dimensions (in millim.) of the Ape "A," together with the corresponding figures relating to three undoubted Gorillas at Cambridge, two of which, however, are immature. And I have added the corresponding figures for "Johanna" for the sake of comparison. Three indices show marked contrasts between "A" and undoubted Gorillas.

In comparing "A" with undoubted Gorillas, one may also specially remark the palmar breadth: this is very much less than in a Gorilla at Cambridge of rather greater size, viz. "Cy," whereas the pollex in "A" is much longer than in this Gorilla.

After ascertaining, however, that, from evidence supplied by teeth, by facial features, and by the extremities, our specimen "A," while in some respects intermediate, yet resembles the Chimpanzee rather than the Gorilla, it is not encouraging to find Hartmann in 1876, after an extended series of observations, pronouncing on none of these characters as really of specific import. Thus he states¹, for instance, that whereas in Chimpanzees large ears are the rule, yet individuals with small ears are not unknown, and in fact he illustrates this (see fig. 3, p. 991); whereas again in Gorillas, though small ears are usual, one sometimes finds examples in which these appendages are of large size.

But yet on finding the coincidence of so many characteristics of Chimpanzee as in this animal, one may well be excused hesitation in continuing to regard the specimen as a Gorilla.

However, it can hardly be described as an ordinary example of *Anthropopithecus troglodytes*; and I am inclined to think, in the absence of contradictory evidence, that we have here a specimen of Du Chaillu's Kooloo-Kamba. Its great size gives it some claim to an intermediate position between *A. troglodytes* and *A. gorilla*.

But if an intermediate form, it differs appreciably from members of another group of intermediate forms which we may call the Mafuka group, and which is constituted by Mafuka, Johanna, and Hartmann's example No. 1 (cf. fig. 7, p. 991).

4. On the Turbinolid and Oculinoid Corals collected by the Author in the South Pacific². By J. STANLEY GARDINER, M.A., Gonville and Caius College, Cambridge.

[Received November 15, 1898.]

(Plate LXII.)

Genus RHIZOTROCHUS.

Rhizotrochus, Milne-Edwards & Haime, Cor. ii. p. 97.

In dredging on the outer slopes of the reef at Funafuti I never obtained any solitary corals. Mr. Hedley, however, found one

¹ Zeitschrift für Ethnologie, 1876.

² Communicated by W. BATESON, F.Z.S. For previous papers on the Corals, see P. Z. S. 1897, p. 941, and 1898, pp. 257, 525.

specimen, which has been identified by Whitelegge with *Caryophyllia clavus*. The specimen referred to this genus was dredged by the 'Penguin,' between 150 and 105 fathoms, and found by me on one of the stones brought up.

1. *RHIZOTROCHUS LEVIDENSIS* Gardiner.

Rhizotrochus levidensis, Gardiner, Willey's Zoological Results, pt. ii. p. 162, pl. xix. fig. 2 (1898).

The specimen of this species obtained by me differs slightly from the type specimen in the Willey Collection. The outside is not nearly so much overgrown by organisms, and there is one large central radicle and six smaller rootlets. The calice is rounder, and the epitheca and septa are thinner and more delicate. The primary septa do not run almost horizontally inwards directly from the edge of the epitheca as in the type, but form thin vertical lines on the epitheca for about 1 mm. below its edge and then abruptly broaden. These characters may very probably be due to a quicker growth, or to the greater depth, the type specimen being dredged from 40 fathoms.

Funafuti; 105 fathoms, outside the reef.

Genus *STYLOPHORA*.

Stylophora, Milne-Edwards & Haime, Ann. des Sc. Nat. sér. 3, t. xiii. p. 102, and Cor. ii. p. 133.

I have referred the specimens of this genus to eight species, of which I consider four to be new. The genus occurs locally in great abundance on the rim of the reef, where the sea breaks. It is very rare in the lagoon, and was only noted by me on certain shoals near passages in the reef. The colour of the living colonies usually varies from a distinct brown to a light yellow.

The specific characters in the genus are extremely unsatisfactory, and at first sight I was inclined to refer my collection, consisting of only a few specimens, to two or three species. A careful comparison, however, with a small number of specimens in the Cambridge Museum, and subsequently with the British Museum collection, showed me that there were a number of very distinct types. The shape and mode of branching of the colonies is not generally of much specific value, being, I consider, very largely dependent on the position of growth. I have hence relied mainly on the characters of the corallites—the shape and appearance of the lip if present, the arrangement of the septa and columella, &c. These characters, while usually varying largely with the position of the calices in the corallum, are fairly constant, and I have in all cases noted them for the terminal and side calices of the branches.

The development of the cœnenchyma between the calices usually increases gradually from the ends to the bases of the branches. The septa, too, gradually get thicker, and the calices often decrease somewhat in size, apparently owing to a deposition of skeleton within the calice-walls.

2. *STYLOPHORA FLABELLATA* Quelch.

Stylophora flabellata, Quelch, 'Challenger' Report on Reef-Corals, p. 54, pl. ii. figs. 1-1 b (1886).

I have referred to this species two small fragments which correspond very closely to the 'Challenger' specimen in the British Museum.

Funafuti; lagoon, 8 fathoms.

3. *STYLOPHORA DIGITATA* Pallas.

Madrepora digitata, Pallas, Elench. Zooph. p. 326 (1766).

Stylophora digitata, Klunzinger, Die Korallthiere des Rothen Meeres, Th. ii. p. 61, pl. vii. fig. 5 and pl. viii. fig. 1.

I have referred to this species a clump, 10 cm. high by 14 cm. broad, which corresponds fairly well to Klunzinger's description. The cœnenchyma is covered with long pointed spines which on the sides of the branches project, especially on the theca over the calice, forming a moderately acute prominence or lip. At the ends of the lower branches the theca projects equally around each calice, but the terminal calices of the longer branches are more or less polygonal and separated only by a thin wall, the fused theca, without any cœnenchyma. The specimen was living at the extreme edge of the reef, and it is probable that the longer branches had reached the low-tide level and were unable to grow further. Some, too, show a slight tendency to broaden out at their ends.

There are in the terminal calices of the branches six distinct, smooth, thin septa, which fuse below with the small, styliform but prominent columella. In the side calices of the branches the primary septa are always distinct and similar, but the columella can seldom be seen.

Funafuti; outer reef.

4. *STYLOPHORA SEPTATA*, n. sp. (Plate LXII. fig. 1.)

The specimen is a colony, about 9 cm. in diameter by 6 cm. high, of the general form of *S. digitata*, consisting of a number of branches arising from a common base. The branches are somewhat fused below but free above, ending usually in two or three small lobes 8-14 mm. in breadth by 4-6 mm. thick.

The terminal calices of the branches are very crowded together, and there is between them no development of cœnenchyma, which is, however, well formed between the side calices. The latter are about .9 mm. in diameter and there are generally 4 in 5 mm. The upper wall of these calices projects usually for about 1 mm. into an obtuse lip, which is on the outside, as also is the cœnenchyma between, covered with short, rough, granular spines, which are often much compressed and arranged in striæ.

The calices of the ends of the branches are very deep, with the six primary septa well developed and with rough edges; they are prolonged deep down in the cell to meet a very delicate style-like projecting columella. The secondary septa between are distinct,

but little projecting and very thin, while the tertiary septa are indicated by long flattened spines at the edges of the calices. The calices of the sides of the branches have the primary septa very thick and rough at the edges and sides, while the secondary septa are much broader than in the terminal calices, and the tertiaries are generally distinct; the columella is situated low down in these calices, but can usually be distinguished as a broad, rough, slightly projecting mass, in the lowest calices much more prominent.

Rotuma; outer reef.

This species is evidently very closely allied to *S. digitata*, having almost precisely the same mode of growth, and may perhaps be only a variety of it due to a very slow growth owing to its position on the reef or some other cause. However, the presence of twelve distinct septa in nearly all the calices and a very obtuse lip are constant features of difference.

5. *STYLOPHORA COMPRESSA*, n. sp. (Plate LXII. fig. 4.)

Corallum consisting of much compressed, dichotomously branching stems, which broaden out towards their extremities, where they bear a number of small lobes. The latter are generally from 1–2 cm. long, and are usually flattened at right angles to the compression of the branches which bear them; they further, too, arise almost invariably in the same plane. Some of the branches immediately below these lobes are 5 cm. in breadth by about 1 cm. in thickness, and the lobes are generally 1–2 cm. broad by about 6 mm. thick.

The upper edges of the side calices of the branches are generally well developed, 1 mm. long, and rather acute in shape; on the ends of the branches and near the attached base there is, however, no such development. The cœenchyma is everywhere well developed except between the end calices of the branches; its surface is covered with low blunt granular spines, which may form striations on the lips of the corallites. The calices are about 1 mm. in diameter, and there are on the sides of the branches usually 7 in 1 cm.

The terminal calices of the branches have the primary septa projecting considerably, rough-edged and prolonged below to meet the small, style-like, very prominent columella; the secondary septa are also present as thin, narrow, but distinct lamellæ. In the side calices of the branches both primary and secondary septa are thicker and slightly exsert; the tertiaries, too, can be distinguished by their spinulous upper ends, but within the calices are indistinct. The columella, however, is thicker and less prominent. Towards the base of the colony the septa become less exsert; the primaries are especially broadened and thickened, and the columella is a very well-marked style.

Funafuti; outer reef and 5 fathoms. Two specimens.

The reef specimen has its septa rougher and with more granular sides than the dredged one; the columella, too, is larger and less style-like. Some of the branches approach in form to those of

S. palmata, but the corallites generally have their upper edges projecting and acute.

6. *STYLOPHORA RUGOSA*, n. sp. (Plate LXII. fig. 3.)

Corallum consisting of more or less rounded branches, which at their summits break up into a number of somewhat compressed lobes. The branches have a diameter of about 2.2 cm. about 5 cm. below their apices, while the lobes above are 2 to 3 cm. high, up to 3 cm. broad by about 1 cm. thick.

On the sides of the branches the upper edges of the calices are exceedingly well developed, forming very acute prominent lips about 1.1 mm. long. The cœnenchyma is everywhere well developed except between the terminal calices of the branches; its surface is covered by low blunt granular spines, which may be very elongated on the edges of the lips of the calices. The calices are very deep, about 1.2 mm. in diameter, and on the sides of the branches usually 3 in 5 mm.

The primary septa of the terminal calices of the branches are usually very thin and smooth, fusing below with the thin prominent styliform columella. In the side calices the primary septa are thicker and rougher, but do not generally project far, nor can the columella usually be distinguished. There are no distinct secondary and tertiary septa projecting into the calices, but their positions are indicated by larger and smaller flattened spinulose projections between the prominent upper edges of the primary septa, giving to the lower calices of the stems the appearance as of a raised edge.

Funafuti; outer reef. Rotuma; outer reef. Two specimens.

There are considerable differences between the two type specimens. The lips of the calices are more elongated and broader in the Funafuti specimen, while the calices themselves are more crowded and slightly larger; the whole corallum, too, is much less heavy. These differences are, however, I think, due to its more vigorous and healthy growth. The corallum of the Funafuti specimen is almost free from boring organisms, while it is in the Rotuman colony bored through and through by *Clione* and annelids.

The fractured surface of the Funafuti specimen shows very well the mode of growth. The separate polyp-tubes can be seen running at first almost vertically in the centre of the corallum, but later turning abruptly outwards, after which they do not increase in size. Fresh polyp-tubes can be seen to be budded off at their sides, and have from the first almost the size of the adult polyp. The tabulæ are very well-marked and occur in the tubes at regular intervals of about .5 mm.

7. *STYLOPHORA PISTILLATA* Esper.

Stylophora pistillata, Esper, Pflanz. t. i. p. 73, Madr. pl. 60 (1767).

Stylophora pistillata, Klunzinger, Die Korallthiere des Rothen Meeres, Th. ii. p. 62, pl. vii. fig. 3, pl. viii. fig. 2.

There is one small specimen, which corresponds closely to this species, which has been excellently described by Klunzinger. The surface of the cœnenchyma is covered by low rough spines. The septa and columella closely resemble those of *S. digitata*, but are somewhat rougher. At the ends of the branches, between two of the lobes, the upper wall of the calice is often more projecting and somewhat pointed, while generally it is low and vaulted. The specimen is rather more massive with broader and thicker branches than those in the British Museum.

Funafuti; outer reef.

8. *STYLOPHORA PALMATA* Blainville.

Stylophora palmata, Blainville, Dict. des Sci. Nat. t. lx. p. 360 (1830); Man. p. 384.

Stylophora palmata, Klunzinger, Die Korallthiere des Rothen Meeres, Th. ii. p. 62, pl. vii. fig. 6, pl. viii. fig. 11.

There are two specimens, which cannot be separated from this species, though neither show any trace of the anastomosis of their branches, which, however, can scarcely be a feature of specific value. The one specimen is a branch 8 cm. high, which at the base is compressed and 3 cm. in breadth; above it divides up into a number of very compressed lobes, 2 to 5 cm. in breadth by about 8 mm. thick. On the sides of the branches there are seven corallites in 1 cm.; the primary septa are distinct, with generally rather rough sides and spinulous edges. The columella cannot usually be distinguished except in the apical calices, where it is smooth and styliform.

The second specimen (dredged from 30 fathoms) closely resembles the first; the calices of its base are very small, and the cœnenchyma between is strongly developed. When first obtained it was of a green colour, while the species is generally light brown.

Funafuti; outer reef and 30 fathoms.

9. *STYLOPHORA LOBATA*, n. sp. (Plate LXII. fig. 2.)

Corallum consisting of low clumps of thick, often somewhat compressed branches, dividing dichotomously above into low, broad, blunt lobes.

The upper margin of the calice is in places prominent and may be acute or vaulted, but usually the whole edge of the calice projects in a ring-shaped form. The cœnenchyma, except at the base of the colony, is not nearly so well developed as in most species; its surface is everywhere covered by low spines, arranged in striæ around the calices. The calices are 1–1.3 mm. in diameter and there are generally four in a space of 5 mm. The terminal calices of the branches are not crowded and have the cœnenchyma almost equally well developed between them.

The primary septa are distinct, broad, rough lamellæ, which fuse low down in the calice with the broad, low columella, which is

never prominent; the secondary septa are very little projecting, but can usually be distinguished. The raised rims of the calices show much flattened spines, which correspond to the primary, secondary, and tertiary septa.

Funafuti; outer reef. Three specimens.

This species resembles *S. palmata* in form, but shows no sign of any anastomosis of its branches. The raised character of the whole edge of the calice separates the species from all previously described forms. In places the upper edge of the calice may be somewhat vaulted or even slightly acute, but the whole lip is never as large or distinct as it generally is even in *S. palmata*.

EXPLANATION OF PLATE LXII.

- Fig. 1. *Stylophora septata*, $\times \frac{2}{3}$, p. 996.
 Fig. 2. *Stylophora lobata*, $\times \frac{2}{3}$, p. 999.
 Fig. 3. *Stylophora rugosa*, $\times \frac{2}{3}$, p. 998.
 Fig. 4. *Stylophora compressa*, $\times \frac{2}{3}$, p. 997.

5. On some Crustaceans from the South Pacific.—Part III.
*Macrura*¹. By L. A. BORRADAILE, M.A., F.Z.S.,
 Lecturer in Natural Sciences at Selwyn College, Cambridge.

[Received November 15, 1898.]

(Plates LXIII.–LXV.)

The specimens described in the present paper were collected by Mr. J. Stanley Gardiner in the Islands of Funafuti (Ellice Group), Rotuma, and Viti Levu, Fiji. Mr. Gardiner has very kindly furnished me with notes respecting several of them.

The Funafuti collection contained examples of the following species:—

1. ? *Periclimenes danæ* (Stimpson).
2. *Coralliocaris brevirostris* Borradaile.
3. *Palæmonella tridentata*, n. sp.
4. *Saron marmoratus* (Olivier).
5. *Athanas sulcatipes*, n. sp.
6. *Alpheus strenuus* Dana.
7. *Alpheus parvirostris* Dana.
8. *Alpheus collumianus* Stimpson.
9. *Alpheus lævis* Randall.
10. *Alpheus frontalis* Say.
11. *Alpheus prolificus* Bate.
12. *Alpheus funafutensis*, n. sp.
13. *Metabeteus minutus* Whitelegge.
14. *Callianidea typa* H. M.-Edwards.

¹ For Parts I. and II., see P. Z. S. 1898, pp. 32 and 457.

1898. "On the Turbinolid and Oculinoid Corals collected by the author in the South Pacific." *Proceedings of the Zoological Society of London* 1898, 994–1000.
<https://doi.org/10.1111/j.1096-3642.1898.tb03198.x>.

View This Item Online: <https://www.biodiversitylibrary.org/item/97095>

DOI: <https://doi.org/10.1111/j.1096-3642.1898.tb03198.x>

Permalink: <https://www.biodiversitylibrary.org/partpdf/69547>

Holding Institution

Natural History Museum Library, London

Sponsored by

Natural History Museum Library, London

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>.