seen that this down-growth is a traction epiphysis developed in the quadriceps tendon below the patella and joining the main upper epiphysis before uniting with the diaphysis or shaft.

The fibula has two pressure epiphyses, the lower of which appears

first. The general rule with the long bones of the extremities is that the epiphysis nearest the elbow or farthest from the knee is the first to appear and the last to join. The writer accounts for the neglect of this rule in the case of the fibula by the fact that the lower cartil­aginous end is larger than the upper (see fig. 26).

In the tarsus the cartilages are at an early stage arranged in three

rows in just the same way that those of the hand are, but in the proximal row the middle one (intermedium), corresponding to the semilunar in the hand, fuses with the one on the tibial side to form the astragalus, though sometimes a vestige of it seems to persist

as a little bone at the back of the astragalus, known as the *o trigonum.*

The centre for the calcaneum appears in the sixth month of foetal life, that for the astragalus in the seventh, the cuboid about birth, the external, middle and internal cuneiforms in the first and second years, while the navicular is the last to appear in the third year. It will be noticed that, although ossification occurs in the bigger cartilaginous masses earliest, *e.g.* calcaneum astragalus and cuboid, the large navicular is the last cartilage to ossify, and this is an exception to the general rule which is probably caused by some factor which we do not at present understand.

The calcaneum has a very definite traction epiphysis developed in the insertion of the tendo Achillis behind.

The development of the metatarsal bones and phalanges of the foot is the same as that of the hand.

For further details and literature see J. P. M'Murrich's *Development of the Human Body* (London, 1906) and D. J. Cunning­ham’s *Text-Book of Anatomy* (Edinburgh, 1906).

*Comparative Anatomy.—*It is only when the class of pisces is reached that paired ap­pendages are found, and there are two main theories to account for their first occurrence. The one which is at present most favoured is that in some ancestral fishes two folds ran along the ventro-lateral part of the body, like the bilge keels of a boat, and that these joined one another in the mid-ventral line behind the cloacal orifice to form the median caudal fin. Into these folds the segments of the body including myotomes and myocom- mata, extended. Later on parts of these ridges were suppressed, but in the pectoral and pelvic regions they were retained to form the paired fins. This theory' was first fore­shadowed by Goodsir, and has been elaborated by Balfour, Dohrn and many others. It is supported by the fact that in some elasmo­branch embryos the whole length of the folds can be traced.

The second theory is that the limbs are elaborated gills; this was proposed by C. Gegenbaur, and has lately been supported by Graham Kerr. It is probable that the limb girdles are of later evolution than the skeleton of the fins themselves.

In the elasmobranch fishes (sharks and rays) there is a crescentic

bar of cartilage (pectoral girdle), concave upward, which girdles the ventral and lateral parts of the body; it is divided into a dorsal part (scapula) and a ventral part (precoracoid and coracoid) by a