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David Wright
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The various joints of the human body are liable to attacks of inflammation - acute & chronic and its different consequences, and, as a joint is essentially composed of a number of different tissues, viz of synovial membranes cartilages, ligaments and bones, so, perhaps, the best division of a dissertation on diseases of joints will be as follows:-

- I Inflammation and its results of the Synovial membranes
- II " " " " Cartilages entering into the formation of the joint.
- III " " " " of the Bones entering into the composition of the joint.

Though thus, at the commencement of a disease in a joint, we may in some cases with little difficulty diagnose the particular structure affected, still, in the majority of cases, especially when they become chronic & connected with some

constitutional cachexia, the whole of the structures soon become more or less affected and consequently modified.

Inflammation of the Synovial Membrane of Joints.
Synovitis. This articular affection may be either acute or chronic. It usually results from exposure to cold or damp especially in rheumatic or syphilitic constitutions, in which more joints than one are implicated at the same time.

Acute Synovitis. In this affection the experiments of Bonnet, Richet and others have shown that there is, in the first instance, an inflammatory congestion and vascularity of the membrane, followed by the absence of the peculiar satiny polish. The synovia is increased in quantity and, at the same time, altered, becoming of a more liguous character than it is in the normal condition. These products are completely absorbed if the disease progresses favourably. If the inflammation goes on to an unfavourable termination, the membrane begins to change its structure and becomes turgid and distended with blood; a thin purulent fluid, composed of granular corpuscles, floating in a serous liquid, is poured forth and disintegration, with thinning of the cartilage, and often complete destruction of the joint, ensues. In other cases granulations are

thrown out on the looser portion of the membrane, which, becoming injected with blood vessels, constitute fungoid expansions, lying on the subjacent cartilage -

The termination of synovitis, when of a simple character, arising as the result of rheumatic influences, will generally be in complete resolution. In other cases plastic material may be thrown out that either assumes the form of warty vegetations or concretions within the joint or of bands stretching across its interior or united with its capsule, occasioning permanent stiffening and diminished mobility in the articulation.

Symptoms consist of severe and constant pain, though this pain varies much in character from the causes of the affection and the constitution of the patient, in whom it occurs. Thus in synovitis arising from cold, damp &c and in traumatic cases it is usually of a sharp aching character, which commences early and gradually increases in severity and ultimately becomes intense; but when the disease occurs in rheumatic or gouty constitutions it is more of a gnawing character; and in that peculiar form of synovitis, which has been, by some pathologists, termed purulent, and which occurs as one of the results of pyaemia, it is of a superficial and indeed almost cutaneous character. There is also swelling, which is not altogether uniform; the joint becomes most prominent at those points

where there is least resistance, as, in the case of the knee joint, where it bulges out laterally and beneath the tendon of the quadriceps muscle, and, in the elbow joint, it is distinctly perceived under that of the triceps.

The skin over the joint is red, tense, hot, and sensitive.

There is general pain pervading the whole part but greatest in the interior. As regards the position of the affected limb it is generally that of flexion, which doubtless affords the patient relief by producing relaxation of the affected membrane.

We must however remember that this flexion of the joints may occur from purely physical causes viz: the actual presence of a fluid. While these changes are taking place in the form and appearance of the joint, the constitutional sympathies more or less in all cases and, in proportion to the severity of the accompanying febrile disturbance, will the prognosis be good or the reverse. This fever is generally at the outset highly inflammatory but, as the case progresses, it may assume even a typhoid type accompanied even by delirium and other head symptoms and is invariably found that the constitutional disturbance is much more serious, when only one joint is affected and that the cause has been traumatic; for when the disease originates in a gouty or rheumatic constitution, then the febrile symptoms are much less marked and generally we have a number of joints at the same time affected, but in these

cases the disease is generally of a chronic nature and the affection of the joints a secondary result.

If the disease is about to terminate in suppuration then this event is generally denoted by the presence of rigors; fluctuation gives to the finger the feeling of pus rather than of serum; the patient complains of a peculiar throbbing and tense pain and now we have a more certain evidence of pus being present in the joint, for the swelling soon begins to point and to approach the surface and bursting the matter is discharged and we have the interior of the joint exposed to the atmospheric influence.

The accompanying fever, which has up to this period of the case been of an inflammatory type, now changes to that of a typhoid character, the pulse becoming small weak and in some cases scarcely perceptible and other symptoms of exhaustion soon make their appearance, and we usually have hectic fever with its night sweats as coming on and increasing. But it commonly occurs that we have a fresh inflammation set up in the abscess formed in the exposed joint and a consequent repetition of the inflammatory fever.

Having considered the course and pathology of the disease, we must now look at its treatment. This will depend partly on the severity of the attack and partly on the cause.

Venesection will probably be had recourse to, if the inflammation be acute and arise from injury, unless of course other symptoms

be present, which counterindicate it, for it is of the utmost importance that we early, by the most efficient means in our power, reduce the intensity of the disease; and this measure will especially be had recourse to if the patient be young, strong & plethoric; but in all cases local blood letting by leeches or cupping will be highly beneficial, and ought to be followed by constant fomentations - It is recommended by some surgeons that the motion of the affected limb be restrained by a splint. This may be efficient and useful, when the joint is moved, not by any voluntary power on the part of the patient, but when, from spasmodic twitchings of the muscles, the limb frequently starts, giving the patient great pain and aggravating the febrile disturbance. Perhaps we may obtain perfect rest for the limb by a careful arrangement of pillows &c which will prove less irksome to the patient than the splint. By now administering Calomel and Opium we will save as much of the structure of the articulation as is possible and, most probably, Opium either by itself or in conjunction with Camphor & Hyoscyamus will be demanded to allay the spasms if these prove excessive. Saline purgatives are highly recommended by some to allay the inflammation but, as their proper effect interferes with the rest, which the joint requires, that object will perhaps be better attained by the use of tartar of antimony given in full doses, combined with strict antiphlogistic regimen; which must be rigidly adhered

to. If the disease is of a rheumatic character, leeches must be applied, followed by hot fomentations, and, if there be much febrile disturbance and much pain at night, colchicum with salines in combination with Dover's powder should be administered - The applications of blisters followed by Calomel & opium may be useful when the disease is of an erythematous origin, but must be used with caution and not till the acute stage has subsided - Friction, prepulse, stimulating plaster or the slightest forms of counterirritation may be used without absorption. As mentioned before, during the acute stage of the disease all motion is to be guarded against, but as soon as the disease has passed away and the patient is convalescent, then a little use of the joint is desirable for long continued immobility of a joint is sufficient to cause serious structural change: effusion of serum into its cavity, change in the synovial membrane, disease of the cartilages & even ankylosis.

But, if the disease has run on to suppuration and matter is clearly detected in the joint, then the proper treatment will be to make a free incision for its escape, and we must treat the fresh attack of inflammation, which generally ensues, by rest and general antiphlogistic measures: and by these means we hope to get the cavity to contract and close though very frequently this result does not happen. Our diagnosis of joint must be certain before we open the joint and, perhaps, its

the safest rule to wait until the abscess points. Should however the swelling remain for some time and we are still in doubt then perhaps the safest practice is to make a puncture with a grooved needle and so be enabled to examine the nature of the fluid before laying the joint open.

Chronic Synovitis - This affection may either be simple a primary affection or the sequel of the acute form. It may be a special affection occurring in & characteristic of the strumous cachexia. It comes on very insidiously, its symptoms being very obscure, the pain & heat and other evidences of inflammatory action being either altogether absent or very slight, and indeed the chief symptoms of the presence of morbid action is the swelling, which is invariably present. This swelling is peculiar in some respects, for here it does not come on until some days ^{after} that pain & uneasiness is felt in the joint - so differing from that in acute synovitis, where it follows close upon the pain; and it also is peculiar in its form being of a peculiar bulging character and very distinct - If the disease proceeds, the synovial membrane and surrounding tissues may become thickened and gritty and the swelling will consequently lose its softness and fluctuation. The membrane is increased in vascularity and its smooth internal aspect changes into a soft pulpy and villous surface. The cavity contains a serous fluid, mingled with a portion

of puriform secretion and sometimes the process of accumulation is very rapid in its rise. In this case the fluid is generally of a serous character, and, when the form of the swelling is influenced by the natural configuration of the joint it is called *Lydrops Articulæ* and is especially seen this condition in the knee joint.

The most prominent symptoms, then of Chronic synovitis will be the presence of an unequal, fluctuating swelling with dull pain, with some heat though never great; the joint is generally in a flexed position, and the tendons of the flexor muscles assume a rigid condition.

The Causes of this affection are of much the same nature as those of the acute form, though it is rarely the result of external violence or wounds; very commonly it is attributed by patients to exposure to cold and damp, to twists or strains and is especially met with it in those, whose constitutions have been debilitated by syphilis and mercury and, in whom the slightest irritation may be sufficient to set up morbid action.

In the treatment of this affection rest is the most important point to be attended to, and, effected thus with perfect success, the joint is generally fixed with leather splints. Before having recourse to immediate counter-irritation, it is very properly recommended to use mild antiphlogistic measures, and some even apply a few leeches, which method of depletion is simply intended

to promote the subsequent use of the counterirritants, on which,
in the treatment of this disease we have mainly depended.
Repeated blutings over the whole of the joint constitute perhaps
the most efficient and useful local means we possess and, in the
more advanced stages of the disease counterirritants, blisters,
croton oil embrocations, tataric emetic ointment, or an ointment
containing the nitrate of silver and such like agents, together with
douches, either of warm sea water or of some of the sulphurous
springs as those of Aix, Harrogate or Baidge. These waters
taken internally and applied externally locally to the joint in the
form of the douche, are of great service in the treatment of diseases
of articulations especially those of a chronic nature and attended
with more or less alteration of structure. When the inflammatory
mischief has entirely departed and nothing but enfeebled action
of the joint remains, then various discutient plasters may be
applied to encourage absorption of the products of the morbid
process. Crepand may be used and, for this purpose, some re-
commend the application of gum plaster especially soap plaster
spread upon leather. But, while thus treating the affection
by these local measures we will do good by administering the
iodide of potassium internally so as thoroughly to produce its
alterative & constitutional effect: this medicine teaching no doubt
to produce absorption and induce healthy action and some have
advised its external use, in the form of an ointment.

In Glydrops Arthriti, in addition to the measures already recommended, friction, in conjunction with absorbent remedies, as the iodine and mercurial ointments, with the internal use of iodide of starch or a mild mercurial course. However these remedies sometimes fail to prevent the reaccumulation of the fluid and, in such cases, an entirely different plan of treatment has been adopted by certain French surgeons, especially Jobert and Velpeau in Paris and Boinet of Lyons. This plan consists in the injection of tincture of iodine into the cavity of the joint. For this purpose a dilute solution of the iodine is used. They introduce a small trocar and introduced into the joint a moderate quantity of the viscous fluid is let out then a corresponding quantity of iodine solution is thrown in and, after a few minutes is allowed to escape. By this proceeding they induce a fresh inflammation, which is treated by antiphlogistic means and the general result of this plan has been favorable, ending in many cases in a complete cure without an- chylosis. But as this proceeding has not been generally received as yet in this country more practitioners of its efficacy are necessary. Some have recommended acupuncture either withdrawing the fluid with a cupping glass or allowing it to escape into the surrounding cellular tissue.

Scrophulous Chronic Synovitis. We will briefly consider the nature and treatment of this disease.

It is generally associated with the strumous cachexy and in

this condition is generally found the synovial membrane degenerated into a soft pulpy substance. We find that, when the joint receives the injury which is generally the exciting cause, it slowly swells and has its motions more impaired. This swelling is soft and elastic and is devoid of fluctuation. The joint may remain for a long time in this condition, but suppuration generally supervenes. Little pain is usually complained of; the integuments are pale and not tense and the pressure & manipulation of an examination can readily be endured. It generally occurs in adolescents and a slight injury as a blow strain or even twist seems sufficient to produce it, and as the disease progresses the limb wastes the muscles becoming flabby and weak.

The treatment here is of a similar nature as that employed for simple chronic synovitis that is by rest & pressure. Scott's method is found to be very useful in all chronic affections of joints. It consists in having the limb supported by a bandage and in stimulating the skin with mercurial ointment: the limb is then surrounded with bands of adhesive plaster. Splints made of leather are applied so as to keep the limb from moving. When the dressing becomes loose it must be resupplied as often as may be necessary and, for fear of the ultimate impairment of the joint's motion, the limb must be kept in the best position for future use: thus the elbow by extension

with splints may be bent so as the convenient for prehension &c.

During the progress of the case it will of course be necessary to attend to the constitutional state and we will endeavour, as far as possible, by the administration of nutritious diet cod liver oil, iron, and boric acid to improve this.

Fimbriated Synovial Membrane.

In this affection we find loops of capillaries projecting into the joint, covered by a synovial membrane, which are scattered over in the form of villi; and the disease consists essentially in the hypertrophy of fimbriae of synovial membrane and we even sometimes find fimbriated deposits in them. These villi are attached sometimes broad, sometimes very narrow, peduncles so that by any violent use of the joint they may get disconnected & thrown loose into the joint. This disease is most frequently seen in the knee sometimes in the elbow. Its symptoms are generally very obscure, pain is complained of after and during exercise, probably from these projecting villi getting displaced and interfering with the motion of the articular surfaces.

We can only hope to cure, if possible, this affection by the same plan of treatment as is set down for synovitis of the most chronic form.

The Inflammatory process originating as it sometimes does external to joints may be either of a simple character and prove local suppuration or may occur in the rheumatic diathesis.

The Simple form. Here we have inflammatory action setting up external to the joint, unconnected constitutionally, and generally acute in its symptoms and tending to terminate in suppuration.

As regards its Causes may be the result of injury, or of erysipelas in the affection may be chronic in character, commencing, at first, of fibrinous exudation causing swelling with stiffness of the joint and, a long time after, suppurative.

If the matter is opposed in reaching the surface it extends both laterally in depth so as to endanger the joint and should it make its way into the joint it will probably produce complete destruction of the textures around, & setting up a fresh inflammation.

In the treatment of this disease antiphlogistic measures must be adopted, as early as possible, so as to arrest the inflammation before it goes on to suppuration for when this occurs an incision should be made as early as possible so as to avert articulation complication.

In the Rheumatic variety we seldom have the inflammatory process running on to suppuration - In the acute form the joint soon becomes affected, but in the chronic form, the

whole mischief is external to the joint. The inflammation is chronic in its nature and is situated, either in the fibrous layers external to the joint or in the periosteal investment of the articulating extremities of the bones. The periosteum becomes more vascular and the corresponding surface of the bone opens out in texture and becomes covered by bony points which project and impair the movements of the joint.

There is pain, very severe at night, also swelling, heat, and painful on pressure, and the use of the joint much impaired.

The treatment should commence at an early period by antiphlogistics, especially by leeching & cupping, fomentation and rest, and we must treat the constitutional disorder by colchicum, iodoide of potash, & guaiacum as also by alkalis, in the form of fomentations to the affected joint.

Inflammation of the Cartilages

In the healthy state no blood vessels penetrate articular cartilage and, on this account, a great number of doubts have arisen as regard their mode of nutrition and the morbid processes connected with them. It has been thought, that inflammation could never take place in a texture not pervaded by blood vessels, that all the forms of destruction of cartilages are either mechanical or chemical, the surface of the joint being worn away by attrition. It has been again contended that, although inflammation takes place in cartilages, which is a non-vascular tissue, vessels pass into it when it becomes the seat of morbid change.

Mr. Liston demonstrated these vessels by injection in diseased joints. Velpeau and Key say that articular cartilage is extra-vascular and maintain that it is a mere epidermic crust endowed with no organic life and hence unsusceptible to disease. Sir B. Brodie & Mr. May say that it is non-vascular, and the former supports his view by observation of vessels containing red blood extending from a diseased bone into cartilage covering it.

Diseases of Cartilage may arise in three ways.

- 1.st Through the medium of synovial membrane.
- 2.nd Through the medium of pulpy bone.
- 3.rd By means of changes taking place in the cartilage itself.

1.st The destruction of cartilage as the result of synovial disease may best be studied in cases of wound of the joint.

In these cases it will be found that the diseased action spreads from the synovial membrane, where it is most intense, downwards into the substance of the cartilage, which superficially diseased becomes more healthy the deeper we examine it.

Under the swollen injected synovial membrane, the cartilage will appear red and soft. A slice of the cartilage being examined with the microscope, it will be found to be composed of granular matter and nuclei of cells. Deeper than this, it will present an opaque matter with cells some perfect others imperfect or disintegrating: below this we come to healthy white cartilage with clear matter and well formed cells.

The total destruction will go on till the bone is exposed.

Aston Key thought that a peculiar disease was set up in the synovial membrane, by which a fungoid network of vessels was formed, by means of which the cartilage was absorbed so that the removal of the cartilage went on as the membrane extended. But Dr. Goodsir has shown that this doctrine is wrong, for he states that a fibrous tissue forms in a diseased joint, as the result of the disintegration of the cartilage. and that this, which is connected either with the synovial or opens surfaces, speedily becomes vascular.

2.nd Disease of cartilage through the medium of subacute bony

typus is a very common mode of the disorganisation of joints especially in chronic subjects.

In these cases the articular extremities of the bones become congested and then may run on to caries and even necrosis. By this process the investing cartilage becomes detached, its under surface softened and finally perforation takes place in a direction from below upwards. The diseased portion of cartilage corresponds to the curious band, from which it is separated by gross fluid and it will be found that the under edges of the perforation in the cartilage are separated from the subjacent bone and that they are bevelled off towards the perforation.

3. Disease of Cartilage may take place by means of changes in itself.

That the inflammatory process can take place in cartilage is the opinion of Mayo, Linton & Brooke. The observations of Goodrich Rainey & Wedfer show that cartilage like other extra vascular tissues is subject to other transformations independent of the prolongations of vessels into it. Wedfer has pointed out that the following changes take place: the cartilage cells enlarge become rounded and granular looking and instead of containing two or three nuclei a considerable number are enclosed in the cell wall and at last these capsules break up and are disintegrated. The matrix of the cartilage now softens and as Wedfer has shown splits up into fibres or bands, which become nucleated.

Naming has showed that a kind of fatty degeneration takes place, which helps to soften and breaks down the structure. In cartilage in which disease has gone on for a long time we find masses of porcellaneous deposit attached to the ends of the bones in plates and layers taking the place of the eroded cartilage.

Simple Destruction of Cartilage commences on the free surface of the cartilage with very little pain after the cartilage be above destroyed. After a time, the disease becomes more extended and the symptoms are more severe; a true inflammatory process is set up and pus is formed. When the extent of the disease is limited, the destroyed part is of a circular form and seems as if the tissue had been worn away. The diseased surface is usually villous & under the microscope shows the bands and fibres arising from the splitting of the hyaline substance. Where the tissue has been perforated, the subjacent bone is exposed, the synovial membrane is red & swollen.

As regards the symptoms the part is at first dull and uneasy and motion slightly impaired and there is very little swelling. The pain is severe at night and generally referred by the patient to one particular spot. Acute pain supervenes, aggravated by motion and we sometimes can detect a grating sensation arising no doubt from the rubbing against each other of the opposing surfaces of the bones. The pain is often referred to other joints as, in the case of the knee joint, when the patient complains of pain in the

Knee. and the limb is usually cold weak & oedematous. The flaccidity of the muscles is in some cases well marked as in the case of morbus coxae where the glutes become soft.

The many sinistors are present in the joint for a long time before swelling appears. and the swelling may be due to accumulation in the synovial sac & in the ligaments altogether external to the joint.

The peculiar balmings which are marked in chronic synovitis are here absent as the accumulation is very gradual.

This disease may terminate in various ways:—

First Resolution may occur at any time during the disease or Disintegration having occurred may prove but slight & functions be restored or true ankylosis may occur the limb being permanently maintained in the function of its articulation or the inflammatory destruction may become so great and the constitution being affected we lose all hope in saving the limb so that for to save life we must have recourse to amputation.

In the treatment of this disease perfect rest of the articulation by means of splints from the very commencement of the disease is of the utmost importance. At the same time blood should be taken away by cupping or leeching from the affected part. and this must be followed by fomentations. The joint may be bled after the violence of the symptoms have been subdued, but in many instances the application of the actual cautery is most beneficial. The patient being rendered insensible, a cauterizing

iron heated to a black red heat should be rapidly drawn over the affected joint in a series of parallel lines across which an equal number of cross bars and again drawn so as to cross but not to destroy the true skin - Inflammatory action is set up and is followed by slight suppuration and, when this has subsided, the application of the hot iron may be repeated if necessary; in this way pain and suppuration of the joint may be averted. Counterirritants should be used before suppuration has set in. The constitution should be looked to at the same time; at first antiphlogistic measures should be enforced and afterwards reborative ones. Whenever there is much pain opiate should be exhibited.

Loose Bodies in Joints. We sometimes find, within joints, bodies of an irregular solid form, apparently cartilaginous but not so their consistency being that of cartilage but their structure is fibrous. Sometimes they are hard, sometimes soft, and are then composed of a fatty tissue. They are most commonly noticed in the knee joint and are generally of an oblong flattened form, with rounded edges and with a smooth glossy surface. They are sometimes met with as rounded flattened and even very irregularly shaped bodies. Sometimes they are soft, frequently almost cartilaginous, and sometimes bony. Such as are quite bony have a rough granular appearance. They are generally about the size of a bean. These substances may be produced in a variety of ways.

First, by external growth. A deposit takes place exterior to the synovial membrane and, as it enlarges, pushes the membrane before it into the cavity of the joint & thus, bursting it may be thrown loose into the joint.

Secondly, by internal formation in the substance of the synovial membrane, and then finally becomes detached and gains access to the joint.

Thirdly, by epithelial growth in the joint cavity by the development of epithelial cells.

Fourthly, by hypertrophy of the articular cartilages.

The opinions in regard to the formation of these bodies vary. Remakus and Moers think they are pieces of cartilage broken off. The den believes them to be the joint glands torn off by violence. Richat holds them for a change of a portion of synovial capsule into cartilage.

Hunter supposed them to have been originally extravasated blood, which had become organized and assumed the nature of the part with which it was connected.

Sanchez holds them to be precipitated into the synovium.

Laennec is of opinion that these bodies are formed on the outer surface of the synovial membrane and gradually pass into the cavity of the joint: the synovial membrane with which they are covered yielding and forming a stem by which they are attached. In consequence of the displacement the foreign

body suffers the stem is torn through and the body is forced loose in the joint - Others think that some of these bodies are organic formations, whilst others on the contrary are inorganic concretions.

Symptoms. The foreign body may exist within the joint for a long time, without producing any uneasiness as long as it is not between the ends of the bones, but, the moment it comes between them, there is very great sudden pain and further motion is arrested. There is not relieved until the intruding substance has been again placed in an unoffending position by gentle flexion and manipulation.

The Treatment ought to be palliative when it gives no inconvenience - but the radical cure must be the removal or absorption of the bodies altogether. This has been effected by a subcutaneous operation, first introduced almost simultaneously by Prof. Syme & Groyand. This operation diminishes the danger in the removal of these foreign bodies from joints by preventing the entrance of air. The foreign body being fixed a hæmorrhoid fold of skin is made at the part, through the base of which a narrow bistoury is carried under the skin, and, by one or more strokes all the parts covering the body are divided. It is then pushed out of the cavity of the joint into the subcutaneous space, where it is fixed with a bandage. Some days after, when the subcutaneous cut is perfectly healed, the foreign body

is removed simply cutting through the skin -

Another method is by applying a blister over the part after you have made a few subcutaneous incision through the synovial membrane and cartilage.

Inflammation of the Bones forming the joint -

This process commences in the osseous spongy part of the joint end of the bones and is, at first, accompanied with very little pain. After some time a swelling of the external parts of the joint is noticed which appears elastic. The swelling is larger when the joint is in action and smaller when it is at rest.

The movements of the ^{joint} are very little hindered: the pain comes on by degrees, the external skin becomes red, and, at last, breaks from which opening pus is discharged -

The joint ends are found in different conditions; they are soft broken up and dusky red color their vessels much enlarged and the cells of the bones are filled with red blood corpuscles.

Generally the cartilages are unchanged but their inner surface is loosened from the distal bone. When the disease has gone a good length both bone and cartilage are destroyed, the synovial membrane fragments decay and the cavity of the joint filled with pus.

Scrophulous inflammation of the joint ends of bone is most common in the spongy bones of the wrist and metap.

It is more frequent in young persons than in adults.

It may be caused by external violence but the stimulus
chatterbox is always associated with it.

The treatment is the same as in inflammation and ulceration
of cartilage.

Destruction of Bone in joints.

Articular ulcers may commence in the cartilage & extend
to the subjacent bone & vice versa. The hip joint is
seldom joint. The treatment consists of counterirritation and
rest, and the case may terminate in cicatrization and ankylosis.

Articular Caries. This destruction of bone may be either simple
or accompanied by a tubercular deposit. It may either arise from
the disorganization of the cartilage or the original disease may
be gotten on degeneration of the synovial membrane, the ends of
the bones becoming carious. As the Caries starts any progress in
the cancellated texture, the cartilage, synovial membrane being
secondarily involved.

Certain results must be looked to in the treatment. For in
the first place we may have a spontaneous cure, that is a
sound part left, which may completely cure by ankylosis.

In the next place we may get the disease brought to the adjoining
treatment for caries, and may get a false joint formed, or, lastly,
better supervening, amputation is our only result.

Anchylorosis or Stiff Joint is a very frequent termination of the chronic varieties of the diseases, we have already planned it, and may be said to be the result of the destruction of a joint by chronic inflammation, and consists in the more or less consolidation of the parts around and within the articulation. It is in many instances nature's own cure; in some cases the best possible termination.

Often Anchylorosis we have different kinds.

1. The Complete or Open and of this we have two marked kinds: in one all the soft parts within the joint are destroyed, and the open surfaces of the bones forming the joint have united and we have the best example of this variety in the elbow joint. In the other variety there has been a fibro-cellular deposit and the bones partly united by this are also tied together by bands of osseous matter, which are thrown out external to the articulation and stretch from one side to the other. There are thought to proceed from the ossification of the ligaments and muscular tissue. In this kind of anchylorosis the articulation is perfectly rigid and unmovable.

2. The Incomplete or Fibro-cellular form. In this kind of anchylorosis the stiffening of the joint may depend on the thickening of its fibrous capsule or it may be caused by the removal of the cartilages and synovial membranes, and their places filled up by a fibro-cellular tissue, which binds the articular ends

together. In this form we have still some degree of mobility left.

3. In this third form we find no structural change of the ligaments proper to the joint nor union of the bones. It seems to be entirely dependent on a morbid state of contraction of the muscles surrounding the joint.

In the Treatment of Ankylosis when we find that the establishment of ankylosis, is the only means of cure in a diseased joint we ought carefully to attend to the best position as well as the most useful one; thus, if it be the elbow, then the ankylosed joint should be placed at a right angle, whilst if it be the hip we should strive to keep it in a somewhat straight position.

We can generally restore the mobility of a joint ankylosed in a good position, if the ankylosis be only of a fibrous character by the gentle employment of passive motion, frictions, and douches, especially with warm salt water or the mineral springs of a sulphureous nature: In some cases where the immobility depends on fibrous bands stretching across the limb division of these bands may be effected subcutaneously.

Plaster bandaging is generally found useful in restoring normal position of joint.

In the treatment of complete ankylosis three modes have been proposed for its relief viz:

1. The cutting out of a wedge shaped piece of bone from the

amputation. This was first performed by Barton one of the surgeons of the Pennsylvania Hospital, Philadelphia, U. S. who performed a successful operation for the relief of an ankylosed hip joint. He commenced the operation by making an incision six or seven inches long with its middle corresponding to the great trochanter. A second incision was made across the former, about its center, at right angles, and four or five inches in length. The incisions were continued down to the bone so as to expose its anterior and posterior part between the great small trochanters, after which the bone was sawn through between the great trochanter and the neck. The limb was then readily restored to its natural position and found to be only half an inch shorter than the other. The case did extremely well and at the end of four months the patient could walk a considerable distance -

2. The establishment of a false joint, which is produced by laying bare the bone and sawing it in such a way as to interrupt its continuity: and for the purpose of preventing union it must be slightly moved from time to time and all other means likely to produce a false joint. ^{used} By degrees the two ends of the bones grow against each other and the moveable ends becomes rounded & blunted whilst the other becomes slightly concave. Two successful operations have been performed, the first by Barton, who cut through and detached all the soft parts

about the great trochanter and then divided the bone with a small saw, after which the limb was placed and retained in Desaults extending splint. The second was performed by Rodgers of New York and also did well.

3. A cure has been attempted by producing sudden rupture of the ankylosed articulation and this mode was practiced and greatly praised by the like surgeons. A case is referred to by Arnup of ankylosis of the knee joint, in which an attempt was made to restore motion by suddenly bending the knee upon the thigh.

A painful cracking sound was immediately heard in the knee and alarming abdominal and thoracic symptoms soon set in which in a few days destroyed the patient.

M. Louvier invented an apparatus, by which the rupture of ankylosed joints might be effected. But serious accidents arose from the employment of so violent means, such as laceration of the integuments, of the great arterial & venous trunks, of the nerves and ligaments, and the more or less severe laceration of the soft parts in consequence of which sloughing frequently occurred.

We will now enter into a brief consideration of those peculiar affections which are comprehended under the name of Hysterical diseases of the joints. These are characterized by severe pain and tenderness in the joint without any evident tumefaction. The joint is fixed and immovable and then

It is moved it is very painful and the leg is generally in the extended position. There is frequently a tendency to spasm, which differs from the real disease of the joint, in which the limb is usually bent and there is the painful and involuntary startings of the limb brought. The joint does not enlarge or alter in shape although sometimes there is more or less swelling. The temperature of the joint and indeed of the whole limb is various at different times. In the morning the limb may be cold and of a pale color while in the afternoon it becomes warm and in the evening is actually hot to the touch, with the vessels tinged and the skin shining.

Coulson has made observations on these phenomena and he finds that the affected limb is liable to remarkable alternations of heat and cold: at one part of the day the limb feels cold and assumes a purple aspect, at another hot flashes followed by perspirations, break out over the extremity and again the limb does not merely feel hot to the patient but is actually so to the touch of another and the whole capillaries of the affected part become tinged with excess of blood.

There is also a sense of weakness in the limb and the absence of constitutional symptoms. When the hip joint is affected there is sharp pain in the hip which extends on the inside of the thigh to the knee joint and is not increased by touching the knee, if the thigh be undisturbed at the hip joint but increased by

any suppur and motion of the hip joint itself; but the pain is diffused and superficial. There is more a hip swelling about the region of the hip: the thigh is drawn up towards the belly because outstretching it is very painful; the foot is turned somewhat outwards and cannot be moved inwards without pain. Sir B. Brodie observes that this is not uncommon to find much attention in the figure of the foot. The pelvis projects posteriorly at the same time that the elevated towards the affected side so that the limb is apparently shortened as well to allow the limb heel to touch the ground, when the patient stands erect. This is due to the predominant action of certain muscles affected by the long continued unnatural position. The disease generally terminates favorably.

The Diagnosis of these cases is of much importance for if we mistake its true nature & treat actively than mischief perhaps irreparable may be done. We may be enabled to arrive at a correct diagnosis by bearing in mind the following diagnostic marks:—

1. The hysterical habit of our patient will affect in greatly her peculiar manner behaviour and conversation &c.
2. That her general health will not suffer if the disease be of a simulative character, as it would do in the real one and, should attend on the appearance of an acute inflammatory affection, we shall not have high fever, hot skin, hard pulse &c. as we certainly should observe in the real case.

3 That although a touch upon the hysterical part will make her scream out, firm equal pressure will be borne and will probably be followed by hysterical laughter sobbing.

The Treatment of these cases is chiefly medicinal by the mineral tonics, diet, fresh air and employment &c.

Another obscure and, to a certain extent, very unsatisfactory to treat disease of joint is what is called.

Neuralgia of joints. Now pain may occur in joints either from pressure on a nerve or from some neuralgic condition of the joint itself though we sometimes find in girls that the joints may be very painful owing to some uterine irritation. It is most common in the hip and knee and on examination it will be found that the pain is superficial, and cutaneous not existing in the interior of the articulation, or increased by pressure of the articular surfaces against one another and is not strictly confined to the joint but radiates for some distance around it. The pain is intermittent and is frequently associated with neuralgia elsewhere or with uterine disease.

Treatment. If there be present symptoms of anæmia and anæmia alvies and the preparations of iron are called for and the habits & constitution of the patient must be inquired into. Thus we will administer arsenic tonics, recommend sea bathing country air, good diet &c. and the most effective part of the treatment is said to be the application of cold douches and

the employment of electric magnetism. Atropine and acouite are useful in allaying the pain, when it is very severe as it is often is; but as the disease arises from constitutional causes in the majority of cases our treatment must so be directed. We now come to consider briefly

Wounds of Joints. In wounds of articulations either the capsular ligament may be opened or the articulating ends of the bones injured in different ways. The escape of synovia tells us that the wound has penetrated into the cavity of the joint. Sometimes however it happens that the wound of the skin & of the capsular ligament have become displaced and there is no escape of synovia and sometimes the wound penetrates into a mucous sheaf and a transparent viscid fluid escapes.

The danger in wounds of joints depends on the inflammation caused by the injury itself or by the entrance of air or of foreign bodies. Cuts & scratches heal without any symptoms. Bruised wounds are very dangerous. John Hunter says that from the disposition that the cavities of joints have to fall into the suppurative inflammation, when an opening is made into them that union by the first intention does not take place. The greatest care should be taken to put this in their power as possible for as they do not readily run through the regular stages of inflammation they give rise to the more violent symptoms. When they do suppurate it is very tedious and then the parts are apt to rot and slough

which makes these accidents have such dangerous consequences, and in cases of wounds he recommends a simple bandage as the best application and advises us to avoid making stitches because they tend to produce inflammation, and Aclay Cooper says, in young and healthy constitutions, these wounds in the largest joints are recovered from but, in aged and weak persons, they destroy life. Upon dissection in the first stage suppurative inflammation of the synovial membrane is found: in the second stage the ligaments of the joint are thickened and the synovial membrane in part ulcerated in part granulating. The Cartilages are absorbed granulations arising from some parts of the bones and exfoliations taking place from other portions.

The indications for treatment are first to put the joint in a proper position and to unite the wound with sticking plaster. The wound is then covered with a compress and the joint is extended into splints and with a circular bandage. Strict antiseptic treatment must be observed and purgatives should be avoided as by their effect disturbing the rest which the joint requires; the wound heals quickly if there is no inflammation, but, if the wound be long exposed to the influence of the air or, if the patient should move the joint, suppuration will take place in the joint often times also under the skin at a distance from the joint; the skin breaks and unless amputation be had recovery

to death will ensue.

Actly Coopers treatment of a wound of the knee joint consisted in a fine needle thread being passed through the skin only and bringing the edges of the external wound together: for a wound in a joint is different from all others as the synovia has a constant tendency to force a passage outwards and it is more abundantly secreted than usual so that adhesive plaster will not be separated and union prevented: lint therefore dipped in blood is applied over the surface of the wound and plaster over it: then the surface of the knee is to be covered with soft linen dipped in a solution of the liquor plumb. subac.: , after which a splint is placed below the limb to prevent all motion of the injured joint and positive rest is enjoined. The practice advised by Abernethy is the best. Having fixed the limb in the position, in which he supposed it to remain he brought the edges of the wound together with sticking plaster: and then having brushed the plaster over with a varnish spreading over a spirit of wine, which hardens in a few minutes: it was undressed then in suppurous tumours: so that a piece of linen, dipped in evaporating wash could be laid over the whole surface of the joint so as to regulate the inflammatory action, without detaching the plaster and depriving the wound of its support. If there is a great deal of inflammation, accompanying the wound repeated bleeding should be resorted to but especially local blood-

lating by means of fleeces. Suppuration should occur and pus cannot escape from the wound an incision should be made. Perfect rest is to be enjoined, moist warm poultices are to be laid over the joint. Suppuration should continue long and the powers of the patient be diminished nutritive diet and internal strengthening medicines ought to be administered.

Excisions of joints. This operation is resorted to in arthritic cases. In comparing the fitness of this operation with amputation objections have been started viz the difficulty of its performance especially in large ginglymoid joints; the danger of violent inflammation, and lasting suppuration; the tediousness of the cure and particularly that after the removal of the joint ends of the bones of the lower extremities in consequence of the shortness and stiffness of the limb, which remains it is only retained in a condition far worse than the use of an artificial limb after amputation, which is much less dangerous. Many of these objections are contradicted. The danger during and after the operation is not greater than in amputation and the symptoms are not so severe, still the removal of the ends of the bones is more difficult: the cure is more tedious, but accompanied with fewer inconveniences and preservation of the limb. ∴ the patient generally finds it in a very useful condition. The elbow and shoulder are the joints most suited to performance. The preservation of the arm even

with confined motion is not to be compared with its artificial supply after amputation, and the removal of the joint of the upper extremity is generally followed with good results.

The removal of the joints of the lower limbs are not so advantageous: the after treatment being more difficult & tedious and the result as to the capability of using the preserved limb incomplete.

Of fifty three cases of excision at the shoulder joint performed by Jaeger two had an unfavorable result: of fifty four at the elbow only four failed: and in three of the wrist all were successful but of these operations on the wrist Mr. Syme declares that it is very difficult to perform, that relapses easily recur and it leaves a stiff and useless limb - but he allows that these objections are supported only by theory and that experience might perhaps shew them to be of less importance.

Of thirteen excisions of the knee joint six were perfectly successful: three imperfectly so in reference to the capability of using the limb and three were fatal: though there is a worse result than from amputation still the operation must not be entirely rejected. Mr. Syme also observes that excision must always be considered more dangerous than amputation when the patient is very weak or has been wasted by previous disease, but, if he possesses moderate power, it is not to be supposed either from general circumstances or from the results of experience

that excision is attended with greater danger than the removal of the limb - Moreau also shows that ankylosis generally occurs after the operation and although the other joints of the foot become more movable, so is in some measure corrected amends for this stiffness, there can still be no doubt that the foot loses much of its elasticity.

We will conclude this dissertation on diseases of joints by a brief consideration of the circumstances, which are necessary for a favorable termination when excision is performed and of the cases in which excision is to be preferred to amputation.

For a good result with excision it is necessary in the first place that the patient's constitution be good and sound, that is to say, not more reduced than we would expect from the mutilation, pain, and continued discharge, then the operation is likely to be attended with success. But if he is highly sthenic or phthisical, then the result would probably be unfavorable.

The age of the patient influences the result, for if extensive disease is present, then the sthenic constitution is generally present and interferes with healthy reparative action - old age is unfavorable. It is at early adult age that the operation is best borne - Of course the textures around the joint must be sufficiently healthy, for if they are full of pus and adhere to the bones, then the result would be unfavorable as there would be no covering of skin for the bones.

Another important point is that the disease should be chronic before excision is attempted, for ankylosis may supervene in acute inflammation, which is liable to be followed by pyaemia. Of course the disease must not be too extensive as to entail the removal of a great part of a limb, and so render it less useful to the patient. There even an artificial one would be. Most probably in the following cases excision would be preferred to amputation :-

In cases and necrosis of the joint end of tubercular bones not spreading :-

In cases where amputation is not practicable, as in disease of the hip joint or temporomaxillary articulation -

In cases of spurious ankylosis of elbow or faulty ankylosis of knee.

In cases of bad compound dislocations and fractures into joints, especially in gunshot injuries, as of the head of the humerus and elbow

When degeneration of the whole joint has taken place from spina ventosa &c it is the only possible plan of treatment.

Also in old stammering dislocations with impossibility of moving the limb -

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