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ZOOLOGY.—*Chalcogorgiinae, a new subfamily of Chrysogorgiidae (Coelenterata: Alcyonaria), and a description of* Chalcogorgia pellucida, *new genus and new species, from the Straits of Florida.*[1] FREDERICK M. BAYER, U. S. National Museum. (Communicated by FENNER A. CHACE, JR.)

The early cruises of the U. S. Fish Commission steamer *Albatross* resulted in large collections of interesting and unusual deep-sea invertebrates, many of which for want of interested specialists have found their way to the deepest recesses of the "miscellaneous unidentified" section of the National Museum collections. This is especially true of the less conspicuous creatures, a category into which many of the alcyonarian corals fall without effort. Among these neglected creatures is a chrysogorgiid so unusual that it seems remarkable it should have remained unnoticed until now. Its characters are so divergent from the ordinary that I am here establishing for it a new subfamily as well as a new genus and species.

The family Chrysogorgiidae was established by Verrill in 1883 (p. 21) to include *Chrysogorgia*, *Dasygorgia* (=*Chrysogorgia*), and *Iridogorgia* and was placed between the Ceratoisidae (=Isididae) and the Primnoidae. Verrill saw in its lustrous, calci-

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fied axis an alliance to the Primnoidae, and in the sharp demarcation of its calcareous base from the less calcareous stem a possible relationship to the Isididae. Hickson, one of the foremost students of the Alcyonaria, saw it as "a family without any well-defined characters" (1930, p. 250), a view which is difficult to understand. It has been studied in detail only by Versluys (1902), who put the family in excellent order as of his time. He divided the Chrysogorgiidae into three subfamilies: the Lepidogorgiinae for *Lepidogorgia* (now =Radicipedinae for *Radicipes*); the Chrysogorgiinae for *Chrysogorgia*, *Metallogorgia*, and *Iridogorgia*; and the Riiseinae for *Riisea* and *Pleurogorgia*. At the time of its proposal, it was a convenient arrangement which provided for all the genera then known, but subsequently described species in several genera have again made the classification inadequate. In its zooidal arrangement and manner of branching, *Trichogorgia* Hickson seems to fall into none of Versluys's subfamilies, although in certain respects it approaches closest to the Chrysogorgiinae. *Pleurogorgia militaris* Nutting appears to resemble *Pleurogorgia plana* Versluys (the genotype) only in its manner of branching, while other features indicate a relationship to *Iridogorgia*. For the time being it is probably best to place *Trichogorgia* in the Chrysogorgiinae and permit the Pleurogorgiae to occupy the same subfamily despite their differences. The new subfamily, the fourth, contains at present only one genus and species, from the Straits of Florida. The characteristics of this singular new species definitely corroborate Verrill's belief that the family Chrysogorgiidae is related to the Primnoidae. Since its basal disk is not more calcareous than is the stem, and is not conspicuously jointed to it, the species does nothing to strengthen the theory of relationship with the Isididae. On the other hand, the character of the spicules in *Riisea* indicates a closer relationship of the chrysogorgiids with the Gorgonellidae. Unfortunately for this theory, certain of the isidids exhibit in their spiculation a striking similarity to members of the Chrysogorgiidae. The most recent arrangement (Hickson, 1930, p. 250; Stiasny, 1937, p. 135) places the family at the end of the Holaxonia, with which I can not agree. It is not, however, my purpose to revise the classification of the Chrysogorgiidae or to theorize as to its possible relationship to other families, but merely to provide a place for the unique form described in the following paragraphs.

Family Chrysogorgiidae Verrill

Chalcogorgiinae, n. subfam.

Unbranched chrysogorgiids arising from a spreading basal disk; axis partially calcified, and having metallic lustre; zooids biserially arranged; distal zooidal scales broad, folding over the oral disk as a well-formed operculum; sclerites typical double plates with rounded ends, and in the zooids large, irregularly lobed plates.

Chalcogorgia, n. gen.

Colony unbranched, arising from a spreading basal disk which is not more heavily calcified than the axis with which it is continuous; axis partially calcified, with noticeable bronzy iridescence; zooids biserially arranged; distal spicules of the zooids forming a definite operculum which folds down almost flat over the mouth and retracted tentacles; tentacles without spicules; sclerites of the zooid body large, lobate overlapping scales; coenenchyma packed with elongate, flat scales having rounded ends and a median constriction.

The name is derived from the Greek χαλκός = bronze, + gorgia.

Genotype.—Chalcogorgia pellucida.

Chalcogorgia pellucida, n. sp.

The whiplike colony is 130 mm high, arising from a basal disk almost surrounding a small bit of rock (Fig. 1, *c*). The axis is partially calcified but rather flexible and exhibits a beautiful metallic luster. At a point 4 cm from the base it is 0.3 mm in diameter, at 7 cm it is 0.25 mm, and at the apex it is drawn out to an exceedingly fine point. At approximately 7 mm above the base a single row of zooids begins on each side of the stem (Fig. 1, *a*), the members of the two rows being either opposite or alternate to each other. Zooids (Fig. 1, *b*) 1.5–2.0 mm long, directed distally and adherent to the stem. They are unique among the Chrysogorgiidae in possessing a well-developed operculum consisting of eight triangular scales (Fig. 1, *k–n*)

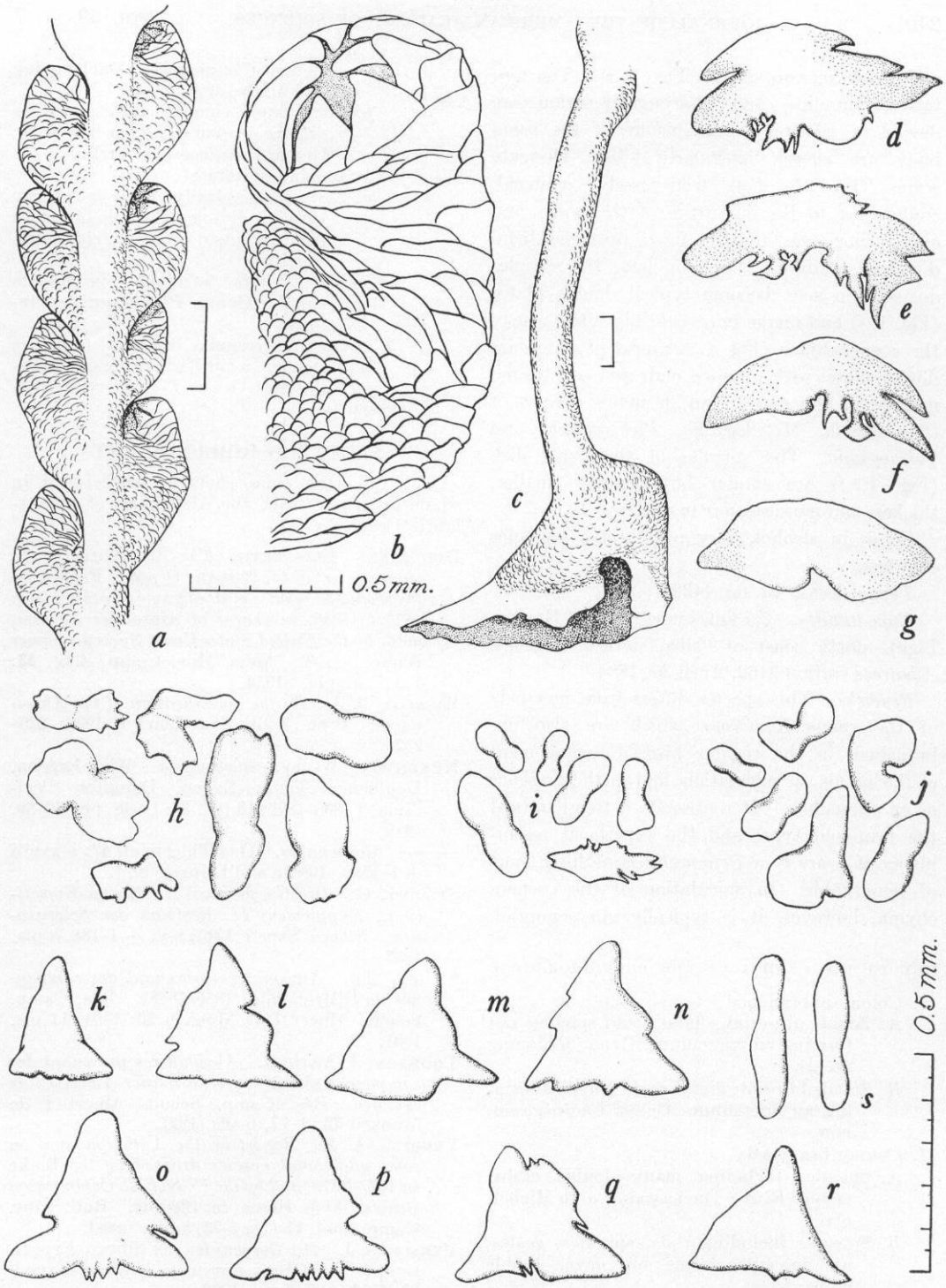

FIG. 1.—*a*, Part of stem, showing biserial arrangement of the zooids (line to right of figure represents 1 mm); *b*, a single zooid, showing arrangement of the operculum and the body scales; *c*, the basal disk and proximal sterile part of the stem (line to right represents 1 mm); *d–g*, scales from the upper part of the zooid body (scale at lower right corner of plate applies to all spicules); *h*, spicules of the coenenchyma, about the middle of the stem; *i*, spicules from the basal part of the zooid; *j*, spicules of the basal disk; *k–r*, the opercular scales; *s*, accessory rods of the operculum.

and a few accessory rods (Fig. 1, *s*). The tentacles, pinnules, and pharyngeal region are devoid of sclerites. The spicules of the zooid body are glassy, irregularly lobed, elongate scales (Fig. 1, *d–g*) transversely arranged, conforming to the curvature of the body, and overlapping one another in a proximal-distal direction. Toward the zooid base the spicules decrease in size, become typical double plates (Fig. 1, *i*) and merge imperceptibly into those of the coenenchyma (Fig. 1, *h*), most of which are double plates with rounded ends and constricted middle, of the sort found in many species of *Chrysogorgia*, *Metallogorgia*, *Pleurogorgia*, and *Trichogorgia*. The spicules of the basal disk (Fig. 1, *j*) are similar but slightly smaller, thicker, and more regular in outline.

Color, in alcohol, very pale brown; spicules colorless.

Type.—U.S.N.M. no. 44220.

Type locality.—2.5 miles northwest of Havana Light, north coast of Cuba, in 387 fathoms. *Albatross* station 2152, April 30, 1884.

Remarks.—This species differs from members of the genus *Radicipes*, which are also unbranched, in the regular biserial arrangement of the zooids, in spiculation, and in the presence of an operculum. It represents a trend toward the primnoid type, and the superficial resemblance it bears to a *Primnoella* is nothing short of remarkable. In spiculation of the coenenchyma, however, it is typically chrysogorgiid.

KEY TO THE GENERA OF THE CHRYSOGORGIIDAE

I. Colony unbranched:
- *A.* Zooids uniserial; distal zooid spicules not forming an operculum: Genus *Radicipes* Stearns.
- *B.* Zooids biserial; distal zooid spicules forming an operculum: Genus *Chalcogorgia*, new.

II. Colony branched:
- *A.* Spicules including many double clubs: Genus *Riisea* Duchassaing and Michelotti.
- *B.* Spicules including rods, spindles, scales, and irregular forms, but never double clubs:
  - *1.* Branching dichotomous beyond main stem:
    - *a.* Main stem sympodial, giving off branches in a spiral around stem: Genus *Chrysogorgia* Duchassaing and Michelotti[2]
    - *b.* Main stem monopodial, branches arising irregularly near its apex: Genus *Metallogorgia* Versluys.
  - *2.* Branching unilateral:
    - *a.* Main stem spirally coiled or spirally twisted, giving off simple branches from its outside: Genus *Iridogorgia* Verrill.
    - *b.* Main stem straight, branchlets simple: Genus *Pleurogorgia* Versluys.
  - *3.* Branching irregular, terminal branches long, slender, whiplike, arising on upper part of stem: Genus *Trichogorgia* Hickson.

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[2] The spiral arrangement is obscure or irregular in some species, but there is never a long monopodial main stem.