

In nearly all the other Procellariidæ, including *Pelecanoïdes*, the *biceps* becomes modified in a peculiarly interesting way. The coracoid head alone forms the muscle proper, whilst the humeral head, becoming detached from the coracoid head, goes *entirely* to the *tensor patagii longus* tendon, which it joins as a short, cylindrical tendon close to the shoulder (Pl. III. fig. 4, *h.*). It is, therefore, functionally a "biceps-slip," though it differs from the ordinary "biceps-slip" found in so many birds,¹ in that it arises independently from the humerus, and is not a part of the true *biceps* muscle, although it is supplied by the same nerve as that which goes to the coracoid head. In *Diomedea*, it is to be observed, the "biceps-slip" is derived from the *coracoid* head alone, whereas in the other Procellariidæ this slip represents the shorter or *humeral* head of the normal muscle.

Only occasionally have I seen (*e.g.*, in specimens of *Procellaria pelagica*, *Cymochorea leucorrhœa*, *Æstrelata lessoni*, and *Prion banksi*) a very small tendinous slip derived from this humeral head, which may be either continued downwards with the nerves and vessels to the elbow, where it is apparently lost in the general fascia, or joins the tendon of the true "biceps" (*Procellaria*, *Cymochorea*).

Supposing this latter to represent a more primitive condition, now nearly or quite lost in most of the species, the *biceps* muscle must originally have been two-headed, with a patagial slip derived from its humeral head. This slip gradually increased at the expense of the other tendon of the humeral head, till eventually the latter disappeared altogether, the *biceps* proper (*i.e.*, that flexing the forearm) being then reduced to its coracoidal moiety.

Expansor secundariorum.—This peculiar muscle² is wanting altogether in the Procellariidæ. It occurs, however, in the Oceanitidæ, though in a form different from any previously observed, being attached to (or derived from) thoracically the surface of the *pectoralis major* muscle (*vide* Pl. III. fig. 3).

Its small belly is attached to the few last secondary remiges (*S.*) at the elbow, and the thin tendon (*e.s.*) runs parallel to, but behind, the humerus, to the axilla, where it is joined by a similar but shorter tendon, which is derived from the most posterior feathers of the humeral tract, the so-called "scapularies" (*Sc.*). The common tendon then runs forwards, being superficial to the extensor and flexor muscles and the nerves and vessels of the forearm (*v.n.*), to be attached to the surface of the first pectoral (*p. 1*) close to its insertion into the humerus. In no other instance, so far as I know, does the *expansor secundariorum* become thoracically attached to the *pectoralis primus*, though it may be so to the *teres*, *coraco-brachialis longus*, or *coraco-brachialis brevis* muscles. Nor have I yet met with any other bird in which the tendon of this muscle is connected to the scapularies, which here it serves to expand as well as the secondaries.

The attachment of this muscle to the *pectoralis* suggests that the *expansor secundariorum* may originally have been formed from a cutaneous branch of the former

¹ Cf. Garrod, Coll. Papers, p. 324.

² *Ibid.*, pp. 323-324.