

II. PREVIOUS LITERATURE ON THE ANATOMY AND CLASSIFICATION OF THE TUBINARES.

I propose under this head to briefly notice the more important papers or memoirs that have appeared dealing with the structure and classification of these birds. Titles of several less important ones not mentioned here may be found duly recorded in the third instalment of Dr. Coues' Ornithological Biography,¹ Procellariidæ, pp. 1021–1033.

1826. One of the very earliest contributions to the anatomy of the Petrels we owe to the voyage of circumnavigation made by the "Coquille." Garnot, in the account of that expedition,² gives some brief anatomical notices chiefly relating to the digestive organs of several Tubinares. The species dissected are, unfortunately, not referred to by scientific names, but they appear to be *Phæbetria fuliginosa*, *Thalassæca glacialisoides*, a *Prion*, *Fregatta melanogastra*, and *Pelecanoïdes urinatrix*, as well as another species I cannot determine ("Petrel de la Mer Pacifique").

In 1827 L'herminier³ described the general character of the sternum of the Tubinares, which formed his twenty-eighth family of birds, and proposed to divide the group up, on sternal characters, into three sections—(1) the smaller Petrels (*Procellaria*, *Cymochorea*, &c.) with the posterior margin of the sternum more or less entire; (2) the Albatrosses, with the sternum with two large and shallow excavations posteriorly; and (3) the Petrels proper, with four posterior sternal excavations. As regards the general position of the group, he remarks:—"Ces oiseaux . . . par la forme de l'appareil sternal, sont intermédiaires aux mouettes et aux pélicans." On plate iv. of the plates illustrating his memoir, two figures of the sternum of a *Puffinus* are given.

1838–39. W. Macgillivray, in Audubon's Ornithological Biography,⁴ describes and figures the alimentary canal and trachea of two species of Petrels, namely, *Oceanites oceanicus* (vol. v. pp. 645–646) and of *Procellaria pelagica* (vol. iv. pp. 313–315).

In the second part of the same author's Manual of British Ornithology⁵ are given a few notes on the visceral anatomy of the British species of the group.

In the same year J. F. Brandt, in his Beiträge zur Naturgeschichte der Vogel,⁶ called attention to the existence of a peculiar ossicle, connected with the lachrymal and palatine bones, and hence called "ossiculum lacrymo-palatinum," which he had discovered in many of the Tubinares and also in *Fregata aquila*.

1840. It is to Nitzsch, perhaps the most acute and original ornithologist that ever lived,

¹ Bull. U. S. Geol. Surv., vol. v., No. 4, Washington, 1880.

² Voyage autour de la Monde, Zool., tom. i.; Recherches anatomiques relatives a divers oiseaux marins, pp. 603–612.

³ Recherches sur l'appareil sternal des Oiseaux, pp. 79–81, vol. iv., Paris, 1827.

⁴ Edinburgh, 1839.

⁵ London, 1842, pp. 258–264.

⁶ Beiträge zur Kenntniss der Naturgeschichte der Vögel, St. Petersburg, 1839, pp. 4–9.