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Report on the Marine Mollusca obtained during the First Expedition of Prof. A. C. Haddon to the Torres Straits, in 1888-89. By JAMES COSMO MELVILL, M.A., F.L.S., F.Z.S., and ROBERT STANDEN, Assistant-Keeper, Manchester Museum.

[Read 16th February, 1899.]

(PLATES 10 & 11.)

EARLY in 1898 Prof. Alfred Cort Haddon, before starting upon a fresh journey of exploration to New Guinea, the coasts of tropical North Australia, and Queensland, favoured us with the request that we would take charge of all the Marine Mollusca collected at low tides, or dredged, during his first expedition to the same region, ten years previously, on the understanding that we would catalogue them and describe any new forms. This large mass of material had been for a long period lying at Cambridge, almost untouched, only a very few species having been identified by the Rev. A. H. Cooke.

The general condition of the specimens contained in the collection is, as might be expected, variable; but, though many of them are only in a fragmentary state, and the larger proportion of the Pelecypoda are mainly represented by single valves, they are in only rare instances past recognition, and, with the exception of an exceedingly small residuum, we have succeeded to our satisfaction in the work of identification.

Some few indeed, mainly Polyplacophora of three or four kinds, also *Haliotidæ* and various *Cyprææ*, are preserved in spirit, but all these Mollusca are well known, both anatomically and systematically.

The collection is, we consider, of more than usual interest, since its component parts differ in several notable particulars from the gatherings previously made in the same neighbourhood, thus tending to prove the extraordinary richness of molluscan life to be found there. And the area is by no means large, geographically speaking. Situate Long. 142° to 144° E., and Lat. 9° to 11° S., it is hardly more than 75 miles from the mainland of New Guinea, or at all events Saibai Island, to Cape York, N. Australia; this narrowing of the passage between the Arafura and the Coral Seas, through which the South Equatorial Current pours its waters, being some 90 miles in width, and universally known as the Torres Straits.

The whole of this area is contained within the great Indo-Pacific Marine Province, as proposed by S. P. Woodward, 1856, though the merging of that Province with the Australian is, speaking from the molluscan point of view, hazily defined only and, naturally, gradual. This Province is the largest by far, and likewise the most prolific in marine life of all, and though almost unwieldy, it should nevertheless, in our opinion, be still further extended so as to include Southern Japan, treated by Woodward and all who have followed him, as well as by Agassiz, as part of a separate region. The Indo-Pacific Province would then extend from the East coast of Africa, north of the Tropic of Capricorn, to the Red Sea, Persian Gulf, and Arabian Sea, round the whole coasts of India and its adjacent islands, southwards so as to include Madagascar, Mauritius, Bourbon, to Malaya, the East India Islands, and China coasts as far as, and inclusive of, Southern Japan, also taking in tropical Australia, and finally the Pacific Islands with Hawaii. Though so vast, we cannot see how with advantage this tract can be lessened or modified; and one is strengthened in this view when the distribution of many of the tropical Marine Mollusca is considered. The range, for instance, of the most abundant, e. g., *Cypræa helvola*, L., *Nassa arcularia*, L., or *Terebellum subulatum*, L., being that of the Province, even extending beyond its limits into the subtropical waters of Natal, or of Queensland and New South Wales.

Many of the species in the following Catalogue have this wide distribution; and with reference to this fascinating subject, it may be not out of place to refer briefly to the instructive remarks made by Prof. E. von Martens, when enumerating the Mollusca of the Mergui Archipelago\*, a few years since. He mentions that out of nearly four hundred species, only one (*Natica unifasciata*, Lam.) was known to have occurred in the New World, besides three, also found on Atlantic shores, and even these were species liable to spread by means of drift-wood and other agencies.

There can be little doubt that an unusually large number of endemic forms occur in the region bounded north-westward and northward by the Philippines and Ladrone Islands, westward and to the east by the Arafura Sea and New Caledonian archipelago respectively, the Torres Straits forming part of its southernmost boundary.

\* Journ. Linn. Soc., Zool. vol. xxi. p. 157 (1839).

From a scientific point of view, the following four Expeditions are the most important that have been made in past years to this region.

#### 1. THE VOYAGE OF H.M.S. 'FLY.'

Dr. J. B. Jukes\*, in 1842-46, exploring part of North Australia, with the South Papuan coasts, assiduously collected Mollusca. These were mostly described by Arthur Adams and Reeve, while Dr. J. E. Gray, in an appendix to Jukes's narrative, gave diagnoses of several important discoveries, e. g. *Voluta Sophia*, *Cypræa Comptoni*, &c.

#### 2. THE VOYAGE OF H.M.S. 'CHALLENGER.'

The 'Challenger' Expedition †, 1873-76, dredged as follows:—  
Station 184, August 29, 1874. E. of Cape York, N.E. Australia, 1400 fathoms; Globigerina-ooze.

Stations 185 & 185<sup>b</sup>, Aug. 31, in the same locality, from 128 to 135 fathoms.

Sept. 7 & 8. Torres Straits and Flinders' Passage, 3-11 fathoms.

Station 186, Sept. 8, 1874. Wednesday Island, Cape York, and Albany Island, 3-12 fathoms; coral-mud.

Station 187, Sept. 9, 1874. W. of Cape York, 6 fathoms.

Station 188, Sept. 10. Off the S.W. of Papua, 28 fathoms; green mud.

Most of these soundings were successful, and a profusion of new Mollusca of great interest the result.

We are surprised that so few of these are in the collection now before us, as in some instances almost the same localities would seem to have been searched and traversed.

#### 3. THE VOYAGE OF THE 'CHEVERT.'

This expedition started from Sydney early in 1876, Mr. John Brazier being the malacologist attached to the staff. He has published the results in a series of articles, dealing thoroughly

\* Narrative of the Surveying Voyage of H.M.S. 'Fly,' commanded by Captain F. R. Blackwood, R.N., in Torres Straits, New Guinea, and other Islands of the Eastern Archipelago, during the years 1842-46. By J. Beete Jukes.

† Report on the Voyage of H.M.S. 'Challenger' during the years 1873-76. Zoology, vol. xiii. pp. 16-18; vol. xv. pp. 710-714.

with the Gastropoda, but the Pelecypoda, so far as we are aware, have not yet been treated. Many new forms, especially amongst the minutiora, are described, but unfortunately not figured, the types all remaining in Australia, we believe mostly in the Australian Museum, Sydney. For our own part, we have been as careful as possible in the comparison of all our undetected forms with these descriptions.

It is to be deplored that Mr. Brazier has not always used language the reverse of vague; still more unfortunate is it that as the Mollusca of the 'Chevert' Expedition were published before those of the 'Challenger,' we are given to understand that they claim priority in not a few instances over Dr. Boog Watson's concise, clear, and admirably illustrated diagnoses. This increase of synonymy is much to be deprecated, and we would press for an insistence of the rule that no mere verbal description should suffice, but that a figure must be published simultaneously, before a new species be recognized.

#### 4. THE VOYAGE OF H.M.S. 'ALERT'\*

The full and very interesting account of the Mollusca obtained during this expedition has been of the utmost service to us while preparing this paper.

Indeed we are now, as upon many previous occasions, under a deep sense of obligation to Mr. Smith, who has compared with us all doubtful forms and given us every assistance at the British Museum (Natural History).

The specialities of this collection will be dealt with in their proper place. Suffice to state here that of the twenty-four species we consider new to science, one, a Neritoid with some superficial resemblance to *Vanikoro*, must stand as the type of a new genus; and a remarkable *Pholadomya*, with almost equilateral valves, is also noteworthy.

The arrangement adopted in the sequence of the following Catalogue is that of Paul Fischer, as given in the 'Manuel de Conchyliologie,' and we have also followed the same author to a great extent in the nomenclature.

\* Report on the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H.M.S. 'Alert,' 1881-82. London (Brit. Mus.), printed by order of the Trustees, 1884. Mollusca, by Edgar A. Smith (pp. 34-116).

## LIST OF COLLECTING STATIONS\*, TORRES STRAITS, 1888.

1. Fringing reef and shore, Thursday Island.
2. 20 miles N.N.W. of Warrior Isl., 5½ fathoms; broken shells and sand. Aug. 15, 1888.
3. Channel between Saibai and New Guinea, 10-17 fathoms; mud and rolled stones, dead shells; very few live animals came up in dredge, mainly sponges; of 3 dredge hauls 1 came up clean with Alcyonarians. Aug. 17, 1888.
4. Between Ormans Reef and the "Brothers Island," 6-7 fathoms. Aug. 18, 1888.
5. Boydong Cays shore. Aug. 26, 1888. (N. Queensland.)
6. 2 miles west of Boydong Cays, 14 fathoms; coral-mud and dead shells. Aug. 27, 1888.
7. Cockburn group, shore of small islet near the south of the three high islands. Aug. 27, 1888. (N. Queensland.)
8. Albany Pass, 10 fathoms; large quantity of sponges. Aug. 29, 1888.
9. Prince of Wales Channel, 8 fathoms; clear rocky bottom and red seaweed. Sept. 15, 1888.
10. Channel between Hammond Isl. and Wednesday spit, 5 fathoms; sand and small rounded pebbles, dead shells. Sept. 15, 1888.
11. Fringing reef, Mabuiaig.
12. Channels between reefs, Mabuiaig.
13. Fringing reef, Mèr (Murray Island).
14. Channels between reefs, Mèr.

## CATALOGUE OF THE SPECIES.

## PTEROPODA.

## CAVOLINIIDÆ.

1. CAVOLINIA LONGIROSTRIS, *Lesson*.  
Station 5, Boydong Cays.

## GASTEROPODA.

## SIPHONARIIDÆ.

2. SIPHONARIA SIPHO, *Sow*.  
Station 5, Boydong Cays; Station 13, Murray Island.

\* Where no precise locality is referred to, it must be understood that the labels attached to those species contained nothing more definite than "Torres Straits."

## ACTEONIDÆ.

3. ACTEON SOLIDULUS, *L*.  
Station 5, Boydong Cays.

## TORNATINIDÆ.

4. TORNATINA GRACILIS, *A. Ad*.  
Station 14, Mèr.

## SCAPHANDRIDÆ.

5. ATYS DEBILIS, *Pease*.  
Station 2, Warrior Island; Station 5, Boydong Cays.
6. ATYS (ALICULA) CYLINDRICA, *Helbling*.  
Station 13, Murray Island.
7. CYLICHNA ARACHIS, *Q. & G*.

## BULLIDÆ.

8. BULLA ADAMSI, *Menke*.  
Station 13, Mèr; Station 5, Boydong Cays.
9. BULLA PUNCTULATA, *A. Ad*.  
A West-American species (Panama, &c.), also New Caledonia (*Hadfield*), and various Australian localities (*Cox, Angus, &c.*).
10. HAMINEA BREVIS, *Q. & G*.  
Station 2, Warrior Island.
11. HAMINEA CROCATA, *Pease*.  
Station 2; Warrior Island; Station 5, Boydong Cays.

## APLUSTRIDÆ.

12. APLUSTRUM AMPLUSTRE, *L*.  
Station 13, Murray Island.

## TEREBRIDÆ.

13. TEREBRA (SUBULA) MUSCARIA, *Lam*.
14. TEREBRA (ABRETIA) AFFINIS, *Gray*.  
Station 13, Mèr; Station 2, Warrior Island.
15. TEREBRA (MYURELLA) SUBULATA, *L*.  
Station 13, Mèr.