cognise preventable disease, and the function of the health officer will be to support and complete his action.

Thus the relations between the State, the health officer, and the practitioner will grow closer as our organisation is completed in that single-minded co-operation for the public safety which science and humanity alike demand. The relations, as they develop, will need for some time to come, however, the most watchful care. It is fortunate that this Association has, in its Parliamentary Bills Committee and its able chairman, a representative body, admirably fitted to safeguard medical interests and to speak with unequalled authority for the profession. The British Medical Association has borne so important a part in fashioning legislation in the past that I doubt not it will have an increasingly honourable share in perfecting such work in the future.

It seemed to me that if it was excusable anywhere to speak in this address on these topics, Birmingham was the place. Here the Social Science Association began its life under the presidency of Lord Brougham, and amid the congenial surroundings of a population eager for social reforms. Here, too, that Association closed a distinguished career, after having taken a noble part in winning the legislative advances to which I have referred.

In Birmingham, moreover, we have a striking example of a community which has always given special consideration to social questions, and by virtue of this quality has formed a high ideal of local government. The title of the "best governed city," given to the town by a recent American visitor, shows that high aims have led to high success. When the Association last visited this town in 1872, Mr. Joseph Chamberlain and his colleagues were just beginning the memorable enterprise of remodelling the municipal government, which has resulted so happily in the transformed aspect of the city. The transformation is not limited to the surface: it has penetrated deeply into the lives and homes of the people, and has given the world an example of how a great self-governing community, by the loyal co-operation of its citizens from the poorest to the richest, can increase intelligence, cultivate taste, elevate morality, and purify the physical conditions of life. In the free libraries, in the schools—elementary, art, and technical—in the parks, and in the improvement area which once constituted the slums, there is evidence of the results of the modern spirit of municipal work. In no department has this work been done more efficiently than by the Health Committee. The results are shown in a death-rate which has fallen from 26.6 per 1,000—the average of the twenty years ending 1870—to 23.5 for the ten years ending 1880, and 19.6 for the nine years ending 1889. Thus, while the population has grown in numbers during the last twenty years by about one-third, the annual general death-rate has lessened by 7 per 1,000, or by more than one-fourth. The zymotic deaths have fallen in the same time from over 7 per 1,000 to less than 3. In those parts which now form the improvement area, and which once were slums, the death-rate has fallen from over 50 to less than half, or 23.1 per 1,000. These figures tell more eloquently than words how the wise expenditure of public money comes back after not many days in the lessened sorrow and suffering of the population.

The question, Am I my brother's keeper? has been answered in Birmingham in a spirit of true fraternity. The sympathy for misery, which has shaped so much of the national legislation in recent years, has found in this city one of its noblest monuments. Like other towns, we have hospitals and charities of which we are proud, but we have also one of the most perfect Poor-law infirmaries which this kingdom has yet seen. Everyone will, I hope, visit the noble hospital, which has been erected at a cost of over £100,000 as a refuge for sick paupers. A workhouse hospital does not usually connote beauty and comfort, but in the Birmingham Workhouse Infirmary of to-day, both are present. Splendid and spacious corridors connect thirteen blocks of wards, each block the size of a recognised clinical hospital. In the wards you will find the patients bedded amid bright and cheerful surroundings, that would do credit to any of the great institutions of the metropolis. Everything that science and art can contribute for their relief is supplied, well-trained, cultivated ladies serve as their nurses, and two of our most able colleagues act as visiting physician and surgeon.

Go and see, I ask you, how Birmingham takes care of its 1,500 sick poor, and you will, I am sure, appreciate the wise benevolence that has raised this great medical monument of Christian charity. There is, to my mind, only one defect: every one who is admitted is forced to become a pauper. I hope one day sickness and suffering will be sufficient passport, and that the benevolence

which proffers the relief will not mar the sweetness of the gift by a condition which embitters its receipt. When that day comes, and the collective provision for the sick is made a public duty, many hospital abuses will be cured by the municipalisation of our charities. The isolation of infectious cases has already been put upon the rates without entailing pauperism, and our City Hospital contains some 400 beds. Thus these two rate-aided hospitals receive some 2,000 patients, or between three and four times as many as are maintained in voluntary hospitals. In London a similar condition exists, for there nearly two-thirds of the 18,000 in-patients are supported from public funds!

Some of you may say I began this address with philosophy and I end it at a workhouse—a goal which philosophy sometimes attains. I accept the criticism. It states a truth and conveys a lesson. It is that lesson which I wish to impress upon my professional brethren—the immeasurable importance of even their highest scientific work to the well-being of the poor, and through that to the stability and prosperity of the State. We have in our ranks some 4,500 Poor-law medical officers, who are the daily bearers of succour to suffering thousands, and in many cases the only visible link between the rich and powerful State and the homeless and hopeless poor. In the daily work of these 4,500 doctors there reside greater potentialities for social progress than in any other class. To them is given the highest function committed to us by the Highest—the care of the suffering poor—and in the daily discharge of that holy task, the vast hecatomb of human misery that civilisation piles up may be diminished and prevented. If it is not so prevented, decay will come upon us as a nation; for never yet have strength and stability been found in hoarded wealth, but only in the content and comfort of the poorest classes of the population. I want every parish surgeon, every practitioner among the poor—and thank God we all have poor patients—and every medical officer of health, to realise the nobility of the service he gives the State; and one day, I hope no distant day, the State will awaken to the value of such service, and recognise in the trusty dispenser of a nation's charity, or the wise saviour of a city's health, servants of the State more worthy of its honours than the successful soldier, or the astute diplomatist.

But come this higher hierarchy of worldly honour soon or late, to men who do their duty in our ranks, there will come one day the grandest words of welcome and reward, "Well done, thou good and faithful servant; enter thou into the joy of thy Lord."

ADDRESS IN SURGERY,

BY

LAWSON TAIT, F.R.C.S.,

President of Mason College, Birmingham.

SURGICAL TRAINING, SURGICAL PRACTICE, SURGICAL RESULTS.

Modern Biological Training of Medical Students.—What is its Practical Value?—Bodily.—The Modern Assistant—The Advantages of the Apprenticeship System.—How to Saw and how to Hammer.—The Handicraft of Surgery.—The Anæsthetic Revolution.—The Change in Surgical Methods and the Extension of Surgical Possibilities.—The Growth of Specialism in Surgery.—The Advantages it has Conferred on the Public and on the Profession.—The Need for More Exact and Uniform Records of Results.—Fashions in Surgery and Medicine.

MR. PRESIDENT AND GENTLEMEN,—I do not know that there is any position in which one who practises the handicraft of surgery could feel a more weighty responsibility than that which I now occupy, and if responsibility is the best measure of dignity, I frankly acknowledge that there is no position in the whole wide world that could by any possibility be conferred on me which I should regard as a higher honour than that which I am about to try to fill worthily in addressing this great Association on the subject and object of my daily life. Your corporation now is but a short name for the profession and practice of medicine and surgery throughout the English-speaking world, and that means our globular part of the universe. There is no need for me to offer an

apologia for our professional existence. From the earliest time of which we have any historic record—and we can even assert what I am about to say in some directions for prehistoric times—mankind has ever been earnest and selfishly sincere in its efforts to diminish suffering, to prolong life and to cure disease. Generation after generation has made fresh efforts of its best and greatest in such directions as these, and ever and anon fresh victories have been won. Now, as before, we represent the best and greatest of these achievements.

That we have made mistakes, that we have had to confess that our favourite theories and some of our best established practices in one generation have become the flogging posts of the next, is but to confess that we are human. Nothing is human if it can have no progress, and progress is impossible in all human affairs without error. Even the most perfect of human sciences—mathematics—has had, is having, and probably will have in time to come, its evolutionary stages. Even the apparently finite doctrine accepted unquestioningly for nearly two thousand years, that two lines which are parallel can never meet in space, is being shaken to its foundation, and those who can approach space from the aspect of its fourth dimension are staggered to find that the shortest road between any two fixed points may not necessarily be in a straight line. With such awful examples before us; with the fear that even the treasured first book of *Euchid's* propositions may prove to be a fraud, we who practise a mere handicraft, but one of the utmost importance to humanity, have need to walk carefully. It is not necessary that I speak for the importance and dignity of our work, for that is admitted on all hands, even with full knowledge of our shortcomings. Admitted it is to the full, for there is none unwise enough to avoid the counsel and help we can give him when the inevitable hour of trouble comes for his turn. The scoffer may be what he likes when he is well, but when the abscess pains or the tumour threatens, his tastes speedily become monastic. Humanity has on the whole a complete confidence in us, not that we are perfect, but as far as we are so approached we honestly do the best we can. It behoves us, however, from time to time to search out the innermost corners of our chambers, to rid them of all uncleanness, and then to garnish them and to set them in order, hiding no blemish, concealing from ourselves even no defect, but striving in all ways to the perfection of that noble work to which we have set our hands.

You have already been welcomed to this great human hive in the words of our eloquent President, and I wish to re-echo his welcome because I have, for once in my life, an audience before me worth preaching to, and I wish that my sermonising powers were equal to the occasion. You have come to a great home of industry, the very paradise of the handicrafts. I wish I had the tongue of a William Morris to sing their praises, but as you go through our workshops, even those of the humblest kind, you will see such wonders as would empty from sheer exhaustion even his silver store. To look at the work, you may think that as little skill as exists in human sense would be required to cut an ivory nut into what they call blanks in a manufactory of buttons: but as you watch the patient workman for a few hours, and then think you would like to try to rival his skill, you take your place at the saw bench, and if you are not preternaturally skilful it will be only after sacrificing a few of your fingers that you find yourself behind him inexplicably in every conceivable way; you would then begin to have some slight appreciation of the skill he has acquired even in that small department of human art. You would then begin to appreciate the principle we all value here so much, for it constitutes the making of our factories—I mean the principle of the subdivision of labour. In such an apparently rough, and certainly very humble employment as that of the cutter of the button blanks which I have taken as my text, a few questions will help us to much thought, and the answers may excite in many of us solutions for problems which are greatly exercising the authorities of our medical corporations at the present moment. You will find that even the cutter of the ivory nut will prove to be a more docile apprentice and a more competent workman if he has had a good education before he enters the shop, such an education as we supply now in our Birmingham schools, in a fashion compulsory and almost free. I wish it were entirely free. The philosopher who asserts that liberal education will spoil the future craftsman is a mere bookworm, without a true knowledge of human powers. We further find that our button cutter must go through a long apprenticeship to accustom his eye to judge the nut, to avoid its faults, to accustom his fingers to the sense of resistance, and even his ear to the sound of the saw. Mere general

education will do nothing of this kind for him, but the general training he has had will open his mind first of all to the sublime advantage of accuracy in all things, and it will make his mind just so much the more receptive for the monotonous details of his work. Finally, it will make him in all respects a better citizen than he would have been without it.

We may easily, and I think justly, apply these facts to the training required by our own handicraft of surgery. Every one has something to say on this subject, and I do not see why I should refrain from expressing my views, especially when I find that the general course of opinion is running at the present moment on lines on which my own has always lain. A surgical craftsman must be a trained gentleman, accustomed by a classical education to use his native tongue with ease and fluency and without confusion. He must have the fundamental principles of reasoning and of business habits instilled into him by such mathematical training as will be involved in his being able to pass some one of the ordinary examinations now insisted upon by all the licensing bodies. If he can spare the time and money to become a graduate in arts so much the better. Up to this point we are all agreed. Our apprentice surgeon has now to enter upon his purely professional training, and to learn the constituent parts of the body and their functions; and here comes in our first difficulty. I, for one, desire to raise my voice in protest against the absurd attention to detail and the enormous waste of time involved in the present biological training of the surgeon student. Let him be grounded in every fact of anatomy which may, under the rarest and most unlikely conditions, aid him to appreciate the results of an injury, or a displacement, or of a new growth; let him be grounded in all such items of information concerning the ultimate structure of organs and their mediate and immediate functions, and the changes to which disease subjects them.

Let him be placed so constantly alongside somatic sections that he will not only learn his anatomy, but that he will never forget it. Let him see things and think of them so often that he will, as it were, see through his patient as this man sees through his nut before he cuts it up. But I plead most earnestly that your successors shall be spared that senseless grind at useless details of anatomy with which our own young memories were burdened—details which he can remember only by a demoralising system of catch words—details which he prepares himself to forget the moment the necessity of examinations is over.

Still more strenuously I appeal that our student be altogether relieved from that senseless system of biological training which has set in as a fashion at Cambridge, at Oxford, and at Edinburgh. Not many years ago I attended a lecture on physiology given to medical students, which consisted in an explanation of a brass instrument resembling a model of Clapham Junction, intended to explain something about muscular fibre. I could not understand it, of course, I was too much of an old fogey, but I had this consolation, that when talking over it with my young friends who had attended the lecture with me, they could make nothing of it either, and it worried them as much as it had worried me. But there was a difference between us—it was demoralising to them, for it discouraged them, and small wonder! And how angry they must feel when they come to deal with human patients and human disease, that all these nonsensical details are of no use to them—not even for the purpose of general training—when they find, in truth, that the time occupied in mastering such subjects has been absolutely thrown away. For students who are disposed to appear for a science tripos, or who have such a line of life open for them or the tendency towards it, who are possible professors of anatomy or biology, this kind of work is of course admirable; but of our medical students, nine hundred and ninety-nine out of every thousand will have to find their positions at the bedsides of their fellow countrymen in times of accident and sickness, and there such knowledge is useless.

I remember that we had to learn that the direction of the anterior cornu of the fourth ventricle of the brain ran a course which was backwards, outwards, downwards, forwards, and inwards, and we were enabled in the most improper way to remember these important facts by the word "bodfi." Has "bodfi" ever served any of you at the bedside? Is there any conceivable condition of human accident or ailment in which "bodfi" could assist you to relieve your patient? The students who continue to learn such matters will find, as I have done, that they will be of no assistance to them to estimate the character of a delirium, and no amount of knowledge of the arrangements of the electrical currents in muscular fibre will help them to

determine the proper relations of a splint. What I wish for our students is that they should go back to the institutes of medicine and leave comparative biology to those who may be able to benefit by it.

Again let me remind you of the terrible task that we had to fulfil in committing to memory the names and relation, the ligatures and points of contact, of the bones of the wrist and of the ankle-joints. To me this task has never served in the faintest instance. If unfortunately I had ever to submit one of my limbs to a joint amputation, I should most unhesitatingly insist upon the selection of that devised by Mr. Syme. The other more fanciful methods of amputation I believe are constantly condemned for very many reasons. Still, it may be that occasionally—perhaps ten times a year in the whole population of England—they are performed. For some specific reason they are not performed by surgeons in the country, distant from reference libraries and anatomical museums, and men who elect to perform such operations can in the course of twenty minutes or half an hour master the relations of these bones sufficiently to enable them to carry out the particular object they have in view. The question which occurs to my mind with great force is, Can the occasional performance of these somewhat eccentric proceedings justify the infliction of the senseless labour of committing all these special peculiarities of these bones upon every medical student who has to appear for examination? I cannot imagine that the committal to memory of these peculiarities can in itself constitute any kind of mental training, and I think the present system of anatomical education involves a gigantic waste of time and much frittering away of serious mental effort. As these words were gathering themselves in my mind, I turned to a number of the JOURNAL which had just appeared, and therein I found a most interesting—I may say a most amusing—account of “Modern Assistants,” by “A Sufferer,” the sufferer in question being a practitioner who had, by reason of his work, to employ a recently qualified young man as assistant in his practice. In language far more trenchant than I can possibly employ he gives a line of argument which I appreciate to the full, and he finishes what he has to say in these two noteworthy paragraphs:—

“But no reasonable person can doubt the superiority of modern methods of training over old-fashioned ones. Our fathers made their apprentices pay them for the acquisition of practical experience, while we, more liberally, subsidise medical tiroes to gain experience at our expense. Our predecessors thought that much could be learned of art and something of science in the surgery of the private practitioner and by the bedside of his patients; we, more modestly, hold that the necessary science can only be taught at the hospital bedside, even when overcrowded by a hundred students, while art we practically ignore; but wisdom after all is justified of her children, and modern methods can proudly point to their resultant—the modern assistant. In face of such a practical proof criticism is silenced.

“Of course you can vaccinate?” said a surgeon to a doubly qualified and newly-fledged assistant the other day. “No, I cannot,” was the reply. “Of course, I hold the certificate of proficiency in vaccination, but I never vaccinated a baby in my life.” Could anything be more entirely satisfactory and excellent than this, or more reassuring?”

In the old days—days which I can remember—it was charged against the corporations that they turned out a large number of ill-educated empirical practitioners who knew nothing but their patients. Now I say the tendency is to turn out a still larger number, a very much larger number of scientific young tiroes who know neither patients nor their diseases till they have gone through a second pupillage extending for years after they have left their university. This second pupillage lies in the rough school of experience, and in its second training they will be found deliberately and at once to throw overboard at least two-thirds of what they have learned in the first. What the boy wants after his general education has been fully developed, and his fundamental knowledge of useful anatomical facts and physiological principles has been made perfect to the utmost of their extent for usefulness and not one scrap beyond that, is that he should be dealt with as we deal with the cutter of blanks in the button manufactory. He should be put at once into contact with his material. I therefore vote cordially with those who demand the restoration of the apprenticeship system in such fashion as modern requirements indicate. It is of course no longer to be a seven years’ slavery in mixing pills and spreading plasters, for

the modern manufacturing chemist does all that for us now, but it should be a period of at least two years spent in learning how to deal with patients, how to divine their peculiarities, and in learning how to avoid making an ass of himself in the sick room as the modern, newly-fledged, qualified assistant is certain to do for the first few years of his second pupillage, in spite of his biological lore.

The road to success in the practice of our art lies not only in knowing how to deal with disease, but how to deal with men and women while they suffer from it. Our biological practitioners have no experience of either of these lines of research, and they therefore fail miserably. I had to meet a most excellent and estimable practitioner of the old school in the North of England some months ago, and he told me that within a year he had had three assistants, all Bachelors of Medicine and Masters of Surgery from one of our most flourishing biological schools. “Sir, would you believe it,” he said to me, boiling with indignation as he thought of the needs of his large colliery practice, “not one of them could put on a splint? and the third was such an ass that he used to lecture a collier’s wife on how fishes lost their eyes in coal pits instead of supporting her perineum.” I am speaking from a lamentable fulness of similar experience, and I feel that no other remedy is possible than that which I recommend, and the sooner we begin to cry out for it the better. Our corporations are deaf to our appeals upon such subjects, because their rulers no more understand the requirements of the general practitioner than they understand the Confucian system of philosophy.

The Council of the College of Surgeons is directing its system of examinations more and more in the ultra-scientific direction, and the demand of the Members of the College for a reasonable share of representation on the body which at present is the great manufactory of general practitioners of England is largely based on this preposterous blunder. As I read the questions put to the candidates at the College examinations, I wonder more and more how such a training as they involve can by any possibility suit men for the every-day work of country practice. The new scheme of the University of London under which the new University will be largely constituted by the two Royal Colleges, will only go to perpetuate the mistake. With a spirit of selfishness which is inexplicable, this new institution is to be confined, so far as its government is concerned, to the eleven medical schools of the metropolis, including the School of Medicine for Women; and all discipline of education and control of examinations will rest in the hands of our metropolitan rivals. There will be, therefore, a constant struggle between those outside the charmed circle and those within its pale; and I speak for those of us concerned, as we are here, for a large and growing school, who will find ourselves greatly handicapped in the fight. But we shall not be easily beaten. We believe in teaching our students what they can best use when they enter upon their struggle for existence, and it is upon that kind of material we want to have them examined; we therefore propose to agitate without ceasing for a more direct representation of the body of the profession at those tables where the direction of medical education and medical examinations are controlled. Upon one point we are coming to an agreement, and that is a demand for the restoration of the practice of the apprenticeship. But I would carry it further. While the student is attending to this most important part of his training, he ought at the same time—and now I am speaking for those who have to follow the craft of surgery—to be taught how to use his hands. I should set him so many hours in the week into the shop of the village carpenter; and I should have him trained to use a saw, a chisel, a plane, and a skew, so that he should be able to make a long splint, if need be, as well as to put it on. And into the blacksmith’s shop he should also go, till he knew how to strike properly with a hammer. Some of you may think this may be unnecessary; but if you could look with a workman’s eye (as I can do, for I served my time at the lathe, the bench, and the forge) at a Fellow of the College of Surgeons—I won’t give his name, but you will find him in almost every large hospital in the kingdom—who used a saw for the first time in his life in the amputation of a human leg, and see, as I can see, what a horrible mess he makes of his work, you will agree with me that a training in practical mechanics is just as necessary (I say it is far more necessary) for a man who has to operate upon his fellow human beings as is a training in anatomy.

The great difference between the man who starts his saw cutting from the point of the saw and the man who starts from the hilt is just as great, I think it must be much greater than the

difference between the man who amputates a leg without any kind of knowledge of anatomy and the one who has such knowledge fairly perfect. During the two years that our student spends in this practical training for his after life, he would unconsciously imbibe the fundamental principles of the scientific training which he would afterwards have to undergo; he would see for himself day by day the characteristics of wounds healing healthily, and how different they are from those of a wound indicating action the result of constitutional poisoning. The meaning of these differences he would learn afterwards at his clinical school. At present he can babble about the theoretical causes of the changes, but of the real facts and phases of them he knows nothing. After his apprenticeship, as he heard in the academical rooms the explanation of the process of the healing of a bone, he could recall to his mind illustrations in the practice which he had already gone through, and the combination of the facts as he knew them, with their explanation, would impress the whole thing on his mind in a way to which at present it is a complete blank. As a matter of fact at present in medical education, the cart is being uniformly put before the horse. Impressions in youth are far better and more lastingly conveyed by the eye than by any other sense. Words referring to clinical systems and to physical diagnosis, which are now a mere shibboleth to the student, would under better arrangement possess a living interest, and what is used merely as dead rote for the purpose of passing examinations, would survive for his lifetime as the guiding principles of his practice.

Having now delivered my soul concerning the training which I believe to be essential for the craft of surgery, I fall naturally into the utterance of some words concerning the practice of the art, and I pause at the outset in absolute wonderment when I contemplate what has happened in my own life-time. The year 1847 was the real birthdate of our work, when there first fell upon man that gentle slumber, anticipated in the beautiful legend of the Garden of Eden when Adam's rib was resected, but which was not brought into the region of actual fact till that memorable night in Queen Street, when Simpson, Keith and Matthews Duncan "were all under the table in a minute or two," to quote Simpson's own graphic description. What had gone before that time was mere groping in the dark, and what has happened since could never have been ventured upon but for that greatest of all human blessings—anaesthesia.

That has been to surgery what the motive power of steam has been for the arts, manufactures, and for commerce: it has revolutionised everything in connection with our art. And yet we are so accustomed now to take the advantage as a matter of course that we have almost forgotten its history. We are apt to ignore the fact that all our brilliant advancements of to-day could never have been arrived at but for chloroform—we could not have developed the splendid work of the modern ophthalmic surgeon, and the modern development of abdominal surgery would never have been dreamed of but for the genius and indomitable fighting qualities of James Young Simpson, who thrashed out the victory of anaesthesia and gave us the anæsthetic which for more than half a century has held its own against all comers.

This, the greatest of all medical triumphs at once broke down the barriers which had hindered the development of our art and a vast change in surgical practice became apparent. Not only were the horrors of the surgical theatre banished, but the type of men who could and did practise surgery was altered—in some instances though, not for the better. In the days before chloroform the man who "niggled" over an operation was avoided alike by patient and doctor. A man like Liston, whose manual dexterity is said almost to have approached the miraculous, had it all his own way. Syme returned from London to Edinburgh for many reasons, but no doubt chiefly because his comparatively defective manual dexterity was very apparent in contrast to many of those with whom he had to be in rivalry. He never could cut decently for stone to the end of his days, and but for the aid of the chloroform of his greatly disliked colleague, we never could have had the splendid philosophical principles of surgery which Syme laid down. He never could have been the surgeon he was without the encouraging influence of an anæsthetic.

In fact the history of this epoch of surgery is one of the most interesting there is, and I venture to say by far the most important. Indeed it is only by reason that we are more or less all part of it that we do not see how overwhelmingly important the transition effected in the years between 1850 and 1865 has been in the development of our art. In that time appeared men like

Paget and Savory who never could have been surgeons as Liston, Fergusson and Miller were, but who lived, and mostly are living still, to fill a higher and more useful post. They became the surgical pathologists, among the first of whom in date we have to put Stanley, and now they are a goodly army. They have lifted us from mere handicraftship to something approaching a science—approaching the position of a science more and more every day.

But in addition to this, probably the best result of the change effected by anaesthetics, another of great interest arose about the same time. With the possibility of human benefit came a huge extension of the number of cases not only of those suitable for the new work but of those who could bring themselves to submit to it. Before the days of chloroform vast numbers of men died of stone in the bladder rather than submit to the torture of the operation. Nowadays nobody is foolish enough to refuse to submit to the operation. Operations were comparatively rare and they were made the subject of vulgar theatrical display. I remember that when Syme had to tie an iliac artery or remove a tongue he would have seven or eight hundred people from all over the country to "assist" as the French say, for only two or three could see what he was doing.

This strange perversion survives even to this day, and it makes me often sad to hear of the anxiety professed by many of my profession to "see" some great surgeon perform some big operation—an operation which they themselves would never entertain a wish to undertake. Such performances, I think, ought to take place only in the utmost privacy and be witnessed only by such as can really be benefited by observing them, that is, men who wish to engage in operating practice and are likely to have fields in which to fulfil their wishes. Of course there are some operations to be excepted from such remarks and the real intention of what I have said must be clear enough to everyone—for an operating surgeon to have a theatre full of second year students merely for the purpose of being able to say that they were in the same room with him is a useless waste of time for the students, and for such purposes I wish all operating theatres were closed.

I have said the number of cases for operation vastly increased after the introduction of anaesthetics, and with this increase it became perfectly evident that no one man could grasp the whole realm of surgical work. The subdivision of the work became inevitable, and the best and first example of this subdivision came in ophthalmic surgery.

I have not asked Sir William Bowman, nor have I inquired of Mr. Anderson Critchett concerning his distinguished father, I have merely gone to the old medical directories for dates and I find the story told concerning these two men who were the first, as they remain still the greatest, of the pure ophthalmic surgeons we have possessed to be as follows. In 1850 Bowman was assistant-surgeon to King's College Hospital and assistant-surgeon at Moorfields; whilst Critchett was assistant-surgeon at the London and full surgeon at Moorfields. Bowman left King's College in 1862, and Critchett left the London in the following year, after a very short tenure of the full surgery, and these dates are of the greatest interest as they allow of just sufficient development of ophthalmic pathology by Helmholtz's great invention to have persuaded both of those of whom I speak that their true vocations lay at Moorfields, where they both remained till 1877, and that they could not well combine rough general surgery with their finer work on the eye.

There are some of whom it would not be true, but as a rule it is now quite true, that a man, to succeed in ophthalmic surgery, must practice it exclusively, and I fancy that any exceptions would go far to prove my rule.

In abdominal surgery nothing was really done, if we except the truly brilliant achievement of Ephraim McDowell, before the days of anaesthetics. It is true that in this country a few parovarian cysts were removed and a still smaller number of very simple operations for ovarian tumours were completed; but there is little doubt that whenever any serious complication was met with, the abdomen was promptly closed. No solid tumour was completely and successfully removed till that now before us fell to the hands of my valued old friend, John Day of Walsall, who was gathered to the majority only a few months ago. The greatest advance of all—the intra-peritoneal treatment of the pedicle by means of the cautery in the hands of Baker Brown, giving a mortality of ten per cent.—was the real starting-point of all our progress, and that proceeding would have been an absolute impossibility without the aid of an anæsthetic. Then came Spencer Wells, who,

with his precise methodical plans and steadfast business-like habits which have characterised all he has done, has established abdominal surgery as a distinct speciality. For this, as well as for much more, I and others owe him much gratitude.

As the practice of surgery has grown, so have the arrangements and provisions for its pursuit become enlarged and altered to suit the varying requirements. Great changes have been necessitated in our hospitals and in our medical schools, changes again to be traced directly to the inestimable benefit of anæsthetics. When I came to Birmingham in 1870 there was practically no hospital between Summer Lane and Stafford, or between Bath Row and Worcester. The towns round about us were supplied by old-fashioned dispensaries, where bronchitis was treated in the winter and diarrhoea in the summer. Serious accidents and important surgical cases were all jolted into the General and Queen's Hospitals. Old John Burton, of Walsall, aided by Sister Dora, had just begun to show, in 1870, what a cottage hospital could do. Now we have not only cottage hospitals innumerable, but we have palatial receiving houses for accidents and urgent cases at Dudley, West Bromwich, Walsall, and Rugby, and many other important centres. These local hospitals would do credit to any community, and the surgical practice in these institutions is quite brilliant, as many of you know. We have now in our midst a Hospital for Diseases of the Eye superior to anything of the kind, and its four surgeons, engaged exclusively in special work, are not excelled in the excellence of their results throughout the wide world. Not only so, but ophthalmic hospitals have appeared in smaller centres, as Shrewsbury and Wolverhampton, which have already acquired highly deserved reputations under the care of men who do not engage in special practice nor in general surgical work. A new feature has appeared at West Bromwich, for which I predict a rapid extension and splendid results. An enlightened committee has engaged the services of a special ophthalmic surgeon from a distance, at quite a handsome salary, to attend to their ophthalmic cases. The same committee has for many years engaged my own services for special cases, with the rank of consulting surgeon, but as the cases are few the handsome salary in my own instance is yet merely a prospect. In this same line another well pronounced division of surgical work has been accepted in Birmingham and the Midland district, of which you have heard something in another place from the lips of my highly esteemed colleague, Dr. Savage. Here, more than anywhere, can be seen the triumph of anæsthetics, for not one of our modern advances could have been accomplished without them. Jean Louis Petit planned and described in detail the method of curing the troubles of gall-stones in 1745, but they could not be carried out till our patients were soundly under chloroform.

The rearrangements of hospitals necessitated by the changes just described have had a most wholesome result on the practice of surgery. The crowding of our two large hospitals by cases of compound fracture and amputations has been sensibly diminished, and the cases are treated far more safely and quite as well in the cottage hospitals nearer the place of accident. The surgeons to our large hospitals are becoming much more of the special consulting and operating surgeons, and less of the senior general practitioners than they used to be; and in our smaller centres are being trained men competent in the highest degree to deal with the ordinary surgery of every-day life. In their turn these men are recognising the advantage to their patients and themselves of yielding up the grave responsibility of special and exceptional cases.

By the development of specialism, and the establishment of a set of men in our midst who are not in any way engaged in general practice, I venture to think a great many advantages have been gained. Of this not the least is that the public derive what benefit consultation may give at the onset of their ailments instead of at the end, for I venture to say that nowhere now in this district are serious abdominal symptoms encountered without a speedy summons being sent to one of us who practise in that department; and it is in no small degree owing to the foresight and prompt action of our brethren who seek our help that we have the success which has crowned our efforts. Unless those who practise such a speciality have the confidence of their brethren by keeping clear of general practice, no such satisfactory results can be gained.

In dealing with the third division of my subject I have less clear ground upon which to go, and I fear I must depend more upon what I wish were the facts than upon what can be actually shown in their present existence. But I sincerely wish that we

had better surgical results than we have; I wish we knew more exactly what they are; and, most of all, I wish that we could go about establishing them in a more logical fashion.

It has often been said that the greatest of the gifts of God which take the form of genius, I mean oratory, is the most potent of all for immediate effect, but most transitory for fame, and so it is with the sister histrionic art. The dead printed matter (all that we have left of John Bright) gives not the slightest idea of the great artist he was. The phonograph may alter all this, and the orators of the future may enthral audiences as much as the skill of Leonardo captivates you in the Refectory delle Grazie at Milan just as it could have done four hundred years ago. We have no such promise for the fame of the surgical artist, for he and his handiwork perish alike, leaving nothing but the bald and printed statement of cases. The limner's work lives almost for all time, and the sorrows of Ursula affect us quite as much now in the hospital at Bruges as when Hans Memling first depicted them. We have only one comfort. In the days which Edward Bellamy predicts, and for which William Morris pines, the limner and the surgical artist will be the only highly paid craftsmen, for their art will remain something unapproachable by mechanical contrivance. This may be or may not, but it is a compliment of no small excellence that so great an authority ranks our craft so high.

In the results of our work we have much cause for congratulation, but I would rather look on the other side of the fence and wonder if they could not be improved, even with the methods we have now at work. For the last twenty years we have first been opposing a great theory, then we have been accepting facts on which it was based, then we have been rushing into violent and illogical enthusiasm about it, only at the end of all to throw doubt and dispute on the whole field. I confess I always doubt surgical theories, just as I doubt all theories of art. The greatest painters have been the least trenchant about theories. Turner never had a theory of any kind, and always used bad pigments; and John Brown tells us that Guido mixed his colours with brains, and could get no further explanation of his results. No school of art which started on a theory has ever made a lasting impression. The modern school of the pre-Raphaelites gathered adherents, it is true, but they have nearly all deserted their theories on finding that the Dutch school knew far more than they did; the Flemings had all their excellencies without falling into their errors. The Impressionists were similarly a failure. Our surgical theories never lead to anything; not even the great antiseptic theory has led to any tangible result beyond what every housewife knew before its day, namely, that dead moist organic matter will decompose if some agent or other gets to it. We know now the exact nature of this agent, but this is a new fact, not a new theory. The theorists forget that living tissue will not decompose under the access of the same influences—influences, indeed, which surround us at every moment of life, and pass by harmlessly. Now the theorists take a lingering farewell of their lost darling by saying, "Well, at any rate, it taught us cleanliness." As a matter of fact, the very reverse of this is true, for it was the arguments of those who opposed the antiseptic theory which demonstrated the successful cleanliness. The last phase of this discussion—I sincerely hope the very last—is the antiseptic accoucheur, who pleasingly fancies that both his theory and his practice are new, whereas in matter of fact Semmelweis literally died for them nearly thirty years ago. No more instructive reading can be indulged in than a brief monograph which has recently been issued concerning the history of this truly great man—a man so great, that I think he deserves to have erected to his memory a statue in every civilised country. Semmelweis had no theory, he simply stated the fact that puerperal women in Vienna were poisoned by dirt. "Wash your hands," he cried, "and the women will not die," and his colleagues ruined him for his frankness. But he persuaded the world he was right. Simpson took up the fight with his accustomed vigour, and carried it through, and now, forsooth, we hear of the antiseptic theory as applied to midwifery as a new thing.

What is wanted for the improvement of our surgical results is not any more theories, but better work and better systems of working, preceded by better systems of training. We forget that an art like surgery cannot be acquired by passing examinations. It is true that examinations admit to our Academy schools in Art, but they are merely for the purpose of selecting candidates upon whom it is likely that benefit will arise from the teaching which there can be obtained. Surgical art is not conferred upon the successful candidates by the College of Surgeons' parchment for

the Membership, still less by that for the Fellowship. Like all arts, surgery requires some indescribable gift, easily recognised and appreciated when seen, but wholly incommunicable by diploma or otherwise. With that gift the art may be acquired by persistent labour, but without the gift the labour is hopeless, and that this fact is being recognised in all our large centres of population, even in the close hospital corporations of the metropolis, is one of the most hopeful signs for better surgical results. Another hopeful sign is the demand for complete and accurate statements of results. Public attention is now being drawn very largely to the question of hospitals in general, and a most wholesome rivalry is being established upon the question of results; so much is this the case that grave suspicions are being entertained regarding all institutions which neglect or refuse to publish their results. I remember very well that when engaged some fifteen years ago in writing a book on hospital mortality, I asked a large metropolitan hospital to furnish me with the facts of their amputations for a period of sixteen years. The hospital was notoriously reticent upon all such questions. The medical board answered my request by a resolution that it was not expedient to furnish me with the information required. I replied that if they did not furnish me with what I wanted within a month, I should publish their resolution in the *Times*, and, as this hospital was entirely dependent on annual subscriptions, they reconsidered their decision. Their amputation results were ghastly; probably they did not themselves know how bad they were. Publication of these results had a marvellous effect, for now the same hospital has an amputation mortality of less than one half what it was sixteen years ago.

To Sir Spencer Wells is most undoubtedly due the credit of putting the publication of surgical results on a business-like basis and the extension of this ought to be encouraged in every possible way. When the results in abdominal surgery, which began to be obtained about twelve years ago, were first published, they were so amazing that the favourite criticism of them was that they must be lies—a complimentary method of criticism which, it may be mentioned, was meted out to Ephraim McDowell. This sort of thing at first was very irritating and used to make me very angry; but for many years past I have ceased to trouble about it and the incredible things of eight or ten years ago are now matters of every-day experience. My present desire is to urge in every possible direction a careful classification and publication of surgical results as one of the best methods of improving them, for it is clearly necessary first of all that we should know what our results really are before we can see the necessity for their improvement; and, secondly, it is only by the comparison of the results from different hospitals and different surgeons that it is likely that we shall start rivalry and inquiry as to the causes of the better results.

Another great advance required is the devising of logical plans in recording and classifying the results and also the adoption of reasonable methods of conducting the investigation. For example, no one would now, in making a research on the mortality of amputations, arrange his figures without a careful separation of amputations for accident and those for disease and a perfect arrangement of the cases according to the limb affected and the point of amputation. But until Simpson pointed out the necessity for such divisions, the importance of them was not clearly understood, certainly was not fully admitted. Arising out of a matter so simple as this there are, there must be scores, of points which require settlement, yet no serious attempt has been made even to indicate what such points may be. It may be, for instance, that one particular method of flap making will suit primary amputations better than another, and a point so important could be settled in twelve months by a simple agreement amongst a group of hospitals and their surgeons. Let one set of men work steadily at one method for one class of cases, and another set at another method, and the statistical laws will be found faithful to the truth as they ever are when the figures are large enough. Instead of adopting a method like this, our present method is that when such a point is raised for discussion, surgeon after surgeon rises and gives vent to vague impressions which he is pleased to elevate by the name of opinions. The fact is that every one has been trying all the plans in a disconnected illogical way from which truth never can be evolved. One of the many things I admired about Tom Keith was the religious way he stuck to the cautery in treating the ovarian pedicle. Nothing could shake him. I was equally obstinate in my adhesion to the silk ligature. The result was that when we came to compare notes after many hundreds of ovariotomies, we found that so long as the bleeding from

the pedicle is effectually stopped, and the pedicle carefully dropped back into the peritoneal cavity, it does not matter a pin how it has been treated; and that I venture to say is a surgical conclusion, not only of the utmost importance, but one which never can be contravened. The so-called discussions on special subjects which are now fashionable at our annual gatherings illustrate well how utterly futile our present method of research is. Take the case of the kidney. We have half a dozen men discussing such a question as that of removing a suppurating kidney as a primary operation or subjecting it to a preliminary drainage, and when you have heard all that they have to say you are no wiser on the subject. But if four men would subject all their cases to one method, and four others would confine all their work to the second method, within five or six years the question would be definitely and finally settled, and the probability is that we should have determined as a definite conclusion that in all certain well-defined cases the best treatment was the first method, whilst in another class we should probably discover that the alternative was the better choice. The latest instance of this kind is the question of lumbar *versus* inguinal colotomy, concerning which I am certain that the shield has a silver as well as a golden side, and that our present method will never enable us to differentiate the two metals.

Some such plan of research as I have described would very clearly indicate in which set of conditions which proceeding ought to be adopted. It may be urged against my proposal that such a plan of research would hamper liberty of action, but I answer that our present liberty of action is not wise; indeed, it is not liberty at all, but licence.

Let me take a personal case. It is well known that I adopt a special method of treating uterine myoma, and that there is a rival in the field in the shape of the electrolytic method. It is a charge also against me that I will not try the electrolytic method—a charge to which I readily plead guilty—and for this conduct my defence is simple. I say that no logical and complete conclusion can be arrived at by everybody treating everything in every kind of way. Having opened out a continent I want to know all about it. I pursue, therefore, all the windings of its rivers, and I measure the heights of all its mountains, and I give you the results of my ten years' wanderings. Let the electrolyticians do the same, and then you shall be the judges, not upon men, but upon principles. If the primary results of the removal of the uterine appendages are satisfactory enough to justify the experience being continued over an area of about 400 cases, the judgment will rest upon the ultimate and permanent results. If the results of electrolysis are given with the same fullness and with equal authentication and are found to be better than those of surgery, I have no more to say on the subject, and shall take a back seat. But meanwhile I am sure, in the interests of our art, that it is better that I should continue my research in a logical fashion, unhampered by qualifications which would make a just conclusion on your part an absolute impossibility, and which would lead to nothing in my own mind but confusion.

On the other side of this most important question lies another grave source of error, which is too true of our research into surgical results, though it is far more extensive in its results in general therapeutics in the practice of medicine. No sooner is a new drug placed on the market than everybody rushes to try it. At first all is well, and "rubbishin" is good for everything. Then come a few isolated hints about the "toxic effects of 'rubbishin,'" and finally "rubbishin" gets dropped altogether and we hear no more about it. It is positively awful to think of what some of these new drugs—say chloral, for instance—may have done before they got settled. For the mischief that is done in this way the public is largely to blame, if indeed it is not wholly to blame; they like the idea of a new discovery, especially the upper classes, and I am told by men practising near the dwellings of the princes of the land and at fashionable watering places that the great burden of their lives is to keep up with the new drugs and the new dodges. People who live in such houses and such places always have a smattering of such things, and they judge a man harshly who is ignorant of them. For my part, I instinctively distrust men who are always going in for new drugs, and for myself I will have none of them. In our surgical results there is too much of the same thing. Take the case of Dieffenbach's operation for squint, a most useful proceeding judiciously applied over a limited area. But I remember the time when every urchin with a squint was collared in the street and walked into the operating

room to have one rectus divided in order that its opponent should have full power to swivel the eye out in the opposite direction. Everybody was "doing squints." Similarly when removal of the uterine appendages was proposed, but long before the just and true principles on which it is now based could be formulated, everybody rushed into the trial of it, and the result was a disastrous epidemic, the chief burden and discredit of which fell upon me.

I was more horrified than I can tell, and much of my time was taken up in disclaiming the doubtful honour of what was called "Tait's operation," in the performance of which every principle advocated by Tait was neglected or deliberately outraged. If the men who engaged in this work had waited for a reasonable trial, a fair discussion, and a just verdict, much discredit for our art would have been spared us. The just verdict has now been arrived at, and the misrepresentation of which this operation was the centre has now ended. But the example is a very telling one in illustrating the want of logical application in our present method of research upon surgical results.

This vast and powerful Association could accomplish almost anything it wished after determining that it was for the good of the world, and after a reasonable method was pointed out for its accomplishment. We tried an expensive experiment in the way of a collective investigation, but from intrinsic reasons it was a failure. The fact is that its plan was lost in diffuseness and defeated by the machinery involving a vast number of contributors—in fact to increase the means of success involved the very essence of increase of risk of failure.

If you want a thing done well you must either do it yourself or trust it to a very small number of workers. I do not think it would be too much to ask our Association to do to place every new drug and every proposal for a new surgical proceeding under the observation of a small responsible committee, whose judgment should precede anything like a wholesale experiment by the professional public at large. This step would certainly clear away a vast amount of rubbish, would direct more extended research into definite lines instead of the indefinite and haphazard roads it now runs upon in almost every instance. And I cannot help feeling it would prevent us doing the great deal of harm which is now done in the early stages of even our best proposals.

My proposal may be crude and impracticable. It may be easily perhaps displaced by some other and better. But if I have only imbued you with necessity for reform I have gained my end and shall have accomplished the object of this Address in Surgery.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF SURGERY.

At the Annual Meeting of the British Medical Association, held in Birmingham, July, 1890.

By T. H. BARTLEET, M.B., F.R.C.S.,

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THE TEACHING OF OPERATIVE SURGERY.

It is my first and most agreeable duty to welcome my surgical *confrères* to the city of Birmingham, and to the Surgical Section of the annual meeting of the British Medical Association for 1890. When I reflect that at the last annual meeting in Birmingham my old teacher, Sir William Fergusson, conferred dignity on the post I now occupy, and aided by his knowledge and experience our surgical discussions, and when I reflect on the distinguished predecessor and successors in this chair, I may be pardoned if I am dubious of my capacity, and may be excused if I ask your kindly forbearance. My shortcomings will, however, be supplemented by my erudite colleagues, the Vice-Presidents and Secretaries of the Surgical Section.

The city of Birmingham is a well-equipped surgical centre. We have large general and numerous special hospitals and institutions. The General Hospital, the Queen's Hospital, and the Workhouse Infirmary represent our general hospitals. The former is, I suppose, the oldest charitable medical institution in the district; the Queen's Hospital, founded by Mr. Sands Cox, in connection with the Queen's College; while the City Infirmary presents special interest as exhibiting the construction and equipments of a modern hospital.

In special hospitals we have the Women's Hospital at Sparkhill, about two miles and a half from Birmingham; and the Children's Hospital in Broad Street, close to the beautiful suburb Edgbaston. These two hospitals have out-patient departments in the centre of the city, placed so as to be accessible alike to the inhabitants of the city and also to patients coming in by train from the surrounding districts, while the in-patient departments are so located as to gain pure air and sunlight, with garden surroundings.

The Eye Hospital is a modern and completely equipped institution, though the charity was, I believe, the first provincial eye hospital, and was founded by Mr. Joseph Hodgson, a distinguished Birmingham surgeon, who late in life migrated to London, and was elected President of the College of Surgeons. His portrait graces the Board Room of the General Hospital. Among other special hospitals, we have the Orthopædic Hospital, the Ear and Throat Hospital, the Skin and Lock Hospital. There are also at Edgbaston large and important institutions for the support and education of the blind and of the deaf and dumb.

While near Birmingham, situated so as to catch the pure breezes from the Leckey Hills, is the Birmingham Sanatorium, and on the other side of the town, near to the large park or chase at Sutton Coldfield, is the Suburban Hospital, in connection with the General Hospital, founded by the discriminating generosity of Mr. John Jaffray, a distinguished citizen of Birmingham, and bearing his name. This hospital serves two objects—the one, in conferring the benefits of country air and surroundings on convalescent patients; the other, not less important, in relieving our General Hospital wards of chronic cases, principally surgical cases, such as bone and joint diseases, which, by their necessarily protracted occupation of beds, excluded more urgent acute cases.

The traditions of our profession in this city are, I think you will allow, both interesting and honourable. Dr. Ash was the founder of the General Hospital more than a hundred years ago, at which period its site, now in the midst of an extensive manufacturing district, was suburban. One of the earliest notices to be found in the archives of the institution is a charge for the erection of sign posts to guide the sick poor through the fields to its gates.

Dr. Withering, famous for the introduction to our therapeutic armamentarium of digitalis, was also on its staff. Mr. Freer, one of its surgeons, is notorious in classical surgery as having been the first to ligature successfully the external iliac artery, his case succeeding a fatal one of Abernethy's, and preceding his first successful one, which placed the operation in the list of reliable operations, and which gained him world-wide fame.

Mr. Joseph Hodgson, who wrote a classical work on diseases of arteries, and who was subsequently President of the Royal College of Surgeons, was for forty years a member of the General Hospital surgical staff.

On the Queen's Hospital staff Mr. Sands Cox, founder of it and of the Queen's College; Mr. Langston Parker, in his time a well known syphilographer; Mr. Sampson Gamgee, noted alike in surgery and literature; Dr. Fleming, who made aconite a study; and Dr. Heslop who was associated with the foundation of at least three of our special hospitals, and to whom the library at the Mason College owes its existence.

I believe that physicians and surgeons still living ably maintain the honour and prestige of our profession. Among these I feel I may mention without indecorum those whom the British Medical Association has delighted to honour: our President, Dr. Wade; our President at the meeting in 1872, Mr. Baker; the reader of the Address in Surgery on that occasion, Mr. Oliver Pemberton; the readers of the Addresses in Medicine and Surgery at the present meeting, Sir Walter Foster and Mr. Lawson Tait; and the recipients of the Hastings Prize Medal, Mr. Lawson Tait, Mr. Furneaux Jordan, and the present officer for women's disease, at the General Hospital, Dr. Malins. In connection with this branch of my subject, I would mention that the works of Withering, Hodgson, Freer, and Pemberton are on the table for your inspection.

The medical and surgical staffs of the several hospitals I have mentioned desire me to express the hope that their respective establishments will be visited by many members attending the meeting.

I am about to beg a few minutes in which to bring before you a subject in which I am much interested, and I would fain add to my remarks any weight that may attach to my present honour-