ART. XV.—*Descriptions of imperfectly known and new Actinians, with critical notes on other species*, III; by A. E. VERRILL. *Brief Contributions to Zoology from the Museum of Yale College*, No. LX.

Family PARACTIDÆ Hertwig, op. cit., 1882. Andres, op. cit., p. 255, 1884. McMurrich, Proc. U. S. Nat. Mus., xvi, p. 160, Pl., 1893.

Paractidæ + Sideractidæ Daniel., 1890.

Paractidæ + Actinostolidæ Carlgren, Kongl. Svenska. Akad. Handl., xxv, II, pp. 64, 137, 1893.

Entacmæous actinaria provided with a mesodermal sphincter muscle, but destitute of acontia. Mesenteries usually numerous, nearly always with 12 or more pairs perfect, the number and arrangement not always truly hexamerous. The perfect and larger imperfect mesenteries are usually fertile. Column-wall is usually smooth, sometimes with submarginal plications and solid ridges; rarely with low wart-like elevations or small verrucæ, sometimes capable of attaching sand, etc. No actinobranchs. No acrorhagi. No disk-tubercles.

The mesogloea of the wall is usually tough and elastic, thin or thick, often parchment-like or subfibrous, in deep sea forms often thick and coriaceous. Base with an adhesive disk, which is sometimes amplexicaul, embracing permanently the stems of gorgoniæ, etc. Mouth with two siphonoglyphs and numerous lateral folds. Tentacles simple, usually numerous and retractile. Margin generally capable of involution.

This family appears likely to become an extensive one when all the species, whose places in the system are still doubtful, shall have been studied anatomically. At present there is no practical and sure way to distinguish the *Sagartiadæ* from this family except by the presence of *acontia* in the latter, and this is not always a satisfactory test* with preserved specimens. However, the thin, smooth, tough, wall is often a fairly good indication of this family, as is also the large number of perfect

* All the acontia may be ejected and lost by violent contractions, when certain *Sagartiæ* are placed in preservatives, or they may be easily decomposed in poorly preserved specimens. So they are often not to be found in specimens known to have had them in life. On this account it is doubtful whether several of the genera described by Danielssen, 1890, as destitute of *acontia*, belong to *Paractidæ* or *Sagartiadæ*. Of these *Stelidiactis*, *Allantactis*, *Anthosactis*, *Kyathactis*, and *Korenia* are described as having pores or cinclides in the wall (the last has them also in the disk). These genera may, therefore, be sagartians that have lost their acontia. The first three have only 6 pairs of perfect and sterile mesenteries, as is often the case in *Sagartiadæ*; the fourth has 20 perfect pairs; the last has 24 perfect pairs; the base is amplexicaul. His *Sideractis* is octamerous, with 16 perfect pairs of very thin mesenteries, partly fertile; tentacles not retractile, 8 inner ones large; sphincter mesodermal. It probably belongs with *Paractidæ*.

and fertile mesenteries, which are usually thin and have feeble and diffuse longitudinal muscles.

This family now appears to include *Paractis*, *Stomphia*, *Actinostola*, *Actinernus*, *Actinolobopsis*,* *Pycnanthus*, ? *Sideractis*, *Cymbactis* (near *Stomphia*), *Tealidium*, *Paranthus*, ? *Paractinia*, *Kadosactis*, *Phelliopsis*,† nov. (type *P. Panamensis* V. '69), *Alloactis*, nov. (type *A. excavata* Hert.), *Raphactis*, nov., *Synanthus* Ver., *Ammophilactis*, nov. (type *A. rapiformis* Les.).

The last named genus is remarkable for its small base and for having minute adhesive suckers near the margin. It agrees with *Paranthus* in living buried in sand and in its elongated form.

Raphactis, gen. nov. Type *R. nitida* V.

Paractidæ having a short column, with thin wall and submarginal longitudinal plications, with raised folds or solid ridges of mesogloea. Sphincter muscle enlarged distally in a thickened portion of the wall, above which the thin wall can be involuted; below this fold the wall may be smooth, or wrinkled, or slightly warty, but without suckers.

Base either broadly expanded, with thin edges, or amplexicaul and embracing permanently stems of gorgoniæ, etc., and in this case the opposite edges of the same or of different individuals unite by sutures.

Tentacles numerous, rather stout, in several rows, retractile. Mesenteries numerous, 12 or more pairs perfect and fertile; some imperfect ones may also be fertile. Stomodæum short. This genus lacks the pores of the disk and wall described in *Korenia*. *Synanthus* Ver. is closely allied in form and habit; it has a smooth wall and only six pairs of perfect, but fertile, mesenteries.

Raphactis nitida, sp. nov. Figures 18, 22.

Base large, either broadly expanded, with thin edges, or else clasping stems of sponges, hydroids, etc., and in the latter case the opposite lobes may unite together in a close suture; it secretes a tough thin cuticle. Column in contraction low and broad, most of its surface smooth and white in alcohol, often somewhat glossy or, in others, with a parchment-like appearance. The infolded summit is strongly plicated. Toward the contracted summit there is a much thickened fold, usually covered with a series of unequal longitudinally convergent, low, rounded, solid ridges, which vary in number and size, and are

* This new name is proposed for *Actinoloba* Hert., 1882 (*non* Blainv., 1834.) The type is *A. reticulata* (Dana, sp.) of Patagonia, etc.

† This name is proposed for those species of paractids that have been described as *Phelliæ*, on account of the adherent cuticle. They have usually 12 or more pairs of perfect, fertile, and very muscular mesenteries.

often lacking or concealed in the smaller examples; in the larger ones about 24 longer, alternating with shorter. Tentacles of moderate size, thick, tapered, blunt, crowded in five or six rows; in the larger specimens sometimes more than 144 in number; the inner are much longer and stouter than the outer ones. The walls of the tentacles are thick, and uniform. In section the column-wall is generally thin, but tough; toward the collar it becomes gradually much thickened and very firm. Sphincter muscle mesogloæal, imbedded in the thick collar, large, diffuse, club-shaped distally. Mouth large, with two broad shallow siphonoglyphs and about 12 to 14 distinct folds on each side. The siphonoglyphs may lie in the direction of the short axis of the body, or the reverse. Mesenteries regularly hexamerous, in more than four cycles, the fifth usually more or less incomplete; 12 pairs are perfect and fertile and in the larger specimens 16 pairs may join the stomodæum near its upper end; many of the smaller imperfect ones of the fourth cycle are also fertile; those of the fifth cycle are very small except close to the disk and basal membranes where they become larger and some bear small gonads close to the disk. No acontia were found. The stomodæum is very short and broad, strongly plicated within. The gonads are small; those of the perfect mesenteries are close to the base. Septal foramina of large size occur at about mid-height of the column. Diameter of column of the larger examples, contracted in alcohol, .85 inch (20–22^{mm}); of base 1.5 inch (36^{mm}); height of column .75 inch (18^{mm}).

Color in life was not noted.

Station 1043, U. S. Fish Com., Str. Albatross, in 130 fathoms off E. coast U. States, latitude of Delaware Bay.

This species has the habit common to many genera and species of deep-sea *Paractidæ* and *Sagartiadæ* of clasping with its base the stalks of hydroids, gorgoniæ, sponges, etc. When the opposite lobes come in contact they unite in a suture.* So, likewise, do the edges of the bases of adjacent individuals, as shown in fig. 18, A, B, C, and fig. 22.

* Hertwig made this habit a generic and family character, in the case of *Amphianthus* and *Stephanactis*, giving it, undoubtedly, an exaggerated importance, for the same species may live either in this way or attached by a broad base to a shell or stone, as I have repeatedly observed in *Actinauge Verrillii* McMur. (= *nodosa* Ver.) and other species. It is even doubtful whether it should be of generic value in any case. *Stephanactis* was used by me in 1868 for a genus near *Discosoma*, consequently I propose for the group thus named by Hertwig the new name *Stephanauge*. It is near *Actinauge* and *Hormathia*. The type, *Stephanauge abyssicola* (Moseley, 1877) is identical with my *Actinauge nexilis* (1883) and came from the same region. *S. tuberculata* (Hert.) is very similar, if not the same, but it came from the Pacific Ocean, as did *S. hyalonematis* (McMur., 1883), which last is very imperfectly known. The structure of this genus will be discussed later. It differs from *Actinauge* chiefly in having the thick wall smooth below the fold, and perforated by distinct cinclides.

Explanation of cuts.

- FIG. 16. *Paractis nivea* (Less.). Peru, $\times 1\frac{1}{2}$.
 FIG. 17. *Raphactis Caribæa* Ver. on a gorgonian, nat. size, front and side view, contracted. West Indies, 124 fathoms.
 FIG. 18. *Raphactis nitida* Ver., three examples, A, B, C, natural size, united together by sutures; contracted in alcohol.
 FIG. 19. *Sagartia* (*Psammactis*) *modesta* Ver., $\frac{1}{2}$ nat. size, from life, New Haven.
 FIG. 20. *Viatrrix globulifera* D. and M., 1860. $\times 3$. Bermuda.

All the drawings are by A. H. Verrill.

Erratum—In No. II of this series, p. 42, I erroneously referred *Actinia cruentata* Dana to *Bunodactis*, overlooking the anatomical description of McMurrich (Proc. U. S. Nat. Mus., xvi, p. 150, 1893), under the name *Condylactis cruentata*. It should, I now believe, be called *Actinoides cruentata*, as it agrees closely with the typical species of the latter genus. Page 45, *Bunodella stelloides*. Since, the publication of No. II, I have received from Mr. J. E. Duerden, of Jamaica, larger examples of this species. On dissection they were found to have 24 pairs of perfect and fertile mesenteries, thus agreeing with *Bunodactis*. The genus *Bunodella* must, therefore, be dropped, and this species be called *Bunodactis stelloides*. Moreover the name *Bunodella* had already been used by Matthews for a genus of *Eurypteroidea*.