

CHRONIC SYNOVITIS IN
CHILDREN, ON AN HEREDITARY
SYPHILITIC BASIS.

by

ARTHUR MURRAY WOOD,

M.B., Ch.B., 1900.



CHRONIC SYNOVITIS IN
CHILDREN, ON AN HEREDITARY
SYPHILITIC BASIS.

Synovitis from one cause or another is only too frequent an occurrence in children, and often there is no doubt as to the cause of the condition. Yet there are cases one meets with every now and again which tax to the utmost the ingenuity of the medical practitioner to give a satisfactory explanation to the anxious parents, and at the same time honestly satisfy himself that his diagnosis is the true one.

As time goes on and as our pathological knowledge advances and our clinical acumen increases, some of these cases, so difficult to explain at present, will be put into their proper category. It is to one of those unusual forms of synovitis that I wish to refer, a form of synovitis usually found in children.

My/

My attention was first directed to this condition by Dr Thomson, while I was his resident at the Sick Children's Hospital, and I am deeply indebted to him and Dr Melville Dunlop for much valuable advice and the use of cases in the preparation of this Thesis.

Although all the large joints of the body may suffer from synovitis, yet the commonest one to be affected is undoubtedly the knee-joint. In this form of synovitis I am about to describe this holds good also, although it seems that other joints may also be affected and are not recognised at the time on account of the peculiarity of the condition.

Synovitis may arise from many different conditions. The synovial membrane may alone be affected, or the other structures of the joint may also be involved, then the condition is usually spoken of as an arthritis. The condition may be primary or secondary to changes in the surrounding structures, and it is often very difficult to make out whether the condition is purely a synovitis or only the prominent expression of some underlying condition.

One of the commonest forms of synovitis one sees/

sees in children is Traumatic. Here the history of injury, the sudden effusion, the red and painful joint all form a picture not easily mistaken.

One notices as one's experience enlarges the occurrence of a synovitis in the so-called exanthemata or infectious fevers. Too often is the diagnosis of Rheumatism formed and the nurse or the doctor blamed for carelessness, when the condition is really only a manifestation of the general toxæmia from which the patient is suffering. In Scarlet, Measles, Diphtheria, Typhoid, Pneumonia, and other specific fevers, one meets with a synovitis which although usually simple in character may go on to the formation of pus and end in the ultimate destruction of the joint. Here our knowledge that such a condition can occur, as an evidence of those fevers, along with the fact of its close association with them should help one to a diagnosis.

The synovitis of Rheumatism is rarely missed. Here the severe pain calls early attention to the joint and this, with the temperature, the acid sweating, the fibrous nodes, and the general appearance of the patient, form a clinical picture not easily/

easily to be mistaken for anything else. Now, thanks to the brilliant researches of Poynton and Paine, one can verify this diagnosis by finding the specific cocci in the blood, cultivating them, and reproduce the disease in animals.

Synovitis of a gonorrhoeal origin is also only of too frequent occurrence in children. Here the synovitis may assume many different forms, from the slight effusion to the chronic and even to the ^{sub}purulent condition. Usually the condition is put down to rheumatism, but the absence of sweating and fleeting character of the pain so characteristic in this disease, should make one doubt one's diagnosis. An examination for conjunctival and vulvar discharge will often clear up the diagnosis.

Probably the commonest cause of synovitis in children is the Tubercle Bacillus. A synovitis on a tubercular basis presents many characteristic features only too common to all of us. Here the history of some slight accident, the subsequent swelling of the joint, and may be some local tender point over the adjoining bone, or the thickened synovial membrane with the subsequent "starting" pains at night, and these along with perhaps some unmistakable/

unmistakeable tuberculous lesion elsewhere, form a picture which makes our diagnosis almost sure.

Although the diagnosis of synovitis of a tuberculous origin is often only too certain, yet there are cases where the synovitis is apt to persist for a considerable time and no further change seems to occur in the joint. Here the diagnosis is often very difficult, and one is apt to put the condition down to one of simple hydro-sarticulari were it not for the subsequent history and the fact that the synovial membrane sooner or later thickens and makes the diagnosis easier.

While the fact that tubercular disease of the joints in children is so common cannot be denied, yet it is certain that many cases of synovitis are put down to tubercle which claim their origin from other sources, and many cures of tuberculous joints are reported which owe their apparent success to the fact that the diagnosis was wrong in the first instance.

In this rapid and necessarily superficial resume of the condition of synovitis in children, we are struck with the many and varied causes at work. As our knowledge increases with the advance of science/

science, new conditions arise and what seemed simple before now becomes complicated; what we thought due to one cause only, now claims many agents as its originator. Yet of the many causes we have mentioned one is conspicuously absent. That is Syphilis. We have seen synovitis capable of being produced by many organised agents. Then why not the virus of syphilis? for an organism there certainly is, although not yet isolated and scientifically proved. Although it is not so long ago since the fact that syphilis could produce joint changes, was denied by men of the standing of John Hunter, Ricordi, and Von Zeiss, yet it is now conclusively proved, thanks to Virchow and others, that undoubtedly there are many conditions of the joints which are the direct result of the virus of syphilis. That the condition of syphilitic arthritis is rare, is true; yet it is commoner than one would think. This is accounted for by the fact that it is so often not recognised, and an affection of the joints whose specific cause is syphilis is attributed to some commoner origin, because the medical man confined himself too closely to the local condition, and did not take into account/

count the general state of the patient. If the fact that syphilitic arthritis is too frequently not recognised in adults is true, it is much more so in the case of children. This is well brought out in the paucity of recorded cases in medical literature.

It is true that the osteo-chondritis occurring in infancy, although rare, is seldom missed. Here, however, the child usually presents unmistakeable signs of syphilis in the occurrence of snuffles, the characteristic rash and sores, all coming on immediately after birth, make up a picture which gives at once the clue to the joint affection, should it arise.

It is not to this variety of syphilis arthritis I wish to refer, but to a form which occurs in late congenital syphilis, and the nature of which is often difficult to make out. While at the Sick Children's Hospital, Edinburgh, I was struck with a form of synovitis occurring in children about 8 years old. The knees were affected. The effusion came on insiduously and was painless. No cause was assigned for the condition. On first sight the child seemed quite healthy otherwise, but on closer/

closer examination, there was observed unmistakable evidences of late syphilis in "Hutchison" teeth, depressed nose, and periosteal thickenings. These signs threw light on the nature of the case and introduced me to a form of synovitis I was previously unacquainted with. On looking into the literature, I found practically nothing had been written on the subject, and the fact that a joint condition could occur as an evidence, and that may be the only one, of congenital syphilis was usually absent in the text-books on the subject.

Late Congenital Syphilis:

Before one can say that a joint affection is syphilitic in nature, one must first show the evidences of syphilis. Now in the later forms of that disease this is often very difficult.

The evidences of syphilis at a late period must depend on

- (1) Structural peculiarities, left as a result of secondary lesions.
- (2) Or the occurrence of new local inflammatory changes which are characteristic of syphilis.

Thus a child, who has suffered from infantile syphilis/

syphilis may show unmistakable evidences of that disease at a later period in the scarring round the mouth, the shape of the head, the sunken nose, etc.

But can a child, who has not shown evidences of infantile syphilis, develop lesions characteristic of that disease? This is analagous to the question - "Can a man have tertiary who never had shewn secondary evidences of syphilis?" Of the later question there is no doubt, and thanks chiefly to Jonathan Hutchison, there are certain manifestations of hereditary syphilis which occur at a late period, and may not be preceded by infantile syphilis, and are yet undoubtedly due to that disease.

These are deafness, "Hutchison's" teeth, interstitial keratitis, choroiditis, periosteal nodes on the bones, ulceration of the palate, and the occurrence of synovitis, usually symmetrical and usually affecting the large joints.

Deafness:

This usually affects both ears and may induce total loss of hearing in two months. According to Hutchison, it is due to disease of the internal ear or the auditory nerve. There is usually no previous/

previous history of otorrhoea or earache. No cause is given for it.

Interstitial Keratitis:

It is usually very characteristic. It begins with a cloudiness of the cornea which spreads till the cornea may have a complete ground glass appearance. There is usually great ciliary irritation. It attacks usually one eye first, then the other suffers similarly in a short time. The eyes usually recover, although nebulae may be left or only the brilliancy of health may be wanting.

Teeth:

Here the characteristic ones are the second set and especially the upper incisors. They are usually "dwarfed", too short, too narrow and display in the centre a single cleft on their free edge. The enamel may be deficient in the cleft. Only the two upper incisors can be relied on. Peculiarities in the other teeth are never trustworthy evidence of syphilis, if taken alone. The milk-teeth are never characteristic, but as a rule they decay rapidly in a specific child. Whether this may have something to do with the administration of mercury at an early period is difficult to say.

It/

It is exceptional to see characteristic teeth without some other evidence of late syphilis, although it is a fact that children with Hutchison teeth often do not show a typical syphilitic physiognomy. This may be explained by the children who have had infantile syphilis being treated and in them the teeth which is a manifestation of late syphilis is not occur.

Periostitis:

The occurrence of periostitis is very frequent. Nodes may be formed on many bones, especially the tibia and ulna. The periostitis, although it may go on to the formation of pus, is peculiar in that there is no new case formed outside the necrosed area.

Synovitis:

This is usually bilateral, affecting the knees, although other joints may be involved. Painless, feverless, and associated with Keratitis sooner or later. This will be described later on in fuller detail.

Having thus shortly described the chief signs of late congenital syphilis on which we must base our/

our diagnosis in the following cases, I shall describe some typical ones I have myself seen, and also give an analysis of cases I have gathered from the literature on the subject, and from records of others lent me by my friends. I shall also give an account of the post mortem changes found in one of my cases, who died while I was resident at the Edinburgh Sick Children's Hospital.

CASE I.

M.G. , girl, age 9, who was admitted complaining of a swollen left knee.

Family History: Syphilis denied. No miscarriages, 9 children, 5 dead. Patient 6th child. At birth child had snuffles and rash on buttock. Was treated then and been well up till the present.

History:

About one year ago mother noticed child's left knee was swollen. Child did not complain. No cause known for it. No pain. No attention was paid to it at first. Some days the knee was less swollen than on others. A doctor saw it after some time. He blistered it and painted it with iodine. No effect. No other joints swollen ever. Never/

Never had suffered from sore eyes. Came to hospital one year after knee first noticed to be swollen.

On Admission:

Girl was pale, with dirty white complexion. Vertex flat, forehead prominent, no rhagades. Bridge of nose broad, but not much depressed. No keratitis, no deafness.

Teeth: Girl had typical "Hutchison's" teeth, central upper incisors being dwarfed, pegged, separate and notched. Two of her lower molars were domed.

On her left shin, there was distinct periosteal thickening. No other nodes made out.

L.Knee: $11\frac{3}{4}$ inches round mid-patella. Distinctly swollen, skin normal colour. Temperature not raised. No pain to touch anywhere or on movements, which were normal. Synovial pouches distended with fluid. Synovial membrane seemed slightly thickened.

Rt. Knee: slightly swollen, slight amount of fluid present.

Treatment

Ung. Hydrarg. applied locally, while Pot.Iod. Gr.III. t.i.d. started.

Her parents took her out of Hospital after being/

being in only one week. No change noted in condition.

This was the first case of this condition I had ever seen and at first was very puzzling to me, until the nature of the synovitis was shown me.

CASE II.

A. B. L., boy, age 6. Complains of swollen knees, noticed day before admission.

Family History:

Father once suffered from rash. Six children. 2 still births. 2nd child is typical congenital syphilitic, has keratitis, rhagades, etc.

At birth patient was healthy and remained so until few days ago, when he complained of pain in leg. Mother took no notice of this, but on examining the boy yesterday, she found both knees swollen.

On Admission: Child looked fairly healthy. Nose was little broad. Eyes normal on admission teeth very carious.

Both knees very much swollen, patella floating. No tenderness on palpation. No redness. No pain on movement.

Treatment/

Treatment:

Ung. Hydrarg. locally to joints. Pot. Iodidi internally. The swelling of the knees went down under this treatment, but while child was in hospital he suffered from a typical attack of interstitial keratitis, atropine given. Child was three months in hospital. On dismissal, eyes almost better and knees seemed normal.

CASE III.

Wm. G. 7 years. Complaint is sore eyes and swollen knees.

Family history is satisfactory. No miscarriages. Child healthy at birth. No history of congenital syphilis.

History is that child complained of his knees three weeks ago. No injury. On examination both were found swollen. His eyes began to be painful at the same time. Right eye started first, then left eye the day after.

On Admission: Child was pale, delicate boy. Skin unhealthy looking. White silken scars on the abdomen. Bridge of nose much depressed. Upper incisors carious, lower incisors pegged, marked dome/

dome shaped molars. No rhagades. Eyes showed well marked interstitial keratitis. Pupils much contracted.

Knees - right $9\frac{1}{4}$ " ^{left 9"} around lower margin of patella. Both markedly swollen. Skin normal in colour, not hot. Not painful to touch. Movements seem normal and painless. No thickening of bone made out. Synovial membrane seems slightly thickened.

Treatment:

Blue ointment rubbed into knees, while Syrup Ferri Iodidi given internally. Atropine dropped into the eyes.

At the end of fifth month, eyes were almost cured, while knees still slightly swollen, but very much improved.

CASE IV.

J. H. Boy, age 4. Complaint, swollen knees for one month.

Family History:

One miscarriage before present child. When infant, child had "spots on the buttock", and a "dirty/

"dirty nose".

History: For last six weeks mother noticed child walking lame. He did not complain of any pain, but on mother looking, she found the right knee much swollen. Child quite well otherwise.

On Admission: Child looked fairly healthy. Head flat with "bossed" forehead. Bridge of nose very depressed. Eyes show commencing keratitis. Photophöbia very bad. No periosteal nodes. No rhagades. Teeth very carious. Liver 3 inches below costal margin in R.N.L. Spleen not enlarged.

Right knee: Very much swollen, flexion interfered with. Colour normal. No atrophy of muscles. No creaking. Slight pain complained of on full flexion. No starting pains. Synovial membrane thickened and lower end of femur seems enlarged.

Left Knee Increase of synovial fluid. No other change in the joint.

Treatment:

Pot.Iodidi internally and Ung.Hydrarg. locally. The keratitis got worse at first, then gradually got better. On leaving hospital after one month, the eyes quite well, while knees almost normal.

CASE V.

L.B. girl. age 5. Complaint is swelling of right knee.

Family History:

Mother and father both deny syphilis, although mother had led rather an irregular life before marriage. Has had four children. First child is suffering from similar condition and to be described next. Second child is boy, healthy, 9 years. Third child is patient. Fourth child is $1\frac{1}{2}$ years old and healthy. Mother has had three miscarriages, all at third month, no cause assigned. Two occurred between first and second child, and one after third child.

Patient was full time. No rash or snuffles as an infant. About nine months ago, mother noticed that right knee was slightly swollen, and as swelling looked like her brother's knee, who was in hospital at the time, she took her to a doctor, who prescribed powders and rest. The swelling lasted six weeks in spite of treatment, then went away and knee remained normal for four months, when again began to swell without any known cause. The swelling sometimes almost disappeared for a time/



Case V

time, but returned again. No pain. Child running about.

On Admission: Child looks healthy. Nose normal. Teeth very carious. No rhagades. No deafness nor keratitis. In fact, only thing made out was the condition of the knees.

Right Knee: Distinctly swollen, $9\frac{1}{2}$ inches round border of patella. Skin not red nor hot to touch. No pain on movement, or on pressure over any part. Knee slightly flexed. Fluid very much increased. Synovial membrane is slightly thickened. No osseous change made out.

Left Knee: Slightly swollen. Slight though distinct increase of synovial fluid. No pain.

Treatment:

Rest, splint, Ung. Hydrarg. and Pot. Iodidi internally.

Under this treatment the fluid from the left knee disappeared, while the right knee only slightly improved. Was in hospital for three months, and left with knee much improved. Has been running about at home and twice been readmitted into hospital with both knees much swollen. They improved under rest and treatment, but never entirely disappeared. No keratitis ever seen.

Here/

Here the diagnosis of the synovitis was very difficult at first. The clue was in that her brother was suffering from a similar condition of undoubted syphilitic origin. The patient had first been treated for rheumatism, then for tubercle, and these diagnoses proving unsatisfactory, the mother brought her up to hospital, as she thought the girl's knee was like her brother's.

CASE VI.

J.B., Boy, age $11\frac{1}{2}$. Complaint, swelling of knees and wrist and a pain in his head.

The Family History is the same as his sister (Case V.)

Previous History:

Full time, healthy at birth. No rash or snuffles as infant.

Present Illness:

One year ago, he complained of pain in his jaw when he tried to bite anything. Pain increased and one month after this a swelling was noticed in front on his left ear. This swelling was at first soft and the size of a marble. It gradually increased in size till it extended from in/



Fig. 1.



Fig. 2.



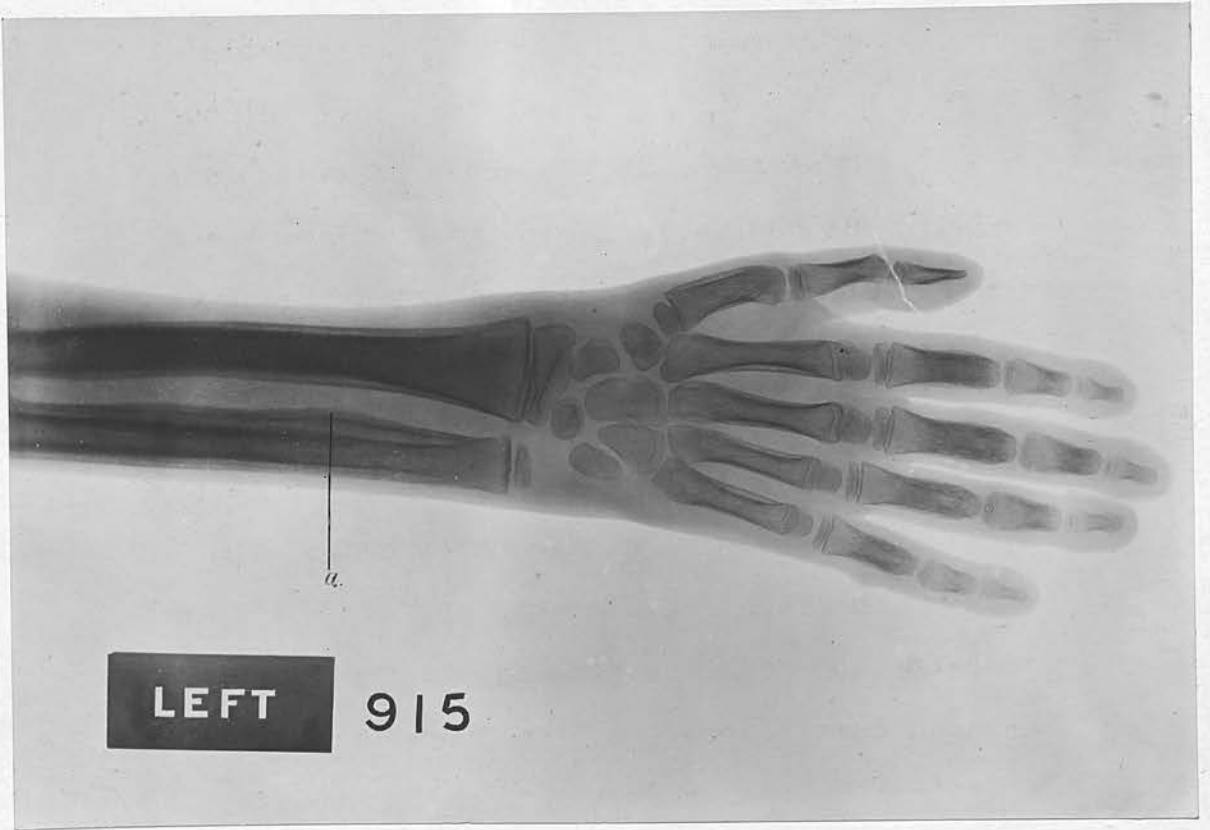
Fig 3.



Fig. 4.

in front of the ear to almost touch the left orbital cavity. At first soft, it has lately become hard and painful to the touch. Mother had noticed that boy's knees were swollen three months before admission, but paid no attention to them, as he did not complain of them. Swelling of knees got very much worse, until on admission both knees were slightly flexed and could not be straightened. Six weeks ago mother also noticed that both wrists were swollen. Patient had been treated by doctor for swelling of his face, but no improvement taking place, he was brought to the Sick Children's Hospital.

On Admission: Boy was very pale, skin dry and unhealthy. Poorly developed. No keratitis. No rhagades. Marked swelling of left cheek (Plate 1., Fig.1.) Skin over swelling was glazed, with red spots here and there. Swelling is semi-solid with elastic feel. It seemed to involve the masseter and the malar bone. It filled up the space between the upper and lower jaw on the left side. Mouth could only be opened to a very limited extent. Not painful to touch. He does not now complain of pain in his head. Left eye is/



Pl. II.

Showing periostitis of radius and ulna and also of metacarpals.

(a) Shows two attacks of periostitis.

is very prominent, upper eyelid markedly oedematous, and marked epiphora present. There are one or two glands, the size of beans, in the sub-maxillary triangle, and along the carotid. No other glands enlarged. He was almost completely deaf in both ears. His ears had never discharged.

Teeth were very good, upper incisors quite sound. He had marked clubbing of fingers and toes. Circulatory, respiratory and digestive systems were all healthy.

Knees: Both were much swollen, especially the left (Plate 1., Fig.4.) They are both slightly flexed, and to straighten them causes him some pain. The skin over them is glazed, white, and on palpation does not feel hot to the touch. No pain on deep pressure and no tender areas elicited. No "starting" pains at night complained of. Synovial membrane feels slightly thickened. Distinct fluid present in both knees. The lower ends of the femurs were not thickened.

Ankle-joints: Both swollen, with characters same as above, although not so marked (Plate 1, fig.4)

Wrist-joints: Distinctly swollen (Plate 1, Fig.2/

Fig.2,) no redness, no pain on movements or palpation.

Periostitis over middle of both tibia, distinct periosteal nodes could be felt.

On examining the left ulna, an area of thickening could be made out and on taking a radiograph of the left arm, an interesting condition was found which is well seen in Plate II. Here both ulna and radius are the subject of periostitis, which is especially well marked on the ulna, where there are two distinct attacks able to be made out. The metacarpal bones of the hand are also seen thickened by a periostitis. A photograph of the feet also shewed well marked periostitis in certain places. The X-ray of the tibiae did not show the condition very plainly. The syphilitic character of the periostitis is well seen in the large area affected and also in the ulna where there is distinct evidence of two separate attacks and no tendency to breaking down and caseation of the deeper parts, so commonly seen in tubercle. There is instead a localised sclerosis of the bone.

Progress and Treatment:

The patient was put on Pot.Iodide and the joints/

joints were treated locally with Ung. Hydrarg. These remedies were pushed until the boy showed signs of mercurialism, yet the joint condition did not improve. During this time, he was kept at complete rest. The swelling on the face gradually increased in size and he began to complain of pain in his head, which was at first relieved by phenacetin. He steadily lost weight. Four months after admission he complained of pain at the back of his neck. He began at this time to have a purulent discharge from his nose and his breath to have a very foul smell. On looking into his mouth the left half of his palate was seen markedly bulging and the left tonsil pushed across past the middle line. Muco-pus was seen on the posterior wall of his pharynx, evidently coming from above. His breathing was interfered with and Mr Stiles did a high tracheotomy to relieve this. He improved slightly after this, but again sank gradually and died five months after admission. The condition of his joints had remained unchanged from the time of his admission.

Post Mortem Examination:

The autopsy was made by Dr Beattie and some
of/

of the following facts are taken from notes made by him at that time.

The body was very emaciated. There was marked swelling of both knees and ankle joints. There was a mass of glands on the left side of the neck. They extended up under the jaw and were continuous with a tumour which involved the left malar region and the posterior part of the upper and lower jaws. The enlarged glands formed a continuous chain from clavicle to the angle of the jaw. They were firm and fibrous in consistence. There was no evidence of pus. The tumour involved the posterior part of the body and all the ramus of the lower jaw. It extended behind the malar bone into the temporal fossa and passed inwards to the base of the skull. The upper limit was quite distinct in the temporal fossa. The posterior part of the body and the ramus of the jaw were completely absorbed, the condyle alone being left. The zygoma was also absorbed. The bones in the temporal and pterygoid fossa were slightly eroded. It was impossible to point out the definite origin of the tumour, but from the general appearances the most likely origin seemed to be from the lower jaw. The tumour/

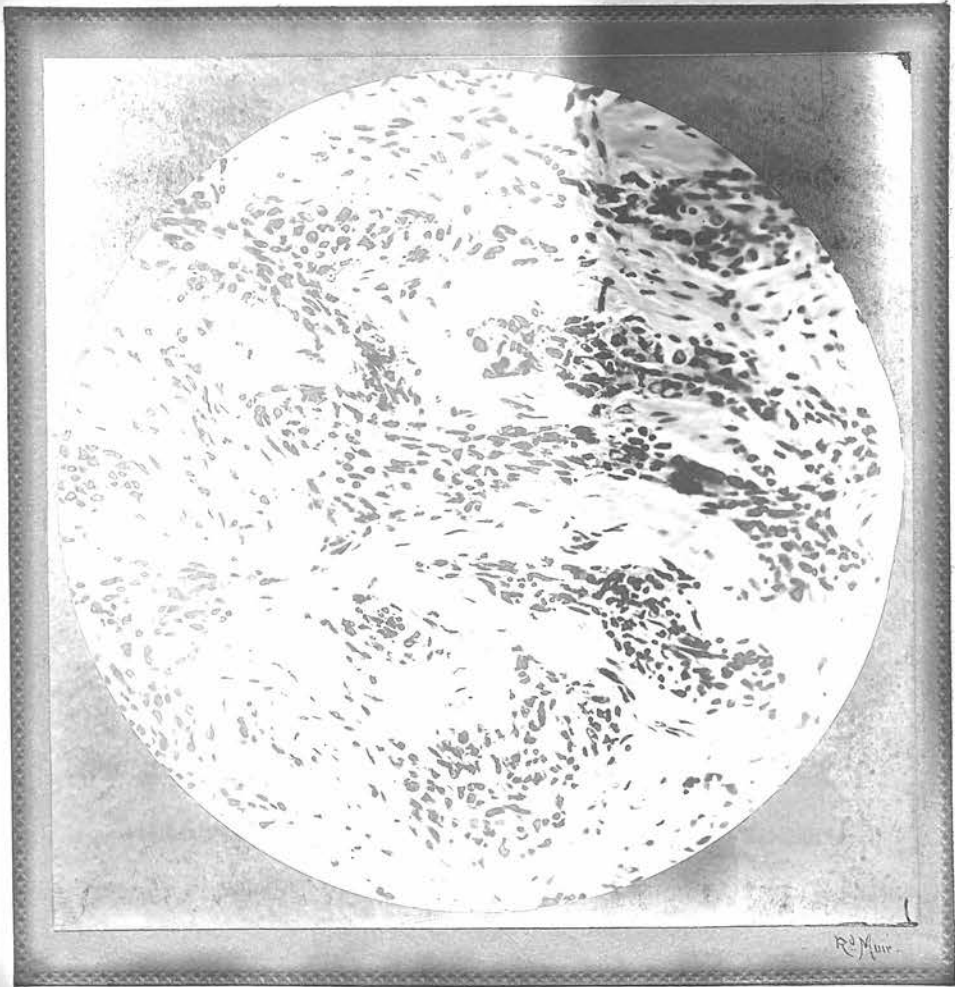
tumour was very firm, almost cartilaginous in consistence and on section appeared very fibrous.

Thorax: A few fibrous adhesions in each pleural cavity were found, especially over the left upper lobe. In the upper lobe of this lung there were found some small glistening nodules about the size of a pinhead. They were very hard and in appearance resembled cartilage or very dense fibrous tissue. They were all collected in an area about one inch in diameter on the anterior surface. No similar nodules found elsewhere in the lungs.

Heart, liver and spleen were all normal.

Right knee Joint: Distinctly swollen. There was slight thickening of the periarticular fibrous tissue. There was a slight increase of synovial fluid. No pus. The synovial membrane was much thickened and gelatinous in appearance and in places was congested, especially on the anterior surface of the femur. No change in the patellar bursa. No erosions of cartilage seen. No erosion of bone.

Left Knee Joint: This was removed unopened, and on dissecting it later I found that the synovial fluid was increased and the periarticular tissue/



R. III.

Section of Growth from cheek. X 200 diam.

The tumour is composed of bundles of spindle shaped sarcomatous cells which interlace with one another. Intercellular substance is scanty. Trusses of cells are surrounded by well formed fibrous tissue, in which a few blood vessels are seen. The tumour appears to be a Fibrosarcoma.

tissue thickened. The synovial membrane was as a whole slightly thickened. There were no adhesions. In the lower part of the joint, there was an oedematous gelatinous mass, which was continuous with the synovial membrane. The mass filled the space between the ligamentum patellae and the tibia. It spread back over the upper surface of the tibia, to which it was adherent, and then extended up the posterior surface of the joint to the inter-condylar notch of the femur where it was also attached. The cartilage of the bone, where not covered by the new growth, seemed quite healthy. On section of the bone, the cancellous tissue at the end was softened.

Tumour:- On microscopic section being made, the tumour was found to be a fibro-sarcoma. (Plate III.) Here one sees the large amount of fibrous tissue arranged in bundles running through the tumour and interlacing with one another. The intercellular substance is scanty. The cells vary much in size and shape, from spindles to round cells of different sizes. Young blood vessels can be seen in certain places forming between the cells.

Lung: On microscopic examination the peri-alveolar/

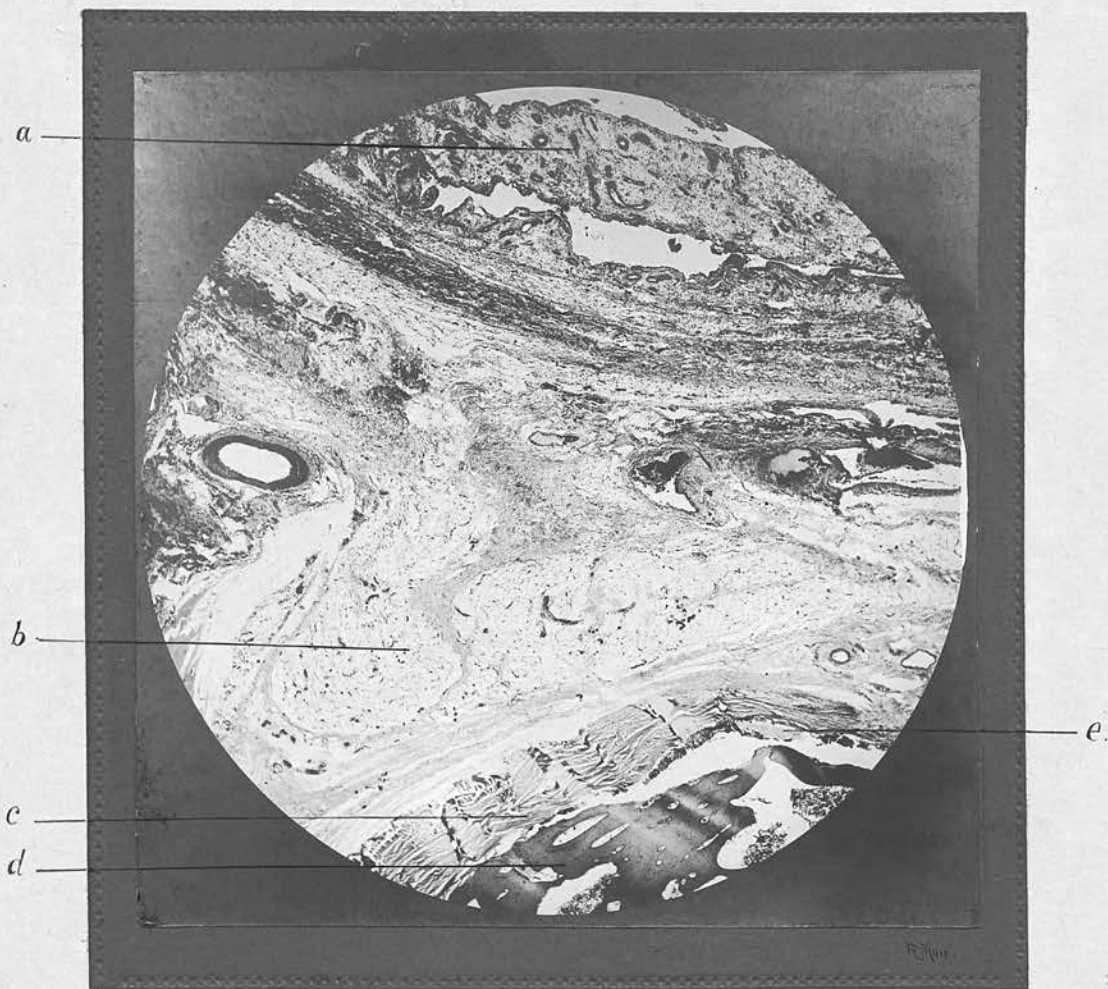


Pl. IV

Section from Lung X 200 diam.

Show round masses of non vascular fibrous tissue below the pleura,
with interstitial overgrowth of surrounding lung tissue.

Cicatrix on surface result of fibrous nodules.



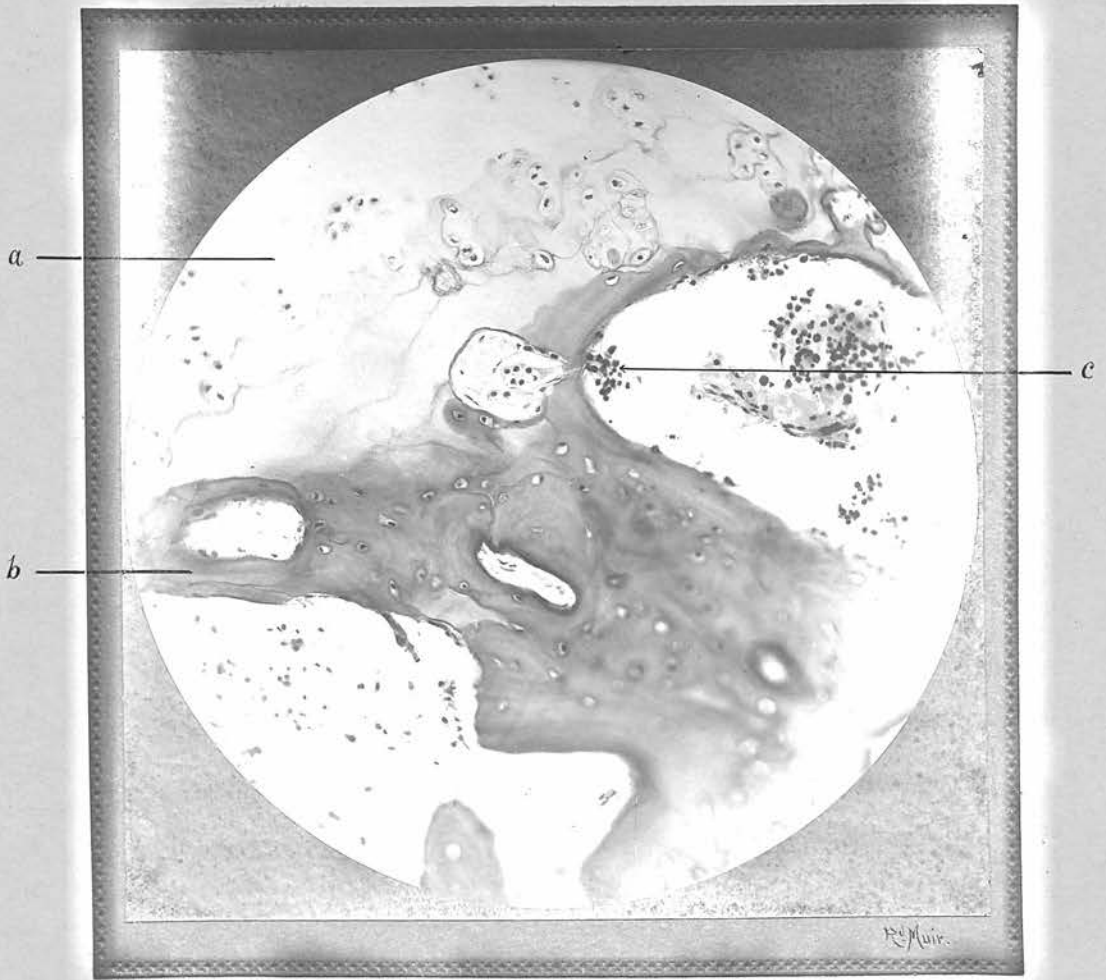
Pl. V

Synovial Membrane x20 diam.

- a. layer of new granulation tissue*
- b. area of myxomatous degeneration in deeper part of thickened membrane.*
- c. well formed fibrous tissue covering the bone.*
- d. Bone — articular lamella.*
- e. Remains of cartilage between fibrous layer and articular lamella.*

alveolar tissue is seen to be slightly thickened. The nodules, above described and seen in Plate IV. show round masses of non-vascular fibrous tissue. In the centre of the nodule degenerating and necrotic areas are seen. On staining for tubercle bacilli, none were found. Although tubercle is by no means uncommon in syphilitic patients, yet those nodules have not the appearance of healed tubercle, but of small gummata. Such undoubtedly is their nature.

Knee Joint: A microscopic section was made through the femur, so as to include the softened area of bone and also the gelatinous tissue which was attached to the femur at that part. On examination, this gelatinous tissue is found to be composed of newly formed tissue of the nature of granulation tissue (Plate V.). At the free or upper part, the tissue seems of very recent formation. Here the young connective tissue cells and the early formation of young blood vessels are well shown. As you pass down nearer the bone, the tissue becomes better formed until adjoining the bone well formed fibrous tissue is seen arranged in definite bundles parallel to the bone. In the intermediate/



Pl. VI

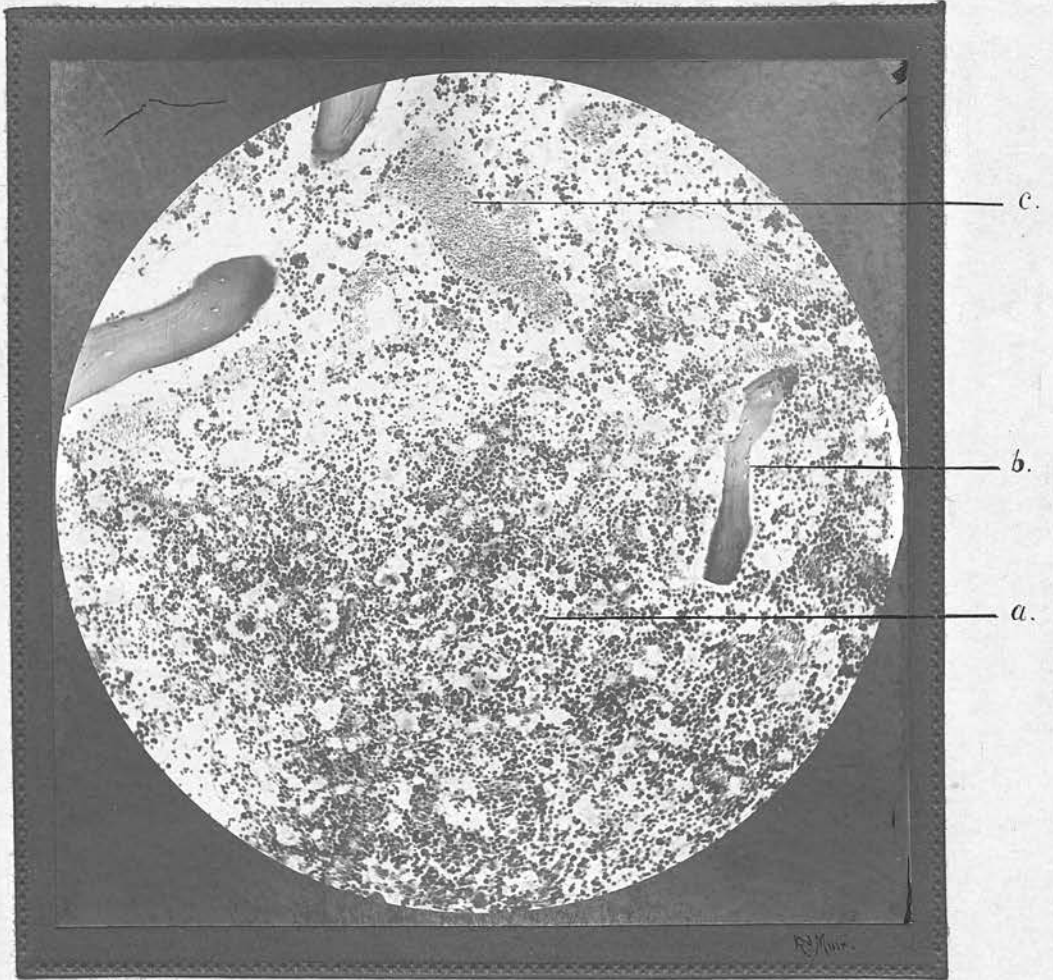
Absorption of Cartilage

x160 diam.

- a. layer of cartilage*
- b. Bone - articular lamellae*
- c. Osteocysts piercing thin layer of bone and invading the cartilage causing absorption.*

intermediate part of this tissue, there are areas where mucoid degeneration has taken place. In some parts, it is very well marked. Immediately adjoining the deepest and oldest fibrous tissue is bone. One is at once struck by the fact that the articular cartilage has disappeared. At other parts of the section, one sees the remains of the articular cartilage in its usual position covering the underlying bone. One naturally asks, how has the cartilage disappeared? On examining the osseous structure, one notices at once that the bone is very much rarified and that the bone marrow is much changed in character. The marrow shows well marked leucoblastic condition. One notices at once the absence of fat and the great cellular increase. This cellular increase has acted on the bone, decalcifying it and ultimately absorbing the osseous tissue and thus greatly thinning the trabeculae in the cancellous, while the compact bone at the end is rarified and in places eaten right through to the cartilage.

On examining carefully the little islands of cartilage that are present, we find them being absorbed by cells which are identical to those found in/
in/



Pl. VII

Cancellous part of bone X 90 diameter

- a. Marked leucoblastic condition of the marrow with disappearance of fat cells.*
- b. Bone trabeculae undergoing absorption.*
- c. Dilated blood channel of the marrow.*

in the marrow. This leads us to the conclusion that the marrow cells must have come through from the medullary cavity of the bone, the compact shell of which must necessarily have been eaten through. Under high power, one sees (as in Plate VI.) an area where the cellular invasion has just succeeded in breaking through the dense bone. All around one sees the bone being absorbed by those marrow cells. The dense bone has been channelled out - probably the cells enlarging the natural Haversian canals - and at last the cartilage is reached. One notices the processes of cellular invasion which are narrow in the dense bone, but suddenly balloon out on reaching the softer cartilage which is rapidly absorbed. Here then, is the explanation of the disappearance of the cartilage. The cartilage having disappeared, its place seems to have been taken by the fibrous tissue, and the formation of the granulation tissue increased, as the irritation is kept up from within.

Does this explain all the newly formed fibrous tissue, which we found covering the posterior part of the joint? Has it started where the cartilage was first eroded and spread from there over the joint? This does not seem to be altogether true. It/

It seems more likely that the granulomatous thickening of the synovial membrane is the direct result of a toxine of a syphilitic nature.

The cartilage where exposed to pressure was quite healthy. The changes in the cartilage were confined to the areas underlying the newly formed gelatinous mass, which was only in areas outside pressure.

The causal agent of the disappearance of the cartilage and the absorption of the bone, seems to be the well defined leuco-blastic marrow (Pl.VII.) The leucoblastic condition is well seen in the marked increase of the cellular elements at the expense of the fat cells, which have almost entirely disappeared. All the cellular elements of the marrow are increased, but especially the neutrophile myelocytes, which is characteristic of this leucoblastic condition. The eosinophile myelocytes are also increased, yet nothing like the neutrophiles.

In regard to the cause of this leucoblastic change it is difficult to speak definitely. Chronic suppuration, malignant growths, and infected conditions as syphilis are all possible causes. The patient suffered from all three. He was the subject/

subject of hereditary syphilis: he died of a sarcoma, which ulcerated into his palate and caused a purulent discharge from nose and mouth for some time before death. It thus seems impossible to say which is the exact cause.

The chief interest in this case seems to lie in the fact of the multiplicity of the joints affected and the nature of the changes in those joints. It is customary in hereditary syphilis to have both knees affected, or knee and elbow and ankle. I have been able to find only another case like it recorded in literature. This is one reported by Maynard in the British Medical Journal 1887. In his case, however, there was reddening of the joints with raised temperature, which makes it almost impossible to exclude rheumatic fever. In my case, the diagnosis was at first very difficult. One naturally thought of a constitutional cause. Tubercle was suggested, but was soon put out of court by the multiplicity of the joints affected, the absence of temperature, the painlessness of the condition and the want of interference with movements. Syphilis was then thought of and on closer enquiry the diagnosis was verified by the history of miscarriages, the periostitis, the deafness, and the nature/

nature of the synovitis. The admission of his younger sister a month after him with a practically similar condition of her knees, made the diagnosis of syphilitic synovitis almost certain. The death of the patient from sarcoma of his jaw gave an opportunity of examining the joints - an opportunity seldom obtained, as death from this condition of the joints almost never occurs. The finding of this gelatinous gummatous condition of the synovial membrane where nothing was suspected during life, leads one to think that many of those cases described as simple synovitis and which persist for some time may have some similar condition of the joint, if only the condition could be seen.

Those cases naturally drew my attention to the subject of syphilitic synovitis in children, and, on looking up the literature on the subject, I was astonished to find how seldom it was mentioned, even in standard works on Surgery and Diseases of Children.

No one now denies that syphilis may be the cause of several forms of arthritis, although it is not so long since John Hunter, Ricordi and others held that changes in the joints could not be produced/

duced from syphilis. To Lanceraux, Virchow, Richet, Voisin and Marsh the credit is due of putting our knowledge of syphilitic arthritis on a sound scientific basis. Yet there is no doubt that this form of arthritis is far too seldom recognised. Syphilitic arthritis is not nearly so rare as one would gather from reading the textbooks. Schuller from a large personal experience estimates this form of arthritis as 7% of all diseases of the joints. Fournier finds that in 212 cases of hereditary syphilis he had examined, that joint changes were present in 82, giving a percentage of 39%.

To the joint changes in hereditary syphilis and especially in the later or tertiary stage of that disease, my attention was drawn by the above cases. I have no doubt that there are going about undiagnosed or wrongly attributed to tubercle or rheumatism, many affections of the joint of a true syphilitic nature, and especially of the milder forms, as those cases of symmetrical synovitis so frequently associated with keratitis.

Seeing that this form of synovitis seems to be so little known and that the recorded cases are few and in out of the way places, I have collected a series of cases, partly from any literature I could get on the subject, and also from notes of cases lent to me by friends.

LIST OF CASES.

Sex.	Age.	Joints.	Family History	Other Manifestations of Congenital Syphilis	Duration, &c	
1.	F.	9	Both knees	No history of Syphilis.	History of C.S. at birth. Sunken Nose. Teeth. Periostitis.	Lasted one year.
2.	M.	6	Both knees	Father rash ? 2 still births Sister typical Cong. Syphil.	Keratititis. Sunken nose.	3 months.
3.	M.	7	Both knees	Satisfactory	Keratititis. Sunken nose.	5 Months. Pain at commencement.
4.	M.	4	Both knees	One miscarriage	Keratititis. Sunken nose. Had signs of C.S. at birth.	1 month. Not quite gone.
5.	F.	5	Both knees	3 miscarriages	No keratititis	1 year and still present.
6.	M.	11	Both knees wrists & ankles.	3 miscarriages	Periostitis. Deafness	1 year. Death from sarcoma of jaw.
7.	M.	19	Knees, wrists and ankles.	3 miscarriages	Keratititis	Lasted 10 months.
8.	M.	9	Both knees.	2 miscarriages	Keratititis	1 month.
9.	F.	7	Right knee.	Satisfactory	Keratititis. Depressed bridge of nose.	3 weeks.
10.	F.	9	Both knees	3 miscarriages	Keratititis. Deafness. Bosses on skull.	2 years.
11.	M.	14	Both knees	Mother syphilitic.	No Karatititis. Scars on body.	6 months. Slight thickening of joint noted.

	Sex.	Age.	Joints.	Family History	Other Manifestations of Congenital Syphilis	Duration, &c.
12.	F.	8.	Left knee	Brother and Sister show C.S.	Keratitidis. C.S. facies. Teeth.	First attack, 2 years. 2nd attack, 2 months.
13.	M.	21	Both knees	F. is syphilitic	None	One year.
14.	M.	10	Both knees	None	Keratitidis, teeth Ostitis.	4 months.
15.	F.	8	Both knees	None	Keratitidis. Ostitis.	6 months.
16.	M.	11	Both knees	2 miscarriages	Teeth. Nodes.	6 weeks.
17.	F.	9	Both knees	None	Keratitidis. Teeth	3 months.
18.	F.	20	Both knees	None	Keratitidis. Ostitis.	6 months.
19.	F.	10	Both knees	F. is syphilitic	Keratitidis. Teeth.	7 months.
20.	F.	15	Both knees	None	Keratitidis. Deafness.	6 months. Artic.tenderness
21.	M.	14	Both knees	None	Keratitidis. Teeth. Deafness.	3 months. Artic. tenderness.
22.	M.	12	Both knees	M. syphilitic. 2 miscarriages	Keratitidis	2 months.
23.	F.	8	Both knees	Doubtful hist. of syphilis.	Keratitidis.	4 months. Pain in one knee at commencement.
24.	M.	21	Knees and both ankles	Brother has Keratitidis.	Keratitidis.	One year.
25.	F.	8	Both knees and left elbow.	1 abortion. 2 still births.	Depressed nose. Teeth. Deafness.	6 months.
26.	F.	7	Both knees	1 still birth	Deafness. Teeth.	
27.	M.	20	Both knees	None	Keratitidis. Nodes on tibia.	4 months.
28.	F.	20	Right knee	2 sisters have Keratitidis.	Nose. Rhagades.	

Sex.	Age.	Joint.	Family History	Other Manifestations of Congenital Syphilis.	Duration, etc.	
29.	F.	12	Both knees	5 abortions	Keratitis	
30.	F.	11	Left knee	None	Keratitis. Evid. of Infant. Syph.	4 weeks.
31.	F.	13	Both knees	6 abortions	Keratitis. Nose. Deafness.	3 years had first attack.
32.	M.	17	Right knee	1 abortion	Keratitis. Rhagades. Nose.	First attack 2 years ago.
33.	F.	14	Left knee	2 abortions	Keratitis. Teeth.	3 years ago had an attack.
34.	F.	4½	Rt. ankle	Brother shows Cong. Syphilis.	Sunken nose. Bosses in skull.	
35.	F.	10	Rt. knee & Rt. elbow	1 dead born	Saddle nose Keratitis	
36.	F.	12	Both knees	None	Keratitis. Nose.	Here T. of joint raised one year.
37.	F.	29	Both knees	None	Had Infant. Syph. Keratitis. Deafness.	1 attack when 13 years old. Operated upon & found loose body in joint.
38.	F.	3½	Left knee	None	C.S. as infant Keratitis.	Osteitis of Femur. Gumma of Palate.
39.	F.	10	Right knee	None	Keratitis	Osteitis of Femur. Gumma of Synovial Membrane.
40.	F.	11	Left knee	2 abortions	Keratitis. Teeth.	Osteitis of femur Gummative thickening of synovial membrane.
41.	F.	11	Left knee	One brother had C.S.	No keratitis.	Osteitis of Femur Gummative thickening of synovial membrane.

Sex.	Age.	Joint.	Family History.	Other Manifestations of Congenital Syphilis.	Duration, etc.	
42.	F.	15.	Both Knees	One abortion	No keratitis.	Gummatous synovitis.
43.	F.	9.	Both knees at interv. of 2 yrs.	Mother had Syphilis.	Keratitis. Periostitis of tibia.	Had pain first in joint, then effusion.
44.	M.	6 $\frac{1}{4}$	Both knees.	One miscarriage	Periostitis of tibia. No keratitis. Atrophy of Rt. Optic disc.	Started with pain in Right knee. L.knee duration 5 months.
45.	M.	8	Both knees & rt.elbow	3 still births	Keratitis. Rash. Snuffles as infant. Teeth.	8 months. Sloughing of Palate 3 years after and Keratitis.
46.	M.	7	Both knees	1 miscarriage. 3 still births	Rash. Snuffles when infant. No Keratitis.	
47.	F.	6	Both knees	2 miscarriages	Snuffles as infant Keratitis.	Keratitis first, then 2 yrs after had synovitis.
48.	M.	6	Both knees		Keratitis	Started with pain in L.knee Three months.
49.	F.	12	Ankle joint		Dble.Keratitis	6 months.
50.	F.	6	Ankle joint	1 abortion. 2 sisters show Cong.Syph.		
51.	F.	13	Right knee	None	Infantile Syphilis Sunken nose. Deafness. Keratitis.	Had repeated attacks of synovitis and operated on for loose body in joint three years after.

Such were the cases I collected and on analysing them I tried to arrive at some conclusion in regard to the incidence and most important symptoms, etc.

Sex:

In the above cases, we find a marked preponderance of females. Of the 51 cases, 32 were females, while 19 were males, giving thus to the female sex a percentage of 62.7%. This percentage corresponds closely to that of Bosse, in which he finds the females were 64% of his cases. Thus this manifestation of syphilis seems to attack females more than males.

Age:

Taking the age at which the manifestations of late congenital syphilis show themselves to be from 4-21, one would naturally expect this to be the range in the joint affection. This is borne out. In my 51 cases the youngest was $3\frac{1}{2}$, while the oldest was 21 years old. Taking an average for all ages, one finds it to be 10 years. The majority of the cases were grouped round an age period of from 8-12 years. In Clutton's cases the ages were from 8-15, the average age being 13. In Bosse's cases the youngest/

youngest was 4, while his eldest patient 15 years. Out of 20 cases, Hutchison found the ages ranged from 7-19 years, while Von Hippel in 43 cases concluded the commonest age to be from 6-10 years old, although he had cases occurring as late as 20th year.

Thus from the above the commonest age seems to be somewhere about 10 or from 8-12 years.

Joints affected:

At once one is struck by the fact that only the large joints seem affected, the knee, ankle, elbow and wrist being the usual ones. The next thing one notices is the remarkable frequency with which the knees are attacked, usually alone, but at other times along with other joints. Clutton early pointed out this tendency for the synovitis to be symmetrical, although the interval between the attack of one knee from another might be as long as a year. In the above 51 cases, we find that the knee joint was affected 48 times - 36 times both knees, while 12 times one knee alone. In the 36 cases where both knees were involved, 5 times they were associated with other joints, twice with both ankle and wrist, and once with both ankles alone, twice with the right elbow and once with the left elbow joint.

One/

One knee was affected alone in 12 cases. Of these the right knee was affected 6 times and the left the same. The elbow joint was affected 3 times and then always along with the knees.

Synovitis occurred in the ankle joints six times, thrice along with the knees and thrice alone. Von Hippel out of his 42 cases, showed the knees to be involved 41 times, 35 times alone and 6 times along with other joints. In 33 of the 36 cases, both knees were affected. In only three was one knee alone affected. Bosse has in 14 out of his 17 cases the knee joints the subject of synovitis. From the above analysis, there seems no doubt that the knee joint is the one usually affected and that there is a remarkable tendency to symmetry, both being usually involved, although one is as a rule much worse than the other. So slightly may the other joints suffer, that it is only on careful examination that one can diagnose fluid to be present, a diagnosis which is verified by the subsequent course of the disease.

Keratitis:

The association of this condition with the synovitis seems to be a very close one. In fact, the/

the synovitis is often first discovered by the ophthalmic surgeon to whom the patient is brought for the concomitant keratitis. Out of the above 51 cases, Keratitis occurred in 37, giving a percentage of 72.5%. In Clutton's cases, Keratitis was present in 9 out of his 11, or 81%.

Hutchison says that he noticed the occurrence of keratitis in nearly all his cases.

Bosse had keratitis in 37% of his cases. The frequency with which keratitis occurs along with the joint condition is necessarily a great aid to the diagnosis of the synovitis. Although often accompanying the synovitis, yet it may be absent or delayed, the interval being from 2-15 years, according to Von Hippel.

Von Hippel found that the joint condition preceded the keratitis in 32 out of his 35 cases, while Hutchison says that the eye affection was as a rule first. Bosse found that in half his cases the keratitis was first, and in the other half the synovitis preceded the inflammation of the cornea. There seems, therefore, to be some difficulty in saying whether the keratitis precedes or follows the synovitis. There is no doubt that the majority of the cases suffer from keratitis at some time or other. In some it precedes, in others is concomitant/

itant with the synovitis, while in a few cases it may be delayed for some months, even years after the joint affection.

Other Manifestations of Syphilis:

These were not of so frequent occurrence as Keratitis. Periostitis and ostitis were present in 14 out of the 51 cases. Deafness without previous otorrhoea in 8; while Hutchinson's teeth were present 8 times. Frequently those conditions were of great help in clearing up the diagnosis or strengthening the opinion that syphilis was the cause.

Duration of the Synovitis:

It is often very difficult to arrive at a definite conclusion regarding the duration of the synovitis. In the first place, the patient or the parents have great difficulty in telling you how long the condition has been present. When first noticed the joints are often found to be full of fluid. The child does not as a rule complain of pain, and only when the effusion is so great as to cause discomfort is the attention of the parents directed to the condition. The time the fluid may persist/

persist depends on whether treatment has been applied, the condition of the joints and often on causes we cannot explain. There is a remarkable tendency to chronicity. Some cases persist for months and even years; in others, the condition rapidly disappears, but it is apt to return again. Relapses are common and in the recurrence other joints may be affected, and be accompanied by another attack of Keratitis.

Symptoms:

As a rule, the patient does not complain of any pain. In only 5 out of my 51 cases was there a history of pain, and then only very slight. Sometimes the onset of the effusion is preceded by a slight pain, which is described as "rheumatic" in character, but this is very rare. At the most a sense of discomfort is experienced when the joints are much distended with fluid and movements may to a slight extent be interfered with. As a rule, the patient can walk about, and even run. The skin over the swollen joint is not reddened, and is not hot to the touch. There is no tenderness on palpating the joints. Occasionally if there is an area of periostitis on the adjoining bone, /

bone. the patient may complain of pain on that spot being touched. There are, however, never any "starting pains" experienced at night. There is never any accompanying fever. The close association of the keratitis to the joint condition is well brought out by the fact that the child is usually taken to an ophthalmic surgeon for the eye condition, and only then is the joint condition discovered, or as must often be the case, missed. There is no doubt that the ophthalmic surgeons have special opportunities of studying this condition of the knee joints.

Pathology:

The pathology of the joint condition must depend to a great extent on the manner in which the virus of syphilis has attacked the joint and the stage to which these changes have attained.

The joint may be affected primarily or secondarily: from the inside or from changes occurring outside in the neighbourhood of the joint. In all the above cases, synovitis was present. In some cases, no changes could be made out in the synovial membrane or the bone adjoining. In others the synovial membranes were thickened, and in a third variety there was present a periostitis in the adjacent/

adjacent bone. Thus the synovitis observed in all these cases must be due to different pathological conditions.

The classification I shall follow is one mainly on the lines drawn up by Hutchison:-

- (1) Chronic Synovitis, without apparent changes in the joint structure.
- (2) Chronic Synovitis with thickening of synovial membrane.
- (3) Chronic Synovitis with accompanying osteitis in the neighbourhood of the joint.

I. Chronic Synovitis, without apparent changes in the Joint.

According to Hutchison, this form was first described by M. Horand in 1875, by Hirschberg in 1884, and Clutton in 1886. Bosse, however, gives the credit to Forster.

Whoever described it first, there is no doubt that the chief credit is due to Clutton for bringing it clearly before the medical profession and putting it on a firm basis.

That this form of synovitis can occur, has been denied. Fournier says he has never seen cases like those described by Clutton, yet says they are so well observed/

observed that they might occur. According to Clutton, this synovitis is usually associated with keratitis, is insidious in onset, is symmetrical as a rule, chronic, painless, and more amenable to antisyphilitic treatment than to other remedies. He said there was no thickening of the capsule, the synovial membrane or any osseous affection.

Fournier in cases like the above has always found osseous lesions to account for the synovitis. It has, however, now been definitely proved that a simple synovitis can occur in children, as a manifestation of Hereditary Syphilis. It is chronic in nature, and on disappearing the joint seems to be left quite normal. Although no change can be discovered, there must undoubtedly be some alteration somewhere, whereby the physiological balance is upset with the resulting effusion. In one or two cases in which the joints were opened during life, on the supposition that it was a tuberculous condition, the only change found was a slight hyperaemia of the synovial membrane.

One is struck with the close association of the synovitis with the keratitis. When we think of the similarity of structure between the cornea and the synovial membrane and how one can see the changes/

changes going on in the eye - the exudation, the vascularisation, and subsequent new tissue formation, and resulting nebulæ, one is bound to believe that similar changes are probably taking place inside the joint, if only we could see them. The fact that recovery is the rule and that patients seldom die when this condition is present in the joints, explains the fact that no post mortem examinations are reported. The patient with keratitis usually recovers with a useful eye, so the synovitis as a rule disappears and leaves an apparently healthy joint.

In my case of J. Brown, who died of sarcoma of the jaw, there was during life no thickening of the synovial membrane or bone to be made out; yet on opening the joint after death, there were large masses of œdematous seemingly thickened synovial membrane, and no apparent changes in either cartilage or bone. One cannot help thinking that many of those cases thought to be simple synovitis have definite structural changes; and as nebulæ are often left after an attack of keratitis, so in the joint small opacities or new formation on the synovial membranes may be present in what otherwise appears a healthy joint.

Bourchard/

Bourchard believes that when those cases run a chronic course, there must be changes in the joint, as thickening of the synovial membrane with gummatous nodules. Rash corroborates this in a remarkable case, where a girl 13 years old, had typical synovitis of both knees, with accompanying keratitis. The synovitis persisted for 4 years with intervals of resolution. There was no pain. About this time, there were symptoms of foreign body present in the joint. He removed a fibrous body. Next year, the patient again complained of similar symptoms and this was accompanied by attacks of keratitis. He removed another fibrous mass. Rash remarks the synovial membrane was thickened, but not inflamed.

In this form of synovitis, the larger joints are usually affected, especially the knees, and here a remarkable tendency to symmetry is seen.

II. Chronic Synovitis, with thickening of the Synovial Membrane.

Here there are various degrees of severity in the changes that may occur in the synovial membrane. The synovial membrane may be thickened with/

with minute gummata studded all over it. There is usually an increase in the amount of the synovial fluid. From this comparatively slight thickening of the synovial membrane, it may pass on till the whole cavity of the joint is filled with gummatous tissue. In some cases, the gummatous process seems especially to affect the synovial fringes which are thickened and enlarged, and hang down into the joint cavity. The cartilage, according to Heuter, may be fibrillated and eroded and the periarticular fibrous tissue increased.

This form of arthritis may simulate closely the common tuberculous knee. In fact, it was called by Richet the syphilitic "pseudo-white swelling." It differs, however, from the true white swelling, in that the skin is whole, not reddened or oedematous. There is no tendency to suppuration, no pain, no fever, no fixed attitude, and no hindrance to movement. The patients with this condition, according to Fournier, can even run about. Here anti-tuberculous treatment has no effect, while anti-syphilitic remedies often cause marked improvement.

III. Chronic Synovitis, due to Ostitis and Gumma
in neighbourhood of joint.

One's attention is first drawn to the joint on account of its size. Usually one joint alone is affected. On palpating the joint one finds that the end of the bone is much enlarged. The enlargement may be very irregular. Robinson reports a case where the ostitis produced a condition of knock-knee. On examining the swelling further, one may discover an area of softening, and here the patient complains of pain on pressure. Here we have to do with a gumma breaking down. This gumma may burst externally, internally, or both. If internally, the joint becomes filled with pus and gummatous material. This form of arthritis is of special interest in that it may be mistaken for sarcoma of the femur, a condition not uncommon in children. Amputation may be considered and the patient may consider himself extremely lucky if he shows well marked signs of congenital syphilis elsewhere, to lead the surgeon to the right diagnosis.

Diagnosis:

There is no doubt that this condition of the knee joints is often unnoticed, and if recognised is/

is usually wrongly diagnosed. Syphilitic arthritis is not nearly so rare as one would gather from the literature, and when one sees it for the first time in a child whose knee is swollen and no cause given for it, one naturally thinks of tubercle and rheumatism and altogether leaves out of account the possibility of syphilis. The fact that potassium iodide is a favourite remedy in chronic rheumatism and is also so markedly beneficial in this syphilitic manifestation hinders often a true diagnosis, for having given that drug on the supposition that the condition was due to rheumatism and getting so good a result from it, one naturally concludes that the treatment has confirmed our diagnosis. As regards tubercle, it is only when all the known remedies for that condition have failed, that we begin to doubt our diagnosis and turn our thoughts to syphilis. The great danger is of confining our attention to the affected joint. If one viewed the general condition of the patient as a whole and went carefully into the family history, mistaken diagnoses would not be so frequent and the seeming rarity of this condition would disappear.

The occurrence of miscarriages should naturally arouse/

arouse our suspicions, but it is almost proverbial that a specific history will be denied on questioning the parents, and too much stress cannot be laid on its absence. When one knee is presented for examination, one should always examine its fellow, and very frequently one will find what was thought to be one sided turns out to be bilateral.

The occurrence of this symmetrical effusion naturally turns our thoughts to a constitutional cause and makes us look out for the other manifestations, past or present, of those diseases.

Keeping in mind the evidence of late hereditary syphilis, one looks for the small undeveloped child, the pale muddy complexion, the occurrence of characteristic silken scars and rhagades round the mouth. The patient may be deaf, a condition one finds came on suddenly, without previous otorrhoea. One would then naturally examine the upper incisors for "Hutchison's" teeth and the molars for "doming". On palpating the bones, one may find osseous nodes, which on being examined by the X-ray may show typical syphilitic periostitis. Lastly and most important, the occurrence of keratitis, either past or present, should arouse our suspicion and point decidedly to syphilis as being the fons et origo of/

of the articular condition.

The onset of the synovitis is usually insidious. In only a few cases does the child complain of pain preceding the effusion. When the effusion has been established and is excessive there may be a sense of discomfort which draws attention to the condition. As a rule, the state of affairs is only discovered accidentally by the parents, or as is often the rule, by the doctor who is treating the patient for the so frequent concomitant Keratitis. Very often the child is never brought under medical care, as the condition is painless and in no way interferes with the usefulness of the joint, the child being able to walk and even run about.

Clutton has summed up the chief characteristics of this form of synovitis to be - "A symmetrical synovitis, usually of the knees, but may affect other joints; insidious in onset and usually associated with keratitis; has a marked tendency to become chronic; an absence of pain and hindrance to movement; more rapid improvement under anti-syphilitic treatment than when treated with other remedies."

On examining the patient, the discovery of unmistakable evidences of tubercle, while it may weaken/

weaken, will not annul the diagnosis of the condition of the joints being syphilitic, for it is well known that tubercle is a frequent accompaniment to syphilis, and that those children who are the subjects of hereditary syphilis frequently die from tuberculosis in one form or other.

Regarding the differential diagnosis from other forms of synovitis, I have already described those conditions at the beginning of this paper, and will not therefore repeat them here.

Treatment:

Many cases seem to recover without any treatment, while in others antisyphilitic remedies cause no marked improvement for a long time. The ordinary simple methods for synovitis seem in themselves useless, unless combined with Mercury and Potassium Iodide. In many cases, the joints were treated with rest, splints, counter irritation, and cod-liver oil & iron were given internally, and yet no improvement took place. But when the patient was put on some of the recognised remedies for hereditary syphilis, the synovitis showed speedy signs of disappearing and the general condition of the patient rapidly improved.

As/

As a rule the patient is put to bed so as to rest the joints - a splint may be applied to ensure complete fixation. The application of Ung.Hydrarg. to the joint locally is usually followed by marked beneficial effects. Mercury may also be given internally in the form of Hydrarg. cum creta or combined with Potassium Iodide as Liq.Hydrarg. Perchlor.

The local administration, however, seems to be especially efficacious. Failure in the treatment is often due to the fact that too small doses are given. The bold exhibition of Mercury and Iodide in large and increasing doses is often followed by signal success. The improvement of the general condition of the patient by good food and iron tonics accelerates the recovery.

Conclusion:

From the examination of the above cases, I have shown not only that a chronic synovitis may occur as a late manifestation of hereditary syphilis, but that it is of exceptional interest and is not nearly so rare as is generally thought to be the case. The discovery of those definite pathological/

ogical changes in the joint is especially noteworthy. The exact significance of this leucoblastic change in the marrow, it is true, is difficult to estimate; yet I am convinced, and this case bears me out, that very definite pathological changes are present in many of those chronic cases of synovitis in which during life nothing can be made out.

In my case of J. Brown, where nothing definite was made out during life, the joints were found to be occupied by a gelatinous, almost gummatous thickening of the synovial membrane, along with disappearance of the cartilage in areas. I have no doubt that as the condition is better recognised and more careful examination made, definite pathological changes will be described as typical of this condition of the joints, occurring as a late manifestation of inherited syphilis.

REFERENCES.

1. Clutton: Lancet, 1886, p.391.
2. Hutchison: Brit. Med. Journal, Vol.I., p.789.
3. Maynard: Brit. Med. Journal, Vol.I., p.569.
4. Bowlby: St. Barts. Hosp. Reports, London, 1890, XXVI., 83-86.
5. Robinson: Brit. Med. Journ. 1896, Vol.I., p.1191.
6. Bosse: Ueber die Interstitiale Keratitis hereditärer Natur und ihrer Zusammenhang mit Gelenks-affectionem. Inaug. Diss., Berlin, 1895.
7. Von Hippel: Munchen Med Wochensch. Aug.4th, 1903.
8. Rash: Annal de dermat. et Syph. Par., 1891, 3 s.II., 669-675.
9. Cheminade: Annal. de dermat. et Syph. 1888.
10. Borchard: Ueber leutische Gelenkenzündungen Zeitsch. f. chir., Bd.61. heft 1.
11. Heuter: Syph. und Kindesalter Gerhardts handbuch der Kinderhalt, 1896, p.75.
12. Fournier: La Syphilis hered tardive, Paris 1886.
13. Hirschberg: Ueber spezifische Hornhautentzündungen, Deutsch, Med. Woch., 1888, No.25-26
14. Jordan: Munch. Med. Woch. Aug.4th, 1903.
15. Imbert: Des Arthrop. Syph. Gaz. d'hosp. Par 1899, 72. p.185.
16. Pielinke: Die Syph. Gelenkerkrankungen, Ber. Klin. Woch., 1898, XXXV., p.98, 105.
17. Guterbock: Langenbeck Arch. XXXI., 23, heft 2.
18. Heubner: Berlin. Klin. Wchschr. 1884, S. 548.
19. Guterbock: Rev. mens. des Mal de l'enfance.
20. Somma: Su de una forma morbosa articolare per sifilide ereditaria, Napoli. 1882.

LIST OF CASES.

- Cases 1-6. Taken from those I myself saw at Sick Children's Hospital.
- Case 7. Taken from Maynard Brit.Med. Journal, 1887.
- Cases 8-10 Taken from Records of Cases in Sick Children's Hospital.
- Case 11. Reported by D'Arcy Power in his book, "Diseases of Children".
- Case 12. Reported by authors of Ashby & Wright's "Diseases of Children".
- Case 13. Reported by Von Hippel in Munch. Med. Woch., 1903.
- Cases 14-24. Reported by Clutton in Lancet, 1886, Vol.I., p.389.
- Cases 25-36 From Bosse, Inaug.Diss., Berlin. "Interstitiale Keratitis mit Gelenk affectionem.
- Case 37. Reported by Rash in Annal. de Dermat. et Syph., Par. 1891.
- Cases 38-43 Reported by Robinson in Brit. Med. Journal, 1896.
- Cases 44-50 From records kindly lent me by Dr John Thomson.
- Case 51. From Hirschberg in Deutsch. Med. Woch., 1888, No.25-26.