Within four months I operated upon her five times. The bony ankylosed ankle was first straightened by the removal of a large wedge with its base obliquely outwards. Next a wedge was removed from the left knee; then pseudarthrosis of the left hip by removal of trochanter and neck and muscular interposition was performed. The right knee was next straightened by a similar operation to that performed on the other knee, and finally a transtrochanteric osteotomy of the right femur completed the scheme.

All the wounds healed by primary union, and in less than six months after the last operation the patient was walking short distances painlessly, only aided by two sticks.

I mention such cases in order that it may be realized that it is a mistake to strike a minor key. The weakest of such cripples—rejected, helpless, and hopeless—seem to be specially endowed with strength when they see salvation at hand.

There is still another operation to which I would draw attention, and that is the transplantation of whole joints in the place of exsected and diseased ones. Only a few months have passed since this operation was performed, and, as we know in the case of Gluck's ivory joints, some of which remained *in situ* for over twelve months and subsequently become extruded, it is necessary to withhold our judgement. The experiment is extremely interesting, and is an eloquent tribute to surgical ambition. Already this operation has been performed on five or six occasions, and I will describe the transposition by Lexer of a complete knee-joint.

The patient, a girl aged 18 years, was the subject of ankylosis of the knee, the result of a purulent osteomyelitis of the femur. The joint was acutely flexed. An anterior flap incision was adopted with its base above the femoral condyles and its lower border below the tuberosity of the tibia. The flap included all the soft parts—the detached ligament of the patella, the remainder of the joint capsule, and the ligament, as well as the muscular attachments. The patella which was chiselled from the femur formed also part of the flap. All lateral and posterior attachments were carefully removed from the bone, and remained in their entirety attached to the popliteal structures. Simultaneously an amputation was performed through the thigh in a patient suffering from senile gangrene. The knee-joint, including the semilunar cartilages, the epiphyses, and the crucial ligaments was removed from the amputated limb and transplanted into the gap formed by the exsection of the girl's knee. Some trimming was necessary to make the parts fit, and the ligament of the patella was fixed to the tubercle of the tibia. The femoral and tibial epiphyseal portions were fixed by nails. Lexer, however, omitted to cover the new patellar surfaces which become united with the femur; months later it was necessary to cut down and remove the patella. This gave an opportunity for the examination of the epiphyses, which were found firmly united. The union was so complete that it did not allow a trace of motion. The semilunar cartilage and crucial ligaments were preserved; the articular cartilages were smooth without fibrillation. Around the joint a connective tissue callus had formed, containing the remains of ligaments and capsule, as well as tendons. The question naturally arose, Had the joint obtained life? A spicule of bone was removed containing a piece of cartilage, the spongy portion of the epiphysis, and the connexion of this with the old tibia, and on the outside the periosteal covering of the transplanted bone. Microscopic examination revealed firm fibrous and bony union, also new vessels and bone lamellae in the medullary spaces.

In another case the upper third of the tibia was exsected for an endosteal sarcoma and a transplantation made to fit the gap. Union occurred here also.

It is premature to discuss the subsequent history at so short a date. It may be mentioned, however, that both limbs could bear the weight of the body during standing and walking.

It will be of interest to watch the later progress of these and similar cases and to study the physiological questions involved. Can a joint transplanted live indefinitely, perform its natural functions, and alter so little in form and structure as to adapt itself to weight and function?

By the death of Miss Mary Hezmalhalch, of Felliscliffe, Yorkshire, certain dispositions in the will of her brother Joseph, who died some thirteen years ago, have now become operative. The Harrogate Bath Hospital, the Yorkshire Deaf and Dumb Institution, the Leeds Deaf and Dumb Institution, and the Harrogate Cottage Hospital each receive a sum of £1,000, and the Leeds Hospital for Women and Children half that sum. The principal beneficiaries, however, are Leeds Infirmary and Leeds Dispensary. The former receives three-fourths of the residue of the estate, and the latter the remainder. Such residue seems likely to amount to a sum of over £25,000.

A Clinical Lecture ON ARTHROTOMY OF THE KNEE

FOR THE

REMOVAL OF INFLAMED SYNOVIAL FRINGES
AND OF THE PADS OF MALGAIGNE.

DELIVERED AT ST. BARTHOLOMEW'S HOSPITAL.

By C. B. LOCKWOOD, F.R.C.S.,

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My lecture to-day is based upon operations performed for the removal of inflamed synovial fringes from the knee joint and of certain pads of fat, which have hitherto received little attention. Ordinary cases of slipped, dislocated, or broken fibro-cartilages will not be referred to. I cannot help regretting that, owing to the calls upon my time, I have been unable to read the later literature on the subject, and therefore my remarks will be founded upon my own experience, which, after all, is for you the best and most instructive.

I advise you to be very cautious in making statements as to what you think has happened within an injured knee, but this advice, of course, applies to everything you are unable to see. As a rule, inflamed and enlarged synovial fringes are mistaken for some fault in the fibro-cartilages or for a loose body within the joint. The reasons for this are that clinically there is a close resemblance. The enlarged synovial fringes are apt to get between the articular surfaces and trip the patient up, and, moreover, as you are aware, a slipped, dislocated, or broken fibro-cartilage is usually associated with pain at the inner or outer side of the knee, and pressure over the inner or outer fibro-cartilage is accompanied by tenderness. When you remember how close the ligamentum alaria, usually at fault, are to the fibro-cartilages, it is easy to understand that pain or tenderness felt in them is usually attributed to the former, but, as a rule, the situation and extent of the tenderness ought to put you on your guard. The pain and tenderness of inflamed alar fringes is usually felt close to the edge of the ligamentum patellae. The following is a case in point:

A middle-aged gentleman, who, by-the-by, was very gouty, was sent with the usual history of having dislocated his internal semilunar fibro-cartilage. But pressure on the edge of the fibro-cartilage in front of the internal lateral ligament failed to elicit the usual pain or tenderness. On the other hand, rather acute pain and tenderness were to be found internal to the ligamentum patellae and in the situation of the internal alar ligament. There was, moreover, a slight swelling at that spot. When the joint was opened by an internal vertical incision, the internal alar ligament was found to be inflamed, swollen, and elongated, and situated between the internal condyle of the femur and the tibia, so that it could be easily squeezed. This explained the pain which the patient felt when he extended the tibia on the femur, and which entirely disappeared after removal of the inflamed fringes and of some of the fat. One would prefer not to perform arthrotomy upon gouty patients, but in this instance the pain and discomfort were spoiling the patient's life and preventing him from doing many things which he wished to do.

The following is an instance in which inflamed synovial fringes were mistaken for a loose body in the knee-joint: A footman was suddenly tripped up by something within the knee-joint. This occurred more than once, and ended in him falling downstairs whilst carrying a tray. When he first came under observation he had synovitis of the knee, with a moderate amount of fluid in the joint. He gave a most graphic account of a loose body which could be felt sometimes at the inner and sometimes at the outer side of the knee, and before the operation this is said to have been felt by the House-Surgeon and others. However, when the joint was opened, some fluid escaped, and although the joint, and all its pouches, was explored over and over again with a bullet scoop, no loose body could be discovered. Whilst making this exploration I could not help being struck by the extraordinary extent of the synovial pouches. Those of the vasti reached at least

one-third up the thigh; those behind the condyles, too, were very extensive, and also the one along the tendon of the popliteus. Although no loose body was discovered, the ligamenta alaria were inflamed and enlarged, so that they could easily have intruded themselves between the articular surfaces. Therefore they were freely removed.

It is not probable that a loose body was overlooked, because the patient came again more than eighteen months after the arthrotomy. His knee had given him no further trouble, and he wished to leave off an apparatus which he had been advised to wear, because we feared that after the synovitis he might have had some relaxation of ligaments.

I propose now to tell you some of the causes of inflammatory enlargements of the synovial fringes, and traumatism should, I think, be put first.

For instance, a young woman wrenched her right knee whilst mounting a horse. This was followed by an attack of synovitis, and afterwards the knee used suddenly to give way. On each occasion the giving way was followed by synovitis. I saw her soon after one of these accidents, and in addition to the swelling of the knee-joint there was distinct bruising at the inner side of the ligamentum patellae. The knee-joint was explored by the usual vertical incision, and the inflamed, enlarged, and elongated ligamentum alaria was pulled out from between the condyle of the femur and the tibia, and removed. The history of this case is clear. Sudden nipping of the alarial fringe between the femur and tibia, an effusion of blood into it, clotting of the blood, and then an attack of inflammation such as is always caused by the presence of a clot in any part of the body. The term "sprain" is to my mind vague and unscientific, but I suppose that this is what happens when a person is said to have sprained a joint. An injury to a part of the synovial membrane, to the capsule of the joint, or to one of its ligaments, causes an effusion of blood, clotting of the blood, and then an attack of inflammation. If in cases of so-called sprain you make a diligent search, you will as a rule discover some bruising. It is to be remembered, however, that the bruise may not appear because the blood may be within the capsule of the joint, or beneath the deep fascia of the limb. In a little while I shall refer to a case in which I could not help suspecting that the inflammatory enlargements of synovial fringes had been caused by the presence of tubercle bacilli. The patient had what I believed to be tuberculous scars upon the neck. There was a strong history of tubercle in his family, but, although the most diligent search was made, we could not obtain scientific evidence of the presence of tubercle bacilli. As you are aware, in slight and very chronic cases of tubercle, it is often most difficult to discover the microbe.

We are on more solid ground when we attribute the inflammatory enlargements of synovial fringes to the presence of loose bodies within the joint. For instance, a man aged 30 came with considerable effusion within his knee-joint. He said that this had come on after a fall. In spite of rest and the usual treatment the effusion persisted, but at last a loose body was discovered slipping about within the joint. When the joint was opened a loose cartilaginous body was removed, and a second one was found attached to the inner side of the patella by a short stalk. The synovial fringes were inflamed and considerably enlarged, so that as a matter of precaution they were excised. The result was entirely satisfactory.

In another patient the clinical symptoms led to the belief that the patient had displaced or broken the external fibro-cartilage of his left knee. The fibro-cartilage was found detached and displaced, and in addition the alarial fringes were inflamed and considerably elongated. They were taken away, because it seemed likely that they could intrude between the articular surfaces. Presently I shall mention cases in which the synovial fringes were inflamed and enlarged in cases of osteo-arthritis, and I should not dismiss from my mind the possibility of them becoming enlarged in sarcoma of the synovial membrane. I have only seen two examples of this very rare disease. Finally, the synovial fringes become gradually enlarged in that curious disease, villous synovitis. I remember opening the knee-joint of a woman by a transverse incision through the ligamentum patellae and clearing it of quantities of fringes, which were enlarged, and looked like mucous polyps of the nose.

I now come to the second part of this lecture, which relates to inflammation and enlargements of the pads of Malgaigne. Eight years ago I began a paper on this subject, but I regret not to have had leisure to finish it or to dip deeper into the subject. I have long been aware of the existence of small adipose pads immediately above the articular surface of the femur and on either side of the upper end of the patella. I suppose they may afford some support to the patella in its highest position during the extension of the leg. I was long in finding any reference in medical literature to these pads of fat, which I had on more than one occasion mistaken for a loose body within the joint; but at last I have found that Tillaux,¹ in his admirable treatise on topographical anatomy said they had been described by that excellent surgeon Malgaigne. Malgaigne² gives a very clear description of these pads of fat in his work on surgical anatomy published in 1859, and he speaks of them as "*mon flocon adipeux*," and I venture to suggest that in future they be called the pads of Malgaigne. What he says about them is most interesting. He remarks that for some time Marjolin had noticed a tumour at the inner side of the knee in cases of hydrarthrosis. This tumour was quite distinct, circumscribed, rolled under the finger, and had in fact all the characteristics of a foreign body in the joint, except that it was always found in the same spot in spite of its apparent mobility. Clearly Malgaigne was well aware that this pad of fat might lead to error, and indeed he goes on to say that clever surgeons had thought it was a foreign body, and had wished to open the joint in order to extract it—a dangerous proceeding in those days. Thus Malgaigne came to the conclusion, after palpating his own knees, Marjolin's knees, and the knees of his pupils and patients, that every one possesses these little false tumours, also that their size depended upon the state of the joint. Inflammation caused them to swell, but they shrank again when it subsided.

I see that Mr. Henry Morris³ in his excellent work on the *Anatomy of the Joints* depicts these pads in one of his plates.

The authors of *Quain's Anatomy* say that folds of synovial membrane containing fat "fill the angular spaces left by the separation of the articular surfaces in different positions of the joints, and similar adipose folds or pads are found within the capsule, corresponding to hollows formed by the bones in the neighbourhood of the articular surfaces." Sir George Humphry, who wrote so admirably upon the human skeleton and joints, seems to have been unaware of the existence of these pads of Malgaigne.

I will now narrate some of the cases in which I have met with an enlargement of the pads of Malgaigne during operations upon the knee.

Some years ago I opened the knee-joint of an elderly lady to remove a number of foreign bodies which could be felt around the patella and around the articular surfaces of the femur. She had advanced osteo-arthritis of the knee, and one would not willingly have performed an operation upon her, but unfortunately these enlarged fringes got between the articular surfaces and tripped her up. Once this accident occurred whilst she was crossing a busy thoroughfare, and she fell down and was nearly run over by an omnibus. Clearly, as apparatuses were of no avail, she was condemned to remain at home unless something was done. And here I may advise you always to try and have a good reason before you perform arthrotomy. These are some of the reasons which have guided me:

A gentleman was crossing the street when his inner fibro-cartilage slipped, and he fell down and was nearly run over. Another was canoeing in the Fraser River when he was turned out and had to swim. The internal fibro-cartilage of his knee slipped out again, locked his knee, and he was nearly drowned. An engineer was walking along a railway bridge when his internal fibro-cartilage slipped out and locked his leg. To his horror he heard a train approaching, and with difficulty he managed to escape.

Now to return to the lady with an enlarged pad of Malgaigne. An incision was made at the inner side of the ligamentum patellae and two cartilaginous fringes were taken away; but, in addition to these, a loose body of considerable size could be felt slipping about above the trochlear surface of the femur, and just above and external

to the patella. This was cut down upon, and was found to be a pedunculated fatty tumour, attached to the front of the femur by a broad pedicle, and which had obviously originated in the external pad of Malgaigne. This polypoid piece of fat had obviously pushed the synovial membrane before it into the joint. It was so movable that it slipped away from the fingers with the characteristic suddenness of an enlarged synovial fringe or of a loose body, and it could be pushed beneath the patella. It was, however, always to be found near the same place. Its pedicle only contained minute vessels, so that no ligatures were required. One of my fears in removing these synovial fringes is lest blood should be effused into the joint. It is hardly necessary for me to repeat that, if this were the case, the blood would of necessity clot, would surely cause an attack of synovitis, and might lead to suppuration. When there is the slightest chance of such an occurrence, I do not hesitate to leave a drainage tube in the joint for forty-eight hours. The ultimate result of this operation was completely satisfactory—at all events the patient was very pleased.

I was deceived by the pad of Malgaigne in the case of a young gentleman, 21 years of age, who said that he had "sprained his right knee on various occasions whilst playing football and tennis." At the time of the accident he suddenly fell down, the knee became fixed in the half-flexed position, and was straightened with difficulty. The accident was followed by synovitis, which kept him in bed for days or weeks. As usual, this internal semilunar fibro-cartilage was supposed to have been damaged. When seen by me the movements of his knee-joint were free, but a slight swelling could be felt near the internal fibro-cartilage, and this area felt hard, and was tender. Enlarged synovial fringes could be felt over the inner condyle, and a loose body above the external condyle of the femur. On one occasion his joint "went wrong" whilst he was in bed. After that he wore a Thomas's knee splint and never moved the joint. This is the case which I have mentioned to you before, and in which there was a suspicion of tubercle, because he had scars upon his neck which were suggestive of suppuration such as occurs in tuberculous glands, and also he had a rather forbidding family history of tubercle. The knee-joint was opened by the usual internal vertical incision, and nothing could be found wrong with the internal semilunar fibro-cartilage. But the alar fringes were greatly elongated and enlarged, some being as much as $\frac{3}{4}$ in. long. Eight were removed. Afterwards the loose body felt above the external condyle was explored by another incision, and was found to be a small lipoma projecting into the joint; this, too, was removed. As I have said, every effort was made to ascertain whether this condition was due to tubercle. The ultimate result was quite satisfactory. Perhaps one may venture to surmise that even if the condition had been tuberculous, the arthrotomy may have been as beneficial to the joint as laparotomy is in cases of tuberculous peritonitis with effusion.

Finally, I will mention the case of a young gentleman, aged 21, who on clinical grounds was thought to have displaced the internal fibro-cartilage of his knee at football. But in addition to the ordinary symptoms of an injured internal fibro-cartilage, a loose body could be felt above the external condyle of his femur and outside the patella. When the knee-joint was opened by the internal vertical incision, the internal fibro-cartilage was found to be torn off and dislocated, and was removed. Perhaps I ought to pause and tell you that, although I have made every effort, I have hardly ever succeeded in removing the posterior part of these damaged articular cartilages. I have had special levers and special scissors made and have placed the joint in all sorts of positions, but I have seldom succeeded in removing the whole cartilage. I have often wondered how other surgeons manage when they say they have removed the articular cartilage; but I have never had reason to think that the piece left behind caused the patient any trouble whatever. But to return to the case of this young man. After removal of the internal fibro-cartilage, the loose body above the external condyle was cut down upon by another incision, and was found to be a piece of fat outside the synovial membrane, but projecting into the cavity of the joint. It was taken away.

These three are the cases in which I have been deceived by inflammatory enlargement of the pads of Malgaigne.

In conclusion I wish to advise you never to minimize the dangers of arthrotomy. These dangers are three.

First of all the danger to the knee-joint, for if suppuration occurs, it may lead to destruction of cartilage, and the knee will inevitably become stiff. Next the danger to the limb, for severe and prolonged suppuration in the knee-joint may necessitate amputation. And, finally, a danger to the life of the patient, for who can with certainty guide the course of these dire forms of infection?

In the course of a long series of arthrotomies I have twice had disasters. I once, after a great deal of consideration, removed the internal semilunar fibro-cartilage of a young lady because it tripped her up, and was a source of danger to her. The operation was uncomplicated, and the patient did exceedingly well until she got a sore throat, became covered with a rash, and probably suffered from some form of scarlet fever. At this period the knee-joint became acutely inflamed, and I there and then put in a drainage tube. This was followed by some amount of suppuration within the joint, but without destruction of cartilage, and by dint of continuous massage and repeated movements we ultimately secured a perfectly movable joint, with which she could skate and dance, and, I am thankful to say, walk without a limp. And now, if you will go into Harley Ward, you will see there a man who has suppuration in his knee-joint after the removal of dislocated fibro-cartilage. He had returned from the West Coast of Africa in order to have his fibro-cartilage removed. This was necessary because it locked and prevented him from following his occupation. At the operation nothing but a pair of forceps and a pair of scissors were introduced into the joint. He immediately began to have most severe attacks of malaria, during which his temperature went up to 105° F., and everything became drenched with profuse perspiration. In spite of this his knee-joint appeared to be perfectly well, and for four days after the malaria his temperature and pulse were normal. Then the sutures were removed, and a fresh outburst of malaria occurred with acute synovitis in his knee. A drain was put into the outer side of his knee-joint, which was found to be infected with *Staphylococcus aureus*. I am thankful to say that this acutely septic condition has now subsided, and I hope and trust that he will get off as well as the young lady to whom I have referred. But who can say that his clean operation cases will never be marred by these disasters?

REFERENCES.

- ¹Tillaux. *Traité d'anatomie topographique*, Paris, 1897, fig. 287, p. 1054. ²*Traité d'anatomie chirurgicale*, second edition, Paris, 1859, vol. ii, p. 803 et seq. ³*The Anatomy of the Joints of Man*, by Henry Morris, London, 1879, plate xxxii, p. 350.

THE United States Congress has allocated the sum of £5,000 for the expenses of the Congress of Hygiene and Demography, which is to be held in Washington next year. All the nations of the world have been invited to send delegates.

A REMARKABLE case of poisoning by the common honeysuckle of our hedgerows (*Lonicera periclymenum*) has been reported (*Nordisk medicinsk Arkiv*) by Dr. O. Hanssen of Christiania. A child aged 2 was playing with honeysuckle flowers at 11 one morning. At noon, as he seemed sleepy and tired, he was put to bed. An hour later he awoke with a flushed face, and asked for a drink; immediately after he fell into a comatose condition, with his eyes half open; from time to time his limbs were agitated by clonic spasm. At 4 p.m. his bowels acted, and in the stool two honeysuckle flowers were seen. In the evening he had a sharp attack of diarrhoea; the spasms became stronger and more frequent, affecting all four limbs, and on one occasion there was well-marked opisthotonos. His expression was placid but fixed, his face livid; the pulse and respiration were quickened. At 8 p.m. the spasms diminished, and copious perspiration broke out; the child fell asleep, and remained sleeping all night. The next day he was peevish and depressed, had no appetite, and the stools were irregular, but he made a good recovery. The *Pharmacopée Universelle* states that the stalks, leaves, and flowers of *Lonicera periclymenum* have been used in medicine as a slight astringent and tonic, and that it was formerly used as a constituent of gargles. A formula for a syrup (syrupus caprifolii) is given, made by infusing 4 lb. of fresh petals in 8 lb. of boiling water, to which, after filtering, double the quantity of white sugar is to be added.