

posterior border of the flipper, and the anterior border of the radius about its middle.<sup>1</sup> The abdominal part, after disappearing beneath the sternal, is joined by the outer division of the latissimus dorsi, and then joins the portion of the sternal part which is *inserted* into the humerus. The humeral portion is muscular on the under surface in the upper third and tendinous in the lower two-thirds.

In *Arctocephalus gazella* there are also three parts having almost similar names. The pre-sternal part is most anterior, and consists of a narrow muscular band. It *arises* from the lateral anterior termination of the presternum by a small tendon. It is half under cover of the sternal part, and courses almost transversely outwards to the shoulder over the sterno-cleido-mastoid, which descends behind its inner half to gain the fascial slip occupying the position of the absent clavicle. The outer half is between this muscle, which is now ventral to it, and the sternal part. Over the shoulder it is lost among the fibres of the sterno-mastoid above and the sternal part behind.<sup>2</sup> The sternal part lies posterior to the pre-sternal, and anterior to the thoraco-abdominal, partly covering it. It is a fleshy mass of transverse fibres of considerable depth and breadth. It *arises* from the lateral half of the presternum and meso-sternum; and from the cartilages of the four anterior ribs. It blends over the presternum and meso-sternum with the same part of the opposite side. The fibres reach the anterior border of the humerus in a sheet of the same breadth as at the origin. This wide bundle is *inserted* in its anterior half after blending with the thoraco-abdominal part into the inner lip of the deltoid ridge of the humerus. The anterior three-fourths of this insertion pass beneath a slip of the sterno-cleido-mastoid, which is adherent to the pectoral, and end by dividing into two; the outer slip becoming confluent with the origin of the inner part of the brachialis anticus, and the inner by ending similarly upon the pectoral. The posterior half is *inserted* obliquely into the deep fascia of the forearm, from the anterior side of the bend of the forearm to the middle of the posterior border of the ulna. It is also attached to the cartilaginous bar over the outer side of the forearm near the elbow-joint. The thoraco-abdominal part is a large strong triangular sheet with the base in the mesial plane. It *arises* by two divisions; the ventral from the linea alba 1 inch behind the xiphi-sternum, and from the outer half of the xiphi-sternum. This soon blends with the dorsal, which *arises* from the cartilages of the 2nd to the 11th ribs; from the 8th to the 11th ribs, opposite to the origin of the ventral division, it only springs from the cartilages; but anterior to the 8th rib it also has origin from the side of the meso-sternum, and blends with its fellow as far forwards as the 4th rib. Anterior to this, it does not blend over the meso-sternum; for the sternal part intervenes between the origins of the thoraco-abdominal parts of the opposite sides. The fibres pass towards the humerus, partly under cover of the sternal part; the posterior fibres ascend, the anterior are transverse. At the level of the 5th rib laterally, the outer division of the latissimus dorsi blends with it. After gaining these fibres along its outer edge, it blends with the sternal part and is *inserted* with it. The under surface of the insertion is tendinous.

As a guide to the descriptions of this muscle in *Phoca vitulina*, *Arctocephalus gazella*, *Otaria* and *Trichechus*, a statement of the names used for the various divisions may be useful, as anatomists differ much in their nomenclature.

In *Phoca vitulina* there are three parts—(1) the *Presternal*, (2) the *Sternal*, (3) the *Abdominal*.

<sup>1</sup> The deep fascia over the anterior surface of the forearm divides into two layers—the anterior one gives attachment to the panniculus, as has already been stated; the posterior is for the pectoral muscle.

<sup>2</sup> The fascial slip representing the clavicle is attached to the presternum internally, and passes outwards beneath the inner half of the pre-sternal part of the pectoral, to end by joining the sterno-cleido-mastoid going to the humerus.