Pathological and surgical observations on the diseases of the joints / by B. C. Brodie.

Contributors

Brodie, Benjamin, Sir, 1783-1862.
Home, Everard, Sir, 1756-1832
St. Thomas's Hospital. Medical School. Library
King's College London

Publication/Creation

London : Printed for Longman, Hurst, Rees, Orme, and Brown, 1822.

Persistent URL

https://wellcomecollection.org/works/z6fyprsa

License and attribution

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

PATHOLOGICAL

AND

SURGICAL OBSERVATIONS

ON THE

Diseases of the Joints.

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

PROFESSOR OF ANATOMY AND SURGERY TO THE ROYAL COLLEGE OF SURGEONS;
AND SURGEON TO ST. GEORGE'S HOSPITAL.

SECOND EDITION,

WITH ALTERATIONS AND ADDITIONS.

ILLUSTRATED WITH PLATES.

LONDON:
PRINTED FOR
LONGMAN, HURST, REES, ORME, AND BROWN,
PATERNOSTER-ROW.
1822.

London:
Printed by A. & R. Spottiswoode,
New-Street-Square.

TO

SIR EVERARD HOME, BART.

V.P.R.S.

SENIOR SURGEON TO ST. GEORGE'S HOSPITAL,

&c. &c. &c.

DEAR SIR,

IN dedicating to you the following observations, I am anxious to avail myself of the first opportunity which has occurred, of publicly expressing my gratitude for the numerous favours which I have received from you, from the time of my first commencing my professional pursuits; and of acknowledging the obligations which I owe, to your example, to your instructions, and

to your friendly assistance, on many and various occasions.

Independently of these private considerations, I should have been desirous of prefixing your name to this volume, as a mark of my respect for one, whose talents and unwearied exertions have so essentially contributed to the advancement of surgery, and of those interesting branches of philosophy, which are connected with it.

I remain,

Dear Sir,

Your faithful friend and servant,

B. C. BRODIE.

October 19. 1818.

CONTENTS.

CHAP. IV.

ON THE ULCERATION OF THE ARTICULAR CARTILAGES.

CHAP. V.

ON A SCROPHULOUS DISEASE OF THE JOINTS HAVING ITS ORIGIN IN THE CANCELLOUS STRUCTURE OF THE BONES.

CHAP. VI.

ON CARIES OF THE SPINE.

CHAP. VII.

ON TUMORS AND LOOSE CARTILAGES IN THE CAVITIES OF THE JOINTS - - - 322

CHAP. VIII.

CHAP. IX.

ON INFLAMMATION OF THE BURSÆ MUCOSÆ.

INTRODUCTION.

THE following pages contain a series of observations, which were begun several years ago, and which have been continued, not without considerable labour, up to the present period. They relate to a class of diseases, which have strong claims on the attention of the surgeon; since they are of very frequent occurrence; are a source of serious anxiety to the patients; and, for the most part, if neglected, proceed to an unfavourable termination. There are other circumstances also, which seemed to render the morbid affections of the joints a fit subject of investigation. They have scarcely met with the attention which they merit from former pathologists. The terms, white swellings, scrophulous joints, &c. have

been used without any well-defined meaning, and almost indiscriminately ; so that the same name has been frequently applied to different diseases, and the same disease has been distinguished by different appellations. Confusion with respect to diagnosis always gives rise to a corresponding confusion with respect to the employment of remedies; and hence I was induced to hope, that, if it were possible to improve our pathological knowledge of the diseases to which I have alluded, this might lead, not indeed to the discovery of new methods of treatment, but to a more judicious and scientific application of those which are already known, and a consequent improvement of chirurgical practice.

The joints, like the other animal organs, are not of a simple and uniform, but of a various and complicated structure. Although in the advanced stages, the diseases, to which they are liable, extend to

all the dissimilar parts of which they are composed, it is to be presumed that such is not the case in the beginning. We cannot doubt, that here, as elsewhere, the morbid actions commence, sometimes in one, and sometimes in another texture; and that they differ in their nature, and are variously modified, and of course require to be differently treated, according to the mechanical organization, and the vital properties of the part, in which they originate.

It was under the influence of these impressions that I endeavoured to pursue my enquiries into the subject of the present treatise. Believing that nothing has contributed in a greater degree towards the modern improvements in surgery, than the practice of investigating by dissection the changes of anatomical structure, which disease produces, I availed myself of every opportunity which occurred of making such examinations. In particular, I was anxious to do this where

the morbid changes were still in an early stage, and where I had the opportunity of noting the symptoms by which the incipient disease was indicated; and the knowledge which was thus acquired became the basis of my future observations. In laying the results before the public, I cannot be otherwise than conscious, that these researches are still imperfect. But I feel assured, at the same time, that those who are engaged in the study of pathology, will make due allowance for the difficulties, which belong to this most complicated of all the sciences, and will not be disposed to criticise my labours severely, because they find, that there is still an ample space left for those, who may be willing to engage in similar enquiries.

Some of my readers will recognize in the present work the substance of three papers, which have been published in the fourth and two subsequent volumes of the Medico-Chirurgical Transactions; but

they will also find a considerable proportion of new matter. I have met with no reasons for altering my former arrangement of those affections of the joints which are of most frequent occurrence. Indeed it has been to me a source of much satisfaction, that all my subsequent observations, founded on numerous additional cases and dissections, have tended to confirm the accuracy of those pathological views, which I was led to adopt several years ago, and which I ventured to bring forward in the first of those papers, to which I have alluded.

CHAP. I.

ON INFLAMMATION OF THE SYNOVIAL MEMBRANES OF JOINTS.

SECT. I.

Pathological Observations.

THE soft parts, which, added to the bones and cartilages, constitute the structure of the joints, are, the synovial membranes, by which the lubricating fluid is secreted; the ligaments, by which the bones are connected to each other; and the fatty substance, which occupies what in certain positions would otherwise be empty spaces. It is to be supposed, that the adipose membrane belonging to the joints may be inflamed; that it may be the seat of abscesses and tumours, as well as that which is situated beneath the skin or in the interstices of the muscles; and the

ligaments cannot be regarded as more exempt from disease than the fibrous membranes, which they very nearly resemble in their texture. It is not improbable that some of the pains which take place in the joints in syphilitic affections, may depend on a diseased action occurring in the ligaments; and there can be no doubt that the long-continued symptoms, which occasionally follow a severe sprain, depend on these same parts being in a state of slow inflammation, in consequence of some of their fibres having been ruptured, or over-stretched. I cannot say that I have never seen a case, where disease, independently of these causes, has originated in the ligaments; but I certainly have never met with a case, where it has been proved to have done so, by dissection; and it may be safely asserted, that this is a rare occurrence, and not what happens in the ordinary diseases to which the joints are liable.

On the other hand, no part of the body is much more frequently diseased than the synovial membranes. This is what their anatomical structure and functions might lead us to expect, since we find that living organs are more subject to have their natural functions deranged, in proportion as they are more vascular, and as they are employed in a greater degree in the process of secretion.

The synovial membranes of the joints have not been well described by the majority of the old, nor even of modern anatomists. A sufficiently accurate account of them, however, has been published by Dr. W. Hunter, in a communication to the Royal Society on the structure of cartilage, published in the forty-second volume of the Philosophical Transactions, and since then by M. Bichat, in his *Traité des Membranes;* and to these authors I may refer those of my readers, who wish to see their anatomy more fully explained. At present it is sufficient for me to ob-

serve, that the office of the synovial membrane of a joint is to secrete the synovia, by which the joint is lubricated; that it lines the ligaments, by which the bones are held together; covers the bones themselves for a small extent, taking the place of the periosteum; and that from thence it passes over the cartilaginous surfaces, and the inter-articular fat. Where it adheres to the bones and soft parts, it very much resembles the peritonæum in its structure, and possesses considerable vascularity; but where it is reflected over the cartilages it is thin, and readily torn; — its existence, however, even here, may be always distinctly demonstrated by a careful dissection. The synovial membrane of a joint forms a bag, having no external opening; in this respect resembling the peritonæum, the pleura, and the pericardium; which it also resembles in its functions, and to which it bears some analogy in its diseases.

Cases occasionally (but not often) occur,

in which a joint is swollen from a preternatural quantity of fluid collected in its cavity, without pain or inflammation. This may be supposed to arise, either from a diminished action of the absorbents, or an increased action of the secreting vessels. The disease may be compared to the dropsy of the peritonæum, or pleura; or, more properly, to the hydrocele; and it has been not improperly designated by the terms, "*Hydarthrus*," and "*Hydrops articuli.*"

It more frequently happens that there is swelling from fluid in a joint with inflammation and pain. Here we may presume that the disease consists in an inflammation of the synovial membrane, with a consequent increase of the secretion from its surface; and I have found this confirmed by the appearances observed in many such cases, in which I had the opportunity of examining the affected parts after death.

In some instances, while there is still

pain and inflammation in the joint, the fluid is felt indistinctly, as if a considerable mass of soft substance lay over it. Often, when the inflammation has subsided, and the fluid is no longer to be felt, the joint remains swollen and stiff; painful, when bent or extended beyond a certain point, and liable to a return of inflammation from slight causes. The appearances observed on dissection, in the following cases, seem to throw light on this subject.

CASE I.

A middle aged man was admitted into St. George's Hospital in September 1810, on account of a disease in one knee. The joint was swollen and painful, with slight stiffness, and with fluid in its cavity. The swelling extended some way up the anterior part of the thigh, behind the lower portion of the extensor

muscles. It subsided under the use of blisters and liniments. Two months after his admission into the hospital, he was seized with a fever, apparently unconnected with the disease in the knee, of which he died. On examining the affected joint, the synovial membrane was found much diseased, and more capacious than natural, extending up the anterior surface of the femur at least an inch and a half higher than usual. Throughout the whole of its internal surface, except where it covered the cartilages, the membrane was of a dark red colour; the vessels being as numerous, and as much distended with blood, as those of the tunica conjunctiva of the eye in a violent ophthalmia. At the upper and anterior part of the joint, a thin flake of coagulable lymph was effused from the inner surface of the synovial membrane, of the size of a half-crown piece. There was no other appearance of disease, except that at the edge of one

of the condyles of the femur, the cartilage adhered to the bone less firmly than usual.

CASE II.

A. B., a young man, in the spring of the year 1808, in consequence (as he supposed) of exposure to damp and cold, became affected with a painful swelling of one of his knees. Under the treatment employed by the practitioner whom he consulted, the pain and swelling in great measure, but not entirely, subsided. Three months after the disease first took place, he was admitted into St. George's Hospital. At this time the knee was swollen, painful, and tender. The swelling had the form of the articulating ends of the bones. The leg was confined to nearly the straight position, and admitted of very little motion on the thigh. His general health was unaffected.

Blood was taken from the knee by cupping; and afterwards it was rubbed daily with mercurial ointment and camphor. The pain and inflammation subsided; and the swelling and stiffness were in some measure lessened. It afterwards became necessary to amputate the limb on account of another disease. The operation was performed on the 15th of December 1808, and I did not neglect the opportunity of examining the joint.

The bones, cartilages and ligaments, were in a natural state. The synovial membrane was increased in thickness to about one-eighth of an inch, and was of a gristly texture. It was closely attached to the surrounding cellular membrane and fascia by means of coagulable lymph, which had been formerly effused on its external surface.

CASE III.

A middle aged man, who laboured under an organic disease of the liver, was admitted into St. George's Hospital on the 19th of December 1821, on account of a painful swelling of one knee. Blood was taken from the knee by cupping, and afterwards blisters were applied. The affection of the knee was much relieved under this treatment, but the joint remained rather larger than natural, and somewhat stiff. The disease in the liver continued to make progress, and the man died on the 11th of February 1822. On examining the body after death, the synovial membrane of the knee was found slightly thickened, and of a gristly structure. The vessels on its inner surface were more loaded with blood than under ordinary circumstances. The cartilage covering that portion of the articulating extremity of the femur

which corresponds to the patella, in one spot of about $\frac{3}{4}$ of an inch in diameter, presented an irregular surface, as if it had been partially absorbed, but not to a sufficient extent to expose the surface of the bone below.

These cases seem to explain the usual consequences of inflammation of the synovial membrane. It occasions, 1st, a preternatural secretion of synovia; 2dly, effusion of coagulable lymph into the cavity of the joint; 3dly, in other cases a thickening of the membrane; a conversion of it into a gristly substance; and an effusion of coagulable lymph, and probably of serum, into the cellular texture, by which it is connected to the external parts.

I have seen several cases where, from the appearance of the joint, and other circumstances, there was every reason to believe that the inflammation had pro-

duced adhesions, more or less extensive, of the reflected folds of the membrane to each other; and I have observed occasionally in dissection such partial adhesions as might reasonably be supposed to have arisen from inflammation at some former period.

These effects of inflammation of the synovial, very much resemble those of inflammation of the serous membranes. There are, however, some points of difference. In the latter, it is not very uncommon for suppuration to take place independently of ulceration. I have had an opportunity of examining one case, where the same thing had occurred in the synovial membrane of a joint. The elbow was found filled with pus, although there was no ulcerated surface. Here the inflammation followed a small wound, which had penetrated into the articular cavity; but I believe that inflammation of the synovial membranes, which has not had its origin

in mechanical injury, seldom terminates in this manner. Inflammation of the peritonæum or pleura, though very slight in degree, and of short duration, is sufficient to produce an effusion of coagulable lymph; but it is only violent or long-continued inflammation which has the same result in the membranes of the joints.

The slight adhesion of the cartilage to the bone in the first of the cases which have been related, and the partial absorption of the cartilage in the last case, we must suppose to have been the consequence of the greater disease in the synovial membrane. In another case, in which the patient, having recovered of inflammation of the synovial membrane, died several months afterwards of another disease, I found on dissection, that the greater part of the cartilage of the patella, and a small portion of that covering the condyles of the femur, had disappeared, and that its place was occu-

pied by a thin yellow membranous substance adhering to the bone. I have known some cases in which there was extensive destruction of the cartilages of a joint by ulceration, manifestly arising from neglected inflammation of the synovial membrane. That this should happen is no more remarkable than that ulcer of the cornea should occasionally be induced by inflammation of the *tunica conjunctiva* of the eye. At the same time, I believe it will be found in the great majority of cases, where ulceration of the cartilage is combined with inflammation of the synovial membrane, that the former is the primary affection, and that the latter takes place subsequently in consequence of the formation of an abscess in the articular cavity.

Sect. II.

On the Causes and Symptoms of this Disease.

It is evident that inflammation may affect the synovial membrane of a joint, by extending to it from some of the other textures of which the joint is composed, or that it may have its origin in the membrane itself. My present observations are intended to relate chiefly to cases of the latter description; and what little is to be said, in addition, respecting those of the former will be better introduced hereafter.

Although no period of life is altogether exempt from this disease, it does not occur equally in persons of all ages. It very seldom attacks young children; becomes less rare as they approach the age of puberty; and is very frequent in adult persons. This is the reverse of what happens with respect to some of the

other diseases, to which the joints are liable, and a knowledge of these circumstances will be found of some importance to the surgeon, in assisting him to form a ready diagnosis.

Inflammation of the synovial membranes may take place, as a symptom of a constitutional affection, where the system is under the influence of gout or rheumatism; where it is disturbed by the operation of the syphilitic poison; where mercury has been exhibited improperly, or in too large quantities; and under a variety of other circumstances. But, in these cases, the disease for the most part is not very severe; it occasions a preternatural secretion of synovia; but does not in general terminate in the effusion of coagulable lymph, or in thickening of the inflamed membrane. Sometimes it attacks the greater number of the joints at the same instant, and even extends to the synovial membranes, which constitute the bursæ mucosæ and sheaths

of the tendons. At other times it leaves one part to attack another, and several joints are affected in succession.

In other cases, the disease is entirely local; produced by a sprain or other injury; or the application of cold; and sometimes arising from no evident cause. The application of cold is, on the whole, the most frequent source of the complaint; and hence it is easy to explain, why it occurs much more frequently in the knee than in any other joint; and why it is comparatively rare in the hip and shoulder, which are defended by a thick mass of muscles from the influence of the external temperature. Where the inflammation is thus confined to a single joint, it is more probable that it will assume a severe character, and that it may be of long duration. It leaves the joint with its functions more or less impaired; and occasionally terminates in its total destruction. In itself it is a serious disease, but it is often confounded under the alarm-

ing name of white swelling, with other diseases, which are still more serious.

Inflammation may attack the synovial membranes in different degrees of intensity; but for the most part it has the form of a chronic or slow inflammation; which, while it impairs, does not altogether destroy the functions of the joint; and which, if not relieved in the first instance by active and judicious treatment, may, like a chronic ophthalmia, continue for weeks or months, and with occasional recoveries and relapses may even harass and torment the patient during several successive years.

In the first instance, the patient experiences pain in the joint, which although it affects the whole articulation, is often referred principally to one spot, where it is felt more severely than elsewhere. The pain usually continues to increase during the first week or ten days, when it is at its height. Sometimes even at this period the pain is

trifling, so that the patient experiences but little inconvenience from it; at other times it is considerable, and every motion of the joint is distressing and difficult.

In the course of one or two days after the commencement of the pain, the joint may be observed to be swollen. At first, the swelling arises entirely from a preternatural collection of fluid in its cavity. In the superficial joints, the fluid may be distinctly felt to undulate, when pressure is made alternately by the two hands placed one on each side. When the inflammation has existed for some time, the fluid is less perceptible than before, in consequence of the synovial membrane having become thickened, or from the effusion of lymph on its inner or outer surface; and in many cases, where the disease has been of long standing, although the joint is much swollen, and symptoms of inflammation still exist, the fluid in its cavity is scarcely to be felt. As the swelling consists more of solid

substance, so the natural mobility of the joint is in a greater degree impaired.

The form of the swelling deserves notice. It is not that of the articulating ends of the bones, and therefore it differs from the natural form of the joint. The swelling arises chiefly from the distended state of the synovial membrane, and hence its figure depends in great measure on the situation of the ligaments and tendons, which resist it in certain directions, and allow it to take place in others. Thus, when the knee is affected, the swelling is principally observable on the anterior and lower part of the thigh, under the extensor muscles, where there is only a yielding cellular structure between those muscles and the bone. It is also often considerable in the spaces between the ligament of the patella and the lateral ligaments; the fluid collected in the cavity causing the fatty substance to protrude in this situation, where the resistance of the ex-

ternal parts is less than elsewhere. In the elbow the swelling is principally observable in the posterior part of the arm, above the olecranon, and under the extensor muscles of the fore-arm; and in the ankle it shows itself on each side, in the space between the lateral ligaments, and the tendons, which are situated on the anterior part. In like manner in other joints, the figure of the swelling, whether it arises from fluid alone, or joined with solid substance, depends in great measure on the ligaments and tendons in the neighbourhood, and on the degree of resistance which they afford; and these circumstances, though apparently trifling, deserve our attention, as they enable us more readily to form our diagnosis.

In the hip and shoulder the disease occurs less frequently than in the superficial joints. The effused fluid here cannot be felt to undulate, but the swelling is perceptible through the muscles. When

the hip is affected, in the first instance a tumefaction may be observed in the groin and in the nates also; but where the disease has existed for some time, the nates assume a flattened appearance, in consequence of the glutæi muscles becoming wasted from want of use. The pain is usually confined to the hip itself; but I have known some cases, in which it was referred to the knee also. These symptoms to a certain degree correspond with those which take place where the cartilages of the hip are ulcerated; but attention to the following circumstances will enable us to distinguish the two diseases from each other. Where the synovial membrane of the hip is inflamed, the pain is more severe in the early than in the advanced stage of the disease, and it never amounts to that excruciating sensation which exhausts the powers and spirits of the patient who labours under the other affection. There is a tumefaction and tenderness of the groin from the

beginning. The patient complains of the pain being aggravated, when he stands erect and allows the limb to hang without the foot being supported on the ground. The pain is also increased by motion, but not by pressing the cartilaginous surfaces against each other; so that it does not prevent the weight of the body being borne by the affected limb. The wasting of the glutæi muscles is preceded by a swollen appearance of the nates.

After inflammation of the synovial membrane has subsided, the fluid is absorbed, and in some instances the joint regains its natural figure and mobility; but in other cases, stiffness and swelling remain. Sometimes the swelling has the same peculiar form which it possessed while the inflammation still existed, and while fluid was contained in the joint; and we may suppose, that it depends principally on the inner surface of the synovial membrane having a thick lining

of coagulable lymph: at other times the swelling has the form of the articulating extremities of the bones, that is, nearly the natural form of the joint, and it probably arises from the thickened state of the synovial membrane. From whichever of these causes a swelling remains after the inflammation has subsided, the patient is very liable to a recurrence of the disease. Whenever he is exposed to cold, or exercises the limb in an unusual degree, and often, without any evident reason, the pain returns, and the swelling is augmented. In those cases, where the synovial membrane is thickened, although the fluid which had been effused is absorbed, and the principal swelling has disappeared, it occasionally happens, not only that a certain degree of inflammation still lingers in the part, but that it continues until the morbid action extends to the other textures; and ultimately ulceration takes place in the cartilages, suppuration is established, and

there is complete destruction of the articulating surfaces. In this advanced stage, if we wish to know whether the inflammation of the synovial membrane, or the ulceration of the cartilages, has been the primary affection, we must form our judgment, not from the present symptoms, but from the previous history of the case. It is indeed often difficult to procure a history on the accuracy of which we can rely, particularly in hospital practice; but this is of the less importance, as whatever the disease may have been in its origin, where it has proceeded so far as has been described, there is no difference respecting the treatment; and for the most part, when suppuration has taken place, there is little prospect of advantage from any thing, except the removal of the limb by amputation.

I believe, that the above history will be found applicable to the majority of cases, in which this disease exists. But I have before observed, that inflammation

may affect the synovial membranes in different degrees of intensity; and occasionally it will be found to be more urgent in its symptoms, and to be more rapid in its progress, than what has been described; having the characters of an acute instead of a chronic inflammation. Under these circumstances, the swelling takes place immediately after, or at the same instant with, the first attack of pain; there is redness of the skin; the pain is more severe, and it is so much aggravated by the motion of the parts, that the patient keeps the joint constantly in the same position, and usually in an intermediate state between that of flexion and extension. In addition to these symptoms there is more or less of symptomatic fever of the inflammatory kind. In a few days the disease, if left to itself, assumes the chronic form; or perhaps, under proper treatment, it subsides altogether.

It must be observed, however, that the

boundaries of acute and chronic inflammation do not admit of being very well defined. These terms accurately enough express the two extremes ; but there are numerous intermediate degrees of inflammation, of which it is difficult to determine whether they should be considered as being of the acute or chronic kind. On this and on many other occasions the pathologist must be content, if he can succeed in pointing out the principal varieties of morbid action which occur, and the symptoms which they produce, in such a manner as will enable others, with the assistance of a certain degree of original observation, to distinguish those nicer shades in the characters of disease, which language is inadequate to explain, but a knowledge of which is of considerable importance in medical and surgical practice.

Sect. III.

On the Treatment of this Disease.

In those cases in which inflammation of the synovial membrane has arisen from a protracted or ill-conducted course of mercury, sarsaparilla may be given with some advantage, although it does not exhibit those singular powers which it is known to possess in some other complaints, which spring from the same source. When the inflammation is connected with rheumatism, opium conjoined with diaphoretics, preparations of the colchicum autumnale, and such other remedies may be employed as are capable of relieving rheumatism in other textures. The colchicum is especially useful in some cases, in which the patient complains of an excruciating grinding pain, and where the disease bears probably some relationship to gout, or is con-

nected with a gouty diathesis. In other instances, when several joints have been affected at the same time, it has appeared to me that the patient has derived benefit from the use of moderate doses of some mercurial preparation.

The principal remarks, however, which I have to make at present, relate to the local treatment of the disease; and it is worthy of notice, that even in those cases where it is evidently dependent on some constitutional affection, topical remedies are on the whole of more importance than any other.

In the acute form of the inflammation leeches may be applied in the neighbourhood of the part; and if there is much symptomatic fever, blood may be taken from the arm, and the bleeding may or may not be repeated, according to circumstances. Attention should be paid to the state of the bowels, and saline draughts may be given with some diaphoretic medicines. If the swelling has

rapidly risen to such a height, as to occasion considerable tension of the soft parts, the pain will be best relieved by means of warm fomentations and poultices ; but, otherwise, cold evaporating lotions seem to produce a better effect. Under this treatment the acute inflammation in general speedily subsides.

The chronic inflammation is relieved more slowly. In the first instance the joint should be kept in a state of perfect quietude. Blood should be taken from the part, by means of leeches or cupping. The latter method is preferable ; the sudden abstraction of blood, which can be thus effected, being more beneficial than the more gradual hæmorrhage, which is procured by leeches. It will in general be right to repeat the blood-letting twice or three times, or even oftener ; and, in the intervals, compresses may be laid on the part, moistened with some cold lotion. After the violence of the inflammation is

subdued, a blister may be applied; and (if necessary) several blisters may be used in succession, with more advantage than a single blister kept open by means of savine cerate. The blisters should be of a considerable size; and if the affected joint be deep-seated, they may be applied as near to the joint as possible; but otherwise a blister is frequently of more service when applied at a little distance. For example, if the synovial membrane of the hip be inflamed, the blister may be placed on the groin and nates; but if the disease be in the wrist, it may be applied to the lower part of the fore-arm. Under this treatment the pain is usually relieved; and in a few days the swelling, as far as it depends on fluid collected in the joint, is much diminished. Even when the tumor is solid, arising from the effusion of coagulable lymph, it will in a considerable degree subside, and sometimes be entirely dispersed; provided that the lymph has not yet become organised. Blisters

are of more service, with respect to the removal of the swelling, than any other remedies; but they should not be employed without the previous abstraction of blood, except when the inflammation is slight, and when fluid is effused without any admixture of solid substance.

When the inflammation is in great measure relieved, a moderate degree of exercise of the joint is beneficial, rather than otherwise. Liniments, which irritate the skin, may be rubbed on twice or three times in the day. Most of the liniments of the Pharmacopœia are not sufficiently stimulating for this, nor indeed for other purposes. The *linimentum camphoræ compositum* may be employed pure; or the *linimentum saponis* may be made stronger by the addition of *liquor ammoniæ* and *tinctura lyttæ;* and the powers of the *linimentum ammoniæ* may be augmented in the same manner, or by the addition of the *oleum terebinthinæ.* The following liniment is more

stimulating than those in common use; and as its effects are more permanent, it seems to me in many cases to be productive of better effects with respect to the disease.

℞ *Olei Olivæ* ʒ j ſs.
Acidi Sulphurici ʒ ß.
M. Fiat linimentum.

It may be used of this strength for the class of persons who apply at a hospital for relief; but for those of a higher class in society, in whom the cuticle is generally thinner, and the cutis more tender, the proportion of olive-oil should be greater. The effect of this liniment is to excite some degree of inflammation of the skin: the cuticle becomes of a brown colour, and separates in thick, broad scales; and the inflammation of the internal parts is relieved, probably on the same principle as by a blister. Another liniment, which is also very useful, is one frequently recommended, consisting of a dram (or more)

of the *antimonium tartarisatum* to an ounce of the *unguentum cetacei.* This produces a pustular eruption of the skin ; which, like other eruptions of the same kind, runs its course, and during a certain period of time operates very beneficially by abstracting the inflammation from the other parts.

No other remedies seem to be productive of much benefit.

Plasters of gum ammoniac, and others of a similar nature, are generally of little efficacy, while inflammation still exists : they are, however, useful in less severe cases ; and they may be employed after inflammation has subsided, for the purpose of protecting the joint from the influence of the external cold, and preventing a relapse.

Issues and setons may be of some service in chronic cases in abating the symptoms of inflammation of the synovial membrane; but they are more especially beneficial, where there is reason to believe that a

secondary disease has begun to take place, in the form of ulceration of the cartilages; and of their use, under these circumstances, I shall have occasion to speak hereafter.

The swelling and stiffness, which remain after the inflammation has subsided may be relieved by the free exercise of the limb, and by friction. The mercurial ointment with camphor may be rubbed on the joint; or friction may be made by the hand, with starch or other fine powder. The friction, however, should be employed with caution, as, when used too freely, it sometimes occasions a return of the inflammation. Whenever there is the slightest indication of this being the case, the friction should be omitted, blood should be taken from the part, and some time should elapse before the friction is resumed. Friction is sometimes productive of very essential benefit, but not unless it be employed to a considerable extent; as for two or three hours

daily, and during a long period of time. As, however, when employed in this manner, it is likely to induce a return of inflammation in parts in which the inflammatory disposition may still linger, it evidently is a remedy which is applicable only under certain circumstances. We must always bear in mind that friction is useful in relieving some of the effects of disease, but not disease itself; and those who recommend it without attention to this principle, in these and in other cases, will often find it to be productive of very injurious consequences.

I have sometimes tried the effect of pumping hot water on a stiff joint, as recommended by Le Dran, and as now practised at some watering places. The blow of a column of water, falling from a height of several feet, produces considerable friction, even so as to excoriate the surface, with which are combined the relaxing powers of heat and moisture. This practice is certainly productive of

benefit; but the observations just made apply to this as well as the other modes of producing friction.

Sect. IV.

Cases of Inflamed Synovial Membrane.

The cases, which I am about to relate, will serve to illustrate some of the observations respecting the inflammation of the synovial membrane, which I have already made; and also to explain some circumstances which will be found to occur in practice, and which could not so well be introduced in the general history of the disease contained in the preceding pages. Whoever will take the pains to compare these cases with each other, and with those which I shall relate hereafter, will, if I am not exceedingly mistaken, be convinced, that the distinction of the different diseases of the joints is not a mere matter of curiosity, which may be

interesting to the morbid anatomist; but that these diseases are different in their progress; that they produce different symptoms, by which they may be known from each other in the living person, and which indicate the employment of different remedies for their relief.

CASE III.

John Adams, forty-seven years of age, on the 21st of August, 1811, was seized with a pain in his left knee, and in the course of a few hours he found the joint to be swollen. This was accompanied by a slight attack of fever.

On the 28th of August he was admitted into St. George's Hospital. At this time the knee was extremely painful and tender, and much swollen; the swelling not having the form of the articulating ends of the bones, but being most prominent on the anterior and lower part of the thigh, underneath the lower portion

of the extensor muscles. The fluctuation of fluid might be distinctly felt within the synovial membrane.

Eight ounces of blood were taken from the knee by cupping. The loss of blood was immediately followed by an abatement of the pain, tenderness, and swelling. On the 30th of August a blister was applied.

The cupping was repeated on the 9th and 18th of September, and on the 4th of October; and each time was followed by the application of a blister.

On the 10th of October, the joint was free from all pain and tenderness. It was stiff, and still slightly swollen; but no fluid was perceptible, the swelling appearing to arise entirely from solid substance. He was directed to use a stimulating liniment twice in the day.

On the 18th of October there had been no return of inflammation, and the stiffness and swelling were diminished. Friction was now employed, by means of the

hand, with starch powder every morning and evening; and in a few days afterwards, it was directed, in addition to the friction, that hot water should be pumped on the joint, so as to fall on it from a height of several feet, for half an hour every morning.

About the middle of November he was dismissed from the hospital; the joint being now nearly as small, and as moveable as before the inflammation had taken place.

CASE IV.

Robert Stewart, eighteen years of age, was admitted into St. George's Hospital on the 26th of January, 1814.

He said, that about seven weeks before his admission, the right knee had become swollen and painful without any evident cause. The pain and swelling took place about the same time. The pain was severe, and attended with some degree

of fever. About a fortnight before his admission, the joint was cupped, and the swelling and pain became much diminished, and the leg more moveable. The cupping had been repeated on the day previous to his coming to the hospital, and again afforded him relief.

At the time of his being admitted into the hospital, the knee was still much swollen, the swelling extending up the anterior and lower part of the thigh under the extensor muscles: and it appeared to arise chiefly from solid substance effused within the articulation, very little fluid being to be distinguished. There was but little pain or tenderness; the joint admitted of a limited motion: he said, it was less stiff than it had been a short time before.

On the 27th of January eight ounces of blood were taken from the knee by cupping, and afterwards a blister was applied.

On the 5th of February the blister was healed. The swelling was much di-

minished. The solid substance, which had been effused, was in great measure absorbed; so that the form of the articulating ends of the bones could be distinguished. The blister was repeated.

On the 18th of February, the joint was scarcely larger than natural, but it was still stiff in a slight degree. The stiffness disappeared under the employment of friction with mercurial ointment and camphor, and on the 23d of February he was dismissed from the hospital as cured.

CASE V.

John Hannam, a stout middle-aged man, was admitted into St. George's Hospital under Mr. Keate, on the 22d of May, 1811.

He said that six years ago he had wrenched his right knee, which in a few hours became swollen and painful. In the course of a month the pain and the

swelling subsided, and he returned to his duty as a soldier, in one of the regiments of Life Guards: but from that period he experienced, what he termed a weakness of the joint; and he had a return of pain and swelling, whenever he made any unusual exertion. A year and a half previous to his coming to the hospital, he was ill of a fever. From this time the knee was more swollen and painful; and he continued in this state, sometimes better, sometimes worse; so that he was unable to do his duty, and he was in consequence discharged from his regiment.

At the time of his admission the knee was swollen; partly from fluid in its cavity, partly from thickening of the soft parts. The swelling extended some way up the anterior part of the thigh, and was prominent on each side of the ligament of the patella. The joint was stiff, but admitted of an imperfect flexion and extension. He complained of some degree of pain when at rest, but the pain

was more severe, whenever he attempted to exercise the limb. There was an enlarged lymphatic gland in the groin.

The knee was cupped several times, while the patient remained in the hospital. Blisters and stimulating liniments were employed, and about the end of September he left the hospital, better than when he was admitted; but there was still pain, whenever he made any unusual exertion, and the joint was swollen and stiff, though in a less degree than formerly. The swelling now appeared to arise altogether from solid substance, no fluid being perceptible.

Fifteen months afterwards I had an opportunity of seeing him again. There was very little alteration in the state of the knee. He said that whenever he took more exercise than usual, or was exposed to cold, inflammation took place, and the swelling was increased; but that by remaining for a short time in a state

of quietude these symptoms were always relieved.

The three preceding cases are sufficient to illustrate the ordinary characters, and the ordinary progress of this disease. Those which follow are intended to explain certain circumstances, which, although of less frequent occurrence, are occasionally met with, and which it is of much consequence for the surgeon to understand.

CASE VI.

A young gentleman, about thirteen years of age, in July, 1817, was seized with inflammation of the synovial membrane of one knee, attended with the usual symptoms. Blood was taken from the knee by means of leeches and cupping, cold lotions were applied, and the violence of the inflammation subsided. In

the beginning of October a blister was applied; and at the end of October, the knee was in the following state. It was larger than the other; the swelling having the form of the articulating extremities of the bones, and appearing to arise from a thickened state of the synovial membrane. The joint admitted only of a limited degree of motion, and the motion of it beyond a certain point was productive of pain. He was now directed to employ friction with a stimulating liniment.

The complaint continued very nearly in the same condition until the middle of November, when the swelling became suddenly reduced, and almost wholly disappeared. But on the same day he complained of an acute pain in his head, shooting from the temples to the forehead just above the eyebrow. This pain went off in a few hours, leaving only a slight soreness; and for several days it returned periodically, in the form of a nocturnal

paroxysm, of great severity, but of only a few minutes' duration. Leeches and blisters were applied both to the head and legs: and purgatives were administered. At the end of a week the pain ceased; but he was seized with great somnolency, which was soon followed by strabismus, partial blindness, and almost total cessation of speech; and after remaining in this state about a week he died.

The body was not examined.

CASE VII.

James Burton, forty years of age, was admitted into St. George's Hospital on the 2d of June, 1813, labouring under a complaint of his left knee. He said, that two years ago the joint became painful and swollen, at first in a slight degree, but afterwards the pain and swelling increased; and he observed that the symptoms were always aggravated

on the coming on of cold or wet weather. For the last nine months he had been unable to use the joint, sufficiently to enable him to attend to his usual occupations. Blisters and issues had been employed at various times, and as he thought with some temporary relief. At the time of his admission the knee was swollen in consequence of fluid being collected within the cavity of the synovial membrane. The fluid might be distinctly felt to fluctuate underneath the patella when the two hands were placed, one on each side of the joint. The soft parts were somewhat, but not considerably thickened. He had very little pain except on motion ; was unable to bend the leg beyond the right angle, but could extend it completely. The swelling of the joint appeared greater than it really was, on account of the wasting of the muscles of the thigh and leg.

Blood was taken from the knee by means of cupping; and afterwards several

blisters were applied in succession. He took five grains of the *pilula hydrargyri submuriatis* every night. On the 2d of August a blister was applied, and kept open by dressing it with the savine cerate. At the end of three weeks he complained of pain, and a sense of irritation, extending up the thigh and down the leg. These symptoms were attributed to the open blister, and were immediately relieved when the blistered surface was allowed to skin over. On the 20th of September he quitted the hospital, being free from all his former symptoms, except that there was still a slight degree of stiffness of the joint.

In the beginning of July, 1815, the same patient came again under my observation. At this time, both knees were distended with fluid; the right shoulder was swollen, but in a less degree; and there was a collection of fluid in the synovial membrane, which forms the sheath of the tendons, on the posterior part of each

wrist. On examining the right knee, which was the most swollen of the two, a sensation was communicated to the hand, as if produced by a number of small loose substances, of a soft consistence, within the cavity of the joint; and just perceptible to the touch. The joints were moveable, and very little painful. He said that all these swellings had begun about three months after he formerly quitted the hospital, with a slight degree of pain, and had gradually increased.

I suspect the loose substances, which were felt within the knee in this case, to have been portions of coagulable lymph, which had been effused on the inner surface of the synovial membrane, and afterwards had become detached; similar to those, which are sometimes formed in the cavity of an inflamed bursa mucosa, and which I shall have occasion to describe hereafter. I had not the opportunity of observing the subsequent progress of the disease in this patient;

and I have never been able to ascertain the correctness or incorrectness of this opinion, respecting these loose substances, by dissection. They are certainly of a different nature from the loose cartilages, which are met with in other cases.

CASE VIII.

Amy Brookes, fifty-four years of age, was admitted into St. George's Hospital on the 10th of June, 1818. Three years ago, her right knee became swollen and painful, and the pain and swelling had existed ever since, sometimes in a greater, sometimes in a less degree. At the time of her admission, the knee was much swollen, in consequence of fluid collected in its cavity. There was pain in the joint, which was aggravated by motion; but which was not sufficient to interfere with her rest at night, or to prevent her going about her usual occupations. On examining the

knee, a sensation was given to the hand, as if some soft loose substance was formed within the joint; and a crepitus was distinguished, on moving the patella from one side to the other.

During the time of her stay in the hospital, blood was taken from the knee twice by cupping, and once by leeches; and two blisters were applied. July 15th, she was discharged as cured; there was no pain nor swelling; the loose substance was no longer perceptible, and the crepitus could scarcely be distinguished.

The crepitus which was observed in this case, occurs in a few instances, and I know not positively to what cause it is to be attributed. It is different from that which I have met with, where there has been reason to believe that the cartilages are destroyed so as to expose the bone underneath; and if this had been the cause of it we must suppose that it would have been permanent, or at any rate of longer duration. Probably it may have depend-

ed, in this case, on an effusion of albumen (coagulable lymph), or on the synovia having been secreted of a different quality from what is usual.

The following case furnishes an example of a disease, which, as far as I know, has not been described by any pathological or surgical writer. One of the most remarkable symptoms, which the disease produces, is an inflammation of the synovial membranes; for which reason it is to be regarded as connected with the present subject, and may be properly introduced in this place.

CASE IX.

A gentleman, forty-five years of age, in the middle of June, 1817, became affected with symptoms resembling those of gonorrhœa. There was a purulent

discharge from the urethra, with ardor urinæ and chordee. On the 23d of June he first experienced some degree of pain in his feet. On the 24th the pain in the feet was rather increased, but not in a sufficient degree to prevent his walking four miles. There was some appearance of inflammation of his eyes.

June 25th, the pain in his feet was more severe; the tunicæ conjunctivæ of his eyes were much inflamed, with a profuse discharge of pus.

These symptoms increased in violence, the pulse varying from 80 to 90 in a minute; the tongue being furred; and the patient being restless and uncomfortable during the night. The whole of each foot became swollen; there was inflammation of the synovial membranes of the ankles; and it appeared to me, that the affection of the feet themselves arose from inflammation of the synovial membranes belonging to the joints of the tarsus, metatarsus, and toes. He said

that he could compare the pain, which he experienced, to nothing else than that which might be supposed to arise from the feet being squeezed in a vice.

On the 27th of June the left knee became painful, and on the following day the synovial membrane of this joint was found exceedingly distended with synovia. He was now completely crippled; compelled to keep his bed, and scarcely able to vary his position in the smallest degree without assistance. The inflammation of the eyes and urethra was somewhat abated.

June 30th, the inflammation of the eyes and urethra had much subsided, and the purulent discharge was diminished. The pains of his joints were less severe; and the feet were less swollen. On the following day the knee was less swollen also.

He continued to mend, and on the 10th of July the swelling of the feet was still further diminished, and that of the

knee had almost wholly disappeared. His pulse continued to vary from 80 to 90 in a minute, and his tongue was still furred. He had pain in the feet and knee, but less severe than formerly, and he was restless at night.

July 13th, he complained of pain in the right knee, and on the following day there was pain also of the right elbow and shoulder.

The right knee afterwards became swollen from fluid within the cavity of the synovial membrane, but not in the same degree with the other knee, and the swelling soon subsided. There was never any perceptible swelling of the shoulder and elbow.

August 1st, all his pains were abated. The eye and the urethra were nearly free from inflammation, and the purulent discharge was scarcely perceptible.

August 5th, he was free from pain except on motion; the joints, which had

been affected, were stiff; but he was able to move about on crutches.

From this time he progressively mended. The stiffness of the joints diminished very slowly; but he was free from all uneasiness. He was longer in recovering the use of the shoulder, than that of the other joints.

In the following December, 1817, (at which time he had nearly, but not completely recovered the use of his limbs,) he had another attack of the complaint. The symptoms were the same as formerly, taking place in the same order, and pursuing the same course, but with a much less degree of violence. This second attack lasted about six weeks; and left him again considerably crippled.

In March, 1818, he became affected with an ophthalmia, but of a different nature from that which he laboured under in the preceding summer. The inflammation was seated in the proper

tunicks of the eye; and it appeared probable, that it would speedily have terminated in adhesions of the iris, and destruction of the powers of vision, if its progress had not been arrested, by repeated blood-lettings, and the use of mercury. He had another attack of ophthalmia of the same kind in the present year (1822).

In order that the history of the disease might be rendered as simple as possible, I have described the symptoms in this case without hitherto adverting to the treatment, which was employed. — Leeches, and blisters to the knee; liniments rubbed on the knees and shoulders; and fomentations when there was severe pain; formed the principal topical remedies. Of the various medicines which were exhibited, none seemed to be productive of benefit, with the exception of the *vinum colchici.* It was under the use of this medicine, that not only the pains and swellings of the joints, but

that even the purulent inflammation of the eyes and urethra first began to subside: and I am on the whole inclined to believe that my patient was indebted to it for a much more speedy recovery than he would have had otherwise.

I have had the opportunity of seeing many other cases, in which a similar train of symptoms took place.

One gentleman has had as many as nine attacks of this complaint. The first took place when he was under twenty years of age, and the others at various intervals in the course of the next twenty years. In one of them the first symptom was inflammation of the urethra, attended with a discharge of pus, although from particular circumstances he could not believe that he had been exposed to the risk of infection. This was followed by purulent ophthalmia, and that by inflammation of the synovial mem-

branes. In three of the attacks, a purulent ophthalmia was the first symptom; which was followed by inflammation and discharge from the urethra; and then the synovial membranes became affected: and in the other four attacks, the affection of the synovial membranes took place without any preceding inflammation either of the eye or urethra. The disease was not confined to the synovial membranes of the joints, but those of the bursæ mucosæ were inflamed also. In some of the attacks, the muscles of the abdomen were painful and tender, and subject to spasmodic contractions; and there was an occasional impediment to breathing, which seemed to arise from a similar affection of the diaphragm. The acute form of the disease, in this case, lasted from six weeks to three months, but nearly a year generally elapsed before the use of the limbs was perfectly restored. He had an attack in July, 1817; and in the beginning of May, 1818,

while he was still lame, he was seized with a very violent inflammation of the sclerotic coat and iris of one eye, which was subdued by very copious blood-letting, and the exhibition of mercury. He had another attack of the disorder in the year 1820, and in the winter of the present year 1822, he became affected with an inflammation of the iris and sclerotic coat of the other eye, which was relieved like the last by blood-letting and the use of mercury.

Another gentleman gave the following history of his complaints. In the year 1809, he had symptoms resembling those of gonorrhœa, and, when these had continued for some time, one testicle became inflamed and swollen. This was followed by a purulent ophthalmia, and inflammation of the synovial membranes. In the year 1814, he had a similar attack, with the exception of the swelled testicle; and in the year 1816, when I was consulted, he still laboured under a

chronic inflammation of the synovial membranes of the knees and ankles, the consequence of the last attack, and by which his lower limbs were completely crippled.

In a fourth case, the patient laboured under a severe ophthalmia, which was followed by inflammation of the urethra, and then the joints became affected: but I had no opportunity of watching the progress of this case, nor have I heard any other particulars of it.

In another case the patient laboured under strictures of the urethra. He had had four attacks of the disease, which has been just described, in the course of a few years. The inflammation of the urethra was in all of them the first symptom; which was followed by purulent ophthalmia, and afterwards by inflammation of the synovial membranes, and swelling of nearly all the joints. In two of these attacks, he attributed the discharge from the urethra to his having received the

infection of gonorrhœa, and in the two others to the use of the bougie.

I shall conclude this chapter with the history of a case, which bears a relationship to those, which I have just described, but which is introduced chiefly as it shews the good effects produced occasionally by the exhibition of the colchicum.

CASE XI.

A gentleman 23 years of age, in the beginning of July 1819 rode 24 miles on horseback, trotting very hard on account of rain. Two days afterwards he observed a slight swelling of the left knee, but this did not prevent his going about his usual occupations. About the middle of July, a slight purulent discharge took place from the urethra, with little or no pain. On the 1st of August he walked a considerable distance, and found

the knee to be more painful. On the 2d of August he applied to me with the knee very much swollen and very painful. Twenty leeches were applied, and afterwards a cold lotion, but this gave him no relief.

August 3d, the pain had much increased, so that it was excruciating. He was bled in the arm, and was in much less pain afterwards. Some saline medicine with the pulv. ipec. comp. was administered. In the evening a blister was applied, but as soon as the blister began to act, the pain returned and was as severe as formerly.

August 5th, he continued suffering very much from pain.

August 6th, the pain was very intense in the knee. The purulent discharge from the urethra was rather increased. There was a slight degree of inflammation of the tunica conjunctiva of the left eye. He was bled, with little or no relief. A saline draught with a few grains of the

pulvis ipecac. comp. and 20 drops of the vinum (radicis) colchici was administered every six hours. When he had taken four doses of this medicine he became sick and vomited, and was afterwards purged. The colchicum was discontinued.

August 7th, he was quite free from pain, but the synovial membrane was much distended with fluid.

August 15th, the knee had continued free from pain, but was much swollen. With a view to promote the absorption of the fluid, another blister was applied; but as soon as it began to produce its effect, the pain returned more excruciating than ever, and continued so on the following day, August 16th, when the vinum colchici was again administered. As soon as he had taken 3 doses of 20 drops each, he was sick and purged, and this was followed by an immediate and complete relief from pain.

August 17th, he was free from pain except on motion.

August 18th, the swelling began to subside, and in the course of a few days it had entirely disappeared, and he was quite recovered.

The inflammation of the eye subsided without any particular local treatment in about ten days from the period of its commencement. The purulent discharge from the urethra continued for some time afterwards. The pain in the knee in this case was of such a kind as to be almost insupportable. The patient said that he could compare it to nothing, but the sensation which he might suppose to be produced by the joint being forcibly torn open. The pulse was never accelerated, except at those times when the pain was most intense. Purgatives and other remedies were administered in the course of the disease, but nothing seemed to be productive of benefit except the vinum colchici.

CHAP. II.

ON ULCERATION OF THE SYNOVIAL MEMBRANE.

When an abscess has formed in a joint, an ulcerated opening takes place in the synovial membrane, through which the matter is discharged. The following are the only cases, which have come under my observation, where ulceration of the synovial membrane has occurred as a primary affection. The most remarkable circumstance which they demonstrate is, that a disease apparently slight, and of a part which is in no way concerned in the vital functions, should produce such a degree of disturbance of the constitution as to occasion death. Of this however they form by no means a solitary example; and every surgeon and physiologist will be able to call to mind numerous

other instances, which shew that an impression made upon a small part of the nervous system may derange, and ultimately destroy, the functions of the whole animal machine.

CASE XII.

A young lady, nine years of age, being at play on the 1st of January, 1808, fell and wrenched her hip. She experienced so little uneasiness, that she walked out on that day as usual. In the evening she went to a dance; but while there was seized with a rigor; was carried home, and put to bed. Next morning she was much indisposed, and complained of pain in the thigh and knee: on the following day she had pain in the hip, and was very feverish. These symptoms continued; she became delirious; and she died just a week from the time of the accident.

On inspecting the body on the following day, the viscera of the thorax and abdomen were found in a perfectly healthy state. The hip-joint on the side of the injury contained about half an ounce of dark-coloured pus; and the synovial membrane, where it was reflected over the neck of the former, was destroyed by ulceration, for about the extent of a shilling.

CASE XIII.

A middle-aged man, who had met with a contusion of one shoulder, was admitted into St. George's Hospital in the winter of 1812. He complained of pain and tenderness of the shoulder, and a very slight degree of swelling was observable: but his principal disease was a fever, resembling typhus in its character, of which he died in a few days after his admission.

On inspecting the body, about half an

ounce of thin pus was found in the shoulder-joint. The synovial membrane bore marks of general inflammation, and in one spot, where it was reflected over the neck of the os brachii, it was destroyed by ulceration for about the extent of a sixpence.

CHAP. III.

ON CASES, IN WHICH THE SYNOVIAL MEMBRANE HAS UNDERGONE A MORBID CHANGE OF STRUCTURE.

SECT. I.

Pathological Observations.

THERE are some diseases, which consist simply in a morbid action; there are others, in which the morbid action produces a morbid change of anatomical structure.

Diseases of the latter class differ in their nature in different organs. Thus the tubercles, which affect the lungs in phthisis pulmonalis, are never met with in the breast; and cancer, which is frequent in the breast, never attacks the

lungs, except by extending to them from the contiguous parts.

The disease, which I am about to describe in the present chapter, consists in a morbid alteration of structure, which takes place in the synovial membranes of joints, and which, as far as I have seen, is peculiar to these parts. I have never known an instance of the same disease in the serous membranes, which so nearly resemble the former in their nature and functions; nor even in the synovial membranes, that constitute the bursæ mucosæ and sheaths of the tendons.

Several years since, in examining a diseased elbow, I found the cartilaginous surfaces completely destroyed by ulceration: an abscess had formed in the joint, and no remains were observable of the natural structure of the soft parts, these being every where converted into a pulpy substance, of a light brown colour, and about one-third of an inch in thickness. As the ravages of the disease were very

extensive, it was impossible to determine from the appearances on dissection, where the morbid action had originated. This case, however, differed materially from some others which I had met with, in which the destruction of the cartilages was not attended by any affection of the soft parts similar to that which has been described. The following cases, which have since occurred, furnish examples of the same disease in earlier stages of its progress, and show that it begins in the synovial membrane, and that the other parts become affected only in a secondary manner.

CASE XIV.

In a diseased knee, which was sent to me for examination by my friend the late Mr. Horn, surgeon to the Newcastle Infirmary, I found, in the cavity of the joint, about four ounces of a pale yellow fluid, having flakes of coagulable lymph

floating in it. The synovial membrane, where it formed the loose folds, extending from one bone to the other; where it was reflected over the bones themselves, the crucial ligaments, and the fatty substance of the joint; had completely lost its natural appearance. It was converted into a pulpy substance, in most parts about a quarter, but in some parts, nearly half an inch, in thickness, of a light brown colour, intersected by white membranous lines, and with red spots formed by small vessels injected with their own blood. The synovial membrane on the edge of the cartilaginous surfaces had undergone a similar change of structure, but only for a small extent. The semilunar cartilages were entire, but in a great measure concealed by the pulpy substance projecting over them. The cartilages covering the bones, in a few places were in a state of incipient ulceration.

CASE XV.

Martha Manners, twenty-six years of age, was admitted into St. George's Hospital on the 6th of March, 1813, on account of a disease in her right knee.

She said that in June, 1811, she first observed the joint to be swollen and stiff; and from this time, the swelling and stiffness increased; but in the first instance by very slow degrees. About Michaelmas, 1812, she caught cold, and the swelling increased more rapidly, but it was not attended with any considerable quantity of pain.

At the time of her admission into the hospital, the right knee measured about two inches in circumference more than the left. The swelling was elastic; prominent at the upper and lower part of the joint; not having the form of the articulating ends of the bones. The joint admitted of motion, but the leg could not

be completely bent or extended on the thigh.

Various remedies were employed without the smallest benefit. The stiffness of the joint increased. About the middle of May, she began to experience considerable pain; and soon afterwards an abscess presented itself by the side of the ligament of the patella, which was opened on the 15th of June. The orifice made by the lancet healed in a few days; but she continued to suffer severe pain; her health became much affected, and on the 6th of August the limb was removed by amputation.

On examining the joint, about an ounce of thick matter was found in its cavity. The ligaments were in a natural state. The synovial membrane had undergone precisely the same alteration as in the case which has just been related. The only point of difference that could be observed was, that the whole of that portion of the membrane which is re-

flected over the cartilages had become affected, presenting the same appearance as elsewhere, but being thickened in a less degree. The cartilages had begun to ulcerate in a few spots ; but the ulceration had made so little progress, that it might not have been noticed on a superficial inspection.

CASE XVI.

Samuel Langford, 24 years of age, was admitted into St. George's Hospital on the 22d of April, 1812.

At the time of his admission, one of his knees was swollen to nearly twice its natural size. The swelling was prominent on the anterior and lower part of the thigh. It was soft and elastic, so that at first it appeared to contain fluid ; but on particular examination, the absence of fluid was ascertained by the want of fluctuation. The leg was kept in the half-bent state, and the joint ad-

mitted of only a very limited degree of motion. He had no pain, even when attempts were made to move the limb. The skin, over the diseased part, was of a pale colour, with some dilated veins ramifying in it. On each side of the joint a small orifice was observed, through which the probe might be introduced into a sinus; but the sinuses appeared to be of small extent. His general health was unimpaired. He said, that two years ago he first experienced some pain in the knee, but it was not sufficient to prevent his going about his usual occupations. Soon afterwards the joint began to swell, and the enlargement gradually increased from that period. Several abscesses had formed at different times, but the greater number of them had healed.

About two months after his admission into the hospital, the limb was amputated.

On dissecting the diseased joint, the ligaments were found in a perfectly natural

state. The whole synovial membrane, except where it was reflected over the cartilages, was converted into a pulpy, elastic substance, of a brown colour, intersected by white membranous lines, in some places half an inch in thickness, in others more; and in those parts where the membrane was reflected over the bones, near the border of the cartilages, it was destroyed in spots by ulceration.

The semilunar cartilages were in a natural state, but in a great measure concealed, in consequence of their being enveloped in the mass of substance formed by the diseased synovial membrane. The cartilaginous surfaces of the femur and patella were extensively, but not entirely, destroyed by ulceration; the ulceration being greatest towards the circumference. On the internal portion of the head of the tibia, the cartilage was destroyed only for a very small extent, the ulceration being entirely confined to the margin. On the external portion of the head of

the tibia, the cartilage was absorbed to a greater extent. The bones possessed their natural structure and hardness. The cavity of the joint contained matter, and the sinuses communicated with it.

CASE XVII.

Michael Purcel, sixteen years of age, was admitted into St. George's Hospital, on the 10th of July, 1811, on account of a disease in the right knee.

He said that in the summer of 1807 he had received a blow on the inside of the joint. Some time afterwards a swelling formed and burst, and some fluid was discharged. In about a week the orifice healed; a slight degree of stiffness only remained, and he was able to follow his usual occupations. He continued well till December, 1810, when the joint was observed to be increased in size. From this time the swelling increased, but with no other inconvenience than

stiffness of the joint, and a slight degree of pain in walking.

At the time of his admission into the hospital there was a large swelling of the knee, extending an inch or more up the anterior part of the thigh under the extensor muscles. The swelling was more prominent in some parts than in others. It was soft and elastic, and gave to the hand an indistinct sensation, as if it contained fluid. The leg was kept in a half-bent position, and was nearly immoveable on the thigh. He had no pain, except on motion or pressure.

On the 28th of November, an abscess burst on the outside of the joint, and discharged a small quantity of pus. After this other abscesses formed, and burst at various times. The swelling continued to increase. Amputation was performed on the 6th of April.

On dissecting the amputated joint, all the ligaments were found in a natural state. The synovial membrane had pre-

cisely the same appearance as in the last case. In some parts it was half an inch, in others more than an inch in thickness. The cartilages were for the most part destroyed by ulceration, and * carious surfaces of bone were exposed. The abscesses appeared to have formed in the substance of the synovial membrane, and did not communicate with the cavity of the joint, nor did the joint contain pus.

CASE XVIII.

A boy, six years of age, was admitted into St. George's Hospital, in March, 1808, on account of a disease in one knee.

---

* In using the term *caries*, on this and on other occasions, I have considered it as synonimous with ulceration; or, at least, as expressing that state in bones which corresponds to ulceration in soft parts. Some confusion has been produced in pathological nomenclature in consequence of this term having been employed by some to express, not only bone which is ulcerated, but that whose surface has been exposed from other causes.

The joint was larger than the natural size. The leg was bent at a right angle to the thigh, and admitted of no motion. The skin on the outside was ulcerated to a considerable extent. Various remedies having been employed without success, the limb was amputated on the 29th of April. On examining the joint, the synovial membrane was found to have undergone a morbid change of structure, similar to that in the preceding cases; but with this difference, that the pulpy substance into which it was converted projected into the joint, so as nearly to fill its cavity, and adhered to the cartilaginous surfaces. On making a longitudinal section of the joint, the cartilage covering the bones was seen, as a white line, about one-tenth of an inch in thickness, connected to the bone on one side, and having the pulpy substance adhering to it on the other. It was, therefore, thinner than natural; but otherwise entire, except at the posterior part of one

of the condyles of the femur, where it was destroyed by ulceration for a small extent. There were no distinct remains of the ligaments external to the joint, and only some small vestiges of the crucial ligaments and semilunar cartilages.

CASE XIX.

John Dillemore, thirteen years of age, was admitted into St. George's Hospital, in the summer of 1812, on account of a disease in one knee. At that time the joint was slightly swollen and stiff, so as to admit of only a very limited degree of motion. He was free from pain. The swelling was elastic, without any perceptible fluctuation of fluid. These symptoms had been coming on gradually about two years previous to his admission. At this time he remained in the hospital for upwards of three months; and a great number of remedies, which it is unnecessary

to enumerate, were employed without the smallest benefit.

On the 26th of January, 1814, he was re-admitted into the hospital. The affected knee was about two inches and a half in circumference more than the other. The swelling was elastic; it extended up the anterior and lower part of the thigh, as in cases of inflamed synovial membrane; but its form was less regular, being more prominent and extending higher up on the outside, than on the inside. The leg was kept in the half-bent position, and was perfectly immoveable on the thigh. He was subject to occasional attacks of violent pain. He said, that the swelling had gradually increased from the period of his quitting the hospital in 1812, but that he had not been subject to very severe pain till about six weeks previous to his re-admission. On the 31st of January the limb was amputated.

On examining the diseased joint, the synovial membrane was found converted into a pulpy substance of a light brown colour, with red spots arising from vessels ramifying in it, injected with their own blood, and intersected by very numerous membranous lines. On the outside of the joint, the diseased membrane was in some places nearly an inch in thickness. The membrane covering the cartilages in some parts was in a natural state; in other parts, it had undergone the same morbid change of structure as elsewhere. The cartilages were ulcerated in spots. There was about half an ounce of pus in the cavity of the joint; and there were two or three abscesses in the substance of the synovial membrane, not communicating with the joint, containing about the same quantity of purulent matter.

CASE XX.

William Hine, twenty-three years of age, was admitted into St. George's Hospital on the 12th of December, 1814, on account of a complaint in one of his knees. He said, that in the summer of 1812 he first observed a slight degree of stiffness and swelling of the joint, unattended by pain. At first the swelling was confined to the inside, but it gradually extended itself over the whole circumference of the joint. The stiffness and swelling slowly, but uniformly, increased: about the end of the year 1813, he began to experience considerable pain.

At the time of his admission, the knee was much swollen; the swelling was irregular, and most prominent on the inside; it was soft and elastic, without the fluctuation of fluid. He complained of constant, deep-seated, gnawing pain, which disturbed his sleep. He had a

slight degree of hectic fever. On the 16th of December the limb was amputated.

On dissecting the amputated joint, the synovial membrane was found to have undergone the same morbid alteration of structure as in the last case. The cartilages were slightly ulcerated in a few spots.

CASE XXI.

James Gould, sixty-five years of age, was admitted into St. George's Hospital, in May, 1814. One knee was swollen and stiff, admitting of scarcely any motion. The swelling was elastic. He complained of severe pain in the joint. Near the ligament of the patella was the orifice of a sinus communicating with the articular cavity, and discharging a very small quantity of pus. No clear history could be procured of the disease in its earlier stages; but it appeared that he had been subject

to repeated attacks of inflammation of the synovial membrane.

The limb was amputated on the 23d of May.

On dissection, the ligaments, bones, cartilages, and that portion of the synovial membrane which is reflected over the cartilages, were found to be in a natural state; but the synovial membrane in other parts had undergone the same morbid alteration of structure as in the preceding cases.

These cases furnish examples of the same disease in different stages of its progress. The morbid action evidently originates in the synovial membrane, which loses its natural organization, and becomes converted into a thick pulpy substance, of a light brown, and sometimes of a reddish-brown colour, intersected by white membranous lines. As the disease advances, it involves all the parts of which

the joint is composed, producing ulceration of the cartilages, caries of the bones, wasting of the ligaments, and abscesses in different places.

I have already remarked, that this disease is peculiar to the synovial membranes; at least, that I have never met with it in any other part of the body: but it belongs to the same order with tubercles of the lungs, scirrhus of the breast, the medullary sarcoma or fungus hæmatodes of the testicle, and numerous other diseases, in which the natural structure of the affected organ is destroyed, and a new and different structure is added in its place. To these also it bears a near resemblance in its progress. Thus, tubercles of the lungs, in the first instance, occupy the vesicular and interlobular substance, but ultimately they inflame and ulcerate; abscesses form in them, and then the pleura, the bronchia, and other contiguous parts become affected. Similar circumstances mark the progress

of other maladies of the same description.

The cases which have been related are not the only ones in which I have had the opportunity of tracing the same morbid appearances. I have also met with numerous others, in which the similarity of the history and symptoms, and the resemblance in the form and elasticity of the tumor, indicated the disease to be of the same nature, although I was not able to verify the fact by dissection. In every case, in which I have had it in my power to watch its progress, the complaint has advanced slowly, and sometimes has remained in an indolent state during a very long period: but ultimately it has always terminated in the destruction of the joint.

It is a remarkable circumstance, that this affection of the synovial membrane is rarely met with except in the knee. I have never known an instance of it in

the hip or shoulder. * It is probable that the influence of the external cold may operate as one of the causes, by which the disease is produced, and this explains, why it occurs frequently in the knee, and seldom in the deep-seated articulations. †

It is evident from the history of cases, in which a part of the living body has assumed a new and morbid structure, that this alteration seldom takes place except

---

* My friend Mr. Hodgson, surgeon to the hospital at Birmingham, informs me that he has met with one example of it in the ankle, and another in one of the joints of a finger.

† The account of the *fungus articuli*, which has been given by some German writers, appears to have been drawn, partly, from cases of the disease described in this chapter, partly, from cases of inflammation of the synovial membrane. Mr. Russel seems to have taken his history of the pathology of white swelling, in great measure from cases similar to those, which have been related; but we must observe, that the term white-swelling has been applied, almost indiscriminately, to all the affections, to which the joints are liable, and by no means confined to that under our present consideration.

by slow degrees; and it would add much to the interest and utility of researches in morbid anatomy if it were more frequently attempted to ascertain, what is the first change in the organization of the affected part, which disease produces, and from thence to trace the gradual progress of the other changes, which take place, until the destruction of the natural organization is completed. Whether the following case is to be considered as of the same kind with those already recorded, but in an earlier stage of the disease, cannot at present be determined; but it appears not improbable that it is so; and I shall venture to relate it, in this place, in the expectation, that it may, at any rate, be of some service in assisting the investigations of future enquirers.

CASE XXII.

—— Belton, a boy eleven years of age, was admitted into St. George's Hospital

in August, 1810, on account of a disease in one knee.

There was but little pain in the joint: it was slightly enlarged, admitted of some motion, but not of complete flexion and extension. His parents said that the disease had begun about a year and a half before his admission into the hospital: that it had increased very slowly, and that he had never suffered from it any serious distress. Various remedies were employed without benefit; and in a short time his friends took him out of the hospital. A few weeks afterwards he died, in consequence of an accumulation of water in the ventricles of the brain.

I obtained permission to examine the body.

The synovial membrane of the affected knee externally had its natural appearance. Internally it was lined by a straw-coloured gelatinous substance, so intimately adhering to it, that it could not be detached, except by an artificial separ-

ation. The synovial membrane was encrusted in this manner, every where, except on the cartilaginous surfaces. The gelatinous substance in general appeared about one-eighth of an inch in thickness, but in some parts, near the borders of the cartilages, it was much thicker, so as to project considerably into the cavity of the joint. In a few places, towards the margin of the articulating surfaces, the cartilage had begun to ulcerate ; in some of these it was entirely absorbed ; so that the bone was exposed ; but, for the most part, there was only an irregular ulcerated surface towards the cavity of the joint : the remaining portion of the cartilage being entire, and having its natural adhesion to the bone.

The synovial membrane itself bore no marks of inflammation. In the substance with which it was lined, some vessels were observed ramifying, beautifully injected with their own blood, but these

were few in number, and only in certain parts. This substance differed in appearance, from the coagulable lymph, which is found on the surface of an inflamed membrane; and we may presume, therefore, that the effusion of it was the result, not of inflammation, but of some other morbid action.

Sect. II.

On the Symptoms of this Disease.

This disease generally takes place in persons, who are not much above the age of puberty. I do not recollect more than one instance of it having occurred after the middle period of life. In general it can be traced to no evident cause, but occasionally it is the consequence of repeated attacks of inflammation. In this respect it resembles other diseases of the same order. Inflammation of the lungs may lay the foundation of tubercles, and

inflammation of the breast may occasion the growth of a scirrhous tumor. Where I have had an opportunity of examining the morbid appearances after amputation, I have always found the whole, or nearly the whole, of the synovial membrane affected by the disease; but it is probable, that if the examinations were made at an earlier period, we should often find the morbid change originating in some one point. At least this is in conformity to what we find in other maladies, which correspond to this in their nature: and in one instance, in a girl who laboured under this affection, and who died of a fever, I found one half of the synovial membrane altered in structure, and the other half retaining its natural appearance.

In the origin of this disease, there is a slight degree of stiffness and tumefaction, without pain, and producing only the most trifling inconvenience. These symptoms gradually increase. In the greater number of cases, the joint at last

scarcely admits of the smallest motion, but in a few cases, it always retains a certain degree of mobility. The form of the swelling bears some resemblance to that in cases of inflammation of the synovial membrane, but it is less regular. The swelling is soft and elastic, and gives to the hand a sensation as if it contained fluid. If only one hand be employed in making the examination, the deception may be complete, and the most experienced surgeon may be led to suppose that there is fluid in the joint, when there is none: but if both hands be employed, one on each side, the absence of fluid is distinguished by the want of fluctuation.

The patient experiences little or no pain, until abscesses begin to form, and the cartilages ulcerate; and even then the pain is in many instances not so severe, as where the ulceration of the cartilages occurs as a primary disease: and the abscesses heal more readily, and dis-

charge a smaller quantity of pus, than in cases of this last description. At this period the patient becomes affected with hectic fever; loses his flesh, and gradually sinks, unless the limb be removed by an operation.

The progress of this disease varies in different cases. In general, one or two years elapse before it reaches its most advanced stage; but sometimes the period is much longer; and occasionally it becomes indolent, so that it remains during many months without any sensible alteration. In like manner tubercles of the lungs, or scirrhus of the breast, in some instances remain in an inactive state for several months, or even for one or two years.

The diagnosis of this disease is seldom difficult. The gradual progress of the enlargement and stiffness of the joint without pain, and the soft elastic swelling without fluctuation, in the majority of cases, enable us to distinguish it readily

from all the other morbid affections to which the joints are liable.

The cases, with which those of this disease are most liable to be confounded, are those of chronic inflammation of the synovial membrane.

1st, When the synovial membrane has undergone a morbid change of structure, it occasionally happens that a preternatural secretion of fluid takes place at the same time from its inner surface; and the joint becomes distended, not with synovia, but with a turbid serum having flakes of coagulable lymph floating in it, which causes the tumor to present nearly the same external characters, as where the synovial membrane is inflamed. But here the swelling will not yield to that treatment, under which it would be speedily reduced if it depended on simple inflammation; and attention to this circumstance, joined with an accurate previous history, will enable us to recognise the real nature of the disease.

2dly, When the synovial membrane after inflammation has subsided has been left in a thickened state, and coagulable lymph has been effused into the articular cavity, the tumor in some instances a good deal resembles the tumor, which occurs in cases of this disease: so much so, that it will be very difficult to give a correct opinion, merely from observing the present appearance and condition of the joint. The surgeon must in great measure form his judgment from the account which he receives of the origin and early symptoms of the complaint; or (when an accurate statement cannot be procured) by waiting to observe its future progress.

Sect. III.

On the Treatment.

When a part is swollen and rigid in consequence of inflammation, the swell-

ing and rigidity may often be dispersed; but I know of no instance, in which an organ having completely lost its natural structure, is capable of having that structure restored. Physicians and surgeons have been employed during successive ages, in endeavouring to discover a cure for tubercles of the lungs, and cancer of the breast, and the result of their labour is only to prove that these diseases are incurable. Analogy therefore would not lead us to be sanguine as to the discovery of a remedy for this affection of the synovial membrane, and experience demonstrates that it is equally incurable with other maladies of the same order. It would be needless for me to occupy the time of my readers, by a detail of the various remedies which I have tried, or seen tried by others, in cases of this description: since the general result of these trials was only to lead to the above conclusion. By means of rest and cold lotions, the progress of the disease may be somewhat

checked, as the suppuration of tuberculated lungs may be retarded by occasional bleeding, and a milder climate. Where there is considerable pain in consequence of the cartilages having begun to ulcerate, some benefit is derived from the use of warm fomentations and poultices. But no method, with which I am acquainted, is capable of doing more than somewhat checking the progress, and somewhat relieving the symptoms of the complaint. In every case, of which I have had an opportunity of seeing the termination, the ulceration of the cartilages, the formation of abscesses in the cavity of the joint, and the consequent disturbance of the patient's general health, have ultimately rendered the amputation of the limb necessary, in order to preserve the patient's life. At this period therefore the surgeon is called upon to recommend and urge an operation; but at an earlier period, it is a matter of choice with the patient, whether he will

live with the incumbrance of an useless limb, till the advanced stage of the disease renders its removal indispensable, or whether he will submit to the loss of it, before the absolute necessity for losing it exists.

CHAP. IV.

ON THE ULCERATION OF THE ARTICULAR CARTILAGES.

SECT. I.

Pathological Observations.

IT has been taught by some anatomists, that the articular cartilages are not endowed with vascularity; and that when there is an appearance of their having been destroyed by ulceration, this destruction must really have been effected, not by the action of vessels in the cartilages themselves, but by that of the vessels of the other parts, with which they are connected, or with which they come in contact. Various circumstances,

however, seem to be in contradiction to these opinions.

Up to the period of growth being concluded, we must suppose the articular cartilages to be vascular, otherwise we cannot account for the changes of bulk and figure which mark their progress towards complete developement. In the child, canals or sinuses may be seen ramifying through their substance, containing blood, and manifestly intended to answer the purposes, though not constructed with the distinct tunicks, of ordinary blood vessels.

In the adult person these canals for the distribution of blood are not perceptible. This proves that they are very minute, but not that they are altogether wanting. 1. In the transparent cornea of the eye, no vascular structure can be detected under ordinary circumstances; but the existence of vessels in the cornea is proved by the changes which it undergoes in disease; and when it is inflamed

such vessels become distinctly visible, injected with red blood. So we meet with occasional, though rare instances, of vessels containing red blood extending from a diseased bone into the cartilage covering it. A case, in which this appearance was observed, will be mentioned in the next chapter. 2. The cartilages of joints are subject to the constant and powerful operation of friction, yet they are not affected by it. They continue as thick, and as perfect in those who are unremittingly engaged in bodily exercise, as in the most inactive persons. The cartilages of the knee and ankle are exposed to friction at least as much as the hard enamel and ivory of the teeth; yet we often see persons in whom the latter are much worn away, while the former remain entire. These circumstances cannot be explained unless we admit the cartilages to possess a power of reparation; and this must be supposed to depend, as in other textures, on the

action of blood-vessels modified by that of the absorbents. 3. We find occasionally some portion of the cartilage covering the articular extremity of a bone, altered from its natural organisation, converted into a number of ligamentous fibres, each of which is connected by one extremity to the bone, while the other is loose towards the cavity of the joint. Here is a morbid alteration of structure, the occurrence of which seems to indicate that there must be such a vascular apparatus entering into the formation of cartilage as enables new materials to be deposited, and old materials to be absorbed, and without which morbid alterations of structure do not take place in other parts of the body.

In some of the cases related in the former chapters, the cartilage covering the articular cartilage had been removed for some extent on the surface, towards the cavity of the joint, while that portion of it which was connected to the

bone remained entire, and retained its natural structure. In the two following cases, the same thing was observed to a very great extent, and this superficial abrasion had taken place in many parts in which cartilage was in contact with cartilage, and where, therefore, it was impossible to attribute it to the operation of vessels belonging to any of the neighbouring textures.

CASE XXIII.

A boy, twelve years of age, on the 28th of June, 1809, fell from a height, and pitched on one of his knees. When he was brought to the hospital, he was found to have a compound fracture of the femur. For some days he appeared to go on well, but afterwards an abscess formed in the thigh, extending as high as the nates; and he sunk and died on the 21st of July. On examining the knee-joint

after death, the cartilage covering the condyles of the femur, and that covering the head of the tibia were found, in some parts, entirely absorbed, so that the bone was exposed; and in other parts it was absorbed on the surface towards the cavity of the joint, while the layer of it next to the bone retained its natural adhesion, and its natural structure. The cartilage, in these parts, was formed into grooves, having an appearance, as if the greater portion of its substance had been removed with a chisel. There was no purulent, nor other effusion, into the cavity of the joint.

CASE XXIV.

A middle-aged man met with an injury of the knee, which was followed by inflammation and suppuration, and he died in St. George's Hospital on the 30th of August, 1809.

On examining the joint after death, the cartilage covering the condyles of the femur, and the head of the tibia, was found entirely destroyed towards the circumference, so that the bone was exposed. Elsewhere, only a thin layer of cartilage remained; but this had its ordinary texture, and adhered as firmly as usual to the bone.

I conceive that the foregoing cases, and the other facts which have been stated, are sufficient to prove that the articular cartilages may be absorbed or ulcerated from the action of their own vessels, and that the ulceration may begin, and frequently does begin on that surface, which is towards the articular cavity. At the same time it is to be observed, that in many instances the ulceration begins in another situation, and I have frequently seen the cartilage abraded where it had been in contact with the bone,

while on the surface, towards the cavity of the joint, it remained smooth and perfect. Under these circumstances, the space formed by the absorption of the cartilage becomes filled up by a vascular substance, resembling granulations, and uniting the bone and cartilage to each other.

In whatever way the ulceration of the articular cartilages is produced, there is this remarkable difference between it and the ulceration of soft parts: suppuration seldom takes place while the ulcer of the cartilages is small, and often the disease proceeds so far as to cause caries of the bones to a great extent, without matter being formed in the joint. This circumstance is deserving of notice. It has long been established, that suppuration may take place without ulceration, and it appears that in this instance ulceration occurs without the formation of pus.

In some of the cases which have been related in the preceding chapters, ulceration of the articular cartilages existed as a secondary affection, the consequence of a disease originating in the neighbouring soft parts. There are other cases in which it seems to depend on a morbid condition of the cartilage itself, or on a chronic inflammation of the bony surface with which it is in contact, and in which it has, therefore, the characters of a primary disease. The dissections, which I have had an opportunity of making, lead me to believe that ulceration of the cartilages taking place under these circumstances in the superficial joints, constitutes one class of those numerous cases which were formerly designated by the appellation of white swellings; and that in the hip joint it forms a large proportion of those diseases, which have been confounded with each other under the names of "Morbus Coxarius," the "Disease of the Hip," the "Scrophulous Hip," the "Scro-

phulous caries of the hip joint." The history of cases of this description will form the subject of the present chapter.

CASE XXV.

In examining a body, brought into the dissecting-room in Windmill-street, I found the cartilage in a diseased state, in the joints of both hips, of one of the knees, and of both elbows. In some spots, the cartilages of these joints were altogether destroyed by ulceration, and carious surfaces of bone were exposed; in others, the cartilage was not completely absorbed, but it had the appearance of fibres, which were connected at one extremity to the bone, while the other extremity was loose towards the cavity of the joint, and having no lateral connection with each other. The intervertebral cartilages connecting the bodies of some of the dorsal vertebræ were also in a dis-

eased state. They retained the usual appearance of concentric layers towards the circumference, but in the centre, instead of the white semi-fluid substance, which is met with under ordinary circumstances, they were found to be of a brown colour, of a solid and somewhat brittle texture, composed of several portions, having a very slight adhesion to each other. The ligaments, the synovial membranes, and the bones, were all in a natural state, except that the latter were occasionally carious in consequence of the absorption of the cartilage; but the caries was unattended by the formation of matter.

In this case, the original disease appears to have been a morbid state, and subsequent ulceration of the cartilages. It shows that where the disposition to it exists, the destruction of the cartilage may take place in several joints at the same time, and I have observed the same thing in other instances.

The conversion of the cartilage into a soft fibrous structure has been already noticed. I am disposed to believe that it is the frequent, though not the constant forerunner of ulceration. In a woman, who died a week after a severe contusion of the hip, the cartilage of the head of the femur was found in some parts entirely absorbed, in others having a fibrous appearance, similar to what has been described, and I have noticed the same circumstances in other cases, sometimes connected with, and sometimes independent of local injury.

CASE XXVI.

A boy, ten years of age, was admitted into St. George's Hospital, in April, 1809, on account of a disease of the left hip. The nates were wasted, and flattened; there was pain in the hip and knee, and a large abscess had formed which pro-

duced a tumor on the outside of the thigh. An issue was made with caustic behind the great trochanter. About a month after his admission, the skin over the abscess having become inflamed, I made an opening in it, with a lancet, and half a pint of pus was evacuated. The orifice made by the lancet healed by the first intention, but, in a few days, pus was again collected in the abscess, and the tumor was larger and more tense than ever. The limb became shortened, the abscess burst externally, the boy became affected with hectic symptoms, and died on the 21st of October.

On examining the body, the abscess was found communicating with the cavity of the left hip. The capsular ligament and synovial membrane were not distinguishable from the other soft parts, forming the parietes of the abscess. There was no vestige of the round ligament, and no remains of cartilage on either of the bones composing the joint. The head of the

femur was reduced by caries to about one half of its natural size; and, from the same cause, the acetabulum was rendered deeper and wider than is natural. At the posterior part, the margin of the acetabulum was more extensively absorbed, and the head of the femur had been drawn out of its cavity, and was lodged on the dorsum of the ilium.

No other disease had been suspected to exist during life. If the boy had ever complained of pain in the right hip, the circumstance had been overlooked, on account of the greater disease in that of the opposite side. Having accidentally cut into the joint of the right hip, I found the cartilage covering the head of the femur, absorbed for about one-third of its extent, and the surface of bone, which was in consequence exposed, was covered by a thin layer of coagulable lymph. The cartilage lining the acetabulum, and all the soft parts belonging to the joint, were in a perfectly natural state, and the

bones were of the ordinary texture and hardness.

CASE XXVII.

A girl, seven years of age, was admitted into St. George's Hospital, in May, 1809, on account of a complaint in the left hip. She had pain in the knee, the limb was shorter than is natural, and the nates were wasted and flattened. An issue was made with caustic, behind the great trochanter. Soon after her admission an abscess burst near the crista of the ilium. The disease in the hip appeared to be considerably relieved, but on the first of August, she died of an accidental attack of erysipelas.

On inspecting the body, the glutæi muscles of the left side were found wasted, and of a dark colour. A sinus extended from the external orifice of the abscess through the soft parts, and communicated

with the hip-joint, by an ulcerated opening in the margin of the acetabulum.

There were no remains of cartilage on the surface of the acetabulum. The exposed bone was in a carious state, and of a dark colour, and the cavity of the acetabulum was rendered deeper and wider than is usual. The greater part of the cartilage was destroyed on the head of the femur, and the small portion of it which remained was readily separated from the bone. This circumstance is often met with, where cartilage is undergoing the process of ulceration.

The capsular ligament was somewhat thicker than under natural circumstances, and more connected with the surrounding parts. There were no remains of the round ligament.

In the anterior part of the joint, a quantity of organised soft substance, resembling that of adhesions, was interposed between the head of the femur and the acetabulum, and behind this was

a collection of dark-coloured pus. From these two causes the head of the femur had been separated from the os innominatum, and pushed outwards, and it had afterwards been drawn upwards by the action of the muscles, so that it was lodged on the superior part of the bony margin of the acetabulum. The synovial membrane was of a dark colour, but not otherwise diseased.

On examining the hip of the opposite side, I found the soft parts external to it, the capsular ligament, synovial membrane, and fatty substance of the joint, having no appearance of disease. The cavity of the joint contained about a drachm of dark-coloured pus. The cartilage was absorbed from about one-third of the surface of the acetabulum. The exposed bone in most parts presented an uniform compact surface, but in two places it was in a state of superficial caries. In some parts of the head of the femur, the cartilage had a fibrous appear-

ance, similar to what has been already described; in other parts it was entirely absorbed, and a carious surface of bone was exposed; and elsewhere it was in a natural state. The round ligament was ruptured by a very slight degree of force, which seemed to arise from the cartilage having been destroyed round its insertion into the acetabulum.

The bones in the neighbourhood of the carious surfaces of the left hip were of a darker colour than usual; but no such appearance was observed in the bones of the other hip, which were in all respects in a healthy state.

CASE XXVIII.

John Catnack, forty-four years of age, was admitted into St. George's Hospital on the 29th of September, 1813, with pains in the lower limb of the right side, extending from the hip to the knee, and

resembling the pains of rheumatism. He attributed these pains to his having caught cold about a month before his admission. He laboured also under a complaint of his bowels, of which he died on the 4th of December. On dissection, no preternatural appearances were discovered, except in the right hip. The capsular ligament and synovial membrane were in a natural state. The cartilages covering the head of the femur, and lining the bottom of the acetabulum, were destroyed by ulceration, for about one-half of their extent, and wherever the cartilage was destroyed, an ulcerated surface of bone was exposed. The round ligament was readily torn in consequence of ulceration having extended to it at the part, where it was inserted into the acetabulum. The bones possessed their natural texture and hardness. There was no pus in the joint. It was observed, that the ulcerated surface of the acetabulum corresponded to that of the

femur, these surfaces being exactly in contact, in the position in which the patient had remained since his admission into the hospital.

CASE XXIX.

William Bridges, twenty-one years of age, was admitted into St. George's Hospital, on the 28th of November, 1810. He gave the following account of his complaint. About the middle of the May preceding, he first experienced a pain in the right knee, which was aggravated by walking. At the end of a month, the pain became so severe that he was under the necessity of being confined to his bed. He had slight pain in the hip; but that in the knee was intense, keeping him awake at night. An abscess formed, which in the September following burst on the inside of the thigh.

At the time of his admission, the nates were wasted and flattened; the limb on the affected side, appeared to be an inch and a half longer than the other; there was a large abscess in the posterior part of the thigh. He was emaciated, and laboured under a hectic fever. An issue was made with caustic, behind the great trochanter of the femur, and afterwards a second issue was made in the same manner on the anterior edge of the tensor vaginæ femoris muscle. Under this treatment, he experienced for a time great relief, notwithstanding several abscesses formed and burst in different parts of the thigh. He became free from pain; regained his flesh; the hectic fever abated; and the discharge from the abscesses was much lessened. The limb now appeared to be shorter than the other. He continued to mend, till the middle of February, 1811. At this period the former bad symptoms began to return. He was affected with a constant diarrhœa, and profuse per-

spirations, and he died on the 26th of March following.

On inspecting the body, the glutæi muscles were found wasted and shrunk, and in many parts their texture was destroyed by the abscesses, which communicated with the cavity of the joint by two ulcerated openings, one on the anterior and the other on the posterior part. The abscesses formed several sinuses in the neighbourhood of the joint, and the capsular ligament was in consequence connected to, and in some measure blended with the other soft parts.

The joint contained purulent matter. The synovial membrane was darker than natural, but otherwise had the ordinary appearance. There were no remains of the round ligament. The cartilages were every where absorbed, and the exposed surfaces of bone were in a carious state. The head of the femur was reduced to about two-thirds of its original size, and the acetabulum was rendered deeper and

wider, nearly in the same proportion. At the bottom of the acetabulum, there was an ulcerated opening, just large enough to admit a common probe, communicating with an abscess within the pelvis. The carious surfaces of the bones, had the same dark colour and fœtid smell, as in other cases of caries, but otherwise they did not differ from healthy bones.

CASE XXX.

Jemima Holloway, about 23 years of age, was admitted into St. George's Hospital on the 30th March, 1814, on account of a disease of the right hip. There was a large abscess in the neighbourhood of the hip, and the nates were wasted, and flattened. She said that the disease had been going on for some years. On the 6th of June following her admission, she died.

On dissection, the glutæi muscles were

found wasted and flabby, and of a pale colour.

There was a large abscess of the nates communicating with the hip, by means of an opening in the posterior part of the capsular ligament and synovial membrane. In other respects the synovial membrane and capsular ligament were in a perfectly natural state.

The cartilages covering the head of the femur and lining the bottom of the acetabulum were destroyed by ulceration. The ulceration had extended to the bones, so that, the head of the femur was not more than half, and the acetabulum was double, the usual size. The bones possessed their natural texture and hardness. There was an ulcerated opening at the bottom of the acetabulum, communicating with the inside of the pelvis.

I could add to the foregoing, an account of the dissection of several other

cases, in which the hip was affected with the same disease; but in doing so, I should only occupy the reader's attention unnecessarily. It will be sufficient to observe that:

1. In the most advanced stage of the disease, none of the parts entering into the composition of the joint retain their natural structure. The soft parts are blended into a confused mass. Sometimes the head of the femur is completely destroyed, and there remains only the neck, or a portion of the neck, of that bone. Often the projecting margin of the acetabulum is entirely absorbed, so that instead of a cavity, there is a broad carious surface of the os innominatum. In a few instances a portion of the carious bone is found dead, and undergoing the process of exfoliation, or having already exfoliated into the cavity of the joint.

2. In whatever period of the disease the examination is made, the cartilages

are found in a state of ulceration, but the morbid affections of the soft parts and bones vary very much, nor are they much altered from their natural state, except in the most advanced stage of the malady.

From these circumstances, and from the appearances in several of the cases which have been related, in which the disease was found in its incipient stage, and wholly confined to the cartilages, and bony surfaces, with which the cartilages are in contact, we may conclude that in a large proportion of cases of caries of the hip these are the parts primarily affected, and the following may be stated to be the progress of the disease.

1. Ulceration takes place in the cartilages: generally in that of the acetabulum first, and in that of the head of the femur afterwards; sometimes it begins in both at the same time.

2. The ulceration extends to the bones, which become carious; the head of the

femur is diminished in size, and the acetabulum is rendered deeper and wider.

3. Abscess forms in the joint, which after some time makes its way, by ulceration, through the synovial membrane and capsular ligament, into the thigh, or nates, or even through the bottom of the acetabulum into the pelvis. Sir Astley Cooper has shown me two specimens, in each of which an abscess connected with a diseased hip had burst into the rectum.

4. In consequence of the abscess, the synovial membrane and capsular ligament become inflamed and thickened. The muscles are altered in structure; sinuses are formed in various parts; and at last all the soft parts are blended together into one confused mass, resembling the parietes of an ordinary abscess.

In giving this statement it is not my intention to assert that the hip is not liable to other morbid affections. I have in a former part of this work described the symptoms produced by inflammation

of the synovial membrane of this joint. In the next chapter I shall point out another order of cases, in which the hip is affected in consequence of a scrophulous disease originating in the bones themselves: but still the conclusion remains that in a great, and I believe in the greater, number of those cases, to which the name of "diseased hip," has been usually applied, the ulceration of the cartilages is the primary affection, and the other parts in and near the joint become affected only in a secondary manner.

As from the peculiar situation and connections of the hip, diseases of this part are attended with particularly serious consequences, I trust that the foregoing account will not be considered as given too much in detail, especially as it will prevent the necessity of entering with much minuteness into the history of the ulceration of the cartilages of other joints, in which the progress of the disease, al-

lowance being made for the difference of structure and situation, is the same as in the hip.

CASE XXXI.

David Martin, twenty-six years of age, was admitted into St. George's Hospital, on the 25th of July, 1810, on account of a disease in his right knee. He attributed it to a blow, which he had received some years previous; but he said, that the symptoms had all been much aggravated within the last six months. At the time of his admission into the hospital, the knee had the appearance of being swollen; but on examination, this was found to arise from the wasting of the muscles, rather than from actual enlargement. The leg was fixed, or nearly so, in the half-bent position. The condyles of the femur

projected beyond the head of the tibia. He complained of pain, which was particularly severe at night. An issue was made with caustic on each side of the patella; but the symptoms were not relieved, and an abscess burst on the outside of the joint, discharging a large quantity of matter.

Soon after his admission, he experienced, for the first time, severe pain in the other knee; but this was unattended by swelling, or any alteration in the form of the joint, and the leg admitted of complete extension and flexion on the thigh. The pain continued, but no swelling ever took place.

In the beginning of September, he was seized with an accidental attack of erysipelas. Abscesses formed in different parts of the leg and thigh; and he gradually sunk, and died on the 7th of November.

On inspecting the body, the right leg

was found bent so as to form a right angle with the thigh. The head of the tibia had been drawn towards the ham by the action of the flexor muscles, so that the condyles of the femur were unusually protuberant. The lateral ligaments were in a natural state. There were no remains of the crucial ligaments, or semilunar cartilages. The cartilages of the tibia, femur, and patella, had been entirely absorbed. The bones were carious on their exposed surfaces, but not otherwise diseased. The synovial membrane was free from all morbid appearances, except at the points of its attachment to the bones, where, in a few places, coagulable lymph had been effused on its surface.

The left knee, externally, had its natural appearance with respect both to form and size. The leg admitted of complete flexion and extension. On dissection, the ligaments and synovial membrane were found in a perfectly healthy state;

but about one-third of the cartilaginous surfaces of the tibia and femur was destroyed by ulceration, the ulceration having taken place principally, but not entirely, near the circumference. The cartilage of the patella and the semilunar cartilages were entire, but the latter in some parts were softer than usual. The bones were free from disease. There was no pus or other fluid in the joint.

The dissection of this case, in which the ulceration of the cartilaginous surfaces was evidently the primary disease, explains well the nature of, at least, many cases of that species of white swelling, which some authors have described, in which there is long continued and severe pain in the joint, before any tumour is observable.

CASE XXXII.

William Bowles, eighteen years of age, was admitted into St. George's Hospital, on the 1st of December, 1810. He said that about eleven months previous to his admission, he had been seized with pain in his right knee, which was so severe as to keep him frequently awake at night. Six weeks after the pain attacked him, the joint for the first time became swollen. He now applied to a practitioner, under whose treatment, joined with perfect rest, the pain and swelling subsided, so that he was able to walk about. In the September following, having returned to his usual occupations, and used the joint a good deal, the pain and swelling returned.

At the time of his admission, the affected knee was about an inch and a half in circumference larger than the other. The swelling had the form of the articu-

lating ends of the bones. The leg was half bent, and all attempts to give it motion gave great uneasiness. The pain, which he experienced, was great at all times, but particularly at night, when it very much disturbed his rest.

Soon after his admission, an abscess was discovered on the outside of the knee, which burst in the beginning of February, and discharged a large quantity of matter. On the 18th of March, the limb was removed by amputation.

On examining the joint, the greater part of the cartilaginous surfaces of the tibia, femur, and patella, were found destroyed by ulceration. Where the cartilage was destroyed, the exposed bone was carious, and in some places covered by a thin layer of coagulable lymph; but in other respects the bone was free from disease. There were scarcely any remains of the semilunar cartilages. The joint contained pus, and the abscess in the joint had made its way into the external

parts, through an ulcerated opening in the synovial membrane. The synovial membrane was in a natural state, except that, in a few places, there was a thin layer of coagulable lymph on its surface, which evidently had been recently effused. The external lateral ligament was destroyed by the abscess: the other ligaments were entire.

In this case, the principal disease observed in the dissection, was the ulcerated state of the cartilages. There was no affection of the synovial membrane beyond what might be considered as arising from the formation of pus in the joint, and the bursting of the abscess externally. Where inflammation of this membrane is the primary disease, swelling takes place often in a few hours, always within two or three days from the beginning of the attack; whereas in this instance, the constant answer, which the patient gave to the repeated enquiries made of him, was, that he had had violent pain

for six weeks before the joint was observed to be enlarged. From all these circumstances, we may conclude, that in this case as well as in the last, the cartilages were the original seat of the disease, and that the morbid appearances observed in the soft parts, were the consequence of the formation of the abscess in the joint.

The same conclusion may be drawn respecting the two cases which follow.

CASE XXXIII.

Mary Anderson, twenty-eight years of age, was admitted into St. George's Hospital, on the 6th of April, 1815.

At this time, she complained of intense pain in the right knee, which was particularly severe at night, so as exceedingly to interrupt her rest. The pain was

referred principally to the head of the tibia. There was a slight swelling of the joint, having the form of the articulating ends of the bones, and not giving to the hand the smallest sense of fluctuation. The leg admitted of being moved on the thigh, but all motion aggravated the pain.

No more particular account of the previous history of the case could be procured than the following: that she had laboured under pains of the right knee for nearly six years, which had been occasionally relieved; and that in the first instance the pain had been unattended by swelling.

Immediately on her admission, an issue was made with caustic on each side of the patella. On the 9th of April the pain had very much abated. The issues were kept open by the occasional application of caustic; and the pains very soon left her, and the swelling diminished.

About the 8th of June, she began to experience a return of the pains in the

knee, and, in the course of four or five days, they were so severe as to keep her awake at night. There were convulsive startings of the limb, and the joint was swollen in a greater degree than formerly. The pains increased in violence, and her health began to suffer considerably. On the 3d of July, the limb was amputated.

On examining the knee, some lymph and serum were found effused into the cellular membrane external to it.

The cavity of the joint contained about half an ounce of thin purulent fluid: The cartilage covering the patella was, in some parts, in a natural state; in others it had the fibrous structure, which I have described in a former part of this chapter; and in others, it was completely destroyed by ulceration, so as to expose the surface of the bone. The cartilage covering the articulating extremity of the femur, presented the same variety of appearances. On the inside

there was a spot of some extent, which, instead of cartilage, was covered by an organized substance, resembling the substance of adhesions, but somewhat more dense in its structure; as if the cartilage had been formerly destroyed at this part, and coagulable lymph had been effused on the ulcerated surface of bone, which had afterwards become organized.

The cartilages of the tibia were ulcerated for a very small extent.

The synovial membrane in general was in a natural state. In some places it was slightly inflamed. On the outside of the joint, it was inflamed in a greater degree than elsewhere, and thickened, and had begun to ulcerate, evidently in consequence of the abscess in the joint having begun to make its way to the external surface.

The bones possessed their natural texture and hardness.

CASE XXXIV.

Jane Bannister, forty years of age, was admitted into St. George's Hospital, in September, 1810, on account of a disease in her right foot. She gave the following account of her case.

In the September of the preceding year she wrenched her instep, and soon afterwards experienced violent pain in this part, so that she was unable to stand on that foot, and her rest was much disturbed at night. The pain continued very severe, and at the end of four months she observed, for the first time, a slight swelling on the inside of the foot. This was occasioned by an abscess, which was opened by her medical attendant in the April following.

At the time of her admission into the hospital, the whole foot was swollen, and she complained of violent pain in it. The abscess continued open, discharging a small quantity of pus. On introducing

a probe into the orifice, an exposed surface of bone was felt. Several applications were made without benefit, and the leg was amputated on the 25th of February, 1811.

On examining the amputated foot, the cartilages of the joint formed by the astragalus and os naviculare were found destroyed by ulceration, and a portion of the astragalus was dead, and undergoing the process of exfoliation. The cartilages of the joints formed by the cuneiform bones with each other, with the os naviculare, and with the metatarsal bones, were in like manner destroyed, and the exposed surfaces of bone were carious. The abscess communicated with the carious joints. The ligaments and synovial membrane were in a natural state, except in a few spots, where they were destroyed by the abscess. The bones possessed their natural texture and hardness. The cellular membrane of the foot contained coagulable lymph and serum.

It would be needless to add to the foregoing an account of other cases, in which the disease was in a still more advanced stage. The progress of it, in other joints, corresponds with that in the hip, and whatever may be the joint affected, there is ultimately the same complete destruction of the cartilages, and the same extensive ravages are committed among the bones and soft parts.

Sect. II.

Of the Symptoms of this Disease.

The ulceration of the articular cartilages may occur at any period of life; but it is most frequent in those, who have passed the age of puberty, and who are under thirty or thirty-five years of age. We meet with it, however, sometimes in young children, and at other times in old

persons. In general the disease is confined to a single joint; but occasionally two or three joints are affected in the same individual, either at the same time, or in succession. Sometimes the patient traces the beginning of his symptoms to a local injury; but for the most part no cause can be assigned for the complaint, and often, the cause to which it is attributed, appears to be imaginary rather than real.

In giving an account of the symptoms which are produced by this disease when it exists in the hip joint, I should first observe, that they a good deal resemble those which are the consequence of that scrophulous disease to which the hip is also liable, and which will be described hereafter. These two diseases of the hip have many circumstances in common, and as I shall, in the present chapter, enter into a minute history of the progress of the former, I shall be enabled, in the next chapter, to confine my observations

respecting the latter, chiefly to those points in which it differs from the other complaint, and on which our diagnosis, so far as it can be made, must mainly depend.

Where the cartilages of the hip are ulcerated, the only symptoms met with for some time, are pain, and a slight degree of lameness in the lower limb. The pain at first is trifling, and only occasional; afterwards becoming severe and constant. It resembles a good deal the pain of rheumatism, since it often has no certain seat; but is referred to different parts of the limb in different individuals, and even in the same individual at different periods. As the disease advances, the pain becomes exceedingly severe, particularly at night, when the patient is continually roused from his sleep by painful startings of the limb. Sometimes he experiences some degree of relief from the pain in a particular position of the joint, and in no other. A patient in St. George's Hos-

pital never obtained any rest, except when he had placed himself on the edge of the bedstead, with his feet on the ground, and resting his body on a pillow, in a position between that of lying and sitting.

As the pain increases in intensity, it is more confined in its situation. In the greater number of instances it is referred to the hip and the knee also, and the pain in the knee is generally the most severe of the two. At other times there is pain in the knee, and none in the hip. Sometimes there is pain referred to the inside of the thigh; sometimes even to the foot. Wherever the pain is situated it is aggravated by the motion of the joint; but it is aggravated in a still greater degree by whatever occasions pressure of the ulcerated cartilaginous surfaces against each other. Hence the patient is unable to support the weight of the body on the affected limb; and if he be placed on an even surface, in a horizontal position,

and the hand of the surgeon be applied to the heel so as to press the head of the femur against the concavity of the acetabulum, violent pain is the consequence; although this be done in so careful a manner that not the smallest degree of motion is given to the hip-joint. This circumstance is well deserving of attention; and no one should attempt to give an opinion as to the nature of a disease connected with the hip, without having made an examination in the manner which has been just described.

Soon after the commencement of the complaint, the hip-joint is found to be tender, whenever pressure is made on it either before or behind. The absorbent glands in the groin become enlarged, and sometimes suppurate. Occasionally there is a slight degree of general tumefaction in the groin. In this there is nothing remarkable, since we must suppose that, a disease going on within the articulation must ultimately occasion some degree of

inflammation in the neighbouring parts. But it is a curious circumstance, that in some cases, there is tenderness of those parts, to which, though not diseased themselves, the pain is referred from sympathy with the disease in the hip. I have observed this in the knee several times, and I have also seen a slight degree of puffy swelling of this joint, where pain was referred to it, in consequence of disease in the hip. These facts correspond to what may be observed in some other cases, where pain is referred to a sound part, in consequence of a sympathy existing between it, and some other part that labours under disease; for example, I have known the passage of a calculus down the ureter, to occasion not only pain, but tenderness, swelling, and no trifling inflammation of the testicle.

When the disease has existed for some time, the nates undergo a remarkable alteration in their form. They become

wasted and less prominent: so that, instead of their usual convexity, they present the appearance of a flattened surface: they are flaccid to the touch, and hang more loosely towards the lower edge; and they have the appearance of being wider than those of the other side. In a very few cases, in the advanced stage of the disease, the nates are really wider, in consequence of the acetabulum being filled with coagulable lymph and matter, and the head of the femur being pushed out of its natural situation. But in general the increased breadth of the nates is only apparent, and on an accurate measurement no difference will be found between the nates of one side, and those of the other. The alteration in the figure of the parts in those cases, may arise partly from the position in which the patient usually places himself, when he stands erect; but the principal cause, to which it is to be attributed, is the wasting of the large fleshy bellies of

the glutæi muscles from want of use; and this has been ascertained, by repeated, and accurate examinations of the living, and numerous dissections of the dead body. *

Another symptom, which occurs in this disease, is an alteration in the length of the limb. 1st, in the early stage of the disease the patient often complains, that the limb on the affected side is longer than the other. This cannot be explained on the supposition of the acetabulum being filled with pus, or solid substance,

---

* This alteration in the form of the nates is a symptom, but is not in itself to be considered as a certain diagnostic mark of disease in the hip-joint; as it may be observed in other cases, where, from any cause, the glutæi muscles have been for a considerable time in a state of inaction. Thus children are subject to a paralytic state of the muscles of the lower limb, and in this complaint, if the muscles are affected as high as the pelvis, the nates present to the eye the same appearance. It may be noticed also where there is disease of the thigh-bone, or where, from any other cause, the motion of the hip is painful and difficult.

which would cause the head of the femur to be pushed outwards rather than downwards. The fact is that there is only an apparent, and no real elongation of the limb. If the patient be placed on his back in the horizontal position, so that both thighs make the same angle with the pelvis, the foot on the diseased side may at first appear as much as two or three inches lower than the opposite foot; but, if the distance be accurately measured with a tape, from the anterior superior spinous process of the ilium to the patella, no difference is perceptible. The apparent elongation is produced by the position of the pelvis being altered, in such a way that the crista of one ilium is visibly depressed below the level of that of the other. It is easy to understand how this effect is produced, by observing the position in which the patient places himself, when he stands erect. He supports the weight of his body on the sound limb, the hip and

knee of which are in consequence maintained in the state of extension. At the same time the opposite limb is inclined forward, and the foot on the side of the disease is placed on the ground, considerably anterior to the other, not for the purpose of supporting the superincumbent weight, but for that of keeping the person steady, and preserving the equilibrium. Of course this cannot be done without the pelvis on the same side being depressed. The inclination of the pelvis is necessarily attended with a lateral curvature of the spine, and hence it happens that one shoulder is higher than the other, and that the whole figure is in some degree distorted. All these symptoms will disappear in the course of a few weeks, if the patient under these circumstances be confined to his bed in the supine and horizontal position; except in some instances, where, in consequence of their having occurred in a young and growing person, and having already been allowed

to exist for a considerable time, the shape of the parts has become adapted to their new situation, and the alteration of the figure may continue during life.

2. In a few cases, where the patient is in the erect position, it may be observed that the foot, which belongs to the affected limb, is not inclined more forward than the other, but that the toes only are in contact with the ground, and the heel raised; at the same time that the hip and knee are a little bent. This answers to the patient the same purpose of enabling him to throw the weight of his body on the other foot; but it produces an inclination of the pelvis in the opposite direction. The crista of the ilium is higher than natural, and there is an apparent shortening, instead of elongation, of the limb on the side of the disease.

3. In the very advanced stage of the disease, when the head of the femur has been completely destroyed by ulceration, there is nothing to prevent the muscles

from pulling the bone upwards. This may be compared to a case of fractured neck of the femur. The limb is not only apparently, but it is really shortened: the foot may be rotated inwards, but, if left to itself, it generally is turned outwards.

4. In other cases, the limb is shortened; the thigh is bent forwards; the toes are turned inwards, and do not admit of being turned outwards; and there is every symptom of a dislocation of the hip upwards and outwards. The following case fully explains the cause of those appearances.

CASE XXXV.

—— Taylor, a middle-aged man, was admitted into St. George's Hospital in the autumn of 1805, on account of a disease in his left hip. He laboured also under other complaints, and he died in the February following.

On inspecting the body, the soft parts in the neighbourhood of the joint were found slightly inflamed, and coagulable lymph had been effused into the cellular membrane round the capsular ligament.

There were no remains of the round ligament.

The cartilages had been destroyed by ulceration, except in a few spots.

The bones on their exposed surfaces were carious; but they retained their natural form and size. The acetabulum was almost completely filled with pus and coagulable lymph; the latter adhering to the carious bone, and having become highly vascular. The head of the femur was lodged on the dorsum of the ilium. The capsular ligament and synovial membrane were much dilated; and, at the superior part, their attachment to the bone was thrust upwards, so that although the head of the femur was no longer in the acetabulum, it was still within the cavity of the joint.

Since the man did not attribute this disease to any local injury, we may conclude that the ulceration of the cartilage was the primary affection, and that the dislocation had been produced in consequence, of the destruction of the round ligament, and of the head of the femur having been first pushed outwards by the coagulable lymph and pus, which occupied the cavity of the joint, and then drawn upwards by the action of the muscles inserted into the great trochanter. *

The shortening of the limb, which takes place in the advanced stage of the disease, is usually, but not always, the precursor of abscess. The formation of matter is also indicated by an aggravation

---

* This case affords an example of the dislocation of the hip from an internal cause, which some surgical writers have described, and it is probable that in the majority of such cases, the dislocation is produced in the same manner.

of the pain, by more frequent spasms of the muscles, by a greater wasting of the whole limb, and by the circumstance of the thigh becoming bent forward, and being incapable of extension without such an increase of the patient's sufferings as he will be unable to endure. At the same time the pulse becomes quick, the tongue furred, and the whole system is in a state of preternatural excitement. The abscess usually shews itself in the form of a large tumor over the vastus externus muscle; sometimes on the inside of the thigh near the middle; and occasionally two or three abscesses appear in different parts, and burst in succession. The abscesses discharge a large quantity of thin pus, and in the worst cases a copious suppuration continues, until the powers of the patient are exhausted, and enfeebled and emaciated he sinks under the symptoms of a hectic fever. That an adult should recover under these circumstances is so rare an occurrence, that the

surgeon can never be justified in giving any but the most unfavourable prognosis. Children recover more frequently in this advanced stage of the disease, but seldom without a complete anchylosis of the joint. If suppuration has not taken place, it generally, but not always, happens that the limb after the cure regains its natural degree of mobility. *

---

* The morbid affections of the hip most liable to be confounded with that which has been above described are the following:

1. Inflammation of the synovial membrane, of which I have spoken in a former chapter.

2. The scrophulous disease, having its origin in the cancellous structure of the bones, of which I shall speak hereafter.

3. Chronic inflammation of the soft parts in the neighbourhood of the hip terminating occasionally in the formation of a chronic abscess. Here the pain is more confined in its situation; not encreasing to the same degree of severity; attended with more stiffness of the joint in the early stage, yet less aggravated by motion; not relieved in the same degree by rest; and soon followed by a manifest tumefaction of the groin and nates.

When the cartilages of the knee are ulcerated, there is pain in the affected joint; at first it is slight and only occasional, and in the early stage of the disease, it is completely relieved by remaining in a state of rest for a few days, but it returns as soon as the patient resumes the exercise of the limb. By degrees the pain becomes constant and very severe, particularly at night, when it disturbs the patient by continually rousing him from his sleep. The pain is referred principally to the inside of the head of the tibia, but sometimes a slighter degree of pain extends down the whole of that bone. The pain is aggravated by motion, so that the patient keeps the limb constantly in one position, and generally half bent: and he never attempts to support the weight of the body on the foot of this side.

---

4. Affections of the sciatic nerve; which however are liable to be mistaken for diseases of the hip joint only by superficial and careless observers.

The ulceration of the cartilages of the knee differs with respect to its symptoms, from inflammation of the synovial membrane, in this; that the pain in the former is slight in the beginning, and gradually becomes very intense, which is the very reverse of what happens in the latter. But there is another circumstance, which forms a remarkable distinction between the ulceration of the cartilages, and most other diseases, to which this joint is liable. The pain in the first instance is unattended by any evident swelling; which comes on, never in less than four or five weeks, and often not until several months have elapsed from the commencement of the disease. The reason of this is too manifest to require explanation, and it is equally unnecessary to point out the importance of it, as affording the means of making a more ready diagnosis. We must not indeed conclude indiscriminately, whenever there is a slight pain in the knee, unattended by swelling, that

the cartilages are in a state of ulceration, since this symptom may equally arise from inflammation of the bones themselves; of the ligaments; of the fatty substance of the joint; or from simple nervous affection; and instances will occur to every surgeon, where there is reason to believe that the above mentioned symptom arises from one or other of these causes. But when the pain continues to increase, and at last becomes very severe; when it is aggravated by the motion of the joint, and by the pressure of the articulating surfaces against each other: and when after a time a slight tumefaction takes place, such as I shall presently describe; we may conclude that the disease consists in an ulceration of the cartilages; and in all such cases, which have come under my own observation their subsequent progress, and the morbid appearances presented by dissection, where an opportunity has

occurred of observing them, have fully justified this conclusion.

The swelling, which attends this disease in the knee, differs from that, which occurs in either of those diseases of the synovial membrane, which I have formerly described. It arises from a slight degree of inflammation having taken place in the cellular membrane external to the joint, in consequence of the disease within it. The swelling is usually trifling, appearing greater than it really is, in consequence of the wasting of the muscles of the limb. It has the form of the articulating ends of the bones; that is the natural form of the joint. No fluctuation is perceptible, as where the synovial membrane is inflamed: nor is there the peculiar elasticity, which exists, where the synovial membrane has undergone a morbid alteration of structure.

But a few cases occur, in which this disease is attended with a collection of

fluid in the joint, and in which therefore the tumor has a form different from that which has been described, and giving to the hand a distinct sense of fluctuation.

1st, Inflammation of the synovial membrane may occur as a secondary disease, ulceration of the cartilages having preceded it, and the effusion of synovia into the joint being the consequence of it. This I supposed to have happened in the case of John Child, which will be related hereafter.

2dly, In an advanced stage of ulceration of the cartilages, where an abscess is formed, it occasions ulceration of the soft parts, and usually makes its way to the skin; but sometimes the pus is collected in the joint, distending the synovial membrane, and causing a tumor very similar to that, which would arise from it being distended with synovia. In these cases, the surgeon must form his diagnosis, by attending to the previous history; by observing the degree and

the kind of pain of which the patient complains; and the state of his general health; and by bearing in mind this circumstance, that blisters very seldom fail in procuring absorption of the too abundant synovia, and that they never cause the absorption of pus.

As the ulceration of the cartilages is sometimes followed by dislocation of the hip; so we find that dislocation of the knee occasionally takes places from the same cause. Where there has been considerable distension of the soft parts in consequence of ulceration extending to them, the head of the tibia is gradually drawn backwards by the action of the flexor muscles and lodged in the ham; and I have even known this to happen where abscess has never formed, the patient ultimately recovering with a stiff joint and disfigured limb. In such a case, the condyles of the femur make an unusual projection, and the articulating

surfaces of the bones are partially or entirely separated from each other.

The symptoms produced by the ulceration of the cartilages of other joints correspond very nearly with those already described. The principal diagnostic mark is the pain, which is experienced in the beginning unattended by swelling. The pain is referred to the part, which is the actual seat of the disease: but where the elbow is affected, the more violent pain in this joint is accompanied by a slighter degree of pain in the lower part of the fore-arm and wrist; and where the disease is in the shoulder there is often a painful sensation, extending down the whole of the bone of the arm. In all cases the pain is much encreased, when the articulating surfaces are pressed against each other, and in the first instance it is unattended by swelling. In cases of ulceration of the cartilages of the shoulder, the joint is smaller than natural, in consequence of the wasting of the deltoid muscle.

Whatever joint is the seat of the disease, the formation of abscess is always attended with an aggravation of all the symptoms. But the degree, in which the general system is disturbed, when suppuration is established, depends on various circumstances; on the age and powers of the patient; on the size of the affected joint; and on its situation. An abscess connected with a deep-seated joint occasions more extensive mischief of the soft parts, before it reaches the surface, and therefore is productive of more serious consequences, than one which is connected with a joint, that is situated superficially.

The progress of the ulceration of the cartilages varies, with respect to time, in different cases, but it is generally tedious. In one case, where violent pain had existed in the knee, with little or no swelling, for two years and a half previous to amputation, I had an opportunity of examining the diseased joint, and found

the cartilages destroyed for only a small extent; a dram and a half of pus in the articular cavity, and no morbid appearances of the soft parts, with the exception of a very slight inflammation, which had been induced in the synovial membrane, and the effusion of a minute quantity of coagulable lymph into the cellular texture on its external surface. In another case, the pains in the lower limb had existed for a whole year, before they were sufficient to attract the patient's serious attention. In this case no pus was formed in the joint; and the ultimate recovery was complete, without the smallest detriment to the motion of the limb. Sometimes, however, the progress of the disease is much more rapid. There was a patient in St. George's Hospital, in whom, in the course of four months, the destruction of the head of the femur and acetabulum was such, as to occasion a real shortening of the limb to the extent of an inch.

Sect. III.

On the Treatment.

It is of course of importance to attend to the general health, and to exhibit such internal remedies as the symptoms seem to indicate in each individual case. Where there is any febrile excitement of the system, saline, and antimonial medicines, and occasional purgatives are proper. Where the patient, in the advanced stage of the disease, finds his bodily powers enfeebled, and is troubled with nocturnal perspirations, bark, or some other vegetable tonic, combined with mineral acids, may be given with advantage; and opium, or extract of poppies, may be administered to those whose rest is disturbed by attacks of excruciating pain. Where the disease in the joint is attended with a disordered condition of the functions of the digestive organs, it is un-

doubtedly proper to endeavour to restore these to a more healthy state, and purgatives of calomel and rhubarb may occasionally be given to young persons with torpid bowels. But I am not aware that it is possible to lay down any more general rule as to medical treatment, nor am I acquainted with any medicine which can be said to exercise a specific influence over this complaint. No such influence certainly can be attributed to those mercurial alteratives, (as they are called) which, in the practice of modern surgery, are often advantageously prescribed for a great number of other local diseases.

When the cartilages of a joint are ulcerated, it may well be supposed that the motion of their surfaces on each other must be favourable to the progress of ulceration. I have known some cases, in which rest alone was sufficient to produce a cure. In all cases the symptoms of the disease are aggravated by any con-

siderable exercise ; and we may therefore conclude that the keeping the limb in a state of the most perfect quietude, is a very important, if not the most important, circumstance to be attended to in the treatment. When the affected joint is in the lower limb, the patient should be confined to the bed, or at any rate to the sofa. In most instances, a splint or some other contrivance may be employed in such a manner, as to maintain the diseased joint in a state of absolute immobility, and this should be always regarded as one of the principal points to be attended to in the surgical treatment. The apparatus made use of for this purpose, should be such as is efficient, and at the same time, simple, light, and commodious to the patient.

Issues made with caustic* have been

---

* The immediate relief, which sometimes follows the application of caustic to the skin, or the surface of an issue, when the limb is under precisely the

recommended by many practitioners for the cure of diseased joints ; but as far as I know, no one has attempted to point out the particular class of cases, to which this remedy is particularly applicable. I have employed caustic issues, and seen

---

same circumstances, as before, with respect to rest; and the return of the symptoms, which in many instances follows the early healing of an issue; sufficiently prove the efficacy of this remedy. It may be difficult to explain the *modus operandi;* but what happens in these cases seems to bear no distant analogy to the suspension of gonorrhœa, by the occurrence of inflammation of the testicle, or the metastasis of gout from the stomach to the foot. Issues are employed in surgery for the purpose of stopping the morbid actions of the animal body; but it is probable that if made of too great an extent, they would interfere with its natural actions also. In a guinea-pig, a large abscess took place of one leg and thigh in consequence of a local injury. The formation of the abscess completely stopped the growth of the claws on the foot of this side. They wore away at the points, without being regenerated at the base, became short and dry, and readily cracked and splintered; while on the foot of the opposite limb they continued to grow as usual, and possessed their ordinary appearance.

them employed, in a great number and variety of instances, and have found them to be usually productive of singular benefit where the cartilages are in a state of ulceration, and to be of much more service in these than in the other morbid affections to which the joints are liable. Setons and blisters kept open by means of the savine cerate appear to operate nearly in the same manner as caustic issues, and may be used with advantage in the same description of cases. *

Local blood-letting, or bleeding from the arm, is occasionally productive of ad-

---

* It may be expected that I should in this place offer some remarks on the effects of the application of the cautery, which has been recommended at different times, for the relief of some cases of diseased joints. I do not however feel myself warranted in giving any confident opinion as to the comparative efficacy of issues made by the caustic, and those made by the cautery; my experience of the latter being limited. The little, which I have had an opportunity of observing, has certainly not led me to prefer the cautery to the caustic.

vantage in the beginning, especially in some cases, which occur chiefly in hospital practice, in which the patient, from too freely exercising the limb, has brought on an inflammation of the ulcerated surfaces, occasioning an aggravation of the pain, and usually some degree of fever.

In the early stage, the warm bath is sometimes of service. At least it is capable of relieving the symptoms, if not of stopping the progress of the disease.

Plasters made of gum ammoniac, and others of a similar nature; embrocations and liniments of all kinds, are entirely inefficacious. Friction is invariably injurious.

I have shewn in a former section that ulceration of the articular cartilages may take place to a considerable extent, without suppuration being established. This is a circumstance of much importance, not only with respect to pathological science, but also in a practical point of view. The prospect of a cure, which

the employment of any remedies affords, is undoubtedly much greater where abscess does not exist, than where it does; and the prognosis, which the surgeon gives, must depend in a great degree on the opinion which he is led to form on this subject.

Having premised these general observations, I shall proceed to offer a few practical remarks: first, on the treatment of this disease in the hip, and afterwards in other joints, without reference to suppuration having taken place; secondly, on the plan, which should be adopted, where suppuration is established, and there is a collection of pus communicating with the articular cavity.

Where the cartilages of the hip are ulcerated, the patient should, in the first instance, be confined to a couch, if not to his bed; and if the disease be far advanced, the limb should be supported by pillows and cushions properly disposed, so as to favour the production

of anchylosis, by allowing it to vary as little as possible from one position.

In children, blisters are capable of affording complete relief. They may be applied on the nates, round the great trochanter, and in the groin. A blister kept open by means of the savine cerate is usually more efficacious in this disease than a number of blisters applied and healed in succession.

In adults the same treatment is useful in the very early stage of the disease; but in the more advanced stage, issues made with caustic appear to be much more efficacious, and to be attended on the whole with less inconvenience to the patient.

The hollow behind the great trochanter of the femur, is in many respects the most convenient situation for the application of the caustic; but in some cases the application of it on the outside of the hip is attended with better effects. The skin of this part is in fact nearer to

the joint than the skin behind; and there are some grounds for the opinion, that issues are more efficacious when made near to the seat of the disease, than when made at a distance from it. * The skin in the groin is still nearer to the hip than that on the outside, but the large vessels and nerves of the thigh forbid the use of the caustic at this part. A slough may be made with the caustic potash in the adult, half an inch in breadth and two

---

* " I have for many years applied caustics above " and below the internal condyle of the thigh-bone, " for white swellings of the knee, with various success; " and I have remarked, that where this plan disap- " pointed my hopes, and where a suppuration took " place in the joint, that the inflammation in almost " every case arose, and that the matter collected " generally made its way outwards on the external " side of the knee. Observing this fact repeatedly, " I was led to believe that the caustic, in the manner " I used it, checked the progress of the disease, as " far as it had influence; but that the influence was " not sufficient to pervade the whole cavity of the " joint."

Ford on the Hip-Joint, p. 194., first edition.

inches in length behind the great trochanter. If this fails in giving relief, a second slough of a smaller size may be made on the anterior edge of the tensor vaginæ femoris muscle; and in some instances, though no relief is afforded by the first issue, there is great relief from the second.

The good derived from the issue does not seem to be in proportion to the quantity of pus discharged from its surface. It has been observed by others, that sometimes more abatement of the symptoms is produced in the first few days after the caustic is applied, and before the slough has separated, than in several weeks afterwards. This circumstance first led me, instead of employing beans for this purpose, to keep the issue open simply by rubbing the surface with the caustic potash, or with the sulphate of copper, twice or three times in the week; and after an extensive trial of both methods, the latter has appeared to

be decidedly preferable to the former. The pain produced by the caustic is very considerable, but the relief of the symptoms is such, that I have known patients to be in the habit of making the application themselves, saying that " they knew they should be better by the next morning." Besides, the issue is more easily dressed than where beans are used; and the inconvenience arising from the beans slipping out under the adhesive plaster, and from any accidental pressure of them against the sore surface, is avoided.

The cases, in which complete relief of the symptoms immediately follows the making the issue, are not very numerous. In general, there is some degree of abatement on the caustic being applied; and in a few weeks afterwards (provided that suppuration has not taken place,) if the patient continues in a state of quietude, the pain entirely leaves him. Where the pain is exceedingly severe (as it sometimes is, so as to prevent sleep during many

successive nights,) it is very desirable that some method should be adopted, capable of affording more speedy relief, than that, which can usually be obtained from the application of the caustic. If there is reason to believe that the ulcerated surfaces are in a state of inflammation, in consequence of the joint having been too much exercised, bleeding may be had recourse to. A blister may be applied to the groin, and repeated if necessary. Blisters applied to the knee, or to the thigh, though there is no actual disease in these parts, will often occasion considerable or even entire relief of the pain, which is referred to them, from sympathy with the affection of the hip. This is a curious circumstance, but I have known it happen in so many instances, that, however difficult it may be to explain it, I can entertain no doubt of the fact. Sometimes the pain is altogether relieved by the application of the blister; at other times, I have known it leave the

knee, to which the blister was applied, and attack the hip.

The objections, which may be urged against the application of caustic to the skin in the groin, do not hold good with respect to a seton in this situation. I was led to adopt this treatment some years ago, partly from observing that the skin of the groin is nearer to the hip-joint, than the skin elsewhere; partly from an expectation (though not a very confident one), that the making a seton over the trunk of the anterior crural nerve, might be particularly calculated to relieve the pain referred to those parts, to which the branches of that nerve are distributed. The results of this practice more than realized whatever hopes I had entertained of its success. In many cases the seton occasioned very speedily a complete relief of the pain. In other cases indeed, it failed in producing the like good effects; but these cases have borne only a small proportion to those in

which it has succeeded. On the whole, I am led to conclude, that where the pain is very severe, the seton in the groin is more calculated to afford immediate relief than the caustic issue; but that it is not equally efficacious in checking the progress of the disease, as in lessening the violence of its symptoms; and that the caustic issue can be better depended on for the production of a cure. *

---

* The following are extracted from notes, which were taken formerly, when I was making observations on this subject.

" November, 1808.

" Martha Atkinson, fifteen years of age, laboured under symptoms of ulceration of the cartilages of the hip. She had pain in the hip and knee, but that in the hip was the most severe of the two. Her sufferings were such that she could not venture to make the slightest alteration in her position; and she could scarcely procure any rest at night.

" November 20., a seton was made in the groin.

" November 22., the pain in the hip was almost completely relieved; and from this time she mended rapidly."

" John Selly, eleven years of age, was admitted into St. George's Hospital on the 28th of December,

To make the seton in the groin it is convenient to use a curved seton-needle.

1808, with severe pain in the hip and knee; tenderness in the region of the hip, and enlargement of the glands in the groin.

" December 30., a seton was made in the groin.

" The pains in the hip and knee were almost completely relieved within a few hours after the seton was introduced. The relief was permanent, and on the 24th of May following he left the hospital as cured."

" Susan Dean, about twelve years of age, was admitted into St. George's Hospital, in November 1808, with very severe pains in the hip and knee, in consequence of disease in the former joint. A large abscess presented itself on the upper and outer part of the thigh.

" On the 4th of December a seton was made in the groin. The pains were relieved on the same afternoon. She had no return of pain, while she continued in the hospital, but as her friends took her away in a few weeks after the seton was made, I had no opportunity of observing the termination of the case."

" James Craven, a young man, was admitted an out-patient of St. George's Hospital on the 15th of March 1809, with the usual symptoms of ulceration of the cartilages of the hip. There was a large abscess on the outside of the thigh, and intense pain in the knee preventing his rest at night.

In the majority of cases, the patient keeps the thigh considerably bent on the pelvis; and this position of the limb makes it difficult to employ a needle of the usual form. The seton may be introduced obliquely on the anterior part of the joint, including from one inch and a half to two inches of integuments. After some time the skin over it usually inflames and ulcerates, and the seton drops out; but this does not happen before it has produced all the benefit which may be expected from it.

Of the above observations on the ulceration of the cartilages of the hip,

---

" March 16., a seton was made in the groin. Being unable to become an in-patient of the hospital, he walked home afterwards. Nevertheless the pain was completely relieved in a few hours: and he slept soundly at night, the pain not at all disturbing him.

" After this the abscess burst, and collected again several times; and he became affected with hectic symptoms. I did not see the termination of the case, but I make no doubt of it having ended fatally."

many are applicable to the disease in other joints. In all cases, a state of the most perfect quietude is indispensable. Where the knee or elbow is affected, we may employ the caustic issue, or the blister kept open by means of the savine cerate, but the former appears to be the most efficacious of the two. In the knee, a narrow slough may be made by rubbing the skin with the caustic potash on each side of the patella; and, in the elbow, the caustic may be applied in the same manner on the inside, and on the outside of the joint. When I have met with this disease in the shoulder, I have sometimes employed a large blister, and kept it open by means of the savine cerate; and in other cases I have made two caustic issues, one on the anterior, the other on the posterior part of the joint; and, on the whole, the caustic issues have appeared to be productive of better effects than the blister. Where the disease has its seat in those joints, which are sur-

rounded by numerous tendons, as the wrist and ankle, it may be more prudent to employ the blister, lest injury should be done to the superficial tendons by the application of the caustic. I have, however, in several cases, made a caustic issue below the internal or external malleolus. It has produced the best effects with respect to the disease in the ankle, but has been sometimes attended with unusual irritation and distress to the patient, so that it was with difficulty that he could be induced to allow it to be kept open for a sufficient length of time.

I have seen many cases, in which the caustic issue has in the first instance removed all the symptoms of the disease; and yet, after some time, notwithstanding the patient has remained in a state of perfect quietude, and there has been no evident cause of aggravation, they have returned nearly in the same form as before, and with their original severity. In some of these cases, their recurrence

is to be attributed to the issue itself; which, from some cause, that the present state of our knowledge does not enable us to explain, produces an effect, apparently the opposite to that which it produced when it was first made. The issue being allowed to heal, the symptoms again subside, and perhaps the patient may find himself entirely and permanently relieved before the sore is completely cicatrized. The same thing may be observed, perhaps more frequently, where a blister has been long kept open by means of the savine cerate: and here, if the blister be of a large size, the recurrence of the pain is usually attended with a quick pulse, and a furred tongue, and much constitutional irritation; of all which the patient is relieved, when the blistered surface is allowed to skin over. It is evident that it is of much importance, and also that it may require considerable discrimination on the part of the surgeon, to distinguish when the issue or the

blister begins to be injurious, and ought therefore to be persevered in no longer.

In other instances, where the symptoms have returned under the use of the caustic issue, it has appeared to me that this was to be explained in a different manner. A very small quantity of matter has been formed by the ulcerated surfaces of the joint, but not sufficient to prevent the application of the caustic from producing in the first instance very considerable benefit. But having once begun, the suppuration has continued until a sufficient quantity of pus has been collected to occasion distension of the joint, and the reproduction of the former symptoms, in spite of the remedy, which before relieved them. Such cases are not of very unfrequent occurrence, and they shew that the surgeon should not incautiously give a very favourable prognosis in the first instance, because the immediate effects of the issue have been beneficial; but that he should wait and

observe, whether these good effects continue, before he ventures positively to predict his patient's recovery.

The treatment of the abscess, which arises from this disease in a joint, makes a question of very serious importance, but more so as it regards children, than adults; since the former may, and do frequently, recover, even after an extensive suppuration has taken place; whereas, this is a very rare occurrence in a grown up person. *

I have not found that the method of evacuating the matter, which has been recommended by Mr. Abernethy, in his treatise on the lumbar abscess, is attended with any particular advantage in a case of carious joint. Indeed this corresponds

* It is to be observed that I speak here only of the abscess in a joint, which is the consequence of ulceration of the cartilage occurring as a primary disease.

with what a little consideration might lead us to expect. If an abscess takes place as a primary affection, the disease being confined to the soft parts, there may be nothing to prevent the contraction of the cyst, and gradual diminution of the quantity of pus evacuated at each puncture. But where an abscess occurs, in consequence of an ulcerated state of the articular cartilages and bones, as the cause of the abscess exists equally after, as before the puncture, the suppuration will necessarily be kept up, and the contraction of the cyst, and the obliteration of its cavity, will be prevented.

In some instances I have been led to believe, that, after the application of the caustic, the tumor formed by the abscess has diminished in size; as if from an absorption of a portion of its contents. I have, however, seen no instance of complete absorption having taken place, though I have made various attempts to produce so desirable an effect. Emetics,

whether they were given to excite vomiting, or only in nauseating doses, were, in my experiments, of no service. Electricity was never useful; appearing rather to occasion a more rapid accumulation of matter. Knowing that pressure, under certain circumstances, causes an increased action of the absorbent vessels, in two cases I applied stripes of adhesive plaster round the limb, with the view of trying the effects of pressure on the contents of the abscess. The consequence was a speedy diminution of the external tumor; but I afterwards found that this arose, not from any absorption having taken place, but simply from the increased resistance on the surface causing the abscess to occupy a larger space in the interior of the limb.

The early puncture of an abscess connected with a diseased joint is certainly not to be recommended. I have always observed that such an abscess has healed more readily, and that the opening of it,

(whether by a natural process, or by the lancet,) has been attended with fewer ill consequences, where the patient has been kept for some time in a state of perfect quietude, and the other methods of treatment, formerly mentioned, have been previously resorted to, than where it has taken place immediately on the patient coming under the care of the surgeon. Nor is this difficult to explain: in the latter case, at the bottom of the abscess there is a carious or ulcerated surface of bone; in the former, it is highly probable, that the process of cure has already begun, and that where there was diseased bone before, there is now a granulating surface. At any rate it cannot be supposed, that when, in consequence of the neglect of the disease, the ulcerated bones as well as the other parts, are in a state of inflammation, the abscess can be under such favourable circumstances for being opened, as when such inflammation has been previously allowed to subside, under

rest, and the employment of proper remedies.

An abscess connected with any joint, but particularly one connected with the hip, does not form a regular cavity, but usually makes numerous and circuitous sinuses in the interstices of the muscles, tendons, and fasciæ, before it presents itself under the integuments. It is therefore less easy to evacuate its contents, than those of an ordinary lumbar abscess; and indeed it can seldom be emptied, without handling and compressing the limb, in order to press the matter out of the sinuses, in which it lodges. But this is often attended with very ill consequences. Inflammation takes place of the cyst of the abscess, and pus is again very rapidly accumulated. Small blood-vessels give way on its inner surface, the bloody discharge of which, mixed with the newly-secreted pus, goes into putrefaction, and exceedingly irritates the general system. I have seen cases, where,

after a great deal of pains having been taken to obtain the complete evacuation of the contents of the abscess, and the puncture having healed, in a few days the tumor has become as large as ever, attended with pain in the limb, and a fever resembling typhus in its character, and threatening the life of the patient. A second puncture having been made, a quantity of putrid fœtid pus, of a reddish brown colour, has escaped; the confinement of which had produced all the bad symptoms, which have been immediately relieved by its evacuation.

The practice, which has appeared to me to be, on the whole, the best, is the following. An opening having been made with an abscess lancet, the limb may be wrapped up in a flannel wrung out of hot water, and this may be continued, as long as the matter continues to flow of itself. In general, when a certain quantity has escaped, the discharge ceases; the orifice heals, and the puncture may then be re-

peated some time afterwards; but where the puncture has not become closed, I have seldom found any ill consequences to arise from it remaining open.

I have already observed that the prognosis, which the surgeon is led to form, must depend very much on the circumstance of suppuration having, or not having, taken place. The formation of even the smallest quantity of pus in the joint, in cases of this disease, in the young person considerably diminishes, and in the adult very nearly precludes, the possibility of any ultimate good being derived, except from amputation. On the other hand, where abscess has not begun to form, there is perhaps no disease, among those, which come under the care of the surgeon, in which he can employ his art, with a better prospect of success than this. It is to be observed, however, that the symptoms may be relieved, while there are still some remains of the disease: or, at any rate, while there is still a disposition

to relapse; and in order that the cure should be permanent, it is necessary that the treatment should be employed for some time after the patient is apparently recovered. A gentleman who had long laboured under ulceration of the cartilages of the hip, finding himself to be free from all uneasiness, allowed the issue to be healed. This was attended with no immediate ill consequences; but in the course of two or three months he began to experience the well-known symptoms of his former complaint. A caustic issue was again made, and he was again relieved. The issue was kept open for twelve months longer and then healed. When I last saw him, two or three years after the healing of the issue, he continued perfectly well. This however is only one of many cases, which might be quoted in proof of the above observation.

When the ulceration of the cartilages has made very considerable progress, if

the patient recovers, so as to preserve the limb, he seldom has the use of the joint afterwards, the bones composing it being united by anchylosis; but if it has been checked in a less advanced stage, even though there may be reason to believe that the cartilages have been extensively destroyed, the patient may retain the natural motion of the joint. I have not hitherto examined any cases, in which it appeared, that there had been an attempt at the regeneration of the absorbed cartilages: and I have occasionally been able both to feel and to hear the hard surfaces of the bones grating against each other in the motion of the joint, in such a manner, that it was evident that they had no cartilaginous coverings. In some instances a compact layer of bone is formed on the carious surface, nearly similar to what is seen in the healthy bone, after the cartilage has been destroyed by maceration. I have many times, in dissection, observed a portion

of the cartilage of a joint wanting, and in its place, a thin layer of hard, semi-transparent substance, of a grey colour, and presenting an irregular granulated surface. It is probable that in these cases, the original disease had been ulceration of the cartilages. In a subject in the dissecting room, I found no remains of cartilage on the bones of one hip; but, in its place, a crust of bony matter was formed, of a compact texture, of a white colour, smooth, and having an appearance not very unlike that of marble. I suspected this also to have been a case, in which the patient had recovered, after ulceration of the cartilage; and this opinion was rendered more probable, by the following case, which afterwards occurred.

CASE XXXVI.

A woman, thirty-six years of age, was admitted into St. George's Hospital, with

pain in the hip and knee on one side. The nates were wasted and flattened, and a large abscess had burst, leaving a sinus communicating with the hip-joint. She was affected with hectic fever, and gradually sunk and died.

On inspecting the body, various sinuses were found in the neighbourhood of the hip and communicating with it.

The synovial membrane and capsular ligament had undergone no alteration in their appearance, beyond what evidently depended on the abscess. The cartilage was every where absorbed from the articulating surfaces, and in its place there was a white polished surface, similar to that, which has been just described.

Sect. IV.

Cases of this Disease.

The following cases, which are taken from many similar, of which I have pre-

served notes, are intended to illustrate the observations, contained in the two last sections. There seems to be no doubt that the disease was ulceration of the articular cartilages, since the symptoms exactly corresponded with those, which have been observed in cases of this description, in which an opportunity occurred of examining the morbid appearances after death, or after amputation. It will be observed that I have not selected cases, in which the disease was situated in the hip: nor, in which it had reached its most advanced stages: my reasons for which have been, that a sufficient number of examples of this affection of the hip, may be found among the cases already published by Mr. Ford, and other writers: and that it is in the early stage of the disease that it principally deserves to be studied, and that the diagnosis is of the most importance.

CASE XXXVII.

Mary Jenkins, twenty-one years of age, in May, 1809, received a blow on one of her knees. Soon afterwards she was seized with pain in the joint, which gradually became more severe. In September of the same year, she was admitted into St. George's Hospital, on account of this, and of some other complaints, which required medical treatment. At first she was under the care of Dr. Bancroft. On the 9th of November, she came under the care of the surgeons. At this time, the knee was somewhat swollen; the swelling having the form of the articulating ends of the bones, and appearing greater than it really was, on account of the wasting of the muscles of the limb. No fluid was perceptible in the joint. She complained of violent pain, which she referred chiefly to the inside of the head of the tibia, and which

was extremely aggravated by motion. There was no redness of the skin. She was emaciated, and laboured under a slight degree of hectic fever.

An issue was made with caustic on each side of the ligament of the patella. The issues were kept open by means of peas: their surfaces being also rubbed with caustic every fourth day.

At the expiration of a fortnight the pain was very much abated: she was able to give some motion to the joint without much uneasiness. The swelling had nearly disappeared.

In a short time the pain was completely relieved; however she did not quit the hospital until the September of the following year. At this time she was free from all bad symptoms, and had recovered the perfect use of the joint.

CASE XXXVIII.

John Reade, twenty-eight years of age, applied for relief as an out-patient of St. George's Hospital on the 4th of October, 1811.

He said, that for two years preceding he had been subject to pains in the elbow, which were occasionally severe, but attended with little or no swelling. At the time of his coming to the hospital, the pain in the joint was very violent, particularly at night, when it continually roused him from his sleep. There was also pain in the shoulder and wrist; but trifling, when compared to that in the elbow, and only occasional. The elbow was slightly swollen, the swelling having the form of the articulating ends of the bones, and arising, not from fluid within the joint, but from inflammation having extended to the cellular membrane external to it. The fore-arm

was kept bent, and all attempts to move it from this position caused a severe aggravation of the symptoms. There was some degree of symptomatic fever.

Eight ounces of blood were taken from the other arm, which occasioned some, but not considerable relief.

October 8th. A caustic issue was made on each side of the joint.

October 11th. He was free from the symptomatic fever; the pain in the shoulder and wrist had entirely left him; that in the elbow was much diminished.

October 16th. The sloughs were separated. The issues were afterwards kept open by the occasional application of caustic. He now made very little complaint of pain, and slept well at night. From this time he experienced very little uneasiness. He gradually recovered the use of the elbow; and in a few weeks, finding no inconvenience from the complaint, he ceased to attend at the hospital.

CASE XXXIX.

A lady, 33 years of age, in November, 1816, first experienced a pain in the articulation of the lower jaw on the left side: and this was attended with a sense of stiffness, and difficulty of taking, and masticating food. Some liniments were used, which seemed rather to aggravate the complaint, and were therefore left off. From this time the symptoms gradually and slowly encreased, and in May, 1818, when I was consulted, they were as follows. — There was severe pain in every motion of the lower jaw, especially in masticating the food and yawning. The pain was induced whenever pressure was made in the situation of the articulation of the lower jaw with the left temporal bone; but there was no tenderness in any other situation. From this joint however, as from a centre, the pain extended in various directions; to the temple; to the back of the head on that side,

towards the lambdoidal suture; to the lower part of the orbit of the left eye, and even down the left arm. She said that it was impossible to describe the character of the pain, as she had experienced nothing like it before. When the fingers were applied to the joint, and the lower jaw was at the same time opened and shut, a grating sensation was communicated to them as if the articulating surfaces were deprived of their cartilages. There was no evident tumefaction. The patient did not complain of her sleep being much disturbed; nor did her general health appear to be considerably affected, though her pulse was as frequent as 96 in a minute.

The caustic potash was applied so as to make a slough of the skin below the ear, opposite the condyle of the lower jaw, on the anterior edge of the sterno-cleido-mastoideus muscle. She now returned into the country, where she was under the care of Mr. Pitman of Andover, who removed the slough made by the

caustic, and kept open the issue in the usual manner.

After the issue had been established for 5 or 6 months, and not before, there was considerable relief from pain. On the 21st of August, 1822, Mr. W. Pitman wrote me the following account of our patient: "At this time she has the perfect motion of the jaw, but there is still the same grating sensation when it is moved, as there was formerly, though in a less degree. She has the power of masticating almost all articles of diet, which are not very hard. The condyle does not appear to be much reduced in size: — when however the mouth is widely opened, as in yawning, our patient generally places her hand to support the jaw, as if fearful that it may slip out of its situation. With all this amendment, however, there is considerable pain occasionally; and as there has never been an absolute cessation of pain for more than 3 or 4 weeks at a time, the issue is still kept open."

CASE XL.

A gentleman, twenty-four years of age, about the end of the year 1816, became affected with a slight pain in the left ankle; and he observed also that this pain was particularly aggravated, whenever any thing occurred to press the articulating surfaces of the joint against each other; for example, when he happened to tread with his heel on any projecting stone in the street. He also observed a very slight degree of puffy swelling on the anterior and outer part of the joint, before the external malleolus.

On the 6th of January, 1817, he went to a ball, and danced; and on the following day the pain was very much aggravated. The exercise also brought on some degree of general tumefaction about the joint; which however subsided with rest, in the course of twenty-four hours. But the pain continued and increased;

so that he could not support the weight of his body on that foot, and he was compelled to walk with the assistance of one, and afterwards of two, sticks. In May following, a general puffy swelling took place round the whole joint, which did not subside.

On the 30th of June, 1817, he consulted me, being then in the following condition.

There was some degree of general œdematous tumefaction of the whole joint, in consequence of slight inflammation of the cellular membrane external to it. There was a constant and severe pain referred to the ankle, which was rendered more violent, when he attempted to stand, and when the cartilaginous surfaces were pressed against each other, by the hand placed on the lower part of the heel. His rest was disturbed at night, by painful startings of the limb.

He had come to consult me at my own house; and in going home, he fell from

his horse, and wrenched his ankle, which brought on inflammation, and rendered all the symptoms still more severe.

He was directed to remain at home, in a state of perfect quietude, and never to place the foot on the ground. Leeches and cold lotions were applied, and the leeches were repeated. Under this treatment the additional inflammation induced by the accident subsided; and the pain became much less severe. At the end of August, a blister was applied on each side of the ankle, and kept open by means of the savine cerate. After the first blisters were healed, others were applied, and kept open in the same manner; and in the intervals between the applications of the blisters the joint was bound up in stripes of linen spread with soap plaster.

About the end of September he was so much relieved that (having some concerns which it was of much importance to himself to attend to,) he was allowed to go out occasionally in a chaise.

On the 20th of December, a caustic issue was made behind the inner ankle. This occasioned exceeding irritation and uneasiness, and the issue was in consequence allowed to begin to heal, about a fortnight after the separation of the slough. He was however much benefited by the issue; and after it was healed, he was free from pain, and the swelling had subsided.

On the 23d of May, 1818, he was in the following condition. He was free from all pain; could bear the joint to be moved, and could support the weight of the body on that foot without inconvenience. There was still some slight remains of the external swelling. When the joint was moved, a grating sound could be heard; and if at this time the fingers were applied to the joint, a sensation was communicated to them, as if two hard and rough surfaces were rubbed one against the other.

CASE XLI.

Mary Taylor, fifty years of age, was admitted into St. George's Hospital, on the 3d of December, 1809.

She said, that in the preceding July she experienced a violent wrench of the right shoulder, in consequence of her husband having pulled her by the arm. Soon afterwards she was attacked with pain in this joint, which gradually became very severe. At the time of her admission into the hospital, there was no alteration in the external appearance of the shoulder. There was not the smallest evident swelling; but she complained of constant and violent pain, which was much aggravated by every attempt to move the arm. The pain was most severe at night, so as very much to disturb her rest. She was unable to lie on the side on which the disease was situated.

The arm was supported by a sling, and

a blister was applied to the shoulder, and afterwards kept open by means of savine cerate.

In less than a fortnight the symptoms were much relieved. In the beginning of January, 1810, she had very little pain, and slept well at night. About the middle of February she was dismissed from the hospital, being free from all her former symptoms. She was directed to attend as an out-patient, that the blister might be kept open for some time longer; however she never made her appearance at the hospital again, probably in consequence of her finding no inconvenience from the complaint, and of her not being convinced of the necessity of continuing the treatment after the symptoms were relieved.

I have before observed that ulceration of the articular cartilages is not unfrequently complicated with inflammation

of the synovial membrane. Sometimes the one, and sometimes the other is the original disease; in like manner as we find ulcer of the cornea of the eye, in some cases the cause, and in others the consequence, of inflammation of the tunica conjunctiva. In the very advanced stage, when the organization of the joint is completely destroyed, this complication must always exist: and it is unnecessary to adduce evidence of this fact. But occasionally the two diseases are combined together in a more early stage, and previous to the establishment of suppuration.

In the following case, which is related for the purpose of illustrating this subject, ulceration of the cartilage appears to have been the primary, and inflammation of the synovial membrane the secondary affection: at least the symptoms which occurred are better explicable on this supposition than on any other.

CASE XLII.

John Child, thirty-three years of age, in April, 1814, was seized with a pain in one knee. The pain at first was slight, but gradually became very severe. It was referred principally to the head of the tibia on each side of the ligament of the patella. At the end of five months, the joint for the first time became swollen, and the swelling soon attained a considerable size. He was now under the necessity of confining himself to his room. Five blisters were applied in succession, and the swelling and pain subsided; so that at the end of three weeks he returned to his usual occupations. In five or six days, however, the pain and the swelling returned, and he was in consequence admitted into St. George's Hospital on the 26th of October.

At this time he complained of pain in

the joint, referred to the head of the tibia, on each side of the ligament of the patella. The pain was excruciating, so as often to keep him awake during the whole night. The knee was much swollen: the swelling arising from an effusion of fluid into its cavity, and having the same form as in ordinary cases of inflammation of the synovial membrane.

October 29. A blister was applied including the greater part of the circumference of the joint.

November 7. The swelling and pain were relieved. Another blister was applied, which was kept open with the savine cerate until the end of the month. It was then healed, and a third blister was applied and kept open in the same manner.

On the 21st of December he left the hospital of his own accord. The pain at this time was very nearly, but not completely relieved: the knee was swollen only in a very slight degree; and the

trifling swelling, which remained, appeared to arise not from fluid within the articulation, but from thickening of the soft parts in consequence of their having been previously inflamed.

CHAP. V.

ON A SCROPHULOUS DISEASE OF THE JOINTS HAVING ITS ORIGIN IN THE CANCELLOUS STRUCTURE OF THE BONES.

SECT. I.

Pathological Observations.

THE term scrophula is often employed without much precision; and indeed it is not always easy to determine what symptoms ought, and what ought not, to be referred to this disease. It has been usual to regard nearly all the affections of the joints as scrophulous; and I believe it may be found that persons having a predisposition to scrophula are, on the whole, more liable than others to those affections, which form the subject of the preceding chapters. As, however, they

occur very frequently, where no such predisposition exists, there seem to be no sufficient grounds for considering them as having any necessary connection with it: and it can be no more proper to designate these as scrophulous, than it would be to denominate inflammation of the synovial membrane a mercurial disease, because it occasionally arises from the use of mercury. But there is another malady, which affects the joints, having all the characters of scrophula: generally occurring in persons who have a scrophulous appearance, and usually preceded by, or combined with, other scrophulous symptoms.

In this disease of the joints, the cancellous structure of the bones is the part primarily affected; in consequence of which, ulceration takes place in the cartilages covering their articulating surfaces. The cartilages being ulcerated, the subsequent progress of the disease is in many respects the same, as where this ulceration takes place in the first instance.

CASE XLIII.

Thomas Scales, aged 18, having a scrophulous appearance, was admitted into St. George's Hospital on the 18th of October, 1815.

He complained of pain, which he referred to the inside of one foot. The pain was constant, but slight, and not sufficient to prevent his walking as usual. There was very little, if any, tumefaction, and the parts were not tender to the touch. He was also in a general ill state of health: there were symptoms of derangement of the functions of the liver, and the urine was turbid and deposited a quantity of sediment, which stained the vessel that contained it of a pink colour. He was heavy and stupid, and scarcely able to give any consistent account of his ailments. There were some small ulcerations at the edges of his eyelids.

While he was under a course of reme-

dies for these complaints, he was seized, in the beginning of February, 1816, with a fever, of which he died on the first of March.

On dissection, the foot, which had been the seat of the pain, was particularly examined. The bones of the tarsus, and metatarsus, were found to contain an unusually small quantity of earthy matter; so that they were preternaturally soft, and admitted of being cut in any direction with a scalpel, without turning its edge. The cut surfaces of these bones were of a deep red colour, in consequence of increased vascularity; and vessels injected with their own blood could be distinctly traced extending from the bones into the cartilages covering them, and rendering the latter, in a few spots, of a red colour. The cartilage covering the internal cuneiform bone, where it forms the joint with the metatarsal bone of the great toe, was ulcerated to a small extent. The ulceration had begun on that side of the car-

tilage which was connected to the bone; the surface towards the joint remaining entire. The bones of the tarsus were more diseased than those of the metatarsus; and those on the inside of the tarsus were affected in a greater degree than those on the outside. The bones of the other foot were affected in the same manner, but in a much less degree. Some of the other bones were examined, and were found nearly in a natural condition.

CASE XLIV.

December 21st, 1814. In a boy apparently about ten years of age, whose body I had the opportunity of examining after death, I observed the following appearances.

Both elbows were slightly swollen. On the fore-part of the right arm, immediately above the elbow, there was the orifice of a sinus, which extended down-

wards obliquely into the cancellous structure of the bone, where it terminated, without communicating with the cavity of the joint. The cancellous structure of the articulating extremities of the os brachii, radius, and ulna, was so soft, that it might be crushed by a very slight degree of force when squeezed between the fingers : it was of a dark red colour ; preternaturally vascular, and there was a reddish fluid, mixed with medulla, in the cancelli. The cartilages covering the radius and ulna were in a natural state ; that belonging to the os brachii was ulcerated in a few spots on the surface towards the bone, while the surface towards the cavity of the joint was entire. There were no morbid appearances of the ligaments or synovial membrane.

The bones of the left elbow were in a similar state of disease ; the cartilages were entirely destroyed by ulceration ; and carious surfaces of bone were ex-

posed. A small portion of dead bone had exfoliated into the cavity of the joint, where it lay, surrounded by matter. The synovial membrane and ligaments were extensively destroyed, and there were several sinuses communicating with the joint and opening externally.

On examining the right knee, which externally had not the slightest marks of disease, and admitted of perfect motion, the cancellous structure of all the bones, which enter into its composition, was found in the same morbid condition with that of the bones of the elbows, being preternaturally red and vascular, with a much less proportion than is usual of earthy matter, so that they admitted of being crushed by a very slight force. In the interior of the lower extremity of the femur, between the two condyles, there was one part where the earthy matter seemed to have entirely disappeared, and there was in consequence an irregular space, in which there was little else than

medulla and reddish fluid mixed together; near this part, the cartilage had only a very slight adhesion to the bone, and ulceration had begun on its inner surface.

In several other joints, which were examined, there were marks of the same disease, but in a less advanced stage.

CASE XLV.

John King, twenty-six years of age, having blue eyes, thick lips, and a florid complexion, was admitted into St. George's Hospital, on the 1st of June, 1811, on account of a complaint in his right ankle and foot. I received the following account of his case, partly from himself, and partly from a medical gentleman, who was in the habit of seeing him before he came into the hospital.

About the end of May, 1810, he wrenched his foot. The instep and ankle

became swollen and painful, but in a few days these symptoms subsided. During the summer he experienced slight pain and weakness of these parts, whenever he took more than his usual quantity of exercise; but in October a slight tumefaction was observed on each side of the ankle, and the pain was more severe, but still not sufficient to prevent his going about his usual occupations. About the middle of December the pain became more violent, and he was confined to the house for a fortnight; after this the pain abated, so that he was able to go about with the assistance of a crutch.

In March, 1811, an abscess burst on the outside of the foot. The formation of the abscess was not attended with any considerable degree of pain.

He formerly had been supposed to labour under incipient *phthisis pulmonalis;* but from the time of the disease having begun in his foot, he suffered

no inconvenience from the complaint in his lungs.

At the time of his admission into the hospital, there was a diffused œdematous swelling of the soft parts over the whole foot and ankle. On the outside there were the orifices of three or four sinuses, which had burst at different periods. He had very little pain, even on motion or pressure. Soon after his admission, another abscess broke on the inside of the heel.

On the 11th of July, the leg was amputated.

On examining the foot, the cells of the cellular membrane were found distended with serum and coagulable lymph.

All the bones had undergone a morbid change, similar to what was observed in the last case, except that they were still softer and more vascular.

The cartilages of the ankle were completely destroyed by ulceration, and the exposed surfaces of bone were in a state

of caries. The cartilages of the tarsus were entire, but, in some places, of a red colour; and this was found to arise from vessels loaded with red blood, extending into them from the bone. The ligaments and synovial membranes of the tarsal joints were in a natural state, as were also those of the ankle, except where they had been destroyed by the abscesses.

CASE XLVI.

This patient was a soldier in the Coldstream Guards. I once had an opportunity of seeing him before amputation was performed; and, through the kindness of the medical officers of the regiment, I was favoured with the previous history of the complaint, and with the opportunity of examining the amputated joint.

William Miles, twenty years of age, of a delicate complexion, with red hair and dilated pupils, was attacked with a slight

pain and swelling of the left knee, about the middle of January, 1808. On keeping quiet for a few days the swelling subsided; but it returned about the end of March, though still attended with very little pain.

He was received into the hospital of the battalion at Chatham, and on the 9th of June following, he was sent to the regimental hospital in London.

At this time the diseased knee measured in circumference three inches more than the other. Fluid was felt external to the joint, and in the cavity of the joint itself. The leg was kept extended, and all attempts to bend it gave considerable pain; but otherwise, the pain which he endured was trifling, amounting only to a slight degree of uneasiness, deep-seated in the joint. On the 8th of July, an abscess burst near the inner edge of the patella, and discharged about eight ounces of thin pus. On the 27th of July, the limb was amputated.

On examining the knee, the articulating extremities of the tibia and fibula were found so soft, that they were readily cut by a common knife: they contained much less earthy matter than is usual, and their cancelli were filled by a yellow cheesy substance.

The cartilage covering the head of the tibia was destroyed by ulceration in a few spots at the margin. That of the femur was eroded for a very small extent behind the crucial ligaments. The patella, and the cartilage covering it, were in a natural state. Coagulable lymph, having a gelatinous appearance, had been effused into the cellular texture, on the outside of the synovial membrane. Pus was found external to the joint, and in the joint itself.

CASE XLVII.

Charles Miller, twenty years of age, having blue eyes, light hair, and a fair com-

plexion, was admitted into St. George's Hospital, in April, 1808, on account of a disease of one foot.

The whole foot was swollen and œdematous, with two fistulous sinuses, one on the inside and the other on the outside, through which a small quantity of scrophulous matter was discharged. A probe having been introduced into either of these sinuses, some exposed pieces of bone might be distinguished.

On the 16th of May, the limb was amputated below the knee.

On examining the amputated foot, the muscles were found pale and wasted from want of use, and the cellular membrane was distended with coagulable lymph.

The extremities of the tibia and fibula, all the bones of the tarsus, and the extremities of the bones of the metatarsus, contained much less earthy matter than is usual. They were so soft, that they might be cut with a scalpel without the edge of it being turned. They were preternaturally

red and vascular, and a yellow cheesy substance was deposited in the cancelli. The cartilage at the base of the fifth metatarsal bone was destroyed by ulceration. Those at the bases of the three middle metatarsal bones were also destroyed, and the exposed surfaces of bone were undergoing the process of exfoliation. The cartilages of all the other bones were in a natural state. Pus and coagulable lymph had been effused in the neighbourhood of the dead and carious bones, and the sinuses communicated with them. The synovial membranes and ligaments were in a natural state, except where destroyed by the abscesses.

CASE XLVIII.

James Miller, twenty-one years of age, was admitted into St. George's Hospital on the 21st of May, 1817, on account of inflammation of the iris of one eye, and

some eruptions, which had followed a sore on the prepuce : and for these complaints he was put through a course of mercury.

About the end of July, soon after the mercurial course had terminated, he complained of a slight degree of pain of the left ankle. A swelling took place, and an abscess formed on the outside of the ankle, which was opened on the 26th of September. Another abscess afterwards formed, and was opened on the inside. It was observed, that there was pain while the abscesses were coming forward, but little or no pain after they were opened. The abscesses continued open, and discharging matter, but the quantity of the matter gradually diminished.

About the beginning of October, he became affected with cough, and it soon became evident that he laboured under tubercles of the lungs.

In the beginning of December, he complained, for the first time, of pain of the left elbow; and, on examination, it

was found that an abscess had already presented itself underneath the skin. This abscess burst in the beginning of January, 1818, and he scarcely complained of any pain in the elbow afterwards.

The disease in the lungs continued to make progress; he expectorated purulent matter, and died in March following.

On dissection, the lungs were found extensively tuberculated, and containing numerous abscesses. The bones composing the left ankle were preternaturally vascular and soft, so that they might be cut with a scalpel, and in some parts a small quantity of yellow cheesy substance was found in the cancelli. The abscess on the outside of the ankle seemed to have originated in the lower extremity of the fibula, and there was a cavity (large enough to receive the end of the little finger), in that bone, made by the process of ulceration, and forming the bottom of the abscess. Both abscesses, however, communicated with the joint itself. The

cartilages of the ankle were nearly destroyed; and the tibia and astragalus were united, partly by coagulable lymph, and partly by bony anchylosis. The abscess on the outside of the left elbow, was found communicating with that joint by a large opening. The bones of this elbow were in the same morbid condition as those of the ankle; the cartilages were entirely destroyed by ulceration.

The patient had never complained of the right elbow; but after death, a small abscess was discovered on the inside, which however did not communicate with the cavity of the joint, but appeared to have originated in the substance of the bone, and to have made its way through the periosteum.

The cancellous structure of the articulating extremities of the bones, which composed the joints of the knees, wrists, and the right ankle, were preternaturally soft and vascular; but there were no abscesses connected with them, and the

cartilages were entire. The bones of the hip and shoulder were in a natural state.

There was an enlarged absorbent gland in the groin, converted into a cheesy substance.

CASE XLIX.

A girl, 15 years of age, was admitted into St. George's Hospital in the winter of 1809, labouring under symptoms of disease of one hip, as well as of one elbow. After remaining some months in the hospital, she left it of her own accord in the beginning of August. In the following October she was readmitted with the disease both of the hip and elbow much advanced. There was a large abscess in the thigh; her general health was much impaired, and she sunk and died in less than six weeks after her readmission.

On dissection, the abscess in the thigh was found communicating with the cavity of the hip joint, through an ulcerated opening of the capsular ligament and synovial membrane. The cartilages of the hip had entirely disappeared; the bones were carious; the acetabulum had been rendered deeper and wider, and the head of the femur smaller than natural. The capsular ligament and synovial membrane were thickened, and a soft organized mass, similar to the substance of adhesions, was found adhering to the neck of the femur. The cancellous structure of the bones was softer than natural, so that it might be cut with a scalpel, or crushed between the fingers; and the appearance of it in other respects corresponded to that of the diseased bones in the cases which have been just related.

The disease of the elbow was similar to that of the hip joint; but it had made less progress. The ligaments and synovial membrane of the elbow were nearly

in a natural state, and some thin portions of cartilage still remained lying on the surface of the carious bone, but having little or no adhesion to it.

The preceding cases sufficiently illustrate the nature and progress of this disease. The morbid affection appears to have its origin in the bones, which become preternaturally vascular, and containing a less than usual quantity of earthy matter; while, at first, a transparent fluid, and afterwards a yellow cheesy substance is deposited in their cancelli.

From the diseased bone, we see, in some instances, vessels carrying red blood extend into the cartilage. The cartilage afterwards ulcerates in spots, the ulceration beginning on that surface, which is connected to the bone. The ulceration of the cartilage often proceeds very slowly. I have known a knee amputated on ac-

count of this disease, in which the cartilage was absorbed, for not more than the extent of a sixpence. Occasionally a portion of the carious bone dies and exfoliates.

As the caries of the bones advances, inflammation takes place of the cellular membrane external to the joint. Serum, and afterwards coagulable lymph, is effused, and hence arises a puffy and elastic swelling in the early, and an œdematous swelling in the advanced stage of the disease. Abscess having formed in the joint makes its way by ulceration through the ligaments and synovial membrane, and afterwards bursts externally, having caused the formation of numerous and circuitous sinuses in the neighbouring soft parts.

In one of the cases which have been related, thin layers of cartilage were found lying on the ulcerated surface of bone, apparently unconnected with it. In some instances, in the advanced stage of this

disease, we find nearly the whole of the cartilage forming an exfoliation instead of being ulcerated.

This scrophulous affection attacks those bones, or portion of bones which have a spongy texture, as the extremities of the cylindrical bones, and the bones of the carpus and tarsus, and hence the joints become affected from their contiguity to the parts, which are the original seat of the disease. Sometimes, however, we may trace the effects of these morbid changes even in the shaft of a cylindrical bone; so that we see the femur or tibia converted in its middle into a thin shell of earthy matter, enclosing a medullary canal of unusual magnitude.

It has been remarked by a modern author*, that in the last stage of this disease, the bones not only lose the preternatural vascularity which they pos-

* Lloyd on Scrophula, p. 123.

sessed at an early period, but even become less vascular than healthy bone. I believe the observation to be correct; and this diminution of the number of vessels, and consequently of the supply of blood, is probably (as this author has suggested) the proximate cause of those exfoliations which sometimes occur where the disease has existed for a considerable length of time, especially in the smaller bones.

Sect. II.

On the Symptoms of this Disease.

The scrophulous affection of the joints occurs frequently in children: it is rare after thirty years of age. Examples of it occur in almost every joint of the body, but the hip and shoulder appear to be less liable to it than many other articulations. *

* Perhaps this arises from the circumstance of the hip and shoulder being less exposed to the influence

As it depends on a certain morbid condition of the general system, it is not surprising that we should sometimes find it affecting several joints at the same time; nor, that it should shew itself in different joints in succession; attacking a second joint after it has been cured in the first, or after the first has been removed by amputation. It is seldom met with, except in persons who have the marks of what is called a scrophulous *diathesis:* and in many cases it is either preceded, attended, or followed, by some other scrophulous symptoms; such as enlargement of the scrophulous glands of the neck and mesentery; or tubercles of the lungs. I have often been led to

---

of the external cold, which in most instances promotes the developement of scrophulous diseases. So we find, the scrophulous enlargement of the lymphatic glands, to occur more frequently in the neck, than in the groin or axilla, which last are generally defended by a warmer clothing.

believe, that the occurrence of this disease in the joint, has suspended the progress of some other, and perhaps more serious disease elsewhere.

The scrophulous disease is more likely to be confounded with that, which formed the subject of the last chapter, than with any other. There is in many respects a correspondence in their symptoms. There are however certain points of difference, and I believe that this difference will be found, in general, sufficient to enable the practitioner, who is careful and minute in his observations, to make a correct diagnosis; at least in those cases, in which the local disease is not so far advanced, and in which it has not so much affected the general constitution, as to make the diagnosis of no importance.

While the disease is going on in the cancellous structure of the bones, before it has extended to the other textures, and while there is still no evident swell-

ing, the patient experiences some degree of pain, which however is never so severe as to occasion serious distress, and often is so slight, and takes place so gradually that it is scarcely noticed.

After a time (which may vary from a few weeks to several months) the parts external to the joint begin to sympathise with those within it; and serum and coagulable lymph being effused into the cellular membrane, the joint appears swollen. The swelling is puffy and elastic, and though usually more in degree than it is, at the same period, in those cases, in which the ulceration of the cartilages occurs as a primary disease, it is not greater in appearance, because the muscles of the limb are not equally wasted from want of exercise. I have observed that in children, the swelling is in the first instance usually less diffused, and somewhat firmer to the touch than in the adult.

If a suspicion of some disease of the

joint has not existed previously, it is always awakened as soon as the swelling has taken place. Should the patient be a child, it not uncommonly happens that the swelling is the first thing, which the nurse or the parents discover. This leads to a more accurate enquiry, and the child is observed to limp in walking, if the disease be in the lower limb, and to complain of pain on certain occasions.

I have said, that the swelling is puffy and elastic, and after what has been remarked in the former chapters, it is needless to point out more particularly the difference between it, and the swelling which takes place in cases of inflamed synovial membrane. The swelling increases, but not uniformly, and it is greater after the limb has been much exercised, than when it has been allowed to remain for some time in a state of quietude.

As the cartilages continue to ulcerate, the pain becomes somewhat, but not

materially aggravated. It is not severe, until abscess has formed and the parts over the abscess have become distended and inflamed. The skin under these circumstances assumes a dark red or purple colour. The abscess is slow in its progress; when it bursts, or is opened, it discharges a thin pus, with portions of curdly substance floating in it. Afterwards the discharge becomes smaller in quantity, and thicker in consistence, and at last it nearly resembles the cheesy matter, which is found in scrophulous absorbent glands.

In most instances several abscesses take place in succession, but at various intervals; some of which heal, while others remain open in the form of fistulous sinuses, at the bottom of which carious bone may be distinguished by means of a probe.

The disease not unfrequently remains in this state for several months, or even for a much longer period, without the con-

stitution being materially disturbed. In the less fortunate cases, the patient at last becomes affected with a hectic fever, under which he gradually sinks, unless the cause of it be removed by amputation. At other times, a curative process begins; the sinuses close; the œdema subsides; and the patient ultimately recovers, either with or without an anchylosis; accordingly as more or less destruction of the articulating surfaces has taken place. But the cure is always tedious, unless the disease has been arrested at a very early period. It is not uncommon to see a patient with a scrophulous joint, in a state of imperfect anchylosis, with a single sinus remaining open, and waiting for many years, before even such a cure as anchylosis affords, can be said to be completed. The chance of ultimate recovery is not the same in every articulation; and I have observed, that it is much less, where the disease attacks the complicated joints of the foot and hand, than when it

is situated in those, which, though of a larger size, are of a more simple structure.

The principal difference which is to be observed, between the symptoms, which have been just described, and those, which are met with, where ulceration of the cartilages occurs as a primary affection, is in the degree of pain, which the patient endures, and which is much less in the cases of the former, than in those of the latter description.

It may indeed be a matter of surprise, that in cases of this scrophulous affection, the sufferings of the patient should be so little as they are found to be, in proportion to the quantity of local mischief. For the most part, the pain which he experiences, is not a subject of serious complaint, except at the time when an abscess is just presenting itself underneath the skin, and then it is immediately relieved by the abscess bursting. There is never that severe pain, which exhausts

the powers and the spirits of the patient, in cases of ulceration of the cartilage, except in a very few instances, and in the most advanced stage of the disease, when a portion of the ulcerated bone has died, and having exfoliated so as to lie loose in the cavity of the joint, irritates the parts, with which it is in contact, and thus becomes a source of constant torment.

There are other circumstances, besides the less degree of pain, which although not in themselves sufficient, it is useful to take into the account in forming our diagnosis: such as the general aspect and constitution of the patient, and his having manifested a disposition to other scrophulous symptoms; the very tedious progress of the disease; and the circumstance of the suppuration not being in general confined to a single collection of matter; but producing a succession of abscesses.

The progress of this disease in the hip very much resembles that of the disease,

which was described in the last chapter. Whatever pain exists is referred to the knee rather than to the joint actually affected. There is the same alteration in the appearance of the nates; the same apparent elongation of the limb in the early stage; and the same shortening of the limb from the destruction of the head of the femur, or from dislocation, at a more advanced period; and abscesses form and present themselves in the same situations: yet even here, attention to the circumstances which have been enumerated, but more especially to the quantity of pain which the patient suffers will usually enable us to distinguish the real nature of the case. A girl laboured under an affection of the hip joint, in which the nates were flattened, the limb had become shortened, and an abscess had broken on the outside of the thigh, but it was observed that she had suffered comparatively little pain. Under these circumstances she died, and when I was

about to examine the body, I observed to those who were present, that there was little doubt but that the origin of the disease would be found to have been not in the cartilages, nor in the bony surfaces to which they are connected, but in the cancellous structure of the bone. The appearances which were observed verified this remark. The cartilages were ulcerated, and the bones themselves destroyed to some extent. The latter were soft, so that they might be cut with a scalpel, without turning its edge; and on dividing the articulating extremity of the femur longitudinally, a considerable collection of thick pus was found in the neck of that bone, below the head, which either had not escaped at all, or had escaped in very small quantity, by oozing through the cancelli, which were interposed between it, and the cavity of the hip-joint.

Sect. III.

On the Treatment.

In attempting the cure of the scrophulous disease of the joints, it is necessary to bear in mind, that it depends on a certain morbid condition of the general system. It seems reasonable to expect, that when the local affection has once begun to exist, local remedies may be of service in checking its progress; but that with a view to the ultimate result, such remedies as operate on the constitution of the patient may be of as much, if not of more, importance, than any local treatment.

I cannot say, that the abstraction of blood from the neighbourhood of the diseased joint is never useful, but it certainly is not necessary in ordinary cases. The state of the cancellous structure of the bones approaches to that of inflam-

mation, and the cartilages have the appearance of being inflamed, before they begin to ulcerate; but the inflammation is of a specific kind, and like scrophulous inflammation in other parts, is not likely to be relieved by the loss of blood, in the same degree as common inflammation. I have seldom known any benefit to be derived from the use of blisters or stimulating liniments. Issues and setons are certainly useful; yet in my experience they have not been productive of the same marked benefit as in cases of that variety of disease, which formed the subject of the last chapter.

Cold evaporating lotions seem to check, in some degree, the extension of the disease from the bones to the other textures, and to retard the occurrence of suppuration; and they may be employed with advantage, in the early stage of the complaint.

But neither at this, nor at any other period, is any thing of so much import-

ance as that the joint should be kept in a state of quietude. All motion, and pressure of the articulating surfaces against each other, is likely to promote the ulceration of the cartilages, and hasten the formation of abscess. We cannot suppose that rest will contribute to the amendment of the scrophulous state of the bones themselves; but it may do much towards preventing the disease from affecting the other parts. I do not mean to assert, that in every case, the patient should be kept in a state of absolute rest for a long period; but certainly all motion and exercise of the limb should be avoided, as much as possible, consistently with due attention to the state of the patient's health, and the improvement of his constitution. If the disease be in the lower extremity, it is much to be desired that he should always remain in the horizontal position. If it be in the upper extremity, the hand and fore-arm should be supported by means

of a sling. The observations, which I made in the last chapter, respecting the employment of splints and other contrivances, for the purpose of keeping the diseased joint in a state of complete immobility, are equally applicable to that order of cases which are under our present consideration, and a repetition of them is unnecessary.

During the formation of abscesses, fomentations and poultices may be employed, with a view to hasten their progress, and relieve pain: and they may be continued for some time after the abscess has burst; or simple dressings may be applied according to circumstances.

When, after several abscesses have taken place, the disposition to suppuration appears at length to have ceased, and the swollen joint has become diminished in size, it may be expected that a curative process by means of anchylosis is about to commence. At this period, pressure by means of stripes of linen, spread with

soap cerate, or some other moderately adhesive plaster, and applied in a circular manner round the limb, will be productive of benefit. This will promote the healing of the sinuses; and by more completely preventing the motion of the joint, will lessen the chance of fresh suppuration, and favour the union of the ulcerated bony surfaces.

If a portion of the bone has lost its living principle, and has exfoliated into the cavity of the joint, the chance of ultimate recovery is very much diminished. For the most part, the dead bone is so entangled in the living parts, that it is incapable of separation by a natural process; and every attempt to remove it by artificial means will occasion a fresh attack of inflammation and abscess. It is to be observed, however, that bone which is found exposed at the bottom of a sinus is not necessarily doomed to exfoliate. It may be simply ulcerated, and may possibly granulate,

and recover ; and the surgeon, therefore, is not warranted in giving a prognosis, which is decidedly unfavourable, merely because he discovers a piece of exposed bone, when he makes an examination with a probe.

With respect to the constitutional treatment : — It is to be supposed that the air of a crowded city must be more or less unfavourable ; and that a residence on the sea-coast is likely to be more beneficial than a residence in the country elsewhere. The patient should live on a nourishing but plain diet ; he should be in the open air in summer, as much as he can be, without exercising the joint. His mode of life should, in all respects, be regular and uniform.

It is more difficult to appreciate the value of medicines in a disease which is so completely chronic, than in acute diseases ; but of those which I have tried it has appeared to me that preparations of iron are much more useful than any

others. They must, however, be continued for a considerable length of time; and in order that this may be effected, it is generally necessary that different preparations should be given in succession, a change being made, whenever the patient begins to loathe that which he is already taking. Of course the steel medicine should be suspended if it excites any febrile action in the system, or if a febrile action be excited in consequence of the formation of abscess. Under these circumstances, the mineral acids may be substituted for it with advantage. In children, it will be generally found useful to combine the plan of treatment which has been just described with the occasional exhibition of mercurial purgatives. What has been termed an alterative course of mercury, is not, as far as I have been able to observe, productive of benefit in these scrophulous affections of joints; and, indeed, what experience I have had on the subject would incline

me to believe that it is likely to be injurious rather than beneficial. Mercury exhibited in larger doses is invariably prejudicial.

When the organization of the joint is completely destroyed, and the constitution has become affected, so that the patient's health is evidently failing, there can be no doubt of the necessity of the local disease being removed by amputation. But a question concerning the expediency of this operation will often arise under other circumstances. The patient has hitherto not suffered with respect to his general health, or has suffered in a very slight degree; the condition of the diseased joint is such that ultimate recovery is very doubtful; and it is certain that no better cure is to be expected, than that by means of anchylosis; and even this cannot be looked for except after the lapse of a considerable length of time. Is the chance of the ultimate preservation of an imperfect limb suffi-

cient to repay the patient for all the trouble, and pain, and anxiety, which he must go through, in order to attain this object? Perhaps it is not, particularly with persons belonging to the lower orders of society, who have to support themselves by their bodily labour. There are, however, some other points to be taken into consideration, before this question can be properly decided. A girl was admitted into St. George's Hospital, who laboured under this disease in the bones and joints of the tarsus. Her foot was amputated by Mr. Griffiths. In about three weeks the stump was perfectly healed; but now she was seized with symptoms which indicated an affection of the mesenteric glands, which had not shewn itself previously, and she died. On dissection, numerous glands of the mesentery were found enlarged, and containing a cheesy matter. Another girl, whose arm I amputated on account of a scrophulous disease of the elbow,

became affected in the same manner immediately after the stump was healed. She also died, and similar appearances presented themselves on dissection. A man, whose leg was amputated on account of a scrophulous disease of the tarsus, in a short time after the operation began to experience symptoms which indicated the incipient state of some pulmonic complaint: and soon afterwards the other foot became affected in the same manner as the first. These are a few of many cases which might be adduced, as leading to this conclusion, — that the occurrence of this scrophulous disease in a particular joint may be the means of preventing the scrophulous disposition from shewing itself in some other organ; and that if the affected joint be removed by an operation, there is more danger of disease breaking out elsewhere, than if the operation had not been resorted to. I do not say that these considerations are sufficient to war-

rant the surgeon in forbidding an operation altogether, in all cases where it is not actually and indisputably necessary to save the patient's life; but they are certainly sufficient to make him cautious not to recommend and urge it too strongly. They show the prudence of delay in certain cases. Perhaps after the lapse of one, or two, or more years, by means of proper medicines, and a judicious attention to diet, and mode of life, and still more in consequence of that change which the mere lapse of time may produce in the constitution of a young person, the patient's general health may be so far improved that the diseased joint may be removed, without that risk of subsequent mischief which would have been incurred at a former period.

Sect. IV.

Cases of this Disease.

Several of the cases related in the first section will serve to explain the principal circumstances of this scrophulous affection of the joints in its most aggravated form.

The following exhibit it in its less advanced stages, where it is still capable of a cure. It may be presumed that in these cases, the original disease was that morbid condition of the cancellous structure of the bones which has been just described, since the symptoms exactly corresponded to those which have occurred in other cases, which have been proved by dissection to be of this nature.

CASE L.

William Moulds, six years of age, having a scrophulous aspect, was admitted

into St. George's Hospital, on the 23d of February, 1814.

His left knee was an inch and a half in circumference larger than the other. The swelling was puffy and elastic; without fluctuation, having nearly the form of the articulating extremities of the bones; but filling up the space on each side of the ligament of the patella. The joint admitted of considerable motion, but not of complete flexion and extension. He complained of pain, which was worst at night: but never very severe. It was somewhat aggravated by pressure.

His parents attributed the complaint to some trifling hurt, which he had met with a year ago; soon after which, a slight degree of pain and tumefaction was first observed, which had continued ever since, and had encreased, particularly within the last month.

On his admission, with a view to the relief of the external inflammation, blood was taken from the knee by means of

leeches and cupping. A cold lotion was applied; and he was directed to take 3i of the vinum ferri, with a few drops of the tinctura ferri muriatis, three times in the day. On the 3d of March, the knee was bound up in stripes of linen spread with soap cerate, chiefly with a view to restrain the motion of the diseased joint, without interfering with the patient's bodily exercise.

March 20. The swelling was somewhat diminished; and he did not complain of pain.

April 1. He was in all respects better. As the former preparations of iron had begun to disagree with him, they were changed for ten grains of the carbonate of iron, three times in the day.

April 20. Scarcely any swelling of the joint remained: and there was no pain or stiffness. He quitted the hospital.

CASE LI.

A. B., a handsome boy, having blue eyes, and light hair, in the year 1806 had a scrophulous enlargement of some of the glands of his neck, which suppurated and burst.

In the month of June, 1810, being then eight years of age, he was observed to limp in walking; but he did not complain of pain, and little notice was taken of this circumstance.

In the beginning of December, 1810, some degree of tumefaction was observed of the left instep and ankle. About the end of this month he received a trifling hurt of these parts; and now the pain of the ankle, which before had been so slight, that he scarcely spoke of it, became more considerable, and he was unable to walk. A gentleman who was consulted, directed the application of blisters, but they were productive of no relief.

In the middle of January, 1811, when I was first consulted, there was a puffy elastic swelling on each side of the ankle and instep; there was scarcely any pain, when the joint was perfectly quiet; but on attempting to use it, the pain was more considerable, and it was particularly aggravated, when the heel was pressed upwards against the bones of the leg. In other respects he was in perfect health.

I directed him to take the sulphate of iron internally, and to avoid all exercise of the joint, walking only on crutches, and so as never to place this foot in contact with the ground. Stripes of linen spread with soap cerate, were applied for the purpose of more effectually restraining motion.

I did not see him again until the beginning of March, when the pain and swelling were found to be somewhat diminished. As the stripes of soap cerate did not seem sufficiently to answer the intended purpose, a light pasteboard

splint was applied on each side of the leg and foot, and secured by means of a bandage.

April 12th. The puffy swelling was evidently diminished, and there was no pain, even when the heel was pressed upwards against the tibia. The same treatment was continued.

May 26th. The swelling was further diminished; and, on the 29th of June, the affected foot and ankle scarcely differed in appearance from the other. He was free from pain even on motion. The splints were left off, but it was directed that he should continue to wear the bandage. He was allowed occasionally to put his foot on the ground.

July 20th. He continued well. He went to the sea-side, with directions to continue the steel medicine, and to bathe in the sea twice in the week.

CASE LII.

George Lavel, nine years of age, and having a scrophulous appearance, in January, 1817, complained of an aching in his left elbow, and in about two or three months it was observed that the elbow was swollen. In May, 1817, he became an out-patient of St. George's Hospital. At this time, the elbow was swollen, and painful, but the pain arose chiefly from an abscess which presented itself underneath the skin on the inside. After the abscess had burst, it was observed that the swelling, which was independent of it, was not considerable, and that it seemed to arise entirely from an effusion of serum and coagulable lymph into the cellular membrane external to the joint. From this time he suffered very little pain, until the beginning of January, 1818, when another abscess began to shew itself on the out-

side of the elbow. On the 28th of January he was received as an in-patient of the hospital. The joint now admitted of very limited motion. Whenever it was moved, or when the articulating surfaces were pressed against each other, he complained of some, but not of severe pain. He kept the fore-arm in the half-bent position, and walked about, supporting the hand in a sling, with very little inconvenience.

In the beginning of February, he was directed to take six grains of carbonate of iron three times in the day; and a purge of calomel and rhubarb was administered occasionally. The abscess was opened, and a poultice was applied.

March 1st. The joint was smaller, but he was feverish, and suffered pain at night.

March 21st. The swelling was much diminished, the pain had abated; he slept well at night, and was free from fever.

In the middle of May there was a re-

currence of pain in the joint, and another abscess presented itself on the outside, which was opened on the 19th of May. After this a fourth abscess formed on the fore-part of the elbow, and broke on the 23d of June.

July 4th. There was little or no swelling. He was free from pain; the abscesses continued open, discharging a very small quantity of matter.

The poultices and fomentations, which had been hitherto employed during the formation of the abscesses, were now left off; and some simple dressings, and a bandage, were applied in their stead. The swelling continued to subside; he had no return of pain or abscess. On the 4th of September, the joint was not larger than the other; it admitted of much more motion than formerly; there was no pain; there was still one sinus, which was not completely closed, and which discharged a minute and almost imperceptible quantity of matter; all

the other abscesses were completely healed.

In concluding this chapter, I have one further observation to offer, which may be of some importance to those, who are engaged in studying the pathology, and investigating the morbid anatomy of the joints. In the disease, of which I have just treated, the bones are rendered preternaturally soft, so that they may be cut with a scalpel without turning its edge, or even crushed between the fingers. But this softened state of the bones is only one of the morbid changes which scrophula induces in these textures; and we are not hastily to conclude, where we meet with the bones thus deprived of their earthy matter, that this is always the original malady. In a patient who met with a compound fracture of the leg, close to the ankle, and who died some time after the accident, I found on dis-

section, the fractured surfaces in a state of caries, and the neighbouring portions of the tibia and fibula as soft as they would have been in the most scrophulous subject. I have seen a number of other cases, which prove that a preternatural softness may occur as a consequence of inflammation and caries affecting a bone, which was previously in a healthy state. In cases of primary ulceration of the cartilage, the morbid appearances are at first confined to the cartilage and bony surface, to which it is connected. When the disease is further advanced; when the bones are extensively ulcerated, and inflammation has taken place in their substance; the earthy matter becomes absorbed, and the bones lose their natural hardness, so that they may be divided with little force. If we find the bones deprived of a large portion of their earthy matter, and this change connected with extensive destruction by caries, but without that effusion of serous fluid, and

yellow cheesy substance into the cancelli which has been formerly described, we may well doubt whether this morbid change be not the consequence, rather than the cause, of the caries, with which it is combined. At any rate, it is to the examination of cases, in which the disease is in its early stage, and not of those, in which it has made great ravages, that we are to look chiefly for pathological information as to the nature of the morbid action which has taken place, and the particular texture in which it has had its origin.

CHAP. VI.

ON CARIES OF THE SPINE.

SECT. I.

Pathological Observations.

IT is obvious from the structure of the joints between the bodies of the vertebræ, that they can be liable to no diseases bearing any resemblance to the affections of the synovial membrane, which occur in other articulations. But analogy would lead us to expect, what experience demonstrates, that those diseases, which commence in the harder textures, may occur here as elsewhere, and that an extensive caries of the spine may have its origin, sometimes in an ulceration of

the invertebral cartilages, and at other times in a morbid condition of the cancellous structure of the bodies of the vertebræ.

In one of the cases, which have been related in a former chapter, where ulceration of the articular cartilages had begun in several other parts, those between the bodies of some of the dorsal vertebræ were found to have been very much altered from their natural structure. I had an opportunity of noticing a similar morbid condition of two of the intervertebral cartilages in a patient, who, some time after having received a blow on the loins, was affected with such symptoms, as induced Mr. Keate to consider his case, as one of incipient caries of the spine, and to treat it accordingly with caustic issues ; and who, under these circumstances, died of another complaint. In various other instances, in which the patients had died in the advanced stage of caries of the spine, and in which the

appearances were examined after death, I observed that the destruction of the intervertebral cartilages was much greater than that of the bones themselves, the latter having retained their ordinary structure and hardness, and the caries of them being either entirely confined to, or most extensive on, those surfaces to which the cartilage had been connected.

The above circumstances seem to render it probable that this affection of the spine frequently originates in the intervertebral cartilages. The following cases afford a more direct evidence in favour of this opinion.

CASE LIII.

Christiana Clear, a girl eight years of age, was admitted into the Infirmary of the parish of St. George, Hanover-square, in the year 1808, on account of a disease of the spine. At this time, the upper

part of the spine was bent forward, and the spinous processes of some of the dorsal vertebræ formed a preternatural projection at the posterior part; but still she was able to walk without assistance.

Soon after her admission, an abscess presented itself, and burst in the groin; and this was followed by a second abscess, which burst near the former.

The child was now under the necessity of being confined entirely to her bed. The abscesses continued to discharge pus. She became affected with hectic fever; nevertheless more than two years elapsed from the time of her having been first admitted into the infirmary, before she died.

The body was examined by Mr. Howship, to whom I am indebted for this account of the case. It was universally anasarcous. The abdominal muscles were so wasted that scarcely any vestige of them was perceptible. This probably arose from the circumstances of the child

having remained in bed for so long a time previous to her death, and having scarcely ever varied her position.

At the posterior part of the abdomen, there was a confused mass of soft substance, which proved to be the parietes of an abscess communicating with the orifices in the groin.

The bodies of the lowest dorsal, and three superior lumbar vertebræ were found at the posterior part of the abscess, nearly consumed by caries. There were no remains of the intervertebral cartilages between the tenth and eleventh dorsal, nor of those between the third and fourth lumbar vertebræ. These intervertebral spaces were filled with pus, and the opposite surfaces of the vertebræ were carious, but only to a small extent. The central part of the intervertebral cartilage between the ninth and tenth dorsal vertebræ had been completely absorbed, and pus was found in its place. Externally to this, the concentric layers of elastic cartilage

were entire, though somewhat altered from their natural appearance.

CASE LIV.

Mr. M., a young man, in the summer of 1816, became affected with pain in his back, and general debility, which he attributed to his having lain on damp ground, while in the island of Ascension, in the preceding March. In the beginning of September he sailed for England, being compelled to return home, on account of the state of his health.

In February, 1817, he arrived in London; complaining of pain in the back, and numbness of the thighs. Soon afterwards, on examining the spine, it was observed that that part of it, which is formed by the dorsal vertebræ, was incurvated forward, and that in addition to this there was an evident lateral incurvation also. After this, an abscess burst

in one groin, and continued open, discharging a large quantity of matter. The lower extremities became imperfectly paralysed; he lay constantly on one side, with the thighs drawn forward, so that his knees nearly touched his chin, and never varied from this position. He lingered until the 10th of August, 1818, when he died.

On inspecting the body, I found an abscess, which occupied nearly the whole of the anterior surface of the spine, from the upper part of the posterior mediastinum as low as the pelvis, and which communicated with each groin, extending downwards in the direction of the psoæ muscles. In many parts, in consequence of the contact of the matter of the abscess, the bodies of the vertebræ, and even the heads of the ribs, were affected with a superficial caries.

There were no remains of the intervertebral cartilage between the fourth and fifth dorsal vertebræ, and the opposite

surfaces of these two vertebræ were consumed by caries to some extent, and hence arose the curvature of the spine forward; and they were consumed to a greater extent towards the left side than towards the right, and hence arose the lateral curvature.

The intervertebral cartilage between the eleventh and twelfth dorsal vertebræ had also entirely disappeared, and the opposite surfaces of these bones were in a state of caries; but this had not extended itself sufficiently to occasion any sensible loss of bony substance.

The intervertebral cartilages between the third and fourth, fifth and sixth, seventh and eighth, tenth and eleventh dorsal vertebræ, and also that between the twelfth dorsal and first lumbar vertebræ, were all found in a perfectly natural state towards the circumference; but in the centre, they were of a dark colour; and on the surfaces towards the bones they, as well as the bones themselves, were in

a state of incipient ulceration, but without any appearance of pus having been secreted.

All the other intervertebral cartilages were, throughout their whole substance, in a natural condition: and the bones of the vertebræ every where had their natural texture and hardness. On laying open the theca vertebralis, the membranes of the spinal marrow were found adhering together, behind the space between the fourth and fifth dorsal vertebræ.

The above cases, and the circumstances before mentioned, seem to warrant the conclusion, that, in many instances, caries of the spine has its origin in an ulceration of the intervertebral cartilages, beginning in their centre, and extending to their circumference, and afterwards affecting the bodies of the contiguous vertebræ.

But there is no doubt that there are other cases, in which caries of the spine has its origin in the bones themselves. The bodies of the vertebræ are liable to that peculiar disease of the cancellous structure which occurs in the articulating extremities of other bones, and there is no reason why it should not produce the same results here as elsewhere. The following cases, the first of which occurred in St. George's Hospital, and for the second of which I am indebted to my friend Mr. Henry Earle, of St. Bartholomew's Hospital, are selected from others of the same description, and afford examples of this disease, and of the extensive mischief to which it may give rise.

CASE LV.

Edward Griffiths, forty-five years of age, was admitted into St. George's Hospital on the 15th of April, 1818, on account of an abscess, which presented

itself in the left groin. He said, that about four months before his admission, he had been seized with pain in the loins, and that the tumor in the groin had appeared about six weeks after the commencement of the pain.

He was directed to remain constantly in the horizontal position ; and in a short time the tumor formed by the abscess in the groin disappeared, and another shewed itself over the left os innominatum. On the 15th of May, this abscess was opened, and about forty ounces of pus were discharged. After this, he gradually sunk, and died worn out by a profuse suppuration on the 19th of August following.

On dissection, it was found that the cancellous structure of all the dorsal and lumbar vertebræ was of a dark red colour, and softer than natural, so that they might be cut with a common scalpel, or even crushed by the pressure of the thumb and fingers.

The opposite surfaces of the bodies of the second and third lumbar vertebræ, and of the cartilage between them, at the posterior part, were extensively destroyed by ulceration. Anteriorly, the bones and the intervertebral cartilage were entire, and the latter was in a perfectly natural state; but the bones throughout were of a dark and almost black colour.

On one side of the body of the twelfth dorsal vertebra, there was a small ulcerated spot, forming an opening which extended itself into a small cavity in the centre of the bone. This bone was also of a black colour; but the intervertebral cartilages belonging to it, as well as the intervertebral cartilages connected with the other vertebræ, were in a perfectly natural state.

The abscess had originated in the carious surfaces of the second and third lumbar vertebræ, and had extended itself behind the left psoas muscle, as low as the upper and anterior part of the left

thigh; where it made a turn backwards on the inside of the tendon of the psoas, and thus made its way to the place where it was opened on the posterior part.

The ribs were throughout unusually vascular, and brittle, so that they might be broken by the slightest force. There were vomicæ in the lungs, and tubercles in the liver.

CASE LVI.

Henry Shaw, seventeen years of age, consulted Mr. Earle in November, 1816, on account of a complaint which had begun about three months before, and of which the following were the most remarkable symptoms.

He had frequent attacks of pain in the head, attended with giddiness. Occasionally he had fits, in which he was for a short time insensible, with a spasmodic action of some of the muscles of the

neck. The right eye was amaurotic, and there was constant tinnitus aurium. His mental faculties were for the most part unimpaired.

By Mr. Earle's directions, he was cupped; purgatives were administered, and he was kept under the influence of mercury during six weeks, at the end of which time his symptoms had nearly disappeared.

About the end of May, 1817, he went on a visit into the country; and while there, he one day tripped and fell in crossing the room. Another set of symptoms now shewed themselves, for which he was brought to London. At this time he had pain in the back and in the right side, shooting in the direction of the costal nerves. He was subject to severe cramps in the stomach; his bowels were irregular; and he breathed with difficulty. He had cramps in his lower limbs, and his locomotive powers were impaired, though there was no actual

paralysis of the muscles. His general health was much deranged. On examining the spine, Mr. Earle discovered a curvature, of which the convexity was turned backwards, occupying about the three middle dorsal vertebræ; and this was attended with a considerable alteration in the form of the chest. He was now removed into St. Bartholomew's Hospital, where Mr. Earle directed him to remain constantly in the horizontal position, and an issue was made with caustic on each side of the spine. In a short time he lost the cramps of his lower extremities; but his general health continued to fail, and the difficulty of breathing increased.

In the middle of December he quitted the hospital. The exertion of being moved seemed to aggravate the disease. He was seized with numbness of the left leg and thigh; the dyspnœa became worse; and he sunk and died in convulsions, on the 23d of December, 1817.

On dissection, the arachnoid membrane was found opaque and thickened. A large tumor, of almost cartilaginous hardness, occupied the anterior lobe, and a similar one the posterior lobe, of the right hemisphere of the cerebrum; and a third tumor occupied the greater part of the right lobe of the cerebellum. The ventricles were distended with water.

The right lung was studded with tubercles, and adhered universally to the pleura costalis. A large abscess occupied the posterior mediastinum; at the bottom of which, the bodies of two of the vertebræ, together with the intervertebral cartilage between them, were found nearly destroyed by ulceration. The other intervertebral cartilages were in a natural state; but the bodies of the vertebræ were soft, and many of them were beginning to ulcerate. The ribs were porous, and their cancelli were filled with a curdly matter; and they were soft, so that they might be easily divided with a common

scalpel. Four of the ribs were separated from their attachment to the spine, and were ulcerated as far as their tubercles.

In such cases as those last described, there can be no doubt that the disease originated in the bony textures, and that it corresponded to the scrophulous disease which so frequently occurs in the other articulations. But caries of the spine may be the consequence also of simple chronic inflammation of the bodies of the vertebræ, different from that morbid condition of those parts which exists in the true scrophulous affection. I have briefly noticed the appearances on dissection, in a case of this kind, in the former edition of this work. * A preparation illustrating the same circumstances was shown to me some time ago by

---

* Page 296. 1st edition.

Mr. Earle ; and the following case affords another example of the same disease.

CASE LVII.

Charlotte James, 19 years of age, was admitted into St. George's Hospital on the 30th of May, 1821. About a month before her admission, she had experienced pain in the loins, which was relieved by cupping. At the time of her admission she had violent pain in the left lower limb, from the hip to the foot ; and soon afterwards she again complained of pain in the loins : about the same period a tumor presented itself in the loins on the right side. Her constitution also became affected with hectic symptoms.

On the 2d of June the tumor was punctured, and sixteen ounces of pus were evacuated. Another abscess presented itself in the groin.

The hectic symptoms continued ; she

gradually sunk, and died on the 3d of August.

On dissection, the bodies of the three or four inferior lumbar vertebræ were found preternaturally vascular, and of a dark, and almost black colour; but they retained their natural texture and hardness, and had undergone none of those changes which mark the existence of the scrophulous affection of the bones. The intervertebral cartilages were in a natural state: but the body of one of the vertebræ was superficially ulcerated for about the extent of a sixpence on one side, towards the posterior part. A large abscess communicated with this ulceration, and occupied the situation of the psoas muscle of the left side, extending downwards to the groin.

In investigating the pathology of caries of the spine, we must distinguish from the various cases which I have now de-

scribed some other cases, which at first appear to be of a similar, but which are in reality of a different nature. The long-continued pressure of an abscess which has originated in the neighbouring soft parts; of an aneurysm of the aorta; of a mass of enlarged lymphatic glands, or of any other tumor; may produce ulceration of the bodies of the vertebræ: and here we find the intervertebral cartilages in general to be very little, or not at all affected; so that they are left projecting nearly or quite of their natural size, while the bones themselves are in a great degree consumed. In such cases, where the spine is carious in consequence of disease beginning external to it, the symptoms are not the same as where it has begun in the spine itself. For the most part, the affection of the spine is not suspected during the patient's lifetime; and after death it is easy to trace the origin of the disease in the contiguous parts.

Not unfrequently, however, we find caries from disease of the spine itself complicated with caries from external pressure. For example, disease of the vertebræ, or intervertebral cartilages, occasions caries, and this is followed by the formation of abscess. The matter having become accumulated in considerable quantity, the abscess occupies a large space; and by its pressure on the surfaces of the vertebræ in the neighbourhood, causes an extensive caries of them far beyond the boundaries of the original disease.

Sect. II.

On the Symptoms of Caries of the Spine.

As these diseases of the spine correspond in this respect, that they terminate in a more or less extensive caries, it may be expected that there must be a certain degree of resemblance in the symptoms

which they produce. This resemblance is indeed greater than where the same morbid affections take place in other joints. I suspect, that where the disease has its origin in the cancellous structure of the bones, it is more immediately followed by suppuration, than where it commences in the form of ulceration of the intervertebral cartilages; and that in cases of the latter description, the pain and tenderness in the situation of the carious portion of the spine is more considerable than in those of the former. But farther than this, nothing, which I have hitherto observed, enables me to point out any circumstances, in which the symptoms of these different diseases differ; nor do I believe (however desirable it may be to do so), that it is possible, in the present state of our knowledge, to distinguish them from each other, with any degree of accuracy, in the living person. Perhaps future observations may throw light on this important sub-

ject. In the mean time, when I speak of the symptoms of caries of the spine, it is to be understood, that the observations which I make are (as far as I know) applicable to the various cases of this description ; those only excepted, in which the caries is a secondary affection, the consequence of the pressure of a tumor in the neighbourhood.

It is evident that two orders of symptoms may be the result of caries of the spine : — 1st, Those which are the immediate consequence of the morbid condition of the vertebræ themselves, and of the intervertebral cartilages. 2dly, Those which arise from pressure on the spinal marrow, or from irritation propagated in some way or another, to this important part of the nervous system. I believe it will be found, that when the disease is situated above the lumbar region, it almost constantly happens, that these two sets of symptoms are combined ; whereas, when the vertebræ of the loins

are alone affected, the latter set of symptoms are generally wanting. Perhaps this may be accounted for, partly from the greater magnitude of the bodies of the lumbar vertebræ, in consequence of which, a much more extensive caries is necessary to produce the same quantity of incurvation here, than elsewhere; and partly, from the circumstance of the spinal marrow here terminating in the bundle of nerves belonging to the lower extremities; which possess a different structure, exercise different functions, and are probably of a less susceptible nature than the spinal marrow itself.

Caries of the lumbar vertebræ usually occasions a pain in the loins, which, after a longer or shorter period of time, is followed by an external abscess, shewing itself in the groin, or in some other situation, and it constitutes the original disease in the great majority of cases of lumbar abscess.

The symptoms which are produced in

those other cases, where caries is followed by curvature of the spine, and affection of the spinal marrow, have been described at length in the works of former writers, (more especially in the able and eloquent dissertations of Mr. Pott,) and it is unnecessary for me to repeat what has been already given to the world by others. I shall therefore only advert to certain points in the history of the disease, which some of my own observations may tend to illustrate.

The curvature of the spine, which this disease produces, cannot take place until the caries has made considerable progress; and hence, although it furnishes an excellent diagnostic mark of the disease in its most advanced stage, it affords the surgeon no assistance whatever at that early period, when the diagnosis is of the most importance. Previous to the appearance of the curvature, the symptoms are not unfrequently very equivocal; so that the real nature may often

be overlooked by a careless practitioner; and sometimes even by the most accurate and minute observer. A pain, and some degree of tenderness in that part of the spine, where the disease has begun; pain in the inferior portion of the spine below the actual seat of the disease; a sense of constriction of the chest; an uneasy feeling at the pit of the stomach, and of the whole abdomen; a disturbed state of the functions of the alimentary canal, and of the urinary bladder; a sense of weakness and aching, and occasional cramps of the muscles of the extremities; one or more of these symptoms, according to the part of the spine which is affected, and other circumstances, are in most instances met with before the form of the back has undergone any alteration. But it is obvious, that symptoms very similar to these may arise from other causes; and hence, practitioners are liable to be led into error. Many cases also occur, in which these symptoms have been so slight, that,

although the patient has recollected them afterwards, he did not experience sufficient inconvenience at the time to be induced to notice them; and I have even known some instances, in which they were altogether wanting, so that there has been no suspicion of any complaint existing previous to the actual discovery of the curvature.

In the greater number of cases, which have come under my observation, the curvature of the spine has been first noticed about six months after the commencement of the other symptoms. In one case only the interval was as long as two years.

In general, the curvature is at first only just perceptible; and by degrees it becomes more distinct. In one instance, the patient, who had made no previous complaint, immediately after some slight exertion, experienced a sudden pain, as if something had given way in the back, and immediately afterwards lost the use

of her lower limbs, and observed that the spinous process of one of the lower dorsal vertebræ made an angular projection. In another patient a similar circumstance occasioned the same sensation, and was followed by numbness of the legs and thighs, and paralysis of the bladder; but not by any evident curvature. Of course, we must suppose, that the disease had been making progress, before the occurrence of the trifling accident, which first induced its symptoms.

The distortion of the spine in these cases is usually of a peculiar kind, and such as nothing can produce except the destruction of the bodies of one or more vertebræ. The spine is bent forward, so as to form an angle posteriorly; and although the destruction of the vertebræ may be the same, it is more obvious in some parts of the spine, than it is in others. For example, the spinous processes in the middle of the back being long, and projecting downwards, the ele-

vation of one of these must occasion a greater prominence, than that of one of the spinous processes of the neck, which are short, and stand directly backwards.

Curvature of the spine in the direction forwards, may arise from other causes, as a weak condition of the muscles, or a rickety affection of the bones. In general, in such cases, the curvature occupies the whole spine, which assumes the form of the segment of a circle. At other times, however, it occupies only a portion of the spine, usually that, which is formed by the superior lumbar, and inferior dorsal vertebræ; as I have ascertained, not only by examinations during life, but by dissection after death. Here the curvature is always gradual; never angular; and thus it may be distinguished from the curvature arising from caries. Nevertheless, I am satisfied, that those different kinds of curvature, arising from different causes, have frequently been confounded with each other; and

that some of the cases, which have been published as examples of caries of the spine, and in which, it may at first be a matter of surprise, that so complete and so speedy a cure has been effected, have in reality been cases of an entirely different malady. *

I believe it is generally supposed, that the lateral distortion of the spine arises from causes, which are independent of caries. This rule however must not be admitted without some exceptions. A slight degree of lateral curvature is, in some instances, the consequence of caries. This was observed in one of the cases related in the last section, and the examination of the morbid appearances explained in what manner the lateral curvature was produced; that is, by the bodies of the vertebræ having been de-

* Some excellent observations on this subject are published by Mr. Earle in the Edinburgh Medical Journal for January, 1815.

stroyed on one side, to a greater extent than on the other.

Mr. Copeland * has observed that the symptoms which take place in this disease in consequence of the affection of the spinal marrow, are not always confined to the parts below, as might be expected, but that they take place also in those parts, which are above the ulcerated vertebræ. This is an important observation, and I have had opportunities of ascertaining it to be correct. When the disease has been situated in the middle or lower part of the back, I have not indeed known the muscles of the upper extremities to be paralytic, but it is not uncommon under these circumstances, for pains in the arms to be connected with a paralytic affection of the legs and thighs.

I have already observed, that there is

---

* "Observations on the Symptoms and Treatment of Diseased Spine," &c. by Thomas Copeland.

reason to believe, that suppuration takes place at an earlier period, in those cases, where the disease has its origin in the cancellous structure of the bones, than where it begins in the intervertebral cartilages. It is remarkable in some cases of this last description, to how great an extent ulceration will sometimes proceed, without the formation of abscess. I have known as many as three bodies of vertebræ completely destroyed, and the disease to have lasted many years, without matter having been formed; a fortunate circumstance for the patient, as the chance of his recovery is much greater under these, than it would have been under the opposite circumstances. In whatever part of the spine the disease is situated, the abscess is likely to present itself in the upper and anterior part of the thigh; but it may make its way in various other directions. Sometimes it takes the course of the spermatic chord, and forms a tumor projecting through the abdominal

ring; such as a superficial observer might readily mistake for a hernia. In one case, which I had an opportunity of examining after death, the abscess had penetrated into the theca vertebralis, and the whole of the spinal marrow, from its origin to its termination, was bathed in pus.

Sect. III.

On the Treatment.

For reasons similar to those, which prevented my entering at length into the history of the symptoms, which occur in cases of caries of the spine, I shall make but few observations on the methods of treatment, which may be employed for its relief. Those, which have been principally recommended, are, first, a state of perfect quietude in the horizontal position, continued for a long period of time; and, secondly, the establishment

of issues made with caustic in the neighbourhood of the affected vertebræ.

I should imagine that no one will be bold enough to deny the prudence, and that but few will deny the absolute necessity, of the first of these remedies. While the patient is in the erect position, and the weight of the head and other superincumbent parts is pressing the ulcerated surfaces one against the other, it is not likely that the progress of the ulceration can be checked, and it is highly probable that suppuration will be induced. Concerning the advantage to be derived from issues, there may perhaps be a greater difference of opinion: and I am well aware, that some of the most experienced practitioners of the present day, estimate their value at a low rate. It is not, however, very easy to suppose that Mr. Pott, and others, whose opinion carries with it much authority, should have been mistaken so far as to persevere during a series of years, in the employment of a remedy, which was wholly in-

efficacious. If issues are of service, where the cartilages of the hip or knee are ulcerated, analogy would lead us to expect, that they may be useful also, where a corresponding disease has taken place in the joints of the vertebræ, and my own experience has certainly tended to confirm this expectation. I have known instances of patients, who have been under precisely the same circumstances with respect to rest, and whose symptoms have been manifestly and considerably relieved either immediately, or in a short time, after the issues had been made: and where the caustic has been occasionally applied to the surface of the issue for the purpose of keeping it open, other patients have informed me that "they have uniformly found themselves better in a few hours after each application." At the same time it must be acknowledged, that some cases occur, in which the caustic issues seem to be productive of little or no benefit. Probably it is with diseases of the vertebral joints, as it is with those of the

joints of the extremities, and issues may be more beneficial where the original affection is an ulceration of the intervertebral cartilages, and they may be of less efficacy where the morbid change of the cancellous structure of the bones precedes the ulceration. If this be correct, the difference of opinion on the subject of issues may be easily explained; and we must regret the more that we are acquainted with no better signs, by which these varieties of disease may be distinguished in the living person.

Mr. Pott has deprecated in strong terms, the employment, in these cases, of all those instruments, and other mechanical contrivances, which have been invented and recommended for distortions of the spine; and we cannot but believe, that any attempts to elongate and restore its figure, by forcibly separating the ulcerated surfaces of bone, which are in contact, and disposed to cohere, must be highly injurious. But it is also plain,

that the disease is likely to be aggravated by the pressure of the superincumbent parts, when the patient is in the erect position; and if instruments be employed, simply for the purpose of supporting the column of the vertebræ, and taking off the weight of the head from the ulcerated surfaces, they cannot be liable to the same objections, as when they are applied with other views, and it is reasonable to expect that they may be productive of advantage to the patient. They certainly ought never to supersede, in the first instance, the constant maintenance of the horizontal posture; but I am exceedingly mistaken, if I have not seen them of much service, when the patient has made a certain degree of progress towards recovery; and when circumstances have made it desirable, that he should begin to sit up, during a part of the twenty-four hours.

In those cases, in which a cure is supposed to have been effected, it generally

happens, that the carious vertebræ are united with each other by bony substance, which is laid on in a considerable mass on their external surface. But I have seen other cases, in which anchylosis has never taken place. The progress of the disease has been stopped; the surfaces of the vertebræ, which had been affected, have been partially in contact, but no actual cohesion has taken place between them, and they have remained, in a certain degree, moveable on each other. Under these circumstances, an instrument judiciously applied will be useful, not only by affording support to the spine; but also by preventing the weight, and motion of the parts above, from exciting a recurrence of the caries; at the same time I do not mean to affirm, that the cases in which it is right to call in the aid of mechanical contrivances are of frequent occurrence, and I must repeat that they ought never to be employed for the purpose of elon-

gating the spine, and correcting the deformity.

Neither ought the surgeon to endeavour to attain this latter object in any other way. The patient and his friends must be satisfied with the preservation of life; and must not expect the spine, if once distorted from caries, to be restored to its natural figure. It is right that the patient should remain as nearly as possible motionless on a mattress, placed on a horizontal board: if there be little, or no incurvation of the spine, he may be allowed to lie on his back, and will probably be less liable to motion, and will find himself altogether more comfortable in the supine position, than if lying on his side: but where the incurvation is considerable, even the supine position should be avoided, lest it should tend to straighten the distorted spine, and in doing so, should separate from each other, the carious vertebræ, which had come in contact, and the union of

which, by anchylosis, must be regarded as the most important step towards a cure of the disease. It is evident that the forcible separation of adhesions which have begun to form between two carious vertebræ is likely to induce suppuration; and I am much mistaken if I have not known a rigid adherence to the supine posture to be, in this manner, the cause of abscess being formed where it had not existed previously.

CHAP. VII.

ON TUMORS AND LOOSE CARTILAGES IN THE CAVITIES OF JOINTS.

THE loose cartilaginous substances which are sometimes found in the joints have been so frequently described by writers, that I can have but few observations to offer respecting them. I believe it is generally supposed that these loose bodies have their origin in coagulable lymph, which has been effused from inflammation on the inner surface of the synovial membrane, and which has afterwards become vascular: but in the majority of cases which I have met with, no symptoms of inflammation preceded their formation; and hence it is probable that, in some instances, they are generated

(like other tumors) in consequence of some morbid action of a different nature.

They appear to be situated originally, either on the external surface, or in the substance, of the synovial membrane; since, before they have become detached, a thin layer of the latter may be traced to be reflected over them.

My own experience is much in favour of the removal of these loose cartilages by an incision of the joint, provided that this be done in a cautious and prudent manner. The patient should be kept in a state of the most perfect quietude for two or three days preceding, and for several days after, the operation. The cartilage having been well fixed, the different parts over it should be slowly and separately divided until it is exposed. The wound of the synovial membrane may be dilated by means of a probe-pointed bistoury, so that it may be of sufficient size to allow of the cartilage being extracted with a tenaculum; and

the cut edges of the skin should be instantly placed in contact with each other, and secured by means of adhesive plaster.

I attended a gentleman who laboured under this troublesome disease, and in whom the loose bodies not unfrequently slipped between the articulating surfaces of the knee, occasioning an almost immediate swelling of the joint, with the most excruciating pain and tenderness, and much symptomatic fever. In one instance, more than a month elapsed before these symptoms had subsided. These circumstances are noticed, because they prove that in this patient there was a considerable disposition to inflammation; yet, by attending to the precautions above mentioned, as many as five loose cartilages were extracted by three different operations, without the slightest inconvenience from any one of them.

I have seen two cases, in which the loose bodies were of a different nature, and had a different origin from those

which are commonly met with. It occasionally happens, that, from some morbid action, a bony ridge is formed, like a small exostosis, round the margin of the cartilaginous surfaces of the joint. In the two cases to which I allude, this preternatural growth of bone had taken place, and in consequence of the motion of the parts on each other, portions of it had been broken off, and lay loose in the cavity of the joint.

In Mr. Bell's Anatomical Museum there is a specimen of a knee-joint, the inner surface of which is lined by a multitude of small pendulous excrescences connected with the synovial membrane. These excrescences have a smooth covering, and bear an apparent resemblance to the *appendices epiploicæ* of the great intestine; but are not, like these, composed of adipose substance. Mr.

Shaw has informed me that the preparation was taken from the body of a young woman, which was brought into the dissecting room in the usual manner, and the history of the symptoms which the disease produced could not therefore be ascertained. The joint contained a considerable quantity of a whey-like fluid. I have seen an example of a similar morbid growth from the synovial membrane of the knee in Mr. Heaviside's collection.

Occasionally, tumors of a different kind are formed on the inner surface of the synovial membrane, and attain a considerable magnitude.

CASE LVIII.

Morris Sudbury, twenty-one years of age, was admitted into St. George's Hospital on the 4th of October, 1820.

He had swelling, and complained of pain and tenderness, in one knee. He was kept in bed: the joint was bathed with a cold lotion. Afterwards blisters were applied. The swelling subsided, but the joint continued weak and painful.

On the 11th of December, for the first time, a tumor was discovered evidently within the cavity of the knee-joint, situated on the edge of the patella, over the external condyle of the femur. The tumor appeared like a loose cartilage, of about the size and form of an almond. When the man attempted to walk, in certain motions of the limb, it slipped into the cavity of the joint, producing considerable distress, and making him lame. An attempt was made to confine it by means of bandages, but without success.

On the 5th of January, 1821, Mr. Ewbank made an incision through the skin, fascia, and synovial membrane, so as to expose the tumor. It was found to be

not cartilaginous, but of a gristly structure: it was of about the length of an almond, but rather broader; and it was attached by one extremity to the synovial membrane, near the edge of the patella. This attachment was cut through, and the tumor was removed. The edges of the wound were brought into contact, and united by the first intention. Some inflammation of the joint followed, but was subdued without much difficulty. When the patient began to walk, he found himself to have been much relieved by the operation.

Six weeks afterwards, however, a tumor was discovered in the knee, of a smaller size than that which had been removed, but occupying precisely the same situation; so that there was sufficient reason to believe that it had grown from the same basis. This tumor could be pressed into the joint by the fingers, but did not slip into it spontaneously in walking; and therefore, at the time when the man left

the hospital, he did not suffer any inconvenience from it.

CASE LIX.

A. B., a young man, consulted me on the 25th of April, 1822, labouring under the following symptoms: — In certain motions of the right knee, a tumor presented itself on the inside of the patella, which had been supposed to be, and had the appearance of being, a loose cartilage of a large size. He said that, occasionally in walking, this substance slipped between the articulating surfaces: this accident produced considerable pain at the time, and an inflammation of the synovial membrane afterwards, which in one instance had confined him to his bed for several weeks. He said further, that these symptoms had been gradually coming on for two or three years; that he had worn bandages, without experiencing

any good effect; and that, as the disease interfered very much with his comfort and occupations, he was desirous of submitting to any operation which afforded him a prospect of relief.

On the 28th of April, after he had remained for one or two days in a state of perfect quietude, I carefully made an incision on the tumor, which had been previously fixed by the finger of an assistant over the inner condyle of the femur. When it was thus exposed, I found the tumor to be, not a loose cartilage, but of a fleshy structure; and it was connected to the synovial membrane, below the patella, by a broad adhesion. Having divided this adhesion, I removed the tumor. The edges of the wound were brought together by means of a suture, which was passed through the integuments, and stripes of adhesive plaster. The patient was kept in bed, and the limb was supported by a splint, to which it was secured by bandages in

such a way as to render the joint quite incapable of motion.

About twenty-two hours after the operation, symptoms of violent inflammation began to shew themselves. There was almost insupportable pain; the joint became rapidly swollen; and the pulse rose to 90 in a minute, and was hard and strong. By means of very active antiphlogistic treatment, however, the inflammation subsided, without producing any bad consequences. On the 27th of June he was able to undertake a journey to a considerable distance from London; at which time the knee was neither swollen nor painful, but it was still incapable of perfect flexion and extension.

On examining more accurately the tumor, which had been removed in this case, it was found to be about two inches and a half in length, and one inch and a half in breadth, and somewhat less than half an inch in thickness in the thickest part; convex on one surface, and some-

what flattened on the other. It was of a firm, fleshy structure. The general appearance of it a good deal resembled that of the coagulum which is found in the sac of aneurysm; but it was not laminated: and it had a smooth membranous surface; and it was manifestly organized, as vessels might be distinctly traced ramifying through its substance. *

In both of these cases the operation was resorted to under the impression

* A remarkable circumstance occurred in the progress of this case. The wound made in the operation united by the first intention: but the joint being much distended with synovia, the adhesion gave way; so that the wound was re-opened on the 9th or 10th day, and the synovia escaped in a small but constant stream. The discharge of synovia continued; but the joint being carefully retained in a state of the most perfect quietude, supported on a splint, no additional inflammation of it was the consequence. At last the flow of synovia ceased; the wound gradually closed; and in the course of three or four weeks it was firmly cicatrized.

that the substance contained in the cavity of the joint was one of the loose cartilages, of which I have spoken in the beginning of this chapter. If I had been acquainted with the real nature of the tumor in the last case, I should certainly have been less inclined to attempt its extirpation; and the violence of the inflammation which ensued in this instance, must form an additional reason for hesitation in any future case of the same kind.

But the question will arise, how are such firm fleshy tumors, which are capable of altering their position in the cavity of a joint, and which produce symptoms similar to those, which are produced by loose cartilages, to be distinguished from the latter? Perhaps, being aware of the possibility of the existence of a tumor of this description, we may, by a very careful examination, be enabled to ascertain, even through the superjacent soft parts, that it has not the same degree of hard-

ness with cartilage itself. I am not at present acquainted with any other circumstances on which our diagnosis can be founded. Fortunately, however, it happens, that while loose cartilages in joints are not uncommon, such fleshy tumors as I have just described are of very rare occurrence.

CHAP. VIII.

ON SOME OTHER DISEASES OF THE JOINTS.

In the present chapter it is intended to notice, in a brief manner, some other affections of the joints which have not been described in the preceding pages.

1. I have seen a very few cases, in which common inflammation having taken place in the articulating extremity of a bone, an abscess has formed and burst into the joint. In such cases, on dissection, the bone is found usually of a dark colour, and having a fœtid smell; and occasionally a portion of its cancellous structure having lost its vitality, forms an exfoliation, lying loose in the

cavity of the abscess. Sometimes there is a fresh formation of bony matter, in consequence of inflammation and ossification of the periosteum ; and this constitutes the only species of diseased joint which has come under my own observation, in which an actual enlargement of bone has taken place. Where the soft parts of a joint are considerably thickened, a feeling is given to the hand, as if the bones themselves were increased in size ; but my friend Mr. Lawrence some years ago observed, and pointed out, that this feeling is deceptive.

2. I have known instances, in which a portion of the articulating extremity of a bone has died and exfoliated, and the destruction of the joint has been the consequence.

In examining the body of a patient in the hospital, who had died labouring under an affection of the spine, I found the bodies of no less than six of the dorsal vertebræ dead, and undergoing

the process of exfoliation. Five of them were entire, and the sixth was broken into several pieces. The intervertebral cartilages had wholly disappeared. The patient attributed his complaint to some unusual exertion in lifting a heavy weight.

3. Absorption of the articular cartilages to a limited extent sometimes takes place, by a process apparently different from that of ulceration. The bone becomes partially denuded, but it bears no marks of inflammation; there is no erosion of the bony surface itself; and the cartilage which remains entire retains its natural adhesion to it. The patient does not complain of pain in the joint, nor does suppuration follow. These changes are observed more frequently in the bodies of elderly persons; and they are sometimes discovered after death, where their existence had not been suspected during the patient's lifetime. At other times they produce in

the motions of the limb a grating, corresponding to, but less distinct than, the grating which is perceptible after a fracture.

4. There is a class of cases, of no unfrequent occurrence, in which the patient suffers considerable distress, in consequence of pain referred to some of the larger articulations; and which often occasion no small degree of anxiety and alarm among the patient's friends, although there never arise any ultimate bad consequences. The cases, to which I allude, occur chiefly among hysterical females. The disease appears to depend on a morbid condition of the nerves, and may be regarded as a local hysterical affection. At first there is pain referred to the hip or knee, or some other joint, without any evident tumefaction; the pain soon becomes very severe; and by degrees a puffy swelling takes place, in consequence of some degree of serous effusion into the cells of the cellular tex-

ture. The swelling is diffused, and in most instances trifling; but it varies in degree: and I have known, where the pain has been referred to the hip, the whole of the limb to be visibly enlarged from the crista of the ilium to the knee. There is always exceeding tenderness; connected with which, however, we may observe this remarkable circumstance, that gently touching the integuments, in such a way as that the pressure cannot affect the deep-seated parts, will often be productive of much more pain than the handling of the limb in a more rude and careless manner. In one instance, where there was this nervous affection of the knee, immediately below the joint there was an actual loss of the natural sensibility; the numbness occupying the space of about two or three inches in the middle of the leg. Persons who labour under this disease are generally liable to other hysterical complaints; and, in all cases, the symptoms appear to

be aggravated and kept up by being made the subject of constant anxiety and attention.

No general rules can be laid down for the treatment of cases of this description. The parts may be bathed with a cold evaporating lotion; or they may be enveloped in a plaster composed of equal parts of the extract of belladonna and soap plaster, — an application which will be found of singular utility, not only in these, but in a great number of other painful nervous affections. Sometimes the patient has derived benefit from the exhibition of active purgatives; at other times, from taking the root of valerian alone, or combined with bark, or with ammonia. Where the menstruation is irregular, we may suppose it to be of the first importance that we should endeavour to restore this function to its healthy condition.

5. I have seen one case, in which there was a large tumor of the knee, apparently

belonging to that class of diseases to which the name of *Fungus Hæmatodes* has been given by Mr. Hey, and of *Medullary Sarcoma* by Mr. Abernethy. The patient could not submit to amputation, and I had no opportunity of ascertaining after death in what texture the morbid growth originated.

6. The following case affords an example of carcinomatous disease affecting the head of the femur, and producing symptoms somewhat corresponding to those of disease of the hip-joint.

CASE LX.

A lady between sixty and seventy years of age, in the year 1817 underwent the operation for the removal of a scirrhous breast. Some time afterwards a hard tumor showed itself in the cicatrix; and about the same period she began to complain of pain in the left hip and thigh.

On the 7th of November, 1820, I saw her in consultation with Mr. Smith, surgeon, of Richmond, by whom she was attended. At this time a large scirrhous tumor occupied the situation of the breast which had been amputated. She complained of pain in the hip, thigh, and knee, which was aggravated by pressure; the pain was very severe, keeping her awake at night, except when she was under the influence of a very large dose of opium. There was a cluster of enlarged glands in the groin, making a hard, and somewhat moveable tumor. On the 18th of December following, the patient died; and the body was examined by Mr. Smith and myself on the following day.

We found that the thigh-bone had been broken transversely about two inches below the neck; and it was evident, from the appearance of the fracture, that it must have taken place, immediately before, or after death; and in either case it must have been the result of some

very trifling accident. The whole of the superior extremity of the thigh-bone was softer and more brittle than natural; but this morbid change was less distinct below than above the fracture, and it was most distinct in that part of the head of the bone which was contiguous to the cartilage. On making a section of the head and neck of the bone, the earthy matter was found to be very deficient; and a cartilaginous or gristly substance was seen blended with the bony structure. In several places there were spots of increased vascularity, with a deposition of some cheesy matter in the centre. The cartilages were not ulcerated; and there was no effusion of pus, lymph, or serum into the cavity of the joint. The enlarged inguinal glands had the structure of scirrhus; and there was a similar mass of scirrhous lymphatic glands in the pelvis, immediately above Paupart's ligament. *

* The appearance presented by the cut surface of

7. We have abundant opportunities of observing that the joints of different individuals are endowed with different degrees of mobility. This is often very evident in the articulations of the fingers with the metacarpal bones. We see one person whose fingers admit of being extended so as to be in a line with the bones by which they are supported, but of no further motion in this direction; and we see another, in whom they are capable of being bent backwards, so that the nails may be brought almost in contact with the back of the hand. I suppose that this difference is to be attributed chiefly to the state of the ligaments, by which the bones are held together; and a corresponding looseness of the ligaments, but existing to a still greater extent, will explain the singular liability to dislocation which may be ob-

---

the head and neck of the femur, in this case, are delineated in one of the plates at the end of this volume.

served in some individuals. A gentleman consulted me in the year 1820, who had met with the accident of dislocating the patella, four times in the right, and once in the left, knee. The right shoulder had been twice completely dislocated, and once there had been a subluxation of the same joint. The joint of the left thumb with the os trapezium, had been dislocated several times. In every instance the dislocation had been reduced with the greatest facility, and generally without surgical assistance. The patient at the time of my seeing him was not more than 23 or 24 years of age, and was in perfect health; except that he was subject to occasional severe headaches, apparently connected with the state of his digestive organs. No peculiarity could be observed in the form and structure of his joints: his muscles were strong, and he was capable of considerable muscular exertion; he was accustomed to a good deal of walking exercise, but had not

been particularly exposed to the ordinary mechanical causes of dislocation.

CASE LXI.

8. A lady, in the year 1808, first observed a swelling in the upper part of one knee, which was unattended by pain; and which increased slowly, but uniformly. In the course of three years it had attained so inconvenient a magnitude, that the patient was induced to consent to the removal of the limb. Mr. Thomas, under whose care this lady was, performed the operation, and allowed me afterwards to examine the amputated joint.

The tumor occupied the upper part of the knee, beginning at the edge of the cartilaginous surface, and extending about three or four inches up the lower part of the thigh. It was interposed between the muscles and the bone of the thigh, so that the former were seen expanded

over it. It was of a greyish white colour; composed of fibres of a gristly semi-transparent substance, with osseous matter intermixed with it, and about two inches in thickness on each side of the femur. At the upper part it was seen distinctly originating in the periosteum; at the lower part, the periosteum could not be traced, and the structure of the bone was continued into that of the tumor. The cartilages and ligaments of the joint were free from disease. On the external surface of the synovial membrane, unconnected with the diseased structure above, there were three or four flattened bodies; each of about the size of a kidney bean, of a white colour, and of a texture somewhat softer than that of cartilage. The synovial membrane itself was free from disease.

There can be no doubt that, in this case, the original disease was the osteo-sarcomatous tumor, originating in the periosteum of the femur. The circum-

stance of the other tumors being found connected with the synovial membrane, although the intermediate parts were, to all appearance, in a healthy state, is remarkable; but something corresponding to this may be observed in other diseases. For example, when the gland of the breast is affected with scirrhus, it is not unusual to find small tubercles of a similar structure in the skin over it, at various distances from each other; although the intermediate adipose substance, as well as the portions of skin between the tubercles themselves, exhibit no marks of disease.

I met with another case, in which the patient appeared to labour under an enormous tumor of the hip. It was ascertained by dissection, that the hip itself was free from disease, and that the enlargement was formed by an osteo-sarcomatous growth from the periosteum of the upper extremity of the femur. Two other cases have come under my observ-

ation, apparently similar to that just mentioned, but in which I had not the opportunity of examining the parts by dissection.

9. The effects of gout on the joints are very remarkable. The cartilages are absorbed; the exposed surfaces of bone are partially, or entirely, encrusted with a white earthy matter, which I conclude to be urate of soda; and sometimes they have the appearance of being formed into grooves, as if they had been worn by their friction on each other. In some cases, repeated and long-continued attacks of gout occasion complete anchylosis.

10. Mr. Mayo has published a history of some cases, in which ulceration of the articular cartilages took place under peculiar circumstances, having the character of an acute disease, instead of being a chronic affection as in other instances. On this subject it will be sufficient if I refer my readers to Mr. Mayo's valuable paper in the 11th volume of the Medico-Chirurgical Transactions.

CHAP. IX.

ON INFLAMMATION OF THE BURSÆ MUCOSÆ.*

SECT. I.

History and Symptoms of this Disease.

THE synovial membranes, which constitute the bursæ mucosæ, very nearly resemble in their structure and functions those which line the articular cavities; and hence it must be considered as a remarkable circumstance, that the former should not be subject to that peculiar

* I include, under this head, the membranes forming the sheaths of the tendons; which have the same structure, answer a similar purpose, and cannot, with propriety, be distinguished from the other bursæ. I adopt the name of *bursæ mucosæ*, because it is in general use, although it ill expresses the functions of the organs to which it is applied.

morbid alteration of structure which occurs in the latter, and which has been described in another part of this volume.

Inflammation of the bursæ mucosæ is marked by nearly the same characters, and (allowance being made for the difference of the parts with which they are connected) produces nearly the same results as inflammation of the synovial membranes of the joints. In the greater number of instances it occasions an increased secretion of synovia. In other cases the bursa is distended by a somewhat turbid serum, with portions of coagulable lymph floating in it. Occasionally it terminates in the formation of abscess. Sometimes the membrane of the bursa becomes thickened, and converted into a gristly substance. I have seen it at least half an inch in thickness, with a small cellular cavity in the centre containing synovia. At other times, although the inflammation has continued for a very long period, the

membrane of the bursa retains nearly its original structure.

Inflammation of the bursæ mucosæ may be the consequence of pressure, or of other local injury. It may arise from the too great use of mercury, from rheumatism, or from some other constitutional affection; and in such cases it is frequently combined with inflammation of the synovial membranes of the joints. Sometimes it has the form of an acute, but more frequently it has that of a chronic inflammation.

The inflamed bursa forms a tumor, more or less distinct, according to its situation; more or less painful, according to the character of the inflammation. If the bursa be superficial, the fluctuation of fluid within it is, in the first instance, very perceptible; and, under these circumstances, if the inflammation be considerable, it extends to the surrounding parts, and occasions a redness of the skin. When the disease has

existed for a certain period of time, it generally happens, that the fluid is less distinctly to be felt on account of the membrane having become thickened; and, occasionally this takes place to such an extent that the tumor exhibits all the characters of a hard solid substance, of which the fluid contents are imperceptible.

When the inflammation is of long standing, it is not unusual to find floating in the fluid of the bursa a number of loose bodies, of a flattened oval form, of a light brown colour, with smooth surfaces, resembling small melon seeds in appearance. There seems to be no doubt that these loose bodies have their origin in the coagulable lymph, which was effused in the early stage of the disease: and I have had opportunities, by the examination of several cases, to trace the steps of their gradual formation. At first the coagulable lymph forms irregular masses of no determined shape:

afterwards, by the motion and pressure of the contiguous parts, it is broken down into smaller portions. These, by degrees, become of a regular form, and assume a firmer consistence: and at last they terminate in the flat oval bodies, which have been just described.

When inflammation of a bursa mucosa ends in suppuration, the abscess sometimes makes its way directly to the surface of the skin, and bursts externally: but I suspect that in other cases the matter in the first instance escapes into the surrounding cellular membrane, and then it is liable to be confounded with those abscesses, which originate in this texture. The following circumstances seem to warrant this opinion. There is no bursa more liable to be inflamed than that, between the patella and the skin, and inflammation of it not unfrequently terminates in suppuration, as I have ascertained to be the case, both by the discharge of pus, when the tumor has

been punctured, and by dissection after death. It is very common to find a large abscess on the anterior part of the knee, which the patient describes as having commenced over the centre of the patella, in the situation of this bursa. The abscess has a somewhat peculiar character. It raises the skin from the patella, so that the latter cannot be felt, and from this point, as from a centre, it extends itself between the skin and the fascia, equally in every direction, covering the whole of the anterior part of the knee. A superficial observer, judging from the general form of the tumor, and the fluctuation of fluid, without noticing the greater redness of the skin, and the circumstance of the fluid being over, instead of under, the patella, might mistake the case for one of inflammation of the synovial membrane of the joint itself. Such an abscess must be supposed to commence either in the bursa above mentioned, or in the cellular tex-

ture. The original situation of the disease corresponds to that of the bursa: there appears to be no reason why an abscess of the cellular texture should occur in this precise spot, more frequently than elsewhere; and hence it is reasonable to conclude, that the bursa is the part in which the abscess begins. It is not improbable that many other abscesses of the extremities may have a similar origin. The tumor which occurs in the inside of the ball of the great toe, and which is one of those, to which the name of bunyon has been applied, occasionally suppurates; and I have found on dissection, that this is formed by an inflammation of the bursa, which is here situated.

It frequently happens, after the inflammation has entirely subsided, that the disposition to secrete a preternatural quantity of fluid still remains, and that a dropsy of the bursa is the consequence, in like manner as hydrocele takes place

in some cases, as a consequence of inflammation of the tunica vaginalis of the testicle. Such a tumor when once formed, may continue unaltered for many months, or even for years, and the majority of ganglions are of this description.

Sect. II.

On the Treatment.

In the first instance, leeches and cold lotions, and afterwards, blisters or stimulating liniments, may be employed with advantage; and in particular cases these may be combined with such constitutional remedies, as their peculiar circumstances seem to indicate. Under this treatment the inflammation of the bursa will be relieved without difficulty, and in the early stage of the disease, the fluid which has been effused will become absorbed.

But where the disease has been long

established, the preternatural secretion of fluid will often continue after the inflammation has entirely subsided. Under these circumstances, if blisters fail in procuring its absorption, friction may be employed; and if this be not attended with better effects, it will be advisable that the fluid should be evacuated by puncture. In many cases the loose bodies, which have been described in the last section, are found in the cavity of the bursa, and these extraneous substances may in themselves be sufficient to keep up the formation of fluid.

I have observed, where the puncture of the tumor is followed by suppuration, and the whole cavity of the bursa is thus converted into an abscess, that, after the suppuration has ceased, no further collection of fluid in general takes place, and there is a permanent cure of the disease. Hence I have sometimes been induced, after using the lancet, to bring on suppuration by artificial means. This

may be effected, by introducing a seton or tent into the wound, or (which is more simple, and in some respects preferable) by irritating the inner surface of the bursa with the blunt end of a probe. Even where the bursa forms the sheath of one or more tendons, this method may be employed with safety, though the success of it is more uncertain, on account of the greater part of the membrane being beyond the reach of the operation.

I do not mean, however, to affirm that the above practice should be extended to all cases indiscriminately. Inflammation and suppuration of a large bursa sometimes disturbs the constitution in so great a degree, that it may be doubtful, whether it would be prudent, in this instance, to do more than simply puncture the tumor, keeping the patient in a state of perfect quietude afterwards. A large swelling, formed by a cyst distended with serum only, or with serum

and masses of coagulable lymph floating in it, occasionally is met with over the inferior angle of the scapula; originating, as I apprehend, in the large bursa mucosa which is interposed at this part between the scapula and the latissimus dorsi muscle. I had an opportunity of seeing a tumor of this decription, which had attained a magnitude not much less than that of a man's head. I understood that the cyst was afterwards punctured, and a seton passed through its cavity, and that so much disturbance of the general system ensued, as to occasion death. I have seen another case, in which death took place in a short time after such a tumor was punctured, but here the patient was otherwise in bad health, and that strict attention was not paid to his being kept in a state of quietude after the operation, which the circumstances seem to have required. I shall give an account of a more fortunate case of the same kind hereafter.

When the coats of the bursa have become much thickened, I am not aware that there is any method, by which they can be restored to their natural condition. If the diseased bursa be situated superficially, it may be removed with as much facility as an encysted tumor. I have never indeed performed this operation myself, nor have I heard of it being done by others, except on the bursa, which is situated between the patella and the skin; but there can be no doubt that there are some other superficial bursæ, to which the operation would be equally applicable if occasion called for it. On the other hand, where the bursa envelopes tendons, or where it is deep-seated, the operation must be impracticable; and where the bursa communicates with the cavity of a joint, if practicable, it must be improper.

In those cases, where the bursa over the patella has been extirpated, I do not know that the patient has afterwards suf-

fered any inconvenience from the want of it. It is not improbable that a new bursa may ultimately be formed to supply the place of that, which has been taken away. A synovial membrane is of simple structure. It may be resolved by maceration into cellular texture, and instances are not wanting of new synovial membranes being formed where none before existed. Such is the case in an artificial joint after an ununited fracture. In a young lady, who has attained the age of ten or twelve years, labouring under the inconvenience of a club foot, a large bursa is distinctly to be felt on that part of the instep on which she treads.

In another young lady, who had apparently recovered of a caries of the spine, attended with a considerable angular curvature, a bursa appears to have been formed between the projecting spinous process, and the skin.

Sect. III.

Cases of this Disease.

CASE LXII.

Mary Newnham, twenty-two years of age, was admitted into St. George's Hospital, having the bursa over the right patella enlarged to the size of a small orange. It contained fluid, and the membrane of the bursa appeared to be very little thickened. At this time she experienced no pain, and there was no inconvenience, except what arose from the bulk of the tumor.

Blisters having been applied, and other methods having been employed with a view to promote the absorption of fluid without success, I made a puncture with a lancet, and more than an ounce of serous fluid escaped. I then introduced the blunt end of a probe, and irritated the inner surface of the bursa; in conse-

quence of which, on the following day, there was some degree of pain and swelling, with a slight symptomatic fever. On the fourth day after the operation, on removing the dressings, about half an ounce of pus was discharged. The suppuration continued, but the quantity of pus daily diminished, and, at the end of three weeks, the wound was healed, and the tumor had wholly disappeared.

CASE LXIII.

Mrs. T., between twenty and thirty years of age, in the middle of March, 1818, first observed a tumor situated over the inferior angle of one scapula, and attended with a trifling degree of pain and tenderness. In the course of a week, the tumor had attained its greatest magnitude, and then remained stationary. In the following April, when she came under my care, the tumor was of

the size of a large cocoa-nut; of an oval shape; distinctly circumscribed; occupying the place of the large bursa mucosa, which is situated between the latissimus dorsi muscle and the inferior angle of the scapula.

On the 22d of May, the tumor being nearly in the same condition, I made a puncture with an abscess lancet, and about a pint of turbid serum was evacuated, with some irregularly shaped masses of coagulable lymph floating in it. Adhesive plaster was placed over the wound, and secured by a compress and bandage: and she was desired to remain perfectly quiet in bed. The wound did not heal by the first intention, and, on removing the dressings at the end of four days, a considerable quantity of pus escaped. The discharge of pus continued, but the quantity daily diminished, no untoward symptoms took place, but nearly three months elapsed before the suppuration had entirely ceased, and the wound had

healed. At this time there were no remains of the tumor, and she was in all respects well.

CASE LXIV.

A. B., a middle-aged woman, became a patient of St. George's Hospital under Mr. R. Keate, on account of a tumor on the back part of the wrist, of the size of a double walnut, containing fluid; and which had been the consequence of inflammation of the bursa mucosa, which envelopes the extensor tendons of the fingers. At the time of her coming to the hospital the inflammation had entirely subsided, and the tumor occasioned no inconvenience, except what might be attributed to its bulk. After having employed various local remedies without any reduction of the swelling, a puncture was made, and a considerable quantity of serous fluid was evacuated. In a short

time however the fluid was again collected in as large a quantity as before. Afterwards Mr. R. Keate made a longitudinal incision in the skin over the tumor, and dissected out as much as possible of the bursa, leaving only that part of it which enveloped the tendons. The wound suppurated, and healed gradually, and at first it was supposed that the operation had produced a cure. But in a few weeks after the wound had cicatrized, the tumor re-appeared, having the same character as before, but being of not more than one half of its former size: and when I last saw the patient, it continued in the same state.

CASE LXV.

Ruth Target was admitted into St. George's Hospital, in August, 1809, on account of a hard and apparently solid tumor, of the size of a small orange, situ-

ated between the patella and the skin, and perfectly moveable on the parts below.

Having made a longitudinal incision of the integuments, I removed the tumor with perfect facility. A slight degree of symptomatic fever followed the operation, which however speedily subsided, and at the end of a month, she was discharged as cured, suffering no inconvenience except a very trifling sense of stiffness when she walked.

On examining the tumor, after its removal, it was found to be formed by the bursa, which is situated over the patella; the parietes of which had become more than half an inch in thickness, and of a ligamentous texture; while the interior retained its natural cellular structure, and was filled with a serous fluid.

I have since performed a similar operation on three different patients. In each case, after the wound was healed there was at first considerable stiffness of the knee,

in consequence of the cicatrix having formed a close attachment to the anterior surface of the patella. In one of them, which I had the opportunity of observing some months after the operation, the skin had become so moveable in the parts below, that there was every reason to believe that a new bursa had been formed, to supply the place of the old one.

Fig. 1.

Fig. 2.

Fig. 3.

Howship. del. Fig. 1.—J.S. Gaskin del. 2 & 3.

R.W. Sievier. sc.

Published by Longman & Co. London, Oct.r 10. 1828.

J. Howship, del.

R. W. Sievier

Published by Longman & Co. London, Oct. 10, 1818.

EXPLANATION OF THE PLATES.

Plate I.

Fig. 1. A part of the synovial membrane of the knee in a state of inflammation, and lined with coagulable lymph. This is introduced, principally, with a view to the appearances being contrasted with those in

Fig. 2. and *fig.* 3. which represent the cut surfaces of two small portions of a synovial membrane, which had undergone the peculiar morbid alteration of structure, which has been described in the third chapter.

Plate II.

A knee-joint, the synovial membrane of which had undergone the same alteration of structure. In order to make the drawing, the joint has been cut into at its

upper and lateral parts, and the anterior portion of the synovial membrane downwards, so as to expose the internal surface.

A, The cartilage covering the condyles of the femur.

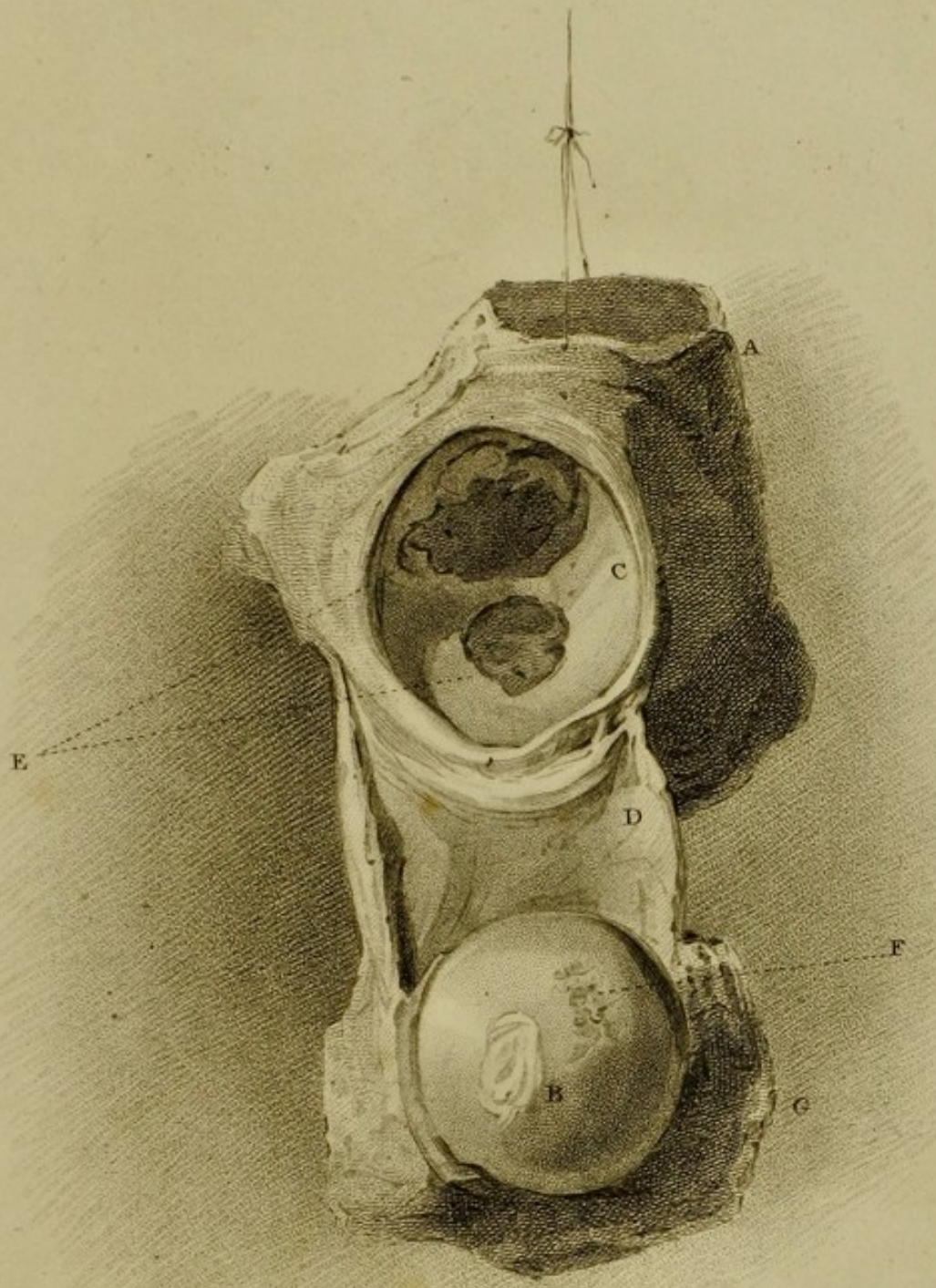
B, The cartilage lining the patella.

C C C, The inner surface of the diseased synovial membrane.

D D, The cut surfaces of the skin and adipose substance.

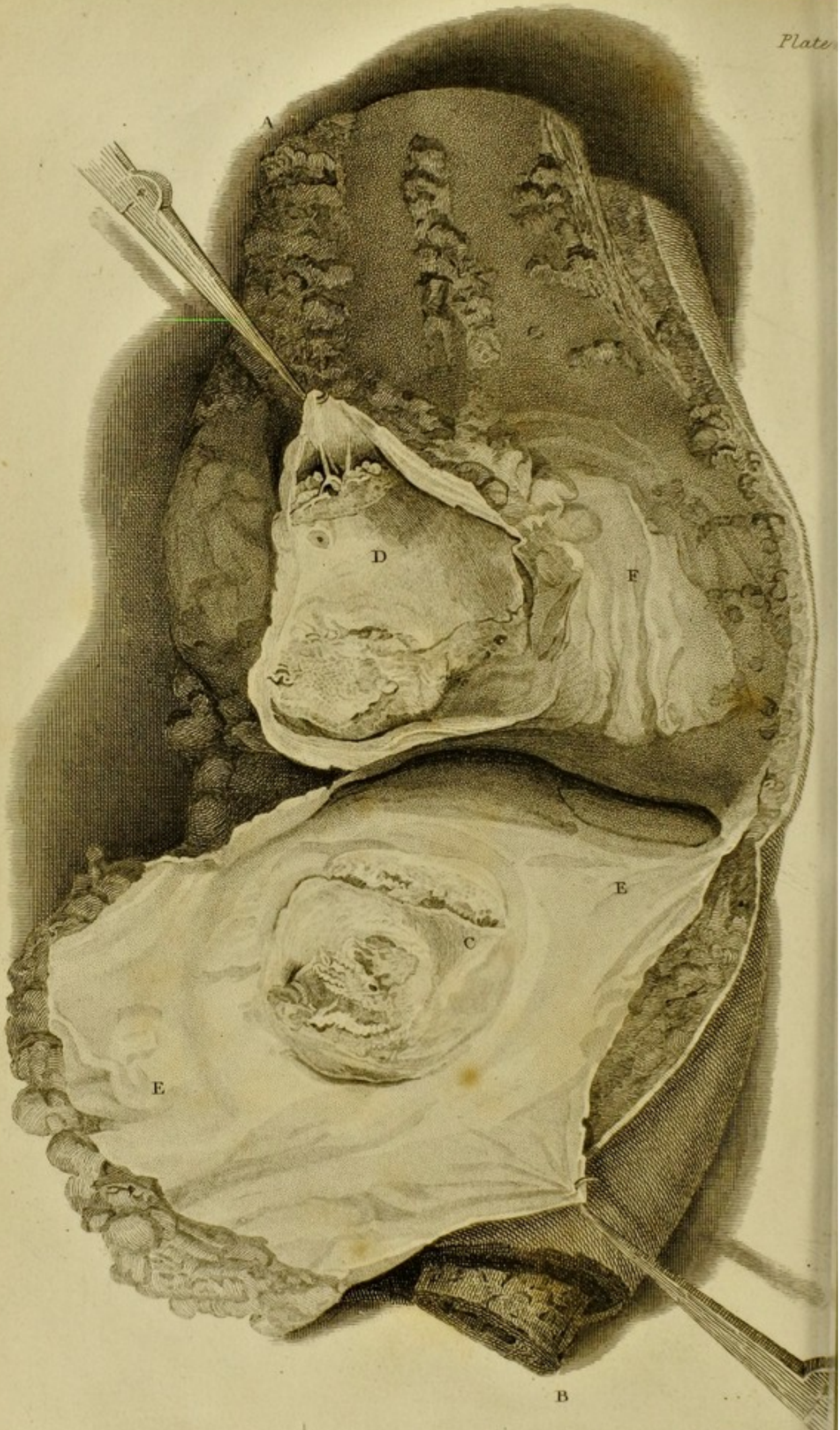
Plate III.

The joint of the hip, affected with ulceration of the cartilage, from a child seven years old. The greater part of the synovial membrane and capsular ligament have been removed, so as to expose more completely the interior of the joint. The round ligament, (which was partly destroyed by ulceration, where it was connected to the acetabulum) has been torn through, so as to allow of the head of the femur being dislocated.



B.W. Sievier. del. et sc.

Published by Longman & Co. London, Oct.r 20 1818.



J. S. Gaskin. delt.

R. W. Stevior. sc.

Published by Longman & Cº London, Octº 20, 1818.

A, A portion of the os innominatum.

B, The head of the femur.

C, The acetabulum.

D, The inner surface of the synovial membrane in a natural state.

E, Portions of the bone of the acetabulum exposed, in consequence of the cartilage having been ulcerated.

F, A portion of the cartilage covering the head of the femur converted into a fibrous substance.

G, The great trochanter.

Plate IV.

The knee-joint affected with ulceration of the cartilages. The interior of it is exposed in the same manner as in Plate II.

A, The femur.

B, The tibia.

C, The inner surface of the patella, the cartilage of which has been in great measure destroyed by ulceration.

D, The surface of the external con-

dyle of the femur, the cartilage of which is partially ulcerated also.

E, The inner surface of the synovial membrane in a natural state.

F, The inner condyle of the femur covered by a substance resembling that of adhesions.

Plate V.

A portion of the carious spine of a child, to shew the disease originating in the intervertebral cartilages.

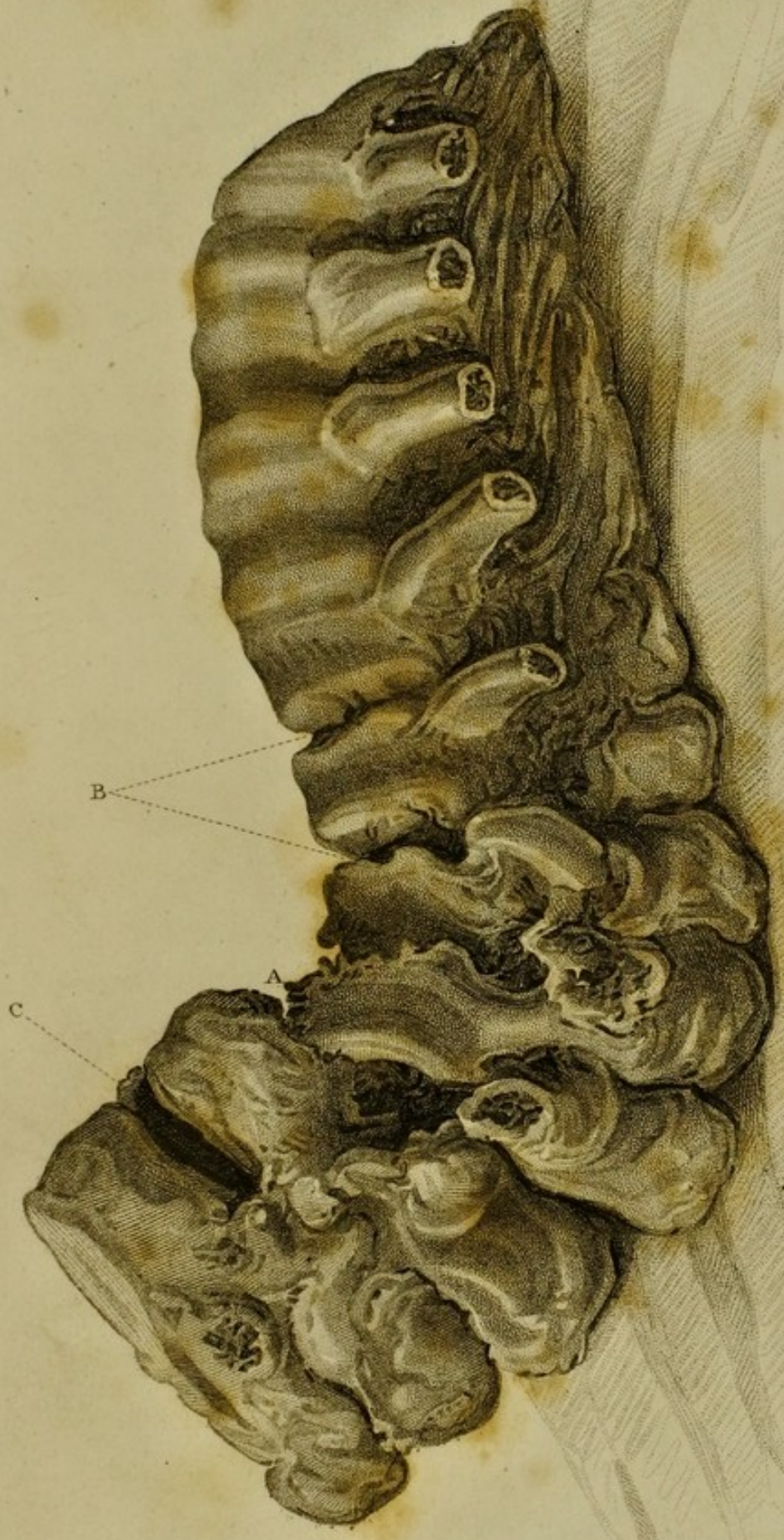
A, The seat of the curvature, where the bodies of two vertebræ have been destroyed.

B, C, The spaces formed by the absorption of the intervertebral cartilages, while the bones have been left entire.

Plate VI.

The preparation, from which this drawing was taken, is in Mr. Heaviside's collection. The history of the case is not known, but the appearances are

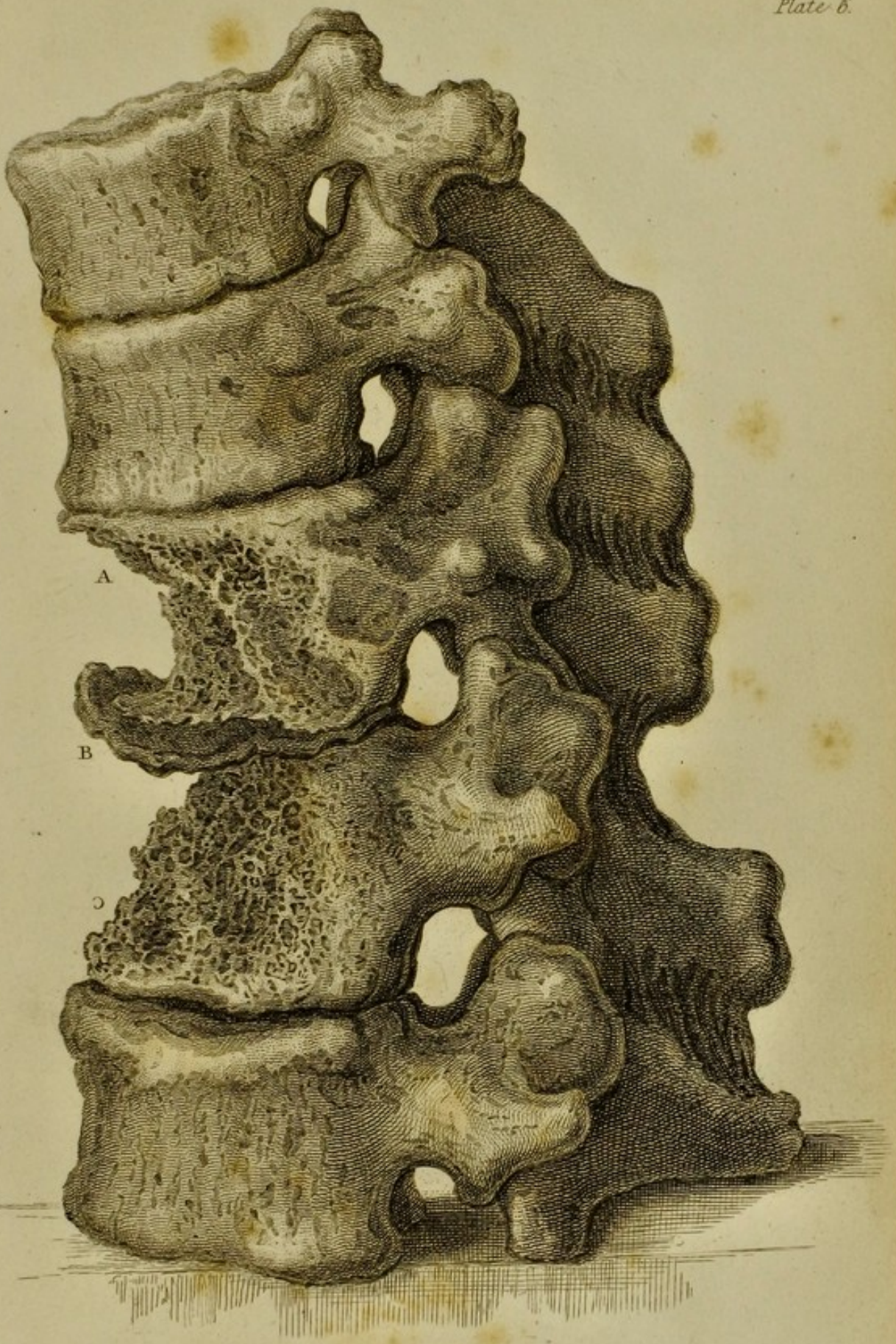
Plate 5.



owship. del.

R. W. Sievier sc.

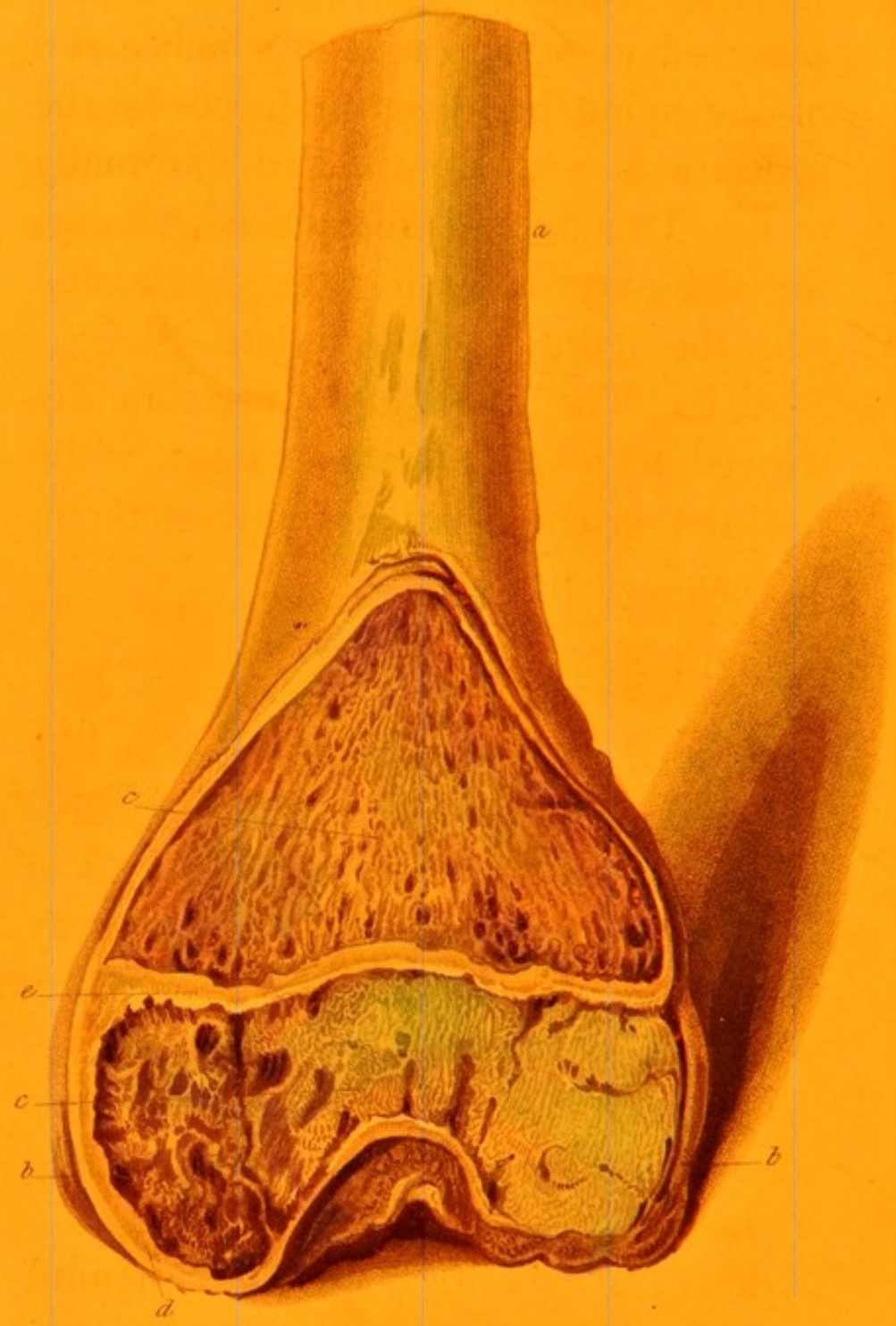
Published by Longman & Co London, Octr 20, 1818.



J. Howship. del.

R.W. Sievier. sc.

Published by Longman & Cº. London, Octr. 30. 1818.



Drawn by W.H. Clift.

Engraved by J. Stewart.

Published by Longman, Hurst, Rees, Orme & Brown, London, 1822.

precisely similar to those, which I have observed in other cases, in which caries of the spine has been induced by the pressure of a tumor situated externally to it. This figure is introduced, chiefly, for the purpose of it being contrasted with the figure in the last plate.

A, C, The bodies of the vertebræ destroyed to a considerable extent, while the intervertebral cartilage between them, B, remains entire.

PLATE VII.

A portion of the femur from a boy who laboured under a scrophulous affection of the knee. The anterior part of the inferior extremity has been cut away so as to expose the cancellous structure, while the cylindrical part remains entire. The appearances are exhibited in their recent state, without having been injured by maceration.

A, The cylindrical part of the femur.

B, B, The condyles.

C, C, D, The cancellous structure, of a red colour, in consequence of preternatural vascularity, with a deposition of yellow substance in some parts, more especially in the external condyle.

E, The junction of the epiphysis with the shaft of the bone.

PLATE VIII.

Fig. 1. is a section of the head of the femur in its natural state, which is here represented, that it may be contrasted with *fig.* 2., which is a section of the same part affected with carcinoma.

LONDON:
Printed by A. & R. Spottiswoode,
New-Street-Square.

Fig. 1.

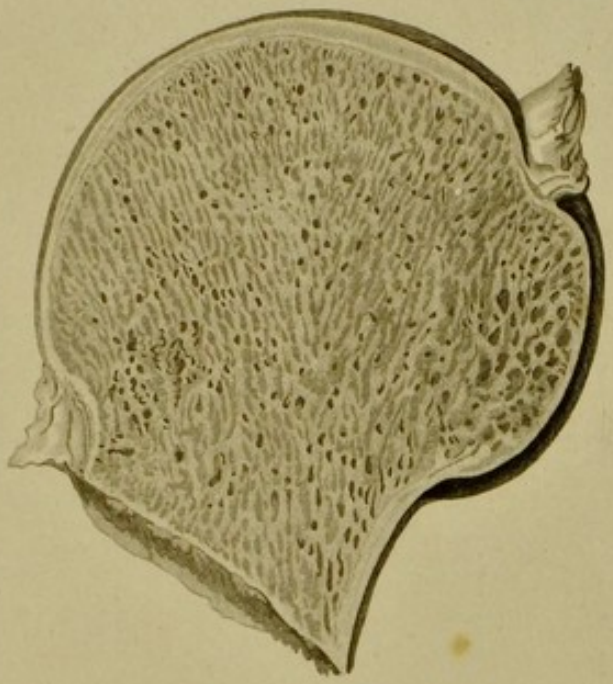


Fig. 2.

Drawn by W. H. Clift.

Engraved by J. Stewart.

Published by Longman, Hurst, Rees, Orme & Brown, London, 1822.