LECTURE ON THE TREATMENT OF HIP-JOINT DISEASE.*

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I AM much obliged, gentlemen, for the privilege of being able to explain to so distinguished an audience any views I may have upon this particular disease. You have certainly one of the largest fields in this institution for its study that I have ever seen; and I am very happy to see Mr. Marsh carrying out the principle of extension which I consider the proper basis of treatment. The only suggestion I have to make is with regard to the application of this principle in such a manner as to afford the children the benefit of out-door exercise. You can hardly expect me, in half-an-hour's talk, to convey a full idea of my views in regard to the treatment of this disease, its anatomy, pathology, and so forth. I take it for granted that you are perfectly familiar with the anatomy of the joint; and I will spend the short time at my disposal in giving you in a condensed form the views which I hold in regard to treatment. Of course you understand that it is a ball- and socket-joint, having its ligaments, synovial membrane, the interarticular cartilage or cartilage of incrustation—which, by the way, has very little vitality, but is merely intended as a buffer or cushion to break the concussion; it lives, as it were, by imbibition, upon the little network or tufts of vessels between it and the bone. Cartilage is very much like the barnacles on a ship; it lives by attachment, and by absorption through these little tufts of vessels; and, like all organs vitalised in that way, it easily undergoes disintegration or death. The ligamentum teres, coming from the little fossa at the head of the bone, and being bifurcated and inserted into each side of the notch of the acetabulum, has also a small amount of vitality, one little blood-vessel and nerve running through it; and of course it is liable to be easily injured. I merely mention these things to show that the disease of the joint will occur either in the synovial membrane lining it, or in the ligaments that hold it together, or in the little network of blood-vessels that lie directly under the cartilage of incrustation, between it and the bone. I doubt much if ever the disease commences in the cartilage itself; this subsequently becomes involved in it. The diagnosis whether the disease has commenced in the bone, or rather in the blood-vessels at the extremity of the bone, or in the synovial membrane, or in the ligamentum teres, is sometimes difficult to make out, for the one soon runs into the other.

Taking it for granted that I am speaking, not to medical students, but to medical men who are perfectly familiar with the physiological condition of the joint, I will go at once to the pathological changes that take place.

There is, first, a synovial inflammation, which is always followed by effusion. Then there is a wrench or tear of the ligamentum teres, which is almost always followed by a destructive inflammation of the bones of the joint, particularly if a concussion have been at the same time associated with the wrench or tear. Synovial inflammation is almost always the result of exposure. Skating, racing, jumping, playing, football, and other movements that over-exercise the joint, followed by a sudden exposure and change of temperature, will produce synovial inflammation in the hip-joint as well as any other joint. When boys are wrestling, going through violent gymnastics, twisting their legs in various positions, putting the ligamentum teres upon the stretch will produce a tear—probably not tearing it entirely off, otherwise attention would be called to it, and they would be put under treatment; but generally the smaller the rip the greater the danger, because it is neglected; and it is sometimes months before the disease is seriously developed, and frequently by this time the origin of the difficulty has been forgotten.

A concussion, a blow, a jump from a great height, would cause a pressure upon this little network of blood-vessels which I described as existing between the intra-articular cartilage and the head of the bone; this would produce a "blood-blister," or extravasation of blood at that point, which would be the nidus or starting-point of the disease; and, if the injury were detected at the time of its infliction, *rest alone* for a sufficient length of time would probably result in a favourable termination of the difficulty in the great majority of instances. But, the injury not being detected, and in many instances not even suspected, the *rest* is not insisted upon at the proper time, and thus the disease is slowly developed, and frequently is not distinctly pronounced until so long a time after the accident that caused it, that the trifling injury which has been the origin of so much trouble has been entirely forgotten.

A pinch of the skin producing a "blood-blister," or slight extravasation in the cellular tissue, is of common occurrence, and of no great importance. If left alone it will soon be absorbed, or at most, if you let out the fluid and do not irritate the wound, it will soon get well: but, suppose even in this most trifling injury that, instead of giving it rest and time to heal, you constantly scratch it with a rusty nail, you will produce a sore, that will last as long as the irritation is continued. This is a parallel case to a joint being exercised after a concussion or wrench producing an extravasation in the tufts of blood-vessels already referred to.

The accidents to which I have referred are the three general causes of the disease which will of course be more or less modified in its symptoms according as it is developed in one or the other of the tissues referred to. If there be effusion within the joint, it is always accompanied by a peculiar distortion. That distortion necessarily arises from the fact that the capsular ligament can only hold a very small amount of fluid without being distorted. You will remember the ilio-femoral ligament that lies upon the front of the capsular ligament, running from the anterior inferior spinous process of the ilium to the trochanter minor; it is folded over the capsule, and causes it to lie close to the neck of the bone. There is a very small amount of fluid in the capsule normally, and you cannot increase that amount without increasing its capacity by *unfolding* it. As long as the limb is in the normal position, the capsule rings round the head of the bone so tightly that no additional fluid can be placed there; but if inflammation take place, and there be increased secretion, accommodation is made by the unfolding of the capsule, and the flexing of the limb when the capsule becomes loose, so as to enable it to hold this increased amount of fluid. That is the reason why the leg always becomes flexed, *abducted*, and rotated outwards. I am particular about these changes, because they materially aid you in making a diagnosis; and the thing is to be able to diagnosticate the disease in its early stages, when a great deal can be done towards its relief.

If the effusion have become very great, the limb is more flexed, more abducted, and more rotated outward, and at the same time more fixed, apparently ankylosed, as if it had been solidified by plaster of Paris; yet it is not a bony ankylosis, but simply arises from distension by effusion and from muscular rigidity.

One of the things that is sure to take place in any inflamed joint of long standing—the hip, knee, or any other joint—is atrophy of the muscles above and below it; and at the same time reflex irritation causes muscular tension or muscular contraction. The muscles that move the bone become irritated and contracted, so as to bring pressure against the diseased surfaces, which aggravates and complicates the disease from the beginning to the end. This is one of the great sources of pain and trouble which we have to overcome in these diseases. So in diseases of the hip-joint, the muscles contract and flex the limb, and would adduct it, but it cannot be adducted on account of the anatomical distension of the capsular ligament necessarily forcing the limb outward, rotating it outward and *abducting* it. Now, the adductor muscles (as all who have seen this disease must have observed) become, like catgut, intensely contracted, and feel like a strong cord. The desire to bring the limb in is on account of this reflex irritation of the adductor muscles, and the absolute impossibility of doing so is because of the capsular distension of which I have already spoken. If you take a dead body and flex the joints so as to break up the *rigor mortis*, and place it on the back so that both limbs are in their natural position; if you now bore a small hole through the ilium into the acetabulum, and forcibly inject a small amount of quicksilver, it will cause the limb to flex, abduct, and rotate outward at the hip-joint. By driving into the hole a small piece of wood to retain this increased fluid within the joint, you will find it impossible to extend, adduct, and rotate the foot inward, without rupturing the capsule; and the attempt to do so, if the capsule do not rupture, will force out your plug like a pellet from a pop-gun.

It is the struggle between the irritated muscles to adduct the limb,

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and the impossibility of the limb yielding to their traction on account of the over-distended capsule, that cause the pain to be so great in the second stage of the disease; and it is made manifest on the inner and lower portion of the thigh near the knee, on account of a little filament of the obturator nerve which runs off there to the ligamentum teres, and a sensitive branch from it running down to the adductor muscle. This over-distension can only be relieved by puncturing the joint and letting out the superfluous fluid, or by cutting the tendon, so as to accommodate the one to the other. The treatment will of course depend upon the condition in which you find the patient; you must exercise your own judgment as to which method is to be preferred, according to the condition in each case. In this stage of the disease the pain is agonising, torturing, with loss of sleep and loss of appetite. The least attempt at movement in any way causes the most agonising shrieks; and at this period ulceration takes place in the cartilage of incrustation. The patients begin to have what are called night-spasms—the peculiarly characteristic pains that occur in the night depending, I suppose, upon the fact that the child becomes completely worn out, loses its hold on the muscles, and drops off to sleep for a second; then there is a spasmodic contraction bringing this increased pressure and movement of the diseased joint, and the child wakes up with a shrill shriek. The mother runs upstairs, and finds, perhaps, that the child has dropped off to sleep again. You hardly ever ascertain this fact unless you live in a hospital, or stay for several nights in a house where there is a child with disease of the hip-joint, when you will appreciate this thing very accurately indeed. The tension of the muscles that the child is undergoing all the time keeps the joint from movement, and makes him comparatively comfortable; but that is done at the expense of vitality. The constant effort of the child to hold the muscle still to prevent movement wears him out, and by and bye he drops off to sleep from sheer exhaustion, and then, when there is the least movement, he screams as though he were pierced with a red-hot iron; instantly the muscles are on guard again, and the child is relieved. That goes on over and over again. After awhile, ulceration takes place, and the capsule ruptures; then this imprisoned fluid escapes from the expanded capsule into the cellular tissue, and the child is comparatively easy. But the disease has still further progressed. We often think we have gained a great deal because the child is so much more comfortable, whereas the disease has only gone on to the third stage, in which effusion takes place into the cellular tissue. Almost immediately there is a marked change of attitude, or character of the deformity. The leg is immediately adducted, drawn close to the other; the toes are turned inward, and the limb is apparently shortened. If this rupture that takes place through the capsule be very slight, so that the pus oozes out by slow degrees, the change takes place very slowly; but if (as is often the case) there be a big rent in the capsule, you may find the child distorted in one way to-night and to-morrow the very reverse. The fluid has suddenly escaped; and that has always been heretofore described as the luxation which occurs in the third stage of hip-disease. I looked through your museum the other day and saw a great many specimens, but none are luxated. The theory of luxation in the third stage was proved by Dr. Alden March of Albany, New York, to be a mistake. The head of the bone is absorbed; the acetabulum is absorbed and increased in size; and the capsular ligament which surrounds the acetabulum slips up, and up, and up, and so it remains—the periosteal development, giving an additional growth of bone, makes a new attachment above, so that the capsule is still attached, and the head of the bone embraced in it only slipped up. You may call it, then, a displacement of the acetabulum, not a luxation of the head of the bone. The absorption taking place in the acetabulum and in the head of the bone, causes the limb of course to be very much shortened; and it being adducted, and the neck having been nearly destroyed (in many instances entirely), the idea of luxation has arisen; but I draw a distinction between a destroyed and changed position of the acetabulum, and a luxation of the head of the bone. I call it a luxation when the head of the bone is outside the capsular ligament; but if the ligament have been displaced or moved in its position, still embracing the head, it is a displacement, not a luxation.

So much for the pathological changes that take place; next as to the causes of this disease. My impression is, that the great error we have always committed has arisen from looking at this disease as necessarily one of constitutional dyscrasia, a blood-disease, a constitutional poison; that this is simply a local manifestation of a general disease. Believing this, we treat the system, we give internal remedies, and apply our medicines for the purpose of changing the character of the blood, instead of paying attention to the local disease which is the great source of trouble. All authors, as far as I know, particularly the older ones, have looked upon this as a scrofulous or tuberculous disease of the bone, necessarily connected with some hereditary taint or some peculiar

scrofulous condition of the system, and therefore they believed that the disease must necessarily go on to destruction, and that there was no necessity for any local treatment except counter-irritation, blisters, setons, and so forth. Internal remedies were the principal things relied upon. The result was, with all that kind of treatment with which we are familiar, always the same—viz., shortening of the leg by absorption of bone, and, finally, the consolidation of it in more or less deformed positions; and then the patient frequently came into a condition of robust health. I do not suppose there is any person in this room that cannot call to mind some old fellow with a shortened hip perfectly ankylosed, yet with a ruddy face, a good healthy complexion—a vigorous robust old man. If he had had scrofula in his blood, if he had had tuberculosis in his system anywhere, it would have remained there; and when the hip recovered, the man would have been a miserable old fellow after all. The fact of his being a vigorous robust man after going through all this trouble, proves, in my judgment, that the disease is not of constitutional origin. The fact that in so many cases the joint has been excised when the patients have been apparently at the point of death, and that they have become, when the source of trouble has been removed, vigorous, strong persons, is another evidence that the disease is not constitutional. Then there is the still stronger fact that, by making application to the local disease, and treating it irrespectively of any constitutional taint, you produce perfect results, so that the patients recover without the slightest deformity, and with perfect motion; that is the best proof in the world of the disease being local. Follow up the history of these cases, and you will find that it is a local disease. Out of several hundred cases that I have accurately observed, and taken the trouble to trace their history, the immense majority, I may say 90 per cent., occur in the most vigorous, robust, wild, harum-scarum children—boys that take their chances of danger, that run races, that climb over fences, jump out of apple-trees, kick their playmates downstairs, ride down the banisters, are reckless and careless. The sickly, poor, scrofulous child, who clings to his mother's apron, does not run the chance of getting hurt. I do not say that scrofula is a preventive against disease of the hip-joint—by no means. All things considered, a smaller amount of injury would produce the disease in one of these miserable young ones sooner than in a healthy robust child. But such children take very little chance of being hurt, and consequently the majority of cases occur in the active and robust. The injury that starts the disease is sometimes very trifling, and not observed at the time. I might illustrate this by my own experience. In getting out of one of your cabs, I have nearly torn off my tendo Achillis. You have no kerb-stone as we have, and no steps to your Hansoms; and the result was that, expecting to step down only eight or ten inches to reach the stone, I found I had to go eighteen or twenty inches, and thus I strained the tendo Achillis. If I had torn it entirely off it would have done no damage, except loss of time, because I should have been compelled to lie by; but I hurt it so little that I paid but little attention to it; and I have been walking about for a week or ten days, until I can scarcely walk any more. It is now bad enough for me to begin to take care of it. If I had hurt it a little less, it would have been more dangerous, because it would have gone on by degrees producing those conditions, that terminate in a destruction of the part.

In the first stage of the disease it is necessary to examine the child by taking off every stitch of clothes. Then, going behind, you will observe the peculiar form of the nates. The diseased side will have the gluteo-femoral fold a little dropped down; the two buttocks are not exactly alike; and you will observe, if you watch carefully, that the toe has a tendency to turn out, and the child bends his knee and hip. The sound leg is made into a solid column to receive the concussion and bear the weight of the body; the child is careful not to concussion the other at all. By careful measurement you will find that, even in the first stage, the thigh is already smaller than the other. Of course you want to examine very carefully in this stage, and it will take time to detect it; but after examining some little time you will see the gluteo-femoral fold dropped lower, the nates flattened, the line from the centre of the sacrum to the trochanter major a trifle greater than on the other side, and the leg having a tendency to be slightly abducted, and flexed at the knee. You then lay the child perfectly flat on the table. The case before us is a very illustrative case. You see the perfectly cautious manner in which the child moves; she sees everything, and keeps herself constantly on guard. There is now no movement at all at the hip; she is locked up, and she keeps herself as quiet as possible. The case is one that has gone on for some time [the mother stated that the child had been suffering for four years; that she had a slight fall at first, and did not complain of it at the time], and it is so conspicuous that anybody could find it out across the street. It is in the incipient stage, such as this child was in three years ago, that you want accuracy of diagnosis. This case has gone on to the third stage of the disease.

It is essential to a proper diagnosis of these cases to have a normal stand-point to go from, and it is this. The body of a child in a healthy state can be laid upon a flat surface, the spine lying upon the floor or table; and a line drawn from the centre of the sternum over the umbilicus to the centre of the symphysis pubis, and another drawn from the anterior superior spinous process of the ilium of one side to that of the other, cross each other at a *right* angle, when the trunk and pelvis are in a normal state. In that state, if the hip-joints be perfect, the legs can be brought so that the popliteal spaces can be made to touch the floor or table. Now, whatever position the other leg has to be kept in, in order to get these two lines at a right angle with each other that is the characteristic deformity of the leg. A sofa, bed, or lounge, will not do for this examination—it must be done on a *solid* foundation. In this case, you see, in order to get these lines right, I am compelled to hold the leg flexed, but it is simply adducted. That is a very important point. It is an evidence that the capsule has become ruptured. If there were effusion in the capsule, the leg would be *abducted* and rotated outward. The fact that it is adducted, and inside the central line, as you see, is evidence that the disease has gone to the third stage, and that the capsule has become ruptured.

You see that the child, when held in the manner in which I am now holding her, has no pain. Putting my hand upon the pelvis, I make movements, and you see that the joint is not ankylosed. Seizing the pelvis with one hand, and passing the other under the knee, and making moderate extension in the direction at which the deformity has arrived, I make movements, and the child has no pain whatever. I let her go for a second, and then, on making the slightest movement, you see what pain she suffers. Now, I have ankylosed that joint; there is ankylosis perfect and complete to all appearance; it is muscular rigidity that has produced it. You see here the disease aggravated and continued by pressure. You could not have a better illustration of the practical working of the principle of extension.

You perceive that the child can be moved about without any difficulty if she be handled properly, and the limb slightly extended. A person accustomed to it can take up a child with apparently the greatest carelessness, and will *seem* to be acting with perfect brutality, without giving any pain whatever. He knows how to apply his force; and yet in a single instant he can produce the most agonising torture. See the way in which the child locks herself up, and makes herself perfectly rigid the instant I omit my extension.

Pressure causes absorption. By constant pressure of the head of the bone against the acetabulum, there is absorption of the head and absorption of the acetabulum; destruction takes place, and terminates in an abscess which finds an outlet somewhere; or else it goes on to ankylosis.

Many persons apply a plaster of Paris splint in these cases. This is good, so far as it keeps the part still; but, as it lacks the power of extension, it does not accomplish all that is desired. It is better to have the limb recover with motion than ankylosed.

If I take hold of the pelvis, and make moderate extension, the child is free from pain; if I put it down straight I hurt her, for I put the *psaos magnus* and the *iliacus internus* on the stretch. The straightening is to be done by slow degrees. You see the result in the case of the other child, whose leg was like this, but is now much better, from the fact that extension has been applied for some days. It is best to put these patients to bed and apply the night extension. You put the extending force on the diseased limb very nearly in the angle of deformity as you find it; lowering your extension by slow degrees, until, in the course of a week or ten days, or two or three weeks, you get the limb as straight as in the case of this other child.

This is really the proper time to apply the instrument which I propose to put on this child in order to enable it to take out-of-door exercise. If you take it in the early stage of the disease you do not want to do that; but, this child having undergone this deformity, we must take her as we find her.

Mode of applying Extension.—We take two strips of adhesive plaster two or three inches wide (according to the age of the child), and extend them from just above the ankle on each side, and long enough to reach two or three inches above the knee, first having had a web sewed fast to the lower extremity of the plaster for the purpose of putting on a buckle for night extension. These straps are secured by a roller, as you see. I always put on the plaster without heating it. When heated, plaster is very apt to slide from itself; it moves off from the web or cloth on which it is spread. If you heat it, it burns the skin, or glides away from itself; but if it be put on with gentle pressure, this does not occur. I am careful not to make the upper end of the plaster stick before reaching it. If you put on the plaster with a fold and get a pucker in it, the effect is the same as pulling your boot on with a pucker in your stocking: it does not hurt you much till after dinner;

before bed-time it is unbearable. The plaster has to be worn many months, and it should be applied carefully. I mention these little matters as the result of my own experience and observation. You will only learn by making blunders; and having made many myself, I try to teach others to avoid them. It is remarkable how easily the plaster may be worn for months if it is smoothly and comfortably adjusted. The skin should always be thoroughly washed, and carefully *wiped* before applying the plaster. Having gone above the knee for an inch and a half or so, I reverse the plaster over the roller. At first I make the roller hold the plaster until I get above the knee; that is, simply to catch a bite, as it were, on the condyles, so that extension shall be made upon the hip, and not upon the lateral ligaments of the knee-joint. I then reverse the plaster and bring the roller back over it; and now the plaster is made to hold the roller in place so that it will not slide. This can now be worn for three or four months. If the bandage become dirty you can take it off without removing the plasters; or you can put a long stocking over it.

This is now ready for night extension. We next put on the plaster to apply an instrument for day extension, so that the child can run out of doors. This is done by taking two fan-shaped pieces of plaster, and sewing on to the pointed end a piece of webbing just wide enough to fit the jaws of the instrument. The instrument (Fig. 1) is made of two

Fig. 1.—Instrument for extension.

pieces of steel, one sliding into the other, as you see, and made to lock by a key. This rod terminates in two branches that go over the thigh, and come on to the inner portion of it. I formerly made the instrument to go down the whole length of the leg; but finding that it only stiffened the knee-joint, I prefer now to make it go over only the thigh. By means of a cross branch, you take the extension from the inside of the thigh. The rod should be made to extend from an inch and a half to two inches above the condyles of the femur up to the crest of the ilium. It ends in a little roller, over which the webbing is to play, and it is capable of being elongated and shortened at will by the key. The

upper portion terminates in a ball-and-socket joint in a little steel band which runs round just under the crest of the ilium. At each end of this band is attached a perineal pad, which runs under the perineum, and is buckled; and counter-extension is made on the perineum, so that the child walks on the perineal pad instead of on the hip-joint. This was a desideratum which I was always trying, for a great many years, to obtain, but did not succeed. A man named Davis was the first to make an instrument accomplishing this object. It was a piece of steel running down the whole length of the leg to the ankle. Extension was made by a joint and a buckle, but it could not be gauged, regulated, or controlled with ease or accuracy; still the principle of keeping up extension, and at the same time permitting motion, was made first by this man Davis. Had he remained an honourable man, true to his profession, he would have deserved to have his name passed down to posterity with respect; but having taken out a patent for his instrument, he has incurred the reprobation of every honest and honourable man. We will, however, give the devil his due, and admit that this man was the first who made an instrument accomplishing this object. But his instrument has been so modified and so immensely improved, that his patent is of no avail.

You lay the instrument over the thigh. If it do not fit exactly, you can bend it with the fingers; if it be a little too tight, you can spring it apart. You put your thumb and finger opposite where the two lower jaws come, and you will know the place to commence the application of your plaster for the extension of the thigh. Sometimes the pain is so intense that it is necessary to give chloroform. The plaster is put on and bandaged round, as you see, working in and out basket fashion, so as to cover any inequalities of the skin. After a few applications, you learn how to do it snugly and smoothly. By having the plaster cut in slits at the upper ends, it can fall in pieces or fall together more readily, and thus be applied more smoothly.

I used to put the bandage over the pelvis, in the form of the figure 8, but I prefer the plan of splitting it in strips and reversing it over the roller, as you now see. Remember that it is not requisite to pass above the trochanter major. It is hardly worth while to draw the anatomist's attention to that; but I have seen the best surgeons thoughtlessly apply the plaster clear above the joint, and of course it only pulled the pelvis instead of opening the joint.

Fig. 2.—Child before the application of the instrument.

If this instrument had been put on the child before she became so much distorted, you can well understand how much greater the advantage would have been; or had she been kept in bed two or three weeks, and the limb pulled down straight; but we will take the worst kind of case, and see whether it will do any good or not. As I am compelled to put on the instrument immediately, I press the plaster on, rather than apply it by heat; and by keeping the limb extended, I can press the plaster home without hurting the child. But it is better to

leave it for a few hours to get an attachment. [The accompanying sketches (Figs. 2 and 3) show the child before and after the instrument was applied. In a few minutes after its application, the child walked around the room in perfect comfort, sat down on a chair, and got up several times to show the perfect freedom of motion in the joint.]

Fig. 3.—Child after the application of the instrument.

This treatment may be required for months and months; and when the patient is well, I make him wear the instrument for weeks or even months afterwards, as a means of protection or guard. If the child be small, no crutches are required; but, of course, if the weight of the body be too great to be sustained by the plaster, crutches must be added. The advantage is, that the ligaments are kept in movement. The objection to the *fixed* treatment is, that the ligaments which are not involved in the disease become diseased by rest. By giving them motion, they are kept in a normal state. A piece of old leather, if you do not handle it and keep it supple, is good for nothing.

When the disease has gone on to another stage where sinuses have occurred, and discharge pus, when a probe leads down to dead bone, there is nothing to be done but to excise it by making a small incision above the trochanter major, midway between it and the crest of the ilium, over the top of the acetabulum—a semilunar incision, the belly of the D covering the posterior part of the trochanter major, going straight down to the bone, *through* the periosteum. You then pull the soft tissues on one side, and, taking a small but strong curved bistoury, go as far around the bone on each side as you can reach, at right angles to your first incision, so as to divide the periosteum completely; you then take a strong firm periosteal elevator, with a large handle, and the end slightly curved, and go into this little triangle; you *peel* off the periosteum, and, as a matter of course, all the muscles with it; by opening the joint thoroughly, and turning the head of the bone out, the periosteum is peeled off from the inner portion; you then saw off the bone above the trochanter minor. I believe that this is better than cutting through the neck. If you go through the neck, the trochanter major comes over the hole and prevents discharges; whereas, by cutting off the trochanter major along with the neck of the bone, you leave a perfectly free opening for the discharges from the diseased joint; and by peeling off the periosteum in the way which I have described, you carry with it all the muscles that move the joint; and if you then keep the leg pulled out to its proper length, by putting on a pair of wire breeches, you can send the patient out into the air the very next day (Fig. 4).

Here is a photograph showing the result of a case that has been excised. Three inches and a half of bone have been taken away, and the head of the bone united. Here is another, in which four inches and a half were removed, and the man recovered with a movable joint. This which I now show you was the first case performed in America. I operated on the patient in 1852. I invited many surgeons of New York to come and see the operation; but no one attended, as at that time it was thought to be unjustifiable. The patient is, as you see, a handsome

woman, and no one would observe any defect in her. Here, however, is the most successful case, in which four inches of bone were removed. The whole acetabulum was destroyed; the head and neck nearly

Fig. 4.—Wire-breeches.

absorbed. There were several sinuses leading down to dead bone. I removed the head and neck, cutting it off just above the trochanter minor; but, finding the disease extending further down, I pushed the femur up, and sawed it off again. By keeping the limb extended, if you will peel off the periosteum in the manner which I have described, the bone will be regenerated, and be as good as ever. By extending it sufficiently, you make the limb as long as before. When you have got the bone regenerated, and before consolidation takes place, you commence passive movements, and in that way obtain an artificial joint, as in the case of an ununited fracture. By constant movements you prevent ankylosis; and, as the muscles have all been carried off with their insertion at the periosteum, you have certainly got the normal position from them to be moved again. The proof of it is in this boy. He bends his leg at right angles; he can kick higher than his forehead; and he won a pair of silver skates two years ago in a contest with some very good skaters on the Central Park pond in New York. The leg is almost exactly of the same length as the other, and the motions are perfect; and yet here you see four and a half inches of his femur, and the acetabulum was perforated.

I have been rather surprised to receive a letter from Mr. Barwell, who said he was going to publish it in the *Lancet*. I hope, for his own sake, that he will not. He dislikes my plan of removing the periosteum. Of course every one has the right to select any plan that suits him best. I am extremely reluctant to be dragged into controversy; and, without answering anything of the kind, I will draw your attention to the answer which you can make yourself. If you take an orange and cut a slit down through the skin, I should like to see any of you with a sharp penknife peel the orange out of the skin without splitting the skin or sticking the knife into the orange; or if you take a straight road knife like a scalpel, and take the orange out without damaging the skin or making an occasional hole in the orange, you are more dexterous than I am. But if you will take a knife and cut across the skin, you can take the handle of a silver spoon, slip it in, and peel round under

the skin, and separate the orange from its covering without tearing it. So it is in regard to the femur. In *dissecting* off, you tear the periosteum into shreds, destroy its vitality, and prevent its doing the good which you want it to do. By commencing *above* and “prying” it off, without first limiting its extent by the circular incision above referred to around the femur, you are in great danger of loosening its attachment to the bone below the point where it is to be sawed off—where you do not want to loosen it. You want the periosteum left attached to the femur. Therefore I prefer cutting down over the trochanter major, through the periosteum, down to the bone, as far as opposite a line a little above the trochanter minor. Taking a small bistoury, and going at right angles to this first incision, half-way round on each side, I thus limit the line of removal of the periosteum to the place where section of the bone is to be made; and below that point the periosteum remains attached to the bone. Since adopting this plan of operating, and always using the saw to divide the bone, instead of the pliers or bone-forceps, I have not had exfoliation follow my operations as in former instances. To prove that this is the better way, I may mention that I have operated forty times, and thirty of my patients are walking about with excellent movement of the joint; and you here see daguerreotypes of them. Eight or ten of them, I am confident, might be walked into this room, and not one gentleman here would be able to say which leg was operated on. These are cases in which I operated in the way I have described. I did not learn to do this the first time I tried; and some of the cases, therefore, did not get on so well. I have had some short legs; and I have had cases where there was a good deal of exfoliation because I did not peel the periosteum properly; and I have had exfoliations because I cut off the femur with a forceps, which in my judgment ought not to be done.

Let me, before I conclude, say a word on operative surgery and anatomical surgery. You sometimes see beautiful dissections. Men will hold the knife like a pen, lay out the various tissues, and give a very pretty dissecting-room demonstration. Every surgeon should go through this anatomical surgery in the dissecting-room, and do it thoroughly and frequently; but, when he comes to apply his knowledge to the living human being, let him be an *operating* surgeon, and go straight to the place which he wants to reach, without splitting hairs and dividing endless series of fasciæ.

CONTAGIOUS DISEASES ACT.—In reply to Mr. Baines on Monday last, Mr. Bruce said that the report of the Commission on the Contagious Diseases Act would be presented to the House at the very earliest possible moment. Although the report was unanimously signed by twenty-three out of the twenty-five members of the Commission, one of the two being absent from ill health and the other being on duty in India, yet as a matter of fact two-thirds of the members might be said to be in favour of a qualified compulsory application of the Act, and one-third—seven at least—of them were in favour rather of strengthening than of weakening the Act, and six of the number were practically in favour of repealing all compulsory legislation, but all were in favour of introducing some further legislation for the purpose of adapting the modified legislation to the acceptance of the whole country. No doubt the report of the Royal Commission on these acts was intended, not merely for the information of the Government, but of Parliament and the whole country, and it appeared to the Government that at this period of the session it would be impossible to give due time for the consideration of the report by the Government or the country, so as to introduce lasting legislation on the subject, and it was, therefore, not the intention of Government to bring forward a bill during the present session. Under one set of circumstances it would have been their duty to do so. Had the statements which had been so frequently made, and to which much of the deep and strong feeling which undoubtedly existed in the country was owing, been confirmed by the report of the Commission—had it been shown that those outrages which had been complained of had been committed, it would have been the duty of Government under almost any circumstances to have introduced a measure to repeal an act capable of such abuse. But he might be permitted to read the words of the report:—“We generally find that the result of our inquiries has been to satisfy us that the police are not chargeable with any abuse of their power, and that they have hitherto discharged their difficult duty with moderation and caution.” Now that feeling was unanimous, and examination of the evidence showed, as he was happy to state, that not only had the statements been grossly exaggerated, but that a great many of them were sheer inventions. The House would see that the substitution of any legislation which would require, both from Government and the House, deep and anxious consideration, was a subject which could not be undertaken at present.