be passive in its presence, is worthy to engage our highest powers and best energies in its pursuit; is worthy of those commissioned to "heal the sick," and in the service of Him by whose Divine fiat *adaper adaper adaper*.

ADDRESS IN SURGERY,

BY
C. G. WHEELHOUSE, F.R.C.S.,

Senior Surgeon to the Leeds General Infirmary.

A REVIEW OF THE PROGRESS OF SURGERY.

MR. PRESIDENT AND GENTLEMEN,—My first duty in assuming the readership of to-day is, through you, sir, to offer my grateful thanks to the Committee of Council for the confidence you have reposed in me when entrusting the preparation of the present address to my care. But a thoughtful and appreciative survey of the entire field of the labour of his lifetime, let any one enter upon it when he may, can hardly prove other than a difficult and an onerous task.

Yet when, in the autumn of last year, I received the distinguished honour of an invitation from your Committee of Council to deliver the Address in Surgery on the present occasion, the idea arose at once, and irresistibly in my mind, that such ought to be its nature, and that such review, fragmentary and imperfect as it must necessarily be, would probably prove more generally interesting to those assembled to hear it than the mere elaboration of any individual subject in surgery. I propose, therefore, that the present address shall, in the main, be retrospective in character; that it shall include, as far as is possible, the advances made in surgery during the period of my own professional lifetime, and shall gather together the chief gains upon which, as a profession, we can count as the result of our labours during that time.

EMPIRICAL PRACTICES OF FORMER DAYS.—In the first place, I would hail with satisfaction the fact that, while in the earlier history of surgery, as of medicine, empiricism was, of necessity, the chief guide men were content to follow, we are learning, as years roll on, to rely more and more on the guidance of strictly physiological principles. I do not doubt, for instance, that it will be within the recollection of many who are here to-day, how common and regular a custom it was in former times for almost every one to think it necessary that, at certain periods of the year he should be bled; not because he was either ill or threatened with illness, but simply because it was the custom of the district in which he lived, the tradition of his family, or for some such purely empirical reason. Or that many persons were content, for similar reasons, to bear the infliction of wearing, year after year, such nuisances as perpetual issues, setons, and such like means of "purifying the blood" and "getting rid of humours". Many is the arm that I have seen seared and scarred by such evidences of barbaric surgery, and many, I doubt not, has been the feeble constitution done to death by them.

And, gentlemen, these things were not done in wilful ignorance; they were not done merely from paucity of knowledge: they were the direct results of empirical teaching, and, until the light shed by physiological science upon the mysterious secrets of the animal economy had grown into a brighter and more steady beam, upon what better guide could men rely?

We may look back with horror upon the time when the surgeon, about to amputate a limb, would arm himself with a brazier, the glowing cautery, and the boiling pitch, because, taught by experience, he knew that these means would sometimes so suffice to staunch hæmorrhage that, perchance, his patient might not die; but until Harvey arose and demonstrated the motions of the heart, and displayed before wondering minds and astonished eyes the great secret of the circulation of the blood, and of the functions respectively of arteries and veins, how, in the name of reason, was the surgeon to know that all he wished to attain might be effected by simply placing a thread around the ends of the severed and gaping arteries?

Save only as a result of thoughtful observation, could Jenner ever have discovered the utility and boundless value of vaccination, and have thereby enabled us to rid the world, whenever we will, of the direct scourge by which it has ever been afflicted?

Thus, then, whilst we should not foolishly underrate the teaching of mere experience, yet, steadied as our own practice is by a clearer know-

ledge of physiological principles, it should be our happier lot to subordinate the one to the teaching of the other, and from the heap of truth accumulated in earlier times to winnow out such grains of living seed as we may reasonably trust will yet bring forth fruit in the future.

EXTENDED RANGE OF MODERN SURGERY.—What have we then to show in proof of our having done this? In what does the surgery of to-day differ in broad principles from that of fifty years ago? In the first place, the range of our art has been greatly extended. Operations which in former times were considered to be wholly beyond the pale of legitimate surgery, are now matters of every day practice. Lives which were formerly lost, being abandoned as beyond the reach of either help or hope, are daily saved. Limbs which were doomed unhesitatingly to the amputating knife are spared, and are often restored to a large measure of utility. Thus the surgery of to-day is a far grander science than was that of former times.

Moreover, it has also become an immeasurably less terrible one; for, robbed as it has been, by the introduction of anæsthetics, of much of its horror, a surgical operation has ceased to be the fearful ordeal it once was, and has become the endurable, if heavy, price to be paid for restoration to life or comfort.

Gentlemen, let your minds fall back by the space of only a few years, and picture for yourselves the wondrous change in surgical proceedings that has been brought about by this method of anæsthesia. Imagine the mental strain to be endured in former times before courage could be found to submit to the dreaded ordeal, the shock to the system which such mental strain and agony must have produced; picture to yourselves the shrunken terrified aspect of the sufferer, the bandaged eyes, the securely bound limbs, the prostrate form, and the agonised, uncontrollable resistance to the whole proceeding, and contrast it with the calm and trustful confidence of a patient prepared to undergo a modern operation.

Thankful for the assurance we can confidently hold out to him of complete freedom from pain, the patient of to-day can contemplate even the severest operation without great fear; and the surgeon, aided as much almost as the patient by the action of the anæsthetic, is enabled to do all that he desires deliberately and efficiently. As I am operating myself or watching my colleagues, I often think that this deliberation of procedure is one of the most important of all our more recent advances. There is no longer any need of the old rapidity and "dash", the "brilliance" of former times; there is comparatively little fear of imperfection of result; there is none on the score of prolonged suffering to the patient; the inanimate form before us is insensible to pain, the deepest traces of disease may be carefully and accurately followed, and thus a greatly superior and often more lasting result may be obtained.

SURGERY RENDERED BLOODLESS.—Of all the difficulties with which the art of surgery is beset, none is more serious than the effusion of blood. In a twofold manner this difficulty tends to endanger the success of our proceedings: first, by impeding our view, and, secondly, by diminishing the vital power of the patient for recovery; and we all feel instinctively how greatly the difficulties in the way of the surgeon, and therefore the danger to the patient, would be removed if the parts could only, for the time being, be rendered absolutely bloodless.

To this feeling, unquestionably, we were indebted for the introduction into surgical practice of the tourniquet; and the temporary arrest of the influx of arterial blood into a part or limb, the subject of an operation, by this most useful instrument, marks an era in the science of operative surgery as clear and distinct as did the introduction of the forceps into the sister art of midwifery. But, great as has been the help given by the tourniquet, it has by no means sufficed to remove the whole difficulty. We are still embarrassed by the constant pouring of venous blood into the wound, and it takes all the time and attention of our assistants, with sponges and otherwise, to keep our way clear for us. Hence the thoughts of surgeons of every age have been bent on the discovery of some more perfect means of controlling hæmorrhage than any so far known to us; hence, also, the satisfaction with which we have welcomed the method of procedure introduced some years ago by Professor Esmarch of Kiel, and entitled "Bloodless Surgery."

By the adoption of this method where possible—for there are, unhappily, regions where it is quite inapplicable—we score another great advantage. We can not only have our patient insensible and unresisting, but we can also have the part on which we are operating absolutely free from blood, until the last stroke of our knife is completed.

Often, since the introduction of this method, have I had reason to be thankful for it; and in no cases, perhaps, more frequently than in such as the clearing out of sequestra in cases of necrosis, the removal of

growths and tumours from the immediate neighbourhood of important vessels or joints, and in many amputations and excisions.

I say in many amputations; for, while your experience will at once suggest to your minds the thought that there are amputations in which such total suppression of all hæmorrhage might not be for the patient's good, there are many in which it forms almost the only hope upon which either the success of the operation or the life of the patient may be said to hang.

As I record this opinion, a case in point arises in my memory. It occurred in the practice of my colleague, Mr. Jessop, and, if related, will serve to show the desperate circumstances in which Professor Esmarch's plan may come to our assistance. A little child, worn and emaciated to the last degree, was brought to our hospital suffering from total necrosis of the femur; the poor withered limb had been riddled in every direction by abscesses, and the whole frame was scarcely more than skin and bone. It was clear to us all that nothing but amputation at the hip-joint could offer the faintest possible hope of recovery; but, unhappily, we were equally clear that the loss of even a few ounces of blood would suffice to turn the scale towards death. Then the question was mooted, "Was Esmarch's method possible in such a case?" Looking at the wan little sufferer, the idea at first startled us all, but eventually the plan was adopted. The limb was elevated and emptied of blood, the perineum, the hips, the pelvis, the lower abdomen were carefully padded and slowly compressed, and finally the amputation was performed. Every vessel that could be discovered was secured, the few ounces of blood—the loss of which would probably have killed the child—were not shed, and the patient made a brilliant recovery!

Further, in an indirect manner, I have seen and have used Esmarch's method in regions where its direct and ordinary application would be simply impossible. In this preparation, I show you what must, I think, be admitted to be a large nævus to have been growing in the cheek of a child only fourteen months old; nevertheless, my colleague, Mr. Teale, removed it with so little loss of blood that the operation caused him positively no anxiety! Acting on a sudden suggestion of our house-surgeon, Mr. Vernon, he first carefully surrounded the base of the tumour with a subcutaneous ligature, which, after he had emptied the nævus of blood, he tightened, and he was then able to proceed deliberately to the almost bloodless removal of the entire growth.

I think, therefore, I may fairly sum up my opinion on this subject thus: that in "bloodless surgery" we have an aid which, though not always, yet often, is most welcome, and which on occasions proves simply invaluable; that it is one whose range of applicability will probably increase as time goes on; but that there are cases to which it is as yet inapplicable, and some in which it would prove disadvantageous.

THE BATTLE OF THE LIGATURES.—Whilst speaking of hæmorrhage and its prevention or arrest, I cannot refrain from saying a few words upon the question of ligatures, which is just now agitating the surgical world.

During the last few years, I have been watching carefully and curiously the efforts that have been made to adapt the material of which ligatures are made, and to harmonise their necessary presence in wounds with the requirements of antiseptic surgery.

First, I have noted that various materials—elastic threads, catgut, horse-hair, jute-fibre, and silk of different kinds, all carbolicised, of course, have, one after another, been employed. Secondly, the methods of their application have been almost as varied as the material of their structure; some surgeons have inclined simply to close the arteries without wounding their coats; and some, as of old, to cut into these. One will cut off one end only of the ligature, while another will take away both and leave the knot to be dealt with by absorption.

The conclusion at which I have arrived is that, as regards the whole subject, we are, for the moment, off the track, and are erring from true principles. I hold that the laws laid down by Jones as long ago as 1805*, and afterwards affirmed and substantiated by the late Mr. Hodgson, based as they were upon the safe ground of exhaustive experimental research, are as true now as they were when first promulgated—viz., that the only safe way of securing an artery is fairly to divide the inner and middle coats of the vessels, and that the only ligature to be trusted to do this efficiently is a well made firmly twisted round cord of silk; that elastic threads, after dividing the coats, if they do so at all, lose their elasticity, yield when they should hold on firmly, and thus permit the efflux of blood; that catgut softens too readily, bursts or slips, and is thus unsafe; that silk ligatures, when cut off at both ends, fail to become absorbed, and become prolific sources of after-mischief; and that horsehair fails not only to be absorbed, but acts as

a source of irritation from first to last. With both these evils, when cut short, I have seen wounds heal perfectly, and at once well; but, later on, small abscesses have formed in various parts of their track, and from each of these, when they have given way, I have had to remove the unabsorbed knots and minute circles of ligature before they have finally become firm and sound.

ANTISEPTIC SURGERY.—Among the broader outlines of advance in surgical science, antiseptic surgery must always henceforward hold a prominent position. To Mr. Lister, and to the unconquerable perseverance with which he has pressed upon us the advantages of this method of dealing with surgical injuries and wounds, we surgeons of the present day unquestionably owe a lasting debt of gratitude; for, although there are those in our ranks who honestly believe that all the good derived from antiseptic dressing is due, not so much to any special virtue in the means adopted, as to the cleanliness and care which the practice involves, yet I cannot think that those who, having used the plan on a large scale, have watched the result with observant and truth-seeking eyes, can really doubt its special virtue and efficacy. For my own part, I can call to mind almost numberless cases, in the treatment of which it has been the turning-point between success and failure, many in which it has been the means whereby a successful issue has unquestionably been attained, and many in which, without its aid, limbs and joints must have been amputated, which, by its help, have been saved. To those of us who have seen much of serious compound fractures, and have noted the restraining influence of antiseptic dressings upon the exhausting discharges which usually accompany such accidents, the gain, I think, will appear to be a very clear one. Again, in the treatment of very large and serious wounds, such as in my earlier days would have been considered to demand amputation, I can confidently assert that, by the aid of antiseptic dressings, I have obtained results which, without such help, would have been impossible. This opinion I feel sure my colleagues will endorse; for, though we all took the matter up cautiously at first, and for many years were met with the views and objections of a confirmed and ardent sceptic on our staff,* the practice has grown so steadily and surely in our wards that, in serious compound fractures, wounds into joints, large lacerations, and flesh-wounds, in many major operations, such as amputations and excisions, and in all ovarian operations, it may be said to have become our all but invariable rule. Of the *modus operandi* I have no intention now to speak, nor to enter upon any discussion of the "germ" or other theories. These have been so ably dealt with and expounded by men who have devoted years to their persistent study, and the results of whose labours have been freely laid before us, that to do so would be to weary your patience and to waste your time; suffice it to record my view that by the practice of the "antiseptic method" we reap a real and very substantial benefit; and that we found it upon no merely empirical grounds, but upon clearly defined principles.

The question has very recently been asked in our own JOURNAL, whether, in adopting this principle of antiseptic surgery, we "may not possibly be encouraging a great delusion"?† As a practical surgeon, I emphatically answer "No! it is not a delusion, but a truth of the greatest value;" and in my mind I call up many cases in which, except for such "delusion", my patients would have lost their limbs, and often times their lives also.

DRAINAGE OF WOUNDS.—Another novelty, or at least an innovation of comparatively recent years, concerning which I desire to say a word or two in passing, is the "drainage of recent wounds, of general surgical injuries, and of abnormal secretions from the interior cavities of the body". I speak of it as a novel procedure, and I conceive that I am justified in doing so, since it is only within very few years that it has come into anything like systematic use, and seeing that mention of it has only recently found its way into our standard surgical works. Its admissibility as an accessory in the treatment of large chronic abscesses has been for some time allowed; but not until lately has it been spoken of as an useful method of dealing with recent surgical wounds. We know how large an amount of discharge of various and mixed kinds is thrown off from freshly made wounds; of blood in the first instance, and of serous or purulent discharge at a later period; and how apt these secretions are, when retained, to decompose and putrefy, and how grievous is the constitutional disturbance they are sure to set up if re-absorbed into the system. By the irritation caused by their presence, they unquestionably interfere with the direct healing of well-nigh all wounds, and any means calculated to facilitate their escape can scarcely prove other than advantageous. I imagine that the

* A Treatise on the Process employed by Nature in Suppressing Hæmorrhage from divided and punctured Arteries, and on the Use of the Ligature, by J. F. D. Jones. 1805.

† Vide "Address in Surgery," delivered in Leeds (1869), by T. Nunneley, Esq. "The Antiseptic Treatment," by Charles Shrimpton, M.D. (BRITISH MEDICAL JOURNAL, May 4th, 1878, p. 656).

practice of antiseptic dressing has brought the necessity for some such process more prominently before our minds than would otherwise have been the case, as the necessarily close swathing of wounds for the exclusion of atmospheric air or germs has an unquestionable tendency to cause the retention of such discharges as are poured out, and though by its "antiseptic" power it may prevent their decomposition and obviate their poisonous effects, it cannot hinder their formation or accumulation. Hence, any means that will enable us to get rid of them from the interior of a wound may reasonably be considered useful. For this purpose various methods have of late been used—the perforated caoutchouc tubes; originally introduced by Chassaignac, a bundle of carbolised catgut threads, a wisp of carbolised horsehair, and, lastly, a long tube inserted at one end into the wound; and at the other into a bottle, in which an antiseptic fluid has been placed.

This last method, first introduced and practised, I believe, by my fellow-townsmen Mr. McGill, and fully described in the January number of the *Edinburgh Medical Journal*, p. 637, has proved of very great service in the hands of my colleagues and in my own, often draining away large quantities of fluid during the first few hours after an operation, clearing the wound of its first danger, contributing largely to its chance of primary union, greatly economising both time and suffering, and lessening the necessity for frequent dressing. I have further seen the application of this principle prove to be of the greatest utility in the treatment of wounds, whose healing must unavoidably be slow and accompanied by much purulent discharge. Thus, in a recent case of my own, in which I had excised the head of the femur, and had scraped out a thoroughly carious acetabulum, so long as I kept in a good drainage-tube all went well, but, as soon as it was removed, there were an exacerbation of fever, a dry hot skin, a quickened pulse, and an immediate rise of temperature, all to be as speedily quieted again by the reintroduction of the tube. The same point has also been further exemplified in the treatment of abscesses and empyema; a similar train of evils has been observed rapidly to follow the removal or blocking up of a drainage-tube, and as quickly to subside again on its re-introduction and the washing out of the pleural or abscess cavity, so as to remove such secretion as, owing to retention, had begun to putrefy. Hence I am inclined to regard this principle of drainage as one likely to grow in the estimation of surgeons, and to think that in a carefully planned, well drained, and antiseptically dressed wound, we have the perfection of the surgery of the present day.

CONSERVATIVE SURGERY.—Of the more open forms in which "conservatism" in the art of surgery has developed and has flourished of late years, I need not stay to speak. Fostered mainly by the teaching of the late Sir William Fergusson, the principle is now so thoroughly accepted, that it needs little more than simple comment on an occasion such as this. So well have we learned how often a limb may be saved by the sacrifice of a joint, a hand by the removal of a finger or two, a larger by the loss of a lesser portion of the body, that every surgeon worthy of the name is now ready to accept the doctrine that nothing must fall before the knife except such parts as are beyond hope of restoration to life and utility. Who amongst us, twenty or thirty years ago, would have deemed it possible to save an arm in which both shoulder and elbow joints had been destroyed, and yet, in our own *JOURNAL* of January 22nd, 1876, p. 101, such a case is placed on record by Mr. Mac Cormac, and is surely as grand a trophy as ever modern conservative surgery can desire to show. Side by side, too, with this form of conservatism in surgery, another of scarcely less importance has also been steadily growing up, has even now attained wonderful results, and has probably many brilliant triumphs yet in store, viz., "Subcutaneous Surgery". Mr. William Adams has taught us how, by subcutaneous section of the neck of a femur, ankylosed at right angles to the pelvis, we may restore a lower limb, grievously crippled and deformed, to utility and shapeliness again; and the daily triumphs of orthopaedic surgery, aided by subcutaneous section of muscles, of tendons, and even of bones, will readily occur to your minds.

PHYSIOLOGICAL REST IN SURGICAL CASES.—Yet another subject arises in my mind, which I cannot pass over in silence, since it is becoming more and more one of the guiding principles of surgery. Mr. Hilton, in his admirable lectures on "Physiological Rest and Pain", has happily and very forcibly pointed out how intimate a relationship exists between physiological rest and the successful treatment of surgical ailments. Just as we look upon local and mechanical rest as the *finis quæ non* for the kindly healing of a wound or union of a fracture, so also, if we can only attain it, may we regard physiological rest as the one thing needful, the one thing without which all our efforts for the cure of many surgical diseases will prove vain. Just as reasonably may

we call upon a horse, already jaded and worn out, to start without rest upon a fresh journey, as upon a kidney, exhausted by long protracted efforts to guard the economy from the effects of alcoholic stimulation, to bear up against the onset of threatening disease, or a brain, worn out by exhaustive work, to recover from, or to resist the effects of, mechanical injury to the head. Sir James Paget, in his recent charming work, entitled *Clinical Essays and Lectures*, tells us that, in estimating a patient's prospect of recovery after an operation, he finds his "capacity to sleep" one of the best measures of his probable power of endurance; and just as, with the system in general, sleep or rest may be regarded as the great healing balm of nature, so, in the case of individual organs, may we look upon "physiological rest", when attainable, as one of our greatest aids. Time forbids that I should do more than point at the direction in which, at this moment, I am aiming to lead your thoughts, and I will only therefore adduce a single instance in illustration of my meaning.

Take a case of "irritable bladder": suppose all extraneous causes carefully sought out and removed, and a diagnosis established that the condition is one dependent upon disease inherent in the bladder itself, say of congestion, of inflammation, or of ulceration; is there any method by which we can place this organ physiologically and mechanically at rest? Its natural work being to retain the urine, it is clear that rest can only be procured by depriving it of its power to do this, for a time at least, by paralysing its sphincter. In the second volume of the *Lancet* for 1875, at page 765, you will find an interesting paper, by Mr. Teale, on this subject, in which he proposes in such cases, especially in the female, temporarily to paralyse the bladder by forcibly dilating and overstretching the urethra. Sir Henry Thompson, Mr. Teevan, Dr. Otis, and other authorities on such subjects, are all agreed that in attempting to cure such irritability, when the result of stricture, it is necessary very freely to dilate, indeed to overdilute, the urethra, and thus, as I would put it, to place the bladder for the time being in a condition of comparative rest; and we, *i.e.*, my colleagues and myself, in order to carry this principle to its logical conclusion, in several cases of serious ulceration of the bladder, have gone so far as to operate as if for lithotomy, with a view to procure absolute quietude of that organ for a time, and we have met with encouraging success. The principle is exactly the same as that on which the physician relies when he prescribes prolonged rest and freedom from work for an exhausted brain; and on which we ourselves act when, for the cure of fistula *in ano*, or of ulcer in the rectum, we divide or stretch the sphincter ani.

Time warns me, however, that I must not linger on the consideration of our advancement in general principles only, but must proceed to the review of such new modes of practice as have of late enriched our means of action, and by which our hands have been strengthened. In doing this, I propose to refer to novel operations and new methods of treatment, as they have been found applicable to the ailments of various regions of the body.

SURGERY OF THE HEAD AND TRUNK.

THE PLASTER-OF-PARIS JACKET IN SPINAL CURVATURE.—It will be within the recollection of many whose good fortune it was to be present at our meeting last year, at Manchester, that, aided by the powerful advocacy and graphic description of Dr. Sayre of New York, an entirely new method was demonstrated and described of dealing with curvatures of the spine, whether of the angular, or lateral, or, as Dr. Sayre prefers to call it, "rotary-lateral" varieties. During the past year, this method of treatment will doubtless have been put upon its trial by many who were privileged to hear Dr. Sayre's description of it, and who will, by this time, have formed a definite opinion concerning its merit. That it is efficient for the cure of many grievous cases will be admitted by all, and that, in cases otherwise beyond the hope of cure, it is productive of an amount of comfort never previously attained, will have been put beyond all doubt. Useful as such appliances as the starch, dextrine, and plaster-of-Paris bandages have been in various other forms of surgical disease and injury, and used for so long, it seems almost inconceivable that their applicability to spinal curvatures should have escaped the surgical mind; yet so it was, and until Dr. Sayre exhibited the application of the plaster-jacket at Manchester, I think I am justified in saying that no one, at any rate in this country, had ever suggested such an appliance; and I should be doing Dr. Sayre less than justice if I did not further add, that probably as much of the success of the method is due to the ingenuity with which he showed us how, in the first place, to obtain the necessary elongation and straightening of the diseased spine, as to the efficiency of the bandage in maintaining the extension thus effected. Moreover, the perfect freedom with which it enables the sufferer to enjoy the blessing of movement and recreation, so long denied to those afflicted with this form of disease, is invaluable. When I think of the many

cumbrous and expensive contrivances which, for years past, I have seen in use in the treatment of such cases, I feel inclined to blush for the skill which had failed for so long to seize and act upon an idea so simple and at the same time so perfect. One caution only, with respect to it, is advanced by its author, and I think it wise to repeat that caution now, viz., that, while it is thoroughly efficient in the cure of most cases of angular curvature in their earlier stages, too much must not be expected of it in the later ones. When once there is reason to believe that ankylosis has fairly set in, it would manifestly be cruel to run the risk of rekindling danger by any attempt to straighten the spine. But surely, as years roll on, with so perfect a means at our command of securing absolute rest, of preventing deformity, and of sustaining the general health, such cases as are now only too common in our streets, will be a reflection on our skill, and will become of comparatively rare occurrence.

INJURIES OF THE HEAD.—With respect to injuries of the head, my friend Mr. Favell, in his surgical address at Sheffield, asked the question, by implication at least, whether we are any nearer now than we were in former times, to a safe and sure rule of action in the treatment of depressed fractures of the skull? No one will doubt, I think, that we see the "trephine" much less used now than was the custom formerly; and in asking myself the question, Is this because it was used with unnecessary frequency then; or because we too seldom resort to it now—the answer of the practical experience of my life comes without hesitation to my mind. As was the case with the lancet, so it was also with the trephine: its indiscriminate use in all, or nearly all, cases of depression of the skull, whether simple or compound, was an undeniable evil, which has led to a revulsion of feeling in the minds of thoughtful men; and steadily, as time has gone on and experience has accumulated, operative interference has been found to be much less frequently called for than was considered necessary in former days. Yet, in spite of all the aid derived from the various novel methods, antiseptic or otherwise, with which we dress our wounds, I cannot bring my mind to doubt the value of the old rule, that "in cases of compound depressed fracture, symptoms or no symptoms, where we can be at all clear that the entire thickness of the cranium is involved, it is the duty of the surgeon, either with the trephine or by some other means, to raise the depressed fragments or portion of bone, and so free the subjacent structures from irritation and pressure.*

NÆVUS.—I have already made casual mention of the subject of nævus, and as we, in our hospital at Leeds, have, for some time past, made the subject of the treatment of this disease a matter of special study, I desire to say a few words respecting it.

Some years ago, Mr. Teale, having satisfied himself that, in many cases, the mass of a nævus was so surrounded by condensed connective tissue as to be practically encapsulated, set himself earnestly to work to ascertain whether it was not possible, by careful and deliberate dissection, to enucleate such growths. Setting aside the rule that, in excising a nævus, the knife must travel wide of the diseased structures, and pass only through surrounding healthy tissues, I have seen Mr. Teale, with the utmost deliberation, dissect out from their immediate bed such nævi as these, which by his kind permission I am enabled to show you, and remove them even from dangerous regions, and from subjects of the tenderest age. As the result of these operations, we have also, further, learned another lesson of great value: viz., that they are applicable not to subcutaneous nævi only, but even to such as have already involved the skin; and that, in removing them, it is not necessary to sacrifice the skin by which they are covered, simply because it is nævoid or traversed by a network of diseased vessels. These, Mr. Teale has found, will shrink and completely disappear under the influence of after-cicatricial contraction, and such skin is ultimately restored to a natural condition.†

Before I leave this subject, permit me to add yet one word more as to his most recent practice in this matter: viz., that by first passing a subcutaneous ligature circumferentially around the tumour, and using it as a "twitch", such operations may be almost bloodlessly concluded.

OPHTHALMIC SURGERY.—Of the enormous advances made in ophthalmic surgery during the past half-century, it would scarcely be coming in me to speak. I am in no sense a specialist; indeed, desirous as I am to record my opinion that specialities in surgery are distinctly disadvantageous, I yet feel bound to exempt ophthalmic surgery altogether from such condemnation: the field is so large, the tissues involved are so numerous, the operative procedures required so delicate in their character, that it is well, in my judgment, that ophthalmic surgery has

been erected into a special science; and with the acknowledgment to those in my audience who have elected to devote themselves to the study of this branch of surgery, that, in no portion of the whole field of our art, has greater activity been shown, or greater advance been made, I will dismiss the subject. I will not even stay to add the ordinary eulogium in praise of the ophthalmoscope, since the value of the instrument, and the flood of light it has thrown on, as well as into, the eye and its diseases, has long since been abundantly acknowledged, and is on all hands admitted to be one of the great triumphs of our time.

LARYNGOSCOPY.—Of the laryngoscope, it may fairly be expected that I should say a little more. The difficulty experienced in using this instrument, both on the part of the surgeon and of the patient, have undoubtedly combined up to the present time to delay its general introduction into practice; but when young men become familiarised with its manipulation, as part of their professional education, it will more and more be found to be one of the indispensable appliances of their daily work. As an aid in the removal of foreign bodies from the larynx; as a guide to the advisability, or otherwise, of the performance of tracheotomy in certain cases; with the help of this latter operation, in the treatment of the diseases of the air passages, it will prove invaluable. I have myself seen it brought into use with the happiest results for each of such purposes. On one occasion, a patient was brought into our hospital, apparently dying, with some foreign body supposed to be impacted in the larynx. An exploration with the laryngoscope cleared up the matter; the thin edge of a piece of bone was seen wedged in the glottis; the trachea was then opened, and no sooner was the freedom of breathing thereby restored, than the spasm in the throat relaxed: a clearer view of the parts was obtained, and the parietal bone of a rabbit was seized and withdrawn through the tracheal wound. Shortly after this, a second case, equally illustrative of the value of the instrument, came under our observation. A patient, received for stricture of the urethra, and waiting for perineal section, was seized with spasmodic difficulty of breathing and loss of voice. Examined with the laryngoscope, the left vocal cord was seen to be paralysed and inactive; aneurism pressing on the left "recurrent nerve" was immediately inferred. The proposed operation was abandoned; and when the man died, as he did very shortly afterwards, it was found that his death was the result of the bursting of an aneurism, which had existed in the arch of the aorta.

ABLATION OF THE TONGUE.—Of complete removal of the tongue for malignant disease, an operation frequently performed of late both by my colleagues and myself, and rendered peculiarly easy by the use of the wire *écraseur*, I fear I cannot speak in terms of as high commendation, or with the promise of results as favourable, as we, at one time, hoped to achieve. That great relief may be afforded to a patient by the operation for a time at least, I am quite prepared to admit; but the final result, in such cases as have passed under my observation, has unquestionably greatly disappointed me. Early return, either in the tongue itself, or if that have been completely removed, in the glands near, has, so far, been the invariable result; and, on the whole, the final condition of the sufferer has been such as to be far from encouraging. Nevertheless, there are cases in which even temporary relief afforded by the operation has been such as, in my judgment, would justify its performance, provided too great hope be not entertained as to the ultimate curative effect. Of the operation of subcutaneous division of the gustatory nerve—performed and highly spoken of by the late Mr. C. H. Moore,* I have no experience, and can therefore offer no opinion.

EXTIRPATION OF LARYNX AND OF THYROID GLAND.—Of extirpation of the larynx, as originally performed by Billroth, and more recently repeated by Bottini and Langenbeck; and of the entire thyroid body, as practised and recommended by Dr. Patrick Heron Watson, I have no experience to offer; but the fact that such operations are possible, and have been successfully performed, may be taken as an encouragement, and may nerve us to their performance in cases which seem otherwise hopelessly condemned to death.

ASPIRATOR.—As one of the more recent and valuable of the additions to our means of treating deeply seated surgical diseases, or diseases curable by surgical help, I would call to mind our acquisition of the aspirator of Dr. Dieulafoy. No instrument of greater general utility has, of late, been placed in the hands of the surgeon than this. Combining as it does the uses of the old grooved needle with those of the more modern exploring trocar, and with the addition of suction-power, sufficient to enable us either to explore, or empty, or wash out, at will, any given cavity, it is one of the most valuable of the additions of modern times to our means of dealing with the surgical diseases of the

* See Mr. Prescott Hewett in Holmes' *System of Surgery*, vol. ii, p. 118.

† See article by Mr. Teale (BRITISH MEDICAL JOURNAL, December 11th, 1869), entitled "Atrophy induced by Cicatrix, and its Surgical Value".

* See *Medical Times and Gazette*, p. 594.

inner cavities and structures of the body. By its use, an empyema, a fatal effusion into the pericardium, a bladder distended almost to bursting, a dropsical knee-joint, or blood effused, are placed as easily under control as the ascitic abdomen was in former days; and structures even more delicate than those I have mentioned are rendered equally amenable to attack and relief, under certain conditions of disease. I have myself removed from a pyæmic abscess, in the centre of the lung, no less than thirty-six ounces of fetid pus; I have seen similar collections in the liver, the kidney, and the brain; attacked with equally favourable results; and, indeed, there seems to me to be no organ in which suppuration has occurred, or within whose investing membranes the normal secretions have become superabundant, that may not be dealt with by this useful instrument.

Foremost among these, I would place the organs and serous spaces contained within the chest. I have already said that I have, without hesitation, pierced the walls of a pyæmic abscess in the centre of the lung; and, to the immense relief of the patient, have withdrawn its fetid contents. Is it too much to hope that the time may come when we may occasionally be able to empty an offensive vomica, and wash it out with some innocuous antiseptic fluid, such as Condy's solution or solution of quinine? And instead of permitting a patient to expectorate the contents of such a cavity, may we not thus be able to withdraw them at once, and so procure refreshing sleep during many hours, which would otherwise be spent in vain and exhaustive efforts to do the same thing *per vias naturales*?

Aspiration in Pleuritic Effusions.—In pleuritic effusions, whether serous or purulent, we have, in the aspirator, a ready means of holding the evil under control. Thus, though rapidly accumulated effusions, the result of acute inflammatory action, generally subside, and comparatively rarely degenerate into pus, they may, occasionally, be poured out in such great and alarming quantity as to render their evacuation imperatively necessary if life is to be preserved; and, compared with the elaborate precautionary measures of former times, how simple has their withdrawal, or diminution, been rendered by the aspirator! Again, although more chronic and simply serous effusions into the pleura may, and often do subside under judicious medical treatment, and need no surgical interference, yet if, as sometimes happens, they persist in steadily increasing, oppression to both breathing and circulation may become so urgent as to demand instant relief. A new danger, too, may thus arise, involving the re-expansion of the lung, or the return of a displaced heart to its normal position; and here, again, in aspiration we possess not only a powerful but a certain mechanical means of control. There is, however, a point at which the power of the aspirator fails us, and at which we are driven to seek help from even yet more radical means.

Empyema.—When once we are satisfied that the pleura is full of pus, having regard to the danger that will arise, that such pus will seek an exit either through the lung, to its irreparable damage, or by a prolonged and imperfect process of ulceration through the chest wall, we are, in my judgment, called upon to adopt more decisive measures than either the aspirator or the old method of paracentesis affords. Under such circumstances, and none the less when a pulmonary fistula is already established, a permanent and free opening, in a well-chosen position, as low down as possible, becomes, as my experience teaches me, the only safe and certain procedure for the surgeon to adopt. Complete, persistent, and efficient drainage may in the end in such cases effect a radical and lasting cure; while mere palliation, by simple withdrawal of the fluid, is certain to lead, time after time, to its re-accumulation, and, finally, in all events a great number of cases, to a fatal termination.

Paracentesis of Pericardium.—So, too, as we have for years past dealt freely with effusions into the pleural space, we have also learned that we may safely deal with similar diseases of the pericardium. Late one night, in the year 1866, as I was entering our hospital to take charge of a serious accident, I met my friend and colleague Dr. Clifford Allbutt leaving it, apparently in a very desponding frame of mind. A word or two sufficed for explanation; he had just left a patient in a dying condition, who, after passing through a grave attack of rheumatic fever, had suddenly developed acute dropsy of the pericardium. All medical means had failed either to control or to reduce the effusion, but our accidental meeting in the doorway of the hospital seemed suddenly to inspire Dr. Allbutt with the thought that relief might possibly be attained by surgical interference. Accordingly, we hastened up stairs, where we found our patient apparently moribund; cold, almost pulseless, livid, bathed in profuse perspiration, and gasping for breath; he had

been screened from the other patients; that they might not see him die. Without a moment's hesitation, I plunged a small exploring trocar into the distended pericardium, and, to our intense delight, there began forthwith to issue a tiny but steady stream of slightly blood-tinged inflammatory serum. This continued to flow until about three ounces had drained away. Presently a long-drawn inspiration followed, and this was succeeded by steady general improvement of respiration; the pulse became again perceptible, the duskiness diminished, and in a few minutes the man heaved a deep sigh and exclaimed, "My God, what relief!" From that time onward the relief continued, improvement was progressive, recovery in the end complete, and the patient remains alive and well to this day.*

Since that time, the operation of paracentesis of the pericardium has been many times repeated, and though not always, yet often, with the same marked degree of success.

Speaking to Dr. Allbutt the other day upon this subject, I find that he gathers hope that, as time goes on, the operation will become better and more widely known, and will presently be more frequently resorted to, at least when danger becomes imminent; and he writes to me on the subject thus: "The exit of even an ounce or two of fluid suffices to give relief, because, when it reaches a certain height, it compresses the auricles, and thereupon, of course, as return of blood by the veins becomes impeded or arrested, the ventricle continues contracting, and contracts for a time upon nothing; the pulmonary vessels become more and more engorged, and finally the patient dies." And he further, with characteristic terseness, adds the following case in proof.

"I was called to Morley a few months ago to meet Dr. Steel. The case proved too urgent to await my arrival; the patient became moribund. Dr. Steel, therefore, drew off from the pericardium four ounces of fluid with the aspirator. Pericardial dullness immediately diminished; the pulse refilled; and the man, aged 35, a miner, suffering from chronic bronchitis, was relieved before my arrival, and for a time did well."

INTRATHORACIC ANEURISMS, TUMOURS, ETC.—Of the surgical treatment of intrathoracic aneurisms and tumours, whether by galvanopuncture, electrolysis, or otherwise, I have nothing favourable to say. We, in the North, have given both methods a fair and impartial trial, and, so far, I can only speak of the result as disappointing. Temporary relief seems, indeed, occasionally to have been obtained, and possibly in the future something better may come of our efforts in this direction; but up to the present time I have seen no case of permanent cure. In one instance, death from embolism of the carotid followed the operation; and, until I have seen some much more promising result from surgical interference than I have hitherto done, I shall rest content to follow the advice of Mr. Fustell and our fellow-workers in Ireland, and shall continue to rely on the enforcement of rigid recumbency, rest, mechanical and physiological, spare diet, and the free use of iodide of potassium, as the most promising plan of treatment hitherto proposed.

SURGERY OF THE ABDOMEN AND PELVIS.

Of all the triumphs of modern surgery, none can compare in magnitude or importance with those obtained in the region of the abdomen. If we had nothing to show in proof of the advance of our art beyond the one modern operation of ovariectomy, that alone would entitle surgery to rank amongst the foremost of advancing sciences. When we remember the few but trenchant sentences in which our distinguished associate Mr. Spencer Wells, in the address in Surgery, at Manchester, portrayed the number of years that have, by this operation alone, been added to the sum of human life,† and call to mind the fact that, by the hands of two operators only, Mr. Wells and Dr. Keith, the lives of more than one thousand women have been rescued from death, to say nothing of the results of the same operation in other hands, and of its steadily increasing success, we have, assuredly, as great reason to be proud of our work as any class of men in the world! But when we add to this the fact that, in addition to the ovary, there is scarcely a single abdominal or pelvic organ the diseases of which have not been successfully grappled with by the surgeon, our success stands out in yet more bold relief.

* For report of case, see *Medical Times and Gazette*, November 3rd, 1866.

† Lord Selborne, in opening the new branch of the Samaritan Hospital, entered into a curious calculation, and showed the total gain of life of 373 survivors of my first 500 operations to be 10,847 years of average healthy life, instead of the 1,492 years of miserable endurance which they might have passed before death without operation. Of the 400 patients operated on since the 500, 306 are cured, making the total recoveries 679. Multiplying this number by 29 years, the average estimated gain of each patient, the total gain amounts to 19,697 years. (T. Spencer Wells's Lectures on the Diagnosis and Surgical Treatment of Abdominal Tumours, BRITISH MEDICAL JOURNAL, July 13th, 1878, pp. 48-49.)

* Since I wrote the above passage, I find that this operation has been twice successfully performed—once in London, by Mr. Erichsen, for a patient under the care of Dr. Theodore Williams (see BRITISH MEDICAL JOURNAL, July 20th, 1878, page 101); and once in Leeds, by Mr. Jessop, at the suggestion of Dr. Clifford Allbutt (case not yet published).

Forty or fifty years ago, the domain of the peritoneum was considered almost supersacred; he who would trench upon it was little less than a heretic in surgery; and loud indeed was the cry of disapproval which arose on all hands when the first bold proposals were made to deal more freely with it. I myself have heard the operation of ovariectomy denounced as "barbarous" and unhesitatingly condemned as "unjustifiable", and that, chiefly, because its performance rendered necessary the laying open of the peritoneal cavity. But the hand of the innovator has changed all this, and he who would now hesitate to make the attempt to save a life, simply because it involved the risk of opening the peritoneum, would hardly be worthy of the name of "surgeon". I would not indicate by this that we have lost a tittle of our real respect for the peritoneum, but only that we have learned that, with the exercise of due caution, it is no less approachable than other important portions of the body; and that diseases, the cure of which involve its exposure, are none the less to be undertaken.

Permit me to illustrate this proposition by the mention of a case which has passed under my own observation. Mr. Teale, on one occasion, a few years ago, called the surgical staff of our hospital together in consultation on the following case. A middle-aged man suffered from persistent obstruction of the bowels; every conceivable effort had been made, first, to relieve him, and, secondly, to ascertain the exact seat of obstruction, but unsuccessfully on both points. Nevertheless, it was believed that the obstruction must be in the large intestine, and that it was probably low down; the exact whereabouts was the knotty point we were met to determine. Nothing could be felt from the rectum; no clue could be obtained by examination through the abdominal walls; and yet, as the man was clearly going to die, what was to be done? The abdomen was laid open; the stricture was sought for, was ascertained beyond doubt to be seated in the sigmoid flexure, and to be impassable. The abdominal wound was immediately closed; Amussat's operation was performed while the man was still under the influence of the anæsthetic; the patient made a good recovery, and afterwards resumed his duties as a butler.

Indeed, the operation of "Gastrotomy" has of late been so successful in our hands, that we are beginning to question the propriety of permitting any one to die from obstructive intestinal mischief, without first ascertaining whether relief may not possibly be obtained by this means; and since it has been shown that, under the protection of antiseptic precautions, such operations may be performed with less risk than was possible even a few years ago, we are becoming more and more confirmed in the view that it is our duty to accept the responsibility of such action.

In connection with this subject of abdominal section, it has further been in our power to show that in cases of extra-uterine foetation, it is possible not only to save the life of the mother, but, in some cases, of the infant also. My colleague Mr. Jessop has placed on record a case in which it was his great good fortune to be thus successful; and when we, who had seen the woman apparently dying before our eyes, saw her again, six weeks afterwards, herself exhibiting her living child to the members of the West Riding Medico-Chirurgical Society, we felt that he had achieved a triumph of which he had indeed just reason to be proud.*

EXTIRPATION OF UTERINE TUMOURS.—Of the extirpation of uterine tumours, I have nothing that is new to say; and of removal of the uterus itself, I have no personal experience to offer you. That such an operation has occasionally been successfully performed is, I believe, beyond doubt; but, up to the present time at least, the number of cases is so few, and the result so unpromising, that I feel I cannot speak with any confidence concerning them. I would fain hope, however, that in the future greater success may reward the efforts of those who seek to extend the range of surgery in this direction.

DISEASES OF THE KIDNEY.—In dealing with affections of the kidney, we have of late had experience well worthy to be placed on record.

Several cases of that somewhat rare form of disease which, for want of a better name, we call "perirenal cyst", have passed under our observation. We believe these to be cases in which either the kidney itself has become dilated, or in which, by condensation of the cellular tissue surrounding it, a cyst has been formed, and that, between this and the kidney, either a direct communication is established, or that, by transudation through the walls of the kidney, the constituents of the urine become freely intermingled with the secretion of the cyst itself; certain it is that these contents, which often accumulate to the extent of many pints, are strongly impregnated with urinary constituents, and if not actually urine itself, constitute a very near approach to that

fluid. If left to themselves, after accumulating to a very large size, they become liable at any time, either by rupture into and diffusion of their contents into the surrounding cellular tissue on the one hand, or into the peritoneum on the other, to bring about a fatal termination; and hence, since they appear to be beyond the reach of medical treatment, we have thought it right to attempt their cure by surgical means. Our first attempt to deal with them was by simple "aspiration", and that failed us; the sac in every instance speedily refilled, and the drain upon the patient was thereby only increased. Next we have followed aspiration by efficient drainage; and in this we have succeeded better, one case having completely recovered. Finally, should these means continue to fail us, we propose to attempt their radical cure by the use of iodine or other irritant injections.

Greater success has rewarded our attempts to deal with certain forms of disease of the kidney itself. In cases, for instance, of chronic sup-puration, rather than permit the pus to drain away through the bladder to the great and constant irritation of that organ, and the steady detriment of the patient's general condition, Mr. Jessop has, on two occasions, sought the suppurating kidney through the back, and, after opening it freely, has left a drainage-tube in it, to the unspeakable comfort of the patient at the time, and with a fair prospect of eventual recovery; and, on one memorable occasion, rather than permit a child to die from malignant disease of the kidney, the same gentleman succeeded completely in removing the entire organ. By his kind permission, I am enabled, in this preparation, to show you the kidney so removed, and to state that the child, so far as the operation was concerned, made a most excellent recovery, though it afterwards died from return of the disease.

On certain occasions, when we have been convinced of the presence of a calculus or of calculi in the kidney, a search has been made there for the concretion. Hitherto, however, no great success has attended our endeavours in this direction; but we have felt encouraged by the results of other cases involving section of the kidney, to repeat such operations whenever a reasonably clear diagnosis can be made; for in no instance has death appeared to have been accelerated by such procedure, and in one, though no stone was discovered in the kidney at the time of the operation, it was found, after death a few weeks later, that the diagnosis had really been correct; that there was a calculus impacted in the upper portion of the ureter; and that, had the search, at the time of the operation, been only a little more boldly pressed, and had a sound been used in addition to the finger, it would have been detected, and could easily have been removed.

LITHOTOMY AND LITHOTRITY.—This brings me to the consideration of the subject of our treatment of stone when lodged in the bladder. At the time when I entered the profession, lithotomy was, practically, the only method open to the surgeon for the cure of this condition, and it is during the time to which this review is limited that the whole subject of lithotrixy has been developed and worked out.

True, the earlier attempts in this direction had been previously made, but so little progress had been attained, and so crude were the instruments at that time in use for the purpose of crushing stones, that, practically, lithotrixy could hardly be said to have been an accepted and recognised method of dealing with calculus.

But how steadily the subject has since been followed out, how exquisitely the instruments required for the purpose have been modified and perfected, and how surely the operation has itself been advancing in favour in the eyes of surgeons of the present day, let the wondrous tables of operations and results lately published by Sir Henry Thompson show.*

My own experience of lithotrixy is such as to lead me to hope that the time is not far distant when the major operation of lithotomy in the adult subject will have become a surgical rarity; that no stone will be permitted to remain so long in the bladder as to pass beyond the reach of the lithotrite; and that, *except in the case of children*, lithotomy will have become one of the operations of the past. Greater accuracy in diagnosis, more thoroughness in the acquirement of manipulative skill by students and junior practitioners, and an increasing knowledge on the part of the public—all, in my judgment, point in this direction; and, even as I write these words, I learn that, with a promptitude worthy of the restless activity of our profession, the very latest acquisition of science, the microphone, has been pressed into the service of our work; that, by its aid, Sir H. Thompson has been able to demonstrate the existence in the bladder of even the most minute fragments of a broken stone, and that henceforward little excuse will

* BRITISH MEDICAL JOURNAL, March 16th; and *Lancet*, March 16th, 1878: Analysis of Five Hundred Cases of Operation for Stone in the Bladder of the Male Adult, by Sir H. Thompson.

* *Lancet*, November 4th, 1876, p. 661.

remain to us if even the smallest calculi should escape detection and successful treatment by the lithotrite.

But a few words more as to the surgery of the urinary organs, and I dismiss the subject.

The many ingenious and varying methods proposed of late years for dealing with inveterate and impermeable strictures attest the magnitude and importance of that subject. Internal urethrotomy, as performed by Mr. Lund; dilatation from behind, as practised by Mr. Cock, Mr. Furneaux Jordan, and others; the sudden rupture and forcible dilatation of Mr. Barnard Holt; the various and ingenious methods recommended by Mr. Teevan; and, finally, my own operation, if I may be excused for speaking of myself, by which the stricture is carefully traversed through the centre, by division from without,† suffice to attest the activity of the surgical mind in this direction, and all tend to show that it will be long before our ingenuity in this matter is likely to be exhausted.

SURGERY OF THE LIMBS.

In no department of surgery has greater advance been made than in dealing with the treatment of injuries, diseases, and abnormal conditions of the limbs. It is not my intention to detain you at any length with the consideration of this portion of my subject; but there are certain points without mention of which I should deem my address to be wholly incomplete.

MODERN TREATMENT OF DISLOCATIONS.—Need I mention, in the first place, the essentially different conditions since the introduction of anaesthetics, under which the surgeon of the present day is placed in dealing with the major dislocations, from those under which his brethren in former generations were compelled to work? Contrast the reduction of a dislocated hip, for instance, now with what it was in the days of Sir Astley Cooper. Remember the preparation and appliances deemed necessary in Sir Astley's time. Bleeding almost to syncope, the hot bath, large doses of tartar emetic, of digitalis or tobacco to lower the patient to such a degree as to enable the surgeon to overcome the action of powerful muscles; then relays of men or multiplying pulleys, and force almost unlimited, to drag the bones into their proper positions. Whereas now a few inhalations of ether or chloroform, and the patient lies powerless, relaxed, and unresisting at our command; a few simple, well directed, and effective manœuvres on the part of the surgeon, and the dislocation is reduced! No blood is lost; no bodily agony is endured; there is no violent and forcible stretching by powerful pulleys; no strength is exhausted; no constitutional deterioration is inflicted: save only for the injury done to the joint by the accident, the patient is no worse than he was the moment before it happened, but awaking, as from slumber, finds, to his unspeakable comfort, that all has been put right for him, whilst he has known nothing of what was being done!

EXCISION OF WOUNDED JOINTS.—Or suppose one of the larger joints—the shoulder, the knee, or the elbow—to have been injured and so lacerated as would have compelled the surgeon in former days to amputate the limb; have we not, in a carefully performed excision, a vastly more hopeful method of dealing with the case?

And even while we are still rejoicing in what excision has enabled us to do for the cure of joints disabled by disease, are we not learning from our Liverpool friends, under the leadership of Mr. Thomas,† that a better method even than excision is at our disposal, and that, by an intelligent and persistent use of absolute immobility, we can procure for our patients, without the smallest risk, results far better and more perfect than follow the most skilfully performed and most successful of excisions?

SUBCUTANEOUS OSTEOTOMY.—For acquired deformities of the limbs, whether resulting from rickety disease of the bones, from faulty muscular action, or remaining as legacies left by diseases of the joints already in a measure cured, we have in subcutaneous division of the muscles, and of the bones themselves, a means of restoration to utility altogether unknown to former generations.

REUNION AND RESTORATION OF DIVIDED NERVES.—Neither, so far as the limbs are concerned, do the muscles, the bones, or the joints mark the limit of our recent surgical acquisitions. In the *Lancet* of June 1st of the present year, a series of experiments are recorded as in progress in Germany, the object of which is to ascertain whether the nerves, like other structures, are not amenable to surgical treatment for their restoration after division and complete loss of function; but, whilst the Germans are patiently experimenting to determine the point,

it is my good fortune to be able to answer this question distinctly in the affirmative, as the following case will show.

On May 5th, 1875, a patient named Adam Smith, a labourer, aged 22, entered the Infirmary at Leeds, under my care. He limped into the ward on crutches, his left lower limb being completely paralysed and useless, and stated that he had come to request us to remove it, as an incumbrance. The story he told me concerning it was this. Nine months previously, as he was returning home one evening, at the close of his day's labour, carrying his scythe over his shoulder, being anxious to make a short cut to his cottage, he attempted to climb over a fence; in doing this, the point of his scythe caught in the hedge behind him; he was jerked suddenly backward, and fell with the back of his thigh upon the sharp edge of the implement. The result of this was a ghastly wound, the contracted cicatrix of which measured nine inches in length when I first saw it nine months afterwards. He lay, bleeding profusely, where he fell for many hours before he was found and carried home; there the hæmorrhage was staunched, the wound was dressed, and, in process of time, it slowly healed; but he noticed, during the whole time so occupied, that the limb was slowly wasting and withering away, and that it manifested no sign whatever of any returning sensibility.

Eventually, when he was able to leave his bed, he found to his horror that, although the wound was healed and the limb was apparently saved, it had become wholly useless to him. So far as the distribution of the sciatic nerve was concerned, the power of sensation was entirely lost; of voluntary muscular power he had none, and the joints were relaxed and flaccid.

I need not detail to you all the efforts, vain efforts indeed, that he made to recover the lost powers of the limb; suffice it to say that, receiving no benefit from anything he did or tried, he finally came to the hospital to ask for its removal.

The whole cause of the mischief was, of course, clear at a glance. The sciatic nerve had been divided, and, in the healing of the wound, the separated ends had never reunited. Here, if ever, was a fair opportunity to test the question, Are nerves which have been divided, and have for long remained disunited, capable of restoration?

I called my colleagues to my assistance in forming an opinion on the matter. Dr. Clifbutt Allbutt was good enough most patiently and carefully to test electrically the condition of the disused and wasted muscles, and he reported that, though not wholly destroyed, their irritability was well-nigh exhausted. My surgical colleagues agreed with me that whereas, should the attempt to restore the lost nerve-power altogether fail, I could still, as a last resource, remove the limb, I should be justified in making an attempt to reunite the ends of the divided nerve. After fully explaining to the patient the position of affairs, and obtaining his assent, I determined to do so.

Having laid open the back of the thigh, and, by a careful and deliberate dissection of the parts, exposed the wounded nerve, I found it completely cut across; the two ends were firmly felt in cicatricial tissue two inches apart. On the upper one was a large bulbous swelling, the lower appeared atrophied and somewhat wasted. Both were carefully loosened and detached; the bulb was removed from the upper one, and each was then pared obliquely until apparently fresh nerve-tissue was exposed. When I then attempted to bring them together, the nerve was found to be so much shortened that I could not do so until I flexed the knee fully. This enabled me to make the ends of the nerve meet without strain; they were then carefully stitched together with very fine carbolised catgut thread, the wound was closed, the ankle was firmly lashed to the buttock, and in this position the patient was put to bed.

I will not weary you with details. Suffice it to say that little by little, and in very wandering fashion, day by day, and week after week, sensation was found to be returning in the limb. At the end of five weeks, I began slowly to relax the position and let down the leg inch by inch, until at length it became straight again, and then, to my intense satisfaction, I found that the restored sensibility remained. By very slow degrees, the power of voluntary motion also returned, and, on August 7th, he was discharged from the hospital so far cured that, with the help of two sticks, he was able to support himself on the limb and could walk. From that time to this, he has gone on improving. During the whole of the past winter, he has worked in the fields as he was wont to do before his accident, requiring neither stick nor support, nor help of any kind; and, though the limb remains greatly inferior in size and nutrition to the opposite one, it is, to all intents and purposes, an useful member again.

Since the performance of that operation, my colleague Mr. Atkinson has in similar manner successfully reunited a divided median, and Mr. Jessop has reminded me that, long prior to

* See BRITISH MEDICAL JOURNAL, June 24th, 1876: Perineal Section, as Performed at Leeds.

† See Thomas on the Diseases of the Hip, Knee, and Ankle-Joint.

my case, he also had been equally happy in thus dealing with an ulnar nerve.

Thus, gentlemen, aiming discursively at much and accomplishing only, I fear, too little, I have wandered over the field of more recent surgical advancement, and it only now remains for me to thank you for the kind and patient indulgence with which you have listened to the feeble effort I have made to acquit myself of the very onerous and responsible duty it has been the pleasure of your Committee of Council to impose upon me.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF MEDICINE,

*At the Annual Meeting of the British Medical Association,
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ON CERTAIN MORBID STATES OF THE KIDNEY.

GENTLEMEN,—My first word in rising to address you must be one of thanks to the Council, for the great honour they have done me in appointing me to preside, on this occasion, over the Medicine Section of the British Medical Association. I feel that it is an honour of no ordinary kind, when I consider the long line of eminent physicians that have preceded me, culminating in the distinguished President of last year, Sir William Jenner. It is also a gratification to me to be associated in office with my friends Dr. Foster and Dr. Clifford Allbutt, men known and esteemed wherever clinical medicine is zealously cultivated.

We may, I think, congratulate ourselves on the prospects of our meeting. We cannot look over the list of our papers without a feeling of gratification that communications on so many important and interesting subjects are to be brought before us by respected members of the profession; and I hope that, following upon those communications, we shall have a frank interchange of opinion and comparison of experiences. I beg you to notice that it has been arranged that, at one of our meetings, a discussion on the diagnosis and treatment of intestinal obstruction shall take the place of the ordinary reading of papers; and I congratulate you on the fact that that discussion is to be opened by Mr. Jonathan Hutchinson and Dr. Long Fox. I may be permitted to bespeak your attention also to the paper by Professor Rutherford, in which he embodies the outcome of his admirable researches into the action of cholagogue remedies on the dog. We in Edinburgh are proud of that research, as a piece of genuine scientific work, and especially as a valuable contribution to the relief of human suffering.

Gentlemen, I have formed the opinion that, while the President of the Association and the readers of the addresses in their several departments may appropriately deal with great general questions, the President of a Section may, in his opening address, best fulfil his task by confining his remarks to some individual topic with which he is familiar. By adopting such a plan, he may give prominence to any lately discovered facts which he deems important; he may make known any changes in his opinions; he may attempt to remove misconceptions as to his statements previously published, and to vindicate the correctness of his views. In accordance with this conception of my duty, I venture to offer a few remarks upon some questions connected with diseases of the kidneys, which have lately attracted my attention. Even after thus limiting my range, I cannot pretend to consider all the topics which invite discussion. I dare not, for example, detain you during the time which would be required for the adequate consideration of the doctrine of arterio-capillary fibrosis, inviting though it may be.

The first subject to which I ask your attention is the disease known as glomerulo-nephritis, which was first described by Professor Klebs of Prague (*Handbuch der Pathologische Anatomie*, Band i, s. 645), as occurring in some cases of postscarlatinal dropsy. It is a form of interstitial nephritis, which affects only the interstitial tissue of the glomeruli. A normal Malpighian body consists, as you remember, of a group of vascular loops, surrounded by a capsule; between the capsule and the tuft, there are epithelial cells; between the loops, there is connective tissue. The affected kidneys present to the naked eye no abnormality beyond congestion of the tissues generally, and pallor and

prominence of the Malpighian bodies. Under the microscope, one sees little or no change in the stroma or in the tubules, but marked alteration in the glomeruli. They appear prominent and opaque; but the opacity is not due to accumulation of epithelium between the layers of the capsules, but to an extraordinary hyperplastic growth of angular nuclei among granular substance within the tuft. This change leads to compression of the vascular loops, and consequent anæmia. It may be readily understood how this might induce great diminution or actual suppression of urine, and how it should lead to uræmia, and, in many cases, to speedy death. Of the correctness of Klebs's general description, I have no doubt; for my friend Mr. David I. Hamilton, Pathologist to the Royal Infirmary and Demonstrator of Morbid Anatomy in the University of Edinburgh, has afforded me ample opportunity of studying the pathological characteristics of the disease. On looking back, I am satisfied that I have met with examples of this lesion. I recollect that the peculiar appearance of pallor and prominence of the Malpighian tufts amid the congested tissues attracted attention, and that I concluded that an increase of the epithelium of the capsule accounted for the appearance. The admirable methods of preparing specimens now in use—methods which have been brought to great perfection in the pathological department of the University of Edinburgh—render it clear that this impression was erroneous; that the change is really in the fibrous tissue, glomeruli, and capsules. The discovery of this special form of lesion does not interfere with our acknowledgment of other changes which have been long recognised as associated with post-scarlatinal dropsy, and with which glomerulo-nephritis may be found associated in greater or less proportion. Its clinical history is believed to correspond to severe and rapidly fatal forms of post-scarlatinal dropsy.

The second new condition to which I wish to draw attention is the remarkable lesion described at the April meeting of the Medico-Chirurgical Society of Edinburgh, by Dr. Angus Macdonald (*Edinburgh Medical Journal*, April 1878), as having been found by him and Mr. Hamilton in a case of fatal puerperal eclampsia. The kidney presented, to the naked eye, such an appearance as is ordinarily seen in the inflammatory affections of the tubes; but the microscope revealed a very different condition. The tubules did not appear opaque, nor the epithelium swollen and granular. These cells, on the contrary, were small, and their nuclei abnormally distinct. The capsule was normal. The most superficial convoluted tubes were wide; their epithelium was quite distinct. In many of them, the lumen was blocked with a peculiar hyaline or colloid material. This material was very abundant in certain districts. In the medulla, many of the tubules were completely occluded, and the observers were able to satisfy themselves that the material had flowed down the tubes, and, by occluding them, had led to secondary dilatation above. It appeared that, at many points, the epithelial periplast contained drops of this clear homogeneous substance, and the conjunction of numerous drops formed the mass. Mr. Hamilton tells me that he has met with this lesion in at least one other case of puerperal renal disease. By his kindness, I have had the opportunity of examining specimens, which satisfy me of the correctness of the description given. It is remarkable that, in Dr. Macdonald's case, the symptoms corresponded precisely with those met with in ordinary examples of puerperal eclampsia when associated with the usual inflammatory condition of the tubules.

The next particular to which I wish to refer is one which may appear of little importance—viz., as to the true nature of the cirrhotic process. I formerly was unable to satisfy myself of the inflammatory nature of this disease, but regarded it rather as a result of excessive growth of the renal connective tissue. My view was thus opposed to that of Dickinson and other eminent authorities; but an examination of microscopic specimens prepared by Mr. Hamilton has now satisfied me that the process, although so slow, must be regarded as inflammatory. The modern methods of staining render distinct the cell-proliferation, abundantly present where the disease is advancing; and this proliferation indicates the inflammatory character of the lesion. But, with this difference, there appears to be no reason for altering the opinions hitherto held as to the character, the progress, and the result of the cirrhotic process. This, as I have said, may not seem a very important change, but it is one which has a bearing, not only upon the individual disease, cirrhosis, but upon other varieties of Bright's diseases. I purpose, however, to retain the term cirrhotic kidney, because it is now well understood and in general use.

I now desire to draw your attention to the fact that a general consensus of opinion is beginning to exist as to the occurrence of three stages of transformation of the variety of Bright's disease, which has as its main feature inflammatory affection of the tubules. The fact that fatty degeneration follows upon inflammation of the tubes, acute or chronic, has of course been long universally recognised; but the further truth