

A man, æt. 22, was admitted to the Toronto Hospital, under the care of Dr. E. W. Hodder, January 15, 1855, having been injured by the fall of a bank of earth an hour before. The head of the right femur was found under the arch of the pubes, the neck resting upon the ascending ramus. The thigh formed nearly a right angle with the body; being strongly abducted, and the toes were slightly everted. On the following day, the patient being placed under the influence of chloroform, extension and counter-extension were employed in the direction of the axis of the femur, that is, nearly at right angles with the body, while, at the same moment, the upper portion of the femur was lifted by a round towel. By this manœuvre the head of the bone was carried into the foramen thyroideum. The force was now applied in a direction "more upwards and outwards; the ankle held by the assistant was drawn under the other and at the same time rotated." In a few minutes the complete reduction was accomplished. His recovery was steady, and three weeks later he was discharged, being able to walk very well with the aid of a cane.¹

§ 6. Ancient Dislocations of the Femur.

Says Sir Astley Cooper: "I am of opinion that three months after the accident for the shoulder, and eight weeks from the hip, may be fixed as the period at which it would be imprudent to attempt to make the reduction, except in persons of extremely relaxed fibre or of advanced age. At the same time, I am fully aware that dislocations have been reduced at a more distant period than that which I have mentioned; but in many instances the reduction has been attended with the evil results which I have just been deprecating." A remark which later surgeons do not seem always to have correctly understood, or which, if they have understood, they have not correctly represented; since it has many times been affirmed of this distinguished surgeon, that he regarded reduction of the hip as impossible after eight weeks, and they have proceeded to cite examples which would prove that he was in error. But long before Sir Astley's day, Gockelius mentioned a case of reduction of the femur after six months, and Giulio Saliceto declared that he had reduced a similar dislocation after one year;² and Sir Astley says that he is "fully aware" of the existence of such facts or statements; yet with a knowledge of what has so frequently followed these attempts, he would not recommend the trial after eight weeks, except under the circumstances by him stated; and notwithstanding the number of these reported successes has been considerably increased in our day, I suspect that Sir Astley's rule will continue to govern experienced and discreet surgeons. Certain examples which have recently been published of successful reduction after six months by manipulation, if sufficiently verified, would encourage a hope that the period might be greatly extended, were it not that manipulation also has already failed many times in the case of

¹ Hodder, *British Amer. Journ.*, March, 1861.

² Malgaigne, *op. cit.*, tom. ii. p. 185; from *Gallieinium Medico-practicum*, Ulm, 1703, p. 288.

ancient dislocations, and that the attempt has sometimes been followed with disastrous results, even in recent cases.

The following case was published in the first edition of this treatise, but I regret that I am now unable to say from what source my information was then obtained, and communications addressed by me to gentlemen in Havana have failed to trace the case to its original source. It will be observed, however, that there is no history of the accident which caused the dislocation, and its existence was not suspected until the patient arose after an illness which had confined him to his bed for a month or more. It was reduced without anæsthesia; it was three or four times redislocated, notwithstanding the employment of judicious means to keep it in place, and while the patient was in bed; that it was reduced with a snap, "deeper than is ordinarily observed in the reduction of recent dislocations;" and, finally, when the patient was dismissed it is only said, he was able to walk without crutches. In short, a careful reading of the report must convey to the experienced surgeon a suspicion that it may not have been correctly diagnosed, and that, if it was, its reduction may not have been thoroughly accomplished and permanently maintained.

A Chinese boy, named Ah-sin, aged about sixteen years, arrived at Havana on the 4th of June, 1856, suffering from a severe illness, which confined him for a month or more to his bed, and the existence of the dislocation was not discovered until he had sufficiently recovered to rise upon his feet. It was then ascertained that he had a dislocation of the left femur upon the dorsum ilii. Upon inquiry, Dr. Martial Dupierris, of Havana, learned that the accident had occurred before leaving China, a period of more than six months. The boy was still feeble, the limb somewhat emaciated, and instead of being rigid from muscular contraction, all the muscles "were in a flaccid condition, except the great gluteal, which was painful to the touch." Deeming the use of anæsthetics improper, on account of the boy's feeble condition, these agents were not employed. Dr. Dupierris describes the method of reduction as follows: "The body being held by two assistants by means of two bands, one of which passed beneath the perineum, and the other under the axillæ. traction was made upon the limb by two strong and intelligent assistants. The movement of the head of the bone, resulting from this manœuvre, was very limited, even when the force was much increased; and the excruciating pain, which the patient referred to the iliac region, compelled us for a moment to desist.

"The following day, the patient having obtained a tolerable night's rest by means of a narcotic potion, I concluded to attempt the reduction by flexion, believing that I could thus better prevent any accident which the necessary force might produce; the operator, in adopting this method, having it in his power to follow the head of the bone by pressure upon it with the hand, aiding its movement in the proper direction, or correcting any deviation that may occur. The emaciated condition of the boy was eminently favorable for such a procedure.

"The patient being placed upon his back, and the trunk of the body made steady by assistants, with the left hand I grasped the upper part of the leg, placed the right hand upon the head of the bone in the iliac

fossa, and then proceeded to flex the leg upon the thigh, and the thigh upon the pelvis. By this movement the great gluteal muscle was relaxed, and the head of the bone advanced, while with the right hand I directed the latter toward the cotyloid cavity. As soon as I judged the head to be immediately above the centre of the socket, I extended the leg, the thigh remaining flexed at a right angle; and then using the limb as a lever, I rotated it from within outwards, and at the same time extended it by making a movement of circumduction in a similar direction. When, by these procedures, the limb was brought near to its opposite fellow, a snap audible to the assistants, and of a deeper character than is ordinarily observed in the reduction of recent dislocations, indicated the return of the head of the bone to its natural position; a fact which was further substantiated by the establishment of the original length and form of the member and the subsidence of the pain.

"The after-treatment consisted in placing a pad between the knees, and another between the internal malleoli, and confining the limbs together by two bands, one above the knees, and the other around the lower part of the legs. But in spite of these precautions to prevent re-displacement, the next morning I found that the dislocation had been reproduced. It was again reduced, but for three successive days there was a re-displacement. After this, however, the head of the bone kept its place; passive motion was daily employed, and all suffering ceased. After twenty days of rest, and a liberal use of the lactate of iron, the patient was allowed to get up; and, being provided with a pair of crutches, upon which he exercised himself daily, improved very rapidly. The muscles gradually recovered their bulk and vigor, and at the end of forty-eight days he was enabled to walk without crutches, although with some fear of falling. About the middle of August he was put to work in a cigar manufactory, and has continued well ever since."

The case reported by Guyenot, of a young woman twenty-two years of age, in which Cabanis is said to have accomplished reduction after the dislocation had existed two years, was probably an example of chronic hip disease. Indeed, Malgaigne has placed it in this category, although by other writers, including Sir Astley, it has been spoken of as if it had been traumatic. It is said that the reduction was effected in 1768, but Guyenot does not say that he was present when it was done, nor is there anything in the report of the case to render it certain that it was actually dislocated, or if dislocated that it was ever reduced.¹

Nor is it proper to accept of the accidental reduction of the femur, reported to Sir Astley Cooper by Mr. Cornish, as a well-authenticated case. Indeed, Sir Astley himself questions the accuracy of the report.²

Dr. Lewis A. Sayre, in a paper read before the American Medical Association, has reported a case of *pathological* dislocation, into the ischiatic notch, of nine months' standing, which he claims to have reduced,³ and which I would not deem it necessary to allude to in this place, except that in commenting upon the opinions of others he seems to regard

¹ Mém. de l'Académie Royal de Chirurgie de Paris, tom. cinquième, p. 803.

² Sir Astley Cooper, *Frac. and Dis.*, 2d Lond. ed., p. 101.

³ Sayre, *Case of Luxation of Femur into Ischiatic Notch, of nine months' standing, Reduced by Manipulation*, Trans. Amer. Med. Assoc., 1866, p. 265.

it as a case of traumatic dislocation, although he does not specifically state that it was; and that, having stated in his report that I was present, he has rendered it necessary that I should express my own views of the case and of the facts.

The patient, Lieut.-Col. William A. Bullit, was wounded in battle, May 9, 1864, in two places, the first ball entering five inches below the anterior superior spinous process of the ilium, and remaining. He fell after the second shot, but he "rose immediately and walked half a mile to the rear." Several attacks of erysipelas ensued, followed by abscess, one of which formed in the left iliac fossa. More than five months after the injury he, for the first time, turned from his back to his side, and in doing so he felt "a slipping" of the caput femoris. This occurred almost daily for two weeks, when, dislocation being recognized, Dr. McDermott, assisted by Drs. Coolidge and Goldsmith, U. S. A., attempted to reduce it under ether, but failed. "In the latter part of February, 1865, four months after dislocation," another attempt was made to reduce it, under chloroform. The fact that this was not a traumatic dislocation, dating from the period of the original injury, is thus confirmed by Dr. Sayre himself, for it was already more than nine months since he had been wounded, but the dislocation had taken place only four months previous. At this time the attempt at reduction was made by Professor Cook, assisted by Drs. Force, Cox, Galt, and Garvin, all of Louisville, Ky. This attempt failed also. July 20, 1865, Dr. Sayre, in the presence of several gentlemen, including myself, the patient being under chloroform, forcibly broke up some adhesions and brought the limb, which was flexed upon the pelvis, down to a position nearly but not quite parallel with the other, and there secured it with a weight and pulley. There was no claim at the time, so far as I know, that a restoration of the bone to its socket had been effected. Some months later I saw this gentleman standing with a high heel under the boot corresponding to the lame leg, and I was then informed by Dr. Sayre, in reply to my inquiry, that the dislocation was not reduced, but that, as I could see, the position of the limb was greatly improved.

In Dr. Sayre's report of the case he does not state when the dislocation was reduced, and certainly it was not reduced in my presence: and I have no reason to suppose that it was subsequently.

In closing his report Dr. Sayre takes exceptions to Dr. Gross's statement that "chronic" dislocations demand some preliminary treatment before attempting reduction to insure success, without noting the fact that the distinguished author was speaking then only of *traumatic* dislocations, but adding, in italics, "my belief is that the best time to perform such an operation is when you find it necessary to be done."

The editor of the *Western Lancet*, published in Cincinnati, mentions in a few lines (vol. xvii. p. 253, April, 1856), that on the 22d of March preceding Dr. Blackman, a distinguished surgeon of that city, had reduced, at the Commercial Hospital, a dislocation of the femur upon the dorsum illi, under chloroform, of six months' standing. No particulars, or authority for the statement, are given. Two months later this editorial, or a copy of it, appeared in the *Ohio Medical and Surgical Journal* (vol. xviii. p. 522) without additional remarks or information. So far

as I know this is the only published account of the case. In reply to my note of inquiry, addressed to Dr. Blackman subsequently, he stated, April 21, 1859, that the patient presented himself before the class "about six months since, and the restoration of the functions of the limb was found to be complete." Since the death of Dr. Blackman, hoping to obtain a more complete history of the case, I wrote to a gentleman in Cincinnati, who informed me that no farther history could be obtained, as the hospital record for that year was lost.

Dr. George E. Post, Missionary in Syria, and a Professor in the Protestant College, at Beirut, has reported a remarkable case of dislocation of both hips in a native girl, thirteen years old, "the result of a *vis a tergo*, applied six months previous" to her admission to the hospital. The force applied to her back caused her to fall forwards, with a "twisting of the trunk to the right, and the lower extremities to the left." She was admitted Jan. 20, 1877. At this time it was ascertained that she had a dislocation not only of the left femur, but that there was a fracture of the neck also on the same side; the head had become necrosed, and there was a sinus communicating with the head as it lay upon the *dorsum ilii*. An incision was made, and the dead bone was removed. The ankylosed knee and thigh were then straightened by *brisement forcé*, the restoration being accompanied with a good deal of laceration.

"The left lower extremity was then committed to an assistant, while the requisite manipulations were undertaken to reduce the dislocation of the right hip. This was effected without pulleys, adding another to the many proofs that bone-setting is a matter of address and attention to anatomical relations rather than to force." The patient recovered after a prolonged confinement, and at the last accounts was able to walk with crutches, the function of the right limb being fully restored, and the left being shortened four and a half inches.¹

It is unnecessary to say that the mode of production of this double dislocation was extraordinary, and that the facility with which the right hip was reduced at the end of six months was equally extraordinary; and that for these reasons the distinguished operator owed it both to himself and to the profession to supply a more complete history of the case, symptoms, and treatment than he has given. In so far as the cause and the mode of reduction are concerned, I have given my readers all that the report contains.

The case reported by Bigelow, of reduction after three months, must be rejected also as a traumatic dislocation. Dr. Bigelow says himself that it was "perhaps connected with hip disease," as there was evidence of disease in the joint for some time prior to the accident which was supposed to have caused the dislocation, and its subsequent existence was demonstrated by sinuses which formed and opened in the groin. He had also had for a long time disease of the bone near the ankle.²

Dr. Brown's case of reduction of ancient dislocation of the femur in a child eight years old, cannot be considered in this connection, inasmuch

¹ Post, Med. Record, May 11, 1878, p. 366.

² Bigelow, Disloc. and Frac. of Hip, 1869, p. 111.

as he states that the dislocation was probably caused by chronic rheumatic arthritis.¹

In the accompanying table I have inserted such cases as have up to the present moment the best claim to be regarded as actual reductions of traumatic hip-joint dislocations after a period of eight weeks. Some of them, however remarkable they may seem to be, there exists now no satisfactory means of verifying or of disproving. Others, even among those reported by my contemporaries, are so briefly and imperfectly reported that they do not seem to me thoroughly established—certainly not by that sort of testimony which science demands where unusual and extraordinary facts are recorded.

While estimating the relative value of the several methods of reduction, I have cited several examples of fracture of the neck of the femur in the attempt to reduce old dislocations. In some cases the results have been much more serious.

A man, 29 years old, was received at La Pitié, Paris, on the 13th of May, 1868, with dislocation of the hip of seven months' standing. M. Broca attempted to reduce it, using a force of 480 lbs. No reduction was obtained, and the patient insisted upon leaving the hospital five days afterward. A fortnight then elapsed, when he presented himself at another hospital, with the hip enormously swollen, and died the next day of peritonitis. The autopsy showed that the head of the bone lay in the ischiatic notch, that it was held firmly by bundles of the torn capsule, and that the cotyloid cavity was much shrunk. Pus was found in the capsule, in the iliac fossa, in the articular cavities, and had found its way into the peritoneum, through the obturator foramen.²

The following case seems deserving of mention, for the reason that it is the first, so far as I am aware, in which an attempt has been made to reduce the dislocation after a subcutaneous division of the capsule:

Thomas Jordan, æt. 28, of Utica, N. Y., was sent to me by my former pupil, Dr. Jenkins, in January, 1869, having a dislocation of his left femur upwards and backwards upon the *dorsum ilii*. His account of the case was, that seven months before he was thrown in wrestling; a surgeon was called on the following day, and finding a dislocation, he placed him under the influence of an anæsthetic, and, as he supposed, reduced the dislocation by manipulation.

The case did not come under the notice of Dr. Jenkins until a few weeks before he was sent to me, and although the character of the accident was recognized, no attempts were made at reduction.

I found the limb rotated inwards, adducted, and shortened two inches. Before the class of medical students at Bellevue, assisted by Drs. Sayre, Crosby, Howard, and others, I made an attempt, January 29th, to break up the adhesions and reduce the dislocation, the patient being fully under the influence of ether. We were able to move the limb quite freely in various directions; but after a trial of nearly an hour, we abandoned the attempt, having failed to accomplish reduction.

¹ Spontaneous Dislocation on *Dorsum Ilii*; Reduction after several months. By Francis Brown, M.D., etc. A pamphlet. Boston Med. and Surg. Journ., Sept. 29, 1870.

² New York Med. Record, Dec. 16, 1868.

Table of Traumatic Dislocations of the Hip, reduced after eight weeks.

| No. | Operator. | Age of patient yrs. | Time after Dislocation. | Form of dislocation. | Method of reduction. | Reference. |
|-----|--------------------|---------------------|-------------------------|------------------------------|---------------------------------|---|
| 1 | S. Nott. | 33 | 56 days. | On dorsum ilii. | Extension. | Sir Astley Cooper, Disloc. and Frac., etc., 2d Lond. ed., p. 50. |
| 2 | Desprès. | 48 | 66 days. | Foramen ovale. | Extension, with anaesthesia. | Bull. Soc. Chir., 1879, p. 142. |
| 3 | A. Crosby. | ... | 68 days. | ..... | Extension, with anaesthesia. | Trans. Am. Med. Assoc., vol. iii. p. 356, An. 1850. |
| 4 | Pollock. | 72 | 72 days. | Ischiatic notch. | Extension, with anaesthesia. | The Lancet, 1880, vol. 2, p. 130. |
| 5 | Breschet. | ... | 72 days. | ..... | ..... | Brown, Boston Med. and Surg. Journ., Sept. 29, 1870. |
| 6 | Dupuytren. | 23 | 78 days. | Dorsum ilii. | Extension. | Dupuytren on Diseases and Injuries of Bones. Lond. ed., 1847, p. 373. |
| 7 | Kimball. | ... | 3 mos. | ..... | ..... | Northwestern Med. and Surg. Journ., June, 1870. |
| 8 | Doutrelepont. | 7 | 3 mos. | Dorsum ilii. | Extension. | Berliner Klin. Wochenschrift, 1876, No. 31, p. 455. |
| 9 | Bayer. | ... | 3 mos. | Foramen ovale. | Manipulation. | Prager. Med. Woch., 1880, No. 30. (Poinsot) |
| 10 | Blanc. | ... | 3 mos. | ..... | ..... | Journ. des Conn. Méd. Chir., 1870, No. 2. |
| 11 | Dupuytren. | 25 | 99 days. | Dorsum ilii. | Extension. | Dupuytren, op. cit., p. 375. |
| 12 | W. L. Atlee. | ... | 4 mos. | ..... | Extension, with anaesthesia. | Trans. Amer. Med. Assoc., vol. iii. p. 357, An. 1850. |
| 13 | Williams. | 8 | 5 mos. | Probably in ischiatic notch. | Anaesthesia. | The Lancet, vol. i. p. 665, An. 1862. |
| 14 | Bigelow. | 7 | 5 mos. | Dorsum ilii. | Manipulation. | The Lancet, 1878, vol. i. p. 86. |
| 15 | MacGee. | ... | 5 mos. and half | ..... | Manipulation. | Amer. Journ. Med. Sci., Jan. 1871. |
| 16 | Gockelius. | ... | 6 mos. | ..... | ..... | Gallicinium Med.-pract., Ulm, 1700, p. 288. |
| 17 | Dupierriis. | 16 | 6 mos. | Dorsum ilii. | Manipulation. | ..... |
| 18 | Blackman. | ... | 6 mos. | ..... | ..... | Western Lancet, April, 1856, p. 253. |
| 19 | Peltavy. | 34 | 6 mos. | Foramen ovale. | Manipulation. | Wiener Med. Wochenschrift, 1873, No. 47. |
| 20 | Bigelow. | 27 | 8 mos. | Dorsum ilii. | Manipulation. | Bigelow on Dis. and Frac. of Hip, 1869, p. 55. |
| 21 | Carron du Villars. | ... | 8 mos. | Foramen ovale. | Extension. | Malgaigne, op. cit., vol. 2, p. 868. |
| 22 | Smyth. | 27 | 9 mos. | Dorsum ilii. | Manipulation, with anaesthesia. | New Orleans Journ. Med., Jan. 1, 1869, p. 71. |
| 23 | Saliceto. | ... | 1 year. | ..... | ..... | Malgaigne, Frac. and Dis. Paris ed., 1855, vol. ii. p. 185. |

A few days later I applied extension, by means of adhesive plaster and a cord, with a weight of twenty pounds. This was continued unremittingly until February the 24th, when he was again placed under the influence of ether before the class. Assisted by Drs. Stephen Smith, Howard, Cross, and others, attempts were made to reduce the bone by manipulation, but without success. Believing now that the untorn portion of the capsule, and particularly the ilio-femoral ligament, constituted the chief obstacle to the reduction, I introduced a long, firm, but narrow bistoury, which I had had made for the purpose, just above the trochanter major, carrying its point inwards until it touched the neck at the base of the trochanter. From this point, the edge of the knife being directed toward the head of the bone, I swept the point of the knife slowly along until the head was distinctly felt, the point touching the neck apparently in its whole length. This was accomplished without enlarging the external opening. While the incision was being made the limb was kept rotated outwards, and abducted as much as was possible, and it was felt to yield distinctly, so that both rotation outwards and abduction were more complete afterwards than before. I then divided also the tensor vaginae femoris; and now the attempts at reduction were repeated, both by manipulation and extension, but without success.

The result of this attempt to reduce the dislocation by division of the ilio-femoral ligament, although unsuccessful, encourages a hope that it may sometimes succeed; and I shall not hesitate to repeat the experiment, if a favorable opportunity is presented.

In 1878, Dr. MacCormack, of London,¹ practised subcutaneous tenotomy of the muscles for the purpose of reducing a dislocation into the foramen ovale, which had existed two years. The patient was nineteen years old. The section of the muscles gave no result; and Dr. MacCormack then exposed, by a free external incision, the articulation; and finding the socket was nearly obliterated he resected the head of the femur, and obtained a satisfactory result.

In 1876, Volkmann,² also, practised resection of the head of the femur, after having exposed the joint and divided the muscles extensively, in the hope that in this way he might effect the reduction; but in which case, as in the case of MacCormack, the reduction was even then found impracticable. The patient was a man, æt. 51, who had a dislocation into the perineum of about three months' standing, and which Volkmann had tried in vain to reduce by other methods. The head of the femur was found upon the dorsum of the ilium, to which point it had been carried by the previous manipulations. The head and neck were resected at a point below the trochanter, and the operation resulted in a complete recovery, and in giving to the patient a tolerably useful limb.

M. Polaillon³ reports the case of a man, æt. 46, who had a dislocation upon the dorsum ilii. The dislocation had occurred more than six weeks before; and although repeated attempts were made to reduce the dislocation, commencing on the day following the accident, and by various

¹ MacCormack, St. Thomas's Hosp. Rep., vol. ix. p. 101.

² Volkmann, Ranke, Berliner Klin. Wochenschrift, 1877, No. 25, p. 357.

³ Polaillon, Bull. Soc. de Chir. de Paris, 1883, Séance du 31 Jan.

methods, it still remained unreduced; but the head had been transferred from the dorsum to the foramen ovale, in which position it lay when M. Polaillon proceeded, with antiseptic precautions, to open the joint, and to sever the ligamentous and muscular attachments which prevented the return of the bone to its socket. Reduction having been effected, the wound was closed. The patient died on the fourth day. His death being caused, as it would appear, by septicæmic infection.

§ 7. Partial Dislocations of the Femur.

Malgaigne declares that certain experiments made upon the cadaver led him, at one time, to the conclusion that all primitive dislocations of the femur were incomplete, and that the old complete dislocations found in autopsies have become so consecutively. Later observations have taught him to correct this error, yet he still finds "incomplete backward dislocations quite common, and incomplete dislocations in all the other directions much more common."

I have more than once found occasion to call in question the accuracy of Malgaigne's views in relation to partial dislocations, the relative frequency of which, as traumatic accidents, he seems constantly disposed to exaggerate greatly. I cannot see the propriety of calling those cases partial dislocations, in which the head of the bone has fairly left the cotyloid cavity, and mounted upon its margin, even if it remains in this position without tearing the capsule; since the articular surfaces are now as completely separated as if the capsule had given way, and the head of the bone had escaped through the laceration. It is in fact a complete dislocation. But I doubt very much whether the head of the bone ever rests upon the margin of the acetabulum without tearing the capsule, unless it has previously undergone certain pathological changes, such as I have already described; at least I cannot hesitate to reject all those examples in which the head of the femur is supposed to rest upon the upper or outer margin of the acetabulum; and if I permit myself to speak of incomplete dislocations at all in this connection, I shall reserve the term for those rare cases in which the head of the femur becomes engaged in the cotyloid notch, after breaking down the fibrous band which, in the natural state, is continuous with the rim of the acetabulum.

Of this form of dislocation, I think I have met with two examples; one of which was in the person of the boy Lower, already mentioned, whose thigh was reduced accidentally by his father; and the other occurred in a boy fifteen years of age, residing at that time in Rutland, Vermont. He was brought to me on the 28th of May, 1842, by Dr. Haynes, of Rutland, at which time the dislocation had existed five years. His account of himself was that in walking upon a slippery floor, his left leg slid outwards and backwards in such a manner that when he fell it was fairly doubled under his back. On the tenth day following the accident he began to walk with some help, and he has continued to walk ever since, but with a manifest halt. Three months after the injury was received, it was first seen by several surgeons, who pronounced it a dislocation, and attempted reduction without mechanical aid, but were unsuccessful.

When the young man was brought to me, the limb was neither lengthened nor shortened, but the thigh was forcibly abducted and rotated outwards. It could not be flexed nor greatly extended. The head of the femur could be distinctly felt, as it lay anterior to the socket, but not sufficiently far forwards to rest upon the foramen thyroideum.

J. C. Warren, of Boston, has reported a similar example in a child six years old, who was brought, April 21, 1841, to the Massachusetts General Hospital. Dr. Hale, who saw the lad at the end of two weeks, thought it a dislocation, but it had been treated by another surgeon as a case of hip-disease. The dislocation had now existed eight or ten weeks. The limb was a little lengthened, abducted, turned outwards, and advanced in front of the body, with very slight motion of either flexion or extension, and almost no tenderness about the joint. Dr. Warren, also, was able to feel indistinctly the head of the bone "immediately external to, and in contact with, the insertion of the triceps and gracilis muscles."

An attempt was made by manual extension and manipulation to accomplish the reduction, but without success.¹

It is probable that both the above cases, which I have described at length, were examples of partial dislocations; yet I cannot conceal from others a doubt which I actually entertain whether they were not, after all, only examples of hip-joint disease, arrested after having wrought certain slight pathological changes in the joint and the tissues adjacent. If, however, they were not examples of incomplete dislocations of the hip-joint, then I question whether any such cases have ever occurred as simple traumatic accidents.

§ 8. Coxo-Femoral Dislocations, complicated with Fracture of the Femur.

Such complications are exceedingly rare, but it will not do to deny their possibility; although in some of the cases reported, the testimony is so incomplete as to leave a doubt whether the surgeons have not erred in their diagnosis.

James Douglas has reported a case of dislocation upon the pubes, complicated with a fracture of the neck of the femur, the actual condition of which was verified by an autopsy; the patient having died twelve years after the injury was received. The head of the femur still remained above the pubes, and was in no way connected with its neck or shaft. The upper end of the femur projected in the groin, lying upon the inside of the femoral artery and vein. Many other curious pathological changes had also occurred.²

The well-authenticated examples of reduction of the dislocation, where the femur was broken also, are still more rare; and several of the recorded examples which my researches have discovered, need additional confirmation.

John Bloxham, of Newport, in the Isle of Wight, claims to have reduced a dislocation of the femur on the pubes, which was accompanied

¹ Warren, Boston Med. and Surg. Journ., vol. xxiv. p. 220.

² Amer. Journ. Med. Sci., vol. xxxiii. p. 455, from Lond. and Edin. Month. Journ. of Med. Sci., Dec. 1843.

with a fracture of the thigh a little above its middle. The following is the account of this interesting case, which I find in the *London Medico-Chirurgical Review*, copied from the *Medical Gazette* of August 24, 1833. I regret that I am unable to see the account as published in the *Gazette*, which might supply some circumstances important to a full appreciation of the case:

On the seventh or eighth day after the accident, "the patient was laid on his back upon the bed, and kept in that position by means of a sheet passed across the pelvis and fastened to the bedstead; another sheet was also passed over the left groin, and secured in a similar manner. The dislocated and fractured limb was then inclosed in splints, one of which extended up the back of the thigh as far as the tuberosity of the ischium. Pulleys, which were secured to a staple in the ceiling, placed at the distance of a foot to the right of a point vertical to the patient's navel, were then attached to a bandage fastened around the splints as high up as possible.

"The foot was raised with the knee extended, so as to bring the limb nearly to a right angle with the line of the tackle, when by drawing gradually on the cord, in the course of about ten or fifteen minutes the head of the bone was rendered movable, and was brought considerably more forwards. I then began to press on the head of the bone, so as to push it downwards, while the pulleys held it partially disengaged from the pelvis. In a few minutes the head of the bone passed over the ridge of the os pubis, and I then directed the foot to be raised a little higher, which by putting the glutei muscles more upon the stretch was calculated to render them more efficient in drawing the bone into its proper place. By this manœuvre, the head of the bone was drawn backwards, and on the foot being more elevated and the cord slackened, it continued to recede from my fingers till the trochanter major made its appearance in the natural situation, and the reduction was found to be perfectly complete.

"Lest the head of the bone should slip backwards on the dorsum ilii, I directed an assistant to apply firm pressure during the latter part of the process, above and behind the acetabulum.

"The apparatus was then removed, the thigh bound up in short splints, and the patient laid upon a double-inclined plane. No symptoms of inflammation appeared afterwards about the joint. Passive motion was employed at the end of a week, and occasionally repeated during the whole reparatory process."¹

Without intending to question the accuracy of the statements in this case, which, in the main, seem to bear the marks of credibility, I must express my surprise that so little difficulty was experienced in the reduction if the femur was actually broken, no more, indeed, than is usually experienced when the bone is not broken; and that Mr. Bloxham was able to employ safely passive motion at the end of a week.

Charles Thornhill relates, in the *London Medical Gazette* for July, 1836, a case of fracture of the femur through its upper third, in a man æt. 40, with dislocation into the ischiatic notch; which dislocation, he assures

¹ Lond. Med.-Chir. Rev., vol. xix. p. 420, Oct. 1833.

us, was reduced at the end of six weeks. But it is much more probable that, instead of reducing a dislocation, he refractured the bone. During more than one hour and a half, aided by pulleys, tractions and manipulations were made in almost every direction.

The upper part of the thigh was lifted with all the strength of one man by means of a jack-towel; it was violently rotated, adducted, and abducted. Both the perineal and the knee band gave way, from the excess of the force employed; and, finally, the head of the femur resumed its place with an audible *crash*. After which the "limb was of nearly equal length with the other;" but there remained an "immense deposit" around the acetabulum.¹

Malgaigne says that M. Étéve found a poor fellow with a dislocation of his left thigh backwards, a fracture near its middle, a penetrating wound of the knee, and a fracture of the fibula in the same leg. Without delay he proceeded to reduce the dislocation by directing two assistants to support the body, three to support the leg, and two more to make extension from a towel tied not very tightly around the thigh above the fracture. The leg was then extended upon the thigh, and the thigh flexed upon the pelvis until it was at a right angle with the body; and after a gradual extension had been made in this direction, M. Étéve pushed with all his strength the head of the bone into its socket. Of which case Malgaigne justly remarks that the "extension" practised by the surgeon was only imaginary.² If the reduction was accomplished at all, it was by manipulation and pressure.

Finally, Markoe relates, in the paper to which I have already several times made allusion, the case of a boy æt. 8, who was admitted into the New York City Hospital, on the 29th of June, 1853, with a compound fracture of the right thigh, a simple fracture of the left, and a dislocation of the head of the right femur upwards and backwards upon the dorsum ilii.

When placed upon the bed, the right limb lay obliquely across the abdomen of the boy, with the foot resting against the axilla of the left side. "The house-surgeon, to whose care the case fell on admission, took the injured limb in his hands very carefully, carried it over the abdomen to the right side, and then abducted it and brought it down toward the straight position," during which procedure the head of the bone is supposed to have resumed its place in the socket.³

Such is the account furnished of the symptoms and treatment of this extraordinary case; too meagre, certainly, to entitle it to much confidence, or to permit us to draw from it any practical inferences. We are not even informed what was the name of the young man who alone saw and treated the case, nor what was his responsibility as a surgeon.

I have been unable to find any other examples of fracture of the femur complicated with dislocation; and, rejecting at least Mr. Thornhill's case as altogether incredible, the proper conclusion would be, that reduction is sometimes possible in recent cases, if the surgeon will resort

¹ Amer. Journ. Med. Sci., vol. xxv. p. 218.

² Malgaigne, op. cit., tom. ii. p. 206; from Gazette Méd., 1838, p. 757.

³ New York Journ. Med., Jan. 1855, p. 30.

promptly, before swelling and muscular contractions have taken place, to manipulation combined with pressure upon the head of the bone. Indeed, it is probable that pressure alone is the means upon which the success will finally depend. Richet says that he has several times dislocated the femur in the cadaver; and then having sawn off the head so as to represent a fracture, he has always been able to push the head of the bone easily into its socket.¹ By seizing the moment then when the patient is laboring under the shock, or by placing him completely under the influence of an anæsthetic, no resistance will be offered by the muscles any more than in the cadaver, and the reduction may, perhaps, be easily effected.

I have no confidence that anything can be accomplished by extension; nor do I think it will be best to wait until the femur has united, since such delay will probably render the reduction impossible.

§ 9. Voluntary or Spontaneous Dislocations of the Femur.

Examples in which persons, having suffered no disease of the hip-joint, have been able voluntarily to dislocate the femur, have, from time to time, been recorded, but I am not aware that any dissections have ever been made in these cases. I shall, therefore, not attempt any explanation of the facts, but simply record them as matters of curious interest, and for the purpose of inducing others to make of them a subject of investigation.

Malgaigne remarks that "certain persons, without having suffered from any injury or disease of the joint, have the singular faculty of dislocating and reducing the femur voluntarily. Portal saw an example in the person of the Abbé of Saint-Benoit. Humbert mentions a surgeon near Troyes, who dislocated the femur up and down, and reduced it by the simple act of the muscles, without the aid of his hands. He reports at the same time, the curious history of a person endowed with the same power, who after a quarrel produced the dislocation, and then claimed damages, attributing the accident to the violence of his adversary." The same author speaks of cases reported by Coulson, Solly, and Stanley, and the one hereafter to be mentioned alluded to by Sir Astley Cooper, making in all seven cases. It does not appear, Malgaigne adds, that "this laxity impairs the functions of the limb; it is nevertheless a subject which demands to be better studied."²

Sir Astley Cooper says, "I have received from Mr. Brindley, surgeon, of Wink Hill, an account of a dislocation of the os femoris, which the patient is able to produce and reduce when he chooses. The man is fifty years of age."³ Sir Astley has not given any further account of this case.

Samuel Cooper speaks of this matter briefly as follows: "There are instances recorded of persons who could dislocate their thigh-bone spontaneously, and afterwards replace it again without assistance. A gen-

¹ New York Journ. Med., March, 1854, p. 293; from *Bullet. de Thér.*

² Humbert, *Essai sur les lux. spontanées du femur*, 1835, p. 35. From Malgaigne, *op. cit.*, vol. ii. p. 883. He also refers to *Gaz. des Hôpitaux*, 1841, p. 104.

³ Brindley, *Sir Astley Cooper on Disloc. and Frac.* Preface to 2d Lond. ed., 1823.

tleman, who attended my lectures, informed me of a person so circumstanced, and related some of the particulars to me. I suppose that, in such cases, there must be an unusual relaxation of the synovial membrane, a rupture of the ligamentum teres, and perhaps an imperfect state of the acetabulum."¹

Dr. William Gibson mentions the two preceding cases, and adds, "A third was related in an inaugural essay, by Dr. Lewis, of North Carolina, who graduated at our University (University of Pennsylvania), in the spring of 1841."²

Dr. Bigelow has seen two cases, and reports a third from Prof. E. M. Moore, of Rochester. In the first of these the hip was at first dislocated by an accident; and in a few hours it was reduced by manipulation. Eight days after the accident, in attempting to walk, it was again partially dislocated, when the patient himself replaced it by pushing against it with the hand, and pressing with the other against the knee. Since then the man has been able to dislocate the bone backwards upon the edge of the socket by muscular action, and to reduce it by throwing the leg out sideways. In the second case seen by Bigelow, "the phenomena are much like those just described."

Dr. Bigelow regards them both as subluxations, and speaking of the first case, he says the limb "exhibits slight flexion, shortening, and inversion." The case seen by Prof. Moore, and of which Prof. Moore obtained photographs (Figs. 361, 362), is described as follows: John B. Parker, private soldier, U. S. V., was skirmishing up a hill, May 13, 1864, and sprang suddenly back to avoid the gun of a comrade in advance. His left foot became entangled, and his weight dislocated the hip. He felt the injury, and supposed it out of joint. Some comrades put it in, and he immediately resumed his skirmishing, and marched seven miles, from 10 A. M. to 6 P. M. He rested at night, and went on duty the next day, sharpshooting and crawling all day. He continued this kind of duty nine days, and subsequently was on duty in other ways, and did not enter a hospital until the fifteenth day after the accident. When the case was reported to Dr. Bigelow, the man could dislocate the hip at any time by pressing the foot on the floor, to fix it firmly, contracting the adductors, and throwing out the pelvis, when the head "suddenly leaves the acetabulum, and goes on the dorsum." There is a slight inversion while the limb remains in this position. Dr. Bigelow thinks that this is also a subluxation.³

The following case was reported to me in 1865, by John M. Forrest, M.D., of Portland, Maine, to whom the man presented himself as a "substitute," while Dr. Forrest was in the service of the U. S. Army. The application was rejected:

"William G. Gliddon, æt. 37, farmer, says that he has been able to dislocate and replace the femur at the left hip-joint since he was a boy. It is not the result of any injury or disease, so far as he knows. He is in good health, and his muscular development is complete. He accom-

¹ Samuel Cooper, *First Lines*. New York ed., 1844, vol. ii. p. 385.

² Gibson's *Surgery*, 6th ed., An. 1841, vol. i. p. 387.

³ Moore, Bigelow. *Disloc. and Fractures of the Hip*, by Henry J. Bigelow, 1869, p. 112.

plishes the dislocation by throwing the weight of his body upon the left leg, and then contracting certain muscles about the hip. The reduction is generally more difficult than the dislocation, sometimes requiring the aid of his hand. When the head of the bone is out, there is a marked projection above and behind the trochanter major, apparently caused by the pressure of the head in this situation; the limb is very slightly if at all everted; while out of place it causes pain; and after a few repe-

FIG. 361.



FIG. 362.



Voluntary subluxation upon the dorsum ilii. Case of Parker. (From Bigelow and Moore.)

titions the pain becomes so great as to compel him to desist. The limb was not measured while it was dislocated. When the limb is in position he does not walk lame."

Dr. Maurice Perrin¹ brought before the Surgical Society of Paris, in 1859, a man aged 22 years, who when 10 years old had suffered a dislocation of the right hip in consequence of a fall from a horse, in which his leg was caught in the harness, and his body suspended in a position of forced adduction. On the following day it was reduced. Two or three months later it was reproduced by a slight misstep. At a later period he was found to be able to dislocate and reduce the dislocation at will. When presented to the Surgical Society this fact was verified, and admitted by Chassaignac, Marjolin, Morel Lavallée, and many others who were present.

The following case came under my personal observation: Dr. William G. S., æt. 24, received an injury on the outside of the right knee, in

¹ Perrin, *Gaz. des Hôp.*, 1859, p. 367.

February, 1862, from the kick of a horse. There was no apparent injury of the hip. On the fourteenth day after the accident he rode forty miles on horseback, which was followed by some stiffness in the right hip. Two weeks later, in mounting his horse, he felt something slip in the hip-joint. From that day until this, a period of four years, he has been able to reproduce the same slipping voluntarily, and which phenomenon I recognize as a dislocation upwards and backwards. I have examined him more than once, and he has dislocated and reduced the dislocation in my presence repeatedly. Planting his right foot firmly upon the floor a little in advance of the left, with his toes turned out, he throws his weight upon the right leg by carrying his pelvis well over to the right, and then contracts powerfully the gluteal muscles. Instantly the head leaves the socket, and seems to mount upon the dorsum; the trochanter major becomes rotated inwards, causing a slight inward rotation of the leg and foot. He can do the same when lying on his back, but not with the same ease. Reduction is accomplished without change of position, but by what precise manœuvre I have not determined. The reduction is more quiet, and less sudden, apparently, than the dislocation. Both manœuvres are accompanied with some pain. He is not lame, nor does the dislocation take place without his volition. I have seen one case, also, which, although pathological in character, was nevertheless caused by an early injury, and as such may properly be noticed in this connection.

Dr. O. Gillett, æt. 65 (1867), of Westernville, Oneida Co., N. Y., was injured in his left hip-joint when 16 years old, by lifting a heavy weight. He felt at the moment something give way in the joint, and he has been lame ever since; at first he was quite lame, but after a time the soreness about the joint diminished, and up to within about three years the lameness was chiefly due to a lack of development in the limb. Since then the joint has again become tender, and during the last nine months he has been able to throw the head of the bone out of the socket, backwards and upwards. Indeed, the bone is dislocated whenever he sits down, and resumes its place again when he stands up. It is quite apparent that the upper and outer margin of the acetabulum is partly absorbed; and probably, also, the head and neck of the femur are in some measure deformed and absorbed. The dislocation is apparently incomplete; and while it exists the thigh is abducted and slightly rotated outwards. This abduction and outward rotation do not properly belong to a dislocation upon the dorsum of the ilium; but as the condition of the joint and of the adjacent muscles is abnormal, they will not require to be explained.

Deininger¹ relates the case of a retired soldier, who stated to him that when 7 years old he met with an accident which caused, as was believed, a dislocation of his thigh backwards. The dislocation was not reduced; an abscess formed; and at the end of fourteen weeks a spontaneous reduction ensued. After a time the patient began to observe a slipping of the joint, and when examined by Deininger the head of the femur was at each step dislocated backwards, with the characteristic noise, but was

¹ Deininger, *Deutsche Militar-Artzl. Zeitschrift*, iii. 2, p. 632, 1874.

again immediately restored to its normal position by muscular contraction alone.

Karpinski¹ reports the case of a man who had dislocated his left hip when 16 years old. Five years later, when seen by Karpinski, he was able to dislocate the femur upon the dorsum ilii by resting the weight of his body upon the left foot, and then turning his body to the left. Reduction was effected by muscular contraction alone.

In some respects the most remarkable example which has come to my knowledge, is that of Charles H. Warren, the celebrated contortionist and acrobat. Having myself made a careful personal examination of the man, and having observed that he does actually sublucate other limbs than the thigh, it has seemed to me that it would throw light upon this somewhat obscure class of cases if I were to give his history briefly, and describe in detail all the phenomena observed by me. My examination of him was made in 1879, when he was thirty-one years old.

Mr. Warren was born in Schuylersville, Saratoga Co., New York, in 1848. His parents were healthy, and neither of the parents nor either of their five children, except Charles, possessed his peculiar muscular development or power of dislocating the bones. His maternal grandfather is said to have possessed a similar power, but in a much more limited degree. In his own case it was first noticed in his infancy, soon after he began to run about, that he would suddenly fall while running across the floor; and it was soon ascertained that he had been tripped up by the sudden displacement of his hip-joint, but the fall would restore it to place and he would get up and again run about. This is his own account of his case at this early period of life, and it may or may not be correct, as I am not informed that any medical man was ever consulted. His statement, however, finds a confirmation in the fact that an infant son of Mr. Warren, now dead, had the same peculiarity. He has also a little daughter, now living, in whom the same phenomenon, so far as the accidental dislocation of the hip-joint is concerned, is manifested. He has had no other children, and his wife is a healthy and well-formed woman. In his own case this tendency to accidental and involuntary dislocation of the hip-joint only lasted two or three years after he began to run about. Since then, it only occurs by an act of volition, and under the powerful contraction of the muscles. It is not even apt to occur during his performance of gymnastic and contortion feats.

As a boy, Warren ran about as other children and at five years went to school, but when eight years of age he left home and joined a traveling circus. At eighteen he began to work at the trade of car-making, but soon returned to the circus.

I have called attention to these historical details, because they seem to illustrate—*first*, that Warren had a congenital relaxation of the ligaments and capsules of the joints; and *second*, that his prodigious muscular development was the result of early and long-continued muscular exercise; while the daily practice of contortion maintained the ligaments and capsules in their original abnormal condition. There is, therefore, in this case a combination of anatomical conditions rarely met with, namely: a relaxation of one class of structures or tissues, and an unusual

¹ Karpinski, *Idem*, ii. 3, 1873, p. 167. (Poinset.)

power of action and contraction in another. We often see persons who have congenital or acquired (pathological) relaxation of the articular ligaments, but this is associated in most cases with muscular weakness. So also there are frequent examples of great muscular power, the result of exercise, but the joints are compact also. None of them have the power of dislocating their bones by muscular action. Mr. Warren informs me that Walter Wentworth, a professional contortionist, now about forty-five years of age, and weighing perhaps 115 pounds, is probably more flexible than himself, but possesses rather less muscular power, yet he is very strong. John Santiago de Gibinois and George Mankin are probably as strong as himself; Lister, of the New York circus, now dead, was probably superior to any one who has ever lived as a contortionist. The latter died only two or three years ago, at the age of forty-eight, and practised successfully his profession to the last days of his life. Yet not one of these men had the power of dislocating his bones which Warren possesses. It is clear, therefore, that we must ascribe Warren's peculiar power in this respect to a congenital abnormality, namely, a great capacity and lengthening of the capsular structures, united with later muscular development from exercise.

Warren is rather above the average height, slender, and well proportioned.

Inferior Maxilla; Partial Dislocation Forwards.—This is accomplished probably by the action of the external pterygoid muscles. There is nothing worthy of special note in this, inasmuch as the ability to displace the condyle to this extent is not very unusual. The condyle resumes its place the moment the action of the muscles ceases.

Clavicle; No Displacement.—He has no power to displace the clavicle at either articulation.

Scapula; Displacement of Lower Angle.—This displacement is very remarkable, the lower angle of the scapula being lifted upwards and outwards until it lies nearly on a level with the top of the shoulder, and is made to project far backwards. We are enabled here to study carefully the mechanism of this displacement, an example of which is every now and then reported in the journals as a "dislocation" of the scapula. It has been ascribed variously to a partial paralysis of the latissimus dorsi, in consequence of which the somewhat feeble hold which it has upon the inferior angle of the scapula is relaxed, and it is unable to retain the angle in its place;—to a detachment of this muscle from the angle in consequence of some violence;—to paralysis of the serratus major anticus;—and by one writer, to paralysis of the rhomboid muscles.

In the case of Warren, it is apparent that it is accomplished solely by the action of the rhomboideus major, which muscle he has the ability to call into vigorous activity, while he suspends the action of the rhomboideus minor, the serratus magnus, the latissimus dorsi and other muscles. We can even trace the fibres of the rhomboideus major as it lies in a state of contraction underneath the trapezius. When this muscle ceases to contract, the angle falls to its place spontaneously.

It is probable that as we see it presented occasionally in other persons, it is due most often to a paralysis of the serratus major anticus; possibly

sometimes to a loss of power in the latissimus, and even occasionally to a disruption of the attachment of the latissimus; but it is impossible that it should be due to a paralysis of either of the rhomboids, as has been suggested. Of course I exclude from consideration, now, all those examples of scapular projections which are due to spinal distortions, and which are purely mechanical, and have therefore nothing in common with this case.

Head of the Humerus; Subglenoid Subluxation.—By the action, apparently, of the latissimus dorsi, aided, perhaps, by the lower fibres of the pectoralis major, Warren displaces the head of the humerus downwards, until it rests upon the lower margin of the glenoid cavity, causing a very marked depression under the acromion process, and increasing the length of the arm, as measured from this process, about one inch. He soon becomes weary of holding it in this position, and then when he relaxes the muscles, the head rises to its socket without noise or sensation. His ability to perform this feat, is equal in the two arms.

Elbow-joint.—The elbow-joint admits of a slight increase of lateral motion, above what is usual, and the backward movement, or extension, is greater than is usual with adults; but he has no power to cause either a dislocation or subluxation at this joint.

Wrist-joint; Backward, Forward, and Lateral Subluxation.—By the action of the muscles alone he displaces the carpal bones backwards or forwards, causing in each case a partial dislocation. He cannot, however, cause a lateral dislocation without first grasping the wrist with the opposite hand—the wrist being grasped firmly by its radial and ulnar margins—when, by the action of the muscles, the carpus is thrown fully half an inch to either side. When the carpus is thrown to the radial side, the hand falls to the ulnar side; and the reverse happens when the carpus is thrown to the ulnar side. When the muscles are relaxed, the carpus resumes its position spontaneously, and without sound or sensation.

Phalangeal Articulations; Subluxations.—He is able to subluxate all the articulations of his fingers, including the thumb. The subluxations backwards and forwards are effected by muscular action, but the lateral dislocation only by the help of the other hand.

Hip; Apparently Complete Dislocation upon the Dorsum Ilii.—It is in the hip that the greatest scientific and surgical interest of this case centres. After a careful study of the phenomena accompanying certain motions of the hip-joint in the person of Warren, I have felt compelled to accept of the theory that he causes a true and complete dislocation upon the dorsum of the ilium.

We notice that while the patient is standing nude, his form is perfect, except that both feet turn out a little more than is usual with others. With a moderate effort of the muscles the head of the bone seems to move in its socket, and to be carried upwards and backwards upon the dorsum ilii. The change of position occurs suddenly, and is accompanied with a sensation to the hand as of a bone slipping suddenly into its socket—a sort of heavy thud. When he has dislocated his right leg, he stands upon his left leg, the right being lifted from the floor, the thigh a little flexed upon the body, the leg flexed upon the thigh, with the toes turned

a little in. He says, that knowing that it ought to turn in a little more to represent the appearance which the limb usually presents in this dislocation, he sometimes, when exhibiting himself, turns it in more; but this is the position, only slightly turned in, which it naturally takes. Looking for the trochanter major, we find that it has been carried upwards and backwards full two inches. The head of the bone we are unable to find. It is very difficult to make a comparative measurement of the two limbs when one is thus displaced, but, so far as I can determine, the right limb is shortened at least one inch, probably more.

Warren repeated the dislocation several times; the bone always returning quietly to its place after each displacement, without any sound or sensation like that which accompanied its displacement. The same experiment was made with the opposite thigh, and with the same results. Finally, he was laid upon the floor, upon a blanket, and he produced the dislocations equally, but apparently with little more muscular effort.

There seem to be but two possible explanations of the phenomena presented in the case of the femur: either they are produced by the trochanter rotating outwards, and pressing firmly against the anterior margin of the glutæus maximus, until suddenly it becomes disengaged and slips under this muscle, while the head of the bone remains in its socket; or, there is a veritable dislocation of the head of the bone.

In favor of the first supposition it may be stated again, that when the displacement in the case of Mr. Warren has occurred, the trochanter major is removed backwards and upwards full two inches; it remains as prominent as it was before, and the head cannot be found; while in the usual dislocation upon the dorsum the trochanter turns forwards, and is less prominent than it was before; and the head of the bone may usually be felt when there is no swelling. How then could this be a dislocation? Plainly only by supposing that there was such an abnormality of the joint—an almost total absence of the rim of the acetabulum in that direction—and perhaps such a broadening of the head, and shortening of the neck, as would permit the head, neck, and trochanter to be drawn up and back by the glutæal muscles, without changing the relations of the line of their common axis to the outer face of the pelvis; that is, without any inward tilting of the trochanter. This would assume the existence of anatomical conditions that are not proven, but only deemed possible.

If the limb is actually shortened, however, there must be a dislocation, and I think it is; but inasmuch as the accuracy of any measurements under these circumstances might be fairly questioned, we shall for the moment dismiss this argument also.

There now remains only this important fact, that while the trochanter major is carried back, the toes are no longer very much turned outwards, as they were before the displacement was made; nor do they point forwards, but actually a little inwards. So that in fact there is about as much inward rotation of the foot as we could have required to indicate an outward dislocation. But it is plainly impossible that the head of the femur should remain in its socket, while the trochanter is rotated outwards two inches, and the knee, foot, and toes not accompany this outward rotation. Certainly it is impossible that the whole lower portion of the limb should rotate inwards, as it actually does, while the trochanter

is strongly rotated outwards. These considerations, it seems to me, must exclude the supposition that there is here only a rotation of the trochanter outwards, and a consequent muscular displacement.

Whatever difficulties there may be in the way of supposing that this is a dislocation, they are not insuperable if we assume the existence of some abnormality in the construction of the joint and of the neck. It is possible even, that what we believe to be the trochanter moved back is actually the head of the bone, and that it is the trochanter which is lost; for the change of position occurs so suddenly that neither by the sight, nor with the hands placed upon the trochanter, can we follow the change of position. I only discover, after a sudden commotion, that there is no longer a projection where the trochanter was felt, and which I marked with a pencil in order not to be deceived; and that there is a projection which resembles it precisely, so far as we can determine, two inches farther back and upwards. Possibly, I say, this new projection is really the head, somewhat changed from its normal form; but I do not think so. Perhaps nothing but an autopsy can determine this and other points connected with the case.

Knee-joint; Rotation and Subluxation.—Mr. Warren has no power to displace the knee-joint by muscular action; but seizing the leg while it is flexed, he can rotate the tibia laterally very freely, and cause the head of the tibia to project beyond the line of the articulation half an inch or more.

Patella.—He has no power to displace this bone.

Ankle-joint.—With his hands he can abduct and adduct this joint almost to a right angle with the leg.

Tarsal Joints.—By the aid of his hands he can imitate the extremes of varus and valgus.

Phalanges of the Toes.—They are loose, but not so loose in their articulations as the phalanges of the fingers.

Adams,¹ of Glasgow, describes the case of a young man who, when 20 years of age, in trying to imitate an acrobat dislocated his thigh, which he reduced without assistance. After this he found himself able to dislocate either hip at pleasure. In order to accomplish this he raised the foot of the limb which he wished to dislocate, until only the toes touched the floor, and then suddenly flexed and adducted the limb. On ceasing the muscular contraction the bone returned spontaneously to its socket. This patient, who was examined three years after the original accident, was able also to displace voluntarily the inferior maxilla.

Chassaignac² furnishes an account of a vaulting mountebank, who had a congenital dislocation of both hips upon the iliac fossæ, which he was able voluntarily to convert into ischiatic dislocations.

¹ Adams, Glasgow Med. Journ., Oct. 1882, vol. 8, No. 4.

² Chassaignac, Bull. Soc. de Chir. de Paris, Séance du 28 Janv. 1853, p. 391.

CHAPTER XVIII.

DISLOCATIONS OF THE PATELLA.

§ 1. Dislocations of the Patella Outwards.

Causes.—In the majority of cases this dislocation has been occasioned by muscular action; and especially is this liable to occur in persons who are knock-kneed, or whose external condyles have not the usual prominence anteriorly. It may be caused by suddenly twisting the thigh inwards while the weight of the body rests upon the foot, and the leg is thus kept turned outwards; or by falling with the knee turned inwards and the foot outwards. Occasionally it is the result of a blow received upon the inside, or upon the front and inner margin of the patella. In some persons there seems to exist a preternatural laxity of the ligamentum patellæ or of the tendon of the quadriceps extensor, which exposes the subject to this accident from very trifling causes. Fergusson says he has known it to be occasioned by a child's stepping upon the knee of a person lying in bed; and Skey says he has seen two cases which occurred spontaneously during sleep. B. Cooper has seen a young lady who frequently dislocated her patella outwards by merely striking her toe against the carpet, or in dancing. Boyer, Sir Astley Cooper, and others mention similar examples.

Pathological Anatomy.—Most frequently the dislocation is only partial, the inner half of the patella resting upon the articular surface of the outer condyle; and in consequence of the peculiar obliquity of these surfaces, together with the action of the vasti and rectus femoris, the outer margin of the patella becomes tilted forwards.

If the dislocation is more complete, this margin begins to fall over backwards, as in the accompanying drawing; and in more extreme cases the patella lies flat upon the outer side of the condyle, with its inner margin directed forwards.

When the dislocation is partial, it is probable that neither the capsule nor the ligamentum patellæ usually suffers much laceration; but in complete dislocations the capsule at least must have given way more or less. Norris, of Philadelphia, reports a case of partial dislocation in which the complications were more serious. John Scanlin, æt. 32, was admitted to the Pennsylvania Hospital, on the 27th of August, 1839, in consequence of injuries received a short time previous by having become entangled in machinery. In addition to several fractures in other limbs,

FIG. 363.



Dislocation of the patella outwards.