

characters of the skull and dentition. *Mus tasmaniensis*, Krefft *, "a new species of land-rat discovered by Mr. George Masters on the banks of the Ouse river," is no doubt one of these four; but even if the type is found to be the same as one of the species here described, Mr. Krefft's name for it cannot stand, as no description whatever has ever been published of it.

XLV.—*Remarkable Forms of Cellepora and Palythoa from the Senegambian Coast.* By H. J. CARTER, F.R.S. &c.

[Plate XVI.]

Cellepora senegambiensis, n. sp. (Pl. XVI. fig. 1, a-v.)

Zoarium asteroid, many-armed, about $2\frac{1}{3}$ inches in diameter, with a large hole at the base of the arms (Pl. XVI. fig. 1). Composition calcareous. Structure hard, firm. Colour white, spotted with greenish brown. Consisting of ten cylindrical arms, variable in form, size, length, and position, sometimes bifurcated. Built upon a depressed, turbinoid, littorine shell, over the whole of which—with the exception of the aperture, which is subcircular, about 1-3rd of an inch in its longest diameter, and still remains open (fig. 1, a)—the polyzoon has grown. Arms solid, composed throughout of an aggregate of white or colourless cells (zocœcia), heaped together irregularly in the form mentioned, mixed with others of a greenish-brown colour, which, grouped together, retain a radiating (? spiral) arrangement from the axis (which is also composed of the same coloured cells) to the surface (fig. 1, b'), where they terminate in subverruciform gentle elevations (fig. 1, b b), varying in size from 1 to 2-12ths of an inch in diameter, and disposed more or less quincuncially about the same distance apart, but chiefly collected at the extremity of the arm. Zocœcium conical and erect, or oval and recumbent (fig. 1, c c c c); orifice circular, constricted unequally, the smallest part (sinus) posteriorly (fig. 1, d d d and m), margined by a smooth, round, even rim, bordered in front by two or more tubercles (fig. 1, l), and behind by a prominent conical rostrum (fig. 1, h), against which the sinus rests more or less perpendicularly (fig. 1, i); furnished with a chitinous operculum. Surface of the cell covered with a branched anastomo-

* Fauna of Tasmania, p. 3 (1868).

sing structure in relief, radiating to the circumference (fig. 1, *u*) from the summit of the rostrum, which is thus grooved (fig. 1, *gg*), forming a reticulation whose interstices are respectively perforated by a hole furnished with a circular membranous diaphragm (fig. 1, *v*); interstice irregular in size and form, surrounded by three or more tubercles (fig. 1, *s*). Oœcium globular, smooth, overhanging the orifice, which is thus more or less perpendicularized by it (fig. 1, *f*). Avicularia lanceolate, numerous, variable in size, situated in the angular intervals left between the cells (fig. 1, *eeeeee*). Zoœcium in some parts covered with a minute calcareous granulation (? pellicle), especially over the rostrum, not even excluding the chitinous operculum of the orifice (fig. 1, *t*). Size of specimen $2\frac{1}{2}$ inches in diameter from tip to tip of the longest arms; largest arm 1 inch long by half an inch in diameter at the base.

Hab. Marine.

Loc. Coast of Senegambiã, West Africa.

Obs. The most striking characters of this species are its asteroid form and spotted surface. Perhaps the colour of the dark parts may arise from an excess of chitine, as it is generally transparent and diffuse. The zoœcia composing them do not appear to differ from the rest, excepting in their prominence and more recumbent position, which, affording the best view of the surface of the cell generally, has been taken for the typical illustration (fig. 1, *c*); while those bearing the oœcium (fig. 1, *f*) appear to be confined to the colourless and more erect forms, which, situated in the depressions between the verruciform or coloured portions, are thus most protected. There is, of course, a great variety in the minor detail of the cell, as might be expected in an acervuline mass heaped together irregularly; but the main characters are those above given. Probably the cavity of the shell on which the Polyzoon has grown was once tenanted by a hermit crab (*Pagurus*), which, from the inconvenience of the weight accumulating around him, may have left it to the mercy of the waves, whereby his commensalist perished, and the specimen got to the shore, where it was picked up for preservation. Conjecturing what must have been the size of the *Pagurus*, compared with that of the *shell*, it does not seem unlikely that the burden on the former, or its own increase in size, or both combined, may have led to the desertion. Certain it is, however, that the aperture of the shell would not have been preserved if a *Pagurus* had not taken possession of its cavity, since there is no shell-substance left in contact with the zoarium for some distance inward from the orifice, although

sufficient remains in the interior, as determined by the section of another but inferior specimen, registered 22. 8. 76. 5, to show what the form was.

Palythoa senegambiensis, n. sp.
(Pl. XVI. fig. 2, *a-c*, and fig. 3, *a, b*.)

Polypary consisting of four or more stout clumsy arms, bent downwards asteroidly from an arched summit, under which and on one side is an aperture representing that of the shell on which the *Palythoa* had grown (Pl. XVI. figs. 2 and 3). Composition siliceo-arenaceous. Structure subfirm, gritty. Colour light brown. Arm irregular in shape, about 7-12ths of an inch thick in its most cylindrical part, simply rounded at the end (fig. 2, *b*), or expanded and flattened (fig. 3, *b*). Aperture elliptical, about 8-12ths by 3-12ths of an inch in its greatest diameters (fig. 3, *a*). Surface uniformly covered with a great number of papilliform eminences (fig. 2, *a*), more or less in juxtaposition, slightly raised above the common level of the polypary, circular, and about 3-24ths of an inch in diameter, with a 12-plicated aperture in the centre more or less open, leading to a cavity beneath about the same in depth sunk into the polypary, and presenting the remains of at least twelve mesenteric lamellæ; thus the cavity bears the proportion of 3 to 14-24ths of an inch when compared with the thickness of the cylindrical part of the arm, which otherwise is composed of pure sand (fig. 2, *c*). Polyp too much desiccated for description. Size of specimen about $2\frac{3}{4}$ inches from tip to tip of the longest arms; height of the summit of the arch outside about $2\frac{1}{2}$ inches, inside about $\frac{3}{4}$ inch.

Hab. Marine.

Loc. Coast of Senegambia, West Africa.

Obs. Although the branched form of this polypary &c. much resembles that of an *Alcyonium*, yet the arenaceous composition and general appearance is more like that of a *Palythoa*, to which "subfamily" it must be relegated on account of the greater number of mesenteric lamellæ, which, according to Milne-Edwards, "reste toujours à huit chez les Alcyonnaires" ('Zoophytes: Coralliaires,' vol. i. p. 221). From the polyps being only sunk into the polypary so much as to be a little above the general surface, or rather, perhaps, from the latter having risen to this height, it evidently belongs to Milne-Edwards's division "A A A" (*op. cit.* vol. i. p. 305), although a branched form is not mentioned. The expanded and flattened ends of the arms of the illustrated specimen (fig. 3, *b*), for there are two very much alike, seem to indicate

that they rested on the ground, while in the other specimen they are all simply rounded, like that of fig. 2, *b*. The same remarks apply to the shell on which the *Palythoa* had built its structure as to that of *Cellepora senegambiensis*, excepting that it appears to have been still more depressed, and, from the smooth shining surface of the portion remaining in the interior, as exposed by a section of the unillustrated specimen, registered 12. 3. 68. 4, together with the elliptical aperture, to have been one of the Naticidæ.

General Observations.

The specimens from which the above descriptions have been taken belong to the Liverpool "Free Public Museum;" and there are two of each, so that I have had one of each to sectionize for the internal structure, while the best of each has been retained entire for illustration, which, together with the sections, will henceforth be returned to the museum for reference. The most remarkable part about them in a physiognomical point of view is that organisms so widely separated in the animal scale should, in the same locality, viz. the Senegambian coast, present the same peculiarities of growth, which, so far, appears not to have been noticed in any other part of the world. There are two specimens of *Cellepora senegambiensis* in the British Museum; and I think that I have seen it figured in some old work, but cannot remember where.

EXPLANATION OF PLATE XVI.

- Fig. 1. Cellepora senegambiensis*, n. sp. Zoarium, natural size. *a*, hole representing the aperture of the shell on which the zoarium has been built; *b b*, coloured portions on the surface; *b'*, section of an arm, showing the same in the interior; *c c c c*, group of cells or zoecia, with their accompaniments, all magnified on the scale of 1-48th to 1-1800th inch; *d d d d*, orifice; *e e e e e*, avicularia; *f*, oecium; *g g*, rostrum; *h*, front view of rostrum &c., more magnified, viz. on the scale of 1-48th to 1-6000th inch; *i*, sinus of orifice; *k*, orifice; *l*, front part of cell or zoecium; *m*, orifice and sinus closed by operculum, and *n*, avicularium, on the same scale; *o*, diagram (on the same scale) to show calcareous granulations in *p*, ?-pellicle, on some parts of the zoarium; *q*, surface without the granular growth; *r*, circular diaphragmatic hole in the interstice; *s*, tubercles on the border of the same; *t*, operculum covered with the granular growth; *u*, branched structure in relief on the zoecium; *v*, diaphragmatic hole in the interstice.
- Fig. 2. Palythoa senegambiensis*, n. sp.: lateral view, with part of upper surface (nat. size). *a*, polyp-cells; *b*, rounded end of arm; *c*, section of the cylindrical part of the arm, to show position and relative size of polyp-cells.
- Fig. 3. Palythoa senegambiensis*, n. sp.: under surface (nat. size). *a*, orifice representing the aperture of the shell on which the polyp has been built; *b*, flattened end of arm.

