ART. II.—Extra-Capsular Fractures of the Neck of the Femur.*

By ALEXANDER GORDON, M.D., Professor of Surgery, Queen's College, Belfast.

(Continued from Vol. LXXI., p. 507.)

Second Form.—In the form which I have described as the first, the line of fracture in front may be through the anterior intertrochanteric line, or it may include a large portion of the anterior surface of the upper part of the shaft extending almost to its outer surface. Now in this, the second form, the line of fracture in front is along the inner margin of the anterior intertrochanteric line; above and behind it is at the point of reflection of the compact tissue of the base of the neck, where it changes its direction to form the apex of the trochanter and the posterior intertrochanteric line, above or below the lesser trochanter. Its course is, therefore, more limited to the base of the neck than the first form. From the direction of the force which is applied to the fore and upper part of the head, the base of the neck in front penetrates behind the compact tissue forming the upper part of the shaft; and, as the line of fracture behind is at the junction of the base of the neck with the posterior intertrochanteric line, it follows that the entire base of the neck penetrates the trochanter, and, in consequence of this mode of penetration, the trochanteric fragment is much greater than in any of the other forms. I have applied to this the term penetration en masse. In many instances nearly the whole of the trochanter is separated from the shaft above. Behind it extends almost, in some instances, to the outer surface of the shaft and below, including the lesser trochanter and part of the shaft below and behind it all in one fragment. In one of the specimens before me at present the depth of the trochanteric fragment is four inches, and its breadth two inches. The angle formed between the neck and the shaft varies but little; it is often a right angle, or sometimes more or even less than a right angle. As the base of the neck is directed more or less backward, there is very little eversion of the limb. Sometimes there is well-marked inversion, and occasionally neither eversion nor inversion. Owing to the depth to which the base has penetrated, there is well-marked shortening of the limb, and a manual examination of the upper end of the shaft renders the diagnosis usually very easy—the great increase in the antero-posterior diameter, from the

* Read before the Ulster Medical Society, 10th May, 1881.
flattening of the great trochanter, and the great size of the trochanteric fragment, and also often a well-marked trochanteric groove. As nearly the whole of the apex of the trochanter is broken off and carried backwards, measurement of the outer surface of the femur shows a shortening in many instances equal to the depth of the trochanter, or more than an inch. Passing the finger along the outer bifurcation of the linea aspera detects at once the prominence of the fragment, contrasting remarkably with the opposite femur. If there is not much swelling, and the limb slightly everted, we may be able to feel the prominence of the anterior intertrochanteric line, which in recent cases would be very painful on pressure. I think that in this case the moment the fracture occurs, instead of the pelvis gravitating backwards as in the first form, it falls forwards; or, in other words, the patient will be found immediately after the accident lying on his back, with the toes remarkably turned out, in the first form, while in this, the second form, the patient will be found prone, with the limb scarcely at all everted or inverted. It is this form which some authors have described as non-impacted extra-capsular fracture—that is to say, where the base of the neck rests upon the large flattened trochanteric fragment and the upper end of the shaft, where penetration has been carried to such an extent that impaction no longer exists.

I have several specimens of the extra-capsular non-impacted fracture. They all occurred in persons of extreme old age, in which there was great fragility of the bone, from senile atrophy, and the force which caused the accident was not of extreme violence, but was by simply falling and alighting on the trochanter.

Treatment.—The treatment of this form is the same as that of the first. Indeed, when I compare two well-marked specimens, I find, in the first form, if the force had been continued it would have placed the base of the neck upon the front of the shaft, with the trochanteric fragment attached to the shaft, whereas, in the second form, the base of the neck would have gone behind the shaft, with the neck attached to the trochanteric fragment.

As regards the impaction of bone, I may here remark that I have never seen any bone whatever, no matter how deeply the fragments were driven into each other, held firmly together. If I take an axe and drive it into a piece of wood, the resiliency of the wood will hold it firmly impacted, but in bone it is the fibrous tissue and not the osseous tissue that holds the fragments firmly together,