A protest against the routine excision of joints / by Robert Jones.

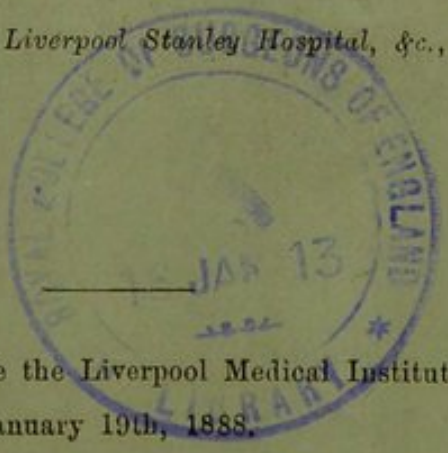
Reprinted from the *Liverpool Medico-Chirurgical Journal*, July, 1888.

A PROTEST AGAINST THE ROUTINE EXCISION OF JOINTS,

BY

ROBERT JONES,

Honorary Surgeon Liverpool Stanley Hospital, &c., &c.



A Paper read before the Liverpool Medical Institute on January 19th, 1888.

LIVERPOOL:
T. Dobb & Co., Printers, 229, Brownlow Hill.
1888.

[Reprinted from the *Liverpool Medico-Chirurgical Journal*, July, 1888.]

A PROTEST AGAINST THE ROUTINE EXCISION OF JOINTS.

By Robert Jones, *Honorary Surgeon to the Liverpool Stanley Hospital.*

Mr. President and Gentlemen,

To deal in any sense exhaustively with such a subject as the treatment of the diseases of the joints in the short time at our disposal is of course impossible. And yet to criticise excision without offering some better alternative, would be to afford members no grounds for exchange of opinion. Indeed the best arguments against the operative school consist in noting the principles, the observance of which render excision unnecessary and the neglect of which are, in point of fact, ample apology for the strong effort made on behalf of operation. I will, therefore, roughly and rapidly sketch those points which I deem it essential to remember in the successful treatment of articular disease. And here, at starting, I would frankly admit that my connection with Mr. H. O. Thomas may have given me a bias in favour of rest as against operation, a bias made more intense by the frequency with which unsuccessful excisions have been forced upon my attention. Still, a bias is not apart from the influences of evolution, and current medical literature is in some measure an antidote to any conservative experiences one may cling to in relation to articular disease.

What, then, are the principles which should govern us in the treatment of these lesions. I group the joints because the laws which obtain in the successful management of a diseased phalangeal joint are identical with those applicable to the hip, and a surgeon prepared to apply diverse methods has not yet grasped the secret of success. The first and all important essential is "rest," and all that is in conflict with this in treatment retards recovery. Later I shall have occassion to deal with some of the factors by which surgeons often unconsciously violate this cardinal doctrine. At present I shall content myself by saying that enough rest is wanted to make more useless.

It is of importance to detect disease early and to apply at the outset those methods of restraint which, whatever course the mischief runs, are sufficient. Most surgeons experienced in joint diseases know that often cases with the mildest primary symptoms run the severest course, and this fact should urge us to do our best *at once*. The first duty, therefore, of a surgeon called upon to treat an inflamed joint, is to secure for it mechanical and physiological rest. This, in the case of the joints of the lower extremity and wrist, is best attained by the suitable application of splints. In their application we must remember that we have to deal with diseased structures undergoing pathological changes, and no splint should be employed calculated to hamper those changes which are curative. Circular compression of the joint is of these obstacles perhaps the most pernicious, and it is in addition one that is perhaps the most popular. The ideal splint is that which, while securing unnobility admits of no compression, and that splint is practically the best which most nearly attains this end. Mr. Thomas aims at this in his knee splint, where the bars are so placed as to admit, on the application of bandage, of a triangular space the whole length of the limb between it and the bars. In the case of the posterior hip splint, an equally successful effort is made by reason of length of leverage. Having chosen any splint which best fulfils these indications, let us apply it say to the knee, and note progress. The joint has perhaps been recently injured, and synovial secretion is plentiful. Should this give rise to no special symptoms, it is best to leave it alone—the yearning for compression notwithstanding. If sensitive, hot and burning to patient, an ice bag will relieve—if not too long continued and its weight be not appreciated, no harm follows its application. Should the effusion diminish or disappear in a few days, so much the better; if not, then the question of aspiration arises. And here it may be asked, "why aspirate if the local or general symptoms give no special indications?" To this I reply, that there are no reliable tests whereby the transformation of serum into pus can be affirmed; and anchylosis may occur even after intra-articular effusion has been absorbed. It is therefore best to aspirate if

after 8 or 10 days, no diminution in a moderate spontaneous collection occurs. If effusion takes place suddenly, following a blow or sprain, and hæmorrhage be suspected, immediate removal is indicated, and this should be repeated as often as fluctuation becomes apparent. If effusion, no matter what its character, be accompanied by acute pain or fever, aspiration should be at once insisted on. Simple mechanical distension which prevents physiological rest is often the direct cause of this pain. The operation is always a harmless one provided two points are remembered. The first and most important being the fixation of the limb before, during, and after the puncture of the needle. The second is the choice of a needle, care being taken that the bore is not too fine. Neglect of this precaution involves much harmful prodding when the surgeon finds his labour has been unproductive. Provided things go well, despite frequently recurring secretions, aspiration should be from time to time continued, and it is by no means uncommon for patients to undergo for months a weekly operation. If, however, the pus be thick or cheesy, or if constitutional symptoms arise, attention will be turned to the propriety of incision. This may be done by the employment of Listerism or not. Personally, I do not recommend the adoption of Lister's method unless the patient is under constant observation; for an abscess may run a very protracted course, and retention would be encouraged by any dressings, save the simplest. It is much more important to see that the incision occupies the most dependent spot of the abscess cavity, and to exercise unrelaxing effort at efficient drainage. This should be done without the introduction of tubes. If observation demonstrates one fact more clearly than another, it is the pernicious effects of drainage tubes. They are a perpetual source of irritation, and their removal is invariably of benefit. Nor will the fact that obscess cavities often exist in out of way corners, answer my objections for their existence much less their position is rarely made out until the joint is removed. Consequently drainage tubes generally do nothing but lie near them. Even did they reach the requisite sites, their benefit would be more than doubtful by reason of the attendant risks. The more

effective way is found in frequently repeated pressures exerted towards the joint from above and below it, which should rarely give pain. Mr. Thomas stitches the skin wound to the abscess wall, and this seems to answer well, for generally speaking, obstruction to discharge, is near its outlet. If the abscess should increase by ramification, incision should follow and check it. And now comes month on month of anxious waiting and constant supervision, attended often by but little change in the patient's condition. It is here that patience and hope are of value, because the vast majority will get well if the waiting is but sufficiently long. Some, but happily a very small minority, succumb, and others recover maimed as far as motion is concerned, while many get well with joints which are of full service. When the pain and fever goes, let the smaller patients don a walking splint and patten, and the country air will act as a charm upon their weakened constitution. We have very many such with discharging sinuses, and intelligent nurses or parents who do not need to visit us for months at a time. Now and again something may occur to pulse or temperature to create alarm, but renewed care and rest generally prevails. Nor should kidney trouble discourage, for annyloid disease may be, and often is, present in a case which finally progresses to recovery. There is, of course, a time in each patient's case when his worst has come, and generally from that time onwards, his recovery becomes attained. The great point to remember is that under appropriate treatment this worst class of case is a rarity, but may easily be manufactured by neglect on the part of the patient, or error of treatment on the part of the surgeon. The observation of the benefits of long continued rest warrants my assertion, and if further proof be needed, it is afforded by those doleful statistics which crowd the two last monographs written on behalf of excision.

The joint should be imprisoned long after the appearance of disease has gone and after all subjective symptoms have disappeared, for the sensations experienced by a patient recovering from articular disease cannot be very reliable under the masking influence of a splint. The test comes on removal of restraint, and a very critical time it is unless the surgeon has grasped the

knowledge whereby such a test becomes infallible. No surgical text books give any allusion beyond vague generalities to the means of knowing the right moment to discard treatment. There is no more danger of relapse in cured joint disease, than there is of disease in a healthy articulation. But if a joint be pronounced fit for use when the remnants of inflammation have not gone, it is easy to understand the very frequent references to relapse which meet us everywhere. What, then, is this test of recovery? The most practical demonstration of it has been rendered by Mr. Thomas, and is in reality founded on the means of detecting early disease. The law may be thus laid down. A joint is cured of disease where the range of movement does not diminish by use. It is easy to understand that this is founded on the fact that the first sign of disease is impaired motion. The practical estimation of these varying degrees of movement is of course to be understood, and may be roughly illustrated in the cases of the elbow and hip. We will suppose an inflamed elbow slung to the chin, where it has remained for many weeks. The surgeon believing it to be sound, slackens the bandage when the weight of the arm takes in the slack either at once or shortly, the angle at the elbow becoming less acute. If at the end of a week or a fortnight, or less, the wrist will not voluntarily return to the chin, the elbow is yet unsound. And so in the hips, supposing all restraint removed, and the patient undergoing a probationary term, returns in a month to find the lordosis is increased, as tested by appropriate means on a plane surface, the proof of remaining disease is beyond doubt. I need hardly say that without some fixed principles in regard to recovery, a surgeon's qualifications for grappling with arthritis must be incomplete. It is as necessary to know when a joint is recovered as it is to know when it is diseased. Without such knowledge, patients are in constant danger of so-called relapse, and surgeons wonder whether such frail members are worth any conservative effort made on their behalf.

Success in the management of joint disease in the young is not always repeated in the case of older patients. Despite the utmost care, such cases sometimes display a strong retrogressive

tendency. The joint, as a rule, seems to be doing excellently, and in spite of this, the general health continues to fail. The temperature rises and with it the pulse, the movements are tremulous and the tongue dry or white and coated. Delirium is sometimes present of a muttering type and the patient, usually uncomplaining, can be roused to conversation. Rigors are not infrequent, and diarrhœa rarely present. Unless amputation be performed, death will most probably ensue. Excision at this stage would be out of the question, for the patient should be at at once freed from his incubus. The condition is by no means common, and to excise early would be to sacrifice a number of curable joints on the bare chance of averting an amputation.

And here we may discuss very briefly the question of rest. To take any monograph and to compare the statistics of successes in those cases treated by excision with those treated by "rest," would be very puerile. The term differs in meaning almost every time it is employed, and unless there be some common agreement regarding it, not much good will come from comparisons between it and rival methods. We require to know its duration as well as quality, and that in connection with the disease and its severity. For instance, a man sprains his ankle sufficiently severely to require a month's repose. A surgeon would be unwise to remove restraint at the end of the first week on the ground that "rest" had been tried and had failed. And yet this is the common proceedure in joint cases where two, three or more months' "rest" is prescribed with almost mathematical precision, and if the goal is not attained, a change comes over the surgeon's principles. A skilful mariner, who has faith in his nautical science, finding he does not reach port at the time he thought, would never dream of sailing in an opposite direction. What is required in both cases is, sufficient belief in the means employed and patience to await the end. The quantitative estimation of rest therefore is essential to its clear definition.

Nor is it enough to pop a patient into a splint without the most careful adjustment takes place. Very few people indeed understand how to properly apply a posterior hip splint; more

especially in Liverpool, where one would imagine that opportunities for knowing how are greatest. Still the best splint is a trivial detail when compared with the theories which govern its best use. Indeed when a surgeon pins his faith to any special appliance, he is prone to place a mechanical reliance on its virtues which may render him negligent to the real welfare of his patient. While it controls it should be under control. A splint is no more automatic in its action than is a violin; and the handle of a broom in the hands of a surgeon who understands the principles upon which recovery is based is of far greater power than the most efficient appliance in the hands of him who is ignorant of them. This explains the success of some who, notwithstanding awkward splints, attain results denied to a majority who fail to make even the posterior support succeed in serious cases. One great cause of failure is the fear which often seizes the surgeon lest limbs should become anchylosed from long confinement. In contemplating the future he forgets his present belief that rest diminishes inflammatory action, and that motion intensifies the disease upon the extent of which anchylosis is so often dependent. Nor are these fears allayed when cases are shewn stiff and deformed where the only rest has been that modicum prescribed by unassisted nature. They therefore resort to the lately fashionable "passive motions." This form of practice after undignified struggle is happily expiring, and not too early, for it has already done incalculable harm. Cases can be shewn where despite diminishing range of movement, on discarding these manipulations and prescribing long continued rest, joint functions have been recovered. Even shampooers and bonesetters prefer to operate on healthy joints whereby their unsystematic wrigglings may at rare intervals release a bond. Whenever the joint is not sound, ample evidence can be produced to prove the damage they do and the motion they limit. The point is to test the patient before he has deserted his doctor and the truth of what I say will be evident. Such is the psychological problem that patients who visit these vampires, despite the contrary, often assert improvement, and it requires an actual experiment to convince them of their error.

Passive motions will not admit of serious defence, and their practise is utterly alien to every principle of rest.

Another factor which most who think they fully prescribe rest resort to is extension. And this they do in the full belief that the joint participates in the full benefits of repose. Is it possible that stretching an inflamed capsule will conduce to its recovery? The assertion that muscular turbulence is quelled by it is no sufficient argument in its favour; for confinement from movement will very soon take all the power of involuntary spasm from muscular tissue. The chief clinical argument against the school of extensionists is that their success is only assured in the simplest cases, and that so large a percentage of the more serious cases are relegated to excision or amputation. Reference need only be made to standard works on the subject, and abundant evidence will be found to corroborate my statement, which is only tantamount to saying that failure to succeed condemns the methods employed. Nor are these results to be wondered at when we learn from Taylor, of New York, himself an apostle of extension, that the stretching sometimes destroys healthy articulations during the treatment of diseased ones. If this may occasionally be the case in regard to a healthy joint, what general effect can we expect it to have on a joint already soddened by disease? Some defend it on the theory of the removal of intra articular pressure; a theory when applied to the hip where its benefits are mainly ascribed, can in the early stages only induce pressure upon the lower and inner aspect of the acetabulum and the corresponding portion of the femur. In the late stages it can only viciously pull upon the soft structures helping to form the joint. It may be laid down as an axiom that muscular control is easier and safer attained by fixation than by any degree of extension. This must be evident to any who have experience in fractures of the lower extremities, more especially if they are sufficiently heretical to put pressure upon a riding fragment. That pain is sometimes eased when weights are applied, and more especially heavy weights, is open to many interpretations besides that usually given, and whether a tense capsule becomes ruptured or traction is sufficiently severe to produce

paresis of the parts involved, both of which conditions are probable, we may feel certain that serious harm is being inflicted. Patients who have complained bitterly of extension are often instantly relieved on its removal, and the pain of which many complain when a splint is first applied is due to rectification of deformity, which it is a duty to secure, and which once attained is generally an indication of freedom from pain.

It is not my object this evening to affirm that excision should never be performed but rather to protest against its routine employment. Nor will the constantly met with phrase "suitable case for excision" be accepted until the term "suitable" (which involves the fallacy of *petitio principii*) be defined. Each surgeon, doubtless, thinks each case he excises "suitable" despite very different conditions. Mr. Wright of Manchester, who has written the latest work* on this subject, says:—"As soon then as there is any evidence of external abscess, excision should certainly be performed, and still better results would, I believe, be obtained by operating even before the pus has escaped from the articulation." It is against advice such as this that some effort should be made as it relegates to mutilation and deformity so large a proportion of curable joint cases. Without dwelling upon the difficulties involved in the diagnosis of pus in some of the early stages of the disease, I would submit that the vast majority of cases so operated upon, would have recovered with better limbs and with less risk under more conservative conditions. The little baby, for instance, which you have examined this evening, whose hip joint, though emptied of pus, has now so complete a radius of movement, would, had Mr. Wright's rule been adhered to, have been destined to limp for life. The early operator has no sort of advantage over him who relies on rest. The one exhibits a percentage of useful substitutes for joint movements with some operative fatality. In the case of the hip and elbow, movement is often aimed at and sometimes struck, often with much more

* Hip Disease in Childhood with special reference to its Treatment by Excision. By G. A. Wright, B.A., M.B. Oxon., F.R.C.S. Eng. London: Longmans, Green & Co., 1887.

effect than bargained for. In the case of the knee, an anchylosis is his best result. To him, on the contrary, whose patience can stand the test, better ends are in view. He cures a number whose joints become totally free from defect. Some only partially hampered in movement, and his worst cases need not take second place when compared with the operator's best. The one may shew a perfect joint, the other, do what he will, cannot. Excision, however, if it be performed, should be undertaken early if the mere record of consistent operative success be aimed at. But the early operator while he can claim a better operative record, has, by thrusting his operation so often between disease and its cure, done less to merit our surgical confidence than the surgeon who operates late and unsuccessfully. Early operation involves the destruction in the large majority of cases of the potentialities of recovery, and if this be as true as I believe it to be, no stronger adverse criticism can be offered. Mr. Howard Marsh, who is in advance of most of his contemporaries upon this point, draws attention to the fact that few are willing in private pratice to undergo an operation which care and early treatment so generally negative. Mr. Mitchell Banks has sounded a similar note. And this is, I think, now getting more and more recognised. Even Mr. Wright who strongly supports early excision, says:—"In private practice cases are usually seen in the early second stage, and it is possible to ensure that the Thomas's splint shall be kept on and no strain thrown upon the joint hence recovery without operation is the rule." If therefore, by the admission of those, who do not practice rest in its fullest sense, cases in private can advantageously evade excision, it should be our aim to ensure for hospital patients a similar immunity. Excision at any stage is a confession of failure and surgical triumph is to be found not in the obliteration but in restoration of a joint.

Some argue that patients can ill afford the time necessary to prolonged rest, and when a case is shewn to them with restored joint function having during disease presented much more than the bare indications for excision, they say, "Yes, but see how long it takes." They are thus forced, by evidence, to admit the superiority of result to any who can afford to wait, and excision

becomes thus reduced to a mere expedient of hurry. So long as a surgeon feels in such instances the almost unwilling creature of circumstances, there is a better time coming for even our hospital cases. Certainly with a hospital committee nagging it is not easy to do justice to joints, and fathers of families are often forced to sacrifice the utility of their limbs to the exigencies of their conditions. The same arguments prevail in the case of the one legged artisan hobbling on a wooden stump and denied by hard times the carefully constructed but expensive movable artificial limb. If this were understood, much of the enthusiasm of the wholesale excisionist would be damped when he realised that by the operation he was supplying to a patient who could not afford a better, a second rate commodity. In the case of children, however, where excision is most often performed, much of this *time* argument must disappear. But is so much time saved unless excision be performed early? The Clinical Society's Sub-Committee on hip disease reported that the average period occupied by rest at the Alexandra Hospital was two and a half years; and in Mr. Croft's cases of excision the recovery occupied a year and three quarters. In short, despite the fact that principles of rest were obeyed at this institution, which I have shewn to be deficient, the gain of time in favour of excision was only nine months. Against this presumed gain, you have to add the mortality of actual operation and the want of success so often inseparable from excision. Under the more rigid adoption of correct principles we have every reason to claim a shortened period for the disease. And should not the market value of a patient recovered with a good joint be more than compensation for extra time employed? which, for the sake of argument, may be admitted. The real truth is that excision, even in such cases, becomes popular only because the surgeon has not sufficient confidence in any other method, and thus the patient becomes deprived of hope.

I so frequently see the uninviting aspect of excision cases gone wrong with their shortened limbs, and flail elbows, and at best stiff knees, that their memories will cling to me, more especially when I read the tables of so-called cures written by

specialists and find phrases such as these: "two sinuses: can walk very fairly," again, "recovered; one sinus: not much discharge." Such experiences are not encouraging even in the light of those successful cases we hear more about and oftener see in public.

Some surgeons, however, excise because they fear the pathological conditions which the joint may evince. Rupture of capsule, ulceration of cartilage, synovial thickening seem to offer to them no likelihood of cure. I would with all modesty wish to reassure them. Huge joints become small, grating joints may become mobile, and cases which I have exhibited before you teach us not to shrink before extensive abscess with ramifying sinuses. Every serious case now recovered at one time possessed joint surfaces fit to adorn the ghastly shelves of our museums. It is the same in all disease. Nature's recuperative powers are not appreciated, and both physician and surgeon are constantly remined by unexpected results of the ease with which she may transform a pathological condition. We need but roughly glance back to note those surgical ailments which time and discovery have rescued from the category of incurable. That joints *do* recover with movement from extremely advanced disease is beyond question, all we have to do is, so to work out our principles that possibilities may become probabilities.

The fear of diathesis is, however, more general, and we all feel now and again anxious when a puny, sickly patient prepares to do battle with his diseased joint. At one time the term Struma was applied to all these cases, and of late this seems to be supplanted by the Tubercular theory. The terror of this latter term seems to have affected most medical minds, and many seem to think it useless to apply mechanical aid to the local manifestation of a constitutional state. Let it be understood, that whatever term be used the condition is curable, and this is vastly more important to all concerned than speculations regarding its morbid anatomy. Reference to the discussion on Tubercular Peritonitis, held at the Clinical Society on October 28th, 1887, will throw some light on this subject. It was proved by the experience of several surgeons, including Sir Spencer Wells,

that simply draining the peritoneal cavity, or cleansing it by means of a germicide, was sufficient in several cases to completely cure those affected. There was no question in the minds of the operators as to the nature of the peritoneal deposits as they were clearly viewed on abdominal section. This should encourage those of us affrighted by terms. But this question surely needs no debate, for most of us will be able to call to mind old cases of strumous or tubercular disease where a patient has come for the rectification of deformity, with a knee anchylosed, traces of old rib sinuses, an elbow bent, and glandular cicatrices. Such cases have weathered the storm and successfully, as far as some points are concerned, unassisted by art, and the conviction should be forced upon us that if so many get well under conditions of so marked neglect, how many more should be rescued by an intelligent and persevering use of means. I have one such case at present in the Stanley Hospital where I have performed osteotomy for an old sound but anchylosed and deformed hip. Her neck, ribs and knee bear witness to her diathesis, and, in spite of all, with little more than nature's help she had recovered. The case I exhibited here six weeks ago is also proof of its curability, and so are some of the patients you examined to-night. Indeed, those surgeons who excise, as I know some do, when there is barely any naked eye pathological condition, do it because of the diathesis; although most will now unite in rejecting the theory that the joint may become a focus of infective disease.

I would not class incision into the hip for removal of necrosis as an excision, although for some puzzling reasons some authors do. On ordinary surgical grounds a piece of dead bone which is of course irrecoverable can have no good mission in a joint. If only to secure free drainage and a hastened recovery, such an operation is absolutely necessary. We should remove any loose piece of bone which can be diagnosed in the joint.

Whether we determine to excise or endeavour to save joints, we do not always succeed in keeping our patients alive. While both schools have their rates of mortalities, it is at present impossible to make a comparative estimate. The mere placing results in parallel columns without regard to the special peculi-

arities of each case can serve no useful purpose. Nor can we condemn the prolonged treatment by rest until several fallacies in its general application are exploded. Amyloid disease, tubercle, and septicæmia are amongst the forces against which we have to contend, and not always successfully. That extensive and long continued albuminuria can be overcome without operative assistance some of my cases have proved to-night. Were it not monotonous, I could have largely increased the number, but sufficient have been exhibited to demonstrate the truth of my remark at a previous meeting that long continued confinement of the knee accompanied by suppuration was not necessarily productive of a stiff joint. Had such a condition been required by any of these patients, passive motions sufficiently assiduously conducted would have probably produced it, and extension would have added its weight in favour of destruction.

In conclusion, I would add that our efforts should be directed to assisting the curative efforts of nature and to removing all obstacles which frustrate that end. In the advance which is sure to be made in the treatment of diseased articulations we may feel convinced that better things are in store for us than excision. Surgeons cannot always remain content with stiff, short knees. Excision has nearly fulfilled its mission in saving from destruction limbs which, without a full knowledge of the benefits of rest, would have been lost. In future, surgeons will realise that it is more important to reclaim those tissues encroached upon by disease than to advocate their sacrifice.

Mr. Robert Jones and Mr. H. O. Thomas shewed amongst other cases the following in illustration of the paper :—

Case 1. J. Q., æt 6; suppurative arthritis of knee. Three years in splint. Strumous diathesis. Two years previously opened knee-joint on inner side. Discharging sinus for six months. Rest uninterrupted. Partial movement which is steadily increasing.

Case 2. Suppurative arthritis of knee. H. W., æt 16. Duration of disease two years. Suppuration of joint. Aspirated seventeen times. Joint finally opened. Albuminuria for four months. Shortening quarter of an inch. Good range of motion.

Case 3. Suppurative arthritis of hip; amyloid disease. C. B., æt 12. Duration of disease nine years. In splint for eight years without interruption. Aspiration thirty-five times. Six sinuses into joint. Half an inch shortening. Very good motion in joint.

Case 4. Suppurative arthritis of knee. Two sinuses into knee. Total duration of disease nine months. Deformed and anchylosed during disease. Good motion now.

Case 5. Suppurative arthritis of ankle. Twelve months in splint. Two sinuses. Prolonged pyrexia. Free motion in joint.

Case 6. Suppurative arthritis of hip with fifteen sinuses leading into joint. Kidneys diseased for two years. Hyperpyrexia for three years at short intervals. In splint for ten years. Patient twenty-five years' old. Can now walk six miles without being very tired. No deformity. Shortening three quarters of an inch.

Case 7. Suppurative disease of ankle. C. B., æt 8. Two sinuses. In splint six years. Movable ankle.

Case 8. Suppurative arthritis of elbow. Two sinuses. Patient under treatment for eighteen months, during which time liver was enlarged and albuminuria. Recovery with free motion.

Case 9. Suppurative arhritits of hip with lordosis and tilted pelvis. Eighteen months under treatment. Two incisions made. Correction of deformity. Shortening scarcely half an inch, although apparent shortening when first seen was three inches.

Case 10. Arthritis of hip. Splint taken off at meeting for first time after four years uninterrupted confinement to show that long continued rest did not result in anchylosis. Motion free.

Case 11. Suppurative arthritis of hip. Three abscesses into joint. Lardaceous disease and dropsy for twelve months. Complete recovery with three quarters of an inch shortening.

Case 12. Suppurative arthritis of knee. Knee splint five months. Very slight motion which is increasing.

Case 13. Suppurative hip disease in a baby cured after eighteen months' treatment, where only one aspiration proved necessary. Motion perfect.

Case 14. F. A., aged 15. Suppurative arthritis of wrist. Six sinuses which discharged for fifteen months. Free motion.

Case 15. R. W., æt 17. Suppurative arthritis of hip. Six sinuses. Duration of disease six years. Four years in splint. Albuminuria sixteen months. Three quarters of an inch shortening. Movement increasing.

Case 16. Suppuration of knee-joint. G. F., æt 14. Strumous disease of joint for six years. Four years in splint. Five sinuses into joint. Old disease of elbow and wrist. Cicatrices of excised lymphatics of neck. Albuminuria for five months. Tubercular family history. Free motion in joint.

Case 17. Abscess of elbow and shoulder. A. F., æt 14. Five years under treatment. Three sinuses into shoulder, four into elbow. Free movement in both.

Case 18. Hip disease of seven years' standing in youth of seventeen. Two sinuses into joint. Five years in splint. Moderate motion which is increasing. No deformity.

Case 19. Abscess of ankle and knee of four years in boy of nine. Tubercular family history. Enlarged glands in neck. Treated by complete rest. Three sinuses into knee, one into ankle. Recovered with fair movement in knee and complete range in ankle.

Case 20. Suppuration in hip-joint. Disease of seven months' duration in boy of ten. Good recovery with motion.

Mr. Robert Jones shewed several other cases of a similar kind in proof of his assertion at a previous meeting, that under the proper application of prolonged rest joints recovered their functions in spite of extensive suppuration.