

of a fall from a height, the individual alighting upon the anterior part of the foot, it is, in general, that variety which has now been described. And this aptness on the part of the cuneiform bone to maintain its connection with the first metatarsal bone, he would ascribe mainly to the fact that both the peroneus longus and tibialis anticus have attachments to each of the bones in question.

Dr. Bertherand, of Algiers,<sup>1</sup> in 1856 reported a case of simultaneous dislocation of all the cuneiform bones, without separation from the metatarsal bones, caused by a fall upon the sole of the foot. The dislocation was not reduced, and was only seen by Bertherand two years after the accident occurred. The foot was atrophied; the tarsal and metatarsal articulations were ankylosed, and he walked entirely on his heel.

## CHAPTER XXIV.

### DISLOCATIONS OF THE METATARSAL BONES.

DISLOCATIONS of one or more of the metatarsal bones, at the points of their articulations with the tarsus, have been known to occur in almost every direction. They may be occasioned by crushing accidents, or more often perhaps they have been caused by a fall backwards or forwards, when the anterior extremity of the foot was wedged under some solid body and immovably fixed. They may be produced, also, by alighting upon the ball of the foot when falling from a height. I have noticed, however, that Mr. Robert Smith inclines to the opinion that this will, in general, only produce the species of dislocation which he has particularly described, and to which reference has been made in the preceding chapter.

The symptoms which characterize the dislocation of the whole range of metatarsal bones upwards and backwards will, when the dislocation is complete, resemble very much those which belong to the dislocation described by Smith. The dorsum of the foot will be shortened antero-posteriorly, the two arches of the foot will be lost upon the plantar surface, or even actually reversed, a ridge will traverse the back of the foot and a corresponding depression will exist underneath.

In some cases, however, the dislocation is not complete, the articulations being only sprung, and then there can exist no foreshortening of the foot, and all the other signs will be less striking.

If only a single bone is dislocated, the diagnosis is generally very easily made out, unless, indeed, considerable swelling has already occurred.

Mr. South says that, in 1835, a case was admitted to St. Thomas's Hospital, under Mr. Green's care, of dislocation of the last two metatarsal bones, occasioned by the falling of a heavy chest upon the inside of the foot. "Upon the top of the foot was a large swelling before and below the outer ankle, and behind it a cavity in which two fingers

<sup>1</sup> Bertherand, Bull. Soc. de Chir. de Paris, 1856-57, t. 7, p. 361

could be easily buried, in consequence of the bases of the metatarsal bones having been thrown upwards and backwards upon the top of the cuboid." The reduction was accomplished with much difficulty by continued extension, and as the bones resumed their place a distinct crackling was heard.<sup>1</sup>

Liston reduced a dislocation upwards of the first metatarsal bone. Malgaigne mistook a dislocation of the fourth bone for a fracture, and did not attempt the reduction until the seventh day, when, after five successive trials, the head entered with a noise into its cavity. In a dislocation of the second, third, and fourth metatarsal bones, he also failed to detect the true nature of the accident until the tenth day, when he proceeded to attempt reduction, but failed. Inflammation, suppuration, and delirium followed, and the patient died on the forty-first day. Tufnell failed in a similar case, although his patient finally recovered with a not very useful limb. Malgaigne failed to reduce the bones also in a recent case of dislocation of the first four bones, although he used chloroform and diligently tried various means. The same writer has seen one example of ancient dislocation, which was not recognized by the surgeon by whom the patient was first seen. Monteggia reports a case of dislocation of the last two metatarsal bones, which was not at the time recognized. On the tenth day swelling commenced, and soon after the patient died in convulsions.<sup>2</sup>

Dr. W. C. Shaw, of Pittsburg, reports the case of a man 35 years old, who, falling from a height, "struck with all his weight upon a sharp edge of stone, striking upon the inner and under surface of the right metatarsal bones, dislocating the proximal end of the first metatarsal bone upwards, and apparently carrying the second with it." After several ineffectual attempts at reduction made by himself and others, in which extension and direct pressure were employed, he succeeded finally by "bending the foot to an acute angle on the inner surface, approximating the articulating surfaces of the dislocated bones, and quickly extending the foot."<sup>3</sup>

These references sufficiently illustrate the difficulty which surgeons have experienced in the reduction of these bones, when a portion only is displaced: a difficulty which is probably due to the fact that it is almost impossible to make extension upon a single metatarsal bone. We might expect more from forced dorsal flexion, as advised in the case of the phalanges, and which was successfully practised by Shaw. Direct pressure upon the displaced head cannot be expected to accomplish much in these accidents, owing to the small amount of surface presented against which the force can be properly applied.

If, on the other hand, all the bones are dislocated at once, the reduction is generally accomplished with ease by simple extension, combined with properly directed pressure. Bouchard and Meynier succeeded without difficulty in two cases of backward dislocation; Smyley was equally successful on the sixth day, in a case of dislocation downwards. Laugier reduced an outward dislocation of all the bones by pressure and extension

<sup>1</sup> South, Note to Chelius's Surg., vol. ii. p. 256.

<sup>2</sup> Malgaigne, op. cit., p. 1077 et seq.

<sup>3</sup> Shaw, Pittsburg Med. Journ., 1882, p. 301.

easily; and Kirk succeeded as well, in an example of the opposite character, all the bones being carried inwards.<sup>1</sup>

Mr. Sandwith has given us an account of a case which occurred in his own person, from the fall of his horse upon his foot. "I was instantly sensible," says Mr. Sandwith, "of the nature of the injury, and as soon as I was upon my feet, the metatarsus was found to be drawn upwards, and obliquely outwards upon the tarsus, by the action of the flexor muscles. On the removal of the boot, which was cut away, these were the appearances: The foot considerably shortened, the toes turned a little outwards, and a hard swelling, bigger than an egg, upon the tarsus, with tumefaction of the integuments. The pain, which was great at first, was kept under by a warm fomentation.

"The reduction was easily effected by my friends Messrs. Williams and Brereton, and leeches and bread-and-water poultices prevented inflammation. For several nights the foot was violently shaken by spasmodic action of the muscles, but the parts preserved their relative situation; and although it was nearly a year before all lameness ceased, yet at the end of six weeks I was enabled to lay aside my crutches. For the ability to use the foot in so short a time, I was indebted to a contrivance which rendered the foot and ankle inflexible.

"Instead of an elastic sole to the shoe part of the apparatus, one of wood was procured, around the heel of which was nailed a piece of firm, unbending leather; this reached as high as the calf of the leg; three small straps with buckles held the leg *in situ*, and a broader one across the instep secured the foot. The comfort I experienced from this simple apparatus is my reason for describing it so particularly; it has since been found useful in various injuries of the foot and ankle."<sup>2</sup>

In one extraordinary case, however, Dupuytren was not so successful. Paul Endes, æt. 24, fell, while drunk, into a ditch six feet deep, and alighted on the soles of his feet. The accident was followed by great swelling, and he did not suspect the nature of the injury, nor present himself at the hospital until three weeks after. Dupuytren then ascertained that he had dislocated the metatarsal bones of both feet. Several fruitless attempts were made to accomplish the reduction, but to no purpose, and in about two weeks he left the hospital.<sup>3</sup>

## CHAPTER XXV.

### DISLOCATIONS OF THE PHALANGES OF THE TOES.

DISLOCATIONS of the toes are less common than those of the fingers, yet a considerable number of cases have been recorded by different surgeons. They are occasioned by blows received directly upon the ends

<sup>1</sup> Malgaigne, *op. cit.*, p. 1081.

<sup>2</sup> Sandwith, *Amer. Journ. Med. Sci.*, Nov. 1828, p. 216; from *London Med. Gaz.* vol. i.

<sup>3</sup> Dupuytren, *op. cit.*, p. 329.

of the toes; by the weight of the body brought to bear suddenly upon their plantar surfaces, as when a horseman springs in his stirrups, or by a fall, in consequence of which the rider hangs in his stirrup; by leaping, etc.

They may be partial or complete; and in the latter case, a slight overlapping is generally observed. In a great majority of cases the direction of the displacement is backwards, or with only a slight lateral deviation. Occasionally several bones are displaced at the same time, but usually only one suffers displacement. It is more common here to find compound and complicated dislocations than in the case of the fingers.

The position of the toes is not always the same in the same form of dislocations. Thus, in the dislocation backwards, the toe is sometimes reversed upon the foot to nearly a right angle, and at other times it is found lying in the same axis as the metatarsal bone, or the phalanx, from which it is dislocated. Some years since I reduced a backward dislocation of the first phalanx of the second toe in the person of Lewis Britton, æt. 60, who had fallen from a fourth-story window, striking upon his feet, and breaking both thighs. I did not discover the dislocation of the toe until sixteen hours after the accident. It was then lying parallel with the axis of the metatarsal bone, upon which it was slightly overlapped. The reduction was effected easily by pulling upon the last phalanx with my fingers, while at the same moment I pushed the head of the bone toward the socket. No swelling followed; nor has it troubled him at all since his recovery.

Dr. John H. Packard, of Philadelphia, informs me that in a dislocation backwards of the first phalanx of the great toe, occurring in a very muscular man, the phalanges were found lying parallel with the metatarsal bone; and it was reduced easily by extension, while the patient was under the influence of ether.

*Treatment.*—With regard to the treatment, surgeons have experienced the same difficulty, in certain cases of dislocation of the great toe, as we have seen experienced in similar dislocations of the thumb. Occasionally, indeed, the reduction has been found to be impossible. The same doubts have existed also in relation to the causes of this difficulty, and in reference to the means by which it was to be overcome. I shall therefore refer the reader to the chapter on Dislocations of the First Phalanges of the Thumb and Fingers, for a more full consideration of this matter.

In case the smaller toes are dislocated, the reduction is generally effected with ease, by simple extension, or by extension combined with pressure; sometimes, also, the bone will be more easily put in place by reversing the phalanx more completely, as I have advised in certain cases of dislocations of the fingers.

If the skin is penetrated, it will often be found necessary either to amputate or to practise resection upon the exposed phalanx.

Sir Astley Cooper relates a case of dislocation of "all the smaller toes," from the metatarsus, which had not been reduced, and the subject of which was, in consequence, so much maimed that he was unable to labor. It had been occasioned by a fall, from a considerable height, upon the extremities of the toes. A projection existed at the roots of all the smaller toes, the extremity of each metatarsal bone being placed