

ensue, or the best result may be ankylosis; but, even here, by proper treatment, a majority may be saved, and we may expect to secure a case with partial, often complete, motion in the joint, as the following case illustrates:

CASE.—Katie K., nine years old, was brought to Bellevue Hospital Medical College, January, 1875, in robust health, but with her right hip ankylosed in the position seen in Fig. 157, from a photograph taken by Mr. Mason at the time. She had



FIG. 157.



FIG. 158.

fallen down-stairs when she was five years of age, bruising her right hip, which was almost immediately followed by all the usual symptoms of hip-disease. She was treated by repeated blisters and internal remedies, but no extension or counter-extension was employed to prevent deformity. After three years of excessive suppuration, she eventually recovered with the limb ankylosed, in which condition she has been for the past twelve months.

As she was in perfect health, no suppuration existing at the time, I put her under chloroform, divided the adductor longus and tensor vaginae femoris muscles, with some bands of contracted fascia, broke up the adhesions, and placed her in the wire

curass before the class, January 13, 1875. No untoward symptoms followed, and, February 2d, she was removed from the wire curass, and a long hip-splint applied (*see* Fig. 158), by the aid of which she could walk perfectly well without a cane. The motions at the joint were quite free, but the psoas magnus and iliacus internus muscles are not fully extended, which produces the slight curve which is noticeable at the sacro-lumbar junction; she can abduct the limb to nearly the normal extent, and is able to flex the thigh to an acute angle.

## LECTURE XXI.

## DISEASES OF THE JOINTS.—MORBUS COXARIUS (CONTINUED).

## Treatment.—Mechanical Apparatus, and how applied.

GENTLEMEN: We have arrived at the subject of TREATMENT in our study of hip-disease, and that will engage our attention this morning.

The treatment of morbus coxarius may be divided into—

1. Local;
2. General.

Many of the general remedies employed have been given to counteract the scrofulous diathesis which was supposed to underlie these joint-diseases. Of course, if the disease occurs in a patient who happens to be scrofulous, it will be necessary to bear in mind the diathesis which complicates the trouble, and employ the proper remedies. But, as has already been shown, these "white swellings" of joints have no necessary connection with scrofula, and occur indifferently in the weak and the robust, according as the exciting causes, generally traumatic, are brought into action. It would, then, be highly illogical to subject every case of joint-disease to a course of anti-scrofulous medication. You will, however, generally find that these patients are benefited by those remedies, such as tonics, cod-liver oil, and stimulants, which are of value in the treatment of any disease of long duration and debilitating tendency.

No more exact rule, I think, should be laid down than this: vary your medication according to the actual demands of each case, and do not base it upon a theoretical morbid cause which you desire to combat. I shall, therefore, simply recall the means which are usually of most benefit in the way of general treatment.

First, see that the patient has sufficient food, and that it is properly assimilated. A very common difficulty in these cases is that, even before the appetite fails, the food taken into the stomach is not properly digested.

It may be mentioned here, that the local means employed for quieting the pain and allaying the destructive processes within the joint are generally the best remedies for restoring the appetite and assisting digestion. But you must see to it that your patient has food that is highly nutritive and easily assimilated. Endeavor to regulate the condition of the bowels, by varying the food according as constipation or a tendency to diarrhoea exists. Cod-liver oil, so commonly used in these affections, I am confident, owes its efficacy simply to its nutritive rather than to any particular medical property.

Again, observe the hygienic surroundings of the patient. If you find him under the influence of bad ventilation, noisome exhalations, or, above all, deprived of sunlight, endeavor to correct and improve his condition in these respects. Look to all these things; for, while I am a strong advocate of the efficiency of local treatment, you cannot expect to succeed in the face of adverse hygienic surroundings and insufficient and improper food. As regards medication proper, I know of nothing demanded beyond the usual tonics and stomachics found to be of service in other diseases. I would mention particularly the use of baths; sea-bathing in warm weather, when it can be had, or its substitute, saline baths, with friction, to stimulate the skin, when the open-air bath is beyond reach, or when the weather is too cold for its use. With this brief outline of general treatment, I shall pass to the consideration of local treatment.

The only local treatment in use till within a few years was the application of counter-irritants, blisters, issues, setons, etc., over the affected joint. It was customary to leave the joint itself to the *vis medicatrix naturæ*, a force that was sometimes found so conservative as to save the life of the patient, but pre-

serving for him a withered, malformed, ankylosed limb, specimens of which you now see before you. It was an opinion entertained by some surgeons of respectability that, if the bones of the joint become involved in caries, there is little or no hope for the patient. Even so high an authority as Mr. Syme asserted that, "if the head of the femur be carious" (which implied, in his estimation, a carious condition necessarily of the acetabulum), "the patient *must die!*" But, it affords me great pleasure, gentlemen, to be able to-day to disprove, in the most unanswerable manner, the broad assertion of Mr. Syme; and this pleasure does not arise from a consideration of being able to point out the errors and refute the statements of so deservedly great a man, but rather from the fact that I am able to give you such tangible, such cheering evidence of the progress of conservative surgery.

The local treatment which has grown into favor during the past few years, but which I have advocated earnestly for the past twenty-five years, depends upon the necessity of giving absolute rest and freedom from pressure of the parts involved in the disease, without materially interfering with the mobility of the joint.

Bonnet's method—fixation without extension—for local treatment has been the plan abroad. In this country, however, fixation with extension has been chiefly employed, and, to afford an apparatus that would meet these indications, leathern splints, gypsum and starch bandages, and strong wire gauze, moulded to fit the limb, have all been employed with more or less benefit, but all these plans prevented mobility.

Fixation with extension, I think, was first employed in 1825 by Dr. Harris, of Philadelphia. His apparatus, however, necessitated confinement to the bed for a long time, and, as a consequence, the patients became cachectic, and the disease progressed to an unfavorable or fatal termination in many cases, despite the relief from pain given by the extension and fixation.

The treatment by *extension* was an unavoidable inference from the demonstrations made in the paper of Dr. Alden March, already referred to, upon the cause of the *apparent* dislocation in the third stage of coxalgia. But, if the patients are kept upon the straight splint, as recommended by Dr. Harris, of Philadelphia, or Dr. March, of Albany, and *extension* is maintained in

addition to the *fixation*, we will relieve our patients from all suffering, it is true, and generally arrest the disease; but, unless the greatest care be observed, and in the latter stages the patient be frequently removed from the apparatus and passive motion employed, it will almost invariably happen that ankylosis, more or less complete, will be left, and, so far as progression is concerned, the patient is in a much worse condition than when left to Nature. To obtain, then, permanent *extension* of the joint without a damaging amount of confinement, or, in other words, *extension* in such a manner as to permit motion, becomes the problem to be solved by surgical ingenuity.

There are many cases in which the inflammation is so violent, and the pain upon the slightest movement so intense, that *absolute rest* is requisite for a time, and in such cases the fixed dressing alluded to answers a most excellent purpose. Under these circumstances I employ most commonly the cuirass with extension. (See Fig. 190.) But *motion* is as essential in retaining a healthy condition of the structure about a joint as light is essential in retaining a healthy condition of the eye; for the ligaments around a joint will become fibro-cartilaginous, or even osseous, if motion is denied them, particularly if a chronic inflammation is going on within the joint with which they are connected. It was in consequence of such accidents occurring in several instances that I was led to contrive some plan by which extension could be maintained that would remove pressure from the acetabulum and the head of the femur, and at the same time permit motion of the joint, thereby retaining the capsular ligaments in a healthy condition.

I never succeeded to my satisfaction in my efforts to attain this desideratum until Dr. H. G. Davis, of this city, applied to one of my cases an instrument which he had devised that answered the purpose admirably, and in its construction embraced the very principles which I had so long sought to apply.

As Dr. Davis is, I believe, the first person who constructed an instrument embracing these important advantages—extension with motion—I have given him full credit for the same with a plate of his instrument, and his own remarks in respect to the method of its application, in my report to the American Medical Association in 1860.

I have since made, as I think, some very important improve-

ments and modifications of this instrument, which I will describe more fully hereafter.

As Dr. Davis since that time has taken out a patent on his instrument, and as others have since been devised by various persons that are so much more efficient without the objectionable features of Davis's original instrument, it is not necessary to make any further reference to it. The instrument of Dr. Davis was applied in the case referred to, with the happiest results for a few days, but it soon began to excoriate the groin; and also the method of extension was not satisfactory, and could not be controlled at will. It would be either too feeble or too severe, and I therefore had an instrument constructed embracing all the



FIG. 159.

principles of the instrument devised by Dr. Davis, but which could be worn with much more comfort to the patient, was much more effectual, and was entirely under the control of the surgeon.

The instrument I then devised consisted of a narrow steel splint, extending from just above the crest of the ilium to within two or three inches of the external malleolus, and was divided into two parts at the knee, so that one ran into or by the side of the other, and was capable of being extended at will by a ratchet and cog-wheel near the knee, that was worked by a key. The upper

portion of the instrument was corrugated to increase its strength, and in a groove at its upper extremity was a ball-and-socket-joint to which was attached a pulley or wheel for the counter-extending catgut cord to play through. This catgut was attached at either end of the perineal band, or counter-extending belt, which was made of thick India-rubber tubing, and, being firmly secured at either end, made an elastic and comfortable air-cushion for the perinaeum, and could be worn without excoriating or chafing the parts. At the lower end of the instrument was a small roller, extending nearly its entire width, and just above it a buckle for the purpose of securing the firm webbing or strap which plays over the roller at the lower end, and was sewed fast to the strong adhesive plaster for the purpose of making extension. (See Fig. 159.)

Such is a brief description of the instrument I first devised for the treatment of hip-joint disease. Since that time I have improved it in many respects, and the instrument I now most commonly employ is a short thigh-splint, as seen in Fig. 160.

The following is a description of this instrument, together with the method of application :



FIG. 160.

It consists of a pelvic band, passing partly around the body at the crest of the ilium, well padded on its inner surface, to which one or two perineal straps are fastened for counter-extension; its outer surface holds a ball-and-socket joint, from which runs a steel 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 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, as you observe, in a cylindrical roller, over which the tags of the plasters are attached to the two buckles placed at the lower ends of the instrument.

When the short splint is used, some means must be employed for making extension during the night, and also at other times when it is expedient for the patient to lie in bed. This is best effected by means of weight and pulley.

To apply it, cut two strips of strong adhesive plaster, two or three inches wide, according to the size of the patient's leg, and long enough to reach from the malleoli to six or seven inches above the condyles of the femur. To the lower end of each strip

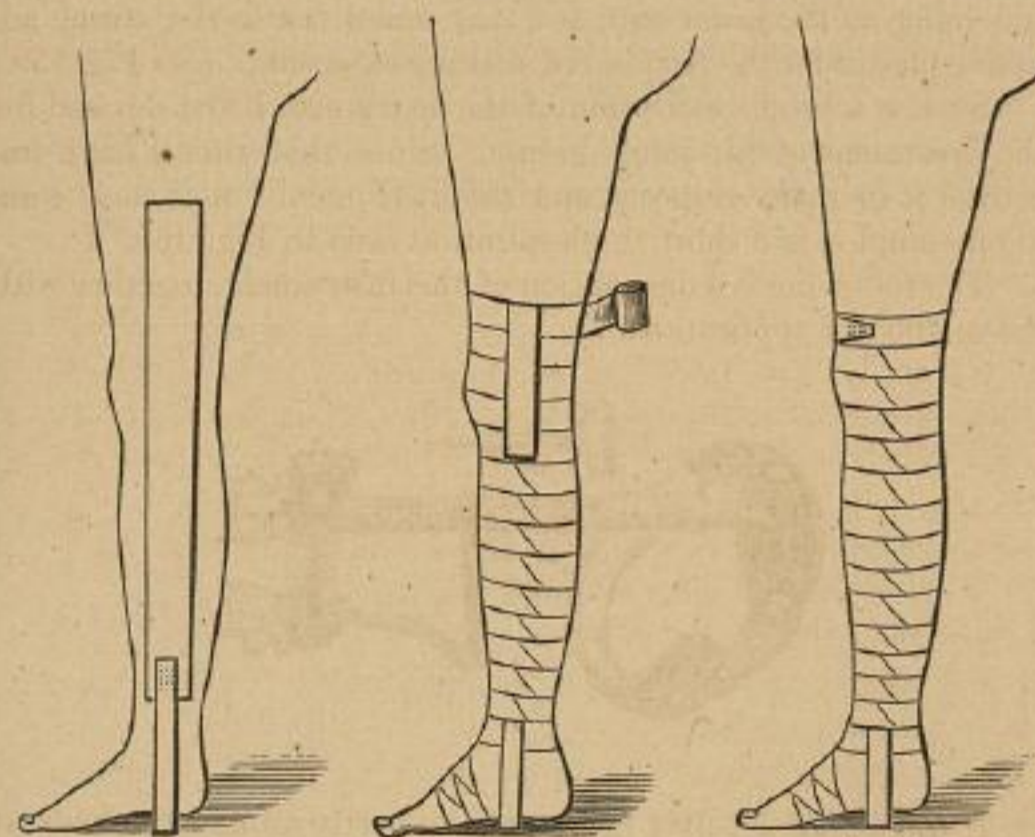


FIG. 161.

FIG. 162.

FIG. 163.

sew a piece of strong webbing three or four inches long. (See Fig. 161.)

After smoothly bandaging the foot and ankle, apply the ends to which the tabs are attached, one just above either malleolus, and carry the strips of plaster up the inner and outer sides of the leg and thigh, and secure them with a roller, nicking the edges of the plasters to make them fit smoothly, and prevent any folding or creasing.

The proper method of fastening the plasters to the limb is to allow them to hang loose along the sides, and bring them in contact with it by the successive turns of the roller, for in this way you will be much less liable to wrinkle them, and that is an important item. This may appear to you like an insignificant matter, and hardly worthy of special mention; but it is not, for a single wrinkle in the adhesive plaster may, by the irritation it will produce, defeat the whole plan of treatment.

The tabs should receive a few extra turns of the roller, over one and under the other, weaving them in, for the purpose of making them additionally secure.

When the knee is reached by the roller, *always* cover it in with the figure-of-8 turn, for the edge of a reverse in the bandage at *this* place may give rise to serious inconvenience, and necessitate its entire removal.

When the bandage has been carried two or three inches above the condyles, the remaining portions of the plasters are to be reversed (*see* Fig. 162), and then a few more turns of the roller will, by the bandage adhering to the plaster, fix the dressing so that it will not easily slip. (*See* Fig. 163.)

The plaster should be applied cold, but when the bandage has been applied the plaster should be moulded to the limb by firmly squeezing it with the hand. It is also very important to secure the plaster above the condyles of the femur, in order that extension may be made upon the thigh and *not upon the lateral ligaments of the knee-joint.*

The bandage should then be fastened, and with stitches, for it is to remain a long time.

If the limb is held in the proper position, namely, in *the line of the deformity, and gentle extension maintained* by an assistant, it can be prepared for the bed-extension and the splint without giving the child any pain.

Next take a piece of thin board about three inches long and two or three inches wide, and arrange across it a piece of tape or webbing so that it shall project three or four inches upon either side. To the ends of these tabs fasten buckles or buttons, that they may be attached to the ends of the tabs upon either side of the limb.

A simpler and more efficient method, for the board is liable to turn out of position, is to take a round piece of wood three or

four inches long, and having a groove in the centre for the attachment of the cord, and also one on each extremity to hold it in place, where it is buttoned into button-holes made in the lower part of the tabs attached to the strip of adhesive plaster already fastened to the sides of the limb. To the middle of this foot-board, or round stick, is attached a stout cord. The object of the board or stick is simply to prevent the bands from making uncomfortable pressure upon the malleoli. At the foot of the bed a pulley is to be arranged in such manner as the ingenuity of the surgeon dictates, the cord from the foot-board placed upon it and a weight attached, just sufficient to make such extension as will render the patient comfortable.

For a weight, a bag of shot or sand is most convenient, because the amount can then be very easily regulated.

To prevent the patient from slipping down in the bed, it should be raised ten or twelve inches by means of bricks or blocks. (*See* Fig. 164.)

The foregoing is for night extension; to apply an instrument for extension while the patient is exercising, the limb should be prepared in the following manner:

First cut two triangular or fan-shaped pieces of adhesive plas-

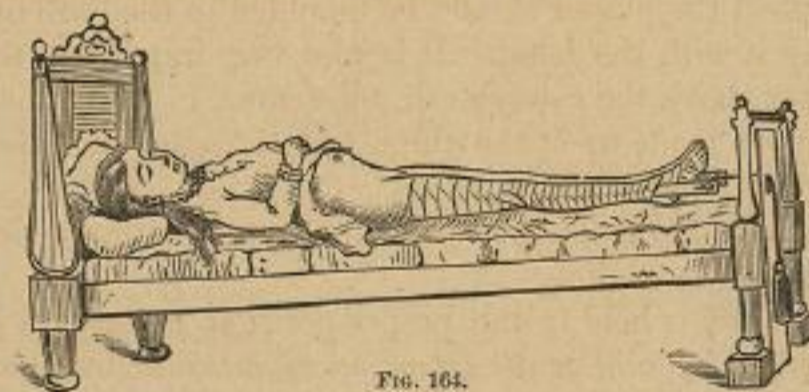


FIG. 164.

ter, the broad extremities of which should be wide enough to cover about half the surface of the upper part of the thigh, and are to be slit into strips an inch or more in width, for the purpose of permitting a more perfect adjustment, and, also, to be reversed in detail over the bandage. They should be of sufficient length to reach from the knee to the groin. To the narrow ends of these fan-shaped pieces you will sew a piece of stout tape or webbing, something non-elastic, three or four inches in length and as wide as the cylinder at the lower extremity of the instrument. (*See* Figs. 165 and 166.)

Next, place the instrument upon the thigh with its jaws about three inches above the condyles, and with the thumb and finger

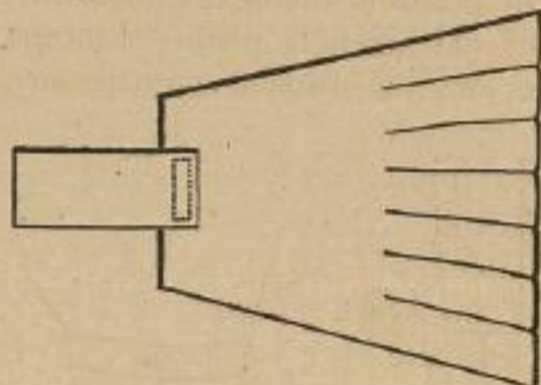


FIG. 165.

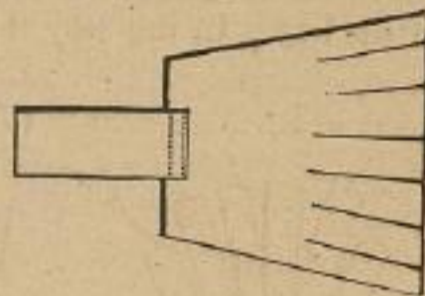


FIG. 166.

grasp the limb at the point upon either side where the instrument comes in contact with it. These two points indicate exactly where the tabbed ends of the fan-shaped pieces of adhesive plaster are to be applied. (See Fig. 167.)

Now, having placed the tabbed extremities over these points, secure them in position with the roller-bandage by first making a few extra turns near the tabs, and then carry the bandage snugly and smoothly over the plaster upon the thigh, until the perinaeum is reached, when the strips of plaster which are now floating loose are every other one to be reversed as the bandage goes around the thigh (see Fig. 168), continuing the bandage at the perinaeum until all of the strips of plasters are reversed, and then the bandage is carried down the thigh until the plasters are entirely covered. (See Fig. 169.)

The effect of all this is to hold the dressing firmly in place.

The thigh is now ready for the splint, and, after the shaft has been shortened as much as it can be, we will place it in position with the pelvic cross-bar, at the upper end, just under the crest of the ilium.

Now, fasten the lower extremity of the splint first, and this is done by passing the tabs around the little cylinders in the jaw upon either side, buckling them as high as possible, and then buckling the strap that passes behind the thigh. Next buckle the perineal band, drawing it snugly, but not too tightly, and see that the smooth side is next to the skin. It is well, also, to lay a piece of old linen in the groin under the band, to protect the parts from pressure, and also to absorb the moisture commonly present in this region.

The neglect of these little points often gives the patient and the surgeon a good deal of annoyance.

The instrument now being in position, the nice adjustment, which is to regulate the amount of extension, is made by means of the key. In this way the exact amount of extension necessary

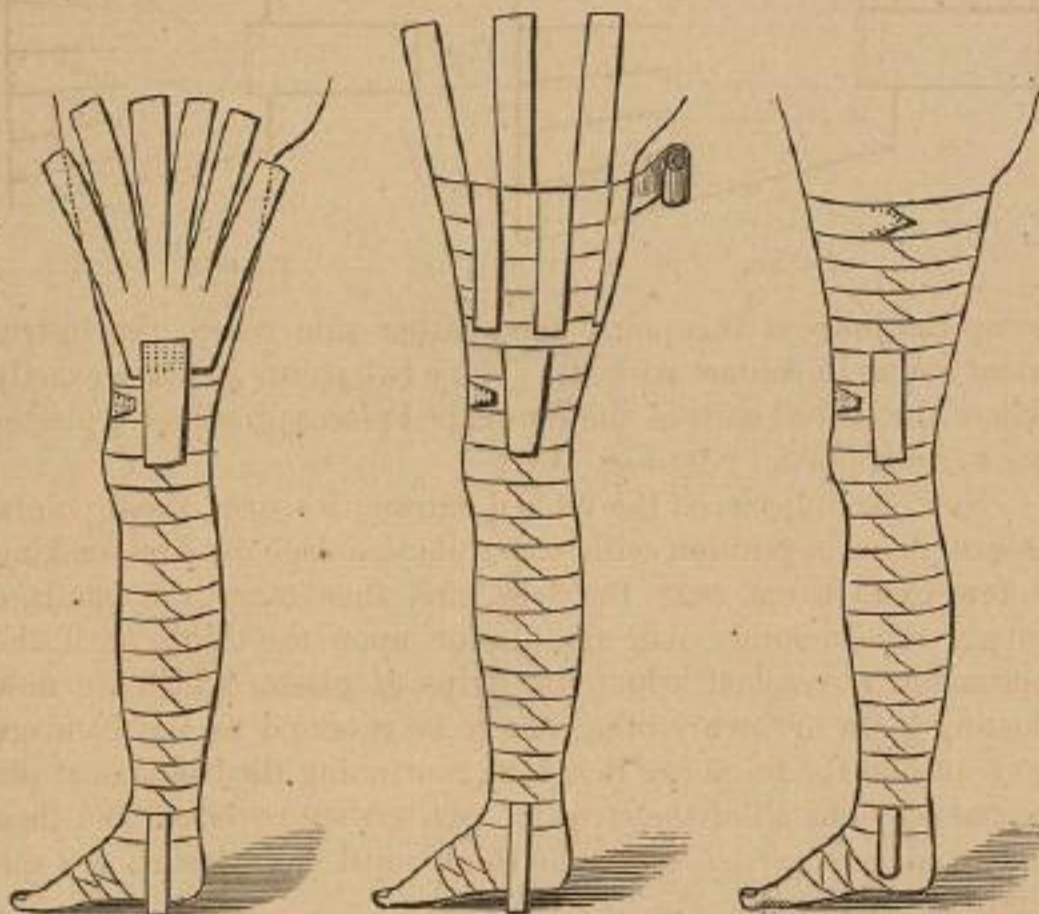


FIG. 167.

FIG. 168.

FIG. 169.

can be applied, and is to be regulated by the following rule: Apply sufficient extension so that when a sharp, sudden concussion is made from the knee, or the heel when the limb is straight, it will cause no pain whatever; that is all the extension required, and your patient's face is to be your guide in deciding when a sufficient amount has been obtained. More extension than this may give rise to an obstruction to the circulation, and do an infinite amount of harm.

At night, and at such other times as deemed necessary, the patient is placed in bed, and the *bed-extension* adjusted *before the splint is removed or shortened*. So, also, whenever the patient wishes to get up you are to apply the instrument and lengthen

the shaft, that is, make extension, *before the bed-extension is removed.*

If the patient is a small child, like this one before you, he may be permitted to wear the splint without using crutches. (See Fig. 170.) If the patient be of much size, crutches will be neces-



FIG. 170.

sary, for the plaster is only intended to retain the instrument in position and maintain sufficient extension to relieve the joint from all pressure, but *not* to support the weight of the body if the child is heavy.

If, after the application of the splint, the patient suffers pain, it is evidence that the splint has not been properly adjusted, and it should be carefully examined, for it may be that the plasters have yielded somewhat so as to permit pressure upon the joint. If so, it can be easily remedied by giving a little more extension with the key.

Now the patient is in a condition to receive the constitutional treatment so necessary in his case, which consists of beef, milk, bread-and-butter, etc., but, above all, plenty of sunlight and pure air.

The apparently trivial points which I wish you especially to remember (for they are really important, and neglect to observe

them has many times brought the instrument into disrepute) are the following :

1. Always shorten the shaft before applying or removing the instrument.
2. See that the jaws are tightly buckled, so that they will not be crowded down, and press upon the condyles.
3. Do not, as I have seen done, tuck the tape between the roller and the buckle.
4. Do not buckle the perineal band too tightly, for in that manner you may obstruct the femoral vessels, but make the extension with the key, which tightens the band by crowding it upward rather than by girdling the limb. There is a point with reference to the sound limb that must be mentioned; when the long splint is worn, have the sole of the boot or shoe worn

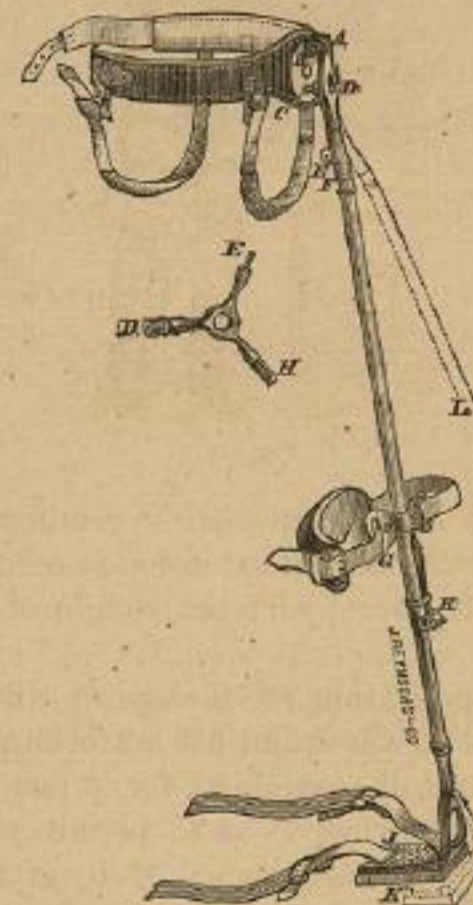


FIG. 171.

upon that side made extra thick, for the purpose of equalizing the length of the two limbs.

Finally, it will be noticed that the knee is left to move as freely as it may. I can see no propriety whatever in restraining the movements of this joint in cases of hip-joint disease in its

earlier stages, when the thigh is long enough to permit the application of the short splint. There may be other circumstances when it becomes necessary to give the knee support, etc., where the long splint should be employed and the movements of the knee-joint restrained. But, all such considerations being set aside, there is no reason why unrestricted motion at the knee may not be permitted.

It was designed that the motions of the joints should be free, and no harm will attend this freedom of motion, unless the joint itself becomes the seat of disease; but, on the contrary, restraint will give rise to more or less ankylosis and deformity.

I resort to the use of this short splint as early as possible, in order that the patient may have the benefit of exercise in the open air. It sometimes happens that it cannot be applied by reason of abscesses, or some other cause. In such cases the bed with extension may be arranged upon some light wagon or wheel-chair, so that the patient can be carried out-of-doors, and placed as far as possible under the influence of good hygienic conditions.

In such cases, however, I more commonly employ the long splint, which is a modification of that devised by Dr. C. F. Taylor, of this city.

This splint differs from the short one described above, in the following particulars:

In the first place it extends the entire length of the limb, receives the weight of the body at a cross-bar under the foot, and has two perineal straps with an iron girdle nearly encircling the pelvis. The long bar, reaching from the pelvis to the bottom of the foot, is hollow, and has another running inside of it furnished with a ratchet and key (*see* Fig. 171), by which we make extension, and is locked in the same way as upon the short splint. The cross-bar at the bottom of the instrument is covered with leather, and a strong leathern strap, *J*, passes beneath two iron rods just above the cross-bar, to which are attached the tabs from the adhesive plaster upon the leg. This completes the attachments at the lower portion of the instrument for making extension.

There is also a knee-pad, *G*, which is attached to the bar running along the outer side of the limb in such a manner that it can be moved up and down to any point desired.

An additional means for applying elastic force is attached to the posterior part of the instrument which is to be used in cases when the thigh is strongly flexed. It consists of an elastic band which is attached above the knee, runs along the back of the thigh, and is secured to the posterior portion of the pelvis-belt. This band can be made tighter as occasion may require, for the purpose of extending the limb, and should be elastic, for the purpose of keeping up a constant tractile force, and at the same time allowing 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 ankyloses the joint.

This instrument has been essentially improved by Mr. Reyn-  
ders, by the following additions:

The improved parts are where the long rod is attached to the pelvic band. The long rod is attached at *A* to a round revolving plate, *B*, which is fastened to the pelvic band. When the plate *B* is revolved (partly) the long rod moves forward and backward. From the point *A*, the long rod moves from and toward the other leg, as shown by the dotted lines toward *L*. *C* is a screw terminating at *D* in a small square stem of steel, fitting to a key. This screw turns in and out of the revolving plate *B*, and has at the end of its thread a little knob, which is a little larger than the perforation at the upper end of the long rod, so that, when the key is applied at *D* and turned, the screw *C* will force the long rod in the direction toward *L*. In this manner abduction is made. At *F* the long rod is divided into two parts; the lower part holds an endless screw transversely, which is worked by a key, and rotation thus produced. (*See* Fig. 171.)

As a matter of comfort to patients, these long splints are also used with joints at the knee, in slight cases of disease, or when convalescence has definitely set in. These joints are sometimes made with coiled springs at the knee, by which, when the leg is bent backward and the power relaxed, it will spring forward involuntarily.

The limb is prepared for the long splint in the following manner:

Cut two strips of strong moleskin adhesive plaster from two to four inches wide, according to the size of the limb, and long enough to reach its entire length, and divide the upper extremity of the plaster into narrower strips for a distance of two or three



inches. Pieces of strong webbing, one or two inches in length, with buckles attached, are sewed 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 then so secured by a snugly-adjusted roller as to leave the tabs with the buckles attached hanging loose. The roller is then carried up over the knee, and as far up the thigh as can be done with convenience, when the upper split ends of the strips of plaster are reversed and braided in with the roller as it returns down the thigh, securing it smoothly. The stocking is then pulled up on the foot, holes having been cut on either side for the buckles to pass through, and the shoe applied with holes cut through it in the same way.

The limb now being prepared, the instrument is placed on its outer side, and the cross-bar at the bottom brought in front of the heel of the shoe, and securely buckled to the tabs above described. The pelvis-belt is next brought around the hips, and secured by the buckle upon the opposite side, and the perineal bands are next attached as firmly as may be. The knee-pad band is then slipped up or down until it is made to rest opposite the knee, when it is passed around the leg and buckled. Extension is now made with the key upon the ratchet until free compression is borne without pain, and the patient can walk without cane or crutch. (See Fig. 195.)

If the limb is adducted, the abducting screw can be used, daily increasing the tension for the purpose of abducting the limb.

If the limb be strongly inverted, the eversion-screw can be used, the force being gradually applied for the purpose of rotating the foot outward; and, if the thigh is strongly flexed, the force exerted by the elastic band upon the posterior part of the splint can be applied for the purpose of producing extension.

In case you are not able to obtain either a short or long splint, it is possible to treat the case successfully by means of the bed-extension alone. Another method is, in addition to the bed-extension, to make extension by increasing the weight of the shoe worn upon the foot of the affected limb, and permitting the patient to go about on crutches. This can be done by running lead into the sole of the shoe. In such a case you will be obliged to increase the length of the sound leg by making the sole of the shoe considerably thicker. In this manner the patient can be up

and around a portion of the time, sufficient, at least, to relieve him from the bad influence of continued confinement in bed. By using the wheel-crutch, manufactured by Darrach & Co., and the weight in the bottom of the shoe, in addition to the bed-extension, the patient can be made very comfortable indeed.

These are methods which may be resorted to when proper splints cannot be obtained.

## LECTURE XXII.

### DISEASES OF THE JOINTS.—MORBUS COXARIUS (CONTINUED).

Treatment (continued).—Treatment for the First Stage.—Treatment for the Second Stage.—Treatment for the Third Stage.—Case illustrating Treatment of Advanced Hip-Disease without Complete Excision.—Indications for Excision.

GENTLEMEN: At my last lecture we studied the principles which should guide us in the local treatment of hip-disease, and I also gave you a description of the apparatus and the manner of their application, by means of which you are to carry them into practical operation.

Now, for the sake of clearness, let us return, and to-day consider separately the treatment to be adopted in each stage.

What, then, is the treatment for the *first stage*?

Local depletion by means of leeches or cups is often necessary. The bowels should be kept free.

Such constitutional remedies are to be employed as may be requisite in each particular case.

Such general support should be given as the system seems to demand. Issues in this stage of the disease are worse than useless, and do harm instead of good. The only good they ever have effected can be explained by the fact that they made the parts so painful the patient was compelled to keep more quiet than he otherwise would have done. The occasional application of iodine or a blister may be of some service; but in a majority of cases I have found the application of leeches and ice to be much more beneficial. The most important of all the means to be em-