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OF

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EXTRACTED FROM THE TRANSACTIONS OF THE
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MORBUS COXARIUS.

BY

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THE PATHOLOGY AND TREATMENT OF MORBUS COXARIUS.

The time allotted me for discussing Morbus Coxarius, its causes, symptoms, and treatment, is so limited, that I can only briefly refer to the first two, and for more minute information must refer you to my published writings on this subject, where more definite and full information has been given; and I shall occupy a portion of the time with a practical illustration of the plan of treatment in each different stage of the disease, as being the best manner of conveying the largest amount of information in the time that has been allotted to me.

Morbus coxarius, or hip-disease, as it is generally called, is more frequently observed in childhood and early youth than at any other period of life, although it may occur in the infant or the adult. It is generally, if not always, the result of some direct injury to the joint involved, either (1) by a blow or concussion of the head of the femur against some portion of the acetabulum, producing an extravasation of blood in the network of vessels underneath the articular cartilage of one of these parts, and ending in caries and necrosis; (2) by some strain or overstretching of the joint, producing rupture more or less complete of the ligamentum teres, and its vessels and nerves, thus interfering with the nutrition of the head of the femur, and inducing necrosis; or (3) by excessive violence and over-exertion, producing free perspiration and synovial secretion, which is suddenly checked by an exposure to damp and cold, thus producing a synovitis which not unfrequently ends in suppuration.

The young infant is protected by the watchful mother or the careful nurse; and the adult has generally sufficient prudence to protect himself; but the reckless, romping, healthy child indulges in wild sports without discretion, and slight injuries are unnoticed until serious consequences have resulted, and often until so long a time has elapsed between the receipt of the injury and the development of symptoms sufficient to attract attention, that the cause of the difficulty is entirely forgotten, and the constitutional effects of long-continued irritation and suppuration are mistaken for the *cause* of the disease, instead of the *result*.

Until within a very few years, every author taught that the disease was necessarily connected with a strumous condition of the system, and could not exist without it, and that it was therefore necessarily of constitutional origin, and never occurred in the robust and healthy. This doctrine I believe to be incorrect; in fact, by a careful examination of my recorded notes of many hundreds of cases of morbus coxarius, I find that by far the larger number occur in children of perfect health, and born of healthy ancestry, and the simple reason is that children of this class are more active and daring, and therefore more exposed to accidents and in-

juries, than sickly strumous children who seldom have energy enough to expose themselves to any danger. But even the strumous constitution requires some local injury to the part itself, in order to develop the disease, and therefore I am inclined to regard the disease as almost always, if not always, of traumatic origin.

Of course the sickly strumous child, having less recuperative power and vital force to resist disease, will have it developed from a much less exciting cause than would be required to develop the same trouble in the healthy and robust; but even among the strumous I believe that, if sufficient care is taken in the investigation, the disease will nearly always be traced to some slight injury which was considered of so little importance as to pass unnoticed at the time, and that months afterwards, when the serious consequences of this slight injury have been fully developed in the well-recognized hip-disease, the universal belief in the doctrine of its constitutional origin has prevented the surgeon from examining for any other cause.

This has been the cause of the fatal error in the treatment of this disease; for, of course, as long as we believe that the disease depends upon constitutional taint, all our efforts will necessarily be directed towards correcting this constitutional poison or element. The result of all such treatment has been either death, after many months or years of suffering and exhaustive suppuration, or else recovery with more or less deformity, and with imperfect motion, or anchylosis more or less complete. Whereas, belief in its traumatic origin (no matter what the constitutional condition may be) will direct our treatment to the part involved, and, if the disease is early detected and properly treated, will result in the vast majority of cases in recovery with perfect motion and without deformity.

For convenience of description, I will divide the disease into three distinct stages, as each represents a different pathological condition of the parts involved; and, as the symptoms vary to a greater or less degree, so does the treatment applicable to each:—

I. The stage of irritation.

II. The stage of effusion.

III. The stage of rupture of the capsule, or perforation of the acetabulum.

In the *first stage*, or the stage of *irritation*, before effusion has occurred within the joint, the symptoms are not well pronounced, and it often requires a very careful investigation in order to recognize the disease. Generally, the first thing noticed is that the child appears very slightly lame when he first gets out of bed in the morning, or when he first moves about after some hours of rest. This limping or halting gait is so slight as hardly to be observed, and, after a few minutes of exercise, may disappear altogether until the following day, or until after a few hours of rest, when it will again make its appearance on the first attempt at movement. The patient may sometimes complain of pain even in the early stage of the disease, but it is generally referred to the knee. Even in this early stage, however, if the child be properly examined, the disease can always be detected.

By stripping the child naked, and standing him on a table or on the floor, with the back towards you, the first thing noticed will be that the child bears his entire weight upon one limb, the other being slightly bent at the knee and hip, with its natis lower and more flattened than on the opposite side, while the corresponding gluteo-femoral crease is

lower than the other, is less distinct, and nearly obliterated at its outer angle. If you now let the child walk around the room, he may not limp at all, or not sufficiently to attract attention, in this early stage of the disease; but when you bring him back to the position as first described, and let him stand a moment or two, you will find that he invariably resumes the position of sustaining his whole weight upon the sound limb. (Fig. 1.)

Fig. 1.

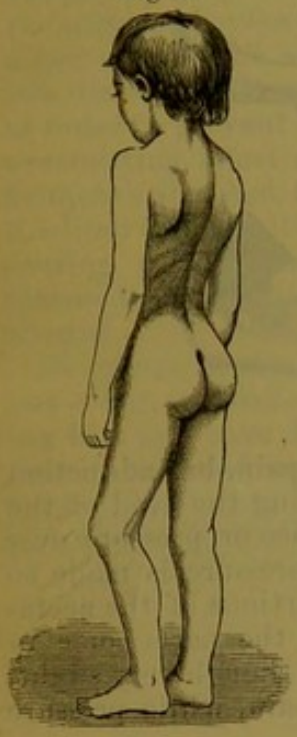
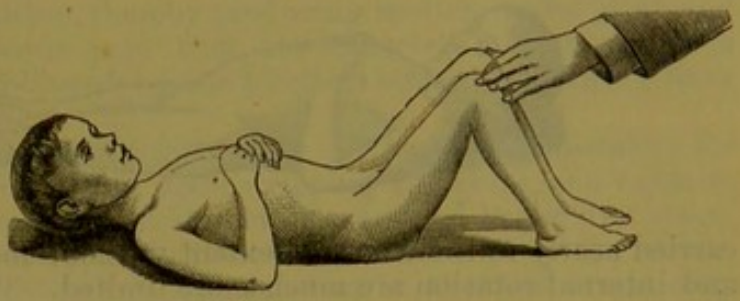


Fig. 2.



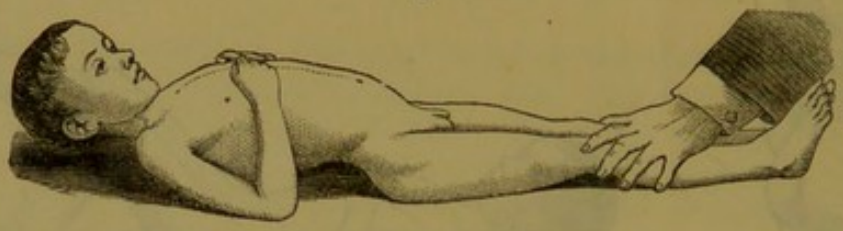
You next lay the patient on his back upon a table, floor, or some other solid plane, covered only with a blanket, and lift his lower extremities until the entire spine touches the plane (Fig. 2), and twist the pelvis one way or the other until a line drawn from one anterior superior spinous process of the ilium to the other will be crossed at right angles by another line drawn from the centre of the sternum over the umbilicus to the centre of the symphysis pubis.

When the spinal column touches the plane, and the two lines above mentioned are at right angles to each other, the spinal column is slightly straighter than normal; but it and the pelvis are at right angles, and, if no disease exists within the hip-joint, the limbs can be brought down upon the plane, so that the popliteal spaces can be made to touch the latter without disturbing the relation of the lines described, and without lifting the spinous processes from the plane. If you therefore hold the suspected limb in your hand in such a manner as to keep the spinous processes on the plane while the other lines are at right angles with each other, you will observe that the well limb can be pressed down to the table so that the popliteal space will touch. (Fig. 3.) The diseased limb can be pressed down nearly to this position, but, before the popliteal space touches the plane, you will notice that the pelvis becomes tilted, making a curve in the lumbar vertebra, so that the hand can be passed between the child's back and the plane. (Fig. 4.) In flexing the limbs,

the well one can be completely flexed, so that the knee will touch the thorax; the diseased one cannot be flexed to this extent; and before the knee touches the thorax the pelvis becomes lifted from the plane. Abduction and external rotation may, possibly, at this early period, be

Fig. 3.

Fig. 4.



carried nearly to their normal extent without much pain, but adduction and internal rotation are much more limited. Pressing the head of the femur into the acetabulum, by concussion at the knee or pressure over the trochanter major, will give pain, providing the pressure is made so that the head of the femur shall sweep around all portions of the acetabulum, the pain being made manifest the moment the parts come in contact in which the disease exists. Extension, even though very slight, in the proper direction, gives instant relief from pain, while pressure causes it as instantly to return.

Atrophy of the muscles of the thigh, from tonic contraction caused by reflex irritation, will often be found even in the earliest stages of the disease, so that the measurement of the two limbs will often differ by from one-eighth to one-fourth, or even half an inch. Rigidity of the muscles is one of the earliest symptoms observed, and is always present until the disease is entirely arrested.

If the disease be detected in this early stage, and properly treated, I am satisfied, from an extensive experience, that the great majority of cases will entirely recover, with perfect motion and without deformity. If the disease be not detected at this stage, and properly treated, it progresses until effusion takes place within the joint; and, in order to accommodate this increasing effusion, the limb becomes more flexed, more abducted, and more everted, or outwardly rotated—to unfold, so to speak, the capsular ligament, thereby enabling it to accommodate itself to the increased amount of fluid within.

This is the *second stage* of the disease, or that of *effusion*. The adductor muscles become more rigid and contracted under the influence of reflex irritation; constant efforts are made to draw the thigh inward, but without avail, as it is impossible for the limb to yield to their tractile force, because the effusion within the capsule compels it to assume the position above described.

This stage of the disease is attended by the most acute and agonizing pain, the slightest attempt at motion, concussion, or compression causing

the most extreme torture; even the jarring of the bed, stamping upon the floor, the slamming of a door, or anything that causes the least movement of the bed upon which the little sufferer lies, may be followed by an increase of pain. At this period of the disease the attendant is frequently awakened at night by a sharp, shrill, agonizing shriek. The nurse runs to the child, and probably finds it asleep. She will have hardly left the bed before the same thing occurs again; and this is often repeated a number of times during a single night. The inflammation of the joint produces reflex contraction of the muscles, thereby adding to the pressure between the diseased surfaces of the bones, and promoting absorption of the same, as also the peculiar deformity connected with this disease. The muscles are kept in this state of constant contraction in order to prevent any motion in the joint; but this incessant, constant, unremitting effort so exhausts the patient that finally he falls into a moment's slumber, from sheer fatigue, when, the muscles being relaxed, the limb changes its position, thereby producing motion in the joint, and causing such instantaneous pain that the muscles instantly give a spasmodic contraction, followed by the piercing scream to which I have alluded.

Of course, at this period of the disease, it can hardly be mistaken for any other, or misunderstood; but upon stripping the child, and examining him as I have directed that he should be examined in the first stage, he will be found to present, both in the erect posture and in the recumbent position, precisely the same appearances as in the first stage, only in a more marked degree (Fig. 5), the chief differences being that the limb

Fig. 5.

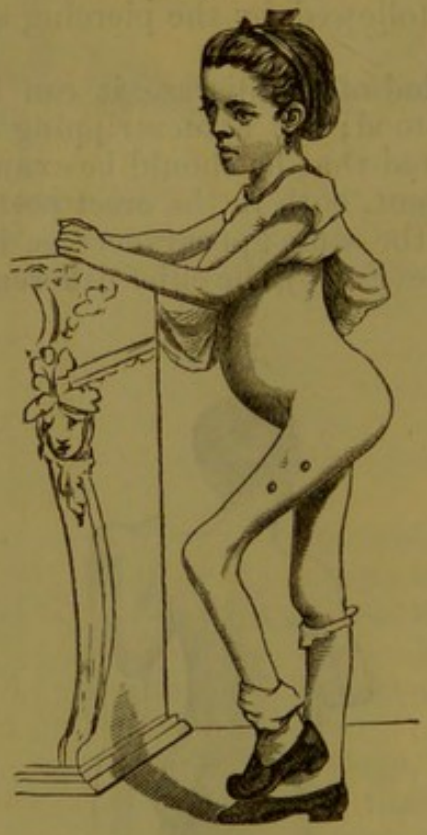
will be more flexed, *abducted*, and *everted*, or rotated outward, and the joint more fixed; in fact, any attempt to move the limb in this stage of the disease is futile, the entire pelvis rolling upon the opposite acetabu-

lum as if the diseased joint were positively anchylosed, though the supposed anchylosis is only apparent, being wholly due to muscular rigidity.

If the disease be not arrested at this stage, it goes on to ulceration of the capsule and effusion of its contents into the cellular tissue of the thigh, or else to perforation of the acetabulum and escape of the fluid into the pelvic cavity, pressing off the internal periosteum before it.

At this point begins the *third stage* of the disease; and as soon as the capsule is ruptured, or the acetabulum perforated, and the contents of the joint escape, either into the cellular tissue of the thigh, or into the pelvic cavity, the limb at once assumes an entirely different position. It now becomes *adducted*, *inverted*, and more straight at the knee; the pelvis on the diseased side becomes raised (whereas in the first and second stages, it was lower than on the sound side); and the limb is shorter. The gluteo-femoral crease is higher than upon the opposite side, whereas, in the previous stages it was lower, or entirely obliterated. (Fig. 6.)

Fig. 6.

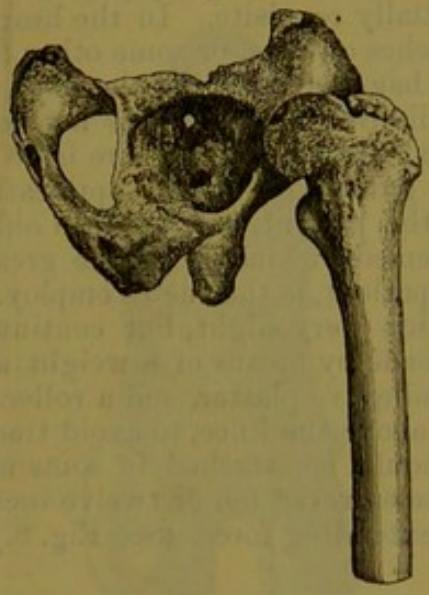


If the rupture through the capsule is very large, so that the contents escape rapidly, this change in the position of the limb from that of the second to that of the third stage may take place in a single night; while if the opening is small and fissure-like, and the contents ooze out slowly, the change of form may not be completed for several days. In some cases, even when the capsule has ruptured, or the acetabulum been perforated, the limb will remain in the position of the second stage, owing to adhesions which may have formed, or to the head of the bone being locked in the opening through the acetabulum. The pain is greatly relieved upon this rupture of the capsule and escape of its contents, but the disease has only advanced one stage further in its progress.

It has been thought by many authors that, when this change takes place, the head of the femur is absolutely luxated from the acetabulum, and that this luxation is due alone to spontaneous muscular contraction. The

sudden change in the distortion, from flexion, abduction, and eversion, with elongation, to shortening, inversion, and adduction, has caused this belief in the occurrence of positive luxation, but in the sixty-three cases in which I have exsected the hip-joint, I have never seen luxation upon the dorsum of the ilium except in one single instance, and in that the dislocation was produced a few days before the operation by bending the limb in the effort to remove the patient from the bed, and was therefore due to the carelessness of the nurse, and not to spontaneous muscular contraction. The absorption of the head and neck of the femur, produced by constant pressure, diminishes its size, while the ilium being also pressed upon, becomes eroded and absorbed, thereby immensely increasing the size of the acetabulum. (Fig. 7.) But while this inter-

Fig. 7.



stitial absorption has been going on within the acetabulum, there has been at the same time periostitis upon its upper and outer borders, causing the formation of new osteophytes; and the capsular ligament, attached to these new deposits, has thus been gradually pushed upward and backward on the dorsum of the ilium, immensely increasing the size of the joint, but still retaining within its embrace what is left of the head and neck of the femur. It might therefore with propriety be called a displacement of the acetabulum, but not a luxation of the head of the thigh-bone.

This may appear a small point to cavil about, but accuracy in observation is essential for obtaining correct knowledge of the pathology of any disease, and unless our pathology is correct, our treatment will be necessarily empirical.

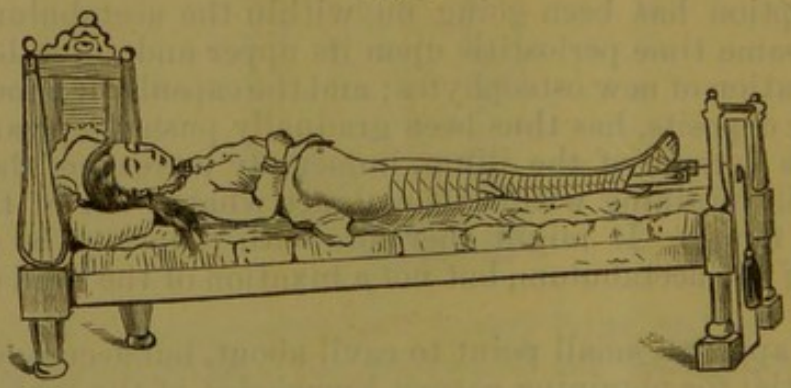
The pus or other fluid having now escaped from the capsule, the patient is greatly relieved from the pain, but the disease still progresses. Constant muscular contraction produces interstitial absorption of the head and neck of the femur, and of the acetabulum, and the pus, which has escaped into the cellular tissue, burrows in different directions, according to the position which the patient maintains, forming extensive abscesses which finally make their way to the surface. These sometimes open behind the trochanter, sometimes at a long distance from it, opening either upon the outer or inner side of the thigh, or on both ; and even,

as I have seen in cases in which the acetabulum has been perforated, making their way between the internal periosteum and the ilium, and forming openings above the pubis; so that the third stage of hip-disease may be accompanied with external fistulous openings in various directions, and with very great exhaustion from extensive suppuration.

We are now prepared to study the *treatment* of morbus coxarius, which of course varies according to the stage in which we find the disease; and the reason that I have dwelt so particularly upon the diagnosis of the affection in its earlier stages, is because, as I have before stated, proper treatment at this time, in the great majority of cases, will be followed by perfectly satisfactory results.

In the *first stage* of the disease, if the symptoms of inflammation be very acute, and pain and tenderness very great, *absolute and perfect rest of the joint* is most essentially requisite. In the hearty and robust patient, in vigorous health, leeches or cups, or some other form of local depletion, may be necessary; ice bags, surrounding the joint, often afford the greatest possible relief, while in other instances hot fomentations, the exact opposite, will give the greatest ease. There is no rule with which I am acquainted, that will guide you in the application of heat and cold, except the feeling of the patient, and this can only be determined by a practical test. The remedy which gives the greatest relief, and is the most agreeable to the patient, is the one to employ. In addition to these local measures, extension (very slight, but continuous) *in the line of the deformity*, should be made by means of a weight and pulley, secured to the limb by strips of adhesive plaster, and a roller. The adhesive strips should always extend above the knee, to avoid traction upon this articulation. The pulley should be attached in some manner to the bed, the foot of which should be elevated ten or twelve inches, so as to make the body act as a counter-extending force. (See Fig. 8.)

Fig. 8.



When the extension is first applied, the traction should be made in the line of the deformity, and the direction should be changed by slow degrees, day by day, until the limb is gradually brought into its natural position. It is sometimes necessary to apply a second extending power, at right angles to the limb, to remove the pressure of the head of the femur against the inner surface of the acetabulum. This is readily done by passing a handkerchief around the upper and inner part of the thigh, securing in its outer loop a cord to which is attached a weight playing over a pulley at the side of the bed.

If the bowels are constipated, cathartics as a matter of course are indi-

cated; and all the secretions and functions of the body must be carefully looked to and kept as nearly in a normal condition as possible.

This plan is to be pursued until the more acute symptoms have subsided; but as the disease is chronic in its nature, *time*, as well as *rest*, is a very important element in its treatment. And as long confinement in bed is injurious to the general health, we must contrive some mechanical appliance which will give the necessary amount of extension and counter-extension to relieve the joint from pressure, while at the same time it allows it to have free motion, and permits the patient to take exercise in the open air.

In some cases, when the disease is very acute, and the child very small, this is best effected by placing him in a wire cuirass (Fig. 9), which is a modi-

Fig. 9.

fication of Bonnet's "*grand appareil*," and which will be found very useful. When this instrument, or any other fixed apparatus, is employed, it is necessary that the patient should be taken from it very frequently; and all the joints should be carefully moved, lest too long-continued rest may terminate in anchylosis, not only of the joint diseased, but of all the other articulations thus permanently deprived of motion. I am aware that Dr. Thomas, of Liverpool, has denied this doctrine; but having seen the result in a number of cases, I must be pardoned if I insist upon placing more confidence in my own personal observations than in the theories of

any one. Perfect rest, too long continued, even of the diseased joint, is decidedly injurious, as there is danger of its resulting in anchylosis; hence the objection to plaster of Paris, or any other fixed apparatus, in the treatment of this affection. The disease is essentially *within* the joint, the capsular ligament not being involved; hence, all that is required is extension and counter-extension, just sufficient to prevent the diseased surfaces from coming in contact; while at the same time motion is permitted, to keep the capsular ligament and other parts not involved in a healthy condition, by allowing the free use of this their natural stimulus.

If the child is large enough to run about, and the thigh sufficiently long to give attachment to the adhesive plasters, then the short splint (Fig. 10) is altogether preferable. I have used this splint for many

Fig. 10.

years, and having tried all others, I find it altogether the best wherever it can be applied, as it allows free flexion at the knee, and is, therefore, more comfortable in the sitting posture. If the patient is ten or twelve years of age, and too heavy to bear the weight of the body upon the instrument without breaking it, or if too much tension is produced upon the skin by the adhesive plasters, then crutches will be necessary when the short instrument is used. If the child's thigh is too short, and he is too small, to receive a sufficient amount of extension by the use of the short splint, then the long splint, which I here show you (Fig. 11), is much to be preferred, and with it, if properly applied, the patient will be able to walk without the use of a crutch.

The short splint and its various modifications, together with the long splint with its abducting joint and rotating screw, and their mode of application, have already been so fully described (in my work on Diseases of the Joints), that I shall barely refer to them here.

The short splint (Fig. 12) consists of a curved cross-bar, surmounting the crest of the ilium or entire pelvis, well padded on its inner surface, and to its two extremities are fastened a perineal band or bands, for counter-extension, and on its outer surface a ball-and-socket joint, from which

runs an iron rod or bar down the outer side of the thigh to within about two inches of the lower end of the femur. This outer bar is divided into two sections, one running within the other, and gauged or controlled by a ratchet and key, which can make it longer or shorter. At the lower

Fig. 11.

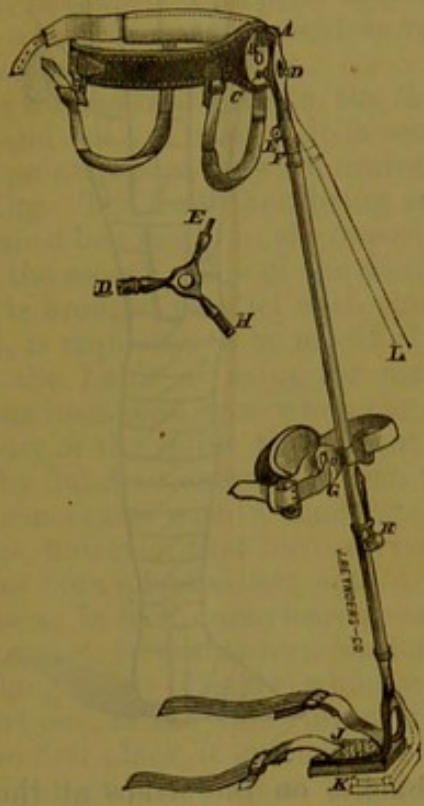
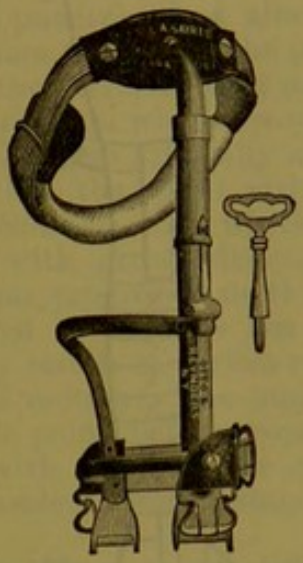


Fig. 12.



extremity of this outer bar is a projecting branch going around to the inner surface of the thigh to receive the attachments of the plaster, hereafter to be described. Both of the lower extremities terminate in cylindrical rollers, over which the tags of the plasters are attached to the two buckles placed at the lower ends of the instrument.

In applying the instrument, it is first necessary to have the adhesive straps to which it is to be fastened properly secured, and this is done as follows. When using the short splint, which is only worn during the day, night-extension is necessary, which is effected by means of weight and pulley: for this purpose a strip of adhesive plaster, to the lower end of which a stout piece of webbing is sewed, is placed on either side of the leg, extending from the malleoli to *above* the knee, in order to avoid traction on the lateral ligaments of the knee-joint; this is secured by a well-adjusted roller, leaving the pieces of webbing projecting for the attachment of the extending force. (Fig. 13.) Next, for the application of the instrument, triangular pieces of plaster, in which are cut several slits converging toward the apices of the pieces, are placed on both the outer and inner side of the thigh, first measuring with the instrument so that the tags which have been sewed to the apices of the plasters will exactly conform to the places of attachment upon its lower extremities. Having secured these with a roller, using care at the upper part of the thigh to reverse each alternate strip of the plasters in carrying round the

roller (Fig. 14), and with another turn taking in the other strips—braiding them in, basket-shaped—run the roller down the thigh again and sew.

Fig. 13.

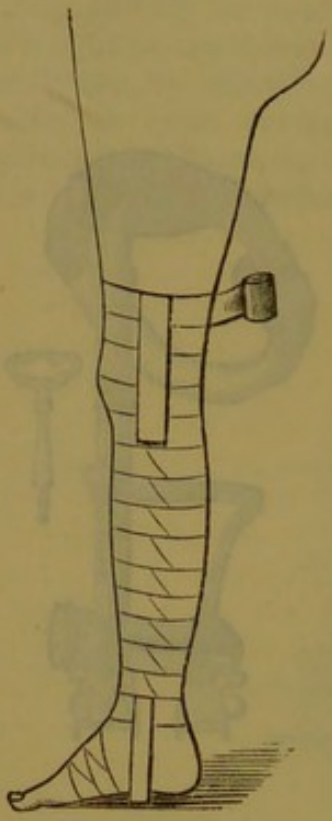
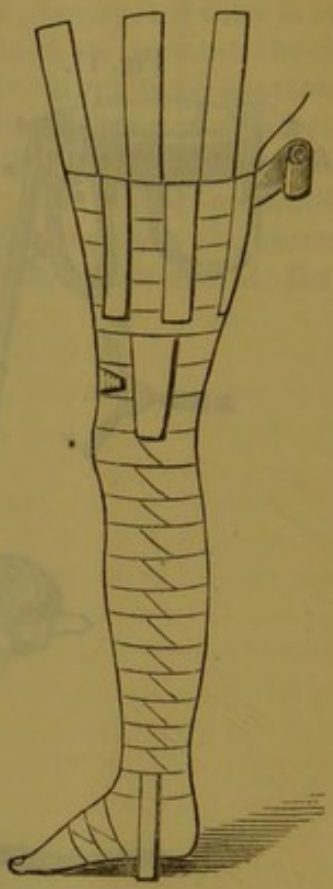


Fig. 14.



In applying the instrument, first buckle on the straps at the lower extremity of the femur. Then pass the strap under the femur to the buckle at the outer side of the instrument for the purpose of keeping it in place. We now pass the perineal band around the perineum, and buckle it snugly, but not too tightly. We next insert the key into the ratchet, and make gradual extension, until the patient is made perfectly easy, and until compression can be made upon the femur against the acetabulum without pain. It is sometimes necessary to employ two perineal bands, and then the cross-piece at the top nearly surrounds the pelvis.

If the disease has arrived at the *second stage* before we see it, and the effusion is very great, which will be indicated by the abduction, flexion, and eversion of the limb—sometimes even fluctuation can be detected—the patient must be kept in bed and the extension applied to the limb exactly in the line of the distortion, which will be in the line of flexion and abduction. This line of extension is to be changed day by day, by slight degrees, until the limb is brought as nearly as possible to the straight position. Blisters applied occasionally over the joint may hasten the absorption of this effusion. Firm strapping with adhesive plaster around the joint and compression with a sponge and roller may also be applied for the purpose of aiding absorption; of course, extension being used before this compression is employed. It is barely possible that the effusion may be so great as to paralyze the absorbents, and that no treatment will decrease the effusion. Under such circumstances aspiration of the joint is not only advisable, but the proper treatment, and

will be immediately followed by a restoration of the joint to its natural position.

When the limb has been brought to nearly its normal position, then the treatment by the short or long splint, according to circumstances, is the same as in the first stage of the disease, the plasters being re-adjusted as often as necessary. Good adhesive plaster (Maw's, of London, I have found to be the best), properly applied, will frequently remain in position from two to four months, seldom requiring removal oftener than once in six weeks or two months.

If the disease has gone to the *third stage*, capsule ruptured, abscesses formed and not yet opened, it is necessary to puncture these abscesses at various points where they are nearest the surface to prevent the pus from burrowing. The limb then being adducted, the extension, as a matter of course, must be exactly in the opposite direction from what it would have been in the second stage of the disease, and the limb gradually abducted until it is brought parallel with the other, when the splint, either long or short, is requisite, to be modified by the *abducting screw*, which I have been in the habit of using for many years with great advantage. In numerous instances, even when the disease has progressed to this stage, by the use of the splint the patient is enabled to improve the general health by out-door exercise, which frequently results in perfect recovery, and in some cases with a moderate degree of motion. The majority of the cases, however, that have arrived at this point before proper treatment has been adopted, are apt to recover with more or less complete anchylosis; in fact, anchylosis should be considered in this stage of the disease a very favorable termination.

The long splint (Fig. 11) which we sometimes have to use, differs from the short one, in the following particulars:—

In the first place, it extends the entire length of the limb, receiving the weight of the body at a cross-bar under the foot, and upon two perineal straps which are attached to an iron girdle which very nearly encircles the pelvis. Where the adduction is great and the joint fixed, it will be necessary also to apply the abducting screw, and in some cases, when the inversion is very great, a screw for the rotation of the foot outward is also necessary. The long bar, reaching from the pelvis to the bottom of the foot, is hollow, and has another bar running inside of it furnished with a ratchet and key, by which we make extension, and which is locked in the same way as in the short splint. The cross-bar at the bottom of the instrument is covered with leather to keep it from making a noise on the pavement while walking, and a strong leather strap is passed beneath two iron rods above this latter for the purpose of buckling on to the adhesive strap upon either side of the leg to make extension.

In applying it you take two strips of strong moleskin adhesive plaster, from two to four inches in width, according to the size of the patient, and the entire length of the limb, the upper extremity of the plaster being divided into strips for two or three inches. Strong webbing, an inch or two in length, with buckles, is sewed fast to the lower extremities of the plasters. These plasters are then placed on either side of the leg in such a manner as to leave the buckles a little above the ankle-joint, and secured by a snugly-adjusted roller, so applied as to leave the tags with buckles attached hanging loose, the roller being carried up over the knee, and as far up the thigh as can be done with convenience, when the upper split ends of the plasters are reversed and braided in with the roller as it

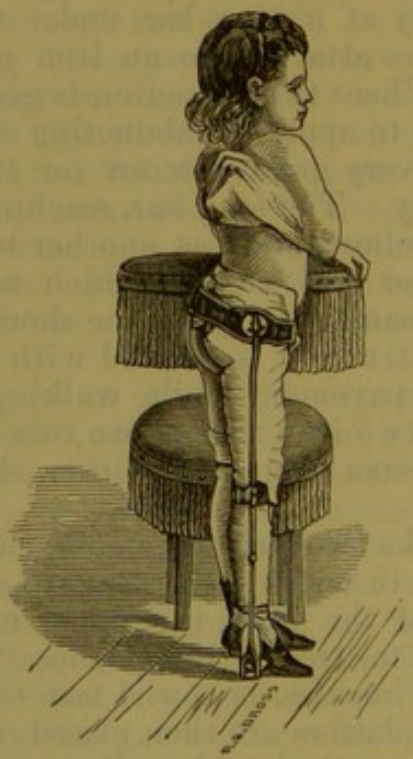
turns down the thigh, securing it smoothly. The stocking is next pulled up on the foot, and holes cut on either side for the buckles to pass through, and the shoe then applied, and corresponding holes cut through it for the same purpose.

The instrument is now placed on the outer side of the leg, with the cross-bar at the bottom brought in front of the heel of the shoe, and securely buckled to the tags above described. The pelvis-belt is next brought around the hips, and secured by the buckle upon the opposite side, and the perineal bands attached as firmly as need be. The knee-pad band is then slipped up or down until it is made to rest opposite the knee, where it is passed round the leg and buckled fast. Extension is now made by the key upon the ratchet until free compression is borne without pain. The abducting screw is then to be used, and daily turned, for the purpose of abducting the limb.

If the limb be strongly flexed, an additional power is applied at the posterior part of the instrument at the knee, running up the back of the thigh, and secured to the posterior portion of the pelvis-belt, and made tighter as occasion may require for the purpose of extending the limb. This latter strap should be always elastic, for the purpose of keeping up a constant tractile force, and at the same time allowing of flexion when the patient wishes to sit down. A fixed or leather strap, as used by Taylor, prevents any motion whatever at the hip, and simply anchyloses the joint.

By this means many cases that have gone to the third stage of the disease may in the course of time recover, with tolerably good form and a moderate degree of motion, without any further operative procedure. (Fig. 15.)

Fig. 15.



If, however, notwithstanding your treatment, the disease progresses, and suppuration increases, the joint becoming more and more impaired, showing a case of progressive caries, we then have no remedy except in *exsection*.

Nature's only way of curing these cases after they have arrived at this point is by the slow exfoliation of the carious bone, and, if this is limited in amount, she is often successful; but if involving the entire head and neck of the femur, with more or less of the acetabulum, as it frequently does, the process is a very tedious one, and the patients often succumb before nature completes the cure; and even in the most favorable cases healed by nature in this way, they have been left always with permanent deformity and imperfect motion—in fact, with a very much less useful limb than those which have been cured by exsection. I have now performed this operation sixty-three times, and can, therefore, speak with positive assurance upon the subject.

The operation is very simple, indeed, and in itself attended with almost no danger. The patient being anæsthetized and laid upon the well side, an incision is made from a point midway between the crest of the ilium and the top of the trochanter major, the knife carried firmly down to the ilium, and drawn with a single sweep downward and outward over the posterior edge of the trochanter major, and then curved forward and inward, making a crescent-shaped incision of some four to six inches in length, according to circumstances, and carried fairly down to the bone in its entire extent. The wound is then held open with spatulas, and a narrow firm-bladed bistoury is carried around and close to the femur just above the trochanter minor, and at right angles to the first incision, dividing only the periosteum, but in both directions, as far around the bone as can be reached, one-half or three-quarters of its circumference. By this circular division of the periosteum you avoid the danger of tearing it off from the femur below the point where section is to be made. If the first incision has not divided the periosteum completely, then carry your knife again through the first incision from the top of the trochanter major down to this cross-incision just described, pressing it firmly through the periosteum down to the bone. The periosteal elevator is then placed in these two triangles, and the periosteum peeled off from the trochanter major, carrying with it necessarily the muscular attachments to it. This can be very successfully done until you reach the digital fossa at the neck of the bone and behind the trochanter major, where the blade of the knife will be necessary to divide the tendinous insertions of the rotator muscles. The capsule being freely opened, the head of the bone will now be easily lifted from the acetabulum by strongly adducting the limb and depressing it, thereby tearing off the internal portion of the bone from its lining periosteum, when the finger can be glided around the bone, and with a finger or chain saw it may readily be removed below the trochanter major. By this means the periosteum will not be peeled off from the bone below the point of section with the saw, as is too often done by luxating the bone too forcibly.

If upon the first section it is found that the caries has extended still further down the femur, you can very easily separate it from its periosteal attachments, and whatever amount of bone is necessary can be removed in the same manner with the saw. Under no circumstances should bone forceps be used in the section of so large a bone. The trochanter major should always be removed, even if it is not diseased, as otherwise it would occlude the opening and prevent the escape of the discharge; and by peeling it from its periosteum, as I have before described, the attachments of the muscles are all left for future use.

When the head and neck have thus been removed, you have a fair opportunity to explore the acetabulum, and to remove all the carious or

necrosed bone by scraping and gouging. If the acetabulum be perforated, which I have frequently found to be the case, with a little care the necrosed bone can be chipped off down to the point at which the periosteum is attached. I have only in one instance found the internal periosteum perforated.

After washing the wound carefully with warm water, fill it with Peruvian balsam; a small plug of oakum should be inserted to the very bottom of the acetabulum, and left dependent from the wound. The upper and lower ends of the incision are then brought together by stitches, and if necessary adhesive plaster, and the patient placed in a wire cuirass (Fig. 9) with a window opposite the place of incision. As it is of the greatest importance that this dressing should be done with care, I will describe to you my mode of doing it.

The cuirass being properly prepared and well padded, the patient is laid in it so that the anus is opposite the opening, and free from any possibility of obstruction. The well leg is the first one to be dressed. By making it perfectly straight and screwing up the foot-rest until it is brought firmly against the heel of the patient, having a pad between the foot and the iron rest to absorb the perspiration, the instep is then well padded with cotton or a blanket, and a roller is carried firmly round it and the foot-rest, running up over the limb; but before going over the knee a piece of pasteboard, or leather, or several pieces of folded paper, are placed over the leg, knee, and thigh, and the roller carried firmly over this extemporized splint for the purpose of preventing the slightest bending of the knee, when the roller is carried up the entire length of the thigh, around the perineum and over the outer arm of the instrument, and several times back around the perineum, and then across the pelvis, by which means the well limb is made a firm counter-extending force.

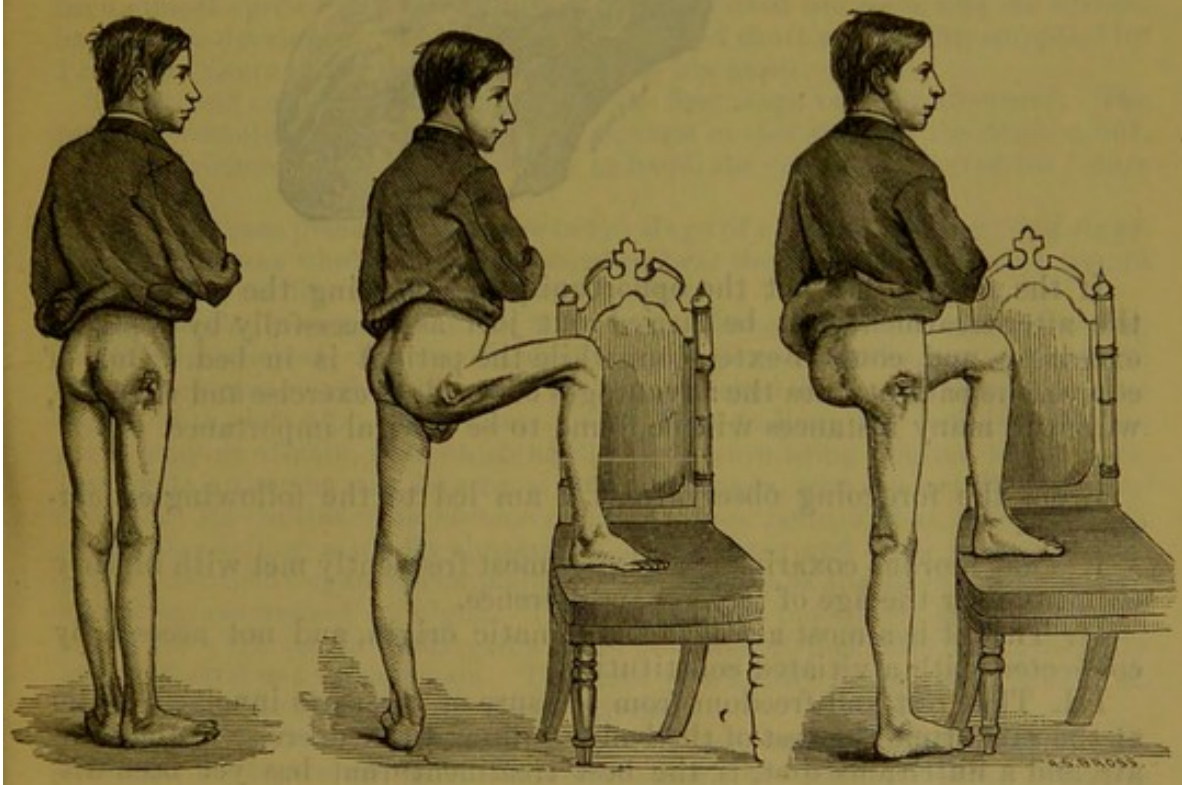
Two strips of adhesive plaster from two to four inches in width, according to the size of the patient, are then placed upon either side of the limb which has been operated upon, and secured with a nicely-adjusted roller over the foot and up the limb and thigh, as far as the abscesses on it or the wounds will permit, being careful to leave a sufficient length of the plasters, at the lower extremity, free for the purpose of applying them to the foot-rest when extension is made. The foot-rest is then screwed up to meet the heel of the shortened limb, and these strips of adhesive plaster are brought down around the foot-rest and securely fastened. The foot-rest is then extended by the screw, slowly and gradually, at times waiting a few moments for the muscles to yield, which have been so long contracted, until the limb is brought down to its full extent. It sometimes happens that, from long contraction of the adductors and the tensor vaginæ femoris, subcutaneous section of those tendons and fascia will be requisite before the limb can be brought to its proper position, even after the head of the femur has been removed. After the limb is brought into this position a roller is carried from the foot over its entire surface; a large wad of oakum is placed around the wound to absorb the discharge, and the roller is carried firmly over the wound, inner surface of the thigh, and around the pelvis. I place great stress upon this latter part of the dressing, as we thereby compress the tissues and prevent the burrowing of pus, the oakum, which has already been placed in the wound, allowing of free drainage, no matter how tightly the roller may have been applied.

Immediately after the patient is dressed in this way, and has recov-

ered from the anæsthetic, he is capable of being stood up against the wall, or riding out in a carriage or boat, and can take his daily exercise in this way. I have, in several instances, had patients removed a long distance, some miles, in fact, within an hour of the operation and without the slightest inconvenience or pain. This dressing will probably not require to be changed for from forty-eight to sixty hours, or until sufficient secretion has been formed to moisten the dressings, when the oaken plug can be removed without hemorrhage. If this dressing does not come away easily, warm water injections will readily float it out. The wound, made clean, is again filled with Peruvian balsam and dressed as before. After this it may require dressing once or twice a day, according to the amount of discharge, and the child should be removed from the entire instrument as often as it is requisite. The well leg should be removed from the instrument at least once a week, and free movements given to all the joints, ankle, knee, and hip, otherwise we may anchylose them, although they are not diseased. The wire cuirass should be used from a month to two months, or more, according to necessity, after which the patient can be put upon the long or short splint, and allowed to exercise, thereby increasing his prospects of perfect motion of the new joint.

In many of the cases which I have exsected, the motion has been as perfect and complete as in the normal joint, and in one case, that of Adolph Rousell (Figs. 16, 17, 18), the motion is greater in that joint than upon

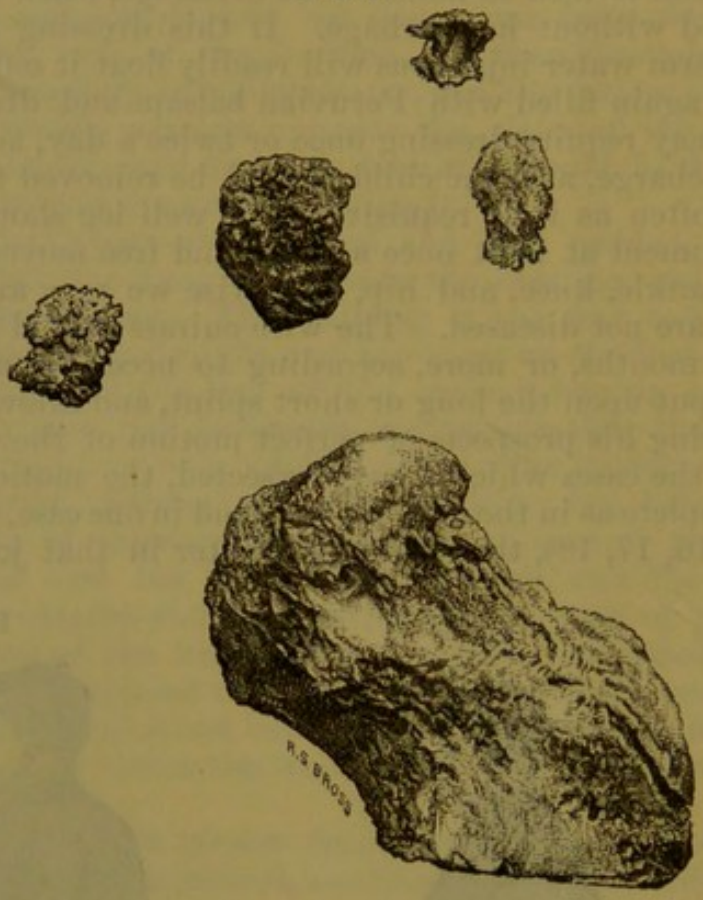
Fig. 16. Fig. 17. Fig. 18.



the opposite side, and the limb less than a quarter of an inch shorter than the other, although it was sawn three inches below the top of the trochanter major, the head and neck having been entirely absorbed, and the acetabulum perforated. (Fig. 19. The four small pieces of bone are fragments from the acetabulum.) Only one of my exsections has recovered by anchylosis, and that was from neglect in the after-treatment, I

never having seen the patient after the operation for two years, and the gentleman who had it in charge having had no experience in the treatment of this class of cases. All the other patients that recovered have more or less good motion, and infinitely less deformity than those which have recovered by nature's process.

Fig. 19.



If the surgeon has not the opportunity of obtaining the wire cuirass, the after-treatment can be carried out just as successfully by applying extension and counter-extension, while the patient is in bed. But, of course, the patient loses the advantages of out-door exercise and fresh air, which in many instances will be found to be of vital importance.

From the foregoing observations, I am led to the following conclusions :—

I. That morbus coxarius is a disease most frequently met with in early childhood, or the age of reckless indifference.

II. That it is almost always of traumatic origin, and not necessarily connected with a vitiated constitution.

III. That rest and freedom from pressure of the parts involved, while at the same time the rest of the body is allowed free exercise in the open air, and a nutritious diet, is the best treatment that has yet been discovered for this disease.

IV. That if this plan of treatment is adopted in the early stages of this disease, the majority of cases will recover with nearly if not quite perfect motion, and without deformity.

V. That in the advanced second stage of the disease, when absorption of the effused fluid cannot be effected, then it is better to puncture or

aspirate the joint, and remove its contents, than to leave it to rupture by ulceration.

VI. That in the third stage of the disease, when the treatment recommended in this paper has been properly applied without satisfactory improvement, but progressive caries continues, then excision of the diseased bones is not only justifiable but in some cases absolutely necessary.

VII. That the operation of exsection of the hip is easily performed, and in itself attended with little or no danger.

VIII. That after exsection of the hip-joint, in cases of progressive caries, the recovery is much more rapid and certain, and infinitely more perfect as to form, motion, and the usefulness of the joint and limbs, than when left to the slow process of nature.

On motion, the Discussion on Dr. Sayre's paper was postponed until the next meeting of the Section, in order to afford the members an opportunity of witnessing a practical demonstration of the modes of treatment recommended, upon several patients who had been courteously placed by Dr. W. H. Pancoast at Dr. Sayre's disposal.

Accordingly, the next day, at 11 A. M., many members of the Section assembled in the surgical amphitheatre of the Philadelphia Hospital, when the first patient presented was a stout woman suffering from hip-disease in the *first* stage. She had been under treatment for some time in the hospital, and had been almost cured; but the splint had been removed too soon, and the disease had been re-developed. The night extension and short splint were reapplied by Professor Sayre in the manner described in his paper.

The second case exhibited was one in the first stage very far advanced. The patient presented the characteristic symptoms of this stage of the disease, but, as no instrument of a proper size was at hand, the case was referred for future treatment.

The third case presented was one in the stage of effusion, or the *second* stage. The patient was wholly unable to stand or bear the slightest pressure; weight extension in the line of deformity was applied.

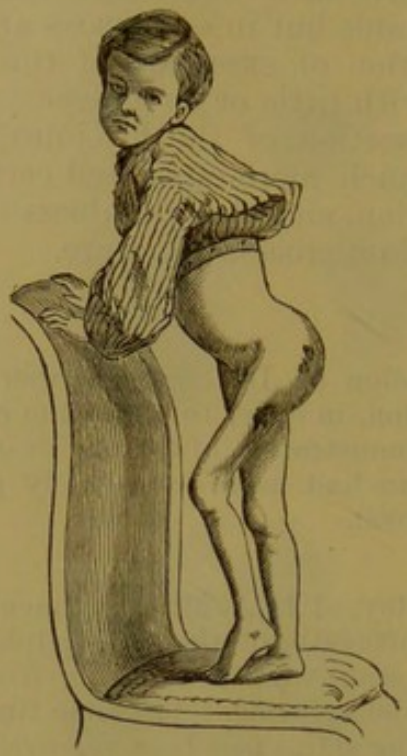
The fourth case was one in the *third* stage of the disease, and the following history was elicited: Thomas S., aged six, had been a healthy, active boy until about eighteen months ago, when he was knocked down and kicked in the region of the left hip. Soon after this he began to limp, but complained of no great amount of pain, that which he did experience being referred to the knee. During this time he was seen by several physicians, who did not discover any disease. He continued to become more and more lame, and at the end of six months a swelling made its appearance on the upper and outer part of the left thigh. He then began to complain of pain which was spasmodic in character, and always increased at night. The swelling was punctured, and, after poulticing for a few days, discharged a large quantity of pus. He has gradually lost flesh, and has become pale. This case was kindly furnished by Dr. J. M. Barton, clinical assistant to Professor Gross.

Present condition.—Extremely emaciated and anæmic; left thigh flexed, adducted across the middle of the opposite one, and fixed. (Fig. 20.) There is an opening in the outer part of the thigh, about the junction of the middle and upper thirds, which discharges considerably. The orifice has all the appearances of leading to dead bone, which is detected by the probe. A large abscess over the trochanter major is yet unopened.

Upon consultation with Mr. Adams, of London, Professor Lister, of Edinburgh, Professor Hueter, of Griefswald, Professor Hjort, of Christiania, Profes-

sor Hingston, of Montreal, Professor Post, of New York, and others, exsection of the head of the femur was decided upon, as affording the only chance of recovery.

Fig. 20.



While chloroform was administered by Dr. Sayre's son, Dr. Sayre said that his plan of using chloroform was entirely at variance with that taught in the books, and with the doctrine of most authorities, viz., that air must be inhaled with the anæsthetic. Air, he said, was the antidote to the anæsthetic, and as long as it was introduced anæsthesia would be prevented; he therefore carefully excluded all air not saturated with chloroform, and found that five, ten, fifteen, or twenty drops thus administered, according to the age of the patient, produced prompt anæsthesia, without that muscular resistance and contortion of the body which followed its administration mixed with air. If, by any possible contingency, this small quantity should produce dangerous or unpleasant symptoms, a few artificial respirations, effected by compressing the chest, would exhale the small quantity of poison, and thus avoid any fatal result. When chloroform was given in the usual way, *i. e.*, mixed with air, anæsthesia was not produced until a large quantity had been inhaled, in some cases many ounces, the patient during this time struggling violently; and the damage done to an inflamed joint by these struggles more than counterbalanced the good resulting from the anæsthetic. If, under these circumstances, failure of the heart or respiratory organs took place, the system was so saturated with the chloroform that resuscitation by artificial means was almost impossible.

The administration of the drug in the present instance confirmed the correctness of Dr. Sayre's statements.

The operation was performed in the manner described in Dr. Sayre's paper, and the child placed in the wire cuirass (Fig. 21); great stress being laid upon the importance of careful dressing, after-treatment, and nursing. Dr. Sayre remarked, as he stood the child in the cuirass against the side of the amphitheatre, "now this child is ready for transportation."

Professor Lister, of Edinburgh, being called upon by Professor Pancoast to address the company, spoke to the following effect:—We must all regard it as an extremely fortunate circumstance that Dr. Sayre has had at his disposal a series of cases so well adapted for illustrating his admirable diagnosis and

treatment of the various stages of hip-joint disease. As these subjects are to be brought before the Surgical Section of the Congress this afternoon, it is

Fig. 21.

needless for me to allude to them in detail on the present occasion, but I cannot refrain from expressing the admiration which I feel, in common I am sure with all present, at the mode of execution and the immediate results of the excision of the hip-joint which we have just witnessed. Dr. Sayre, indeed, has made no attempt at display, and he emphatically endorsed a remark of mine that the days of such exhibitions in surgery were over. For when pain and shock are prevented by anæsthetics, and when all loss of blood is avoided, whether by the use of a tourniquet, or, as in this instance, by the skilful manner in which the incisions are planned and carried out, mere rapidity of operating becomes a matter of absolute indifference, except that the work is probably somewhat better done if a little more time is spent upon it. Nevertheless, gentlemen, we have seen an extremely skilful performance, not only as regards the operation, but also in the application of the highly ingenious apparatus used for the after-treatment. The manner in which the sound leg, firmly fixed upon the cuirass, is made to serve as a perfectly efficient means of counter-extension, is indeed beautiful; and to see that boy who was but a few minutes ago a miserable crouching object, and on whom a capital operation has since been performed, standing erect before us upon this apparatus, with a smiling countenance, is as astonishing as it is delightful.

I feel that this demonstration would of itself have been a sufficient reward for my voyage across the Atlantic, and I beg you to join with me in a cordial vote of thanks to Dr. Sayre.

Professor Lister's suggestion was instantly seconded, and a resolution of thanks to Dr. Sayre unanimously adopted.

The following notes of the subsequent history of this case are furnished by Dr. D. J. Holland, Resident Physician at the Philadelphia Hospital:—There was not the least untoward symptom following the operation. The patient was given the pyrophosphate of iron and iodide of potassium, in small doses, three times daily, and for the first few nights a few drops of laudanum, as an ano-

dyne, though there was comparatively little pain. The limb was dressed every day, and a new tent placed in the wound; after the first month, passive motion was instituted. The patient's appetite gradually increased, and at no time had he any fever. His condition was excellent throughout, and within six weeks the wound had closed by granulation.

Two months after the operation, the patient was exhibited before the class at Bellevue Hospital as the most successful case upon record. There was at this time good motion. The cuirass was now removed, and Dr. Sayre's long splint substituted. Within a week the child became accustomed to the splint, and could walk without any exertion, and there was almost no shortening. He was discharged from the hospital, wearing the splint, November 11, 1876. (Fig. 22).

Fig. 22.

The following note has been received from Dr. J. M. Barton, under whose care the patient came again after his discharge from the hospital:—

Professor SAYRE:

Dear Sir:—I examined the boy Shields to-day, and found that there was five-eighths of an inch shortening; that the small of the back and the popliteal space readily came in contact at the same time with the hard table on which he was lying; that the foot could be raised eighteen inches before the pelvis moved; and that the limb readily passed a few degrees to each side of an imaginary line at right angles to a line connecting the anterior superior spinous processes, so that the boy could quite readily bring his limbs parallel, though he makes much more extended motion than that by moving his pelvis.

All the above motions, as well as pressure sufficient to move the boy upon the table, were totally painless. The limb rotated well; and the foot could be made to touch the table by its external edge, the boy lying upon his back, and could be rotated inwardly enough to touch the opposite foot.

There was about one fluidrachm of discharge in the twenty-four hours, and the boy's general health was excellent, and his appetite ravenous.

Respectfully,

J. M. BARTON,

201 S. Eleventh Street, Philadelphia.

Jan. 18, 1877.

Discussion on Dr. Sayre's Paper.

At the next meeting of the Section, the President having announced that the discussion of Dr. Sayre's paper was in order, Dr. Alfred C. Post, of New York, said:—In regard to the danger which attends excision of the upper extremity of the femur, I would say that the operation in early childhood is comparatively free from risk, but at later periods of life a very considerable proportion of fatal cases has occurred. Yet in many cases the danger of the operation is less than the danger of leaving the disease to pursue its own course. Even in some instances in which the operation is not necessary for the preservation of life, yet, if the case be allowed to go on to a natural cure, after having reached an advanced stage, such an amount of deformity will result as will render the limb an encumbrance, and in these cases the operation is of very great benefit to the patient.

Dr. S. D. Gross, of Philadelphia, said:—I came here this afternoon simply as a listener, but it strikes me that the second conclusion of Dr. Sayre's paper is entirely at variance with the received opinions of the profession, or at all events with my own experience. Many cases of coxalgia, according to my observations, have been cases in which it was impossible to trace as a cause anything like an injury. I have given special attention for many years to these cases of coxalgia: I have inquired "has the child received any injury—a blow, or a fall, or a contusion, or anything of the kind?" and in the great majority of instances the answer has been "no." I am quite certain that the majority of my cases—and they have been very numerous—have been of this character. That the disease may be developed or excited under the influence of traumatic causes is unquestionable; but I maintain that in the great majority of instances the affection is of spontaneous origin, and that it is not necessary for a blow, or a fall, or any such injury to produce the disease. This is my experience. In regard to the conclusion that it is not necessarily connected with a vitiated constitution, my teaching has certainly been greatly at fault if I err in this respect; I maintain, as the result of my dissections, that this affection cannot occur in a child or in any person whose constitution is not in a state of degradation, or who is not laboring under some constitutional taint. I believe that it is impossible for a person to contract consumption without a predisposition to it. So, in relation to hip-joint disease, consider, if you please, the nature of the suppuration which occurs in coxalgia. The surgeon finds an abscess, and puts his knife into the part; what is the character of the matter that issues? Manifestly the same kind of matter that is expectorated by a patient laboring under pulmonary consumption. This is beyond all question. I have never seen any other kind of matter escape.

This, I think, settles the question that the affection occurs naturally in persons predisposed to such diseases. It cannot arise in persons healthy in other respects. There must be a constitutional vice as a predisposing cause. The body must be in a state of debility or feebleness. This is my belief, nay, my solemn conviction. This degraded state of the system may arise from hereditary predisposition; the parent may have had scrofulous disease of the neck or spine, or some syphilitic taint; the predisposition has been transmitted, and the system has become degraded in consequence of the transmitted taint. The child has hip-joint disease, just as in other circumstances it might have had disease of the lungs, or tubercular phthisis, or disease of the spine. Indeed, we not unfrequently find more than one of these affections coexisting in different parts of the body.

The hip is affected in any particular case, simply because it is a weak point. The child may have taken cold, and the disease fixes itself in that locality. It might have fixed itself in the ankle-joint, or in the spine. The child may have received a blow, or a fall, or what not, but I maintain that that part is in a state of predisposition at the time when this takes place. I maintain that it is im-

possible for a child, born of healthy parents, well nourished, well taken care of, unless there is a previous predisposition or some degradation of the constitution, to have coxalgia, pulmonary consumption, or diseased spine.

Dr. Henry Fraser Campbell, of Augusta, Georgia, said:—In regard to the explanation of Dr. Gross, as to why the child has hip-joint disease instead of lung disease, I would say that scrofulous affections are developed in various forms at different ages. I agree that this disease is frequently produced by traumatic causes; I might go further and say that most cases which I have seen have been the result of some fall from the bed, or some carelessness of the nurse, or some twist of the child's limb or joint. But the same fall or twist, or the same carelessness, would not produce such a result in a healthy child, without any disposition to scrofula—in a child that had no syphilitic parentage. I recall one case in a very scrofulous child, in which an ordinary fracture of the arm resulted in the exfoliation of the entire bone. But this never would have occurred had that child not been of a scrofulous constitution. I believe that coxalgia may be one manifestation of scrofula, in childhood, just as at a later period of life tuberculosis of the lungs is another manifestation of the same general vice.

Dr. Wm. H. Hingston, of Montreal, said:—I formerly believed that scrofula or struma had everything to do with common coxalgia, but of late years I have come to think that it has little to do with that affection. Some years ago, in reading the papers of Dr. Sayre, Dr. Bauer, and others, I asked myself whether I was not in error in regard to the constitutional nature of this disease, and whether we were never wrong as to its treatment. In the large hospital at Montreal, the largest in Canada, to which I was surgeon for fifteen or sixteen years, I collected a number of cases which I published a few years ago—twenty-nine cases I think—and of those twenty-nine cases, I believe I could trace twenty-six to traumatic injury. And the treatment to which we have resorted is I think conclusive upon this point, differing as it does so much from the treatment formerly adopted. Without any constitutional treatment whatever, local measures suffice in a great number of cases. Again, we often see one child, out of half a dozen, having morbus coxarius, while the other children of the same father and mother are not affected with the disease. Now, is it the most sickly one that is affected? Not at all. In four cases out of five it is the healthiest child of the whole family. The child has a predisposition to the disease, but it is a predisposition to climb and to fall about. The sickly child rarely has hip-disease. I believe also that the affection is more common among boys than among girls, because they climb more; and it is more common also at that period at which children are cut loose from their mother's apron-strings, and are allowed to run about. As soon as they acquire sufficient intelligence to take care of themselves, the disease becomes rare; it is only in the period between infancy and adolescence that it is frequent.

Dr. E. M. Moore, of Rochester, said:—Like Dr. Gross, I have often asked whether or not there has been any injury, and I have largely failed to find any recollection of such an occurrence to which the disease might be attributed. But then we all know that these little bodies are constantly tumbling around, falling and straining themselves, and I have asked myself how is it that this particular joint, and no other joint, should be the one affected? It seems to me that the explanation of the fact has not yet been given. In the hip-joint we have a surface, small as compared with the ankle-joint, and very little larger than the shoulder or elbow-joint; and yet at this particular point in the body we have an immense mass of muscles surrounding the whole, and these huge muscles take hold of the bone whenever there is an injury inflicted, as they do in any other locality. So we have a reflex action set up in these cases, these muscles taking a sort of tetanic hold, night and day, to steady the joint. Why? Because nature is determined to secure rest, which is the cardinal cure of everything. So these muscles hold the bone up, and the surface is so pressed upon that whenever there is the slightest degree of inflammation, it must continue. Day by day

it will increase, while the child has forgotten the fall, until perhaps a deep-seated abscess is formed in the tissues. Dr. Gross asked whether we ever saw anything not like a scrofulous discharge from these abscesses? I answer, No; and the reason is that they are chronic abscesses, but there may not be the slightest evidence of scrofulous disease. In the same way we were formerly taught that Pott's disease originated from scrofula, but I have seen it traced directly to falls in cases in which no scrofula could be found for three or four generations backward. Again, we are told that these diseases originate from a deposit of tubercle, and the mere fact of finding tuberculous disease in connection with these affections is received as affording proof of their origin. But the connection may be reversed. It is what our medical friends are every day coming more and more to do. If there is no consumption but such as comes from hereditary taint, I ask why men who pick mill-stones never live above forty years. They do not expect a longer duration of life. I had one man, with a family dependent upon him, to tell me that he did not expect to live beyond forty years, but he was more fortunate; he lived to forty-five years, and then died of consumption. The grinders of needles and axes die of consumption. But is it of hereditary taint? It is because the particles of steel get into their lungs, and then produce chronic inflammation. These facts force themselves upon us. We all appreciate and understand perfectly well the force of hereditary taint, but it is unsafe to say that such is always the cause of tuberculous disease. I have myself become thoroughly convinced that a large number of cases of consumption can be traced to disease of cancellated bone. I recall one case of a young man of nineteen years who had inflammation of the tarsus, and a year afterwards presented evidences of tuberculous disease. I could not with the utmost care trace any consumption in that man's family. I am firmly convinced that a large number of cases of Pott's disease, which are followed by consumption, come from inflammation of the bone, and not from hereditary taint; because a large number of cases of the same affection which are cured can be traced to injury.

Dr. George Cupples, of San Antonio, Texas, said:—In regard to the question, why the hip-joint is more often affected than any other, I would say that perhaps a physiological fact may throw some light on the subject; this is the circumstance that the long bone of the body, the femur, is the last to be completely ossified.

Dr. T. G. Richardson, of New Orleans, said:—I would like the positive advocates of the local origin of coxalgia to explain why a severe injury in an adult is never followed by hip-disease. You cannot mention a case of the kind which has been followed by this affection. Then, too, I deny that the age of childhood, or the age of carelessness, is the age at which the hip-joint is most liable to injury, as is shown by the fact that we seldom or never have dislocation of this joint in childhood. Then, again, I call on those who maintain that coxalgia originates from traumatic causes to explain why it is that in cases of congenital dislocation of the femur we sometimes find hip-disease.

Mr. William Adams, of London, said:—I am satisfied that, in a large proportion of cases, it will be found that the exciting cause of hip-disease has been some slight injury; yet years of practice have taught me that there are cases in which the disease occurs without any injury. We used to be taught that hip-joint disease often originated as a bone disease, but my own belief is that it is usually the result of a ligamentous lesion. We have very few post-mortem examinations of cases in the first stage of hip-disease to refer to, but, in those which are reported, we find that an inflammatory condition of the ligamentum teres and a slight exudation into the synovial membrane were noticed;[1] and I believe that, in seeking the cause of the

[1] [See report of post-mortem examinations, made by Aston Key and by Mr. Adams himself, in Chelius's System of Surgery, edited by South and Norris, Philadelphia, 1847, vol. i. p. 290.—Editor.]

affection, we may look to an injury or wound of the round ligament, as from some strain, or twist, or jump, when the muscles of the child are in a relaxed condition. The injury, however slight, causes subsequent inflammation, the extent of the disease depending much on the constitutional condition of the patient. This inflammation may lead on to secondary bone disease, or, in other cases, and in particular states of the constitution, we may have primary bone disease.

Dr. D. Hayes Agnew, of Philadelphia, said:—It is important in discussing this subject to understand what we mean by the term traumatic injury, as preliminary to the whole question. Now, if it is necessary that a joint should have a powerful twist, or wrench, or that a blow should be inflicted upon it, or that the patient should be projected from some height—that is one thing; but, if it is meant that a child by jumping down, for instance, two or three steps, or by tripping on the floor in walking over a carpet, can in such a way receive traumatic injury—that is another thing. My impression in regard to hip-joint disease is this: It is impossible to follow a child in all its movements. Most of the time the child is out of the notice of its mother, in the care of nurses, many of whom are exceedingly careless. The child may receive a great many slight injuries which may yet be quite sufficient to produce such a contusion or such an irritation of the joint as, in a child predisposed (for I must confess that there is after all a predisposition, which may remain latent if the child be kept absolutely at rest), may kindle up the slumbering elements and bring on the disease. I see a great many of these cases, and I must say that I usually find it not difficult to trace behind all a constitutional predisposition. In the family, perhaps, one child may have phthisis, and another enlarged glands, and another hip-joint disease, and another knee-joint disease. But, in most cases, the immediate cause of the disease is some external injury of the joint.

Dr. Sayre said:—Both Dr. Gross and Dr. Campbell agree that some little injury may produce the disease. That is all that I claim; I do not assert that it is necessary for a child to be run over by a railroad car. If coxalgia is constitutional, I would ask why it is that, having recovered from hip-joint disease, the patient becomes perfectly well, and sound, and hearty? why is it that simply having hip-joint disease cures the constitutional taint?

Dr. Gross said:—The difference between Dr. Sayre and myself seems to be simply this: He says that hip-disease is almost always of traumatic origin, and not necessarily connected with a vitiated constitution. I, and those who think with me, do not deny that injury may excite the disease; on the contrary, we confess that it frequently does so; but we maintain that the disease is always necessarily connected with a vitiated condition of the system.

Dr. J. A. Grant, of Ottawa, said:—I must acknowledge that for many years I entertained similar opinions to those now expressed by Dr. Gross; but in one or two cases observed during the last few years, in the hospital at Ottawa, where I see many cases of hip-disease, I have been forced to a different conclusion. One case came under my observation about three years ago, which I investigated most closely, and in which I failed to trace the slightest predisposition of a scrofulous character, either in the boy, or in either of his parents, or in any of his ancestors. In another case that came under my notice, the disease arose purely from irritation or excitement in the joint, entirely independent of scrofulous complication. We must acknowledge, of course, that persons laboring under a scrofulous taint are much more liable to irritation, and to the development of this disease, than others; but we must also acknowledge, from the peculiar construction of the hip-joint, that it is one extremely susceptible to irritation, whether in a scrofulous constitution or in a constitution not of scrofulous character. I am of those who adhere to the view that we may have coxalgia occurring in an individual entirely independently of scrofulous taint.

Dr. J. H. Pooley, of Columbus, Ohio, said:—I will go further than Dr. Sayre's proposition, and say that I believe the disease is not only not necessarily connected with a strumous diathesis, but never connected with it except by the accident of coexistence. What is scrofula? Take all the gentlemen in this room, one by one, and make each man give his description of scrofula, and you will have as many separate descriptions as there are separate describers. We hear a great deal about scrofula, and hardly know what we mean. I not only endorse the proposition of Dr. Sayre, but I would have framed it in stronger language.

Dr. Hunter McGuire, of Richmond, Va., said:—I think I can reconcile in one or two words the different views expressed in regard to the occurrence of scrofulous pus in hip-joint disease. I cannot believe that anybody here ever saw any other kind of pus in coxalgia than scrofulous pus, but it does not necessarily follow that coxalgia is of strumous origin. I was taught five and twenty years ago, and I think I have profited by the teaching since, that scrofula resulted very frequently from pain or irritation, or from the privations of life, such as insufficiency of food and clothing; so that, if a little child gets a fall, rapid coxalgia may follow, and then, in consequence of the pain and loss of appetite, struma may be developed, and there will then be scrofulous pus.

Dr. John T. Carpenter, of Pottsville, Pa., said:—The point at issue, it seems to me, is the local origin of constitutional diseases, upon which Professor Niemeyer has laid so much stress. I published a paper recently, in the Transactions of the Pennsylvania State Medical Society, in regard to the diseases of miners. Miners are subject to phthisis, and rarely live over 45 years. That disease, which we always believed to be constitutional, is caused by nothing but the inhalation of coal dust. We find solid carbon in the patients' lungs. The men die, and the old women live in the villages. Now, if their sons leave the mines and go into the agricultural districts, they live as long as other people. Here is a local origin of constitutional disease, and so it is with coxalgia. Every one of us knows that the first sign of constitutional disease in cases of coxalgia is an irritative fever, and thereafter sinuses form, and there is a discharge of pus, and phthisis may follow. The struma does not exist in the case until after long suffering and long disease. It is the consequence, and not the cause. Children whom I have treated by Dr. Sayre's method are now healthy and happy, and have never had any phthisis, or scrofula, or anything of that kind.

Dr. William Brodie, of Detroit, said:—Some years ago, when Dr. Sayre's views were first promulgated, I had occasion to see a great many cases of this disease in Detroit, and, with my friend Dr. Pitcher, had occasion to examine a great many people who came in from the surrounding country, all supposing that they were going to be cured by the new method. Some of these patients died of their coxalgia, and some from other causes. A great many post-mortem examinations were made, and I came to the conclusion that the disease commenced in the cartilage, and that, when this was absorbed, the bone itself became affected. I noticed in these cases the presence of a low grade of constitution, as if the patients had suffered from typhus, or were in an impoverished condition from cold. We know that children frequently lie exposed at night, or get into water, or get chilled in other ways, and then the external surface is affected, and a low grade of inflammation produced, which results in suppuration of the cartilage. I have always considered hip disease as scrofulous in its nature, but I believe that it originates in inflammation of the cartilage.

The President, Mr. Joseph Lister, of Edinburgh, said:—The question whether this disease is or is not constitutional, must not be allowed to determine absolutely the treatment to be adopted. We must not say that because a disease is constitutional, that it is therefore hopeless to produce a permanent cure by treating it with local means. Take cancer, for example; that may be

in many cases constitutional, yet we know also of many cases of cancer which recover if operated upon early enough. There is a local manifestation of a hereditary taint, but if we take away the local manifestation, there may never be any other. This is the case also with struma. Glandular abscesses in the neck are strumous, and yet how many persons live to be healthy and sound after having these! It seems to me that if we have such a disease as struma at all, we have that disease in morbus coxarius. A child came to me in Glasgow to be treated for disease of the tarsus. He was treated with a long splint, and after a while, though still lying in bed, with the splint, several weeks afterwards, morbus coxarius showed itself. In that child there was a constitutional tendency which developed itself without traumatic cause. But I admit that traumatic causes are frequently operative, and we know the constant liability of children to be affected by traumatic causes.

Dr. GROSS said:—Have you ever seen suppuration in disease of the hip-joint, in which there was not scrofulus pus?

Mr. LISTER said:—I must confess that I have. In affections dependent upon strumous disease, there are great varieties of pus. The treatment which I have adopted has been, if there has been flexion of the limb, to extend it on a long splint, and keep the patient at rest. In the great majority of these cases in Edinburgh, perfect cures are obtained. In Glasgow, a considerable number of the cases are cured, but not so many as in Edinburgh. Then, again, in Manchester the number of cures is a minority. Now I believe the reason for this is that Edinburgh is a more healthy place than Glasgow, and that Manchester is a less healthy place than Glasgow.

Dr. SAYRE said:—I can hardly find language to express my feelings of regret whenever I am compelled to differ in a professional point of view from my distinguished friend Dr. Gross. But we must not let personal friendship, or personal respect and veneration, guide us in the expression of our opinions upon points of science. It seems to be conceded that an injury is often the exciting cause of the disease. Now, with regard to the matter of predisposition, I say that the ordinary teaching has been erroneous, and I believe that the doctrine has led to bad results in treatment. If the disease is necessarily of constitutional origin, it cannot be cured by local means. You must get rid of the constitutional poison or taint. If it is of constitutional origin, the development of some constitutional cause, the treatment ought to be constitutional, to affect the blood and the whole body. What has been the result of the belief in the constitutional origin of hip-disease? The use of internal remedies to correct the constitutional taint, and of local applications to the parts that are simply irritating. Dr. Gross has referred to the character of the pus: I happened to be present at an autopsy in a case of hip-disease in Berlin, made by Prof. Virchow, where an examination was made of the lungs, and heart, and intestines. In the specimens taken from that case there was not a trace of tubercular matter to be found. It was simply a case of pure chronic coxalgia. The pus was not of the kind referred to by Dr. Gross. Had that case been carefully examined and properly treated, in my judgment it would not have terminated fatally. The trouble was a local one, and the constitutional effects of the local trouble were mistaken for its constitutional origin. Prof. Gross will remember seeing a little child whose hip I exsected in Brooklyn. If there ever was a strumous condition, that child's condition was certainly entitled to be called so. In fact the child was almost dead at the time of the operation. It had lain in an exhausted condition for five or six years, with continued suppuration, yet by removing the cause of the trouble, without any constitutional treatment, or medicine of any sort or kind except something to eat and fresh air, from being a dead child, the child is running about to-day in perfect health. I sent its picture as a Christmas present to Dr. Gross himself. Now, in reply to the remarks of Dr. Richardson about cases of congenital dislocation, I may say that congenital dislocation has never been seen, although it has been described by Dr. Carnochan and others, and I believe that I am justified

in saying that the term is a misnomer. There is no congenital dislocation, but an arrest of the development of the acetabulum, the bone having never been completed. It is a congenital *displacement*, from an arrest of development, but not a congenital *dislocation*. The dislocations that occur in the adult are immediately recognized and attended to, and after reduction the parts are kept at rest until all danger of inflammation has passed; whereas the slight injuries which cause hip disease in the child are overlooked, and attention is not called to them until, by continued irritation, inflammation has supervened; and the general health frequently becomes involved before the slight local injury is recognized. Moreover, in the adult the head of the femur is much less vascular than in the child.

Dr. HINGSTON said:—We are told that hip-disease may originate from injuries to the cartilage and bone, and also from ruptures or injuries of the ligamentum teres. Now, I am wholly prepared to admit that in the first set of cases local treatment would probably suffice to effect a cure, but I wish to know if the same degree of probability applies also to cases originating in lesions of the ligamentum teres?

Dr. SAYRE said:—I can answer that question by a practical illustration. Five or six years ago a case of coxalgia was brought to me by Dr. Jourdon for excision. There was an open abscess, which had gone through all the various stages, the disease having originated from a blow two and a half years before. At the time I saw the case the child was hardly in a condition in which it was deemed advisable to operate, and so I thought it better, in order to save the child, to get it in a better condition. In the mean time, to make the child as comfortable as possible, and put it in a condition for treatment, I brought it out of its surroundings, and got it out of doors to build it up a little. When the time came for the operation, the child was so much better that I concluded to give it a chance without excision. I made a free incision into the joint, and took away a comparatively small portion of the bone only. Repair took place; the child got entirely well; and ran around a year and a half without any splint, and with only slight deformity, and with a tolerable degree of motion. Some year and a half ago, through exposure, the child got into a very bad condition, and the physician in attendance informed Dr. Jourdon that it was going to die. The child did die, and I have the specimen. The head of the femur and the ligamentum teres have entirely disappeared; a new covering had been formed, of what I do not know, but it was smooth, hard, and cartilaginous. So that that child lived two or three years without any ligamentum teres at all.

Dr. POST said:—With regard to the necessity of resorting to excision, we all have known of advanced cases of the disease in which there has been a favorable result. I was called, two or three years ago, to see a patient in Jersey City. The knee was thrown up almost to the chin. It was impossible to place the child in a position even approximately straight, in consequence of the extreme pain which the effort gave him. He was almost ready to die from the constitutional disturbance attending the advanced stage of the disease. He was placed under the influence of ether, and the limb brought into as straight a position as possible. It was during cold weather, when there was a fire in the grate, and I put a poker in the fire, and made a thorough application of it behind the great trochanter. Improvement began from that time; and some time afterwards the child was brought to me free from deformity. Here was an entire recovery, and this case goes to show that excision is not always absolutely necessary.

Dr. SAYRE said:—I have only advised the operation in cases in which the disease progresses in spite of proper treatment.

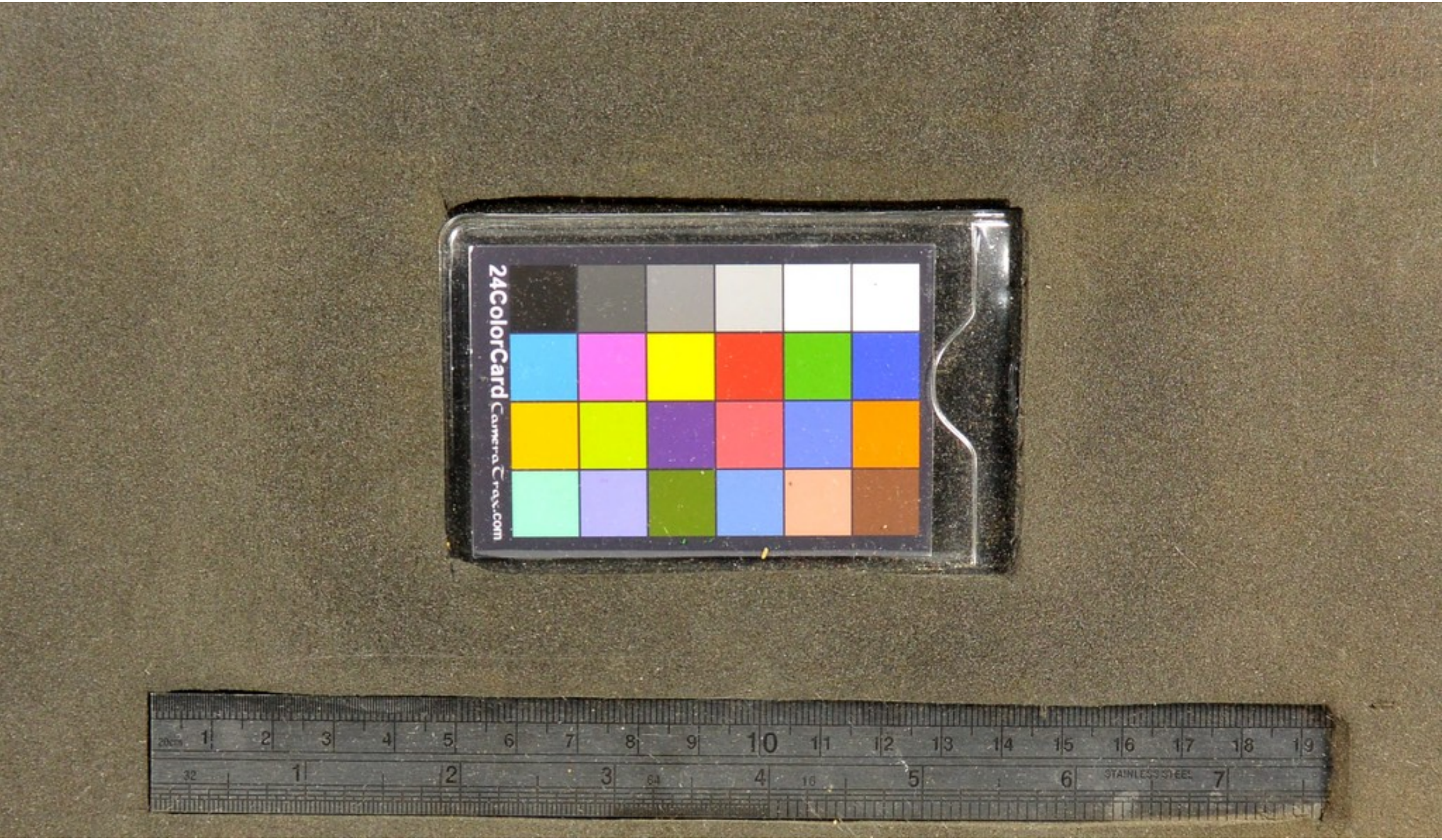
Mr. LISTER said:—I think that a distinction between the stage of effusion, and the stage of suppuration, would be more in accordance with the general pathology of the subject. I believe the last stage of hip-joint disease is invariably the stage in which suppuration is present. Where effusion exists

without suppuration, a permanent cure may result by drawing off the fluid. If the case has gone on to the condition in which sinuses present themselves, I should be prepared to endorse the proposition that excision is the proper treatment; but if there is suppuration without an external opening, I am bound to express my strong conviction in favor of merely opening the abscess. I know of numerous cases in which the abscesses have been treated antiseptically, and in which the patients have recovered. Certainly in these cases the treatment had better results than if excision had been resorted to. I remember one patient, a healthy young woman in Glasgow, whose two limbs became exactly alike, except that there was the mark of the small incision made in opening the abscess; and this result was a great deal better than if excision had been adopted.

Dr. HINGSTON said:—I wish to ask Dr. Sayre if he can tell from the position of the sinuses, whether the acetabulum or the head of the bone is diseased?

Dr. SAYRE said:—I cannot; the pus will, in either case, gravitate in the easiest direction.

On motion, the conclusions of Dr. Sayre's paper, with the exception of the second, were adopted as expressing the opinion of the Section. With the second conclusion, the Section could not unanimously agree.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