

In *Macrorhinus*, and in all the femora of the Phocinæ, there is an oblique ridge running from the top of the great trochanter on the front surface to the external condyle, which curves outwards in *Macrorhinus* to below the middle of the head of the femur before going to the external condyle (Pl. IV. fig. 4). In *Arctocephalus* the ridge is not well marked, but above the line on the femur for the capsular ligament of the knee in the middle of the shaft, a ridge from the top of the great trochanter runs down the upper third of the shaft in a line with this point (Pl. VII., fig. 7). This ridge marks off the vastus externus, even although the fibres of the crureus pass in below it for a distance. In the Phocinæ the vastus externus is supplied by the anterior crural nerve.

The *Crureus*.—In all the specimens there is a layer of muscular fibres without a natural division covering the front of the femur, which may be the combined vastus internus and crureus, but certainly is not the vastus internus only. For in *Arctocephalus* there is a large internal surface on the femur, and if it were covered by muscular fibres going to the patella, that would afford sufficient proof that it was the vastus internus. The fibres on the front surface, however, run from the ventral side of the internal condyle to the corresponding surface of the neck, and do not cover any part of the extensive internal surface of the shaft, therefore the group of fibres is more entitled to the name of crureus in *Arctocephalus* and still more so in the Phocinæ where there is no internal surface.

In the Phocinæ it *arises* from the anterior surface of the femur, from the intertrochanteric line. It extends down the shaft to the part which is covered by the capsular ligament of the knee-joint, and is *inserted* into the upper edge of the patella beneath the rectus, into the outer upper half of it (the muscular fibres descend no further), into the inner side of the ligamentum patellæ, into the head of the tibia on the ventral side, and into the capsule of the knee-joint.

In *Macrorhinus leoninus* it is similar, with the exception of its insertion into the inner side of the patella. The muscular fibres stop at the lower inner edge of it, and are *inserted* into the inner side of the head of the tibia by a tendon.

In *Arctocephalus gazella* it *arises* from the front surface of the femur, with the exception of the surface occupied by the vastus externus, and is *inserted* into the capsule of the knee-joint, and into the upper edge of the patella. In *Otaria* and *Trichechus* it is combined inseparably with the vastus externus.

Lucae describes the vastus externus and crureus as a combined muscle, thus recognising the presence of both; and I found them in all the dissections, including that of *Arctocephalus*. Although the vastus externus is not perfectly separate, the direction of the fibres is an aid to its recognition as a distinct muscle. In *Macrorhinus* the separation is further assisted by a tendinous surface upon the posterior portion of the externus, and here the distinction of it from the crureus was easier. In *Phoca* it was not so distinct, and less so in *Arctocephalus*; but in all it merited a special description. Dr. Murie describes in *Otaria* and *Trichechus* the internus and externus, and is doubtful about the crureus. As already explained, the vastus internus would go over the internal surface if it were present as it is in *Arctocephalus*; when this surface gives no origin to the internus, then the crureus must be crowded out by the two lateral muscles encroaching upon its surface of origin, for in the Phocinæ, where there is no internal surface, there is the same collection of fibres with the same insertion as in *Arctocephalus*, so I conclude that in *Arctocephalus* there is a crureus and vastus externus, whereas *Otaria* and *Trichechus* have a vastus externus and internus. The extensor of the leg, as the name implies, will extend it and flex the thigh upon the pelvis. The