

On a New Tubularian Hydroid from Natal.

By

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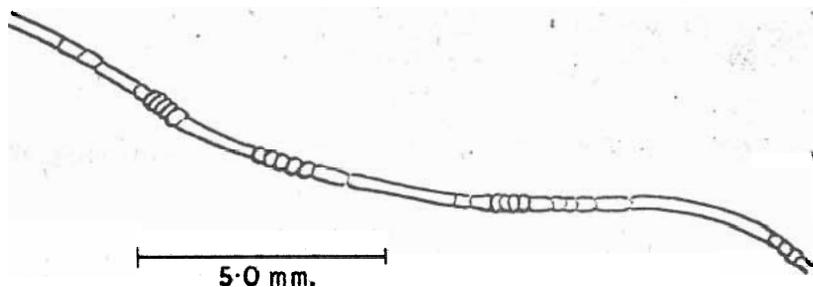
With 4 Text-figures.

THE material which is the subject of this description was collected from the water-line of boats working in Durban Harbour. It is not a recent arrival in the port as material collected there in 1936 proves to be identical.

*Tubularia warreni* n. sp. Text-figs. 1-4.

*Trophosome*.—The colony consists of clustered, unbranched stems arising from a low matted hydrorhiza and attaining a maximal height of 10 cm.

TEXT-FIG. 1.



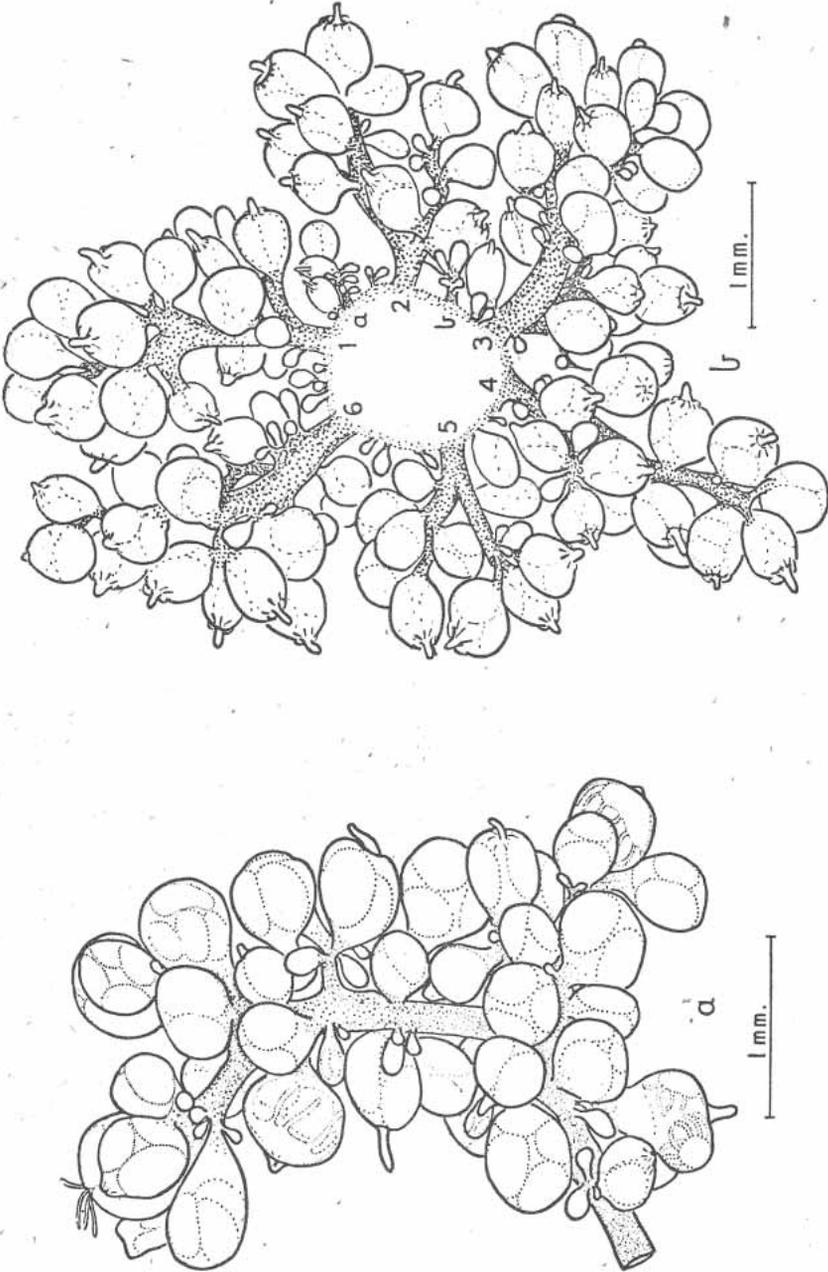
*Tubularia warreni* n. sp. Portion of the hydrocaulus from near the base showing the form of the annulations.

The hydrocaulus tapers gradually from apex (diameter 0.70-0.80 mm.) to base (0.22-0.30 mm.). It is marked by series of prominent annular rings which occur more commonly towards the base. These are most frequently arranged in groups of three to five rings, though groups of six or more rings occasionally occur, as do also single rings. Less prominent annulations occur irregularly along the whole length of the hydrocaulus, text-fig. 1.

The cœnosarc shows two longitudinal septa which divide the coelenteron into two compartments. These appear to be similar to the structures described in *T. mesembryanthemum* Allman (Allman, 1871). In the living material they show through the perisarc as two pink longitudinal stripes. The perisarc is white distally, becoming pale straw-coloured near the hydrorhiza. The thickness of the perisarc is about  $15\mu$ , but becomes less immediately beneath the hydranth.

The hydranth is flask-shaped and carries two whorls of tentacles. In the

TEXT-FIG. 2.



*Tubularia warreni* n. sp. *a*, Blastostyle from a female hydranth showing the young gonophores together with older ones along the length of the pedicle; *b*, arrangement of the blastostyles on a female hydranth as seen from the oral surface. The six primary pedicles are numbered, while secondary pedicles have developed at *a* and *b*.

aboral ring are 24–30 tentacles, up to 4 mm. in length and tapering gradually to a fine point. There is a single whorl of 22–27 oral tentacles, of length up to 0.8 mm. These tentacles lack terminal knobs. The hydranth is supported on an annular expansion of the cœnosarc, which is covered by a thin layer of perisarc. The annulus shows faint flutings as in *T. larynx* Ellis and Solander. The hydranth, from the tip of the oral tentacles to the proximal border of the annulus, attains a length of 4 mm., and its breadth across the base, not including the aboral tentacles, is up to 2 mm. The opening of the mouth is circular.

*Gonosome*.—The blastostyles arise distally to the aboral ring of tentacles. In both sexes there are typically six long primary pedicles, usually unbranched and rarely exceeding the aboral tentacles in length. Between the primary pedicles short secondary pedicles develop. Of these there may be less than six on a hydranth, but frequently there are as many as 12. The secondary pedicles are short and may be branched. Very short tertiary pedicles may also appear. More than 30 gonophores may occur on a primary blastostyle, young gonophores being scattered among the more mature ones (text-fig. 2*a*, and *b*).

The male gonophore (text-fig. 3*a*) is spherical, but with a flattened summit. The spadix occasionally protrudes. No tentacles are to be seen. The female gonophore (text-fig. 3, *b*) is spherical and carries eight laterally flattened crest-like ridges. These tend to be obliterated in the fully mature specimens. The spadix usually protrudes through the opening of the gonophore. The actinula is liberated with eight aboral tentacles.

*Cnidome*.—Four types of nematocyst have been identified :

(i) Stenoteles in which the capsule is broadly pyriform, of maximal dimensions  $8\mu \times 7\mu$ , and with the axial body reaching about two-thirds of the way down in the undischarged capsule.

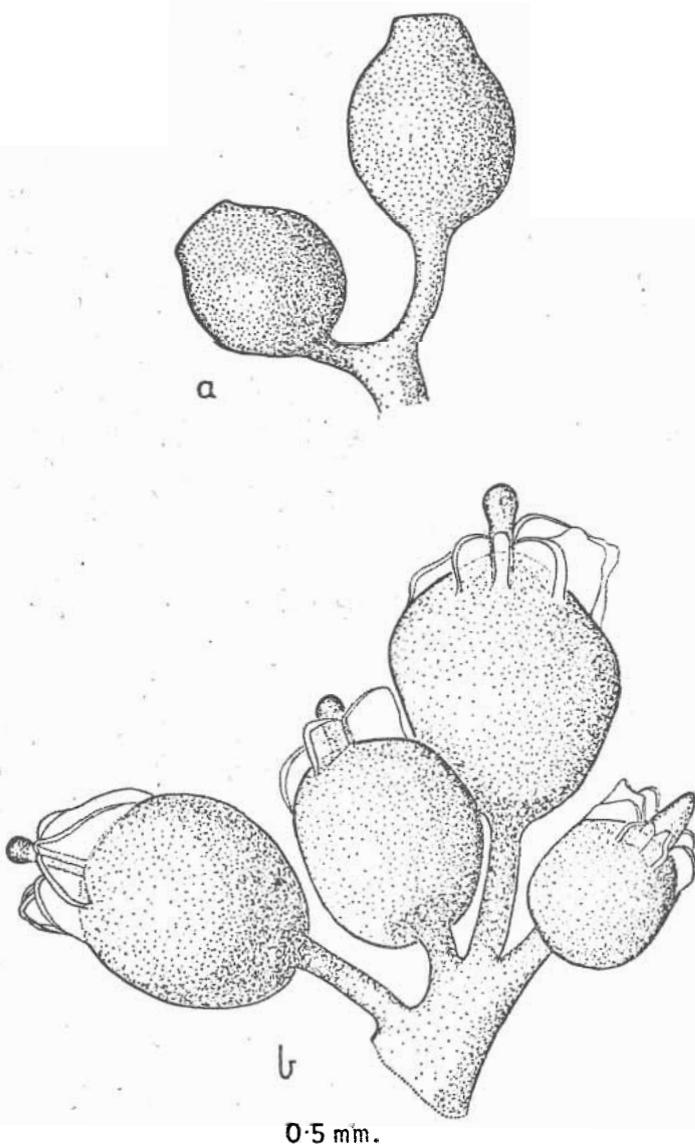
(ii) Desmonemes in which the capsule is broadly pyriform and of maximal dimensions  $5\mu \times 4\mu$ .

(iii) Spherical heterotrichous anisorhizas in which the capsule is almost spherical measuring  $9\mu \times 8\mu$ ; the thread is coiled horizontally and on discharge shows fine spiral armouring; the thread narrows very slightly and gradually towards the tip and in the terminal region the armouring cannot be made out distinctly (text-fig. 4, *a*).

(iv) Oval basitrichous isorhizas in which the capsule is an elongated oval,  $9.5\mu$  in length, and slightly asymmetrical after discharge; the thread is coiled longitudinally, and on discharge shows small spines extending for a distance of about  $11\mu$  from the capsule (text-fig. 4, *b*).

*Coloration*.—The body of the polyp is a deep red-brown, and this colour may also be found in the endoderm of the pedicles and occasionally of the oral tentacles. The oral tentacles are more usually white, as are the aboral tentacles. The spadices of the gonophores are deep brown. The annular swelling

TEXT-FIG. 3.

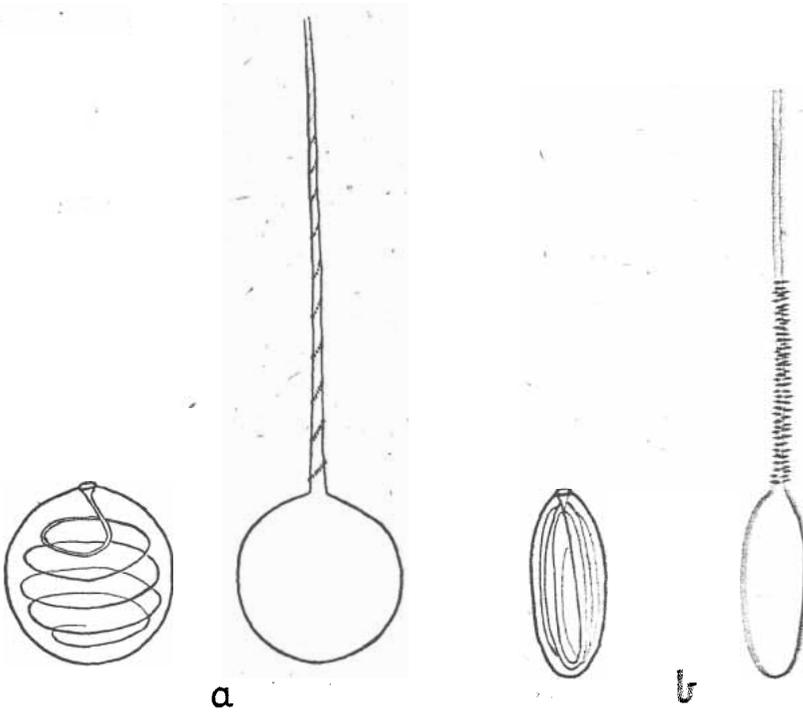


*Tubularia warreni* n. sp. a, male gonophores and b, female gonophores showing the laterally flattened crest-like ridges.

beneath the hydranth is deep orange. The coloration of the hydrocaulus has already been described.

This *Tubularia* closely resembles those species which can be united within Agassiz's sub-genus *Parypha*, which is characterized by the presence of laterally compressed tubercles on the gonophores. This group comprises *T. mesembryanthemum*, *T. crocea* Agassiz, *T. borealis* Clark, *T. cristata* McCrady and *T. sagamina* Stechow.

TEXT-FIG. 4.



*Tubularia warreni* n. sp. a, Spherical heterotrichous anisorhizas, and b, oral basitrichous isorhizas before and after discharge.

It differs from *T. borealis* in having not more than 30 aboral tentacles and in the presence of eight processes on the gonophores; from *T. cristata* in the absence of rows of nematocysts on the gonophores and in the arrangement of the oral tentacles in a single whorl, and from *T. sagamina* in having not more than 30 aboral tentacles, by the shorter length of these, by the arrangement of the pedicles and by the presence of eight tentacles on the young actinula. The characters of the nematocysts distinguish the present species from *T. crocea*, whose cnidome has been described by Weill (1934).

Within the sub-genus *Parypha* the present species most closely resembles

*T. mesembryanthemum* but the following characters serve for differentiation: The pedicles of the present species carry gonophores of all stages of development along their length and are organized into clearly defined primary and secondary groups; there is no sign of finger-shaped processes arising from the base of the spadix of the female gonophore; there are no tubercles on the male gonophores; both the hydranth and the aboral tentacles are shorter than in *mesembryanthemum*.

The species here described may be only a local variety of *T. mesembryanthemum*, for most of the distinguishing characters listed above have been considered by Fenchel (1905) to be variations arising from local environmental conditions rather than valid specific characteristics. Fenchel's views have, however, not met with general acceptance. Unfortunately the cnidome of *T. mesembryanthemum* has not been described in detail, but Weill considers that there is some evidence that atrichous isorhizas occur. If this is so, then it is not identical with the present species. Until the cnidome of *T. mesembryanthemum* has been described from material collected in the type locality it seems desirable to regard the present species as distinct.

Among incompletely described species of *Tubularia* the present animal closely resembles *T. formosa* Hartlaub, which has six to eight well-developed blastostyles. Unfortunately only male hydranths were collected. It does not appear justifiable to accept as identical material collected from Durban and Tierra del Fuego without further information on the structure of the South American species.

I propose to call this new species *Tubularia warreni* as a tribute to the late Professor Ernest Warren of this University, who laid the foundation of our knowledge of the hydroid cœlenterates of the Natal coast.

The species of *Tubularia* now described from South Africa are *T. serturellæ* Stechow (Stechow, 1923a), *T. larynx* E. & S. (Stechow, 1925) and the present species. Stechow (1923b) has given cogent reasons for the belief that *T. bethæ* Warren 1908 is a species of *Ectopleura*, while he has referred *T. solitaria* Warren 1906 to a new genus *Zyzzyzus*.

*Type material*.—Two colonies, one male and one female, deposited with the Natal Museum (Nos. N.M. 1684 and 1685).

My thanks are due to Dr. E. E. Archibald of Rhodes University for drawing my attention to this animal, to Dr. R. F. Ewer for her assistance in describing the cnidome, and Dr. K. H. Barnard of the South African Museum for his assistance in procuring descriptions of known species of *Tubularia*.

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