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INDIAN OCEAN ANTIPATHARIANS.

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TRANSACTIONS OF THE SOCIETY.

VIII.—*Antipatharians from the Indian Ocean.*

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(Read March 16, 1910.)

(PLATE V.)

THE Antipatharians here reported on were collected for the most part at Ibo, in Portuguese East Africa, by Mr. Jas. Simpson, M.A. B.Sc., Carnegie Fellow, University of Aberdeen. A few were collected in the Mergui Archipelago by Mr. R. N. Rudmose-Brown, B.Sc., and Mr. Simpson.

The collection includes fourteen species, of which three are new. The list is as follows.

EXPLANATION OF PLATE V.

- Fig. 1.—*Antipathes abies* Gray. Arrangement of spines, main axis.
" 2.—*A. salicoides* sp. n. Arrangement of spines near the tip of the axis.
" 3.—*Pteropathes simpsoni* sp. n. Arrangement of spines.
" 4.—*Antipathes salicoides* sp. n. Arrangement of spines, main stem.
" 5.—*Stichopathes bispinosa* nom. n. Arrangement of spines.
" 6.—*Antipathes abies* Gray. Showing forked spines.
" 7.—*A. salicoides* sp. n. Polyps on main branches.
" 8.—*A. tristis* Duchassaing. Arrangement of spines.
" 9.—*Cirripathes indica* sp. n. Arrangement of spines.
" 10.—*Stichopathes bispinosa*. Polyps.
" 11.—*S. echinulata*. Polyps.

June 15th, 1910

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Family ANTIPATHIDÆ Verrill.

Sub-family ANTIPATHINÆ Brook.

Section 1. **Indivisæ.**Genus *Cirripathes* Blainville.*Cirripathes indica* sp. n.*C. propinqua* Brook.*C. spiralis* Linn.Genus *Stichopathes* Brook.*Stichopathes diversa* (Brook) = *Cirripathes* (?) *diversa* Brook
= (?) *S. alcocki* Cooper.*S. bispinosa* nom. n. = *Cirripathes* (?) *flagellum* Brook ; n.
= *Stichopathes flagellum* Roule.*S. echinulata* Brook.*S. gracilis* Gray.Section 2. **Ramosæ.**Genus *Antipathes* Pallas.*Antipathes salicoides* sp. n.*A. furcata* Gray.*A. tristis* Duchassaing.*A. lentipinna* Brook.*A. gracilis* Gray.*A. abies* Brook.Genus *Pteropathes* Brook.*Pteropathes simpsoni* sp. n.*Cirripathes indica* sp. n. Plate V. fig. 9.See *Cirripathes* (?) Thomson and Simpson, Ceylon Pearl Oyster Report, 1905, Supplementary Report 30, p. 95, fig. 8.

A simple colony wound in a large circle, whose circumference is 77 cm. and diameter 18 cm. The polyps are badly preserved, but are distributed all round. In some parts they are crowded together. The axis is black, 2 mm. in diameter, with a canal of 0.5 mm.; it is covered with minute spines, distinctly papillose, all alike and equal. They are arranged in no definite order, and from twenty-four to thirty can be seen from one aspect. The specimen agrees with the specimen which Thomson and Simpson described but did not name.

Locality.—Portuguese East Africa. Previously recorded from Ceylon.

Cirripathes propinqua Brook.

See Brook, Report on the Antipatharia of the 'Challenger' Expedition, 1889. p. 82, pl. x. figs. 9-13; pl. xii. fig. 14; pl. xiv. fig. 7.

Of the several broken specimens one is 32·5 cm. in length, and is very stout and straight, difficult to bend or break. It is thickly covered with coenenchyma, and the polyps are arranged all round the axis. They are not all of the same size, the largest being about 2 mm. in diameter. They stand out prominently, about 2 mm. high. The tentacles are long and tapering, and the mouth is prominent. The axis is thickly covered with spines and is 5 mm. in diameter; the central canal is only 1 mm. in diameter. The spines are short and thick, and are longer on one side of the stem than on the other. They stand out at right angles to the axis, but are not arranged in any definite order.

Locality.—Portuguese East Africa. Previously recorded from New Guinea.

Cirripathes spiralis Linn.

See Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 85, pl. xii. fig. 10.

Of the two specimens, one is spirally coiled, 33·3 cm. round the spiral, and 8·5 cm. high; the other is twisted irregularly, 33·4 cm. in length. On the spiral specimen there are only a few polyps left; the other has numerous polyps, but badly preserved. They are crowded together and are arranged all round the axis. They are circular, 2 mm. in diameter; the tentacles are long. The coenenchyma is very thin. The axis, which is not very stout, is black in colour. Its diameter is 1 mm., while that of the central canal is 0·5 mm. The spines are short and conical, and are longer on the outer side of the spiral than on the inner. They are arranged in spirals and longitudinal rows, eleven of which can be seen from one aspect. The members of a row are about one length apart.

Locality.—Portuguese East Africa. Previously recorded from the Indian Ocean, Molucca, Norway, Mediterranean, Ceylon, Kurrachee, and the East Indies.

Stichopathes diversa (Brook).

See *Cirripathes* (?) *diversa* Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 87, pl. 12, fig. 12.

A stout spiral, 15 cm. high. The polyps are arranged on the outer side, while the inner is left bare. They are straw-coloured in spirit, and are very flat, with long tentacles and prominent mouth. There are two types of spines, large ones with small ones between

them. The large ones are blunt and rough, and those on the outer side of the spiral are much longer than those on the inner. The small or secondary spines are short, sharp, and triangular. Cooper has described (1909) a new species, *Stichopathes alcocki*, but his description of it corresponds with Brook's description of *Cirripathes diversa*, e.g. in the arrangement and form of the spines. Brook could not decide whether his specimen belonged to *Cirripathes* or *Stichopathes*, as it was quite devoid of polyps. Cooper remarks on the large size of the central canal. It is probable that *S. alcocki* Cooper should be united with *S. diversa* (Brook). The canal is well seen in this specimen, the wall of the corallum being comparatively thin.

Locality.—Portuguese East Africa. Previously recorded from Galle, Ceylon.

Stichopathes bispinosa nom. n. Plate V. figs. 5, 10.

= *Cirripathes* (?) *flagellum* Brook non = *Stichopathes flagellum* Roule.
See Brook, Report on the Antipatharia of the 'Challenger' Expedition,
p. 87, pl. xii fig. 13.

The longer of the two specimens is 130 cm. in length, and is twisted into large spirals with a diameter of 21 cm. The axis is stout and sinuous, and tapers gradually. The diameter at the base is 7 mm. It is covered with thin cœnenchyma, through which the spines project. The polyps are confined to one side of the stem, and are quite different from those of other species. They are flat, with a small mouth overlapped by two of the tentacles. A little to the side are two other tentacles, and pushed down the side of the axis is a third pair. At first sight one would believe the polyps to have eight tentacles. So closely are the mouths situated, that it is difficult to discover to which polyp the tentacles belong. The tentacles are short and thick. The spines are arranged in longitudinal rows, nine of which can be seen from one aspect. They are very large (about 0·5 mm.), and they gradually decrease until exactly opposite the longest spines are the shortest (about 0·1 mm.). There are secondary spines scattered between the rows. The spines are distinctly papillose at the tip. Members of a row are about a length apart. The central canal is very large, having a diameter of 1·5 mm. The arrangement of the spines and the general characters of the specimen correspond exactly with Brook's description of *Cirripathes* (?) *flagellum*. As Brook's specimen had no polyps, he could not decide whether it should be referred to *Stichopathes* or to *Cirripathes*.

Locality.—Portuguese East Africa. Previously recorded from Ceylon.

Stichopathes echinulata Brook. Plate V. fig. 11.

See Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 92, pl. xii, fig. 9.

Of several specimens, the longest is 95 cm. It is twisted in irregular spirals. The axis gradually tapers to a fine point. The diameter at the base is 1 mm., and of the central canal 0.5 mm. The polyps are large and crowded on one side of the axis. In some of the specimens they show a peculiar mode of growth, being bunched together at intervals in a sort of hummock. The longest diameter of the polyp is 3 mm. The mouth is raised on a prominence 1 mm. in height. The tentacles are long and thin. The spines are numerous, and are arranged in steep spirals. Of the vertical longitudinal rows of the spiral, nine can be seen from one aspect. In one part of the stem the spines are short, triangular, and much compressed; at another part they are much longer. Members of a row are about three lengths apart.

Locality.—Portuguese East Africa. Previously recorded from Mauritius.

Stichopathes gracilis Gray.

See Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 90, pl. xii, figs. 17-19.

Two fragments, one 26.5 cm., the other 8 cm. The larger specimen is somewhat spirally coiled. The axis is black and tapering. At the base it is 2 mm. in diameter, at the tip 1 mm. The polyps are on one side of the axis, and are large and circular (2 mm. in diameter); the tentacles are short and thick; the mouth is prominent. The spines vary very much in different portions of the axis. In slender portions of the stem the spines are arranged spirally and in longitudinal rows. They are triangular and compressed and stand at right angles to the axis. In thicker portions the arrangement is less regular. Most are simple and have a sharp apex, but a few are forked at the tip.

Locality.—Portuguese East Africa. Previously recorded from Fiji, Red Sea, Seychelles, Ceylon.

Antipathes salicoides sp. n. Plate V. figs. 2, 4, 7.

The whole colony is like a miniature weeping-willow. The main stem, which seems to be broken, is only 10.5 cm. high. It is 2 mm. in diameter at the base, and gives off long tapering branches from one side, the first of which reaches a length of 32.5 cm. Some of these branches remain undivided, while others give off long slender twigs. The whole specimen is densely

covered with polyps, which are arranged alternately on the branches. They are large and circular; the mouth is prominent; the tentacles are short and thick—the two transverse ones lying a little below the level of the others. The diameter of the largest polyp is about 2 mm. The spines on the main stem are crowded, and do not all point in one direction—an unusual feature. They are arranged neither in rows nor in spirals. On the branches the spines are short, sharp, and triangular. They are arranged in longitudinal rows, seven of which can be counted from one aspect. The members of a row are about one length apart.

Locality.—Portuguese East Africa.

Antipathes furcata Gray.

See *Antipathes* (?) *furcata* Brook, in Report on the Antipatharia of the 'Challenger' Expedition, p. 104, pl. xi. fig. 2.

The main stem is broken, and is only 5 cm. in length. It gives rise to a branch which reaches the length of 8 cm., and is then broken. It in turn gives rise to a branch 23 cm. in length. The axis of this branch tapers very markedly, and gives off delicate branches on all sides and in no definite order. These are mostly directed upwards. The polyps, which are badly preserved, are elongated in the direction of the longitudinal diameter of the axis, and are twice as long as they are broad. They are about 1 mm. in length. They lie close together, but are not crowded. The tentacles are short. The spines are short, triangular, and compressed, and are far apart. They are arranged in longitudinal rows, six of which can be seen from one aspect.

Locality.—Portuguese East Africa. Previously recorded from Madeira.

Antipathes tristis Duchassaing. Plate V. fig. 8.

See *Antipathella* (?) *tristis* Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 111.

A small delicate colony 5 cm. high. The stem is slender, and gives off delicate branches irregularly at right angles to the stem. Anastomoses occur, but are not frequent. The polyps are situated on one side of the axis. They are small, and have short digitiform tentacles. The polyps are about 1 mm. apart. The spines are sharp and triangular, and are arranged in irregular longitudinal rows, six of which can be seen from one aspect. Members of a row are about two lengths apart.

Locality.—Portuguese East Africa. Previously recorded from Guadeloupe, Santa Cruz, Montserrat, Martinique, St. Lucia, and Barbadoes.

Antipathes lentipinna Brook.

See *Antipathes* (?) *lentipinna* Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 103, pl. xi. fig. 19.

A shrub-like colony 28 cm. high, densely branched. The main axis is black and hard, 7 mm. in diameter. In the branches and pinnules the axis is light brown. The polyps are arranged on one side of the axis, and are large (2 mm. in diameter) and crowded together. Here and there small polyps are crowded in between the large ones. Branches are given off, usually from one side only. On the main stem the arrangement of spines is very irregular. The axis is flattened out, and the spines are scattered all over it, but on the branches they are arranged in regular spirals and longitudinal rows, five of which can be seen from one aspect. The spines are long and triangular, and are very close together.

Locality.—Portuguese East Africa. Previously recorded from the Red Sea.

Antipathes gracilis Gray.

See *Antipathella* (?) *gracilis* Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 113, pl. xi. fig. 8.

Two specimens, one 8.5 cm. in height, and the other a little over 9 cm. The latter is a delicate colony, with no regular mode of branching. The branches are thin and short, and are given off at right angles. Anastomoses are frequent, but the terminal fronds are free. The polyps are crowded together on one side of the axis. They are circular, 1.5 mm. in diameter. The tentacles are short and thick, one pair lying slightly below the level of the other two pairs. The spines are long and numerous, and are arranged in spirals and longitudinal rows, five of which can be seen from one aspect. Members of a row are from two to three lengths apart.

Locality.—Portuguese East Africa. Previously recorded from West Indies and Madeira.

Antipathes abies Gray. Plate V. figs. 1, 6.

See *Antipathes abies* Brook, Report on the Antipatharia of the 'Challenger' Expedition, p. 70, pl. xi. fig. 21.

The four specimens show a remarkable difference in the mode of growth. The first specimen, from Five Islands, consists of two fragments, much-branched and bearing many polyps. Some of the polyps are very well preserved, and show a prominent mouth raised

on a cone, and long tentacles. The polyps are arranged close together on one side of the stem, and are relatively large. The cœnenchyma is thin, and the spines can be seen projecting through it. The spines are very numerous. On the lower part of the stem they are sharp and needle-like, and stand out at right angles to the axis, but on the branches they are small and blunt, and lean towards the axis. The second specimen is 16 cm. in length. The mode of branching is the same as in the first case. The branches are given off all round. The main axis is thick. The polyps are situated on one side of the axis, and are crowded. They are 0·5 mm. in the longest diameter. The mouth is slit-like and prominent. The tentacles are much contracted, and are placed in three pairs round the mouth. The spines are exactly of the same type as those of the first specimen.

Locality.—Portuguese East Africa.

The third specimen branches in one plane and is fan-like. The main axis is thick and flattened out at the base, and gives off alternate branches. The polyps are similar to those of the second specimen, but are far apart, being separated on some parts of the axis by intervals of fully 0·5 mm. The spines are of the same type as in the previous specimens, but are not so long on the stem.

Locality.—Portuguese East Africa.

The fourth specimen is from Bentinck Island, Mergui. It is similar to the last specimen in being fan-like, but the branches are smaller and more delicate. It is 12·5 cm. high. The polyps are crowded together on the branches, and the largest have a diameter of 0·5 mm. The cœnenchyma is very thin. The spines agree with those of the other specimens, but the needle-like spines on the axis are very numerous. It seems that *Antipathes abies* is a very variable species.

Pteropathes simpsoni sp. n. Plate V. fig. 3.

A small colony, 10·5 cm. in length. The branching is irregular, and there seems to be no main axis. The whole specimen is clothed on one side with whitish polyps, which give it the appearance of being covered with a mould. These polyps are unfortunately so badly preserved that their structure cannot be made out, though in some parts long tentacles are seen. The spines, which are large and numerous, are triangular with a broad base. They are arranged in very steep spirals; seven or eight can be seen from one aspect. Towards the tip of the axis the spirals become irregular. The spines also form longitudinal vertical rows, the members of which are about a length apart, and in some places even less.

Locality.—Mergui Archipelago.

LITERATURE REFERRED TO—IN ADDITION TO THAT NOTED BY
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