

with only a few coarse punctures at extreme sides.
Genitalia as figured (fig. 4).

Female.—Externally similar to male.

Type.—♂ in the British Museum (Nat. Hist.). Scotland: Glasgow, xi. 1946, in cracks between boards over bilge of lower hold of ship (*R. M. Dobson*).

Paratypes.—7, with same data as type.

Comparative Notes.—The structure of the antennæ places this species near *T. cribripennis* Champ. from which it may be distinguished as shown in the key given above. In its pubescent dorsal surface it resembles *T. singularis* Grouv., but differs from the latter in the structure of its antennæ and in having a much broader prothorax.

LXXX.—Notes on certain species of *Geodia* described by Oscar Schmidt. By MAURICE BURTON, D.Sc., Department of Zoology, British Museum (Natural History).

AMONG the many species described by Schmidt which are still inadequately known are several species of *Geodia*. There are in the British Museum spicule-preparations of some of them, and these notes are based on a re-examination of them.

Schmidt's preparations were all carelessly made and difficult to deal with, but in the light of our present knowledge it is now possible to be certain of the identity of the following species:—

Geodia canaliculata = *Geodinella canaliculata* (Schmidt).

Geodia pergamentacea = *Geodia conchilega* Schmidt.

Geodia cumulus = *Geodia cumulus* Schmidt.

Synonymy:

G. paupera Bowerbank.

G. exigua Ulizeka nec Thiele.

Geodia simplex = *Geodia cydonium* (Müller).

Geodia geodina = *Geodia geodina* (Schmidt).

Synonymy:

Stelletta geodina Schmidt.

Geodia echinastrella

Topsent.

Sidonops ramosa Topsent.

Geodia globus = *Geodia globus* Schmidt.

Geodia canaliculata Schmidt (= *Geodinella canaliculata*).

Sollas (1888, p. 254), in his re-description, says: "The type-slide in the British Museum presented by Schmidt, does not contain a full complement of spicules." Topsent (1901, p. 334, pl. xiv. fig. 5) has, however, re-described the species from fresh material, and a comparison of his description with Schmidt's slide (B.M. Reg. No. 68.3.2.46) shows Sollas to be in error, and makes it certain that Topsent's re-description is correct.

Geodia pergamentacea Schmidt, 1870, p. 69 = *Geodia conchilega* Schmidt, 1862.

There is in the British Museum collection one of Schmidt's own preparations of *Geodia pergamentacea* (B.M. Reg. no. 70.5.3.80) from Portugal. The spicules contained in this are: oxea, 1.6 to 2.0 mm.; orthotriaenes, shaft 1.4 by 0.02 mm., cladi 0.24 mm. long, passing to incipient dichotriaenes and fully-formed dichotriaenes of similar dimensions; anatriaenes, shaft (only broken spicules present), cladi 0.064 mm. long, sterrasters 0.06 to 0.08 mm. diameter, strongylasters 0.008 mm., oxyasters (numerous) 0.016 mm. diameter, oxyasters (only one seen) with spines at the ends of the rays, 0.028 mm. diameter.

There is little doubt that *G. pergamentacea* is identical with *G. conchilega* Schmidt, a species hitherto recorded by three authors only, viz., Schmidt (1862), Topsent (1894) and Lendenfeld (1894). According to the descriptions given (supplemented by Sollas's re-description of the type), the spicules of *G. conchilega* are: oxea, 1.3 to 3.0 by 0.02 to 0.03 mm.; orthotriaenes, shaft 1.0 to 2.3 by 0.03 to 0.05 mm., passing to dichotriaenes of similar dimensions; anatriaenes, shaft 2.0 to 4.0 by 0.005 to 0.013 mm., cladi

Burton (1946) Ann. Mag. Nat. Hist. 13(11): 856-860

0.05 to 0.064 mm. long, sterrasters, 0.083 to 0.095 by 0.113 to 0.116 by 0.13 to 0.143 mm., strongylasters 0.004 to 0.007 mm. diameter, subcortical oxyspherasters 0.027 to 0.054 mm. diameter, choanosomal oxyasters 0.016 to 0.036 mm. diameter.

It is clear from the descriptions of both Topsent and Lendenfeld that the smaller microscleres show a fair range of variation in size leading to intermediates between the three categories of micrasters; and from Topsent's description that the triaenes may be all orthotriaenes in one specimen, all dichotriaenes in another, or a mixture of the two in other specimens.

It is noteworthy that the cladi of some of the dichotriaenes in *G. pergamentacea* are tuberculate, recalling the triaenes of Lithistids.

Geodia cumulus Schmidt, 1870, p. 71.

The single preparation (B.M. Reg. no. 70.5.3.85) of a sponge from Florida, contains oxea, 1.2 by 0.028 mm.; orthotriaenes, shaft 0.96 by 0.028 mm., cladi 0.2 mm. long; anatriaenes, shaft (all broken) by 0.012 mm., cladi 0.036 mm. long, sterrasters 0.052 by 0.06 mm., and strongylasters 0.009 mm. diameter.

Schmidt's specimen is clearly identical with that from the Barbadoes wrongly ascribed by Ulizcka (1929, p. 58, figs. 60-71) to *Geodia exigua* Thiele.

Geodia paupera Bowerbank (1873, p. 329, pl. xxxi, figs. 16-21), of unknown locality, has a spiculation identical with the two foregoing, and in it, as in the other two, there is a tendency for the ends of the oxea, and of the shafts of the triaenes, to be rounded.

Geodia simplex Schmidt, 1870, p. 70=*Geodia cydonium* (Müller).

The single preparation (B.M. Reg. no. 70.5.3.79), from a specimen from Greenland, contains oxea, 2.5 by 0.038 mm.; orthotriaenes, shaft 1.9 by 0.032 mm., cladi 0.32 mm. long, sterrasters 0.068 to 0.08 mm. diameter, strongylasters 0.009 mm. diameter and oxyasters 0.016 to 0.02 mm. diameter. In addition, there are intermingled with the

oxea and triaenes a number of slender rhabds, usually broken at each end, which suggest that the sponge possessed anatriaenes or prototriaenes, or both, although no heads of such spicules can be found in this preparation.

The micrasters are identical with those figured by Topsent (1894, pl. xi, fig. 8) for *G. gigas* (= *G. cydonium*).

Geodia geodina (Schmidt).

Originally described as *Stelletta geodina*, this preparation (B.M. Reg. no. 68.3.2.39) is more abundantly supplied with spicules than is usually the case with Schmidt's preparations. The dimensions of the oxea and orthotriaenes agree closely with those given by Topsent (1928, p. 112) for *Sidonops ramosa*. There are also a few anatriaenes with cladi 0.022 mm. long, but in no case is the shaft complete. The sterrasters measure 0.04 to 0.06 mm. diameter, the oxyspherasters 0.018 mm. diameter and the oxyasters 0.04 to 0.06 mm. diameter. The measurements of the microscleres agree closely with those given for *S. ramosa* where they are: sterrasters 0.08 by 0.06 mm., oxyspherasters 0.012 to 0.016 mm. diameter, and oxyasters 0.04 mm. diameter.

In addition to the strong resemblance in the details of the skeleton, the fact that *Geodia geodina* was from Algiers and *Sidonops ramosa* was from the Azores makes it highly probable that the two are conspecific, and in so far as it is possible to be certain without having seen Topsent's preparations of *S. ramosa*, I have little hesitation in accepting their identity with each other.

Geodia echinastrella Topsent (1904, p. 70), although inadequately described, appears to be merely a simple variety of the same species, with slightly smaller oxyasters. The fact that anatriaenes are not mentioned in the original description is of little consequence, since they are rare in the type of *Geodia geodina* and were, in fact, overlooked by Sollas (see 1888, p. 265).

Geodia globus Schmidt, 1870, p. 69.

The species is represented by a single badly-made preparation (B.M. Reg. no. 70.5.3.81) from which the following details of the spiculation can be recorded: oxea

4.1 by 0.038 mm.; dichotriaenes, cladome 0.8 mm. across (according to Sollas 1888, although there is no complete example to be seen), shaft (dimensions unknown: all broken); anatriaenes (one only seen), cladi 0.064 mm. long, shaft 0.016 mm. thick (length unknown), sterrasters 0.082 mm. diameter, strongylasters 0.009 mm. diameter, oxyasters 0.017 to 0.06 mm. diameter.

In addition to the spicules given above, there are numerous slender rhabds, all broken, strongly suggestive of the presence of anatriaenes and, possibly, protriaenes. In addition there are numerous small oxea which may or may not have belonged to the type, but may have been derived from other sources.

The species is obviously closely-related to *Geodia divaricans* (= *Geodia barretti* var. *divaricans* Topsent, 1928, p. 110), and *G. megastrella* Carter, from both of which it differs in having large oxyasters with smooth rays, like the spherasters of a *Tethya*, whereas in Topsent's and Carter's species the rays are abundantly microspined.

G. globus comes from Portugal, *G. divaricans* from Madeira, and *G. megastrella* from Cape St. Vincent (Portugal), and Cape Finisterre (Spain) and Madeira.

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