

and supination is unimpaired, as well, also, as the power of flexion and extension.

In the example of outward dislocation mentioned by Deville, there was an almost complete absence of the ulna, the head of the radius mounting upwards more than three centimetres above the level of the articulation.¹

Guérin, who has described an example of a forward dislocation, says it was observed by him in a girl of seven years, and that it was symmetrical. The two radii lay in front of the humeri, near the coronary fosses.² Hayem³ has also reported an example of double forward dislocation, which he believed to be congenital.

§ 11. Congenital Dislocations of the Wrist.

Guérin thinks he has seen three forms of congenital dislocation of the wrist. First, a dislocation forwards, characterized by a sliding of the wrist before the bones of the forearm, and by the projection posteriorly of the lower ends of the radius and ulna; seen in an infant of six months, and in two adults. Second, backwards and upwards; seen in a child of six years, and accompanied with an incomplete paralysis of all the muscles of the forearm and hand. Third, backwards and outwards; in a girl of fourteen years, accompanied with incomplete paralysis.⁴

Guérin has also seen three examples of dislocation outwards in foetal monsters, and one of dislocation inwards, as the result of arrest of development.

Robert Smith believes that the case of simple dislocation of the wrist or of the carpus forwards, mentioned by Cruveilhier in his *Anatomie Pathologique*, was an example of congenital dislocation; and he relates two other cases equally remarkable which came under his own observation. One was in the person of Deborah O'Neil, a lunatic and epileptic, who died when thirty-six years old. Both upper extremities were deformed from birth; the right presenting an example of dislocation of the carpus forwards, and the left of dislocation of the carpus backwards. The dissection showed that there had been an arrest of development, especially in the bones of the forearm and carpus. The second was in the person of a young woman who died of phthisis in the Richmond Hospital; the right wrist presenting an example of congenital dislocation of the carpus forwards from arrest of development also.⁵

Marrigues describes a very singular congenital displacement which he found upon a newly born infant. The radius and ulna were widely separated below, and in the interspace was lodged the whole of the first range of the carpal bones; the hand being strongly turned inwards.⁶

¹ Deville, Bulletin de la Soc. Anat., 1849, p. 153.

² Guérin, op. cit., p. 31.

³ Hayem, Bull. Soc. Anat. de Paris, 1864, p. 56.

⁴ Guérin, p. 717. ⁵ R. Smith, op. cit., pp. 238, 251.

⁶ Marrigues, Malgaigne, from Journ. de Méd., t. ii. p. 31, 1775.

§ 12. Congenital Dislocations of the Fingers.

Chaussier found in a fœtus the last three fingers of the left hand dislocated at the metacarpo-phalangeal articulation. The thighs, knees, and feet were also dislocated.¹

A. Bérard speaks of an incurvation backwards of the last two phalanges of the fingers as having been occasionally seen in newly born children of the female sex; and Malgaigne adds that he has himself seen a woman who had, from birth, all the *phalangettes* carried backwards to an angle of 135°, leaving the heads of the phalanges projecting forwards under the skin.²

Robert has seen, in a girl six years old, a congenital lateral dislocation of the *phalangette* of the index finger, which was inclined outwards at an obtuse angle. The external condyle of the lower extremity of the proximal phalanx was slightly atrophied, and the internal presented a corresponding projection. Robert cut the internal lateral ligament by a subcutaneous incision, but without any favorable result.³

§ 13. Congenital Dislocations of the Hip.

Dupuytren thought that double dislocations of the hip-joint, as congenital accidents, were more common than single dislocations, but in the experience of Pravaz the rule has been reversed, he having met with but four double dislocations in a total of nineteen.

They have been noticed much oftener in females than in males. Of forty-five examples mentioned by Dupuytren and Pravaz, only seven or eight were males.

The following table, constructed by Poinot from statistics gathered by Drachmann, Pravaz, and Krönlein, respectively, ought to be accepted as conclusive evidence that unilateral dislocations are more frequent than bilateral, and that these deformities are much more frequent in females than in males; while as regards its occurrence in the right or left limb, no marked preference exists for either.

Observations.	Limits of observation.	Males.	Females.	Unilateral.			Bilateral.
				Left.	Right.	?	
A. G. Drachmann (77),	1865-1880	10	67	24	24		29
Pravaz (107),	1863-1878	11	96	27	29		51
Krönlein (90),	1875-1880	14	76	32	22	5	31
		35	239	83	75	5	
			274		163		111

Congenital dislocations of the femur may be complete or incomplete. Of the complete dislocations, four varieties have been noticed.

¹ Chaussier, Malgaigne, op. cit., t. ii. p. 751.

² Bérard, Malgaigne, op. cit., p. 773.

³ Robert, from Malgaigne, op. cit., p. 773.

Upwards and backwards, upon the dorsum ilii. This variety is by far the most common.

Upwards and forwards; the head of the femur resting upon the eminentia ilio-pectinea.

Downwards and forwards into the foramen thyroideum: of which variety Chaussier alone mentions one example; but Delpech found in an infant, born paralytic, the head of the femur lodged habitually near the foramen thyroideum.

Directly upwards; seen by Guérin, Pravaz, and others; the head of the femur being placed immediately without the anterior inferior spinous process of the ilium.

Guérin has observed, moreover, a single variety of subluxation; characterized by the incomplete displacement of the head of the femur in the direction upwards and backwards, so that it rested upon the edge of the cotyloid cavity: "observed often in newly born children, and with those in whom the muscular dislocations are effected spontaneously after birth."

Through the courtesy of Dr. Davis, of this city, I was permitted, in March, 1865, to see a child, the daughter of a gentleman residing in Victor, Monroe Co., N. Y., who was born in 1860, with dislocation of both knees and both hip-joints. The legs at the time of birth were doubled forwards upon the thighs, the heads of the tibiae resting upon the front of the femurs, one inch above the condyles, the thighs being at right angles with the body and the feet touching the abdomen. The knees were drawn closely together. The dislocation of the heads of the femurs was not at this time recognized. By constant pressure Dr. J. B. Palmer had succeeded, at the end of one year, in restoring the legs to position, the thighs remaining flexed; but when two years old she began to walk, with her body bent forwards. The displacement of the hip-bones was then first discovered. When four years old the sartorius and tensor vaginæ femoris were severed, but with very little benefit. At the time of my examination she was five years old. The thighs were still flexed and adducted; by pressure upon the knees the femurs could be slid upwards and backwards upon the ilium one inch; on rotating the femurs the trochanters were observed to move upon a very short radius, indicating the entire absence of head and neck. She walked with the gait peculiar to these conditions.

Both Delpech and Guérin have called attention to two varieties of what the latter terms pseudo-luxations; of which the first simulates a dislocation upwards and backwards, and the second a dislocation downwards and forwards. In these examples, the extreme adduction or abduction of the thighs might lead to a belief that the bones were dislocated, when in fact the abnormal position of the limbs is due only to muscular contraction, without actual articular displacement.

In the remarks which follow I shall have special reference to that form of congenital dislocations of the femur in which the head of the bone rests upon the dorsum ilii, as being that which will be presented in a vast majority of cases, and which, characterized by the same general phenomena, may be regarded as typical of all the others.

Symptomatology.—First. When the dislocation is double.

In these examples the deformity is often found to be absolutely symmetrical; the opposite limbs being of precisely the same length, and in the same relative positions; a circumstance which, when it exists, may render the diagnosis more difficult, or may cause it to be for a long time entirely overlooked. It is in such cases especially that the deformity is not usually discovered until the child begins to walk.

The first circumstance which would naturally arrest our attention, if the person who is the subject of this double dislocation is stripped and placed erect before us, is the great apparent length of the arms and of the body in comparison with the lower extremities. We may next observe that the great trochanters are carried upwards and backwards, so as to make a remarkable projection in this direction; the lumbar portion of the spinal column is thrown very much forwards and the dorsal portion backwards. The thighs incline inwards, so as almost to cross each other; the whole of the lower extremities are imperfectly developed and feeble; the toes are generally pointed directly forwards, or they may be noticed to turn inwards.

When the person stands, and his limbs are not in motion, the heel is usually brought down fairly to the floor; but in walking, and especially in the attempt to run, he touches only the balls and toes of his feet. "When they are about to walk," says Pravaz, "we see them lift themselves upon the points of the feet, to incline the superior part of the trunk toward the member which is about to support the weight of the body, and to lift the other from the ground with an effort, in order to carry it forwards. At this moment one of the trochanters, that which corresponds to the column of sustentation, appears to approach the iliac crest more nearly than when the patient is standing upon his two feet." In consequence of which mobility of the thigh-bones, the patient assumes a peculiar waddling gait, which is not only ungraceful, but exceedingly fatiguing.

The difficulty of progression is, however, very variable in different persons. Sometimes the patient requires no aid whatever, and at other times he cannot walk without assistance. Generally it increases with age. It is especially deserving of notice that in rapid progression the mobility of the heads of the femurs is appreciably less than in slow progression, which is explained by the more constant and vigorous contraction of the muscles about the joint, when the motions of the limb are rapid.

In the recumbent posture, the thighs may be drawn down easily to almost their natural positions. The only exception to this rule, according to Carnochan, "is when the head of the femur has escaped from the natural capsule in which it was originally inclosed, and a new socket has been formed upon the dorsum of the ilium."

Abduction is performed with difficulty; adduction and rotation, especially inwards, being less restricted.

Second. When the dislocation is only upon one side.

In these cases the symptoms are essentially the same as in the double dislocation; with only such slight differences and peculiarities as would naturally suggest themselves to the surgeon, and which will not, therefore, demand from me a special consideration.

Pathology.—The head of the femur is sometimes merely changed in form and consistence, the neck also undergoing corresponding alterations in its size, form, direction, etc.; at other times the head is absent altogether, and with it a considerable portion of the whole of the neck has disappeared.

The pelvic bones are usually more or less deformed. The acetabulum may be entirely deficient, or it may present itself as an irregular bony protuberance, without cartilage, fibro-cartilage, or ligaments. Sometimes it exists as an oval or triangular cavity, which is expanded at its superior and posterior margin into a distinct fossa, where the head of the femur, descending from the dorsum illi, occasionally rests. A new cavity is formed usually upon the side of the pelvis, which is shallow and without an elevated margin, or it may be deeper, and more complete in its construction by the addition of an osseous border. In either case, the new socket is often lined with a true periosteum and synovial membrane; but not unfrequently it is unprotected by any soft tissue, the surface being hard and polished like ivory.

The head of the femur, having escaped from its original capsule, through a button-like opening, rests in this socket constantly. In still other examples the head of the femur remains within its capsule, and may be observed to play backwards and forwards between the two sockets; or the head and neck being absorbed, and the capsule remaining entire, the latter is converted into a long narrow sac, somewhat contracted in its centre; or finally into a firm ligamentous cord, which being attached to the stunted upper extremity of the femur, limits its motions in the direction of the crest of the ilium. In this case no new socket is formed.

A portion of the pelvi-femoral muscles are contracted, in consequence of an approximation of their points of origin and insertion, and remaining in a state of comparative, if not absolute, inertia, they become atrophied, or pass into a condition of fatty degeneration; while other muscles, in consequence of the increased labor which they have to perform, become hypertrophied, or degenerate into a fibrous tissue.

Treatment.—Says Dupuytren; "Of what possible utility can it be to practise extension of the lower extremities in these cases, even supposing the limbs could be thus brought to their natural length? Is it not evident that the head of the femur, finding no cavity fitted to receive and hold it, would, when abandoned to itself, resume its former abnormal position? There is something more rational and feasible in adopting a palliative course of treatment. When we call to mind the natural proneness which the heads of thigh-bones have to ascend to the external iliac fossæ, and that this tendency is partly due to the superincumbent weight of the body, and in part to muscular action, a just conception may be formed of the indications on which the employment of palliative remedies should be founded. The object should be to relieve the lower limbs of the superincumbent weight on the one hand, and on the other to moderate the muscular action. Both of these indications are in part fulfilled by repose; and the attitude most conducive to this effect is the sitting posture, in which the weight of the upper part of the body is not transmitted to the lower extremities, but is centred in the tuberosities of the ischia. Therefore, laboring persons afflicted with this infirmity should

be recommended to adopt a sedentary occupation, as a calling which requires much standing and walking about would dangerously aggravate their deformity. Yet one would scarcely be willing to condemn such individuals to perpetual repose; and to avoid this it is necessary to discover some means for diminishing the inconveniences which attend the upright posture, the act of walking and other exercises. Experience has taught me hitherto but two methods of obtaining this important object: the first consists in the daily employment of a perfectly cold bath, in which all the body should be immersed for the space of three or four minutes, the head being protected by an oiled-silk cap; the water may be fresh or salt; and the only precautions necessary to take are to avoid bathing when the body is in a state of perspiration, or when the catamenial discharge is present. These baths have a local, as well as general, tonic effect. The second method consists in the constant use, at least during the day, of a belt, which embraces the pelvis, fitting closely over the great trochanters, and keeping them at a constant height, so as to bind the parts together, and prevent that continual unsteadiness of the body which results from the loose connections of the heads of the thigh-bones. For the proper fulfilment of these indications, certain precautions are necessary in the construction of this cincture; in the first place, it should occupy the narrow interval between the crest of the ilium and great trochanters, completely filling this space, and therefore being about three or four fingers' breadth, according to the age and size of the patient. It should further be well padded with wool or cotton, and covered with doeskin, so that it may not abrade the parts to which it is applied; and there should be a piece let in on either side, so as to receive and support the trochanters without entirely covering them; it should be buckled behind, and padded straps be carried under the thigh, and across the tuberosity of the ischium, on either side, to prevent the zone from slipping up. I do not mean to assert that I have ever succeeded in completely getting rid of the inconveniences of congenital dislocations of the thigh-bones, but I have prevented their increasing, and have rendered supportable what I could not cure. The testimony of some patients to the value of this treatment has been of a most unequivocal character; for being worried by the pressure of the belt, they have laid it aside, but have speedily restored it again, as they found that without it they had neither a sense of firmness in the hip, nor confidence in walking."

In relation to which opinions the same excellent writer subsequently made the following candid admission: "I at first thought that no benefit would be derived in these cases from the employment of continual traction on the lower extremities, for reasons already stated; but the experiments of MM. Lafond and Duval tend to throw some doubt on the correctness of this conclusion. These distinguished practitioners tested the influence of extension, in their orthopædic institution, on a child eight or nine years of age, who was the subject of double congenital dislocation of the hip; after the uninterrupted employment of this treatment for some weeks, I satisfied myself that the limbs had resumed their natural length and direction; but I was not a little astonished to find that, after extension had been persisted in for three or four months continuously, the greater part of the beneficial results remained for several

weeks undiminished. It would be idle, it is true, to generalize on this single case; but as an isolated example of the utility of extension it is interesting, and it may be the forerunner of more important results."¹

Since which time Humbert and Jacquier, who, as well as Duval and Lafond, confined themselves to the treatment of deformities, claim to have met with equal success in the management of these cases by extension alone; and, still more lately, Guérin, of Paris, and Pravaz, of Lyons, by the adoption of the same general principle more or less modified, have added new triumphs, and greatly enlarged its application.

The means recommended and practised by Guérin are: first, preparatory extension destined to elongate the muscles as much as possible; second, subcutaneous section of the muscles which mechanical extension has not sufficiently elongated; third, extension of the ligaments, and even, if extension does not suffice, their subcutaneous section; fourth, manœuvres destined to effect reduction; fifth, treatment designed to consolidate the reduction, and consisting in the application of the apparatus proper to maintain the extension and separation of the divided tissues, and to retain the head of the femur in its place; finally, in the gradual execution of movements proper to complete the coaptation of the surfaces, and to establish, little by little, the physiological movements of the joint.

Other surgeons have confined their efforts to the reduction of the dislocation, and they have, consequently, abandoned all those cases in which, owing to the complete absence of the natural socket, or to the want of sufficient mobility in the limb, the reduction was deemed impossible; but Guérin has gone a step farther, and has sought to establish a new socket upon some point of the pelvic bones as near as possible to its natural articular fossa. "The means which I adopt," says Guérin, "are based upon a recognition of the processes which nature employs for the attainment of the same purpose, and of which mine are but an imitation. I have shown that the essential condition of the formation of artificial cavities is perforation of the articular capsule, and the placing in contact of the luxated extremity with an osseous surface, and that the condition of the maintenance of this abnormal rapport is the intimate adherence of the borders of the rent with the circumference of the new cavity. Now it appeared to me that art could realize, in all points, the conditions which preside at the spontaneous formation of artificial joints. To this end I commence by practising under the skin, and at the point corresponding to that where it is most convenient to fix the luxated extremity, scarifications of the capsule, down to the bone to which it is attached. By this means the dislocated extremity is placed in immediate contact with the bony surface upon which it reposes. It makes upon this point a beginning of the work of organization resulting from the adhesion and fusion of the scarified points with the corresponding points of this surface. Then, in order to circumscribe and imprison the luxated extremity, in this place of election, I practise all about deep scarifications, which tend to excite the same work of organization and to estab-

¹ Dupuytren, *op. cit.*, pp. 176-178.

lish fibro-cellular adhesions between the incised borders of the capsule and the contiguous bony surfaces.

"Finally, when the fibro-cellular adhesions are supposed to be sufficiently solid to resist the movements of the new articulation, I provoke, little by little, the development of the cavity destined to embrace the luxated extremity by the means which nature herself employs in analogous circumstances; that is to say, by circumscribed and frequent movements of this articulation."¹

The treatment ought to be commenced as early as possible, no examples of success having been recorded in persons over fifteen years of age; while the youngest child whose treatment is reported as successful was three years of age.

For the purposes of making the requisite extension, and of maintaining the bone in place, Pravaz (who does not, however, adopt Guérin's practice of establishing for the head of the bone a new socket, but only seeks to reduce and maintain it in its old socket) has invented several forms of apparatus adapted to the different stages of progress in the treatment. Heine, of Cannstadt, Guérin, and others, have also suggested special contrivances for the same purpose; but no surgeon who understands fully the principle upon which the cure is supposed to be accomplished, will be at loss for apparatus suitable for making the necessary extension, or for maintaining the reduction when once it has been effected.

The length of time required for the completion of a cure, where a cure is possible, must vary according to the age and health of the patient, and according to the pathological condition of the joint, and may be found to extend from a few months to one or more years. It is unnecessary to say that where the accomplishment of the cure demands a period of several years, the treatment must be intermittent and greatly varied, so as to suit all the changing circumstances in the condition of the patient.

Finally, if after a fair trial we fail to accomplish a cure, or if the condition of the child will not warrant even the attempt, we ought as far as possible to seek to prevent an increase of the deformity by such means as our ingenuity may suggest, or by such judicious appliances and general management as we have seen recommended by Dupuytren.

South says that he has seen one case of double dislocation in which the walking was at first extremely difficult, but from the fifteenth year and onwards the patient so improved that at the twentieth year scarcely any trace of the peculiar gait could be discovered.²

§ 14. Congenital Dislocations of the Patella.

Palletta found a dislocation of the patella in the cadaver of a young man, which he supposed to be congenital.³ Michaëlis has reported two cases; one in a young man of seventeen years, and the other in a girl of fourteen, each of whom affirmed that it had existed from birth.⁴

¹ Guérin, *op. cit.*, pp. 81-83.

² South, Note to Chelius, *op. cit.*, vol. ii. p. 245.

³ Palletta, *Exercitationes Pathologicae*, p. 91.

⁴ Michaëlis, *Rev. Méd. Chirurg.*, tom. xv. p. 56.

Both of these examples presented themselves at the hospital on account of hydrarthrosis of the knee-joints, and Malgaigne, who had himself seen a similar case, is disposed to regard them all as examples of pathological rather than congenital dislocations. Périat reports a case in which the dislocation was only produced by walking, and in relation to the authenticity or pertinence of which Malgaigne seems also to entertain a doubt.¹

South says that he has seen a congenital dislocation of both legs, in an aged man. The patellæ rested entirely upon the outer faces of the external condyles, leaving the front of the knee-joint completely uncovered. When the limbs were extended the patellæ could be easily made to resume their natural positions, but on the patient's making the slightest movement they were again displaced. The knees were very much inclined inwards, the feet outwards, and his gait was difficult and unsteady.²

Dr. Samuel G. Wolcott, of Utica, N. Y., informs me that he has under observation a case similar to the one reported by South, in a healthy and otherwise well-formed and well-developed boy, æt. 4. "When the legs are flexed the patellæ slip outwards upon the external condyles of the femurs, and on extending the legs the patellæ resume their positions in front of the knee-joints. This occurs at every step he takes. The knees are strongly inclined inwards, and the feet outwards. His step is very insecure, and if accidentally he hits his feet or legs against anything in walking, he invariably falls."³

The most remarkable example, however, has been reported by Dr. E. J. Caswell, of Providence, R. I., inasmuch as no less than five members of the same family have double congenital dislocations of the patellæ. The man who was the subject of Dr. Caswell's special examination is 43 years old, and possessed of a good constitution. The patellæ lay upon the outer condyles, and are movable, performing their functions nearly as well as if placed in their proper positions. He walks without difficulty upon level ground, or upon an ascending plane, but great caution is required in descending. The right patella is longer and less movable than the left, and the muscles of both of his lower extremities are small.

"In addition to his labor as an operative, he cultivates a small farm." Dr. Caswell examined his son and found the same malposition, but less marked than in the case of the father. The father then stated that his own father, his sister, and the son of his half-brother by the same father, had a similar deformity.³

Servier⁴ relates a case of congenital dislocation of the patella associated with other deformities, and both the father and the brother had dislocations of the patella. Zielewicz⁵ has collected eight cases of congenital outward dislocation. To these examples P. Berger⁶ has added three others.

¹ Périat, Malgaigne, op. cit., tom. ii, p. 932.

² South, No. c to Chelius, op. cit., vol. ii, p. 247.

³ Caswell, Amer. Journ. Med. Sci., July, 1865.

⁴ Servier, Gaz. hebdomadaire de Med. et de Chir., avril 5, 1872.

⁵ Zielewicz, Berliner Klin. Wochens., t. 6, p. 25, 1869.

⁶ P. Berger, Art. Rotule, Dict. Encyc. Sc. Méd., 3d. ser., t. 5, p. 360.

Holthouse¹ mentions a case seen by himself, and Lannelongue² reports a similar case.

§ 15. Congenital Dislocations of the Knee.

The head of the tibia has been found, at birth, dislocated forwards, backwards, inwards, outwards, inwards and backwards, outwards and backwards, and simply rotated inwards.

Most of these dislocations were incomplete; and of them all, the dislocation forwards has been observed much the most often.

A subluxation forwards of the head of the tibia has been seen by Guérin in a foetal monster, accompanied with extreme retraction of the extensor muscles of the leg.³ Cruveilhier has dissected a foetus affected with a similar subluxation.⁴

In these examples the displacement forwards at the articular surface was but slight, and the anterior flexion of the limb inconsiderable; but when the dislocation is complete, or nearly so, the deformity is in all respects very much increased; as the following examples will illustrate.

Dr. D. H. Bard, of Troy, Vermont, has reported an example of complete anterior dislocation of the tibia, seen by himself, in a new-born infant. The leg was found drawn forwards upon the thigh at an acute angle, so that the toes pointed toward the face of the child, and the bottom of the foot was directed forwards. By the application of moderate force, the limb could be straightened and even flexed completely. These motions inflicted no pain. It was especially noticed that in bringing down the leg from its position of extreme anterior flexion (extension) more force was required in the first part of the manœuvre than in the last; and that if, having brought the leg down, it was left to itself, it immediately resumed the abnormal position, moving at first slowly, but after a time much more rapidly.

The limb was confined by bandages for a short time, and it did not afterwards show any disposition to return to its unnatural position. The child did well, and when it began to use its legs, no difference could be discovered between them.⁵

J. Youmans, of Portageville, N. Y., reports a similar case which occurred in his own practice. A healthy woman was delivered, on the 16th of August, 1859, of a full-grown female child, whose left knee was so completely dislocated that the toes rested upon the anterior part of the thigh near the groin. Dr. Youmans immediately took hold of the limb and brought it to its natural form, but as soon as he relinquished his hold, it flew back to its original position. Having again straightened the leg it was retained in place easily by two pieces of whalebone tied upon each side of the thigh and body. Some soreness and swelling ensued, and it was some weeks before the splint could be safely removed. At the time of the report, October 11, 1860, the child was using the

¹ Holthouse, The Lancet, Aug. 24, 1872, vol. 2, p. 258.

² Lannelongue, Bull. Soc. de Chir. de Paris, 1880, p. 236.

³ Guérin, op. cit., p. 33.

⁴ Cruveilhier, Atlas de l'Anat. Patholog., 2e livr., pl. 2.

⁵ Bard, Amer. Journ. Med. Sci., Feb. 1835, p. 555, from Boston Med. and Surg. Journ., Nov. 26, 1834.

limb with as much freedom and dexterity as other children of her own age.

In the report particular attention is called to the disposition on the part of the limb to resume its unnatural position with a spring, showing contraction of the anterior muscles of the thigh; to the fact that the patella of this knee was smaller than the other, and that the skin on the front of the knee was wrinkled as it is usually back of the knee in fat children.¹

I have mentioned a case of congenital forward dislocation of both tibiae which came under my observation, in the section on congenital dislocations of the hip, and I have recently seen a case of congenital subluxation of both tibiae backwards, occasioned by contraction of the hamstrings. Section of the muscles restored the bones nearly to their normal position.

Chatelain was consulted in relation to a similar case, in which the restoration of the limb to its natural position was also easily effected, and by means of three metallic splints, applied during about fifteen days, the cure was consummated. Chatelain directed, however, that the leg should be kept flexed upon the thigh eight days longer.²

Kleeberg found a child with the leg so much flexed forwards (extended) upon the thigh that the popliteal region became the lowest point of the limb; in front and above the articular extremity of the tibia could be felt, and the condyles of the femur made a corresponding projection behind into the popliteal space. This was plainly an example of complete dislocation; and, contrary to what was observed in Bard's case, flexion of the limb backwards was difficult and painful.

The treatment was commenced by securing the limb in a straight position by means of a splint and roller; subsequently, Kleeberg carried the limb back to an obtuse angle, and finally, it was kept eight days in a position of extreme flexion. A complete cure was said to have been accomplished in about two weeks.³

Richardson and Porter⁴ report a case of congenital dislocation of the tibia forwards, in which the leg was carried to a right angle with the thigh. Reduction was easily effected and maintained by a roller. The cure was effected in about fourteen days. They report also another case, in which the anterior hyperextension was such that the leg could be laid upon the thigh. The cure was effected in ten weeks by the same means.

Bertin⁵ found a child at birth with a displacement similar to the second example seen by Richardson and Porter, and in whom, under the use of massage and bandaging, all traces of the deformity disappeared in fifteen days. At the end of seven years the cure remained complete.

In a case seen by Motte,⁶ where the heel touched the corresponding shoulder, the leg being turned on its axis, the reduction was easily effected, and being maintained by a bandage, the cure was effected in about fifteen

¹ Youmans, Boston Med. and Surg. Journ., Oct. 25, 1860, vol. lxiii, p. 260.

² Chatelain, Bibliothèque Méd., tom. lxxv, p. 86.

³ Kleeberg, Malgaigne, op. cit., p. 983.

⁴ Richardson and Porter, Boston Med. and Surg. Journ., Sept. 16, 1875.

⁵ Bertin, Union Méd., 14 Oct., 1880.

⁶ Motte, Bull. Acad. royale de Belgique, 3d ser., t. 10, No. 2.

days. After three years no traces of the deformity existed, and the functions of the limb were perfectly restored.

Moos¹ saw in a child two and a half years old, a congenital displacement, in which the leg was extended forwards to a right angle with the thigh. The dislocation had been reduced when the child was six weeks old, but in spite of an apparatus continuously applied, there still continued a tendency to subluxation forwards, the knee inclined backwards, and the foot was everted.

Guéniot² communicated to the Surgical Society of Paris two examples of congenital incomplete forward dislocation of the tibia. In both cases a cure was speedily effected by very simple means. At the same séance Guéniot presented a case observed by Périer, almost precisely analogous with those seen by himself, but in which case, in spite of apparatus, the deformity persisted at the end of about six weeks, and without manifest improvement.

Guérin has seen a subluxation backwards, accompanied with a slight rotation of the head of the tibia outwards, in a girl fourteen years old; and which, he affirms, was congenital, characterized by a permanent flexion (backwards) of the leg upon the thigh, and a sliding of the condyles of the tibia backwards.

This girl was under Guérin's treatment, but with what result is not stated.³

Chaussier found both tibiae displaced backwards in an infant otherwise deformed.⁴

Robert speaks of an example of lateral subluxation in a man, which had existed from birth. The right knee was thrown inwards, and the left outwards.⁵

Guérin "operated" publicly upon a child, two years old, who had a congenital dislocation of the head of the tibia backwards and inwards, accompanied with a slight rotation of the leg inwards.⁶ In what manner he operated, and with what result, he does not inform us.

The same writer speaks of a subluxation backwards and outwards, with rotation in the same direction, a deformity which, he affirms, is very frequent, and which appears especially after birth, although the causes which produce it have given their first impulse during intra-uterine life.

The case quoted from Robert, by Malgaigne, as an example of dislocation inwards, seems to have been rather a case of semi-rotation of the articular surfaces, the inner condyle being thrown back into the popliteal space, while the outer condyle still retained its natural position.

¹ Moos, Archiv für Klin. Chir., Bd. 17, Hft. 3, p. 492.

² Guéniot and Périer, Bull. Soc. de Chir. de Paris, 1880, pp. 442-683.

³ Guérin, sur les Lux. Congén., p. 33.

⁴ Chaussier, Malgaigne, op. cit., p. 884.

⁵ Robert, Malgaigne, op. cit., p. 985.

⁶ Guérin, sur les Lux. Congén., p. 33.

§ 16. Congenital Dislocations of the Tarsal Bones.

Under this general term may be included all those varieties of subluxation of the several bones which compose the tarsus, and which are known as examples of talipes or club-foot; such as tibio-astragaloid dislocations, astragalo-scaphoid, calcaneo-astragaloid, calcaneo-cuboid, etc.

Although these deformities may properly enough claim a place in a chapter on congenital dislocations, they have so long been the subjects of special treatises as to justify their exclusion from the present volume.

§ 17. Congenital Dislocations of the Toes.

Observed occasionally at the metatarso-phalangeal articulations; the articular facets of the first phalanges suffering a subluxation upwards, or laterally upon the corresponding metatarsal bones.

Guérin has noticed especially a congenital lateral subluxation of the great toe.¹

¹ Guérin, *op. cit.*, p. 34.

INDEX.

PART I. FRACTURES.

- A**BSCESS in fracture of the sternum, 200
 Acetabulum, 407
 Acromion process, 243
 Amesbury's thigh splint, 471
 Anæsthetics, use of, in diagnosis, 46
 Anaplasty in fractures of the septum narium, 120
 Anatomical neck of humerus, 251
 Anchylosis after Colles's fracture, 337
 after fractures of elbow, 316
 after fracture of patella, 546
 of knee, 526
 Antiseptic dressings, 80
 Apparatus immobile, 71
 Arytenoid cartilages, fractures of, 167
 Astragalus, 604
 Asymmetry of long bones, 470
 Atlas, 193
 Atrophy of bone, senile, 37
 surgical neck of humerus, 266
 neck of femur, intracapsular, 420
 tibia above tubercle, 567
 Axis, 190
 and atlas, 194
- B**ADLY united fracture of leg, 603
 fracture of radius, 333
 Barton's bran dressing, 82
 Base of acetabulum, 408
 of condyles of femur, 515
 of condyles of humerus, 289
 Bauer's wire splints, 597
 Bean, lower jaw apparatus, 151
 Bending of bones, 96
 Bigelow, stellate fracture of lower end of radius, 331
 rim of acetabulum, 414
 Boardman, fracture of zygoma, 131
 Body of the scapula, 237
 Bodies of the vertebrae, 179
 Bond's elbow splint, 296
 radius splint, 342
 Bosworth, Frank, tracheotomy in fracture of lower jaw, 135
 Box for leg, 599
 Boyer's thigh splint, 472
- Brainard, perforator, 92
 Buck, lower jaw, 134
 thigh splint, 479
 Burge, patella, 558
- C**ALCANEUM, 606
 Carpal bones, 391
 Cartilages of the ribs, 208
 Cervical ligaments, strain of, 186
 vertebrae, bodies of five lower, 184
 axis, 190
 atlas, 193
 atlas and axis, 194
 Children, fracture of femur, 510
 Chronic rheumatic arthritis, 436
 Clark, fracture of humerus, 283
 Clavicle, 209
 partial fractures, 236
 Cline, trephining vertebrae, 176
 fracture of atlas, 193
 Coates, fracture-bed, 503
 Coccyx, 416
 Colles's fracture, 326
 Comminuted fracture, 79
 Common signs of fracture, 42
 Compound fractures, 79
 forearm, 391
 thigh, 515
 patella, 555
 tibia and fibula, 580
 Concussion of spinal marrow, 186
 Condyles of humerus, 301
 internal, 310
 external, 313
 base, 289
 base and between condyles, 298
 of femur, 523
 external, 523
 internal, 525
 base, 515
 between condyles, 527
 Congenital, 39, 278, 567
 Cooper, Sir Astley, fracture of olecranon process, 361
 neck of femur within capsule, 430
 patella, 556
 Coracoid process, 247