

1. General Account of a Zoological Expedition to the South Seas during the years 1894–1897. By ARTHUR WILLEY, D.Sc. Lond., Hon. M.A. Cantab.

[Received January 16, 1899.]

The main object of my recent journey to the South-west Pacific was the investigation of the life-history of the Pearly Nautilus. My first destination was the Island of New Britain (Neu-Pommern) in the Bismarck Archipelago, as this had already become known as a locality where living Nautiluses could be obtained in abundance. The principal difficulties which had to be coped with were owing to the comparatively deep water—50 to 70 fathoms—in which *Nautilus pompilius* lives. It is only to be caught at night—both in Blanche Bay and in Talili Bay, on opposite sides of the Gazelle Peninsula—in native fish-traps baited with small fish. After finding the tracts where Nautiluses congregated in shoals at night, I would, on the following morning, go over the same ground with the dredge. Almost always the dredge would come up full of pumiceous fragments. In fact I came to the conclusion in New Britain, which I afterwards confirmed in the Loyalty Islands, that the feeding-ground is not the breeding-ground of the Nautilus—or, in other words, that the Nautilus migrates in shoals nocturnally from deeper into shallower water in quest of food. The Nautilus will eat any animal-food which is offered to it, from a fowl to a sea-urchin, and from a langouste to a shrimp, but its natural food consists chiefly of small Decapod Crustacea.

When attacking a shrimp, for example, the Nautilus darts forward with great rapidity, and enclosing the victim within its tentacular complex seizes it between its powerful beak-like jaws. It can protrude its body by action of protractor muscles far beyond the mouth of the shell, but it only does this when occasion demands. When normally swimming, the body is slightly raised as to completely expose the eyes above the level of the margin of the shell, and to allow free entrance for the water into the mantle-cavity and exit through the cleft siphon. Like all the other Cephalopods, Nautilus swims backwards with considerable speed. It holds the shell, when swimming, in one position only, namely with the spire and with the mouth of the shell directed upwards, as shown in the photograph here exhibited. Nautilus is incapable of capsizing its boat as described by Rumphius.

After spending the best part of a year in New Britain, during which I made new observations upon the vascular system and branchial sense-organs, I determined to change my base, and accordingly proceeded to the Eastern Archipelago of British New Guinea. Meanwhile, however, I had made a prospecting journey to New Hanover, where I found the natives baling out their canoes with Nautilus-shells. I made no further progress during the five months I spent in New Guinea so far as Nautilus is concerned,

but I captured four specimens of *Ctenoplana*¹, which yielded a number of results of some interest. This remarkable form, half Ctenophore and half Plathelminth, had previously only been obtained as a unique specimen by the Russian naturalist Korotneff, off the west coast of Sumatra in 1886. Korotneff's account was inaccurate in many details, and his discovery of the type was regarded with some scepticism. My re-discovery of this creature is therefore matter of satisfaction. All four specimens were taken from a drifting cuttle-bone off the Conflict Lagoon in the Louisiades, British New Guinea.

From the Deboyne Lagoon, in the same Archipelago, I obtained a species of *Amphioxus* belonging to the subgenus *Asymmetron*, previously known only from the West Indies. This is a remarkable fact of distribution, since in the Torres Straits, which are comparatively close by, there are two species of *Amphioxus* belonging to other subgenera.

When I revisited New Guinea on my return for the second time to New Britain, I was fortunate in securing the only specimen ever seen of the animal of *Nautilus umbilicatus*, which had been taken from the surface off the East Cape of British New Guinea. *Nautilus* does not come to the surface normally according to my observations, and all specimens which are taken from the surface are probably in a moribund condition. This was the case with the specimen obtained by Dr. Bennett, upon which Sir Richard Owen based his classical work on *Nautilus*.

My object in changing my locality from time to time was for the purpose of finding a place where *Nautilus* could be more easily got at. After much misgiving and disappointment, I at last found such a place—namely, Sandal Bay, Lifu, in the Loyalty Group. In this place *Nautilus* migrates at night from deep water into as little as three fathoms. It comes quite close to the shore. The species occurring here is *N. macromphalus*. So far as I have ascertained at present, this species only differs from *N. pompilius* in the character of the umbilicus of the shell. The animals are almost identical. *N. umbilicatus* differs strikingly in external appearance from both of the preceding. After an absence from England exceeding two years, I induced *Nautilus* to deposit its eggs in my cages. The eggs are firmly fixed to a suitable surface: the best artificial surface which can be offered to the *Nautilus* is sacking, the fibres of which are entangled in the hardened milk-white capsule of the egg. I have described these eggs in the 'Proceedings of the Royal Society' (1897). Neither in Lifu nor subsequently in New Britain, where I got the eggs of *N. pompilius*, was I able to rear embryos from the deposited eggs—such was the effect of captivity.

The geographical distribution of *N. macromphalus* is interesting. It is confined rigidly to the New Caledonian Archipelago. In the neighbouring New Hebrides and in Fiji, *N. pompilius* is again met with.

¹ See Q. J. M. S. vol. xxxix. 1896, p. 323.

During my various changes of venue I accumulated a rich material of Enteropneusta, an account of which I shall shortly publish in Part III. of my Zoological Results which are being issued by the Cambridge University Press.

Lastly, it was my happiness to discover a new type of *Peripatus* in New Britain which differs from the South African, Australasian, and Neotropical subgenera in the same respects—anatomy and development—in which they differ from one another. It constitutes therefore a fourth subgenus, which I have called *Paraperipatus*. With regard to *Peripatus*, the next point of interest centres upon the new species—*P. tholloni*, which has recently been described by Mons. E. L. Bouvier from the Gaboon district (West Africa).

2. On Characteristic Points in the Cranial Osteology of the Parrots. By D'ARCY W. THOMPSON, C.B., F.Z.S.

[Received November 16, 1898.]

To discover anatomical characters such as might yield or help to yield a natural classification of the Parrots has been the desire of many ornithologists, but the search has availed little. Garrod's abundant work has told us many facts in regard to the presence or absence of an ambiens, of an oil-gland, of one carotid or two, and other varying characters in a multitude of species; but when we come to put these data together the result is unsatisfactory, and one is left with the impression that the several series of facts are incoordinate and cannot be linked together in a single system. When we find, for instance, that the collation of these facts places in a single group *Ara*, *Psittacus*, *Pœocephalus*, and *Nestor*, and in another *Stringops*, *Melopsittacus*, and *Agapornis*, one is tempted to think that the only thing proved is that the data are invalid or antagonistic—in other words, that the several structures had really followed diverse or parallel or convergent lines of modification and evolution. While such internal structures seem to me to lead to confusion by indiscriminate variability, the characters of the skeleton are generally deemed too monotonously alike to present features of significance. Even in *Stringops*, the osteological peculiarities of which are greater than those of any other form (except perhaps *Nestor*), they are yet not conspicuous enough to have prevented certain recent writers from remarking that the divergence of *Stringops* from the other Parrots is not so great as it had been supposed to be.

There is indeed in most parts of the skeleton a very great uniformity throughout the order, but in certain parts, for instance the orbital ring (where the differences are well known, though imperfectly investigated)¹, the hyoid bone (as Dr. St. G. Mivart has

¹ Cf. Em. Blanchard, "Caractères ostéol. chez les Ois. de la famille des Psittacides," C. R. xliii. pp. 1097-1100 (1856), xliv. pp. 518-521 (1857); C. L. Bonaparte, *ibid.* xliv. pp. 534-539 (1857).



BHL

Biodiversity Heritage Library

Willey, Arthur. 1899. "1. General Account of a Zoological Expedition to the South Seas during the years 1894-1897." *Proceedings of the Zoological Society of London* 1899, 7-9. <https://doi.org/10.1111/j.1469-7998.1899.tb06841.x>.

View This Item Online: <https://www.biodiversitylibrary.org/item/98517>

DOI: <https://doi.org/10.1111/j.1469-7998.1899.tb06841.x>

Permalink: <https://www.biodiversitylibrary.org/partpdf/72581>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: Public domain. The BHL considers that this work is no longer under copyright protection.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.