strongly suggestive of the faucial tonsils being more often a source of infection than the adenoids. In tuberculous disease of the upper deep cervical glands the faucial tonsils have an importance not hitherto well enough recognized or understood. The position of the tonsils at the entrance to the digestive tract favours infection more with food than with inspired air, a fact of great consequence in considering the frequency with which cervical glands in children harbour the bovine type of tubercle bacillus. Furthermore, the very direct and short pathway between the tonsils and the tonsillar lymphatic glands explains the frequency with which well marked tuberculous of these glands may be secondary to a small focus in a tonsil.

Lesions in the Tonsil.—I have investigated the faucial tonsils from 64 consecutive cases of children suffering from tuberculous disease of the upper deep cervical glands; 24 (37.5 per cent) of these cases showed histological evidence of tuberculous in the tonsils. There are no clinical signs by which the condition can be recognized. In the majority of cases the tonsil retains its normal appearance, is small, and frequently receding. Occasionally the tonsil is flat and its surface fissured, or it may be hypertrophied, the external surface showing no ulceration. The chief sites for tuberculous lesions in the tonsil are:

1. Surrounding the deeper parts of crypts, especially the supratonsillar group.

2. Immediately under the mucous membrane near the mouths of crypts.

3. Deep in tonsil, close to posterior capsule.

The lesions may be localized or generalized.

Experimental inoculation of guinea-pigs and rabbits with pieces of tonsillar tissue yielded positive results in 19 cases (30 per cent.), and of these the bovine bacillus was present in 12 cases and the human in 3 cases.

I have also investigated the hypertrophied faucial tonsils removed from 90 children, in whom the cervical glands showed no clinical evidence of tuberculous disease; 6 (6.5 per cent.) of these hypertrophied tonsils gave histological evidence of tuberculous disease, while 9 (10 per cent.) yielded positive results when inoculated into guinea-pigs. The bovine bacillus was present in 3 cases, and the human in 1 case.

GENERAL CONCLUSIONS.

Cow's milk containing bovine tubercle bacilli is clearly the cause of 90 per cent. of the cases of tuberculous cervical glands in infants and children residing in Edinburgh and district, and is responsible for by far the larger proportion of tuberculous cervical glands in children during the milk drinking period of life (0 to 5 years).

The concentration of attention on the existence of human sources of infection has in the past quite overshadowed the evidence that the drinking of milk is an important factor in the infection of children with tuberculous. Having demonstrated that a larger percentage of cases of tuberculous cervical glands in children is due to the bovine tubercle bacillus than previously believed, the need for immediate action is evident and becomes an absolute necessity.

Bovine tuberculous can, therefore, no longer be considered a negligible factor in respect to the spread of tuberculous amongst children, more especially since unsterilized cow's milk in this country is a vehicle by which tubercle bacilli must most frequently be introduced into the bodies of children.

The powers at present vested in our local authorities are grossly inadequate, and it seems to me to be our special duty to endeavour to prevent this enormous and entirely preventable amount of tuberculous amongst children. It is a national problem, and the earlier it is faced the more easily will it be solved.

That measures for the protection of children against infection with the bovine virus are indispensable is an indisputable fact. Whatever powers may be given to the local authorities, they must, to be effective, be so framed that their application throughout the United Kingdom will be uniformly compulsory. I am convinced that the Tuberculosis Order (1913) would in conjunction with the Milk and Dairies Bill (if passed) result in a marked diminution of abdominal and cervical gland tuberculous in children.

Until the proper legislative measures are obtained it is imperatively necessary for the public to sterilize cow's

milk for the feeding of children. I think there has been an unfortunate prejudice in this country against the sterilization of milk.

Regarding the channels of infection, the faucial tonsils have in tuberculous of the upper deep cervical glands an importance not hitherto well enough recognized or understood—that is, they act not only as most frequent portals of entry for the tubercle bacillus, but in a large proportion of cases a well-marked tuberculous of the upper deep cervical glands is secondary to a small tuberculous focus in the tonsil. The high percentage of faucial tonsils in which the bovine virus was present is further striking proof of the frequency of tuberculous cow's milk as a source of infection.

The results of my investigations are widely different from those of investigators in other countries, but I believe they can be verified by the recognition of several correlative factors: (1) The age of the patients; the importance of investigating a large number of consecutive cases of the disease in young children has not been sufficiently recognized. (2) The family history of tuberculous. (3) The almost universal practice in Scotland of feeding children with unsterilized cow's milk. (4) The great prevalence in Scotland of tuberculous in dairy cows, and, in conjunction with this, the present very inadequate veterinary inspection and the gross ignorance of the dairy farmers in matters relating to bovine tuberculous. (5) The fact that about two-thirds of the Edinburgh daily milk supply comes from small byres situated in rural districts round the city, where there is practically no supervision. Greater facilities of infection with the bovine virus are thus afforded in the country compared with the town. Of the children in my series harbouring the bovine tubercle bacillus, almost 50 per cent. had been born and brought up in the rural districts round Edinburgh.

Further, I claim that there is the greater likelihood of a more accurate interpretation of the bacteriological findings if the investigator possesses a combined pathological and clinical experience, and entirely controls the various branches of the investigations.

In conclusion, I have to thank Professor James Ritchie and Mr. Harold J. Stiles for much valuable advice in these investigations.

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TORN SEMILUNAR CARTILAGES.

BY

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For some years past I have been trying to discover exactly how the internal semilunar cartilage is torn in the so-called internal derangement of the knee-joint, because the explanation usually given seems to me inadequate, and leaves out of account one of the two most important factors—namely, the strong action of the extensor muscles of the thigh in its production. Experience has shown me that no dislocation of the cartilage can take place without the meniscus (Gk., “a crescent”) being torn. Therefore the name “torn menisci” (BNA), or “torn semilunar cartilages of the knee-joint,” should replace “dislocation of the semilunar cartilages,” just as the latter, as our knowledge of the subject became more definite, displaced Hey's original term “internal derangement of the knee-joint” (1782). There can be a tear without displacement, but no displacement without a tear. Statistics show that the internal (or medial) cartilage is torn twelve times as often as the external, for reasons

anatomic, which must, for the purpose of this paper, be enumerated and shortly described.

The Anatomy.

The outer convex border of the internal semilunar cartilage (median meniscus) is attached to the capsule of the joint by the coronary ligament, the fibres of which are longer in its anterior half than those in the posterior half; the result of this arrangement is that the slender anterior half of the cartilage is more loosely attached to the capsule and therefore has more play than the posterior half, which is comparatively firmly and closely adherent to the capsule, especially where the latter is blended with the fibres of the internal lateral (or tibial collateral) ligament of the joint. The external cartilage is not attached to the capsule.

The tendon of the quadriceps extensor femoris is inserted into the patella, and the muscle sends two strong fibrous expansions, one on either side of the knee-cap, to blend with the fibrous capsule of the joint and to be inserted finally into the upper end of the tibia. This fibrous expansion on the inner side fills in the interval between the patella and the internal lateral ligament, and is now called the retinacula from the vastus medialis (BNA). By means of these bands, when the patella is pulled upwards by the contraction of the extensor, the capsule of the joint is also pulled upon directly and rendered taut, as may readily be seen and felt by the surgeon placing his fingers on both sides of the patella of a patient and getting him voluntarily to contract the quadriceps. Thus it happens that with the leg in a straight line with the thigh when the extensor muscle contracts the joint capsule is pulled tight, and through the attachment of the latter to the internal meniscus the internal cartilage is drawn away from the centre to the periphery of the articulation and kept immovably fixed there out of harm's way. Once during an operation on the knee I witnessed this action of the vastus internus when it was stimulated to contract by a faradic current. Should the action of the muscle be very violent during this extension, *with the leg straight*, the patella may be fractured across but the meniscus is never torn. In full extension the capsule is taut, the cartilage is at the periphery of the joint, and the bones are "screwed home" and locked, and then no rotation of the tibia on the femur is possible, though a slight rotation inwards of the thigh on the leg takes place as the last stage of extension is being effected.

The Mode of Production and the Nature of the Injury.

When the joint is partly flexed or bent to a right angle, a different condition of the parts obtains. Then the capsule is relaxed, and rotation can take place; and when rotation of the femur inwards or of the leg outwards occurs, the medial meniscus in its anterior half (which has more play than the posterior half) is drawn obliquely across the articular surface of the tibia from the periphery towards the centre of the joint—it may be as much as $\frac{3}{4}$ in., as I have frequently demonstrated to onlookers at operations on the joint. This occurs (1) owing to the insertion of the anterior horn of the cartilage into the front of the tibia, and (2) because the posterior half is closely attached to the internal lateral ligament, and moreover (3) cannot be drawn into the interior of the joint on account of the posterior parts of the articular surfaces of the femur and tibia being in close apposition. Therefore, when the knee is bent and the leg rotated outwards (or the thigh inwards), the capsule being loose, the anterior half of the cartilage is obliquely stretched across the articular surfaces immediately in front of those parts of the internal condyle and head of the tibia which are in close contact. Should now a sudden extension occur the cartilage is nipped between the two opposing articular surfaces* and becomes a fixed point, and as extension of the limb rapidly proceeds, the capsule is forcibly pulled outwards by the contraction of the quadriceps, and as the cartilage cannot follow, a rent in its substance occurs, generally either near its attachment to the capsule and antero-posteriorly, or through its substance in the same direction or transversely, or one or more of its three

anterior attachments are wrenched off or torn through. These are the commonest injuries, though others occur. And this is exactly what occurs in nearly every injury of the joint in which the medial meniscus is torn, as the brief notes of some of my cases which are given below show. These cases have been selected from my list because the notes show in sufficient detail the nature of the accident and the lesion found at operation. In nearly all there has been a violent twist of the thigh inwards (or leg outwards), with the foot more or less fixed and the knee more or less bent, and the patient falls. When he feels himself falling an unconscious and spontaneous effort occurs to save himself, therefore a sudden contraction of the extensor muscles of the thigh takes place and the cartilage is torn; without the capsule and cartilage being pulled outwards the meniscus would be bruised only, not torn; and without rotation in the joint—that is, with the leg straight—the patella alone would be broken across. It is quite true that the patient never says he tries to save himself from falling by contracting his thigh muscles when a torn cartilage occurs; neither does he make a similar statement when fracture of the patella occurs. But that this attempt to prevent falling must occur is, I think, sufficiently obvious.

Hitherto there have been two theories of causation of this injury advanced:

1. The old statement that it occurs with a violent twist with the knee flexed.
2. It occurs with the leg straight or being forcibly straightened.

My view tends to harmonize these divergent statements.

The sickening pain felt at the time of the accident is, of course, caused by the overstretching of the unyielding ligaments of the joint by the bones being forced apart by the gripped cartilage when the extensors contract. The accident is commonest in active muscular men, and in some occupations—for example, coal-mining and football playing. I have seen only one case in a woman.

The Diagnosis.

A certain diagnosis can often be made solely from the *history*. I prefer the word *history*, which means literally "a learning by inquiry," to its Greek fellow, *anamnesis*, which means "a recollection" (especially of a previous state), and which requires a mental effort to pronounce and to understand. In nearly every case we learn by inquiry that there has been:

1. A severe twist of the flexed knee or a severe blow on the side of the flexed knee, with or without the patient falling.
2. A sickening pain, and often a sensation of something having given way in the joint.
3. "Locking" of the joint, that is, inability to extend the limb (if the anterior part of the cartilage be torn) or, much less often, to flex it (if the rent is in the posterior half). The joint sooner or later goes straight of itself or by a special effort on the part of the patient, or is pulled straight by someone—generally with a feeling as if something had slipped into its place.
4. A temporary effusion into the joint (traumatic synovitis).
5. One or several recurrences of the above symptoms, especially of "locking" of the joint on slighter but similar accidents, such as slipping off a kerbstone, twisting the leg in walking, or even turning over in bed.

When the patient applies to the surgeon often nothing can be made out on examination of the joint except some tenderness over the injured meniscus—inner or outer, as the case may be. If the femur has been rotated inwards (or the leg outwards) almost always the inner meniscus will be found torn. If the rotation of the femur is outwards (or of the leg inwards) one cannot be so certain that it will be the outer meniscus that will be found ruptured (see notes of cases).

Treatment.

In working men there is only one treatment—operation.

My method is as follows: The patient is lying straight with the knee held acutely flexed, or he is in the Trendelenburg position. A tourniquet is applied. The skin is swabbed over with petrol containing $\frac{1}{2}$ per cent. of iodine to remove grease, and then painted with tincture of iodine, after which the joint is wrapped round tightly with four

* Recently I saw a cartilage which had been torn from the capsule and which was bruised and slightly torn across at the spot where it had been thus nipped.

layers of gauze wrung out of a solution containing spirit (70 per cent.) and mercury binioidide (1 in 1,000). A transverse incision is made to extend backwards from the inner border of the patellar tendon for 3 in. Sometimes it is necessary to have a good look round, to use a hook and to rotate the leg, before the lesion is discovered. The wound is closed in three layers, the two deeper always with iodized catgut. The interrupted sutures in the capsule are placed widely apart to allow of transudation of the synovia, which is poured out after the operation, to escape into the tissues outside of the joint and thus prevent the pain which arises from distension of the joint. No drain is inserted. I use either iodized catgut for the skin incision, or silkworm gut (sometimes intracutaneously), or Michel's clips. The skin is painted again with iodine, and gauze, wool, and a bandage is applied. No splint is applied; no sepsis occurs and the results are excellent. Only exceptionally is the patient slow in returning to work, and he is always a workman receiving payment under the Workmen's Compensation Act.

BRIEF NOTES OF CASES.

I. TORN INTERNAL CARTILAGES.

Case 1.

Operation No. 524. Horsekeeper (31). Fell and twisted right knee.
Right internal cartilage torn from capsule and anterior attachments.

Case 2.

No. 528. Student (18). Twisted knee while playing football.
Right internal cartilage torn from capsule and anterior attachments.

Case 3.

No. 660. Coal-miner (19). Fell whilst crossing a fence and twisted the right knee whilst the foot was fixed. Recurrent attacks of "locking."
Right internal cartilage was torn from capsule and its anterior attachments, and the anterior half was twisted on itself.

Case 4.

No. 752. Sea-going fireman (30). Twisted right knee whilst at work; still unable to extend joint fully.
Right internal cartilage torn from its attachments in anterior two-thirds and displaced inwards between condyle of femur and head of tibia. Note that displacement inwards of anterior part of cartilage prevents full extension. Compare Cases 5 and 6.

Case 5.

No. 765. Coal-miner (27). Twisted left knee. Could not flex knee beyond a right angle.
Left internal cartilage was torn from its posterior attachments and capsule; the cartilage was folded on itself so that its two ends were in contact with each other. Note that displacement of the posterior half of the cartilage prevents flexion. Compare Case 4.

Case 6.

No. 773. Coal-miner (39). Struck by a piece of coal on inner side of right knee and twisted joint. Could not flex knee completely.
Right meniscus torn in its posterior half and bent forwards exactly as in Case 5 (q.v.).

Case 7.

No. 823. Coal-miner (23). Whilst sitting hewing coal on his "hunkers" (that is, squatting) he screwed his body round to the left and suddenly felt a sharp pain on inner side of right knee, which was flexed at the time and became locked (that is, he could not extend it).
Right meniscus torn from its anterior attachments and from the capsule in its anterior half.

Case 8.

No. 838. Coal-miner (30). Whilst kneeling at work a fall of stone caused him to throw himself backwards, and (he thinks) to twist himself somewhat to the right. Pain in the left knee, which could not be straightened. Locking occurred several times subsequently. Tenderness over inner meniscus and on full extension.
Left meniscus detached from capsule, but still attached at each end and lying straight across joint antero-posteriorly and nipped between condyle and tibia (= bucket-handle displacement).

Case 9.

No. 868. Coal-miner (27). Was throwing "band" behind him to the left whilst in a stooping posture, with right knee slightly flexed and inverted; felt something snap in right knee.
Right meniscus torn across, causing a triangular gap near its anterior end.

Case 10.

No. 870. Coal-miner (20). Whilst running at football, right foot was caught in a hole in the ground; he flew suddenly on to his face. On rising he could not straighten his knee, which was painful and swelled. Later his foot turned over to the outer side, and the knee became locked.
Right meniscus was torn through three-quarters of an inch from its anterior attachment, and the torn part was turned up

against the anterior crucial ligament. (One of the three slips of attachment of the anterior horn blends with the anterior X ligament.)

Case 11.

No. 913. Dock labourer (43). Got right foot fast, and twisted the right knee "in over."
Right meniscus torn from its anterior attachments and projecting into the joint.

Case 12.

No. 924. Youth (21). Severe blow on outer side of extended right knee, twisting the joint in. Joint locked and swelled up for some days.

Right meniscus—a loose tag torn off anterior attachment.

Case 13.

No. 944. Driver (24). When going down three steps fell, but alighted on ball of right foot, twisting right knee inwards. Difficulty in straightening joint, which sometimes locked with pain, if when in bed the knee was bent and the foot twisted inwards.

Right meniscus was torn across three-quarters of an inch from its anterior attachment, and projected as a tag into joint from its anterior attachments.

Case 14.

No. 961. Coal-miner (33). Whilst holding up a beam with both hands above his head and standing on a step, he slipped off the latter and twisted his right knee inwards whilst slightly flexed. Movements limited.

Right meniscus torn across one and a half inches from the anterior end. The torn part, whose edges were rounded, projected into the joint.

Case 15.

No. 979. Coal-miner (23). Caught his left foot between a "roller bed and rail," twisted round to the left with the left leg bending under him, and he fell, and felt something "go" right through the joint. Cannot straighten the knee—frequent locking.

Left meniscus torn from its capsule in its posterior half (the whole cartilage was removed; the anterior crucial ligament looked only about one-third of its natural thickness, and the anterior tubercle and the intercondylar eminence in front of it was bare and rough, showing that part of the ligament had been torn off, though no tag could be seen. On opening the joint both cartilages appeared normal, but on twisting the joint the anterior edge of the posterior half of the inner cartilage was seen to project into the middle of the joint like the thin end of a wedge.

Case 16.

No. 1001. Rivetter (40). Slipped down 2 ft., with knees flexed and twisted around to right. Intense pain in left knee, and could not straighten it for forty-five minutes.

Left meniscus torn from its insertion in front of the tibial spine, and from the capsule in its whole length. On dividing the two remaining anterior attachments and pulling on the cartilage it "snapped" across the joint to the outer (lateral) side of the condyle, and was removed.

Case 17.

No. 1016. Coal-miner (21). Whilst lifting a heavy tub he twisted inwards the left knee, which was a little bent. Inability to straighten the leg and swelling followed. A month later, when kicking a football, the left leg gave way suddenly, and he fell. The joint swelled up again. A month later he trod on a stone, which rolled from under his foot; he slipped and fell with the left foot rotated outwards. The knee swelled up again.

Left meniscus was split in its middle third near its attachment to the capsule. The rent could not be seen until the anterior end was cut through and dragged upon, when the whole cartilage was readily pulled right across into the middle of the joint with an audible snap. The anterior crucial ligament was also torn through.

Case 18.

No. 1026. Coal-miner (31). Was buried under a fall of stone with the left knee bent in. Frequent locking.
Left cartilage torn near the capsule in its middle third.

Case 19.

No. 1034. Coal-miner (33). Knocked down by a pit prop striking him on the inner side of the right knee. Could not say if knee was twisted.
Right cartilage split lengthwise in its anterior half.

Case 20.

No. 1058. Coal-miner (31). Slipped off kerb and fell with left knee behind the right and bent. Felt "a crack" in joint and severe pain. Knee swelled. Was off work six weeks. Later left heel slipped off a sleeper and he fell on his left side and twisted the left knee, which was bent.

Left meniscus was torn from and near to the capsule in its anterior half.

Case 21.

No. 1117. Coal-miner (27). Whilst lifting a "tub" with hands behind his back, he twisted his body round to the left whilst his knee was bent. Severe pain and swelling. Could not straighten the limb. Several "lockings."
Left cartilage found split, with inner half displaced to the outer side of internal condyle.

Case 22.

No. 1165. Coal-miner (26). Whilst standing astride, a pony backed and struck the inner side of his left knee, and he fell, twisting round to the right with the left knee inwards. Felt severe pain and a "click," as if something slipped into its place on rising. A week later, whilst hewing coal, with the knees slightly bent and rotating the left femur inwards as he used the pick, he suddenly felt "something go out" in his left knee. As he straightened the leg with difficulty something slipped in again. The cartilage has been out five times altogether. The slightest twist now displaces it.

Left meniscus torn near its convex border from near the capsule = bucket-handle tear.

II. TORN EXTERNAL CARTILAGES.

Case 1.

No. 831. Coal-miner (22). Whilst lifting a tub (small wagon) with his hands behind his back and the knees flexed, he slipped and twisted round to the left on his left leg, which was fixed. He felt acute pain in the left knee, and something "gave" in it, and then he doubled up. The knee swelled, and he could not straighten the limb. Later he got the same knee jammed between a tub and a prop, when the knee was bent in, and it swelled up again. Knee can be fully extended, but not completely flexed.

Left outer cartilage was split across transversely at its middle and the posterior half projected into the joint. Note that rotation of the thigh *outwards* caused tearing of the *outer* cartilage, whilst rotation *inwards* causes tearing of the *internal* meniscus, and that displacement of the posterior half interfered with flexion.

Case 2.

No. 934. Ship's stoker (39). Whilst right foot was fixed and knee bent he was forcibly twisted around to the left. Pain over outer cartilage on full extension.

Right meniscus torn across about its middle. Anterior half removed. (This case is against the rule, but my cases of torn external cartilages are too few to reason from as to the exact causation.)

SUMMARY OF CASES.

Torn inner cartilages	...	...	22
Torn outer cartilages	...	...	2-24
Right knee	...	...	14
Left knee...	...	...	10

Ages.—18 to 48 years.

Sex.—Males, 24; females, 0.

Occupations.—Coal-miners, 15; football accidents, 2. The chief industries in this district are coal-mining and ship-building.

NATURE OF TEAR.

A. In Inner Cartilages (Total 22).

1. In posterior half only	...	...	3
2. Torn anterior attachments only	...	...	2
3. Torn anterior attachments and from anterior part of capsule	...	...	5
4. Bucket-handle tears—that is, from the capsule only:			
(a) In whole length	...	...	3
(b) In middle half	...	...	2
(c) In anterior third	...	...	1-6
5. Longitudinal splints in substance of cartilage	...	...	2
6. Transverse tears in anterior half	...	...	4

B. In Outer Cartilages (Total 2).

Both had transverse splits	...	...	2
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THE *Bulletin administratif du Ministère de l'Instruction publique* gives statistics as to the students in different faculties in France on January 15th, 1913. At that time the total number of students in the faculties of medicine was 8,247, consisting of 7,400 men, of whom 803 were foreigners, and 847 women, of whom 489 were foreigners. The total number of students in the schools of medicine was 1,497; of that number 1,287 were men, of whom 29 were foreigners, and 210 women, of whom 9 were foreign. These numbers are almost exactly the same as those for the previous year. For the several faculties the numbers were as follows: Paris, 4,211; Lyons, 1,055; Bordeaux, 751; Montpellier, 699; Toulouse, 346; Nancy, 306; Lille, 285; Algiers, 156. Of the various nationalities represented, the list was headed by the Russians, who numbered 831, of whom Paris had 585 and Montpellier 132. Next came the Turks with a total of 85, of whom 68 were studying in Paris and 11 at Montpellier. There were 67 Bulgarians—20 at Lyons, 28 at Montpellier, and 12 at Nancy. The Roumanians numbered 59, of whom 54 were studying in Paris and 5 at Montpellier. Of other nationalities there were 13 English and 24 Greeks in Paris, while the South American Republics were represented by 22, all in Paris.

A POSSIBLE FALLACY IN THE DIAGNOSIS
OF INTERNAL DERANGEMENTS OF
THE KNEE-JOINT.

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THE interesting abstract in the *EPITOME* of the *BRITISH MEDICAL JOURNAL* (November 15th, 1913, par. 255) of a recent article by Bahr¹ on spurs of the patella in relation to inflammation of the knee-joint, recalls some examples of a similar deformity which I have recently studied.

In few cases of displaced, loose, or fractured semilunar cartilages are all the prominent signs found. Allingham² recounted the classical signs as follows: Tenderness over the upper part of the tibia, fixation of knee in semiflexed position, inability to extend the knee though flexion is free and painless, cracking of the joint on movement, weakness on walking or supporting the body on the limb, rotation of the foot, and synovitis. In a summary of his cases he describes three varieties:

1. The internal or external semilunar cartilages may be torn away from their—

- (a) Anterior attachment.
- (b) Posterior attachment.
- (c) Coronary ligaments.
- (d) Coronary ligaments and anterior attachment.
- (e) Coronary ligaments and posterior attachment (rare).

The cartilage at its injured part is completely movable.

2. All or some of the attachments of the semilunar cartilages may have been stretched or partially ruptured.

3. Split cartilages.

Recent operative measures have shown the frequency of actual fracture of the cartilages, or in many cases of the existence of rheumatoid arthritis causing irregular projecting synovial fringes with fibrosis and irregular destruction of the cartilages, which easily become displaced over the typical lipping or moulding of bone of a "mushroom"-like form accompanying these changes.

In many cases pain in the knee is the chief symptom, drawing attention to deformity elicited on palpation from projection of a cartilage, or to rheumatoid change in the bones and joint with recurrent synovial effusion. In elderly patients it is always wise to look for rheumatoid conditions before diagnosing traumatic displacement, even when an injury first leads to the examination of the painful joint affection.

In three such cases seen recently operation showed little or no change in the interior of the joint, but there were periarticular rheumatoid affections of a spur-like character simulating it. The symptoms were pain, swelling, and clicking sensations on movement, and the condition was one resembling that got in *hanche* or *genou à ressort*, thickened bands of tendon or fascia gliding suddenly and precipitately over bony prominences.

The site was internal in all three cases, the tendon of the sartorius muscle riding upon a distinctly lipped portion of the inner border of the femoral condyle. Examination of the borders of the patella, tibia, and outer surface of the femur should in every case be made, and inquiry made into the condition of other joints. In the three cases—two males and one female—injury was adduced as the supposed cause; incipient rheumatoid arthritis was the real cause, and operation was beneficial in allowing the deformed spur of bone to be burred off, though signs of typical rheumatoid change were developed afterwards.

I believe such cases with *external* joint trouble, and others with typical *internal* mischief, often referred to internal traumatic damage, to be much more commonly the resultant of rheumatoid disease than is usually diagnosed. Sometimes they are due to exostoses, in other cases tuberculosis may be a factor. The importance of their clear recognition, especially in cases of compensation proceedings for injury, is obvious.

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