

Fregatta—form a very well-marked family of the Tubinares, which may be called Oceanitidæ, as distinguished from the remainder of the group, or Fulmaridæ of Prof. Garrod. Anatomically, these four genera agree together, and differ from the Fulmaridæ (on nearly all the genera of which, including *Diomedea* and *Puffinuria*, I have notes), in the two important characters already mentioned—the absence of cæca and the presence of the accessory semitendinosus muscle. Externally they may be at once recognized by their peculiar elongated tarsi, lamellar nails, and by never having more than 10 secondaries, *Procellaria* and *Puffinuria* having 13, and the remaining Fulmaridæ more (in *Diomedea*, according to Nitzsch, as many as 40). My family Oceanitidæ, in fact, corresponds to Bonaparte's section “** *Unguibus depressis*” of his Procellariæ¹, and to Coues's “second group” of the similarly-named section in his ‘Review’² with the addition, in each case, of *Garrodia*, included by both authors in the restricted genus *Procellaria*.

Being now engaged in a report, for the Voyage of H.M.S. ‘Challenger,’ on the anatomy of the Petrels collected during that expedition, I propose to reserve further details of the differences and characters of these two groups, and of the genera composing them, till that occasion.

2. Observations on the Habits of the *Echidna hystrix* of Australia. By GEORGE J. BENNETT, C.M.Z.S.

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Having been now engaged for nearly three years in endeavouring to get an Echidna with the young *in utero*, that it might assist me in ascertaining whether they are oviparous or ovoviparous, I have had the opportunity of observing the habits of this interesting little animal in its native haunts. I hope therefore that a few notes collected during that time may be of interest.

Most of my observations have been made at Rosewood, a station below the Range, and the property of Messrs. Kent and Wienholt, from whose manager, Mr. Edmund Lord, I have received much valuable assistance. Their “black boy” Johnny has always been at my disposal. Without him I could have got very few specimens, as he is most sagacious in tracking these animals.

My first trip with Johnny showed many of the difficulties in my way. We saw a great many tracks, but no animals. The ground was rooted up as if so many pigs had been there tearing up the ground, which the Echidnæ do with their noses, to uncover the insects lying under the dead leaves. They then go to the fallen rotten trees, quite denuding them of bark, and tearing out the rotten wood and feasting on the insects, which, on examination, I found to be small

¹ Consp. Av. ii. p. 197 (1857).

² *Op. cit.* p. 74, where characters for it are given.

beetles, ants, and a white juicy worm. Many small dead saplings had been knocked down by the Echidnas in their search at the roots for their food. They are particularly partial to the white ants, which erect small mounds of clay about 18 inches in height. These they attack in a most systematic way, by working round the nest, by clearing away the earth and forming a trench where the nest joins the earth, and devouring all before them; and then they make a hole in the centre and clear out the whole nest, leaving none behind to tell the tale of their visit. The soldier-ant (a large stinging ant) they do not touch; their nests were close to the white-ant mounds, but were untouched.

The larger sugar-ants, which raise mounds of sand about 16 inches high and 4 feet in diameter, they attack first, by lying on the mound with their tongue out and drawing in the ants that cross it; there they remain sometimes for hours. This, I have no doubt, is the time that they get the sand found in their stomach. They then make a hole from one side to the other, and devour the most delicate morsels coming in their way. In the daytime they do not move about much, beginning their search about a couple of hours before sundown. They are very quick of hearing; so that one's movements have to be very cautious and slow, as the least crackle of a leaf anywhere near makes them draw in their snouts and begin at once to burrow their way into the ground, which they do by means of their legs, moving the whole of the body into the burrow and spreading the earth over their backs. The speed with which they do this is almost incredible, very little disturbance of the earth being observable after the animal has disappeared. They do not, as a rule, burrow straight ahead; in only one instance have I known this to happen; this was the case of an Echidna put into a box, which went down into the ground under the box and got away, coming out under a paling fence at a distance of 10 feet.

Their muscular strength is enormous; as I remarked before, they can fell saplings with a good-sized sound root. I have known them force out wire netting, well fastened with large broad tacks; any thing they can once get a purchase against must go before them, if they are attempting to escape; large stones 30 lb. in weight they move clean out of the way; so that, when they are got, if the dissecting-knife is not used at once the difficulty is to keep them.

There is a prevalent idea that Echidnas lie dormant during the winter; but this is not the case, as I began my observations first in June 1878, which is the Australian midwinter, and I found that they were as keen in their search after food then as at any other part of the year. To arrive at their breeding-season has been my greatest difficulty: I do not think it can be fixed at any certain period, but must in some places begin earlier than in others.

In July I got a male specimen which had the testes very much enlarged, fully the size of a hen's egg, being $1\frac{1}{2}$ inch in length and $2\frac{1}{4}$ inches in diameter. I continued to collect specimens to August 9th, and transmitted them, through my father, Dr. George Bennett, F.Z.S., to Professor Owen, who decided that none were actually





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