

Beaver alone is it a tolerably well developed muscle. On reflection, the reason of this weakness of the marginal abductors in aquatic feet becomes apparent. In the backward stroke of the pes the water, the resisting medium against which it strikes, is sufficient to cause the full expansion of the web. The flexores breves guard against over extension of the digits, and thus the long flexor muscle is free to act upon the ankle joint. Dr. Murie describes in the foot of the Sea-lion¹ (*Otaria jubata*) two short muscles which lie obliquely upon the under surface of the tarsus. They both arise from the scaphoid, and they are respectively inserted into the internal cuneiform, and into the base of the first metatarsal bone. He considers that they represent the adductor and flexor brevis hallucis, but as he figures a very distinct adductor for this toe, and also the fibular head of a flexor brevis hallucis, I think (as already explained) that it is more probable that they are homologous with the absent abductor hallucis and tibial head of the flexor brevis hallucis. But what has caused those muscles to assume these highly anomalous attachments? Dr. Murie states that "both are flexors"; one of the internal cuneiform upon the scaphoid and the other of the first metatarsal bone. In this manner therefore they support the tarsus and enable it to bear the strain which must be communicated to it by the backward stroke of the expanded digits through the water. In the Walrus² Dr. Murie found corresponding muscles, and in this animal, as we have seen, a special part of the abducting apparatus of the minimus is set aside apparently for the same purpose. This muscle stretches between the under surface of the os calcis and the base of the fifth metatarsal bone.

Let us now choose two terrestrial animals of similar habits, and which employ their feet for similar purposes, viz., the Dog and the *Thylacinè*. Both these animals use their feet for progression, and it may be also occasionally for burrowing. In the latter case they employ them to clear away the earth which has been detached by their fore-paws. In both animals the feet are very similar in outward appearance, with the exception that the Dog is digitigrade, whilst the *Thylacine* is semi-plantigrade. The intrinsic muscles are disposed differently in each case. In the *Thylacine* the arrangement is typical in every respect; in the Dog the flexores breves and abductors are coalesced, and this withstanding the slow, skulking character of the *Thylacine* as compared with the highly active habits of the Dog.

Arboreal Marsupials almost invariably exhibit the typical disposition of their intrinsic muscles, e.g. the *Phascogale*, the Virginian Opossum, the Australian Opossum, the *Cuscus*, &c. The Koala is an exception, inasmuch as the dorsal layer is poorly represented. The arboreal Rodent, the Squirrel (*Sciurus vulgaris*) has, however, quite a different arrangement. The adductors and flexores breves are well developed, but the abductors are reduced to a single muscle, viz., the abductor minimi digiti.

¹ On the Anatomy of the Sea Lion, Trans. Zool. Soc., vol. vii. p. 579.

² On the Anatomy of the Walrus, Trans. Zool. Soc., vol. vii. p. 456.