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*Being the Annual Oration*
*delivered before the Medical Society of London*
*May 20, 1895*

BY

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MR. PRESIDENT AND GENTLEMEN, I am using no empty form of words when I say that our gathering this evening has lost much of its wonted pleasure from the absence from among us of Mr. Durham, who was so long and so prominently identified with this Society. In a remarkable degree Mr. Durham was the very personification of the great characteristics of the Medical Society of London, for he combined intellectual keenness and professional ardour

with intense warmth of heart and kindly feeling. Every one knew him as the skilful surgeon and the very soul of honour; and we here knew him also as the wise administrator and the genial friend.

When our President, eleven years ago, Mr. Durham, gave us of his very best in time, in thought, and in effort, and made us ever his debtor; but he has placed the Society under a still greater debt of obligation by his ten years of service as its Treasurer. We owe it largely to his genius, which combined enterprise with caution, that we are now more handsomely accommodated and more financially prosperous than at any former time in our history.

Many of us remember the striking and valuable oration which Mr. Dur-

ham gave fourteen years ago. His subject was the Surgery of the Future, and in his address he sketched out the lines along which the art he loved so well—and which he himself adorned—would progress in the immediate future. It is a striking testimony to his accurate appreciation of the new forces at work that he then foretold much of what has since been realised.

The subject that I have ventured to choose as my theme is the Recent Evolution of Surgery. I have selected it because, however unworthily I may deal with it, the subject, at any rate, is well worthy of attentive study. This has been true at every stage in the long history of our art, but never so true as to-day, and for those who, like myself, have had the opportunity

of witnessing during the last twenty-five years such a development in surgery as has never occurred before in a generation—nay, not even in a century or a millennium.

The origin of the surgical art is lost in the obscurity of prehistoric times, but for two thousand years at least we are able to trace more or less clearly and fully its onward march. Its progress has been slow and at times intermittent. The light of science has shone more brightly now here, now there, and great local schools have risen to fame, and then, alas! sunk into oblivion. Although the progress has been slow, it has been assured; and at almost any time in the history of the art we can imagine an orator addressing his fellows and asserting with truth that the present

was better than the past. This reflection may well give us confidence in the future, and temper our boasting of the present with the expectation of the greater things still to be realised.

It is possible to measure the progress of our art either by the growth in the ideas to which it gives expression, or by the improved expression it gives to old ideas. Of method we find an almost infinite variety, and few surgeons are so devoid of all originality as not to add something to the constant advance of surgery as an applied art. The great principles and thoughts of surgery are few, and it is given only to nature's giants to develop or to correct them.

By whichever standard we judge the progress of surgery within the

last twenty-five years, we shall be bound to admit that never before was the advance so general, so rapid, so beneficent.

Inasmuch as mind is more than matter, and in the degree in which a truth is greater than any expression of it, the highest and truest standard by which we can estimate the progress of an art will always be the moral rather than the merely material. I believe the chief glory of this period lies in the almost entire transformation of surgical ideals that has occurred rather than in the improved methods of expressing them. In this sense it may with justice be called the 'golden age of surgery,' and to apply to it the poor term 'progress,' which we also use for the slow march onward of the last two thousand years,

is altogether inadequate, and therefore to some extent misleading. I have accordingly ventured to use the word 'evolution' to express this wonderful unfolding, enlarging, ennobling of the thought, spirit, aim, and ideal of surgery, in contradistinction to improvements in its methods only, which may well enough be connoted by the poorer word 'progress.'

I propose, then, to show to what extent and in what direction the very life of surgery has undergone a striking evolution within the last twenty-five years. I shall ask you to test the position of surgery to-day, as compared with what it was when most of us first began its study, by its new estimate of the bearing of anatomical facts; by its higher regard for the integrity of the organism; and by

its altered conception of its place and value as a healing art.

1. One great change that has come over surgery is the *removal of the formerly admitted anatomical restrictions upon surgical operations.* This is sometimes spoken of as the extension of surgery into new regions, and it is pointed out that organ after organ has been, as it were, captured by surgeons and shown to be a more or less fruitful field for their enterprise. That, I think, is but a very imperfect expression of the facts, and one that conceals their true significance.

For what are the facts?

We are all familiar with them. The operation of trephining probably dates from prehistoric times, and from that remote period up to a very recent day surgeons have confined their

cranial operations to removal of more or less of the skull, and have most carefully abstained from interference with the brain within. Quite recently trephining has sunk in importance, and is now, as a rule, only an incident in an operation directed entirely to active treatment of the membranes and brain.

Similarly, while our immediate predecessors operated timidly, if at all, upon the posterior part of the spinal column, we operate upon the spinal membranes and cord, and also occasionally upon the anterior part of the vertebral column.

Of the surgery of the thorax the same holds true. Operations upon its walls were sanctioned long ago, and timid efforts were occasionally made to open and even drain the

pleura, but the thoracic wall only was regarded as the legitimate field of surgical interference. Now, not only is the pleura a common field of successful surgical interference, but the lung itself is freely operated upon; and the chief bar to a much greater development of pulmonary surgery is the difficulty attending the minutely precise diagnosis and localisation of the diseases of this organ.

The pericardium is aspirated or drained without hesitation, and the suggestion has been made not only to tap the heart itself, but to treat wounds of its muscular substance by careful suture, in just the same way as similar injuries of other muscles. The mediastinum, too, has been brought within the pale of legitimate surgery.

No single organ in the great cavity of the abdomen is now held to be beyond the reach of the surgeon's knife. The successful removal of huge abdominal tumours, which at first excited angry opposition and then admiring wonder, is now a commonplace event in every operating theatre in the world. This has been followed by the extension of surgical methods to one and another of the solid and hollow abdominal viscera, until now liver, spleen, kidney, stomach, and intestines, uterus and its appendages, gall-bladder and bile-ducts, ureters and urinary bladder, and even that most inaccessible of organs the pancreas—one and all have their own surgical history and triumphs. In other words, the field of direct surgical interference was

formerly limited to the limbs and to the common coverings of the great cavities of the trunk, to the exclusion of the great serous membranes and the organs contained within them. Surgeons were content to recognise that many organs and parts of the body lay beyond the limits of legitimate surgical interference, and they admitted it to be no reproach to their art to refuse to interfere with the peritoneum, the kidney, the lung, or the brain.

I submit that it is essential to a correct appreciation of the change that has occurred to notice that the advance has not been gradually or slowly made, but occurred practically simultaneously all along the line. Its explanation lies not nearly so much in increased momentum in sur-

gical art as in a sudden removal of a restriction to its advance. Surgeons are not bolder now than in the past, and although their anatomical knowledge has in many directions been made more precise, and they are possessed of operative aids unknown to a former generation, it is not chiefly in these influences that we must seek an explanation of the fact we are considering, but in the removal of a barrier erected and supported by ignorance and misconception. The error consisted partly in a belief that a surgical operation is in its very nature lethal, what we now call pathogenic, but largely in the view that certain tissues and organs of the body are of such anatomical delicacy, and so little endowed with either power of repair or ability

to resist injurious influences, albeit that they are of prime importance in the animal economy, that to submit them to operation was to court certain disaster.

He who saw the removal of a subcutaneous fatty tumour entail suppuration and the risk of blood-poisoning could not contemplate with approval the removal of a kidney. When the surgical wound of a healthy joint was seen to be attended with the gravest risk to limb and even life, how could a surgeon dare to lay open and operate freely upon a huge serous sac like the peritoneum? When every surgical procedure entailed grievous risk and no means were known of certainly avoiding it, all surgeons felt the necessity of limiting operations to the irreducible

minimum; and when it was forced upon them that the deeper their incisions the greater the peril, what else could they think than that the mere depth of an organ and the means taken by nature to protect it from external violence were a clear intimation of its being beyond the scope of surgery?

Thirty years ago the body was mapped out into an operable area and an inoperable area, the distinction being based upon anatomical position and differences; but when surgeons understood the process of healing of uninfected wounds, such an anatomical classification of parts became meaningless, and a great barrier to the progress of surgery was at one moment removed. To-day we know that simple, well-executed

surgical procedures are not in themselves the cause of disease (pathogenic), and that every tissue and organ of the body is endowed with a power of repair more than equal to the demand surgery makes. With this knowledge the whole anatomical barrier to the progress of surgery has vanished, and the problem has assumed an entirely different aspect.

From an anatomical standpoint the only bar to the feasibility of an operation is its mechanical impossibility.

But I must guard myself from being understood to maintain that to-day a surgeon is free to incise anywhere or to excise anything. That can never be.

The very removal of the anatomical restrictions upon the activity of

surgeons has brought into relief the physiological restraints upon their art. Thus while the depth and important relations and the anatomical structure are no bar to the excision of either kidney, the physiological importance of the organs is an absolute bar to double nephrectomy or to the removal of a single kidney when its fellow is *hors de combat* from disease.

A wandering spleen has been successfully excised, and such an operation is distinctly indicated where the organ gives rise to serious trouble from torsion of its pedicle; its place in the organism can be adequately filled by the bone-marrow, aided possibly by the lymphatic glands and sometimes by small masses of spleen tissues left behind in the gastro-splenic omentum. But, so far as we know, a

wandering liver can never be treated in the same way; anatomically the operation is almost equally feasible, but physiologically it is barred.

Similarly, cerebral surgery is at present limited to the relief of pressure upon its substance, the excision of morbid growths at or close to the surface, and the evacuation of abscesses in its substance. With our present knowledge we have to admit that the medulla oblongata and the central portions of the brain are outside the field of surgery, not because they cannot be reached or on account of any peculiarity of structure, but because of their physiological importance.

In fact the only limit in the anatomical range of his activities that a surgeon now recognises is the physio-

logical one. He no longer asks himself whether this, that, or the other structure is too delicate to be the field of his interference, but only whether he can operate upon it without injury to structures necessary to life, or without inflicting upon the patient greater disabilities than those caused by the disease or injury he seeks to combat.

Thus the surgeon views the human body as a field for operations from an entirely different standpoint from that occupied less than a generation ago ; we of to-day cannot, even in imagination, put ourselves quite into the mental attitude of those who immediately preceded us. In this new thought, then, we see one great sign of the evolution of surgery.

2. Closely connected with this

change in surgical thought, and yet to some extent standing in contrast with it, is the *higher regard in which the physiological integrity of the organism is now held.* While no one tissue or organ is held by surgeons to be beyond the scope of their activities, all tissues and organs have assumed an altogether new and higher sacredness in their eyes. To use a time-honoured but much abused phrase, surgery has become more entirely conservative in its aims than was ever the case before.

It is true that diseased structures are removed with greater freedom than ever and almost regardless of their situation; but never before have we seen such efforts made to limit operations to the removal of diseased parts and to save all healthy

structures. I will mention four examples of the influence of this new spirit in surgery.

(*a*) My first example is found in the *diminished frequency with which amputation is resorted to* for injuries and diseases. I will not attempt to prove this by statistics, for they are in great measure useless for the purpose. Indeed, I think it quite possible that if we appealed to statistics only we might meet such an awkward fact as this—that more thighs were amputated at a given hospital last year, let us say, than was the case twenty years ago. For while amputation for some affections has been replaced by happier methods of treatment, we must not forget that, with greater safety attending all surgical operations, there are other series

of cases which were before deemed hopeless, even at the cost of an amputation, which are now so treated.

Statistics may be good servants, but they are always bad masters. They are capable at the best of expressing only the grosser facts of human experience, and, as a rule, with much error bound up with their mathematical accuracy. The best of life cannot be measured and weighed ; and were the statistical method the only one, or the chief, which showed the recent progress of the surgical art, the title of my address would be a misnomer ; for of evolution mere numbers can tell us nothing.

When a statistician has said his last word on a man's height, bulk, weight, age, and fortune, we are still in total ignorance of the man himself,

his true personality and value. And so with surgery. The aims of surgery cannot be weighed and measured; the soul of surgery is as impalpable as the ether.

Not for proof, then, but to gratify curiosity, and also that you may not think that these remarks are inspired by a suspicion that the so-called 'facts' are against me, I have taken out the amputation statistics as given in the Surgical Registrar's Reports for Middlesex Hospital of the last two years, and compared them with those given in the similar reports for 1873 and 1874. I find that in this institution, in the two years 1873 and 1874, 2,382 patients passed under the surgeon's hands, upon whom 590 operations were performed, including 39 major amputations—by a major

amputation I mean all amputations except those of the digits of either limb; twenty years later, 1893 and 1894, when the number of patients had risen to 2,957 and the operations were 1,554, the major amputations had fallen to 34.

In other words, while 16 per 1,000 of the patients treated by the surgeons in this institution twenty years ago suffered amputation, to-day the proportion so maimed has fallen to 11 per 1,000. Twenty years ago 6·6 per cent. of the operations in this hospital were amputations; to-day only 2·1 per cent. are of this nature.

These figures are small and not specially selected, and I do not quote them as anything more than a rough mathematical expression of a fact familiar to us all—that amputation

has become much less frequent in surgical practice within the very recent period we are now considering.

What a fact that is!

A great and wholly unmerited glamour has been thrown around the operation of amputation. The interest attaching to its design and execution, and to the construction of a sound and useful stump, has done much to obscure the fact that an amputation at best is a confession of failure, a refuge of the destitute.

We have to admit that at times it is an inevitable step, and may be a great boon to the patient, saving his life or health, or freeing him from the encumbrance of a painful and useless member; but all the same, it is a therapeutic tragedy, an irreparable disaster. But not so long

ago surgeons took a special interest, even a pride, in their cases of amputation. To-day, I venture to say, there are no operations in surgery that excite less enthusiasm than amputations, none which are felt to be more opposed to the whole spirit of surgical art ; and a surgeon rarely approaches one without not only a certain misgiving, but a painful sense of disappointment, if not of failure. The readiness with which he resorts to amputation is recognised to be a rough working test of a surgeon's unfitness to practise his art.

This is not only a great fact. It is the outward and visible expression of a great change which has passed over the whole mind and spirit of surgeons. There is more to interest

an intelligent surgeon in the progress of a case of amputation to-day than there was twenty years ago; but to him this interest is dwarfed into little ness by the violation of one of his most cherished instincts, in the sacrifice of healthy living parts in an effort to save or benefit the individual.

What is true of amputation of limbs is equally true of the removal of organs, although in some cases the advance here has not been so great. But I can at least point to excision of the thyroid gland replaced by enucleation of tumours of that organ, and to the removal of tuberculous deposits from the testicle and even from the kidney in place of excision of these organs.

(*b*) My second example I find in the *higher standard of excellence we*

*strive to attain in the repair of injuries and operation wounds.* Where twenty years ago we only aimed at our patient's recovery, and the final closure of a wound, we now look for perfect restoration both of structure and function.

An incident that occurred in this room nearly twelve years ago is indelibly impressed upon my memory. The greatest of living surgeons had read a paper in which he described and advocated his then novel treatment of the direct suture of the fragments of a transverse fracture of the patella. Of the discussion that followed only one speech has lived in my recollection : it was that of a distinguished surgeon and leading teacher, nearly twenty years Sir Joseph Lister's junior, who told him, in his terse

phraseology, that the operation was magnificent, but it was not surgery Not surgery! The idea of obtaining perfect structural repair of an injured part was so foreign to the thought of even our foremost surgeons that this successful effort to grapple with an injury that often permanently crippled its victims was condemned as unsurgical, the object aimed at was considered outside the pale of legitimate enterprise and comparable only with the heroic but mistaken Balaclava charge.

The ideal then falteringly held up before us by Sir Joseph Lister, and which at first was entertained by so few, is now cherished by all, and firmly possesses the mind of every true surgeon. All do not strive to attain it by the same road; that matters not;

the idea of obtaining perfect repair of injuries has been grasped, and this has raised at a bound our standard of surgical excellence. See what it has led to.

Other fractures than that of the patella are now submitted to direct suture if perfect repair cannot be obtained by our older—shall I say antiquated?—methods of treatment.

Dislocations which could not be replaced by external manipulation used to be left; the surgeons had exhausted their resources when ropes and pulleys failed to drag back the errant bone, and they were content to leave the case to unaided nature. Now no one would consent to utter such a *non possumus*, but would at once replace the bone by operation.

In obedience to the same impulse,

the so-called 'internal derangements of joints' are submitted to operation. This ideal finds another expression in the care taken in the suture of wounds where many structures are divided. Where, formerly, surgeons spoke and thought merely of bringing the edges of a wound together, they now speak and think of the careful union of divided structures so as to obtain the most perfect repair.

In the surgery of the abdominal wall the beneficial result of this serried suture of its different layers is very marked, and even such a detail as the splitting of the aponeurosis of the external oblique muscle in place of division of its fibres is not only attended to, but is found to be worth attending to. Another recent improvement of the same kind is the

exact and serried suture of the divided tissues in cases of external urethrotomy, to secure perfect primary healing of the wound in place of the older and very disagreeable method of allowing the wound to slowly fill up.

Surgeons have ceased to view with approval the slow healing up of their wounds by the laborious process of granulation, and this not only because that process is slow, but because it fails to restore the parts in the same perfect way that 'primary union' does. I might adduce other evidence of this, but I hope it is needless to weary you with proof that our regard for the perfect repair of injuries and operation wounds is to-day altogether greater than it was twenty-five years ago, and that a new ideal of excel-

lence possesses the minds of surgeons.

(*c*) My third example of the influence of this improved surgical spirit is seen in *the successful efforts now made for the radical cure of hernia.* Most of us remember the time when the general opinion of surgeons was that a well-fitting truss adequately met the indications of a case of hernia. The desire to obtain a radical cure was entertained by only a few, who were held to be quixotic and unreasonable. To-day the men who regard a truss as the proper and satisfactory treatment for hernia are the marked men, and the aim of surgeons generally is to obtain by direct operation, if need be, but anyhow to obtain, a radical cure of the deformity. This illustration of my point is so striking

that by itself it would have substantiated my claim that the aim and whole ideal of surgeons are now far higher than they were twenty years ago.

(*d*) My fourth example of the same spirit I find in the *application of surgery for the relief of many of the smaller ills and deformities* to which flesh is heir. Look, for example, at the operations now performed for the relief of the various forms of talipes. I do not refer, of course, to tenotomy, which was introduced long before the period of which alone I am speaking to-night, but to the operations of tarsectomy and the like. Look, again, at the excision of varicose veins, the direct treatment of thrombosis, the excision of small moles, warts, lipomata, suspicious growths, unsightly scars, and the like.

While in some of these cases graver surgical principles are also at stake, such operations are mainly undertaken in obedience to a conviction, which we all now admit to be well founded, that surgery is rightly employed in remedying slight as well as graver defects of structure and function. These operations are the outcome of a new spirit among us, of what I have called the higher regard for the physiological and structura- integrity of the organism. They are the expression of a new idea ; and if the examples I have cited appear in any case to be trivial, remember that an idea is greater than any expression it ever receives.

3. In the recent practice of surgery we also find the expression of *a new conception of the real nature of*

*a surgical operation and of the personal responsibility of the operator.* As I have already incidentally mentioned, an operation used to be regarded as in itself a potent cause of disease, and along with this was that other great misconception, that suppuration was sometimes a physiological, and not always a pathological, process.

Surgeons used to speak of 'laudable pus,' 'healthy pus,' 'healing by suppuration,' and so on. These phrases are gone—gone with the false ideas connected with them. We now draw a clear and sharp distinction between the physiological process of repair and the pathological processes of inflammation and blood-poisoning.

When surgeons saw nearly every wound suppurate, and erysipelas,

septicæmia, pyæmia, gangrene, and secondary hæmorrhage were frequent complications, and when they found that neither the surgeon's skill nor the patient's sound health, nor the use of any known dressing for the wound, or of none at all, was sufficient to guard against these appalling evils, what could they think but that an operation in itself was a cause of disease? Surgeons had only too great reason for knowing that, if by an operation they might rid their patient of one diseased condition, it was, as a rule, only at the expense of setting up another, and possibly a far worse malady.

Those who have entered upon the study of surgery only within the last fifteen or twenty years can form no adequate conception of the paralysing

effect of these facts. The surgeon's confidence in his art was sapped at its very foundation, and, what was worse, his confidence in his own power of determining the issue of his cases was destroyed.

As a result, surgeons were with grim irony called 'brilliant,' if only they could execute with despatch and dexterity the feats of the operating theatre. If a large proportion of recoveries was obtained, the man was apt to be called 'lucky'; if failures predominated, again it was his 'luck,' shoulders were shrugged, the Deity was blamed, and the surgeon took comfort in his 'brilliancy.' To-day all this is as a dead language to us; the very slang of the hospital theatre is gone. Instead of brilliancy in execution only, we demand success;

and instead of speaking of 'luck,' we talk of surgical responsibility.

Operations still fail; but instead of blaming the Deity, we now blame ourselves for the result. For how do failures arise?

(1) We may attempt what we are unable to effect; such attempts should be made so as not to add to our patients' ills; we ought, at least, not to introduce any new element of danger where we cannot effect relief.

(2) An operation may be fatal from shock, its direct paralysing influence being more than the patient's powers can withstand.

(3) Or, again, an operation may be fatal by the infliction of some injury to a really vital part, or by what is called an accident, such as uncontrollable hæmorrhage.

(4) Or an operation may be the means of infecting the patient's healthy tissues with virus introduced from without, or from within, from the patient's own tissues.

So long as human nature continues what it is, with its tendency to error in observation and judgment, surgeons will meet with these failures in their operations; but we cannot escape from the load of responsibility that our increased knowledge brings us, and we are bound to recognise that no one of us can any longer shield himself in cases of failure under the plea of ill-luck.

As vain is it for a man to try to sever himself from his own shadow as for a surgeon to share in the increase of knowledge and escape from the heavier burden of responsibility it

brings. And, look at the causes of failure of operations as we may, we cannot get rid of the conviction that these causes are under the control of the operator in a sense and to an extent that was never the case before.

It takes but a few words to describe this great, this fundamental change that we have of late witnessed in the surgeon's estimate of the nature of his operations and of his share of responsibility in their success or failure ; but no words of which I have command can adequately express the importance of the change thus indicated. The language of poetry alone is sufficient for that.

Whether we regard the relief of human misery resulting from it, or the patient labours of those who have

established our new position, or the marvellous world of hitherto unknown life which it has revealed, or the entire revolution of nearly all of our most firmly held pathological doctrines it has effected, the story of the germ theory of disease must long remain without any parallel in biological science.

4. Closely connected with this and arising from the same happy addition to our knowledge, *surgeons have apprehended that their highest ideal is to treat directly the causes of disease.* Up to the last few years surgical methods as applied to disease were crude in the extreme ; they may be summarised as consisting of the removal of pathological products, the relief of tension, and the application of physiological rest.

Knowing nothing of the ultimate causes of disease, nothing could be done to combat them. Of the many beneficent results of this change I cannot now speak; my aim is rather to fasten attention upon the change of thought itself than upon its practical outcome. I will take merely one example, and that shall be the case of tuberculous disease.

For tuberculous disease of lymphatic glands the old practice never attained to anything better than the opening of abscesses, and in this it only slightly anticipated nature and in no way added to or supplemented her powers of dealing with the disease. To-day such a procedure is almost never adopted, except as a merely temporising expedient or a preliminary to a more radical opera-

tion. But, the existence of the disease being once established, the surgeon directs all his efforts to one single end—the removal, not only of the effete products of the disease, but of the active cause of the disease itself, the tubercle bacilli. As a result we have our patients well in a few days instead of their lingering on with slow suppuration for months and years, exposed all the time to a real peril of more widespread tuberculous infection.

In tuberculous disease of bone we witness the same change in the treatment. It was a step in advance when excision of a tuberculous joint replaced the older plan of incision of abscesses, followed, if the case did badly, by amputation. It was a further step in advance when excision

was practised at an early stage of the disease rather than late, because, the disease being more limited, the operator was the more likely to remove all the infective material. It was, however, a far more important step onward when excision was superseded by arthrectomy, the very essence of which is the early complete removal of all the diseased and infected tissue, with the preservation of all the healthy parts.

From a pathological point of view, amputation and excision differ from one another only in degree ; they are both of them empirical sacrifices of structures. But arthrectomy stands on a different plane altogether : it is the expression of a totally different pathological conception—the removal of the cause of disease, and not merely

its products—as well as of the physiological conception of the preservation of healthy parts.

An equally striking change is seen in the treatment of chronic tuberculous abscesses—psoas abscess, and the like.

The old method of incision and drainage, with more or less of empirical washing out of the abscess cavity, was a grim failure. It often led to rapid death from septicæmia or pyæmia, and, when it did not, the suppuration continued and the abscess was said to degenerate into a sinus. So bad were the results that many of the most experienced surgeons refused to operate at all and left the abscesses to burst, for they recognised that where they could not interfere with advantage, it was their

duty at least not to hasten their patient's end by an operation.

It was therefore a great advance when Lister showed us how to open these abscesses without introducing a new element of danger by external infection of the abscess. But that, after all, only led us half the way along the path. We reached the goal only when we further learned where and what is the active cause of such abscesses, and how that cause may be destroyed or removed. And so to-day we regard these cases, formerly so disastrous, as most hopeful, and as yielding some of the best instances of the successful attainment of the new therapeutical ideal of surgeons—the removal of the cause of disease.

I will not weary you with further illustrations. Your own experience

will supply them in abundance. My point is that such a change in surgical treatment as this is not comparable with the replacement of one empirical method by another, or of one mode of dealing with the results of disease by another.

The dealing with the actual causes of disease is a new fact in surgery, the expression of a new idea, and the conception has at one step lifted the art to a higher level, and has made it worthy of the name 'scientific.'

Could I point to nothing else, this alone would justify my assertion that we have witnessed within the last twenty-five years such a development of the spirit of surgery, such an increased adaptation to the requirements of mankind, that 'progress' is far too

tame a word to apply to it; let us call it evolution.

Two collateral modes of expressing this new surgical thought are, I think, worthy of special notice. The first is the ardour and also the success with which the surgeon now applies himself to the arrest of morbid processes in their *early stages*.

So long as the whole aim of the surgeon was to remove the results of disease, not to deal with its cause, he was content to wait, for mere convenience, until these products bulked large, until the case was 'ripe' for treatment. But now that his object is to deal with the cause of disease, he has come to realise that the earlier he makes his interference the better.

He is justified in this, not only by

the saving it involves to the patient —a saving whether of time or of comfort, of health or of tissue—but also by its enabling him to deal more directly and more effectively with the cause of disease, because he is unfettered by the amount or the kind of the morbid results of their action.

This thought has now such a firm hold upon the surgeon's mind that it has become a part of his instinct, and in any case of a failure the explanation which more readily springs to his lips than any other is that his interference was made too late. Indeed, in cases where we know nothing of the ultimate cause of the disease, as in cancer, the same principle inspires us to operate as early as the existence of the disease is recognised, and even before that, to remove 'suspicious'

nodules of disease, and so, if we can, to anticipate the origin of malignant growth.

We do not know as an indisputable fact that the first small nodule of a malignant growth is, or contains, the cause of the disease, but we argue from analogy that it is, or does. We know quite certainly that the cause of cancer, whatever it is, does not lose its power over the individual by effluxion of time; and influenced by this, but still more by our experience in cases where the cause of disease is known to us, we endeavour to combat the evil by the free removal of the disease at the earliest possible moment.

My contention is that we have no absolute scientific warrant for so doing —we soon may have it; but yet the

practice is universally commended and largely followed as a result of the fact that the highest ambition of surgeons now is to remove the cause of disease, to deal with it at its fountain-head or in the germ.

But we see this same tendency exerting itself in another direction—in the stimulus it gives to efforts to anticipate the graver terminations of morbid conditions. The older surgeons would quote a proverb and decline to meet evil half way, and would wait until disaster had come before they endeavoured to combat it. Such an idea is wholly foreign to surgical feeling to-day; we remove an extra-uterine gestation as soon as it is clearly diagnosed, lest it should rupture and cause a fatal hæmorrhage. If we can help it, we do not wait till

our patients are moribund. We excise a diseased vermiform appendix lest it should cause a suppurative local peritonitis or a fatal general peritonitis.

In thus dealing with diseased conditions, not because of what they are in themselves, but to anticipate more grave accidental sequels to them that may arise, we give expression to a new surgical thought, and the practice therefore is to be placed on a different plane in our estimation from any mere improvement in surgical therapeutics along an old line.

5. The last indication of the recent evolution of surgery that I will mention is seen in the introduction of what I will call *physiological operations* into surgery.

By a 'physiological operation' I mean an operation performed on a

part not itself the seat of disease or known to be the cause of existing disease, but by influencing which we can affect beneficially a gross morbid change in another part. It is a kind of substitutionary surgery.

There are two very closely allied instances of this class of surgical operation—the removal of the healthy ovaries in the treatment of uterine fibroma and of the healthy testicles in cases of advanced prostatic fibroma.

I am not now concerned with the results of these operations or with an exact appreciation of their true value; I only want to point out that operations of this kind stand in a category by themselves, that they are the expression of a new thought, and their introduction marks a new epoch in surgery.

This appeal of surgeons to some of the highest and most recondite of the laws of physiology in the pursuit of their art is a striking evidence of the new spirit by which they are influenced.

I venture to hope that I have made good my point that within the memory of all surgeons of middle age their art has been enriched by the introduction of new ideas, new aims, and a new spirit, and to such an extent has the whole thought of surgery been revolutionised that to-day the art is entitled to a totally different position in our regard from that held by it even thirty years ago.

Neither the time allotted to me nor a proper sense of the demand I have already made upon your indul-

gence will allow of my entering at all fully upon a consideration of the causes that have led to this happy result. The gain has come to us by no lucky accident; the new light has burst upon us by no sudden inspiration; but the truth has been unfolded as we have trodden the golden pathway of knowledge.

To some extent the advance, even in thought, has been gained by improvement of method, as by the introduction of anæsthesia and of better modes of hæmostasis and of new mechanical appliances. But in the main it has been as we have increased in knowledge of anatomy, of physiology, and particularly of pathology, that the change in surgical thought and purpose has been effected.

Good surgery is the outcome of a sound knowledge of these three sciences. As the strength of a chain is that of its weakest link, so the most minute knowledge of anatomy, combined even with a tolerably good appreciation of physiology, failed to evolve good surgery until a knowledge of the causes of disease supplied the lacking constituent.

Anatomy aids in diagnosis and guides the surgeon as to what he is to remove and how best to do it, but its only therapeutic indication is *excise.*

Physiology affords indispensable aid in diagnosis, points with unerring finger to the fell results of injury and disease, but bids the surgeon hold in high regard every part and power of the living organism, and calls on him

in no uncertain voice to *save* and to *preserve.*

Out of this discord pathology brings harmony by telling how disease arises, and by uttering its note—*arrest, prevent.*

These words may mark for us the great stages through which our art has passed. Concerning itself at first with excisions, amputations, and such coarse modes, it rose to higher things by seeing that a nobler function was preservation, not destruction. From that of late it has advanced still further, as it has owned its chief ambition to lie in anticipating and preventing pain, disease, and death.

While in nature evolution is seen to be the outcome of the silent working of unintelligent forces, and

many refuse to accord any part to the influence of a presiding mind, in the evolution of an art all admit the predominant influence of mind and of individual genius. Were I to close this poor attempt to indicate the main course of the recent evolution of surgery and the chief forces that have led to it without any reference to that master mind to which we owe the greatest impulse that surgery has ever felt, I should be doing violence to my own feelings and to yours also.

Although science knows nothing of nationality, and we here to-night rejoice in additions to our knowledge and to our powers of combating disease and death, whether they have come to us from a French Pasteur, from a Teuton Koch, from our

Western cousins on the other side of the broad Atlantic, or from a son of that Eastern Empire now just rising above the horizon, we cannot help feeling a special pride in the fact that the name that shines with an unrivalled splendour on the page of surgical history is that of the Englishman, Joseph Lister.

This society is rich in traditions; the picture which hangs on our walls is a precious treasure, not alone as a work of art and the work of a great artist, but as reminding us of the very personalities of the men that were its founders and the leaders in our profession a century ago. Anticipating the future, we may be sure that it will for ever remain one of the proudest traditions of this society that it was here, to us, that Joseph

Lister made more frequent and more important communications than to any other kindred society in London.

This country has been the birth-place of many of the worthiest of men in every department of life, and in the profession of medicine, to which all civilised lands have contributed so richly, we take a foremost place.

Nature is not lavish of her choicest gifts ; they often come to us at what we call long intervals, as if to enable us to judge of them with a true perspective. In the seventeenth century she gave us the immortal William Harvey to lay the foundation of our physiological knowledge ; in the eighteenth century she gave us John Hunter, that great biologist and profound anatomist, the founder of

scientific surgery; and in the nineteenth century she enriched the race with Joseph Lister, a man worthy to rank with Harvey and Hunter, not only for his genius, his powers of observation and reflection, his patience in research, and his scientific method, but even more for the magnitude and the beneficence of the results that have followed from his efforts.

It is a great thing to have and to hold in reverence our mighty dead; it is a better and a greater thing still to have and to honour the mighty living.

Long may this ancient society flourish! Long may she retain in her fellowship this greatest of her sons! May she ever take a leading part in the working out of those

great ideas which can alone ennoble our art! And may she never lack worthy followers of him who has taken the foremost place in the Recent Evolution of Surgery!

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