

different periods of development. In the first the metatarsal bones, with the exception of the first two, are in close apposition, and in consequence all the interosseous muscles, excepting the first dorsal, are plantar in position. The second diagram is from a foot somewhat more advanced. It shows that as development progresses the metatarsal bones separate from each other, and that simultaneously with this the dorsal interossei begin to shoot up between them like wedges. The third illustration gives a view of the relative position of the muscles and metatarsal bones as they are to be seen in the adult. The bones are widely apart from each other, and the muscles have reached the dorsum of the foot.

Among the lower mammals there are many animals which in their adult condition correspond exactly with the first stage of the human embryo in the relation of their intrinsic pedal muscles to the metatarsus. Perhaps the Dog and the Dasyure are the best examples that I could quote. In these the metatarsals are closely compressed together, and the muscles are entirely plantar in position (Pl. VIII. fig. 4).

The majority of animals never reach beyond the second stage of the human embryo in this respect. Let us take the foot of the Leopard as an example. In this animal, the metatarsal bones, whilst they are closely applied to each other towards the tarsus, open out slightly from each other towards their phalangeal extremities; and in the intervals between them the thin sharp edges of the dorsal interossei may be seen reaching half-way up the interosseous spaces (Pl. VIII. fig. 7).

Comparatively few animals correspond with the third or adult condition of the human foot; still certain of the Apes approach very closely to Man in this respect.¹

It is curious to find in an animal so low as the Duck-bill *Platypus* a closer approach to Man than in the vast majority of mammals. The dorsal interossei reach the dorsum of the foot, and, moreover, the second and third are two-headed.

But there is also a relation between the human embryo and many of the adult animals in the mode of origin of the dorsal interossei. Ruge points out that in the early embryo these muscles are one-headed, and that it is only in a later stage that they acquire their bipenniform character and their origin from the metatarsal shafts. How similar is this to what we have seen to be the permanent condition in the great majority of mammals.

¹ Mr. Champneys, when he wrote his well known paper upon the Chimpanzee and Anubis (*Jour. Anat. and Phys.*, vol. vi. p. 207), had a very clear conception of the different conditions which the intrinsic pedal muscles presented to the metatarsus. The following is a footnote appended to his paper:—"Duvernoy remarks that in the Gorilla, as I found in Chimpanzee, the dorsal interossei are not so dorsally placed as in Man. Moreover, this fact was plainly set forth in the hand of my Chimpanzee, in which parts of the dorsal interossei were so divaricated palmarly as to be positively palmarly, and not at all dorsally, placed. In the lower Monkeys, as *Cebus*, *Inuus nemestrinus*, and in Anubis, there are really no true dorsal interossei, but two layers of plantar, the more dorsally lying of which we may take, if we please, to represent the dorsal interossei. The more plantarly placed resemble the interossei of the Carnivora, as Church remarks. We, therefore, have an ascending series from that case where the dorsal interossei are plantarly placed (represented by the *Cebus* and *Anubis*, the more plantarly placed resembling those of the Carnivora), to the Anthropoid Apes, where these are more dorsal, and thus to Man, where they are more dorsal still. This dorsal migration of the interossei is very interesting."