

## **Cases illustrative of the division of tendons / [William Rhind].**

### **Contributors**

Rhind, William, active 1818-1867.

### **Publication/Creation**

[Edinburgh] : [J. Stark], [1841]

### **Persistent URL**

<https://wellcomecollection.org/works/ej7tkfuh>

### **License and attribution**

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



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

the infantry in the Glacis is 5.5 per 1000 less than  
the depot of the West India regiments, which are held  
in a tent, or perhaps favourable position of the state of the  
general body of infantry in this country, the mortality being  
among the regiments at Freetown is two per 1000 or less  
greater than what it is on the same amount of force at all the  
other military stations collectively.

If we then take into account the extent of immunity from  
sickness and death, which the troops in the Glacis enjoy  
owing to the elevated position of the camp, leaving them  
in comparatively full enjoyment of the beneficial influence of  
the climate of Freetown, we are seen in indicated by  
a diminished mortality of 5.5 per 1000 of force, when com-  
pared with the mortality of the troops in the Glacis.

# CASES

## ILLUSTRATIVE OF THE

# DIVISION OF TENDONS.

By WILLIAM RHIND,  
Surgeon, Edinburgh.

(From the *Edin. Med. and Surg. Journal*, No. 146.)

It would be easy to estimate the probable amount of loss  
among the depot of regiments serving in the West India  
from the rate of mortality here given; but as this would  
expose us to the charge brought against Dr Simpson,  
"that in calculations of averages and general results, we  
will forego the corroborative evidence which this would afford  
and remain satisfied with the proof here adduced in favour  
of the inferiority of Freetown, and of the partial superiority  
of the Glacis to the depot, we will not do so."

It would be easy to estimate the probable amount of loss  
among the depot of regiments serving in the West India  
from the rate of mortality here given; but as this would  
expose us to the charge brought against Dr Simpson,  
"that in calculations of averages and general results, we  
will forego the corroborative evidence which this would afford  
and remain satisfied with the proof here adduced in favour  
of the inferiority of Freetown, and of the partial superiority  
of the Glacis to the depot, we will not do so."





## CASES.

THE division of tendons in various parts of the body, first performed by Stromeyer and Dieffenbach, and, especially in cases of Talipes, introduced to the notice of the profession in Britain by the excellent work of Dr Little, still continuing to excite much interest among medical practitioners, has induced me to offer a few cases in illustration of this most useful invention, in the hope that the detail of practical results may still be a desideratum with the profession.

CASE I.—*Division of the Tendons of the Ham for cure of contracted Knee-joint.*—Miss F. aged 30, when about 8 years of age, fell and received a contusion in the right knee, suppuration ensued, and a tedious ulceration and discharge continued for several years. On the ultimate healing of the ulcer, partly, perhaps, from the effects of bandaging the joint, and partly from drawing up the leg to relieve the uneasiness of walking, it was found that the knee-joint had contracted considerably, and in this state it has remained till the present time. Her general health is now good, but in walking she can only put the point of the great toe of the affected leg to the ground, while the heel is elevated four inches. In consequence of this she walks with great difficulty, and with the appearance of great lameness. On examination I found the tendon of the biceps muscle very tense, as also the tendons of the semi-membranosus, semi-tendinosus and gracilis, though in a less degree. On attempting to press the foot to the ground, the *tendo Achillis* seemed also very tense, although on examining the foot in the relaxed state there was free motion in the ankle-joint, and no deformity or undue rotation of the foot. On further minute inspection of the ham, I perceived the tendon of the plantar muscle somewhat contracted; and this I concluded was the cause of the tension behind the ankle when the leg was extended in the erect position. Fig. 1, Plate VII., represents the extent of contraction of the knee-joint. Finding that there was full motion of the joint within the limits of the contracted tendons, and that the surrounding parts were in a perfectly healthy state, I at once proposed an operation, which was agreed to. On 3d October 1840, I divided the tendon of the biceps by introducing a small bistoury under the skin, a little to the outside of and above the tendon, and, turning round the edge of the knife, I cut it through at two strokes from above downwards. I then introduced the bistoury on the inside of the ham, and divided the tendons of the semi-membranosus and semi-tendinosus and gracilis muscles in the same manner, and with the same external opening, turning the knife towards the middle of the ham, I raised up by extension and carefully divided the plantar tendon. It was my intention also to divide the *tendo Achillis* at the ankle, if I found that the division of the plantar tendon had not relieved the tension of the former; but on examination, I found that this had completely effected the object desired. There was only a few drops of blood flowed from the first puncture, and a slight venous hemorrhage from the second. A compress and bandage were applied, and the whole limb was bandaged



up and retained in its original bent position by means of appropriate splints.

7th, The patient has passed two quiet days and nights without any pain or uneasiness. To day a splint was put under the limb, and the bandages partly removed, gradual extension was employed, and the heel easily came down one inch, when the apparatus was adjusted so as to prevent farther extension.

9th, Slight pain last night around the upper part of knee-joint, and slight spasm of muscles. Removed the dressings to day. The outer puncture is completely healed up; slight sanious discharge from inner wound. Extension to-day of about half an inch; no pain or uneasiness. A stimulating lotion ordered if the pain and spasm return.

10th, A good night, and no return of pain; extension gradually continued.

16th, Extension of knee now complete, and the heel on approximating it to the other is one-fourth of an inch shorter. This arises from the developement of the bent leg having been thus much retarded. There is a slight ecchymosis on the inside of the ham, and a small discharge of venous blood from the puncture, for which a stimulating lotion was ordered.

Nov. 7th, A gradual improvement has daily taken place; the wound inside the leg is now healed up, and all the divided tendons feel strong and continuous. There is a complete motion of the knee-joint without pain, and when the foot is placed on the ground, the heel is on a level with the toes. The patient can walk a little with ease, placing the heel and sole completely on the ground; and it is evident that a little more strength and confidence will enable her to walk without pain or halting. The tepid salt water bath and friction of the whole leg and foot ordered to be persevered in.

As the object in this and similar cases is to conduct the extension in a gradual manner, so as that the tendons in their process of union may be elongated to the extent required,—and this may, in some cases, be not less than two to three inches, according to the degree of curvature,—an apparatus constructed for this purpose is represented in Plate VII., Fig. 2. *ab* is a strong wooden splint hollowed out in the middle and padded, with a hinge at *c* and a sole-piece at *b*, also hinged with its axis at *d*, corresponding to the axis of the ankle-joint. A strap with a buckle on each side, as seen at *e*, will serve to make the necessary flexure of the foot and ankle-joint, so as to prevent any chance of contraction during the process of cure, or serve for extension in cases where the *tendo Achillis* requires division. The semicircular metallic plate at *c*, passing through a staple, may be secured at any point by means of a common nut screw, and will thus enable the knee-joint to be gradually and cautiously extended. Whenever the extension becomes painful this joint may be slackened as well as the straps and bandages attached to the splint, as seen at *ff*. I have not seen the instrument used by Stromeyer in similar cases, nor a description of it, and therefore cannot say how far it coincides with the above; but this was the first obvious



suggestion that occurred to me, and it is sufficiently simple and suitable for general use.

I have selected the following cases of talipes from a considerable number lately treated, because they are of an extreme grade, in order to show the success of such operation: even under unpromising circumstances.

Fig. 3, Plate VII. represents the left foot of a boy aged 9. Congenital varus where there was extreme contraction of the tendons and an angular flexure of the tarsal bones, aggravated by the injudicious application of a steel boot, some years before. The cuboid bone projected considerably from its place.

August 12, 1840.—In this case the *tendo Achillis*, the *tibialis anticus* and *posticus*, and the *abductor pollicis* were divided. In a few days, by means of the usual extension, the foot was brought nearly straight; but it was now discovered that the *plantar fascia* in the sole, and the *flexor pollicis* were also much contracted. These were immediately divided, and pressure applied to the projecting tarsal bones, by means of a pad and bandages. September 10, The patient can now put the sole to the ground, and walk with considerable ease; but there is still a stiffness of the ankle-joint and a partial displacement of the cuboid bone.

By means of a pad and bandaging and assiduous friction, the foot gradually assumed its natural position, and it now presents the appearance as represented by Fig. 4.

The boy can walk with ease, and merely requires a boot with a high heel, as the lame foot is about half an inch shorter than the other. The retardation of the cure here was the displacement of the tarsal bones, and the extreme contraction of the *plantar fascia*.

Fig. 5, 6, represent the right and left feet of a female aged 25, with congenital varus. In the right foot the heel is very little elevated, and there is but slight contraction of the *tendo Achillis*; but the other tendons of the inner ankle are very tense and unyielding, and bend the tarsus and toes at nearly a right angle inwards. The left heel is much more elevated, and the foot and toes more twisted inwards and upwards from the rigid contraction of the *tibialis anticus* and *posticus* and the flexors of the toes. There is also in both, but especially in the left foot, a considerable separation of the bones of the tarsus and metatarsus on the outer side, and a great thickening and enlargement of the integuments and bursæ, forming a large artificial pad or heel which, in the left especially, often becomes inflamed and painful if much exercise is taken. The whole left leg from the knee downwards has also a considerable twist inwards, and to a much greater extent than the right leg.

September 8, 1840.—In presence of Dr Abercrombie and Sir George Ballingall, I divided, in the right foot, the *tendo Achillis*, *tibialis anticus*, and *plantar fascia* with the flexors of the toes; in the left, the *tendo Achillis*, *tibialis anticus*, and *posticus*, *abductor pollicis*, and flexors of the toes.

11th, There has been no uneasiness, and the wounds are all healed up. Extension was begun to day. In consequence of the ex-



treme curvature of the feet, the usual instruments of extension could not be applied. I had therefore prepared two long splints with hooks at their extremities, which were applied to the fibular sides of each leg, interposing an air cushion between each. In this way considerable extension was made and persevered in for a few days, until first a modification of the Scarpa shoe was applied, and at last the Scarpa shoes themselves.

October 2d. Considerable progress has been made by using the Scarpa shoes during the day, and night shoes of a simpler construction, with occasionally the use of the long splints and other apparatus.

On examining the right foot more particularly, I found that the undivided *tibialis posticus* is one cause of obstruction to its full extension, divided it to-day about half an inch from its insertion in the *os navicularis*.

16th. Extension of right foot has greatly advanced. In the shoe it appears almost straight, and the sole and heel come down with ease. The patient can walk about tolerably well. The left foot is still considerably curved with great tendency of the whole leg from the knee to turn inwards. This has to be obviated by a splint, which reaches from the knee to the toes, resting upon the edge of the Scarpa shoe, and which is bandaged tightly along the whole leg. Additional compression is also applied to the left foot. The diligent use of fomentations and liniments, especially over the thickened integuments, is also enjoined. The old heels have now become soft, and are rapidly undergoing absorption.

November 4th. A pair of common boots have been worn for some days. The right foot is almost perfectly straight with the slight restraint of the boot. The left has still a tendency to turn inwards, but the heel and sole now come to the ground, and the motion of the ankle-joint is greatly more free.

9th. The patient now walks a little through the room; the artificial heels are fast disappearing, and thus the feet are assuming more of the natural symmetry. The fore part of the foot and toes can now be easily kept in a straight position by the simple restraint of a laced boot, but the opposing ligaments and muscles on the outside of the foot and leg have not yet so contracted as to resume their power to retain the foot in its straight position without assistance. Indeed, in consequence of the great relaxation of the peronei muscles and tendons, as also of the overstretched ligaments of the outer edge of the tarsus, a considerable time must elapse before the proper action of the fore part of the foot is acquired. In the meantime, however, there is a firm footing of the heel, and a motion of the ankle-joint never before enjoyed.

Fig. 8 and 9 exhibit the shape and position of the feet at this period.

In this case I have already alluded to the inward twist of the leg from the knee downwards. There is an unusual looseness of the articulation of the upper end of the fibula with the tibia, as well as a corresponding looseness and deficiency in size at the inner ankle of the *malleolus internus*.



These arise from the constrained and unnatural mode of progression hitherto practised, in consequence of the uneven surface which the side of the foot presents in walking, and its great tendency to inversion, aided also by the contracted state of the muscles of the inner side of the leg, which have a constant tendency to pull the tibia and fibula inwards.

Fig. 7. The case of a boy, aged  $4\frac{1}{2}$  years, with congenital varus of both feet, is given to illustrate this twist; the dotted line *a a* marking out the natural position of the femur and tibia. In this case the cure of the varus, in so far as the feet were affected, was almost completed in two weeks, yet much subsequent pains were requisite to overcome the twist in the legs, and to bring back the muscles to their legitimate action. For this purpose long splints and bandagings were used, and when at rest placing the knees and legs parallel to each other, and drawing them into contact by belts or bandages.

The efficacy of the division of tendons is no less obvious, even in incipient affections of the muscles not congenital, as the following case illustrates.

D. A. aged 4 years, had long been observed to have a weakness of the right ankle. He often fell when running or even walking, and his foot had a tendency to turn outwards, forming a slight *talipes valgus*. On examining the foot I found the peronei tendons tense, and apparently a want of action in the muscles of the inner side of the leg and ankle. The tendons of the *peroneus longus* and *brevis* were divided, and the foot so bandaged as to incline the toes inwards. This was continued for several days till the divided tendons reunited, while a stimulating embrocation was rubbed on the inner side of the leg and ankle. Ten days after the operation the toes in walking had now rather a tendency to fall downwards, but by adjusting a piece of whalebone on the boot, so as to give a support on the outer ankle, and fixing a strap to prevent the extreme flexure of the joint, the step in a few days became much firmer, and he evidently walked with more facility, with less inclination to turn out the toe. In two weeks he returned home, and his father writes me that "he has improved much in walking, and now very rarely falls." In course of time there is little doubt but this would have turned out a confirmed valgus.

I conclude with a few general deductions from facts.

With regard to the mode of operating, I generally prefer cutting the tendon from without inwards, instead of slipping the knife below the tendon, and cutting outwards, as recommended by Dr Little. By making the proper extension, the contracted tendon can always be raised sufficiently, so as not to endanger any of the neighbouring vessels; and a little experience will enable the operator at once to distinguish, by the feeling communicated through the knife, when the tendon has been completely severed, and thus he will be prevented from going deeper.

When neatly performed, the operation causes very little pain; in-



deed the whole pain consists in penetrating through the external skin. The severing of the tendons may be called a peculiar uneasy feeling rather than decided pain.

In no instance have I known or heard of any unpleasant effects which followed the division of tendons; on the contrary, adhesion of the skin, with very few exceptions, takes place in two or three days, and a junction of the divided tendon in a few days more. In one or two cases, from the extreme restlessness of children, slight suppuration of the external wound occurred; but this had no injurious effect on the tendon beneath. In two or three cases the adhesion of the divided tendons was so complete in four days as to admit of motion of the corresponding muscles. In other cases, the callosities have remained in a soft and relaxed state for weeks. These are circumstances to be carefully looked after by the practitioner, otherwise the success of an operation may be frustrated, either by undue delay in making the necessary extension, or by premature extension endangering the total separation of the divided ends of tendons. It may be satisfactory, however, to know that a divided tendon, whose extremities have been separated for a whole month, will unite by simple apposition of the divided ends. Four years ago a lady applied to me with her middle-finger completely bent inwards, in consequence of a cut with a sharp knife, which she received a month before on the back of the middle joint of the finger. On examination, I found that the wound was completely cicatrized, and the ends of the divided tendon were distinctly felt on each side of the joint entirely apart. The separation had existed, as I have said, for a month. I bandaged up the finger with a splint inside, to keep the two ends in contact, and enjoined her to preserve it in this position for at least a month, with, I confess at that time, but faint hopes of success. Within the month, however, I had the satisfaction to find that union had taken place, and that the full use of the joint was restored.

It is truly astonishing also to witness to what an extent a severed tendon will elongate in the course of a few days. In some cases, the amount of elongation could not be less than from  $2\frac{1}{2}$  to 3 inches in little more than ten days. The absorption of the false heel is also a matter of interest to the surgeon, and often of anxiety to the patient. The persevering use of frictions and well adjusted pressure are the best means for accomplishing this. I have found an ointment of hydriodate of potass and a few grains of iodine most useful for promoting this process. In some cases these callosities become quite soft and greatly distended with a fluid, a short time previous to their final disappearance. This fluid, I presume, is the synovial liquid, proper to the joints of the foot.

In the great majority of cases which have come under my own observation, the right foot is most frequently affected, and when both feet are deformed, the right is generally more contracted than the left. This fact was first called to my notice by my friend Mr Braid of Manchester, who remarked the same in the extraordinary



number of cases which are passing so successfully under his hands.\* On reference to Dr Little's book, the same remark holds with regard to his cases therein enumerated. Others have, however, had different results, (See Dr Thomson's table in Med. Journal, No. 144.)

The contraction of the foot retards its due developement, especially its elongation. All the talipes feet I have seen are shorter than the natural and average size, and in single cases the affected leg is uniformly shorter than the other. After cure, however, especially when the heel has been much drawn upwards and inwards, there is an addition to the length of the leg, sometimes amounting to an inch.

In one case I found *talipes varus* hereditary. In another instance varus occurred in a nervous child when two years old, whose father was affected with nervous convulsions, in consequence of intemperance.

In a patient with varus of the left foot, there was a tendency to valgus of the right. The varus was cured by operation, and the valgus benefited by a properly constructed boot.

In young subjects, the cure is of course more expeditious and more perfect than in cases far advanced and aggravated by much walking. Congenital cases seem to be more severe and more difficult of cure than non-congenital.

There seems to be no limits, however, with regard to age, provided the period is within that in which the renovating powers of the constitution are still vigorous. Nor are even the most unpromising distortions incapable of relief and even complete cure. Dr Little has justly remarked, that in this department of the healing art, we have to wage a continued conflict with nature. It is wonderful how much perseverance will effect. The ligaments, and tendons, and bones, which seem at first as rigid and inflexible as the trunk of the oak, begin at last to give way. They first become yielding and elastic, and at length assume all the suppleness of their original nature. We have already alluded to the absorption of the indurated integuments and cellular membrane. Even the raised and thickened edges of bones that have been thus enlarged by undue pressure, after a time become smoothed down by the accommodating activity of the absorbents.

The last matter for consideration is, what are the class of cases in which the operation of division of the tendons is to be recommended, and what are those in which the beneficial results of an operation are more doubtful?

The operation is so perfectly safe, and infringes so slightly on the constitution, that in all cases of young and middle-aged persons, where there are prospects of ultimate advantage, there ought to be no hesitation in putting it in practice. In the case of contracted

\* To this enthusiastic practitioner of the Stromeyerian operation, I owe many valuable practical hints, as well as much personal and professional kindness and liberality. It is to be hoped that the public will soon be put in possession of the results of his ample experience. On this account, I forbear touching on some new and interesting points connected with the subject, which he has been the means of eliciting.



knee-joints, for instance, where the leg is generally useless, and sometimes an incumbrance, the probability even of success would be sufficient to hazard such a harmless attempt at restoration.

It is the same in all those cases which may be called half or incomplete varus, where the foot is not completely turned round and fixed in an uniform position ; but where it turns inwards and on its edge every time the patient treads on the ground, this with little apparent distortion causes great lameness and almost total incapacity of locomotion. In all these the cure is easy, speedy, and most complete. In old confirmed cases of varus, on the other hand, there may be some grounds for hesitation, especially in cases of double varus of the extreme grade. In these, long habit has enabled the sufferer to form an artificial sole and heel, on which he walks with comparative facility, although with a great and laborious expenditure of his whole muscular system. It requires the action of almost all the muscles of the trunk and extremities to preserve a centre of gravity so different from that of ordinary men. In such cases the cure is comparatively much more difficult and protracted. It is a work of time and incessant perseverance, and requires all the assiduity and tact both of the patient and medical practitioner,—a mind fertile in resources, and a hand accustomed to mechanical manipulation. Without all these, sad failure will be but too often the sequel of all such attempts. Time, means, opportunity, station in life, and even cast of mind and feelings, must all form elements in determining cases of this class.

Attached to deformity there is a feeling which nothing but personal experience can communicate,—a depressing idea of inferiority and of difference from one's fellows,—a sensitiveness to the contempt of the unfeeling and rude, or even to the careless curiosity and wonder of the thoughtless,—a shrinking from the gaze even of one's friends,—and a feeling ever recurring to the mind that the peculiar physical infirmities are the objects of remark, when no such observance, perhaps, ever occupies the thoughts of those around. All these, in spite of philosophy, and even under the discipline of a more sacred and self-humbling creed, prey upon the mind,—cast a chill over the glowing blossoms of youth,—interfere even with the sobered thoughts of maturer years,—influence the actions, and determine the very cast and tenor of the way of life. This feeling, perhaps, had its share in setting the too sensitive Byron at enmity with his kind,—added deeper cunning and finesse to the subtle mind of a Talleyrand,—restrained Scott from the Court, and “tented field,” and goaded him on to all manner of ambitious shifts of establishing a name and family, to make up for the consciousness of physical infirmities. The hump-back, no doubt, added an additional sting to the satire of Pope, as similar deformities have soured the otherwise bland tempers of many men of inferior mental capacity. It is this feeling which renders young and old so patient under the process of cure ; so full of hope and anticipation, and so willing to undergo physical pain and temporary confinement. While other patients are depres-



sed with the disappointments and unexpected afflictions of disease, these are full of buoyant spirits, and patiently endure, without any encroachments on their general health, restraint and uneasiness, which, under other circumstances, would be all but intolerable.

It is this feeling which arouses the intense interest of the mother hanging over her deformed child, when accounts of cure and restoration reach her ears ; and when at length the shapeless and contracted mass of limb begins to assume its natural symmetry, and at last receives the handsome boot, exhibiting all the proportion and lineaments of a symmetrical form, one can scarcely say whether the countenance of mother or child evince more heartfelt exultation and delight.

8, Hart Street, 12th November 1840.

Attached to deformity there is a feeling which nothing but personal experience can communicate—a depressing idea of inferiority and of difference from one's fellows—a sensitiveness to the contempt of the unfeeling and rude or even to the careless curiosity and wonder of the thoughtless—a shrinking from the gaze even of one's friends—and a feeling ever recurring to the mind that the peculiar physical infirmities are the objects of remark when in such observance, perhaps, ever occupies the thoughts of those around. All these, in spite of philosophy, and even under the discipline of a more sacred and self-humbling creed, prey upon the mind—cast a chill over the glowing blossoms of youth—interfere even with the sobered thoughts of maturer years.—influence the actions, and determine the very cast and tenor of the way of life. This feeling, perhaps, had its share in setting the too sensitive Byron at enmity with his kind.—added deeper cunning and guile to the subtle mind of a Talleyrand.—restrained Scott from the Court and "tented field," and goaded him on to all manner of ambitious shifts of establishing a name and family, to make up for the consciousness of physical infirmities. The lump-back, no doubt, added an additional sting to the satire of Pope. PRINTED BY JOHN STARK, OLD ASSEMBLY CLOSE, EDINBURGH. Pains of many men of inferior mental capacity. It is this feeling which renders young and old so patient under the process of cure ; so full of hope and anticipation, and so willing to undergo physical pain and temporary confinement. While other patients are depressed







Fig. 1.

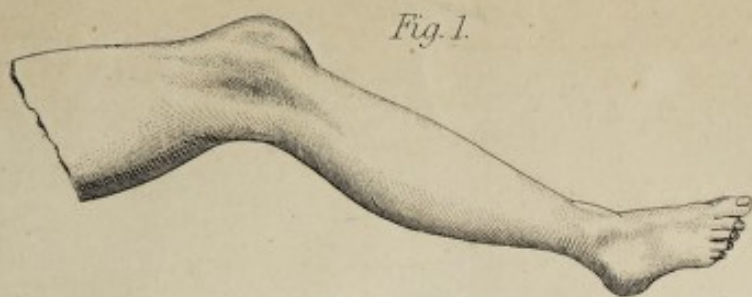


Fig. 2.

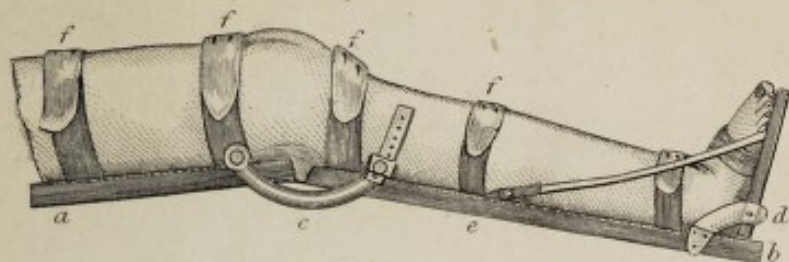


Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.

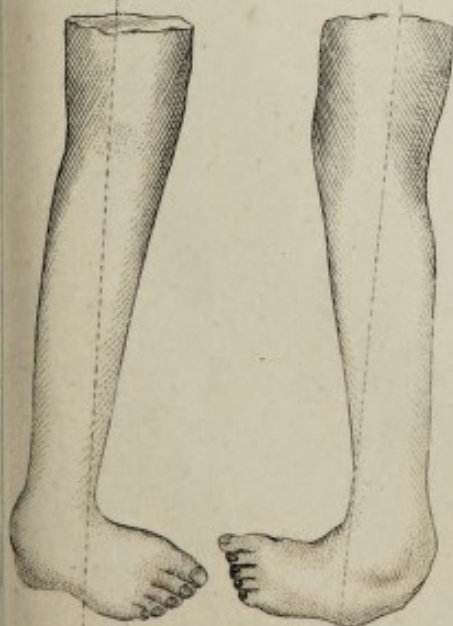


Fig. 8.



Fig. 9.





