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A New Scleraxonian Octocoral (Coelenterata: Anthozoa) from Antarctic Waters (Figures 1-3)

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Abstract

A new genus and species of scleraxonian octocoral from Antarctic waters is described and illustrated. Although the colonial form is similar to that of *Paragorgia* in some respects, the sclerites are not of a shape consistent with that genus and the colonies are monomorphic, with a canal system similar to those of *Briareum* (Briareidae) and *Tripalea* (Anthothelidae). Although the coenenchymal cortex is poorly differentiated from medulla and boundary canals are indistinct, it is tentatively assigned to the family Anthothelidae pending comprehensive revisionary study because its sclerites and gross morphology are more consistent with that family than with Briareidae.

Although the Antarctic marine fauna has been sampled extensively for more than a century, the octocorals of the Southern Ocean never have been treated in a comprehensive manner. Faunistic knowledge of that important group of benthic coelenterates in Antarctic waters is confined to reports on collections made by various expeditions over the years since the cruise of HMS *Erebus* and *Terror*, including Broch, 1958; Gravier, 1907, 1913a, 1913b, 1914; Gray, 1872; Hickson 1907; Kükenthal, 1912; May, 1899, 1900; Molander, 1929; Pasternak, 1961, 1962; Pfeffer, 1889; Roule, 1902, 1907, 1908; Stokes, 1847; Thomson & Rennet, 1931; Thomson & Ritchie, 1906; Utinomi, 1964. In addition, several shorter papers describing one or more Antarctic species appeared during that time. No comprehensive synthesis of the fauna has been attempted so far, although Kükenthal (1919) included the known Antarctic species in his report on the Gorgonacea of the *Valdivia* expedition.

Commencing in 1962, expeditions sponsored by the U. S. Antarctic Research Program (USARP) accumulated a large collection of Antarctic octocorals now deposited in the U. S. National Museum of Natural History, Smithsonian Institution. One of those samples is described in this paper.

Anthothelidae Broch, 1916

Diagnosis: Monomorphic Scleraxonia with boundary canals separating medulla from cortex; medulla perforated by coelenteric canals chiefly in terminal branches, less extensively in proximal parts.

Briareopsis n. gen.

Diagnosis: Arborescent, monomorphic scleraxonians with coelenteric canals extending from gastrovascular cavity of autozooids downward into medulla poorly differentiated from cortex by a network of boundary canals. Sclerites in the form of tuberculate capstans, sparsely warty and thorny rods; anthocodiae with numerous sclerites not arranged as a crown and points.

Type species: Briareopsis aegeon n. sp., here designated.

Etymology: From Greek **Βριάρεως**, Briareos, a hundred-headed giant, source of the generic name *Briareum*, + suffix -opsis from Greek **οπσις**, appearance. Gender, feminine.

Remarks: Assignment of this Antarctic deep-water form to the family Anthothelidae is suggested by the similarity of its sclerites to those of *Tripalea* Bayer, 1955, as well as a resemblance of its spongy cortical coenenchyme to the vesicular cortex of *Tripalea*. The coelenteric canals of *Briareopsis* penetrate the medulla more extensively than is usual in Anthothelidae, especially in the larger branches. A detailed anatomical investigation and review of all genera of Anthothelidae will be necessary to resolve the problem of familial relationship of this genus.

Briareopsis aegeon, n. gen., n. sp.

Figs. 1-3

Material Examined: Scotia Sea: 54° 29′ S, 39° 22′ W, 659-686 m, USNS *Eltanin* sta. 1536, 8 Feb. 1966. One large colony, together with several smaller more or less complete colonies and many broken branches. Holotype, USNM 93244; paratypes, USNM 93245.

Off South Shetland Islands: 61° 25′ S, 56° 30′ W, 300 m, USNS *Eltanin* sta. 993, 13 Mar. 1964. One dichotomously divided colony without holdfast, probably a young colony. Paratype, USNM 93246.

The largest and most complete specimen, the holotype, is a pale tan, almost white colony about 25 cm in height, broken off above the holdfast, branched approximately in one plane in an irregularly dichotomous manner. The main trunk, about 15 mm in diameter, divides into two main branches, which again divide three or four times, resulting in blunt or weakly clavate terminal branches about 1 cm in diameter and up to 8 cm in length; one anastomosis between intersecting branches is present.

Polyps are generally distributed around the branches and are not more densely concentrated on one side of the colony. They form low, bluntly conical calices that in some places are reduced to a scarcely elevated ring of coenenchyme surrounding an 8-lobed aperture. Most anthocodiae are completely withdrawn into the coelenteric cavities, with the tentacles folded inward. Polyps are present on the trunk and main branches, but appear to be in various stages of resorption, as the calices are very low.

The coenenchyme consists of two layers, a central medulla, surrounded by a thick cortex. The coelenteric cavities of the polyps occupy the cortex and extend into the medulla as coelenteric canals, similar to the organization in *Briareum* (Verseveldt, 1940: 9), *Paragorgia* (Verseveldt, 1940: 20), and *Tripalea* Bayer (Bayer, 1961: 70). The general appearance of the colonies (Fig. 1) is more like *Paragorgia* than *Briareum* but, as siphonozooids are lacking, the morphology more closely resembles that of *Briareum* (Fig. 2a). The coelenteric canals extend down the center of the branches, penetrating the medulla in a somewhat sinuous longitudinal course side by side but do not appear to branch or anastomose, intercommunicating only by way of connecting solenia. In the larger branches, the spongy cortex

containing the coelenteric cavities of the polyps is confined to a narrow peripheral zone only indistinctly differentiated from wide medulla perforated by numerous coelenteric canals (Fig. 2b). The tissue immediately surrounding the canals at the center of the medulla is perceptibly paler in color than the area around it and is interpreted as that part of the medula formed around the coelenteric canals extending downward from the apical polyps.

The cortex consists of a thin outer layer containing tuberculate capstans about 0.15 mm in length, many of which elongate to become spindles with complex tubercles arranged in transverse belts, reaching a length of about 0.3 mm or slightly longer (Fig. 3a). These overlie and merge with a thick spongy layer filled with openly thorny rods up to 0.45 mm long (Fig. 3b). A network of cortical solenia divides the walls of the calices into two thin layers, the outer continuous with that of the general cortex and containing tuberculate capstans and spindles. The inner layer, continuous with the cortex between and surrounding the coelenteric cavities of the polyps, is penetrated by a richly anastomosing system of solenia which gives it a very open, spongy aspect, and contains spinose rods.

The thin outermost cortex and the underlying spongy layer are only indistinctly distinguished from the medullar region surrounding the coelenteric canals, as well defined boundary canals are not present between the two layers. Proximad the cortex remains thin but the medulla increases in girth and is penetrated by many coelenteric canals. The medulla contains weakly curved, spinose rods not very different from those of the spongy layer of cortex (Fig. 3c), up to 0.5 mm long, in which some of the projections may have a few apical thorns, together with some weakly spinose rods that may be almost smooth. Crossed forms occur in small numbers in all parts of the colony.

Some of the anthocodiae are preserved more or less exsert with tentacles folded inward over the mouth, but most are nearly or quite completely withdrawn into the coelenteric cavities, the positions of which are indicated by low, hemispherical or bluntly conical elevations of the cortex; in completely retracted specimens these are reduced to slightly elevated areas around the tightly closed stellate orifices of the polyps. The tentacles are filled with nearly straight or weakly curved thorny rods up to about 0.4 mm in length (Fig. 3d), longitudinally placed but converging toward the tips of the tentacles; they do not form a transverse ring-like collaret below the tentacles.

The small specimen from the South Shetland Islands differs from those from the Scotia Sea only in being paler in color, almost white, rather than pale tan. The sclerites of all colonies are colorless.

Etymology: From Greek Αιγαιων, Aegeon, name used by mortals for the third Uranid called Briareus by the gods. Noun in apposition.

Distribution : Scotia Sea; South Shetland Island, 300-686 m.

Comparisons: The robust, arborescent colonies are easily distinguished from *Paragorgia* by their monomorphic polyps and pale color. The canal system, and to some extent the sclerites, resemble those of *Tripalea clavaria* (Studer) in the Anthothelidae (see Bayer, 1961: 71, fig. 14), but in that genus the coelenteric canals proceed downward in a ring surrounding a compact medulla, rather than penetrating the center of a weakly defined medulla as in the present new genus and species.

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Captions

Fig. 1. *Briareopsis aegeon* n. sp. Holotype colony.

Fig. 2. *Briareopsis aegeon* n. sp. a, Diagram of canal system. b, Cross section of large branch, diagrammatic.

Fig. 3. *Briareopsis aegeon* n. sp. Sclerites. a, From outermost cortex; b, From deeper spongy cortex; c, From medulla; d, From tentacles.

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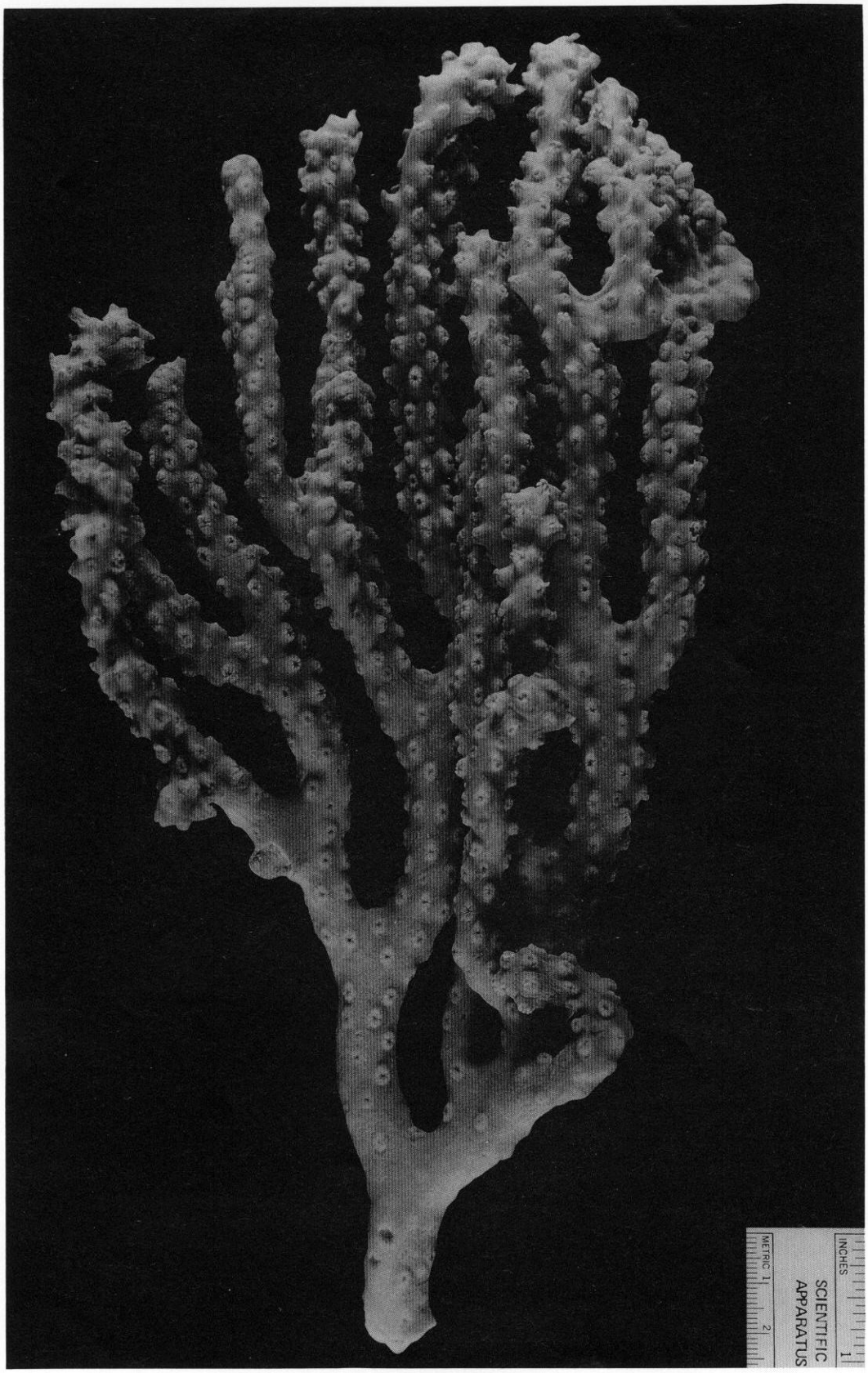
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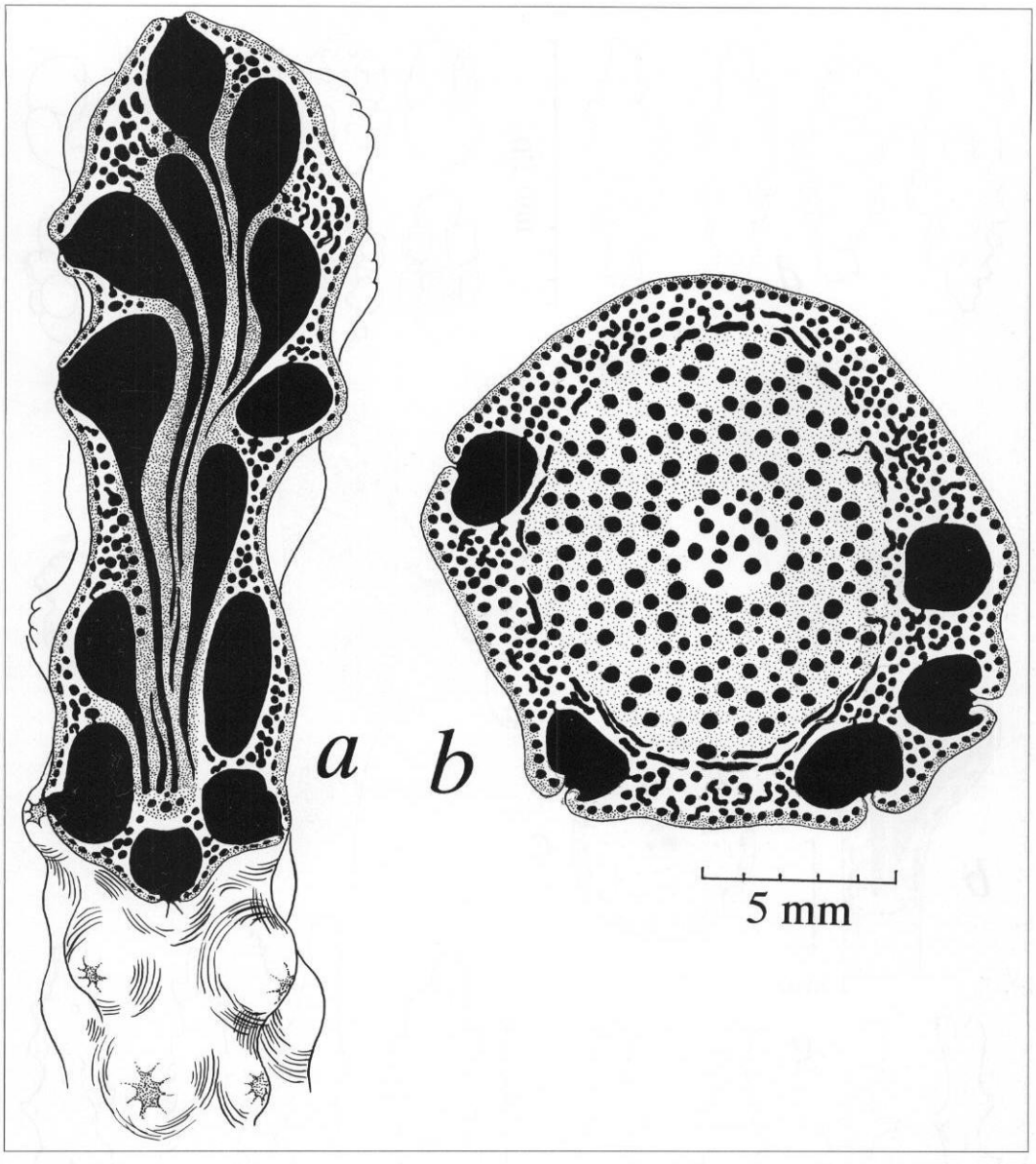
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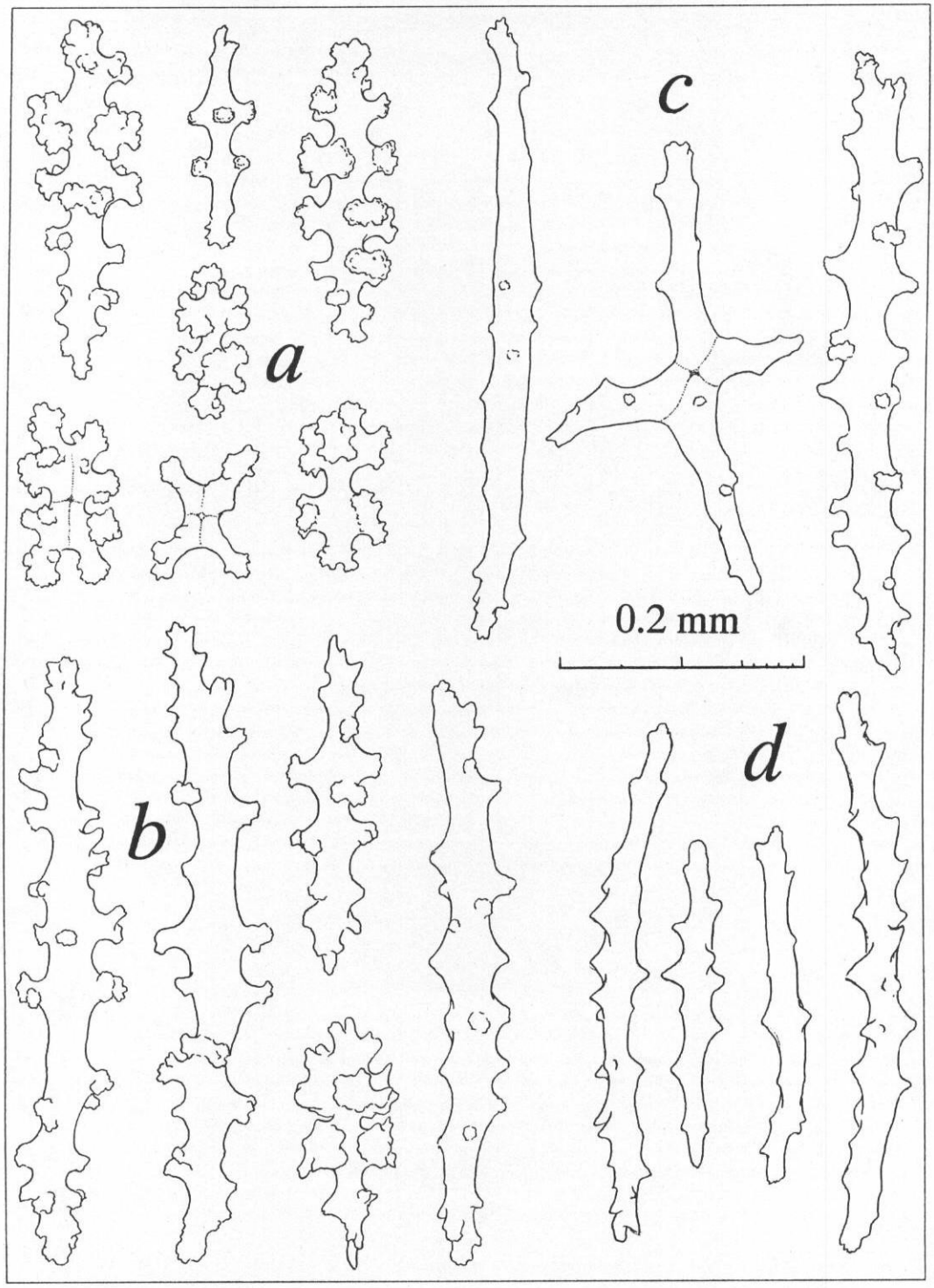
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