



*To Jangé*

KUNGL. SVENSKA VETENSKAPSAKADEMIENS HANDLINGAR  
FJÄRDE SERIEN. BAND 1. N:o 1.

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A SURVEY OF THE  
PTYCHODACTIARIA, CORALLIMORPHARIA  
AND ACTINIARIA

BY

OSKAR CARLGREN

WITH A PREFACE BY T. A. STEPHENSON

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WITH 4 PLATES

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## Preface.

By T. A. Stephenson.

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In cases where different systems of classification have been worked out by different authors, it seems desirable that these authors should consult together and, if possible, agree on a system acceptable to all of them, or at least set out jointly the points upon which they agree or disagree. Such a procedure would simplify matters for those who wish to use their classifications. In the case of the sea anemones consultation is easy, because during the twentieth century only two authors, Professor Carlgren and myself, have made serious attempts to classify the group. As there have been differences of opinion between us many of which no longer exist, it has been thought suitable that I should explain in this Preface at exactly what position we have now arrived. This should save time for future workers, who will be spared the attempt to trace our differences through the literature of the past thirty years; and it is the more advisable in that the differences have seemed more conspicuous on paper than they really are.

My own attempt to classify the anemones was published in the *Quarterly Journal of Microscopical Science* in the years 1920–22. It was modified considerably in 1935, in the second volume of my book on the *British Sea Anemones*, largely on the basis of further work which had been done by Carlgren and myself during the intervening years. Carlgren's classification, on the other hand, first began to appear in 1891, and has developed gradually ever since, assuming its definitive form in the present paper. This, in its turn, owes part of its development to my own system. In 1942, in his second report on the 'Ingolf' Actiniaria, Carlgren published a detailed critical comment on my views and this, while interesting and valuable, was in part unnecessary, because by that time we were in agreement on many of the points upon which we had originally differed; it did, however, clear up Carlgren's position.

As might be expected, some of the innovations of my 1920–22 classification have proved to be justified and have been incorporated in the scheme here submitted, while others have dropped out. Thus for instance, my removal of the Ptychodactiidae from the Protantheae and creation of a separate group for them has now been carried still further by Carlgren, who recognises them here as an Order equivalent in rank to the Actiniaria; and my removal of the Corallimorphidae and Actinodiscidae (Discosomidae) from the Actiniaria (although at that time I thought of them as Madreporaria) has now been recognised by their establishment as another distinct order, the Corallimorpharia. Again, my removal of the Endocoelactids from the Protantheae and their establishment as a sub-tribe has been carried further by Carlgren, who now makes them a sub-order; my fusion of the families Boloceridae and Bunodidae with the Actiniidae has become a matter of course, and Carlgren has carried it further by including the former Phyllactidae in the Actiniidae also; and my treatment of the 'Stichodactyline' families as groups of the Endomyaria instead of as a series distinct from all other anemones, has also now become part of the system. On the other hand some of the families which I created have proved to be heterogeneous in the form in which I originally understood them, or unnecessary. Examples of these are the Diadumenidae, Myonanthidae

and Actinoscyphiidae. This was partly due to the incomplete information available at the time about the forms in question, and has been much improved by Carlgren, who has now allocated the contained genera more accurately or rendered the families homogeneous by removing aberrant forms from them. In the case of yet other families there has been no disagreement between us at any time, and in some respects our classifications have always been substantially the same. All this is, however, exactly what happens in the course of time to any classification, and in looking back I think that the 1920–22 scheme made a contribution to the advancement of the subject, which is all one can expect of such work. What I no longer consider to be of much value is the evolutionary theory which I connected with my system of classification. I now think that such evolutionary speculation is too uncertain to be likely to yield reliable results, and that although we can no doubt decide a few points connected with Actinian evolution with some degree of confidence, there is a great deal which must remain entirely uncertain. In this connection it is possible that Carlgren's discussion of 1942 comes a good deal nearer the truth than mine of 1920–22.

The last paragraph leads up to the statement that I have now read through all the definitions in the paper which follows, and that I regard the classification put forward in it as the nearest approach which can be made at the present time to a solid and seaworthy system. As a whole it meets both Carlgren's views and my own, and I do not dissent from it in any important particular. There are, of course, minor points which will always be in doubt, as they are partly matters of personal preference. I cannot resist the suspicion, also, that Carlgren has now recognised rather too many genera, that some of them might well be fused, and that the distinctions between them are sometimes very slight. But this, if it is an error, is one in the right direction, because it tends to facilitate identification. These doubts on small points, however, do not affect our substantial agreement on the main issue.

From the present paper it is possible for the first time to get a reliable idea of the *size* of the groups Actiniaria, Corallimorpharia and Ptychodactiaria, which are all 'sea anemones'. In my 1920–22 paper I defined 32 families and 124 genera belonging to these groups. In the present work Carlgren defines 42 families and 200 genera. (In neither case do these numbers include the doubtful genera which have not been assigned definite places in the system.) This reveals the anemones as a fairly small group, and the increase in genera since 1922 is probably not unreasonable in view of the amount of new information which has been contributed between then and now. There are no doubt many forms in existence which are not yet described, but as the serious study of anemones has now continued for nearly 100 years (i. e. since Gosse's book of 1860), it is possible that we have achieved a fair conception of variation in the group.

It is interesting however to note that although the anemones, with their 200 genera, form a small group in one sense (as compared with a vast series such as the Mollusca), yet from an ecological point of view they are thoroughly successful. The anemone population of offshore waters is often plentiful, and the individuals are not only numerous but often large. Between tidemarks anemones are a regularly recurrent feature, especially of typical rocky shores; and in many parts of the world (e. g. South Africa, Pacific coast of North America) certain species are among the most abundant of shore animals, occurring in countless thousands and often forming dense carpets. It is some of the genera of Actiniidae bearing verrucae or vesicles which have developed particularly strongly in this environment, such as *Tealia*, *Bunodactis*, *Bunodosoma* and above all *Anthopleura*. In offshore waters other forms (many of them belonging to the Actinostolidae & Hormathiidae) are characteristic.

In this connection it is also noteworthy that although there are now 42 families and 200 genera of anemones, most of the families contain only a few genera, and most of the genera only a few species: major morphological variation is very great, but the splitting up of genera into species is not so marked. Of the 42 known families, only eight contain more than 6 genera each, and only three contain more than 10 genera, these being the Hormathiidae (15), Actinostolidae (20) and Actiniidae (43). Again, of the known genera, only nineteen contain more than 10 species each, and of these only six contain more than 20. These latter include four with between 20 and 30 species each, and only two with more than 30 — *Bunodactis* with 37 and *Edwardsia* with 53.

The last paragraph leads on to a consideration of the status of *species*, among the anemones, which is a difficult matter. When these are well known and living material is available, they are often readily separated, but in the preserved condition I still doubt whether it is possible, in *all* cases, to distinguish them — though very often it is possible. One misconception must be removed, however. I once put forward, at a meeting of a scientific society, the idea that genera among anemones are often sharply defined whereas it is sometimes much more difficult to recognise species within the genera. A well known zoologist promptly asserted that the entities which I described as 'genera' were in reality equivalent to the 'species' which occur in other animal groups, and that anemone genera are not divisible into species at all! This is emphatically and entirely untrue. In many cases, especially where one can see the animal alive, specific limits are perfectly sharp. There is no doubt whatever, for instance, that *Sagartia elegans* belongs to one species and *S. troglodytes* to another, that *Anthopleura thallia* is perfectly distinct from *A. ballii*, and *Hormathia coronata* from *H. digitata*. It is simply that there are many examples less straightforward than the ones just mentioned, and that the difficulty is increased when the specimens are preserved. If we consider this together with the fact that many authors who have written on anemones have left most imperfect descriptions behind them, we may conclude, I think, that while most of the *genera* defined in the following pages are probably valid, a much smaller number of the 800-odd species listed is likely to be so. If it were possible to make a complete revision of them, the number would probably be considerably reduced. On the other hand, as we have to make allowance for the fact that many species doubtless exist which are as yet undescribed, the number 800 is probably smaller rather than larger than the actual number in existence.

Lastly I should like to include a note on the nematocysts. It was unfortunate from a chronological point of view that the first comprehensive proposal for a classification of these structures in the coelenterates as a whole was proposed by Weill in the year 1930, just *after* I had devoted a good deal of time to a study of Actinian nematocysts from living material (1929). If Weill's paper had appeared *before* my own work, I should have had an opportunity of testing his results which has never since offered, because my recent work has been entirely ecological. As, however, my own work preceded the publication of Weill's, I had not the advantage of the information at his disposal, and took a different point of view; and as far as classification of the types of nematocyst found among anemones was concerned, divided them only, in a preliminary manner, into *penicilli* and *spirulae*. I knew perfectly well that there were several varieties of each of these categories, and made this quite clear in my publications on the subject; but that was as far as it was necessary to go for my immediate purpose, with the state of knowledge as it then was. A more detailed comment on the position will be found in the second volume of my book on the British Sea Anemones, 1935, pp. 2-5; and it will be evident to anyone who studies the text of that volume that the broad classification into *penicilli* and *spirulae*, even though not carried further, was thoroughly useful from the point of view of classification and identification. Since that time, however, it has become evident that Weill's system is a workable one and will be generally adopted; and in his papers of 1940 and 1945 on the cnidae of the Anthozoa Carlgrén has used and developed it, and has added an immense amount of information which was not previously available. My terms *penicilli* & *spirulae* therefore lapse, in favour of macro- & microbasic amastigophors, microbasic p- mastigophors (all these are *penicilli*) and basitrichs and microbasic b- mastigophors (both *spirulae*). It is interesting to note that while I included among my *spirulae* a type of nematocyst (microbasic b- mastigophors) which Weill prefers to classify as a mastigophor, Carlgrén agrees with me (1940, p. 4, footnote) that these nematocysts are probably more closely related genetically to the basitrichs than they are to the mastigophors.

The only thing to be regretted about the developments described above is that while Weill's classification is useful, his terminology, which has inevitably been adopted in the absence of an alternative, is unsatisfactory. It would have been easier to use his system if he had taken the trouble to invent more serviceable names for his types.

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Almost to the end of the last century one included all skeleton-less Anthozoa in the Actiniaria. After the removal of the Ceriantharia and Zoantharia the groups treated in this paper have usually been regarded as of unity though several authors have proposed that the Corallimorpharia (Asclerocorallia) must be transferred to the Madreporaria. Undoubtedly these two groups have many characters in common but there are also several differences, as I have pointed out (1940, 1942, 1943). For instance the Corallimorpharia have atrichs which as yet have not been found in the Madreporaria; and in the former sometimes cellislets forming nematocysts occur in the mesogloea, while these are absent in the latter. As to the Ptychodactiaria there is still more reason to remove this group from the Actiniaria. In fact, to my mind they are the most primitive of the Dodecacorallia (Zoanth-Actiniaria) which I have accordingly divided into 5 orders, Ptychodactiaria, Zoantharia, Madreporaria, Corallimorpharia and Actiniaria (CARLGRÉN 1944).

There are only few previous surveys of the orders handled below. The older systems, those of MILNE-EDWARDS (1857) and ANDRES (1883, 1884), were principally erected on the basis of the external features of the animals. More modern systems, founded principally on anatomical characters, have been given by DELAGE HEROUARD 1901, PAX 1925 and STEPHENSON 1920-22. Of these only that of STEPHENSON is interesting and significant, as it is accompanied by critical comments. In many cases I have made use of

his diagnoses. Several mistakes have, however, been made in all these papers, caused partly by the incomplete anatomical descriptions of many forms which were available at the time. The present paper itself is certainly not free from error, as many species are still incompletely described, and the anatomy of many others is unknown; but I think that nevertheless the system here given is more solid than the preceding ones, because our knowledge of the anatomy of many forms has considerably increased during the last 25 years. Also the use of the different categories of nematocysts for classification has in several cases contributed to a better system. The present paper is intended first of all to give good diagnoses of the families and genera. Several genera are, however, so imperfectly described that their systematic position is very doubtful, wherefore I have omitted them. Further, I have listed the species which it has been possible to register. Sometimes this has been very difficult, especially in the case of certain Sagar-tiidae. I have also included information on the occurrence and distribution of the species. As to the synonyms of the genera and species I have not intended to give a complete list, but, in the case of the species especially, have referred to the more important papers. It seems hardly necessary here to give a survey of the organization, but refers to the works which will be found in "The British Sea-Anemones, Vol. 1" by T. A. Stephenson (1928) and "Actiniaria" Pt. 2 The Ingolf Expedition (1942) by the author of this paper. A list of terms, which only in a few cases differ from those given by STEPHENSON I have thought it advisable to add.

I beg to thank Professor T. A. STEPHENSON heartily for his kindness in reading through the manuscript and writing a preface to this paper.

#### Technical Terms.

*Acontia*: thin threads attached at one end to mesenteries, as a rule below the filaments, while the other end is free. They are laden with extraordinarily numerous nematocysts of variable categories.

*Acontiods*: thick threads attached to mesenteries below the filaments. With few nematocysts belonging to some of the same categories as those in the filaments.

*Acrospheres*: the globular ends of certain tentacles, laden with numerous nematocysts. They are of different categories in the Corallimorpharia and in the Actiniaria and seemingly in Madreporaria also.

*Actinopharynx*: throat, stomodaeum; the tube which leads from the mouth in to the coelenteron.

*Atrichs*: see Nematocysts.

*Basilar muscles*: see Mesenterial muscles.

*Basitrichs*: see Nematocysts.

*Capitulum*: see Scapus.

*Ciliated tracts*: see Filament.

*Cinclides*: small apertures (or organized soft spots which will rupture readily) in the column.

*Circumscribed retractor*: see Mesenterial muscles.

*Circumscribed sphincter*: see Sphincter.

*Cnido-glandular tract*: see Filaments.

*Collar*: see Fosse.

*Column*: body-wall.

*Conchula*: a more or less lobed projection from the upper end of a siphonoglyph.

*Couple*: The 12 oldest mesenteries originate in a different way from those which follow in that they arise bilaterally on opposite sides of the directive axis. Each such "pair" has been called a "couple". The directives, which normally belong to the 12 primary mesenteries, are couples as well as pairs.

*Diffuse retractor*: see Mesenterial muscles.

*Diffuse sphincter*: see Sphincter.

*Directives*: see Mesenterial arrangement.

*Directive axis*: see Orientation of the body.

*Dorsal and Dorso-lateral*: see Orientation of the body.



*Ecto-mesogloal muscles*: muscles which in the main are embedded in the mesogloea (see Plate III).

*Endocoel*: the space between two mesenteries belonging to one and the same pair.

*Endocoelic tentacles*: tentacles the cavities of which communicate with endocoels.

*Endo-mesogloal muscles*: muscles which in the main are embedded in the mesogloea.

*Exocoel*: the space between mesenteries belonging to different pairs.

*Exocoelic tentacles*: tentacles the cavities of which communicate with exocoels.

*Filament*: a thickened rim running along the free border of a mesentery from the end of the actinopharynx (in the case of "perfect mesenteries") downwards. In its lower part the filament is simple, in its upper part usually a triple cord. The lateral bands have been called *ciliated tracts* (streaks), the median band the *cnidoglandular tract* (streak) and this is usually very convoluted below the ciliated tracts. In the Corallimorpharia and the Protantheae the filament is always simple, in the Ptychodactiaria the simple filament is continued distally into a half-funnel formation.

*Fosse*: a circular groove enclosed by a distinct fold, the *parapet* or *collar*, of the column, a little below the tentacles.

*Holotrichs*: see Nematocysts.

*Hoplotelic*: see Nematocysts.

*Imperfect mesenteries*: mesenteries not reaching the actinopharynx.

*Limbus*: the border along which the column joins the base.

*Macrobasic amastigophors*: see Nematocysts.

*Macrobasic mastigophors*: see Nematocysts.

*Macrocnemes*: see Mesenterial arrangement.

*Margin*: the upper edge of the column, just below the roots of the tentacles.

*Marginal spherules*: vesicles situated on the parapet or in the fosse, at least sometimes with an aperture and provided with atrichs, basitrichs and spirocysts.

*Marginal pseudospherules*: vesicles situated at the margin, often with an aperture, and containing basitrichs only.

*Mesenterial arrangement*: The mesenteries are arranged in *pairs*, each consisting of two mesenteries adjacent to one another. One distinguishes between directive pairs, *directives*, which are situated in the directive axis and have their longitudinal muscles (retractors) on their outer sides turned towards the exocoels; and *ordinary pairs*, the longitudinal muscles (retractors) of which are situated on their inner sides, turned towards the endocoels. The directives are always perfect, the other pairs may be perfect or imperfect. Usually the partners of the ordinary pairs are equally developed, but sometimes they may be very different in size. Usually the arrangement of the pairs is six-rayed, *hexamerous*, sometimes eight-rayed, *octamerous*, or ten-rayed, *decamerous*. Irregularities in the arrangement are, however, fairly common in connection with displacement or absence of the directives or dislocation of tentacles. In elongate forms the perfect mesenteries are often strongly differentiated from the imperfect ones. The former, *macrocnemes*, have very strong retractors, gonads and filaments, the latter, *microcnemes*, lack these organs. Intermediates may, however, occur. Sometimes the arrangement of mesenteries is quite different from the type, as in the Minyadidae, Endocoelanthaeae, Exocoelactiidae and some Actinostolidae (see Plate I).

*Mesenterial muscles*: One side of each mesentery is occupied by longitudinal muscles, the other by transverse and *parietobasilar* muscles; the latter usually run obliquely from the column to the pedal disc. In most of the Actiniaria there are also *basilar* muscles running along both sides of the base of the mesentery, close to the pedal disc. The longitudinal muscles are usually more or less concentrated, forming more or less strong *retractors*, of different appearance in cross section. When the muscles are very strongly concentrated and there is only one mesogloal lamella (or a few main lamellae close to each other) issuing from the main lamella of the mesentery one speaks of a *circumscribed retractor*. *Restricted retractors* show about the same degree of concentration, but in this case a number of more scattered muscle lamellae arise from the mesentery. If the retractor is not strongly concentrated we call it *diffuse*. Sometimes, especially in

elongate Athenaria, the longitudinal muscles are very weak apart from the retractor. Close to the body-wall they increase in size and form, together with the parietobasilar muscles (which here run longitudinally) a *parietal* muscle (see Plate III).

*Meso-ectodermal muscles*: muscles which in the main are ectodermal, but small parts of which are imbedded in the mesogloea (see Plate III).

*Mesogloea muscles*: muscles wholly embedded in the mesogloea (see Plate III).

*Meso-endodermal muscles*: muscles which in the main are endodermal, but a small part of which is embedded in the mesogloea.

*Metacnemes*: the mesenteries arising as pairs after the formation of the 12 first mesenteries.

*Microbasic b-mastigophors*: see Nematocysts.

*Microbasic p-mastigophors*: see Nematocysts.

*Microcnemes*: see Mesenterial Arrangement.

*Nematocysts*: stinging capsules the thread of which shows several types of structure. The following categories of nematocysts are present in the Anthozoa: *atrichs*: thread without a differentiated basal shaft and without barbs, smooth; *holotrichs*: thread without a differentiated basal shaft but with barbs along its whole length; *basitrichs*: thread without shaft but with barbs at its base only; *microbasic b-mastigophors*: thread with a shaft, but the demarcation between the shaft and the thread not strongly marked, shaft with barbs; in unexploded capsules the shaft does not show any funnel-shaped formation; *microbasic p-mastigophors*: demarcation between the shaft and the thread strongly marked, shaft with barbs; a funnel-shaped formation in the shaft at the beginning of the distal part of the thread is visible in unexploded capsules; sometimes the thread of the microbasic mastigophors is armed: then it is termed *hoplotelic*; *microbasic amastigophors*: the thread reduced, only the shaft present, at most 3 times as long as the capsule, shaft with barbs, a funnel-shaped formation visible at the end of the shaft in unexploded capsules; *macrobasic amastigophors*: as in the former, but the shaft more than 3 times as long as the capsule; in the unexploded capsule the shaft forms coils (see Plate IV).

*Nematosomes*: globular strongly ciliated, free swimming bodies with numerous nematocysts occurring in the coelenteric cavity of *Nematostella*. Their true nature is unknown.

*Nematospheres*: globular tentacles with numerous basitrichs.

*Nemathybomes*: spheroid invaginations of the columnar ectoderm into the mesogloea laden with numerous nematocysts. They occur in *Edwardsia* and *Isoedwardsia*.

*Orientation of the body*: A typical animal belonging to the groups handled here can be divided into two equivalent halves by a line passing through the endocoels between the directive mesenteries. This line is the *directive axis*. In order to describe the position of the 8 primary mesenteries one uses the arbitrary terms *dorsal* and *ventral* for the two *directive* couples and *dorso-lateral* and *ventro-lateral* for the lateral ones. The ventral directive couple is the one towards which the retractors on the four lateral mesenteries face.

*Palmate sphincter*: see Sphincter.

*Parapet*: see Fosse.

*Parietal muscles*: see Mesenterial muscles.

*Parietobasilar muscles*: see Mesenterial Muscles.

*Perfect mesenteries*: mesenteries attached to the actinopharynx.

*Physa*: the aboral ampullaceous end of certain Athenaria.

*Pinnate sphincter*: see Sphincter.

*Primary tentacles*: the six oldest tentacles.

*Primary mesenteries*: the six oldest pairs of mesenteries.

*Protocnemes*: the first 12 mesenteries which arise as couples.

*Restricted sphincter*: see Sphincter.

*Restricted retractor*: see Retractor.

*Retractors*: see Mesenterial muscles.

*Scapus*: Sometimes the column is externally divisible into regions. The most proximal zone has been called a *physis* but this is an ampullaceous extremity present only in Athenaria. The principal and longest zone of the column or *scapus* is often provided with tenaculi or tubercles. Above the scapus, distally, there is either often a thick-walled *scapulus* or a thin-walled *capitulum*, in certain cases both regions are present the capitulum above the scapulus.

*Scapulus*: see Scapus.

*Siphonoglyphs*: Anatomically differentiated smooth grooves running down the actinopharynx from the mouth to its inner end or beyond this. They are usually connected with directives but sometimes not. Occasionally the siphonoglyph forms a tube separated from the actinopharynx (in *Peachia mira* and *Meta-peachia*).

*Sphincter*: The endodermal circular muscles of the column are often accumulated at or near the margin and form a sphincter which either is *endodermal* or embedded in the mesogloea, when it is called a *mesogloedal* sphincter. Rarely there is a transition between them, an *endo-mesodermal* or *meso-endodermal* sphincter. The endodermal sphincter shows a different appearance in cross section. If it is elongate and broadly attached to the column we speak of a *diffuse* sphincter, if more concentrated a *restricted* one. The most concentrated endodermal sphincter is the *circumscribed* type within which we can distinguish 2 kinds, a *pinnate* with only one main-lamella and a *palmate* with only a few main-lamellae. Occasionally there are two mesogloedal sphincters in the same animal. In the genus *Bolocera* and some allied genera, and in the family Boloceroididae, the base of each tentacle is provided with an endodermal sphincter. A weak endodermal sphincter may also be present to close the cinclides (see Plate II).

*Suckers*: see Verrucae.

*Tenaculi*: more or less solid papillae situated on the column, the ectoderm of which is partly chitinised and provided with an usually strong, sometimes stratified cuticle, to which grains of sand or detritus may adhere.

*Ventral and ventro-lateral*: see Orientation of the body.

*Vesicles*: ampullaceous, non-adhesive evaginations of the column, simple or compound; with more or less numerous nematocysts of various categories.

*Verrucae*: more or less ampullaceous, adhesive evaginations of the column, simple or more rarely compound, with modified ectoderm, without nematocysts in their central part. Rarely, as in *Sagartia*, there is no evagination, but the ectoderm shows same structure as that of the verrucae proper and is adhesive (*suckers*).

## Order Ptychodactiaria.

Anthozoa (Dodecacorallia) with definite base but without basilar muscles. Filaments without ciliated tracts. Distal end of the filaments of the imperfect mesenteries drawn out into two lobes giving this part of the filament the appearance of a bisected funnel. Gonads below the filaments, not enclosed in the mesogloea but stalked, recalling the arrangement of the gonads in the Alcyonaria. Cnidom: spirocysts, atrichs.

### Fam. Ptychodactiidae (Appellöf 1893 p. 15).

Column smooth or with vesicle-like outgrowths and with very weak longitudinal ectodermal muscles. Sphincter very weak or absent. Tentacles simple, few to fairly numerous, not retractile, their longitudinal muscles ectodermal as also those of the oral disc. Actinopharynx very short, little differentiated from the oral disc, or quite well developed, with longitudinal muscles. Siphonoglyphs present, distinct or absent. Perfect pairs of mesenteries 6–12. Mesenteries regularly or more irregularly arranged. Retractors weak. All or almost all mesenteries fertile.

## 2. Genera.

Column smooth . . . *Ptychodactis*.

Column with vesicle like outgrowths . . . *Dactylanthus*.

Genus *Ptychodactis* Appellöf 1893 p. 4.

Ptychodactiidae with short column. Tentacles fairly numerous up to about 120. No sphincter. Actinopharynx short, prolonged into lappets on the larger mesenteries. No distinct siphonoglyphs. Mesenteries irregularly arranged. The mesenteries of the first cycle and usually those of the second perfect. Parietobasilar muscles absent. Proximal part of mesenteries only slightly coalesced.

*P. patula* Appellöf 1893 p. 4, Carlgren 1911 p. 13, 1921 p. 11, 1934 b p. 348, 1940 p. 19, 1942 p. 72, 1945 p. 61. Norway, Trondheim fiord, Malangen, N of Iceland, Alaska, Kotzebue Sound, 50–350 m.

Genus *Dactylanthus* Carlgren 1911 p. 2.

*Cystiactis* p. p. Clubb 1908.

Ptychodactiidae the column of which is provided with 24 vertical rows of vesicle-like outgrowths. Sphincter very weak, diffuse. Tentacles 24 short. Actinopharynx well developed, with two distinct siphonoglyphs and with pocket like prolongations between some of the mesenteries. 12 pairs of mesenteries, six pairs or all of them perfect, all fusing together in the gonadial region in such a way that only small apertures remain in the axis of the animals.

*D. (Cystiactis) antarcticus* Clubb 1908 p. 5. *Dactylanthus* Carlgren 1911 p. 1, 1940 p. 19, Stephenson 1918 a p. 19. Antarctic, Graham Region, Entrance Mc Murdo Bay, Mc Murdo Bay 36–377 m.

## Order Corallimorpharia.

### Asclerocorallia

Anthozoa (Dodecacorallia) with flattened, usually adherent aboral end, without basilar muscles. Column smooth without vesicles, verrucae or spherules, sometimes with weak longitudinal muscles. No sphincter or a weak, diffuse one. Tentacles not retractil, simple or branched, the former often with acrospheres at their distal end, usually arranged in radial series, at least in the case of those communicating with the endocoels, rarely arranged only in alternating cycles. Longitudinal muscles of tentacles and radial muscles of oral disc usually weak, ectodermal. Siphonoglyphs very weak or absent. Mesenteries often irregularly arranged. Perfect mesenteries usually numerous, directives present or not. Retractors and parietobasilar muscles weak. Filaments without ciliated tracts. Gonads at the same level as the filaments. Holotrichs numerous, present especially in the endoderm but also in the ectoderm, spirocysts sometimes very rare or absent. Animals solitary or connected by coenenchyme. Cnidom spirocysts, atrichs, holotrichs, microbasic *b*- and *p*-mastigophors.

#### 3. Families:

I. Tentacles never branched but with acrospheres.

A. Tentacles arranged in alternating cycles, never in radial series, *Sideractiidae*.

B. Tentacles arranged in radial rows at least in the case of those communicating with the stronger endocoels, *Corallimorphidae*.

II. Tentacles without acrospheres, simple or branched, arranged in radial series, all of the same appearance or not. In the latter case the tentacles are usually divisible into marginal and discal tentacles, the latter often branched, *Actinodiscidae*.

Fam. **Sideractiidae** Danielssen 1890 p. 14.

Pedal disc more or less well developed. No sphincter. Tentacles with distinct acrospheres, arranged in cycles, not more than one tentacle to each endo- and exocoel. Spirocysts numerous.

## 2 Genera:

- I. Pedal disc flattened, not cup-like. Body elongate. Tentacles thick and fairly long. . . . . *Sideractis*  
 II. Pedal disc small, cup-like. Body low. Tentacles small . . . . . *Nectactis*.

Genus *Sideractis* Danielssen 1890 p. 14.

Sideractiidae the elongate column and actinopharynx of which are provided with weak ectodermal muscles extending into the pedal disc, the former with spirocysts. Tentacles arranged in cycles hexamerously at least to the stage with 24 tentacles. They are conical, fairly long, the inner considerably longer than the outer ones. Apex of tentacles forming an acrosphere with large nematocysts, peduncle of tentacle with small papilliform elevations which occur, though in smaller numbers on the oral disc and on the distal part of the column. Oral disc conical. Actinopharynx longitudinally sulcated, without differentiated siphonoglyphs. 6 pairs of perfect and fertile mesenteries. 2 pairs of directives. Variable number of weak mesenteries, sterile and without filaments. Parietobasilar muscles weak. Cnidom: spirocysts, atrichs, holotrichs, microbasic *b*- and *p*-mastigophors.

*S. glacialis* Danielssen 1890 p. 14, Carlgrén 1921 p. 6, 1940 p. 19, 1942 p. 72, off Jan Mayen 481 m. Hardangerfiord, Sunde., Drontheim fjord.

Genus *Nectactis* Gravier 1918 p. 18.

Sideractiidae with usually cup-like, small base. Body very low, smooth. Tentacles very short, at the apex distinctly knobbed, up to about 60 in number, arranged near the margin probably in 2 cycles. No discal tentacles. 2 weak siphonoglyphs. Muscles of mesenteries weak. Cnidom: spirocysts, atrichs, holotrichs, microbasic *p*-mastigophors and *b*-mastigophors?

*N. singularis* Gravier 1918 p. 18, 1922 p. 76, Carlgrén 1934 a p. 1 38°54' N-39°54' N 17°57'45''-21°18'45'' W; 4360-5005 m.

Fam. **Corallimorphidae** R. Hertwig 1882 p. 21 (18).

Simple or gregarious Corallimorpharia. Longitudinal muscles in the ectoderm of the column present or absent. Tentacles simple, always provided with acrospheres which may be well developed or weak. More than one tentacle is connected with at least the older endocoels. Endocoelic tentacles in each row variable in number. Spirocysts always present, usually very numerous.

## 3. Genera:

- A. Limit of the well developed acrospheres distinct.  
 a) As a rule only one marginal tentacle and one discal tentacle issue from any one endocoel. No sphincter. Always solitary. Fairly large to large forms . . . . . *Corallimorphus*.  
 b) Endocoelic tentacles 2-5 in each row. Sphincter diffuse or absent. Asexual reproduction common. Small forms often gregarious in habit . . . . . *Corynactis*.  
 AA. Limit of the weak acrospheres not distinct. No distinct sphincter. Asexual reproduction common, resulting, when incomplete, in individuals with up to seven mouths. Often aggregated together in patches . . . . . *Ricordea*.

Genus *Corallimorphus* Moseley 1877 p. 300.

- Corynactis* p. p. Hertwig 1888.  
*Isocorallion* p. p. Carlgren 1900.  
*Chalmersia* p. p. Delage and Herouard 1901.

Medium-sized to fairly large, solitary Corallimorphidae with usually low body and broad oral disc. Tentacles provided at their ends with well developed acrospheres, divisible into discal and marginal tentacles. Usually only one discal and one marginal tentacle arising from one and the same endocoel. Exceptionally a doubling of the discal tentacles may take place over the oldest endocoels. Body-wall thick, usually cartilaginous, with more or less distinct longitudinal muscles. No sphincter. Arrangement of the mesenteries hexamerous but often irregular in the youngest cycles. 2 pairs of directives (always?). Muscles of mesenteries weak. Always solitary. Cnidom: spirocysts, holotrichs, microbasic *p*- and *b*-mastigophors.

Genotype: *C. profundus* Moseley 1877 p. 300, R. Hertwig 1882 p. 28, 1888 p. 9-10. Stephenson 1920 p. 178 32°42' S 78°18' W; 33°4' S 105°5' W; 33°N 118 W; 755-3681 m.

*C. ingens* Gravier 1918 p. 23, 1922 p. 84, Carlgren 1934 p. 4 = ? *C. rigidus* (*stephensoni* Carlgren 1928 p. 128) Stephenson 1920 p. 179 51°19' N 12°20' W; 47°36' N 7°38' W; 38°56'30"-59' N 28°19'43" W; 38°27' N 26°28-30' W; 38°20' N 28°04'45" W; 37°28'30" N 25°31'45" W; 34°59' N 33°1' W; 1165-2865 m.

*C. atlanticus* Carlgren 1934 p. 7 45°26' N 9°20' W; 4700 m.

*C. antarcticus* Carlgren and Stephenson 1929 p. 7 65°6' S 96°13' E, Shollert Channel, Palmer Archipelago, 75°56.2' S 178°35' SW; 118-595 m.

*C. rigidus* Moseley 1877 p. 301, Hertwig 1882 p. 23, 1888 p. 9-10, Carlgren 1928 p. 128, 1943 p. 4, Carlgren and Stephenson 1929 p. 8; *Corynactis* sp. Hertwig 1888 p. 10, *Isocorallium hertwigi* Carlgren 1900 p. 19, 1943 p. 4; *Chalmersia* Delage and Herouard 1901 p. 536. Indian Ocean: 6°44.2' N 49°43.8' E; 6°24.1' N 49°31.6' E; 4°41.9' N 48°38.9' E; 46°46' S 45°31' E. The Pacific: Japan, Kagoshima 1°54' S 146°39'40" E; 4°21' S 129°7' E; Key Isl. 35°55.5' S 134°18' E; 53°55' S 108°35' E (33°37' S 74°43' W 3937 m, perhaps another species); 273-3534 m.

*C. obtectus* Hertwig 1888 p. 9, 53°55' S 108°35' E; 2643 m.

Genus *Corynactis* Allman 1846 p. 147.

- Melactis* Verrill 1868.  
*Draytonia* Duchassaing and Michelotti 1866.  
*Anemonia* p. p. Mc Murrich 1893.

Small Corallimorphidae often forming groups of individuals. Asexual reproduction by longitudinal fission usual. Form of the individuals variable according to state of contraction. Sphincter weak, diffuse. Only a single tentacle communicating with each exocoel. All or most of the endocoelic tentacles arranged in radial rows with 2-5 tentacles in each row. Outer tentacles larger than the inner ones, exocoelic tentacles longest of all. Acrospheres of the tentacles very distinct and provided with numerous nematocysts. Often gregarious. Cnidom: spirocysts, atrichs?, holotrichs, microbasic *b*- and *p*-mastigophors.

Genotype: *C. viridis* Allman 1846 p. 417, Gosse 1860 p. 289, Fischer 1873 p. 234 (8), Jourdan 1880 p. 31, Andres 1880 p. 328, 1883 p. 482 = *allmanni* Cocks 1851 p. 4, Great Britain, West coast of France, the Mediterranean, low water.

*C. bahamensis* Watzl 1922 p. 3. Bahamas Isl. Andros.

*C. parvula* Duchassaing and Michelotti 1860 p. 40, 1866 p. 123 St. Thomas.

*C. (Draytonia) myrcia* Duchassaing and Michelotti 1866 p. 124, *Corynactis* Andres 1883 p. 48, Duerden 1898 p. 449, 1900 p. 181. St. Thomas, Jamaica.

*C. carnea* Studer 1878 p. 542, Mc Murrich 1893 p. 208, Kwietniewski 1896 p. 597, Carlgren 1927 p. 9, 1941 a p. 2-3 = *Anemonia variabilis* Mc Murrich 1893 p. 147. Off Argentina 37°50' S 56°11' W; 38°10' S 56°26'6" W. East Patagonia 42°24' S 61°38'30" W; 78-100 m.

*C. (Melactis) annulata* Verrill 1868 p. 50, *Corynactis* Verrill 1869 p. 74, Carlgren 1938 p. 13, 1941 a p. 1. Inaccessible Archipelago, Cape Province from Port Nolloth to False Bay, intertidal-60 m.

*C. (Entacmea) globulifera* Ehrenberg 1834 p. 39, *Corynactis* Klunzinger 1877 p. 73, Carlgren 1900 p. 20, 1943 p. 7, The Red Sea, Zanzibar, Siam. W of Koh Kut. about 28 m.

- C. hoplites* Haddon and Shackleton 1893 p. 118, Haddon 1898 p. 467. Orman Reef Brother Isl. Mabuig 11-13 m.  
*C. australis* Haddon and Duerden 1896 p. 151 Australia, Port Philip, Sydney.  
*C. haddoni* Farquhar 1898 p. 532, Carlgren 1924 p. 181, New Zealand.  
*C. mollis* Farquhar 1898 p. 534 New Zealand.  
*C. gracilis* Farquhar 1898 p. 534 New Zealand.  
*C. albida* Stuckey 1909 p. 39 New Zealand.  
*C. californica* Carlgren 1936 p. 17, California, Monterey Bay Pacific Grove 11-15 m.  
*C. chilensis* Carlgren 1941 a p. 2 = *C. carnea* Mc Murrich 1904 p. 291, Chile, Calbuco, Guaitecas Isl.

Genus *Ricordea* Duchas. and Mich. 1860 p. 41.

*Heteranthus* Mc Murrich 1889.

Corallimorphidae with often irregular margin. No distinct sphincter. Tentacles short, simple, the distal end with weak acrospheres, containing spirocysts and the same nematocysts as in *Corynactis*. No distinct difference between the dicyclic (?) marginal tentacles and the smaller discal tentacles which are arranged in simple radial rows with 2 to many tentacles in each row. No siphonoglyphs. Directive mesenteries present or absent. Retractors rather weak. Parietobasilar muscles very weak, not folded. Vertical fission common, resulting when incomplete in individuals with up to seven mouths. The individuals often live aggregated in patches. Cnidom: spirocysts, holotrichs (atrichs?), microbasic *p*-mastigophors.

- R. florida* Duchassaing and Michelotti 1860 p. 42, 1866 p. 122, Duerden 1898 p. 452, 1900 p. 156, Pax 1910 p. 219, Watzl 1922 p. 8, Carlgren 1947 p. 6. *Heteranthus* Mc Murrich 1889 p. 47, Bahamas, St. Thomas Jamaica.

Fam. **Actinodiscidae.**

Discosomidae of earlier authors pro parte.

Corallimorpharia of small or ordinary size. Column without longitudinal muscles. Sphincter absent or weak diffuse. Tentacles without acrospheres, simple or dendritic, sometimes rudimentary, arranged in radial rows at least over the endocoels, sometimes also over the exocoels, usually distinctly divisible into marginal and discal tentacles. One, or rarely, more mouths. Actinopharynx with high ridges. Siphonoglyphs, if present, indistinct. Muscles of mesenteries weak. Mesogloea principally homogenous but with cells sometimes also with cell-islets containing holotrichous nematocysts. Spirocysts very rare or usually absent.

5. Genera.

- A. Tentacles not dendritic.
- a) All tentacles small. No naked zone between the marginal and the discal tentacles. Marginal tentacles hardly different externally from the discal tentacles ..... *Actinodiscus*.
  - b) Marginal tentacle delicate, discal tentacles large plump, not dendritic. A distinct naked zone between the discal and marginal tentacles ..... *Orinia*.
- AA. Most of the tentacles dendritic, sometimes not or hardly reaching the surface of oral disc.
- c) Margin of the disc thrown into more or less quadrangular, definite, short lobes. Marginal tentacles absent ..... *Paradiscosoma*.
  - cc) Margin not drawn out into lobes.
  - d) Marginal tentacles simple, delicate, at least most of the discal tentacles dendritic. Sometimes a naked zone between the outermost and the inner discal tentacles. Microbasic *p*-mastigophors of ordinary length, not hoplotelic ..... *Rhodactis*.
  - dd) Marginal tentacles absent (or, if really present, strongly reduced). Microbasic *p*-mastigophors very long, hoplotelic ..... *Metarhodactis*.

Genus *Actinodiscus* Blainville 1830 p. 286.

*Discosoma* Leuckart 1828.

*Discostoma* pp. Ehrenberg 1834, Verrill 1869, 1899.

Actinodiscidae with straight or somewhat irregular, not lobed margin. Sphincter diffuse, very weak or only indicated. Tentacles simple, short, often wart-like, not swollen at their apex, sometimes rudimentary and then not reaching the surface of the oral disc. Marginal tentacles not dicyclic, externally almost agreeing with the discal tentacles but often (always?) histologically differentiated from these. Imperfect longitudinal division resulting in 2 or more mouths does not seem to occur. Cnidom: spirocysts (if present very rare), holotrichs, atrichs, microbasic *p*- and *b*-mastigophors.

Genotype: *A. (Discosoma) nummiiformis* Leuckart in Rüppel 1828 p. 2, *Actinodiscus* Blainville 1830 p. 286, *Discostoma* Ehrenberg 1834 p. 32, Verrill 1869 p. 70, *Discosoma* Klunzinger 1877 p. 82, Simon 1892 p. 92, Carlgren 1900 p. 62, 1943 p. 16, The Red Sea, Zanzibar, Gulf of Siam, Cambodja.

*S. (Discosoma) Yuma* Carlgren 1900 p. 63, Zanzibar.

*A. (Discosoma) Unguja* Carlgren 1900 p. 64, Zanzibar.

*A. (Discosoma) dawydoffi* Carlgren 1943 p. 11, Macclesfield Bank.

*A. (Discostoma) fungiiformis* Verrill 1869 p. 70, Bonin Isl. Port Lloyd.

? *A. (Discosoma) rubra-oris* Saville Kent 1893 p. 151.

Genus *Orinia* Duchassaing and Michelotti 1860 p. 52.

Actinodiscidae with weak diffuse sphincter. Marginal tentacles small, delicate, apparently arranged in a single row but these communicating with the stronger endocoels a little longer than the others. Discal tentacles large, plump, simple, but, in the single known individual, usually appearing as large urn-like outgrowths. Between the marginal and discal tentacles a distinct, broad tentacle-free area.

*O. torpida* Duchassaing and Michelotti 1860 p. 52, 1866 p. 134, Carlgren 1900 p. 60, 1934 a p. 2, Mc Murrich 1905 p. 12, St. Thomas, upper littoral.

Genus *Paradiscosoma* Carlgren 1900 p. 60.

*Isaura* Duchassaing and Michelotti 1860.

Actinodiscidae with the margin thrown into more or less quadrangular, definite, short lobes which are strongly thickened in larger individuals and may be continued as ridges on the outer part of the oral disc. Sphincter diffuse, weak. Marginal tentacles absent. Oral disc with robust, radially arranged, plump projections, those belonging to the older endocoels larger than the others which may be small over the younger compartments. In these projections a main-tentacle grows up which is more or less strongly divided into branches a part only of which may reach the surface of the oral disc and forms very small elevations on the projections. Youngest tentacles simple. No siphonoglyphs. One pair of directives (always?). Retractors and parietobasilar muscles weak. Cnidom: holotrichs, (atrichs?), microbasic *p*- and *b*-mastigophors. Microbasic *p*-mastigophors of usual type.

Genotype: *P. (Isaura) neglecta* Duchassaing and Michelotti 1860 p. 51, *Paradiscosoma* Carlgren 1900 p. 60, 1945 p. 21, 1947 p. 4, Pax 1910 p. 214, Watzl 1922 p. 17, Bahamas, St. Thomas, Jamaica, Haiti.

*P. (Rhodactis) Carlgreni* Watzl 1922 p. 13, *Paradiscosoma* Carlgren 1947 p. 6, Bahamas, Andros.

Genus *Rhodactis* Milne Edwards and Haime 1851.

*Metridium* p. p. Ehrenberg 1834.

*Actinaria* p. p. Deshayes in Lamarck 1837.

*Actinotryx* Duchassaing and Michelotti 1860, 1866.

*Platyzoanthus* Saville Kent 1893.

? *Phialactis* Fowler 1889.

Actinodiscidae with weak, diffuse (or no?) sphincter. Marginal tentacles simple, provided with atrichs, discal tentacles mostly branched, sometimes arising from pits on the disc, all without atrichs, arranged



at least mostly in radial series. Distribution of the discal tentacles sometimes interrupted by a more or less naked zone separating the outmost, few discal tentacles from the numerous inner ones. (Discal tentacles situated outside the naked zone sometimes not developed?) Mesogloea, when thickened, with rather numerous to numerous cells, sometimes collected into small cell-islets, sometimes containing holotrichs. The animals may live massed together in patches. Individuals rarely with two or more mouths. Cnidom: atrichs, holotrichs, microbasic *p*- and *b*-mastigophors. Microbasic *p*-mastigophors rather short and of typical appearance, not hoplotelic.

Genotype: *R. (Metridium) rhodostoma* Ehrenberg 1934 p. 39, *Actinaria* Deshayes in Lamarck 1837, *Rhodactis* Milne Edwards and Haime 1851, p. 12, Milne Edwards 1857 p. 293, Klunzinger 1877 p. 88, Carlgrén 1938 p. 15. The Red Sea, Durban.

*R. (Actinotryx) sancti thomae* Duchassaing and Michelotti 1860 p. 45, 1866 p. 128, Duerden 1898 p. 151, 1900 p. 148, Watzl 1922 p. 10. *Rhodactis* Mc Murrich 1889 p. 42. Bermudas, The Antilles, Jamaica.

*R. inchoata* Carlgrén 1943 p. 13 North Annam, Tourane, Macclesfield Bank, Bay of Nhatrang.

*R. indosinensis* Carlgrén 1943 p. 15 North Annam, Tourane, Cochinchina, Bonin Isl., Great Barrier Reef.

*R. (Platyzoanthus) mussooides* Saville Kent 1893 p. 155, Thursday Isl.

*R. bryoides* Haddon and Shackleton 1893 p. 121, Carlgrén 1943 p. 16, *Actinotryx* Haddon 1898 p. 479, Stephenson 1922 p. 306. S. Annam, Bay of Nhatrang, Cochinchina, Paulo Condore, Java, Murray Isl., Great Barrier Reef, Low. Isl.

*R. howesii* Saville Kent 1893 p. 150. Cleveland Bay, Queensland.

? *R. (Phialactis) neglecta*. Fowler 1889 p. 148. Tahiti.

The species referred to *Actinotryx* may possibly form a subgenus.

#### Genus *Metarhodactis* Carlgrén 1943 p. 18.

Actinodiscidae without spineter and marginal tentacles (or, if really present, strongly reduced). Margin a little crenulate. Tentacles occupying the whole oral disc for the most part branched but simple towards the margin. Microbasic *p*-mastigophors are long, hoplotelic, very numerous in the filaments and arranged palisade-like. Cnidom: holotrichs, microbasic *b*- and *p*-mastigophors.

*M. bonienseis* Carlgrén 1943 p. 18, Bonin Isl.

### Order Actiniaria.

Anthozoa (Dodecacorallia), the proximal end of which is either rounded, physa-like or forms a more or less well-developed, flat pedal disc, without or with basilar muscles. Column smooth or provided with verrucae, tenaculi, vesicles, marginal spherules or pseudospherules or other specialisations of variable structure, often divisible into different regions, sometimes with spirocysts and with nematocyst batteries, rarely with ectodermal muscles. Margin indistinct or distinct, sometimes separated from the tentacles by a more or less developed fosse. Tentacles retractile or not, usually arranged hexamerously in alternating cycles but sometimes in radial series at least in the case of those communicating with the endocoels, usually simple, more rarely knobbed at the apex or branched or provided with papillae, exceptionally absent. Sphincter absent or present, endodermal to mesogloea. Oral disc usually circular, but, sometimes drawn out into lobes of varying appearance. Actinopharynx shorter or longer usually with siphonoglyphs, typically two in number but varying from one to several. Siphonoglyphs usually connected with directive mesenteries, but very exceptionally the single siphonoglyph is more or less wholly separated from the actinopharynx. Pairs of mesenteries usually arranged in cycles, usually 6 + 6 + 12 etc., a variable number of pairs perfect. From the stage with 6 pairs or later the subsequent mesenteries grow either (a) from the pedal disc upwards, or (b) from the oral disc downward, or (c) from the limbus and margin about simultaneously. Retractors of mesenteries of variable appearance from diffuse to circumscribed. Parietobasilar muscles more or less strong, in elongate individuals usually forming a well differentiated parietal muscle

together with the parietal part of the longitudinal mesenterial muscles. Basilar muscles present or absent. Ciliated tracts of the filaments as a rule present. Acontia present or absent. Gonads situated at the same level as the filaments, their distribution variable, occasionally present only on the mesenteries of the last cycle, which sometimes lack filaments. Cnidom: spirocysts, atrichs, holotrichs, microbasic *b*- and *p*-mastigophors, microbasic and macrobasic amastigophors (these types never simultaneously present in any single individual).

### 3. Suborders:

- A. Ciliated tract of the filaments absent. No basilar muscles ..... *Protantheae*.  
 B. Ciliated tracts of the filaments present. With or without basilar muscles.  
 1) Mesenteries, after the development of the first twelve appearing in the lateral endocoels, with their longitudinal muscles oriented as in the directives. No basilar muscles. .... *Endocoelantheae*.  
 2) Mesenteries, after the development of the first twelve appearing in exocoels, as pairs whose longitudinal muscles face one another. With or without basilar muscles. .... *Nynantheae*.

#### Sub-order **Protantheae** Carlgren 1891 p. 88 s. str.

Actiniaria without basilar muscles or ciliated tracts. Column with longitudinal muscles and spirocysts.  
 1 family:

#### Fam. **Gonactiniidae** Carlgren 1893 p. 24.

Protantheae with flattened, disc-like proximal end. Column of the same structure as the tentacles with spirocysts and a more or less strongly developed longitudinal muscle layer, not capable of involution. No distinct sphincter. Tentacles not retractile. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Actinopharynx with longitudinal muscles and often with spirocysts, with weak siphonoglyphs. Mesenteries typically arranged in cycles, each pair, except the directives, with the longitudinal muscles facing each other. 8 mesenteries, the two pairs of directives and on each side 2 single mesenteries whose retractors face the ventral directives, perfect. Owing to asexual reproduction some more mesenteries may be perfect. Gonads usually on all perfect mesenteries. Ciliated tracts of the filaments absent. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

- A. Considerably more mesenteries at the margin than at the base, oral disc wide. All stronger mesenteries fertile. .... *Protanthea*.  
 B. Not more mesenteries at the margin than at the base. Oral and pedal disc of same width. Only some of the perfect mesenteries fertile. .... *Gonactinia*.

#### Genus *Protanthea* Carlgren 1891 p. 81.

Gonactiniidae with broad pedal disc. Column broader at the margin than at the base. Longitudinal muscle layer and nerve-stratum of the column well developed. No sphincter. Tentacles long, numerous, at the base a little constricted, at the apex not swollen. Oral disc wide, conical. Only 8 mesenteries perfect, 12 pairs of mesenteries fertile and with filaments. Weak sterile mesenteries without filaments in the upper part of the body. Retractors weak, diffuse, parietobasilar muscles weak. Cnidom: see the family. A single species:

*P. simplex* Carlgren 1891 p. 81, 1893 p. 24, 1921 p. 2, 1940 p. 16. Skagerak, Northernmost part of Cattegatt; Norway 25-400 m.

#### Genus *Gonactinia* M. Sars 1851 p. 142.

Gonactiniidae with smooth, cylindrical body. Margin not undulated. Column with well developed longitudinal muscles and nerve-stratum. Tentacles rather long, few, not constricted at their base, not swollen

at the apex. Usually 8 mesenteries perfect but in connection with reproduction by transverse fission the number of perfect mesenteries may be a little irregular. Imperfect mesenteries 8, four forming pairs with the perfect mesenteries, and four forming two pairs in the dorsolateral exocoels. Only the lateral perfect mesenteries fertile, the perfect mesenteries and sometimes the fifth couple with filaments. Longitudinal muscles of the mesenteries and the parietobasilar muscles weak. Reproduction by transverse fission. Cnidom: see the family. A single species.

*G. (Actinia) prolifera* M. Sars 1835 p. 3. *Gonactinia* M. Sars 1851 p. 142, Blochmann and Hilger 1888 p. 384, Carlgren 1893 p. 31, 1921 p. 4, 1940 p. 17, Stephenson 1935 p. 25. From Murman coast to Skagerak and Cattegatt, Great Britain, France and probably the Mediterranean.

#### Sub-order **Endocoelanthae** Carlgren 1925 b p. 18.

Actiniaria with well-developed pedal disc but without basilar muscles. Column without vesicles and verrucae, nearly always with spirocysts. Margin tentaculate. No sphincter. Tentacles in variable number, often with their aboral side thickened, either in two alternating cycles or, owing to the curious development of the mesenteries, arranged in a way very different from the normal type, but usually in cycles. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal, with a slight mesogloal tendency. Oral disc sometimes lobed. One siphonoglyph or two. Usually more mesenteries than the directives attached to the siphonoglyph. Arrangement of the mesenteries curious. After the first 12 mesenteries (six couples) are developed, all subsequent pairs appear in the lateral endocoels and have their longitudinal muscles oriented as in the directives. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

To the Endocoelanthae only two families belong.

- 1) Mesenteries divisible into macro- and microcnemes, 6 or 10 pairs of macrocnemes. Retractors of the macrocnemes restricted. One siphonoglyph ..... *Halcuriidae*.
- 2) Mesenteries not divisible into macro- and microcnemes. Retractors of the mesenteries weak, diffuse. 2 siphonoglyphs ..... *Actinernidae*.

#### Fam. **Halcuriidae** Carlgren 1918 p. 24, s. str.

Endocoelanthae with elongate, not lobed body. Column with little groups of nematocysts. Tentacles rather few, up to about 70 in more than two cycles, without basal swellings on their aboral side, their arrangement curious differing from the common type. A single siphonoglyph. Mesenteries divisible into macro- and microcnemes, 6 or 10 pairs of macrocnemes. Some of the microcnemes, however, perfect. Retractors of the macrocnemes rather strong, restricted.

2 genera:

- 1) Macrocnemes 10 pairs ..... *Halcurias*.
2. Macrocnemes 6 » ..... *Carlgrenia*.

#### Genus *Halcurias* Mc Murrich 1893 p. 142.

*Endocoelactis* Carlgren 1897 p. 169.

Halcuriidae with definite but sometimes small base. Body elongate, almost smooth, but often with batteries of nematocysts, not lobed in the distal part. Margin tentaculate or with a parapet. No sphincter. Tentacles up to about 70, arranged in cycles, typically 18 (10 + 8) + 10 + 16 + 8 + 16. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. A single siphonoglyph. Typical arrangement of mesenterial pairs 10 (6 + 4) + 8 + 16. (see Pl. 1 fig. 6.) Macrocnemes 10 pairs, fertile, filamented and with

strongly restricted, more or less reniform retractors. Microcnemes only in the upper part of the body, some of them perfect. Parietobasilar muscles rather well developed to fairly weak. Dioecious. Cnidom see the suborder.

Genotype: *H. pilatus* Mc Murrich 1893 p. 142, 1898 p. 227, North America, Sand Key light, American Shoal 201–212 m.  
*H. Carlgrëni* Mc Murrich 1901 p. 159, *Endocoelactis* sp. Carlgrën 1897 p. 159, 1918 p. 26. Corea Straits; Hirudo Strait; Gote Isl. Kin Shin, China Sea 55–137 m.  
*H. endocoelactis* Stephenson 1918 p. 14, New Zealand E of North Cape, 128 m.  
*H. capensis* Carlgrën 1928 p. 132, 1938 p. 18, South Africa, Agulhas Bank 100–287 m.  
*H. minimus* Carlgrën 1928 p. 134 East of St. Paul 672 m.

#### Genus *Carlgrënia* Stephenson 1918 a. p. 109.

Halcuriidae with distinct base, slight parapet and fosse and no distal lobing. Ectoderm of column, at least in upper part, with nematocyst batteries. No sphincter. Tentacles few. Macrocnemes six pairs, fertile, filamented with strongly restricted, reniform retractors. In the lateral endocoels four pairs of perfect microcnemes which run down the whole length of the body; beyond these first ten pairs (six pairs macrocnemes and four pairs microcnemes) any additional microcnemes are confined to the upper part of the body. Parietobasilar muscles rather weak.

*C. desiderata* Stephenson 1918 a p. 109, SW of Ireland 1247–1333 m.

#### Fam. **Actinernidae** Stephenson 1922 p. 258.

Endocoelantheae with the thick body usually expanded above and then drawn out into lobes which are typically 4 or 8 in number. Sometimes there are small nematocyst batteries in the ectoderm of the column. Tentacles numerous, simple, or thickened on their aboral sides, 2 siphonoglyphs. Mesenteries numerous, not divisible into macro- and microcnemes, many are perfect. The later ones are arranged either cyclically or bilaterally, and the partners of a pair may be equal or unequal. Retractors weak. All stronger mesenteries fertile.

#### 4 Genera:

- 1) Body cylindrical, not lobed above. Column with small nematocyst batteries. Arrangement of mesenteries cyclic ..... *Synhalcurias*.
- 2) Body broader in distal part than in proximal, often lobed above.
  - a) Upper part of the body drawn out into 4 large lobes. Small nematocyst batteries in the column. Arrangement of mesenteries cyclic. Inner tentacles with narrow aboral thickenings. *Isactinernus*.
  - aa) Upper part of the body drawn out into 8 lobes, 4 larger and 4 smaller. No nematocyst batteries. Arrangement of mesenteries cyclic. No thickenings of the aboral sides of the tentacles. *Synactinernus*.
  - aaa) Upper part of the body often lobed and then usually drawn out into 8 more or less distinct lobes. No nematocyst batteries. Tentacles with aboral thickenings. Arrangement of younger mesenteries bilateral in definite zones ..... *Actinernus*.

#### Genus *Synhalcurias* Carlgrën 1914 p. 68.

*Ilyanthopsis* Wasilieff 1908.

Actinernidae with cylindrical body not lobed above. Ectoderm of the column with small nematocyst batteries. No sphincter. Tentacles up to over 100 arranged about as in *Halcurias*. Longitudinal muscles

of tentacles ectodermal, rather weak, radial muscles of oral disc strong, meso-ectodermal, 2 siphonoglyphs. Mesenteries numerous, all perfect in older specimens, their arrangement cyclic but not very regular, the two partners of a pair generally about equally developed. Longitudinal muscles of mesenteries and parietobasilar muscles weak. No basilar muscles. Cnidom: see the suborder.

*S. (Ilyanthopsis) elegans* Wasilieff 1908 p. 8, *Synhalcurias* Carlgren 1914 p. 68, 1918 p. 27. Japan, Sagami Bay; Bonin Isl.; Gote Isl. 110–200 m.

Genus *Isactinernus* Carlgren 1918 p. 29.

Actinernidae with well-developed pedal disc. Column with very small mesogloea papillae, the ectoderm of which forms small nematocyst batteries, cylindrical, in the distal part drawn out into 4 triangular lobes which are able to cover the oral disc and the mouth. No sphincter. Tentacles very short, conical, numerous in at least 2 cycles, largest at the apices of the lobes, the inner with narrow aboral mesogloea thickenings at the base, the outer with slighter or no thickenings. Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc very strong, chiefly ectodermal. 2 siphonoglyphs. Mesogloea of actinopharynx very thick. Numerous perfect mesenteries arranged in cycles, the partners equally developed. Weak retractors in lower parts of older mesenteries, parietobasilar muscles weak. Dioecious. Cnidom: see the suborder.

*I. 4-lobatus* Carlgren 1918 p. 29. Gote Isl. Kagoshima; 32°17' N 128° O, 200 m.

Genus *Synactinernus* Carlgren 1918 p. 30.

Actinernidae with cylindrical body which distally is drawn out into 8 distinct lobes, four larger and four smaller alternating. Column without papillae. No sphincter. Tentacles in at least 2 cycles without distinct mesogloea thickenings, largest at apices of the lobes, numerous. Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc chiefly ectodermal, strong. Two broad siphonoglyphs. At least half of the mesenteries perfect. Perfect mesenteries cyclic in arrangement, beyond them weak mesenteries of unequal size in upper part of the body. Retractors weak, parietobasilar muscles rather well developed.

*S. flavus* Carlgren 1918 p. 31, Gote Island, Kin Shin 137 m.

Genus *Actinernus* Verrill 1879 p. 474.

*Porponia* R. Hertwig 1882 p. 125.

Actinernidae with thick column which expands more or less distally and is often but not always lobed, the lobes usually 8 in number. No sphincter. Tentacles, except the youngest and rarely the inner ones, with aboral thickenings or bridges of varying development which may run up the tentacles almost to their tips. Arrangement of tentacles usually in two cycles, the largest tentacles at the apices of the lobes. Longitudinal muscles of tentacles ectodermal, weak, radial muscles of oral disc ectodermal. 2 well-developed siphonoglyphs. Numerous mesenteries, the older ones developed as usual in the Endocoelanthaeae, after the stage with 20 mesenteries or somewhat later they continue to appear in definite zones in a bilateral way from the outer side of the zone inwards, usually. These mesenteries have the partners of a pair unequal. The longitudinal muscles of mesenteries as well as the parietobasilar muscles are weak. Cnidom: see the suborder.

Genotype: *A. nobilis* Verrill 1879 p. 474, Carlgren 1914 p. 70, 1918 p. 32, 1921 p. 14, Davis Strait; East side of U. S., northern part, Nova Scotia 366–2884 m.

*A. michaelsarsi* Carlgren 1918 p. 33, 45°26' N 9° W 4700 m.

*A. (Porponia) antarcticus* Carlgren 1914 p. 50, *Actinernus* Carlgren 1918 p. 35, 1939 p. 179, Off Coats Land 2579 m, Sholert Isl. Palmer Archipelago 160–335 m.

- A. (Porponia) elongatus* R. Hertwig 1882 p. 111, *Actinernus* Carlgren 1918 p. 33, 42° S 134° E, 4755 m.  
*A. (Porponia) robustus* R. Hertwig 1882 p. 113, *Actinernus* Carlgren 1918 p. 34. Japan 3429 m.

Sub-order **Nynantheae** Carlgren 1899 p. 4.

Actiniaria with a rounded or flat base with or without basilar muscles. Column smooth or with outgrowths of one sort or another, rarely (and then especially in the uppermost part) provided with ectodermal muscles. Sphincter absent or present, endodermal or mesogloal. Tentacles simple or complex, commonly arranged in cycles, sometimes in radial rows. Siphonoglyphs usually attached to directives, rarely to non-directives, when directives are absent. Mesenteries as a rule arranged in cycles, commonly hexamerously. Secondary mesenteries always develop in exocoels. The pairs of non-directives consist of two mesenteries whose retractors face one another, rarely unpaired mesenteries occur. Mesenterial filaments always with ciliated tracts. Holotrichous nematocysts only exceptionally present, and never in the endoderm.

The Nynantheae may be divisible into 3 Tribes:

I. Basilar muscles absent.

- 1) Aboral end of the body rounded, rarely flattened, disc-like. Column rarely with ectodermal muscles and then only in its uppermost part. Muscles of mesenteries strong, retractors usually strongly restricted to circumscribed, parietobasilar muscles usually form a well differentiated parietal muscle together with the columnar part of the longitudinal mesenterial muscles ..... *Athenaria*.
- 2) Aboral end of the body always disc-like, never rounded. Column with longitudinal muscles. Muscles of mesenteries weak ..... *Boloceroidea*.

II. Basilar muscles present ..... *Thenaria*.

Subtribus **Athenaria (Abasilaria)** Carlgren 1899 p. 4 (1921 p. 15).

Nynantheae without basilar muscles. Body as a rule very elongate, more or less vermiform, often divisible into different regions. Aboral end of the body usually rounded being a physa often used for digging, which does sometimes adhere to small objects and then becomes more or less flattened. As a rule no sphincter, but when present this may be endodermal or mesogloal. Tentacles and mesenteries usually few, rarely more than 48, cyclically arranged. Mesenteries as a rule divisible into macro- and microcnemes. Retractors of the macrocnemes usually strongly restricted, reniform, or circumscribed. Parietal part of the longitudinal mesenterial muscles commonly differentiated from the retractors forming a distinct parietal muscle together with the parietobasilar muscles. In the more differentiated genera acontia may appear.

The tribe includes 9 families:

I. Acontia absent.

1) Tentacles present.

- a) No sphincter, or in *Oractis* a weak, diffuse one.
- b) 8 perfect mesenteries and at least 4 imperfect ..... *Edwardsiidae*.
- bb) At least 6 pairs of mesenteries perfect (except *Oractis*).
- c) Inner tentacles longer than the outer ones ..... *Halcampoididae*.
- cc) Inner tentacles shorter than the outer ones. A deep ventral siphonoglyph (*Oractis* has a diffuse sphincter and only 8 perfect mesenteries) ..... *Haloclavidae*.
- aa) Sphincter endodermal, circumscribed. Inner tentacles longer than the outer ones  
*Andresiidae*.
- aaa) Sphincter mesogloal, single or double ..... *Halcampidae*.
- 2) Tentacles reduced. 8 (10) perfect mesenteries ..... *Limnactiniidae*.

## II. Acontia present.

- a) Sphincter absent..... *Haliactiidae*.
- aa) Sphincter present, mesogloal.
- b) 8 perfect mesenteries arranged as the macrocnemes in *Edwardsia*. Acontia with basitrichs only ..... *Octineonidae*.
- bb) 12 perfect mesenteries. Acontia with basitrichs and microbasic amastigophors ..... *Andwakiidae*.

Fam. **Edwardsiidae** Andres 1880 p. 333.

Athenaria with elongate, vermiform body usually divisible at least into two regions, a long scapus provided with a cuticle and a short upper scapulus. Often there is also a rounded, naked physa at the aboral end and a very short, thin capitulum immediately below the tentacles. No sphincter or acontia. Mesenteries divisible into 8 macro- and at least 4 microcnemes. Of the macrocnemes there are two pairs of directives and four lateral mesenteries, two on each side, whose retractors face the ventral directives. Retractors diffuse to strongly restricted. Parietal muscles always distinct.

I have referred *Halcampogeton* and *Synhalcampella*, which previously have been placed in the Halcampoididae to the Edwardsiidae because they have only 8 perfect mesenteries.

## 9 Genera:

- I. Scapus with batteries of nematocysts (nemathybomes) sunk in the mesogloea.
  - a) Physa present, without nemathybomes ..... *Edwardsia*.
  - aa) Physa absent. Aboral end with nemathybomes ..... *Isoedwardsia*.
- II. Scapus with 8 rows of solid papillae forming nematocyst batteries ..... *Halcampogeton*.
- III. Nemathybomes absent.
  - a) Scapus with tenaculi.
  - b) More mesenteries in the upper part than in the lower..... *Paraedwardsia*.
  - bb) Probably some more mesenteries at the base than at the margin ..... *Synhalcampella*.
  - aa) Scapus without tenaculi.
    - c) Inner tentacles longer than the outer ones. Scapus with usually very thick cuticle. Physa absent. Without nematosomes in the coelenteron ..... *Fagesia*.
    - cc) Inner tentacles shorter than the outer ones (in *Drillactis*?). Aboral end physa-like or tapered. Regional division of the column indistinct.
    - d) Microcnemes only in the uppermost part of the body.
    - e) Aboral end physa-like. Body of moderate length. Curious bodies, nematosomes, in the coelenteron..... *Nematostella*.
    - ee) Aboral end often tapered. No nematosomes. Body very elongate, slender ..... *Drillactis*.
    - dd) Microcnemes in the whole body ..... *Metedwardsia*.

Genus *Edwardsia* Quatrefages 1842 p. 68.

*Scolanthus* Gosse 1853.

*Halcampa* p. p. Panceri 1869.

*Edwardsiella* p. p. Andres 1883.

*Edwardsioides* Danielssen 1890.

Body divisible into physa, scapus, scapulus and capitulum; the aboral part, physa, short, ampullaceous, without nemathybomes. Scapus long with batteries of nematocysts (nemathybomes) sunk in the mesogloea. Tentacles at least 12, shorter or longer, the inner shorter than the outer ones. A weak ventral siphonoglyph. 8 perfect mesenteries (macrocnemes) and at least 4 imperfect, very weak ones in the most distal

part of the body (see Pl. 1 fig. 1). Retractors very strong, diffuse to restricted reniform, parietal muscles well developed. Only the 8 perfect mesenteries fertile and with filaments. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors.

Genotype: *E. beautempsi* Quatrefages 1842 p. 69; Faurot 1895 p. 68, France, Chansey Is., Manche, Roscoff, Biscaya Bay, upper littoral.

*E. arctica* Carlgren 1921 p. 39, 1940 c p. 22, arctic, Sea of Japan 5–2300 m.

*E. vegae* Carlgren 1921 p. 53. Arctic Sea of Siberia 16–18 m.

*E. (Edwardsioides) vitrea* Danielssen 1890 p. 100, *Edwardsia* Carlgren 1921 p. 49, E. Greenland, Spitzbergen 9–836 m.

*E. fusca* Danielssen 1890 p. 112, 70°36' N 32°35' E; 271 m.

*E. finmarchica* Carlgren 1921 p. 55. Northern Norway, upper littoral to 36 m.

*E. islandica* Carlgren 1921 p. 47, S. of Iceland 216–326 m.

*E. andresi* Danielssen 1890 p. 106, Carlgren 1921 p. 43, 1933 p. 9. Davis Strait, W. Greenland, Iceland, Spitzbergen, Norway, Northern Norway, Skagerrak 149–600 m.

*E. costata* Danielssen 1890 p. 115, Norway, Skjerstad fjord 481 m.

*E. incerta* Carlgren 1921 p. 48. East-Greenland, 72°28' N 21°48' W, 180 m.

*E. tuberculata* Düben and Koren 1847 p. 267, Carlgren 1921, p. 29, Cattedgatt, Skagerrak, Norway, S. of Iceland, 11–326 m.

*E. norvegica* Carlgren 1942 p. 60, Norway, Drontheim fjord 250–300 m.

*E. longicorais* Carlgren 1921 p. 31 Skagerrak, Cattedgatt 14–35 m?

*E. pallida* Carlgren 1921 p. 35, Skagerakk 14–100 m.

*E. danica* Carlgren 1921 p. 37, Cattedgatt, The Sound, The Belts, Kiel Bay to Mecklenburger Bay, Faroe Isl.? 11–45 m.

*E. (Scolanthus) callimorpha* Gosse 1853 p. 157, 1860 p. 255, Carlgren and Stephenson 1928 p. 6, 20. Stephenson 1935 p. 53 = *E. (Halcompa) claparedi* Panceri 1869, Andres 1880 a, S. England, S. Ireland, Scotland?, France, The Mediterranean, upper littoral.

*E. delapii* Carlgren and Stephenson 1928 p. 9, 33, Stephenson 1935 p. 63, Ireland, Valentia Isl.

*E. callianthus* Rawlinson 1935 p. 129. W. England, Menai Strait, low-water.

*E. tecta* Haddon 1889 p. 329, Carlgren and Stephenson 1928 p. 25, Ireland Nymph Bank C:o Cork, off C:o Kerry 95–146 m.

*E. allmanni* Mc Intosh 1865 p. 394, E. Scotland, Saint Andrews.

*E. goodsiri* Mc Intosh 1865 p. 395, E. Scotland, Saint Andrews.

*E. harassi* Quatrefages 1842 p. 71, France, Chanssey Isl. Manche 2–3 m.

*E. timida* Quatrefages 1842 p. 70, France: Chanssey Isl.

*E. Fischeri* Chevreux and de Guerne, France: Les Glénans, upper littoral.

*E. janthina* Andres 1880 p. 334, Naples, upper littoral.

*E. maroccana* Carlgren 1931 p. 15, Marocco 85 m.

*E. (Actinia) sipunculoides* Stimpson 1853 p. 7, *Edwardsia* Verrill 1864 p. 28, 1922 p. 131, Carlgren 1931 p. 22, ? Torrey 1902 p. 378, South Labrador to Maine 87–117 m. ? Unalaska.

?*E. (Halcompa) sulcata* Verrill 1864 p. 29.

*E. elegans* Verrill 1869 b p. 162, 1922 p. 129, Carlgren 1931 p. 17, Maine, Dog Isl., Bay of Fundy 18–117 m.

*E. sp.* Mark 1884 *Leidyi* Verrill 1893 p. 496, Southern coast of New England. Parasite in the Ctenophor *Mnemiopsis Leidyi*.

*E. horstii* p. p. Pax 1924 p. 94, Carlgren 1931 p. 22, Curaçao.

*E. kameruniensis* Carlgren 1927 b p. 479, Cameroon, Duala Bay.

*E. Sanctae Helenae* Carlgren 1941 p. 1, Saint Helena 47–60 m.

*E. capensis* Carlgren 1938 p. 19, South Africa, False Bay 50 m.

*E. intermedia* Mc Murrich 1893 p. 131, Carlgren 1899 p. 6, 1927 p. 4, South Chile, Terra del Fuego, South Georgia, Graham region 1–223 m.

*E. pudica* Klunzinger 1877 p. 80, Carlgren 1900 p. 46, 1931 p. 18, The Red Sea, Zanzibar; probably = *E. adenensis* Faurot 1895 p. 121, Aden.

*E. tinctoria* Annandale 1915 p. 92, Carlgren 1925 p. 19, India, Chilka Lake, upper littoral.

*E. annamensis* Carlgren 1943 p. 19, North Annam, Cambodia.

*E. japonica* Carlgren 1931 p. 12, Japan Sagami, Misaki 3.5–4.5 m.

*E. octoradiata* Carlgren 1931 p. 13, Japan.

*E. mamillata* Bourne 1916 p. 515, New Guinea.

*E. rugosa* Bourne 1916 p. 516, New Guinea.

*E. vermiformis* Bourne 1916 p. 517, New Guinea.

*E. rekaiyae* Bourne 1916 p. 518, New Guinea.

*E. willeyana* Bourne 1916 p. 519, New Guinea.



- E. gilbertensis* Carlgren 1931 p. 16, Gilbert Isl., Lagan Isl., Taritari, Key Isl. Great Barrier Reef, Low Isles.  
*E. stephensoni* Carlgren n. sp., Great Barrier Reef, Low Isles.  
*E. bocki* Carlgren 1931 p. 7, Fidschi Isl. Viti Levu, Namuka, Bau.  
*E. 12-tentaculata* Carlgren 1931 p. 4, Fidschi Isl. Viti Levu, Namuka, Bau.  
*E. armata* Carlgren 1931 p. 2, Fidschi Isl. Viti Levu.  
*E. tricolor* Stuckey 1908 p. 378, Carlgren 1924 p. 184, probably = *E. elegans* Farquahar 1908 p. 528, New Zealand, Island Bay, Ohio Bay, Cook Strait, Slipper Isl., Masked Isl. Auckland Isl.  
*E. neozelanica* Farquahar 1898 p. 529, New Zealand, Lyall Bay, Ohiro Bay.  
*E. ignota* Stuckey 1909 c p. 379, New Zealand, Island Bay.  
*E. carneola* Verrill 1928 p. 27, Hawaii Isl. Kanai. upper littoral.  
*E. californica* Mc Murrich 1913 p. 551, Carlgren 1936 p. 18, California, Balbao.

Genus *Isoedwardsia* Carlgren 1921 p. 56.

? *Edwardsia* Fischer 1888.

Edwardsiidae with the column divisible into capitulum, scapulus and scapus. Proximal part of the body rounded and, as the other part of the scapus, provided with nemathybomes. Nemathybomes scattered or arranged in several lines. Scapus with a more or less well-developed cuticle. Nematocysts in the cuticle-lacking ectoderm small. Tentacles 16 or more. Siphonoglyph ventral, feebly developed. Mesenteries, retractors and parietal muscles as in *Edwardsia*. Ciliated tracts of the filaments may be discontinuous. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors.

Genotype: *I. ingolji* Carlgren 1921 p. 56, North Atlantic 60°37' N 27°52' W 1505 m.

- I. nidarosiensis* Carlgren 1942 p. 61, Norway, Drontheim fiord 125–150 m.  
*I. mediterranea* Carlgren 1931 p. 24, Messina, Faro, intertidal, Naples.  
 ? *I. (Edwardsia) lucifuga* Fischer 1888 p. 32, 1889 a p. 310, France, Bréhat Isl. 2–3 m.  
*I. curacaoensis* Pax 1924 p. 96, Carlgren 1931 p. 26, Cyraçao.  
*I. ignota* Carlgren 1920 p. 149, Easter Isl. upper littoral.

Genus *Halcampogeton* Carlgren 1937 p. 1.

Edwardsiidae with elongate body divisible into physa, scapus and scapulus (capitulum?). Scapus with 12 longitudinal rows of solid papillae containing very large nematocysts. Tentacles more or less cylindrical, of ordinary length, hexamerously arranged, few (probably 12). No distinct siphonoglyphs. Mesenteries probably never more than six pairs. 8 macrocnemes arranged as the macrocnemes in *Edwardsia* and 4 microcnemes. Not more mesenteries proximally than distally. Retractors of the stronger mesenteries restricted, more or less kidney-like. Parietal muscles strong.

*H. papillosus* Carlgren 1937 p. 1, Northeast of Puerto Rico 274 m.

Genus *Paraedwardsia* Carlgren 1905 p. 158.

- Edwardsia* Düben and Koren 1847, Appellöf 1891.  
*Edwardsiella* Andres 1883.  
*Milne-Edwardsia* Grieg 1913.

Edwardsiidae without physa or with only a weakly developed one. Scapus without nemathybomes but with a more or less well-developed cuticle and scattered tenaculi to which grains of sand are adherent. Nematocysts of the scapus-ectoderm scattered with a tendency to arrange themselves in groups. Nematocysts of scapus and scapulus of about the same size. Inner tentacles longer than the outer ones, now hexamerously, now octomerously arranged. A weak, ventral siphonoglyph. Mesenteries as in *Edwardsia*. Retractors diffuse, fairly restricted, parietal muscles well-developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. arenaria* Carlgren in Nordgaard 1905 p. 158, 1921 p. 69, Skagerakk, Norway Skierstad and Herlö fiord, off Jäderen 231–658 m.

*P. (Edwardsia) sarsii* Düben and Koren 1847 p. 267, *Paraedwardsia* Carlgren 1921 p. 71. = *Edwardsia carnea* Appellöf 1891 p. 4, West Norway 22–183 m.

?? *P. (Edwardsia) cretata* Stimpson 1855 p. 376, Verrill 1868 p. 320, Japan, Kagosima Bay.

#### Genus *Synhalcampa* Carlgren 1921 p. 80.

*Halcampa*, Wyragéwitch 1905 p. 1.

Edwardsiidae with the column divisible into physa, scapus and scapulus. Physa without apertures, scapus probably with tenaculi. No sphincter. Tentacles up to 24 in number, short. Siphonoglyphs indistinct. Only 8 mesenteries, arranged as the macrocnemes in *Edwardsia* perfect and provided with retractors. The fifth and sixth couples weak. Mesenteries probably somewhat more numerous than the tentacles. Only the lateral couples fertile and provided with filaments.

*S. (Halcampa) Oustomovi* Wyragéwitch 1905 p. 1. *Synhalcampa* Carlgren 1921 p. 80. The Black Sea 6–8 m, lives as larva in *Aurelia*.

#### Genus *Fagesia* Delphy 1938 p. 520.

*Edwardsia* Gosse 1856, 1858, 1860 p. p. Verrill 1874.

*Edwardsiella* Andres 1883 p. p.

*Milne-Edwardsia* Carlgren 1892, 1893, 1921.

Edwardsiidae with the column divisible into scapus and scapulus, the former very long and provided with an usually strong, sometimes very thick cuticle. Aboral end rounded, flattened or rarely physa-like. Scapus without nemathybomes and tenaculi, with nematocysts either scattered or arranged in groups. Scapulus often ridged with numerous nematocysts on the ridges. Tentacles 6+6+12 to about 40, the inner longer than the outer ones. A single, ventral siphonoglyph. Mesenteries as in *Edwardsia*. Retractors diffuse, fairly restricted, parietal muscles well developed. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors.

Genotype: *F. (Milne-Edwardsia) loveni* Carlgren 1892 p. 456, 1893 p. 17, 1921 p. 60, *Fagesia* Delphy 1938 p. 520, Skagerakk, Norway 70–623 m.

*F. (Edwardsia) carnea* Gosse 1856 p. 219, 1860 p. 259, *Milne-Edwardsia* Carlgren 1921 p. 62, Carlgren and Stephenson 1928 p. 10, Stephenson 1935 p. 35, *Fagesia* Delphy 1938 p. 520, Cattegatt, Skagerrak, England, Ireland, N. W. France (see Fischer 1887 p. 432, 437), low-water to 22 m.

*F. (Milne-Edwardsia) dixonii* Carlgren 1921 p. 59, Carlgren and Stephenson 1928 p. 12, 27, Stephenson 1935 p. 41, 464, = *Edwardsia timida* p. p. Dixon 1886 p. 100, Ireland, Malahide, low-water.

*F. (Edwardsia) lineata* Verrill 1874 p. 379, N. America, Gay Head, Woods hole region 11–22 m.

#### Genus *Nematostella* Stephenson 1935 p. 43.

*Milne-Edwardsia* p. p. Carlgren 1921.

Edwardsiidae with the column divisible into physa, scapus, scapulus and capitulum, though these regions may be slightly distinguished. Scapus with or without adherent material, without nemathybomes and tenaculi. Tentacles 10–18, the outer longer than the inner. A single, ventral siphonoglyph. Mesenteries as in *Edwardsia*. Retractors in comparison with those of other Edwardsiidae rather weak. Ciliated tracts may be discontinuous. Curious, ciliated, spherical bodies, nematosomes, containing nematocysts occur in the coelenteron, in which they swim about. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *N. vectensis*, Stephenson 1935 p. 44, 406, England, Isle of Wight, in brackish pools.

*N. (Milne-Edwardsia) polaris* Carlgrén 1921 p. 65, *Nematostella* 1942 p. 72, N. Iceland, the White Sea 5–50 m.

*N. (Milne-Edwardsia) nathorsti* Carlgrén 1921 p. 67, arctic 30–1000 m.

*N. pellucida* Crowell 1946 p. 58, Woods Hole, Mill Pond, in brackish water.

Genus *Drillactis* Verrill 1922 p. G. 133.

*Edwardsia* Verrill 1879.

*Halcampa* Andres 1883.

Edwardsiidae with often tapered aboral end. Body very elongate slender. No distinct division into scapus and scapulus (capitulum). Tentacles up to 24, the inner shorter than the outer ones? Macro- and microcnemes as in *Edwardsia*. Probably no nematosomes in the coelenteron. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*D. (Edwardsia) pallida* Verrill 1879 p. 198, *Halcampa* Andres 1883 p. 198, *Drillactis* Verrill 1922 p. G. 133, Provincetown, Mass. in sand, at low-water.

Genus *Metedwardsia* Carlgrén 1947 p. 1.

*Milne-Edwardsia* Uchida 1932.

Edwardsiidae with the body divisible into physa, scapus and capitulum (scapulus?). Scapus and physa slightly differentiated from each other, the former with a thin epidermis (mucus-membrane?) without nemathybomes. No sphincter. Tentacles short, the inner shorter than the outer ones. 8 perfect and fertile mesenteries arranged as the macrocnemes in *Edwardsia*. Several microcnemes. Not more mesenteries distally than proximally. Retractors of macrocnemes reniform to circumscribed. Parietal muscles distinct but weak. No nematosomes in the coelenteron.

*M. (Milne-Edwardsia) akkeshi* Uchida 1932 c p. 571, *Metedwardsia* Carlgrén 1947 p. 1, Japan, Hokkaido, Akkeshi.

Fam. **Halcampoididae** (Appellöf 1896 p. 13).

Athenaria (Abasilaria) with usually elongate body and with the proximal end physa-shaped, rarely flattened. Column sometimes without regional differentiation sometimes divisible into physa, scapus and scapulus. No sphincter. Tentacles few up to about 40, the inner not shorter than the outer ones. A single siphonoglyph or no distinct ones. Perfect pairs of mesenteries variable in number up to 20. Retractors of the perfect mesenteries strong, diffuse to restricted, more or less reniform. Parietal muscles distinct.

8 Genera:

I. The same number of mesenteries proximally and distally.

A. All mesenteries perfect.

1) Column smooth.

a) 6 pairs of mesenteries, all fertile. 2 indistinct siphonoglyphs ..... *Halcampoides*.

aa) 12 pairs of mesenteries, the second cycle sterile. A single siphonoglyph

*Calamactis*.

aaa) 20 pairs of mesenteries, all fertile. A single siphonoglyph ..... *Siphonactinopsis*.

2) Column with modified tenaculi. 7 pairs of mesenteries. A single siphonoglyph

*Scytophorus*.

AA. Mesenteries divisible into macro- and microcnemes. Column regionally differentiated

*Calamactinia*.

II. More mesenteries at the margin than at the limbus. Mesenteries divisible into macro- and microcnemes. At least 4 mesenterial pairs perfect.

- a) Body smooth without regional division ..... *Acthelmis*.
- aa) Body divisible into regions. Scapus with tenaculi.
- b) 6 pairs of macrocnemes ..... *Halcampella*.
- bb) 4 pairs and two single mesenteries perfect, the latter forming pairs with two microcnemes ..... *Pentactinia*.

Genus *Halcampoides* Danielssen 1890 p. 93.

Aegir Danielssen 1887, 1890.

Fenja Danielssen 1887, 1890.

Halcampa, Studer 1878, Andres 1883, Hertwig 1882, 1888, Haddon 1889, Kwietniewski 1896, Appellöf 1896 pp. Pax 1912, 1914.

Halcampomorpha Carlgren 1893, 1900.

Halcampoididae with elongate body and physa-shaped end. Column not distinctly divisible into regions, with two cycles of apertures (cinclides) in the proximal end, smooth, without tenaculi and nematocyst batteries. No sphincter. Tentacles 12, rather long, cylindrical. 2 indistinct siphonoglyphs. Actinopharynx without conchula. Only 6 pairs of perfect and fertile mesenteries. No microcnemes. Retractors strong, restricted to reniform, parietal muscles well-developed. No acontia. Cnidom: spirocysts, basitrichs and microbasic *p*-mastigophors.

*H. (Halcampa) purpurea* Studer 1878 p. 145, Kwietniewski 1896 p. 586, *Halcampoides* Carlgren 1921 p. 82 = *Halcampoides abyssorum* Danielssen 1890 p. 93, *elongatus* Carlgren in Stevens 1912 p. 58, *macroductyla* Pax 1922 p. 75, *stephensoni* Pax 1926 p. 60, *Halcampa clavus* Hertwig 1882 p. 92 (82), *kerquelensis* R. Hertwig 1882 p. 22, Pax 1922 p. 75, *septentrionalis* Pax 1912 a p. 312, *Fenja mirabilis* Danielssen 1887 p. 3, 1890 p. 144, *Aegir frigidus* Danielssen 1887 p. 12, 1890 p. 151, Arctic, subantarctic, antarctic and boreal waters, the Mediterranean, probably cosmopolite, 1-1134 m.

Genus *Calamactis* Carlgren n. gen.

Elongate Halcampoididae with well developed physa. Column smooth, not divisible into regions. No sphincter. Tentacles few, rather short. A single rather well developed siphonoglyph. All 12 pairs of mesenteries perfect and with filaments, the first cycle of mesenteries fertile, the second sterile. Retractors very strong, reniform on all mesenteries. The same number of mesenteries proximally and distally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*C. praelongus* n. sp. Estero de la Luna, Sonora, Mexico.

Genus *Siphonactinopsis* Carlgren 1921 p. 115.

Halcampoididae with the proximal end rounded. Body cylindrical of considerable length, not divisible into regions, smooth, without tenaculi. No sphincter. Tentacles short, conical 40 in number, not bulbously swollen at the apex, the inner tentacles longer than the outer ones. A single, ventral siphonoglyph. Pairs of mesenteries 20 (10+10) all perfect and fertile. Retractors diffuse, band-like. Parietal muscles slightly differentiated. Cnidom: spirocysts (long), basitrichs, microbasic *p*-mastigophors.

*S. laevis* Carlgren 1921 p. 115, 1947 p. 16 Greenland?

Genus *Scytophorus* R. Hertwig 1882 p. 104.

*Peachia* p. p. Pfeffer 1889.

Halcampoididae with elongate body and with physa-like or somewhat flattened aboral end. Column indistinctly divisible into scapus and scapulus. Cuticle developed chiefly on the scapus which is provided

with somewhat modified weak tenaculi more or less visible to the naked eye. No sphincter. Tentacles 14, their longitudinal muscles ectodermal. A single weak, ventral siphonoglyph without conchula. Mesenteries 14, six pairs + one couple; the individuals of the couple have their retractors faced towards the dorsal pairs of directives, wherefore there is seemingly a single pair of directives. All mesenteries perfect, their retractors strong, restricted to kidney-like. Parietal muscles well-developed. As a rule all mesenteries fertile. Ciliated tracts of the filaments may be discontinuous. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *S. striatus* R. Hertwig 1882 p. 104 (93) 52°4' S. 71°22' E, 274 m.

*S. (Peachia) antarcticus* Pfeffer 1889 p. 11; *Scytophorus* Carlgren 1899 p. 7, 1927 p. 11, South Georgia, upper littoral.

#### Genus *Calamactinia* n. gen.

Halcampoididae with the elongate body divisible into scapus and scapulus. Scapus without nematocyst papillae but with a rather thick, easely deciduous cuticle. Sphincter absent. Tentacles rather long up to 24. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 weak siphonoglyphs and 2 pairs of directives. Mesenteries divisible into macro- and microcnemes. 6 pairs of macrocnemes. Same number of mesenteries proximally and distally. Retractors of the macrocnemes restricted to almost circumscribed. Dioecious. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*C. goughiensis* n. sp. SW of Gough Isl., 141-162 m.

#### Genus *Acthelmis* Lütken 1875 p. 186.

Halcampoididae with elongate, smooth body without papillae, not distinctly divisible into regions. Aboral end rounded or somewhat flattened. No sphincter. Tentacles more than 12, not swollen at the apex. Siphonoglyphs indistinct. 6 pairs of perfect and fertile mesenteries with strong, restricted retractors. Sterile microcnemes in the upper part of the body. Parietal muscles weak, elongate. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*A. (Actinia) intestinalis* Fabricius 1780 p. 350, *Acthelmis* Lütken 1875 p. 186, Carlgren 1921 p. 92, West Greenland, upper littoral.

#### Genus *Halcampella* Andres 1883 p. 315.

*Halcampa* Andres 1880 p. p.

Halcampoididae with the elongate body divisible into physa, scapus and scapulus. Physa more or less distinct, scapus with tenaculi. No sphincter. Tentacles short, more numerous than the mesenteries in the aboral part of the body, their longitudinal muscles ectodermal. Radial muscles of oral disc ectodermal to meso-ectodermal. Siphonoglyphs weak. 6 pairs of perfect and fertile mesenteries, 2 pairs of directives. Microcnemes only in the uppermost part of the body. Retractors strong, diffuse, restricted, forming numerous high folds. Parietal muscles rather well developed.

Genotype: *A. (Halcampa) endromitata* Andres 1880 p. 331; 1883 p. 315, Naples.

*H. maxima* R. Hertwig 1888 p. 29, Wasilieff 1908 p. 6, Carlgren 1931 p. 28, Philippine Isl. Zebu, Japan, Bay of Suruga, Sagami 50-180 m.

*H. robusta* Carlgren 1931 p. 30. 37° S. 10° W, depth unknown.

Although we do not know whether there is a sphincter or not in the genotype, I think that *H. maxima* and *robusta* may belong to same genus as *endromitata*. Some notes by ANDRES are in my possession and from

his description of *endromitata* we can state that the body was divisible into 3 regions, physa, scapus and scapulus, and that the scapus may have had tenaculi, as grains of sand adhered to it, moreover that 6 pairs of mesenteries were perfect, 8 mesenteries of which are arranged as the macrocnemes in *Edwardsia* and stronger than the others, and that microcnemes were present only in the uppermost part of the body.

Genus *Pentactinia* Carlgren 1900 a. p. 1106.

Halcampoididae with elongate body divisible into physa, scapus and scapulus. Scapus with tenaculi. No sphincter. Tentacles 20, their longitudinal muscles ectodermal. Radial muscles of oral disc ectodermal. A single, ventral siphonoglyph. Mesenteries 10 pairs of which 5 pairs are macrocnemes, the eight "Edwardsia"-mesenteries + one couple pairing with the dorsolateral protoenemes. The sixth primary ventrolateral couple is represented by two perfect but weak mesenteries without retractors. Four pairs of microcnemes in the dorsolateral and lateral exocoels, only present in the distal part of the body. Retractors of the perfect mesenteries strong, reniform, parietal muscles rather well developed. Filament present only on the 10 stronger mesenteries. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*P. californica* Carlgren 1900 a p. 1106, 1931 p. 33. California, upper littoral.

Fam. **Limnactiniidae** Carlgren 1921 p. 75.

Athenaria (Abasilaria) without tentacles and sphincter. Ectoderm of oral disc very thickened. Perfect mesenteries 8-10. Body elongate, vermiform.

Genus *Limnactinia* Carlgren 1921 p. 75.

Limnactiniidae with the body not divisible into regions. Column smooth, without cuticle and tenaculi. Proximal end rounded, physa-shaped, perforated by apertures. Distal part of the column with spirocysts. No sphincter, no tentacles. Siphonoglyphs indistinct. Mesenteries divisible into macro- and microcnemes. Perfect and fertile mesenteries 8-10 (8 mesenteries arranged as the macrocnemes in *Edwardsia* + sometimes the dorsolateral couple). Retractors of the perfect mesenteries strong, restricted more or less reniform. Parietal muscles rather weak. The long ciliated tracts of the filaments may be discontinuous. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *L. laevis* Carlgren 1921 p. 75, 1939 a p. 4, Skagerrak, Norway, South and west Iceland 35-165 m.

*L. nuda* Carlgren 1927 p. 7, South Georgia, Cumberland Bay 22 m.

Fam. **Haloclavidae** Verrill 1899 p. 41.

Body elongate, aboral end physa-like or forming a physa sometimes broadly adherent in *Mesacmaea*. Column either smooth or with hollow or solid papillae or suckers rarely with cinclides, rarely divisible into physa, scapus and scapulus. No sphincter or rarely a weak or moderately developed diffuse one (in *Mesacmaea* and *Oractis*). Tentacles short, sometimes capitate, usually simple, never numerous, the inner shorter or of same length as the outer ones. A single, ventral, usually very strong siphonoglyph, which is occasionally more or less completely separated from the other part of the actinopharynx, and sometimes drawn out at its oral end into a more or less folded conchula. Perfect pairs of mesenteries varying in number, usually they are all macrocnemes, in *Oractis* only 8 mesenteries are perfect. Retractors usually strong.

7 genera:

- I. Tentacles thickened at their apex forming strong nematocyst batteries (acrospheres), with basitrichs, 10 pairs of mesenteries, all perfect. Cnidom: basitrichs and traces of spirocysts.

- 1) Column with longitudinal rows of ampullaceous papillae ..... *Haloclava*.  
 2) Column with small solid papillae ..... *Anemonactis*.
- II. Tentacles without acrospheres. Cnidom probably always: spirocysts, basitrichs, microbasic *p*-masti-  
 gophors.
- 1) All mesenteries perfect.
- a) Siphonoglyph separated from the actinopharynx, with a conchula; 8 pairs of mesenteries,  
 all perfect ..... *Metapeachia*.  
 aa) Siphonoglyph without conchula, not separated from the actinopharynx.
- b) Column divisible into regions. Arrangement of tentacles regular but very atypical with 7 in  
 the inner cycle. A weak, diffuse sphincter ..... *Mesacmaea*.  
 bb) Column not divisible into regions. No sphincter. Tentacles hexamerously arranged *Harenactis*.
- 2) Mesenteries not all perfect.
- c) Siphonoglyph with a conchula, rarely completely separated from the actinopharynx. No sphinc-  
 ter. 6 pairs perfect and 4 pairs of imperfect mesenteries ..... *Peachia*.  
 cc) Conchula absent. Sphincter rather well developed, diffuse. Only 8 perfect mesenteries arranged  
 as the macronemes in *Edwardsia* ..... *Oractis*.

Genus *Haloclava* Verrill 1899 p. 41.

- ? *Edwardsia* Stimpson 1855.  
*Halcampa* Verrill 1864.  
*Halocampa* Verrill 1865.  
 ? *Eloactis* Verrill 1899.  
*Halcampella* Wasilieff 1908.

Haloclavidae with elongate body and rounded proximal end. Column indistinctly divisible into regions, in its upper part with 20 longitudinal rows of ampullaceous papillae. No sphincter. Tentacles 20 hemispherically swollen at the apex forming strong nematocyst batteries, acrospheres. Inner tentacles shorter than the outer ones. A single well-developed, ventral siphonoglyph without conchula. 10 pairs of mesenteries (6 pairs of the first cycle and 4 of the second, in the lateral and ventrolateral exocoels) all perfect and fertile. Retractors strong, more or less reniform. Parietal muscles well developed. Cnidom: basitrichs and traces of spirocysts.

Genotype: *H. (Actinia) producta* Stimpson 1856 p. 110. *Halcampa* Verrill 1864 p. 30, *Haloclava* Verrill 1899 p. 41, Carlgrén 1921 p. 107 = *Halcampa albida* Verrill 1866 p. 29, North America. South Carolina to Cape Cod.

*H. chinensis* Carlgrén 1931 p. 35 China, Swatow 82 m.

*H. (Halocampa) capensis* Verrill 1865 p. 151, 1868 p. 319, *Eloactis* ? Verrill 1899 p. 41 South Africa, Simons Bay 22 m.

*H. (Edwardsia) brevicornis* Stimpson 1855 p. 376, *Halcampa* Verrill 1868 p. 318; *Eloactis?* Verrill 1899 p. 41-42. South Africa, False Bay 31.5 m.

*H. (Halocampa) Stimpsoni* Verrill 1868 p. 319, 1899 p. 41-42 Hong Kong.

*H. (Halcampella) minuta* Wasilieff 1908 p. 7 Japan, Sagami 20 m.

Owing to the incomplete description it is not easy to decide if the 4 latter species belong to *Haloclava* or to *Anemonactis (Eloactis)*.

Genus *Anemonactis* Andres 1880 p. 329.

- Ilyanthus* Milne Edwards 1857.  
*Halcampa* Pax 1912 p. 311.  
*Eloactis* Andres 1883 p. 464.

Haloclavidae with elongate body and rounded aboral end, perforated by numerous apertures. Column cylindrical with numerous solid papillae, scattered over the whole surface, not distinctly divisible into

regions, in its uppermost part with cinclides. No sphincter. Tentacles 20, forming acrospheres distally, their longitudinal muscles ectodermal. Inner tentacles shorter than the outer ones. Siphonoglyph without conchula. Pairs of mesenteries as well as their muscles as in *Haloclava*. Cnidom: basitrichs and traces of spirocysts.

Genotype: *A. (Ilyanthus) mazelii* Jourdan 1880 p. 41, *Anemonactis* Andres 1880 p. 329, *Eloactis* Andres 1883 p. 464, Faurot 1895, p. 110, Carlgrén 1921 p. 111, Stephenson 1935 p. 91. Cattegatt, Skagerrak, Norway. South England and Ireland, Atlantic coast of France, the Mediterranean 37—648 m; ? Japan Moura Bay. *Eloactis* Uchida 1938 a p. 288.

*A. (Actinia) clavus* Quoy and Gaimard 1833 p. 150, *Halcampa* Pax 1912 a p. 311 Australia.

*A. (Eloactis) australis* Carlgrén 1931 p. 35. Australia, Port Jackson (= *clavus*?). See *Haloclava*!

#### Genus *Metapeachia* Carlgrén 1943 p. 22.

*Peachia* Panikkar 1938.

Haloclavidae with elongate body, physa-like at the aboral end, not distinctly divisible into regions. Column with minute suckers. No sphincter. Tentacles 16 (8+8) the inner, endocoelic, shorter than the outer, exocoelic, not swollen at the apex. Siphonoglyph completely separated from the other parts of the actinopharynx to which it is joined by a strip of the mesogloea, in its uppermost part drawn out in a conchula. Pairs of mesenteries 8 (6 primaries and 2 secondaries in the lateral exocoels), all perfect, fertile and similar. Retractors and parietal muscles about as in *Peachia*. Cnidom: probably spirocysts, basitrichs and microbasic *p*-mastigophors.

*M. (Peachia) tropica* Panikkar 1938 p. 182, *Metapeachia* Carlgrén 1943 p. 22, India, Krusadi Isl., Coast of Madras.

#### Genus *Mesacmaea* Andres 1883 p. 462.

*Ilyanthus* Gosse 1853.

Haloclavidae divisible into physa, scapus and scapulus, physa not distinctly marked off from scapus sometimes ampullaceous, sometimes broadly adherent as a flat base. Margin of scapus sometimes forming a collar. A weak diffuse sphincter. Tentacles simple, few, the inner shorter than the outer ones, very regularly but quite atypically arranged with 7 tentacles in the first cycle. The directive tentacle issuing from the compartment corresponding to the single siphonoglyph belongs to the first cycle, the other directive tentacle to the second. Siphonoglyph without conchula. Same number of mesenteries proximally and distally, all mesenteries perfect, and all or the largest ones fertile. Retractors strong, restricted.

*M. (Ilyanthus) mitchelli*: Gosse 1853 p. 128, 1860 p. 232, Andres 1880 p. 330, Stephenson 1922 a p. 819, 1935 p. 79, *Mesacmaea* Andres 1883 p. 462. South England and Ireland, Isle of Man, France, Roscoff, the Mediterranean, about 30–70 m.

#### Genus *Harenactis* Torrey 1902 p. 384.

Elongate Haloclavidae with a physa-like aboral end which can flatten into a disc. Column smooth with vertical rows of cinclides in its upper part. No sphincter. Tentacles 24, the inner shorter than the outer ones?, their longitudinal muscles ectodermal. A single siphonoglyph without a conchula. All mesenteries macrocnemes. The fifth and sixth couples weaker than the 8 other mesenteries of the first cycle. Only the six primary pairs usually fertile. Retractors and parietal muscles of the older mesenteries strong, the former reniform. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*H. attenuata* Torrey 1902 p. 384, Southern California, False Bay, San Diego, Newport Bay; ? Japan, Mutsu Bay (see Uchida 1938 a p. 289), low-water.



Genus *Peachia* Gosse 1855 p. 270.

- Siphonactinia Danielssen and Koren 1856.  
 Bicedium L. Agassiz 1859 Verrill 1869, Mc Murrich 1913.  
 Philomedusa Müller 1860.  
 Bicediopsis Verrill 1922.  
 Halcampa p. p. Haddon 1887.

Elongate Haloclavidae with a well-developed, rounded aboral body-end perforated by very numerous apertures ("cinclides"). Column indistinctly divisible into regions without tenaculi but for minute adherent areas. No sphincter. Tentacles normally 12, without acrospheres, the inner endocoel-tentacles shorter than the outer exocoel-tentacles. A single very deep siphonoglyph, the oral end of which is drawn out in a more or less lobate conchula, rarely forming a distinct tube separated from the cavity of the actinopharynx by an ectodermal fusion. Pairs of mesenteries 10 (6 + 4 lateral and ventrolateral pairs of second cycle). Only the mesenteries of the first cycle perfect, fertile, with filaments and strong diffuse retractors. Mesenteries of the second cycle only with retractors close to the column. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors. The larvae live parasitically on medusae.

Genotype: *P. hastata* Gosse 1855 p. 271, 1860 p. 235, Haddon 1885 a p. 339, 1888 p. 256 (larva of *Halcampa Chrysanthellum* 1887 p. 473), Faurot 1895 p. 94, Carlgren 1921 p. 100, Stephenson 1935 p. 56; = *undata* Gosse 1858 p. 418, 1860 p. 239 = *triphylla*, Gosse 1860 p. 243, Andres 1883 p. 321 = *tricapitata* Andres 1880 p. 330 = *Philomedusa (Halcampa)* Fultoni Wright, Andres 1883 p. 326. Cattegatt, Skagerrak, North Sea, Great Britannia, Ireland, Atlantic coast of France, the Mediterranean, upper litoral.

- P. (Siphonactinia) boekii*, Danielsson 1856 p. 88; *Peachia* Carlgren 1921 p. 105, Norway, perhaps identical with *hastata*.  
*P. koreni* Mc Murrich 1893 p. 144. 36° S. 56° W. 20 m.  
*P. (Bicedium) parasitica* Agassiz 1859 p. 23, Verrill 1864 p. 31, *Peachia* Carlgren 1906 p. 83, 1921 p. 197; *Siphonactinia* Verrill 1922 p. 124 = *Bicediopsis arctica* Verrill 1922 p. 127, *Bicediopsis tubicola* Verrill 1922 p. 126. Greenland to Cape Cod, Hudson Bay, Alaska, Nunivak Isl.  
*P. quinquecapitata* Mc Murrich 1913 p. 963, Uchida 1932 a p. 318, 1938 a p. 284. British Columbia; Japan Mutsu Bay and other waters; probable = *Bicedium aequoreae* Mc Murrich 1913 p. 967.  
*P. mira* Carlgren 1943 p. 21. North Annam, Lien Chien, Tourane.  
*P. hilli* Wilsmore 1911 p. 39, Australia, New South Wales, Broken Bay 7 m.  
*P. neozelanica* Carlgren 1924 p. 187, New Zealand, Three Kings 119 m.  
*P. carnea* Hutton 1878 p. 275, New Zealand, Dunedin.  
*P. chilensis* Carlgren 1931 p. 37, Chile, Valparaiso, Moliendo.

Genus *Oractis* Mc Murrich 1893 p. 138.

Haloclavidae with smooth body, not divisible into regions and with round, proximal end. Sphincter fairly well developed, endodermal diffuse. Tentacles 20 (10 + 10) the inner (endocoelic) considerably smaller than the outer (exocoelic) ones. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. A single, deep, ventral siphonoglyph. Mesenteries 10 pairs, only 8 of which are perfect and fertile arranged as the macrocnemes in *Edwardsia*, the ventrolateral mesenteries of the second cycle absent. Retractors of mesenteries diffuse, fairly weak. Cnidom: spirocysts, basitrichs and probably microbasic *p*-mastigophors.

*O. diomedae* Mc Murrich 1893 p. 138, Carlgren 1931 p. 43, off California 33°08' N. 118°40' W. 755 m.

I have previously (1931) referred this genus to the family Andresiidae but at the same time noted its near relation to *Peachia*. I think it is better to alter the diagnosis of the family Haloclavidae in such a way that it embraces also species with a rather well developed diffuse sphincter. If so, the genus may go to this family.

Fam. **Andresiidae** Stephenson 1922 p. 264.

Athenaria (Abasilaria) with elongate body, the aboral end physa-like. Sphincter small, endodermal circumscribed. Inner tentacles longer than the outer ones. No differentiation of mesenteries into macro- and microcnemes. Retractors diffuse.

Genus *Andresia* Stephenson 1921 p. 518.

*Ilyanthus* Andres 1880, 1883, Simon 1893, Faurot 1895.

Andresiidae of considerable length with rounded aboral end. Column smooth but with a notched parapet and a fosse at the margin. Sphincter small, circumscribed. Tentacles long, hexamerously arranged, not numerous, the inner longer than the outer ones. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs. 24 pairs of mesenteries, all perfect and fertile. 2 pairs of directives. Retractors diffuse. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*A. (Ilyanthus) parthenopea* Andres 1880 p. 329, 1883 p. 459, Simon 1892 p. 19, Faurot 1895 p. 154, *Andresia* Stephenson 1921 p. 518, 1922 p. 264.

Fam. **Halcampidae** Andres 1883 p. 312.

Athenaria (Abasilaria) commonly with an elongate, cylindrical body, usually divisible into three regions, physa, scapus and capitulum. Scapus often provided with tenaculi or papillae containing numerous nematocysts. Sphincter mesogloal, simple or double. Mesenteries divisible into macro- and microcnemes. Macrocnemes as a rule six pairs; rarely only 8 macrocnemes present arranged in the same way as the perfect mesenteries in *Edwardsia*.

6 genera:

- I. A single, weak sphincter close to the tentacles.
- 1) Column divisible into physa, scapus and capitulum. Scapus with tenaculi.
    - a) More mesenteries than tentacles. 8-12 tentacles..... *Halcampa*.
    - aa) Same number of mesenteries and tentacles. Tentacles more than 12 ..... *Cactosoma*.
  - 2) Column not divisible into regions. Without tenaculi.
    - b) Tentacles 10. 8 mesenteries and the fifth couple perfect. One weak, ventral siphonoglyph  
*Parahalcampa*.
    - bb) Tentacles at least 20. 5 pairs of mesenteries perfect, 2 siphonoglyphs ..... *Halcampaster*.
- II. 2 sphincters distinctly separated from one another.
- c) Column with longitudinal rows of stinging warts. Aboral end physa-like ..... *Mena*.
  - cc) Column divisible into scapus and scapulus, without stinging warts. Aboral end usually flattened adherent ..... *Halianthella*.

Genus *Halcampa* Gosse 1858 p. 418.

*Edwardsia* Danielssen 1861. Lütken 1860, Meyer and Möbius 1863.

*Peachia* p. p. Gosse 1855, Milne-Edwards 1857.

Cylindrical Halcampidae with the body divisible into physa, scapus and capitulum. Scapus long, with tenaculi to which grains of sand are often attached. Capitulum in the sphincter region, with spirocysts and longitudinal muscles. A single very small mesogloal sphincter extending into the bases of tentacles. Tentacles short, 8-12. No distinct siphonoglyphs. 8-12 perfect mesenteries, 2 pairs of directives. A second more or less complete cycle of imperfect mesenteries present. Perfect mesenteries fertile with filaments

and strong, restricted, more or less reniform retractors. More mesenteries than tentacles. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *H. (Actinia) crysanthellum* Peach in Johnston 1847 p. 220, *Peachia* Gosse 1855 p. 271, *Halcompa* Gosse 1858 p. 418, 1860 p. 247, Haddon 1886 p. 1, 1889 p. 335, Faurot 1895 p. 85, Stephenson 1935 p. 69 = *H. andresii* Haddon 1885 p. 396, *arenaria* Haddon 1886 b p. 616. Great Britannia, Ireland, Atlantic coast of France 13–80.5 m, sometimes at the bottom of pools.

*H. (Edwardsia) duodecimcirrata* Sars 1851 p. 142, *Halcompa*, Carlgren 1893 p. 18, 1921 p. 119, 1936 p. 19; = *Edwardsia farinacea* Verrill 1869 b p. 162. *Halcompa* Verrill 1922 p. 122. The Baltic Sea from Kiel Bay to Bornholm, the Belts, the Sound, Cattegat, Skagerak, Norway, Northern part of the United States, Pysh, Washington 9.5–164 m.

*H. arctica* Carlgren 1893 p. 45, 1921 p. 120, 1933 p. 11, arctic waters, North Norway, E. Iceland 5–397 m.

?*H. vegae* Carlgren 1921 p. 122, Behring Sea 32 m.

*H. octocirrata* Carlgren 1927 p. 14, South Georgia, Cumberland Bay 75 m.

*H. capensis* Carlgren 1938 p. 22, South Africa, False Bay 90 m.

#### Genus *Cactosoma* Danielssen 1890 p. 85.

*Phellia* p. p. Danielssen 1890.

*Isophellia* p. p. Carlgren 1900.

*Phelliomorpha* Carlgren 1902.

*Halianthus* Mc Murrich 1904.

*Halcompoides* Stephenson 1918.

Elongate Halcampidae with the column divisible into physa, scapus and capitulum. Physa small, often flattened, not ampullaceous, probably without pores. Scapus with cuticle and tenaculi. Capitulum with scarce spirocysts. Sphincter simple, weak, extending a little into the base of the tentacles. Tentacles always more than 12, short. Siphonoglyphs indistinct. Mesenteries arranged at least in two cycles, divisible into macro- and microcnemes. Only the mesenteries of the first cycle perfect, fertile and with strong reniform to circumscribed retractors. Parietal muscles well developed. All mesenteries extended over the whole length of the column. Same number of tentacles and mesenteries. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *C. abyssorum* Danielssen 1890 p. 82, Carlgren 1921 p. 124, 1942 p. 73; = *Phellia crassa* Danielssen 1890 p. 60, *Isophellia crassa* Carlgren 1900 p. 52, *Phelliomorpha* Carlgren 1902 p. 44. Off Lofoten between Spitzbergen and Lofoten, Greenland 349–836 m.

*C. arenaria* Carlgren 1931 p. 39, 1936 p. 2, California, Monterey and Scorpion Bay 11–14.5 m.

*C. (Halianthus) chilensis* Mc Murrich 1904 p. 223, Chile, Calbuco.

?*C. (Halcompoides) aspera* Stephenson 1918 p. 10, *Halcompa* 1922 p. 252, N of Inaccessible Isl., Mc Murdo Sound 406–441 m.

#### Genus *Parahalcompa* Carlgren 1927 p. 22.

Elongate Halcampidae, not divisible into regions. Aboral end physa-like, perforated by pores. Column smooth, without cuticle or tenaculi, with spirocysts, and longitudinal muscles in the region of the sphincter. Sphincter weak, extending into the bases of the tentacles. Tentacles 10, their longitudinal muscles well developed and ectodermal. A weak, ventral siphonoglyph. 10 pairs of mesenteries, 8 mesenteries arranged as the macrocnemes in *Edwardsia*, and the fifth couple are perfect and fertile, the other mesenteries sterile. More mesenteries than tentacles. Retractors restricted, more or less kidney-like. Parietal muscles well developed, recalling the longitudinal muscles of the microcnemes. Ciliated tracts of the filaments discontinuous. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*P. antarctica* Carlgren 1927 p. 15, Tierra del Fuego, S of Staten Island 36 m.

Genus *Halcampaster* Carlgren 1938 p. 24.

Halcampidae with smooth, cylindrical body without tenaculi, not divisible into regions. Sphincter very weak, mesogloal, close to the tentacles. Tentacles more than 12. Longitudinal muscles of tentacles ectodermal. 2 weak but distinct siphonoglyphs. Mesenteries showing a distinct tendency to pentamerous arrangement, owing to the retardation of the development of a pair of the mesenteries of the first cycle on one side of the directive plane. Only 5 pairs of macrocnemes, the others microcnemes. Mesenteries somewhat more numerous than tentacles. Retractors of the macrocnemes very strong restricted, reniform to almost circumscribed. Parietal muscles not very strong. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*H. teres* Carlgren 1938 p. 24, South Africa, East London, upper littoral.

Genus *Halianthella* Kwietniewski 1896 p. 588.

*Edwardsia* Studer 1878.

*Edwardsiella* Andres 1883.

*Halcampa* p. p. Stephenson 1922.

*Marsupifer* Carlgren 1901.

*Dimyactis* Pax 1922, 1926.

*Rhytidactis* Pax 1922, 1926.

Halcampidae with the body divisible into scapus and scapulus, the former with a cuticle, which is sometimes thin and easily deciduous. Aboral end rarely rounded, as a rule adherent and flattened into the form of a pedal disc, but without basilar muscles. Scapus without batteries of nematocysts. 2 sphincters, the upper rather short, close to the tentacles, the lower long. Tentacles rather long the same in number as the mesenteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 weak siphonoglyphs. 6 pairs of macrocnemes, 2 pairs of directives, 6 pairs of microcnemes. Retractors of the macrocnemes very strong, restricted, reniform to circumscribed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *H. (Edwardsia) kerguelensis* Studer 1878 p. 546, *Edwardsiella* Andres 1883 p. 306, *Halianthella* Kwietniewski 1896 p. 588, Carlgren 1928 p. 136, *Marsupifer valdiviae* Carlgren 1901 p. 475, *Halianthella* Pax 1915 p. 799, *Rhytidactis antarctica* p. p. Pax 1922 p. 85, 1926 p. 29, *Dimyactis duplicata*, Pax 1922 p. 87, 1926 p. 38, *Halcampa* Stephenson 1922 p. 252, Kerguelen, Maquarie Isl. — with brood-pouches.

*H. annularis* Carlgren 1938 p. 25, South Africa, West coast of Cape Peninsula, intertidal — with brood-pouches.

Genus *Mena* Stephenson 1920 a p. 522.

*Phytocoetes* p. p. Annandale 1915.

*Synhalcampa* Carlgren 1921.

*Halianthus* p. p. Annandale 1915.

*Halcampa* p. p. Stephenson 1922.

*Caetosoma* p. p. Carlgren 1921.

Halcampidae with no distinct external differentiation of capitulum, scapus and physa. Aboral end rounded, physa-like, at least sometimes without stinging warts. Other parts of the column, except the region of the upper sphincter, with longitudinal rows of stinging warts, which in the lower part are more scattered. 2 mesogloal sphincters, the one close to the base of the tentacles, the other in the upper region of the column. Tentacles 12 or more, in the contracted state short, but stout and cylindrical. 2 siphonoglyphs and 2 pairs of directives. 6 pairs of macrocnemes, at least 8 mesenteries fertile, microcnemes weak. Retractors of the macrocnemes strong, restricted. Parietal muscles very weak. Cnidom: unknown.

Genotype: *M. (Phytocoetes) chilkaea* Annandale 1915 p. 82, *Mena* Stephenson 1920 a p. 522, Carlgren 1925 p. 9, *Cactosoma* Carlgren 1921, p. 21, India, Chilka Lake.

*M. (Halianthus) limnicola* Annandale 1915 p. 89, *Synhalcampa* Carlgren 1921 p. 21, *Halcampa* p. p. Stephenson 1922 p. 252, *Mena* Carlgren 1925 p. 11, India, Chilka Lake.

Fam. **Haliactiidae** nov. nom.

Athenaria (Abasilaria) with elongate body and rounded or rarely flattened aboral end. Column smooth or provided with suckers, or warts forming nematocyst batteries, without tenaculi. No distinct sphincter. 6 pairs of fertile, filamented macrocnemes which have strong restricted to circumscribed retractors. A variable number of microcnemes which are sterile and devoid of filaments but that those of the second cycle are occasionally fertile and filamented. Acontia present.

I prefer to use Haliactiidae instead of Halcampactiidae as the genus *Halcampactis* is imperfectly known.

6 genera:

- I. Mesenteries not distinctly divisible into macro- and microcnemes in as much as the mesenteries of the second cycle have filaments and are fertile in their upper parts. Column smooth. Aboral end physalid-like (or flattened) ..... *Haliactis*.
- II. Mesenteries distinctly divisible into macro- and microcnemes.
  - 1) The same number of mesenteries proximally and distally. Column with a deciduous cuticle and minute suckers in its upper part. 6 pairs of macro- and 6 of microcnemes .... *Halcampactis*.
  - 2) Mesenteries more numerous distally than proximally. Column without cuticle but with rows of cinclides. Body more or less distinctly divisible into physa, scapus and capitulum. A variable number of microcnemes.
    - a) Oral disc thrown into very distinct lobes. Column with stinging warts ..... *Pelocoetes*.
    - aa) Oral disc not lobed
    - b) Scapus with nematocyst batteries ..... *Stephensonactis*.
    - bb) Scapus without nematocyst batteries.
    - c) Tentacles and acontia typically arranged ..... *Phytocoetes*.
    - cc) Tentacles and acontia atypically arranged, the youngest tentacles situated nearer the mouth than the next youngest. Several acontia appearing on each macrocneme ... *Phytocoetopsis*.

Genus *Haliactis* Carlgren 1921 p. 128.

*Acthelmis* p. p. Carlgren 1921.

Haliactiidae usually with rounded aboral end. Column not divisible into regions, smooth. No sphincter. Tentacles rather numerous, short, the inner longer than the outer ones. Two weak siphonoglyphs and two pairs of directives. 6 pairs of perfect, filamented mesenteries with strong restricted retractors, imperfect mesenteries in cycles, without retractors and as a rule without filaments and gonads; but the mesenteries of the second cycle may have filaments and gonads in their uppermost part. Parietal muscles elongate. Acontia present, their nematocysts basitrichs and microbasic amastigophors. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

*H. arctica* Carlgren 1921 p. 128, 1942 p. 73 = *Acthelmis schaudinni* Carlgren 1921 p. 95, Arctic waters.

Genus *Halcampactis* Farquhar 1898 p. 530.

Haliactiidae with rounded aboral end. Column with minute papillae ("suckers") in its upper part, with a deciduous cuticle. No sharply defined sphincter. Six pairs of macrocnemes and six pairs of microcnemes. The same number of mesenteries proximally and distally.

Genotype: *H. mirabilis* Farquhar 1898 p. 530, New Zealand, Wellington.

*H. dubia* Stuckey 1909 p. 387, New Zealand, Island Bay.

Genus *Pelocoetes* Annandale 1915 p. 85.

Metridium Annandale 1907.

Haliactiidae with very elongate, vermiform body. Column divisible into physa, scapus and capitulum or not. Capitulum with spirocysts, scapus with longitudinal rows of stinging warts or spots. Cinclides in the upper part of the column, arranged in longitudinal rows. No distinct sphincter. Uppermost part of the capitulum and the oral disc thrown out into 6 long outgrowths or pedicels each bifurcating two or three times. Most of tentacles placed in groups at the distal end of the pedicels. Actinophorynx long. 2 siphonoglyphs. Mesenteries divisible into macro- and microcnemes. Macrocnemes 6 pairs, microcnemes in several cycles. Mesenteries more numerous distally than proximally. Retractors of macrocnemes reniform to more diffuse. Parietal muscles rather weak to weak. Acontia long but slender, with basitrichs and microbasic amastigophors? (penicilli). Cnidom: spirocysts, basitrichs, microbasic amastigophors? and probably microbasic *p*-mastigophors.

Genotype: *Pelocoetes exul* Annandale 1915 p. 86, Carlgrén 1925 p. 16, Panikkar 1939 p. 670, *P. (Metridium) schillerianum* var. *exul*. Annandale 1907 p. 48, Gangetic delta, Chilka Lake and Madras. Brack-water.

*P. minima* Panikkar 1939 p. 678, Bay of Bengal, Madras.

Genus *Stephensonactis* Panikkar 1936 p. 231.

Haliactiidae with long, vermiform body, distinctly divisible into three regions, a more or less physa-like base, a broader scapus provided with rows of cinclides and with nematocysts arranged in groups, and a narrow capitulum. No sphincter. Tentacles arranged in 5–6 cycles. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs. Mesenteries divisible into macro- and microcnemes, more numerous distally than proximally. 6 pairs of macrocnemes. Retractors of the macrocnemes as those of *Phytocoetopsis*, parietal muscles rather well developed. Acontia thick, long, arranged in the usual manner, with basitrichs and probably microbasic amastigophors (“penicilli”).

*S. ornata* Panikkar 1936 p. 232, India, Madras, Bombay, Vembanad Lake, Travancore, Cochin; brackish water.

Genus *Phytocoetes* Annandale 1915 p. 78.

Metridium p. p. Annandale 1907.

Haliactiidae with elongate body not divisible into regions. Proximal end physa-like. Column smooth, with rows of cinclides in its upper part. Sphincter absent. Tentacles long, the inner longer than the outer ones. Oral disc not divided into lobes. Mesenteries divisible into macro- and microcnemes, more numerous distally than proximally. 6 pairs of macrocnemes, microcnemes in variable number. Retractors of the macrocnemes restricted to circumscribed. Parietal muscles weak. Acontia few, only on the older macrocnemes, with basitrichs and probably microbasic amastigophors (penicilli).

*P. gangeticus* Annandale 1915 p. 79, Carlgrén 1925 p. 15, Panikkar 1937 p. 395 = *Metridium schillerianum* var. *exul* p. p. Annandale 1907, p. 48, India, Gangetic delta, Madras, Cochin, brack-water.

Genus *Phytocoetopsis* Panikkar 1936 p. 230.

Haliactiidae with long, vermiform body divisible into 3 indistinct regions, a more or less physa-like base, a scapus provided with longitudinal rows of cinclides and a capitulum. No sphincter. Tentacles numerous,

those of the last cycles atypically arranged in as much as the youngest tentacles are situated nearer the mouth than the next youngest. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Mesenteries divisible into macro- and microcnemes, more numerous at the margin than at the base. 6 pairs of perfect mesenteries with retractors, filaments, gonads and acontia, microcnemes without these organs. Retractors strong, restricted, more or less reniform. Acontia well developed, atypically arranged in as much as several may arise from each macrocneme. Acontia with basitrichs and probably microbasic amastigophors (penicilli).

*P. Ramunni* Panikkar 1936 p. 231, India, Madras, brack-water.

Fam. **Octineonidae** Fowler 1894 p. 16.

Athenaria with flattened base. Sphincter mesogloal. Mesenteries divisible into macro- and microcnemes. Retractors of macrocnemes very strong, circumscribed. Acontia present containing only basitrichs.

Genus *Octineon* (Moseley) Fowler 1894 p. 461.

*Ammodiscus* Carpenter 1871.

Octineonidae with flat, broad pedal disc without basilar muscles and conical body, the upper part of which is often raised as a cylinder from a lower one. Column divisible into scapus and scapulus, the former with a cuticle, sometimes incrustated with sand, as also is the pedal disc. Ectoderm of scapus showing a tendency to reduction in certain places. Sphincter mesogloal, long. Tentacles few, hexamerously arranged, rather weak, capable of involution. Siphonoglyphs indistinct. Only 8 mesenteries, arranged as the macrocnemes of *Edwardsia* are perfect, fertile, with filaments, acontia and pinnate circumscribed retractors; the fifth and sixth couples, forming pairs with the lateral macrocnemes, are stronger than the mesenteries of the second cycle but of the same appearance. Very numerous mesenteries only in the proximal part of the body. Parietobasilar muscles broad but weak, their innermost part forming a fold on the macrocnemes. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *O. lindahli* (Carpenter) Fowler 1894 p. 461, Carlgren 1921 p. 132, 1931 p. 40, South coast of Spain, Cape Vincent, Cadiz 415-706 m.

*O. suecicum* Carlgren 1940 p. 59, 1942 p. 65, Sweden, Skagerak 60-70 m.

Fam. **Andwakiidae** (Danielssen 1890 p. 86).

Athenaria (Abasilaria) with elongate, cylindrical body, divisible into physa, scapus and capitulum. Physa rounded but may be flattened. Scapus sometimes with cinclides. Sphincter mesogloal, long, usually very strong. Mesenteries more or less distinctly divisible into macro- and microcnemes. Not more than 6 pairs of perfect mesenteries, which are fertile and have well developed filaments, strong retractors and acontia. Acontia with basitrichs and microbasic amastigophors.

2 Genera:

- I. The same number of mesenteries distally and proximally. Scapus with tenaculi . . . . *Andwakia*  
 II. More mesenteries distally than proximally. Column smooth, without tenaculi . . . . *Syndwakia*

Genus *Andwakia* Danielssen 1890 p. 92.

? *Capneopsis* Duch. & Mich. 1866.

? *Ilyactis* Andres 1880, 1883.

Andwakiidae with the column divisible into physa, scapus and capitulum. Physa small, sometimes flattened. Scapus with tenaculi. Capitulum without spirocysts. Sphincter elongate, mesogloal, usually

very strong. Tentacles more than 12. Mesenteries divisible into macro- and microcnemes sometimes, however, indistinctly so, in as much as the oldest microcnemes may have the cnidoglandular tract of a filament and acontia. The same number of mesenteries distally and proximally. 5-6 perfect and fertile pairs of mesenteries with very strong restricted (reniform) to circumscribed retractors. Microcnemes without retractors. Acontia usually few in number. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *A. mirabilis* Danielssen 1890 p. 86, Carlgren 1921 p. 134, Norway, Sogne- and Hjalte-fiords 183-278 m.  
*A. parva* Carlgren 1940 p. 60, 1942, p. 62, Skagerak, Väderö Isl. 60-70 m.  
*A. bonienseis* Carlgren 1943 p. 23, Bonin Isl. upper littoral.  
*A. insignis* nov. sp. Gulf of California.

I have included *Ilyactis* with a query as synonymous with *Andwakia* as the two genera have many characters in common. I am able to complete the description given by Andres 1883 p. 338 from some notes made by him. A diagnosis of his genus shows the following features: Column divisible into physa, scapus and capitulum. Physa rounded, sometimes flattened, scapus with a deciduous cuticle, incrustated with sand. Tentacles short, conical, hexamerously arranged, few (48). Two well developed siphonoglyphs, 24 pairs of mesenteries, 2 pairs of directives. 6 pairs of perfect and fertile mesenteries with well developed filaments, restricted retractors and acontia. Mesenteries of the second cycle probably sterile with weak filaments, those of the third cycle sterile and with a trace of filaments. The same number of mesenteries distally and proximally. — If the sphincter is mesogloal the two genera seem to be identical but if so the name *Andwakia* will become a synonym of *Ilyactis* (*Ilyactis torquata* Andres 1880 p. 326, 1883 p. 338, Naples). Probably *Octophellia* Andres (1883) with the species *O. (Phellia) timida* (Andres 1880 p. 327, 1883 p. 328) belongs to this family. Also *Capneopsis* Duch. Mich. is possibly synonymous with *Andwakia*.

#### Genus *Synandwakia* Carlgren 1947 p. 2.

*Andwakia* Uchida 1932, 1938.

*Andwakiidae* with the body divisible into physa, scapus and capitulum. Scapus smooth, without tenaculi but with cinclides, capitulum very short. Sphincter mesogloal, small, situated at the margin. Tentacles rather numerous. 2 siphonoglyphs. Mesenteries distinctly divisible into macro- and microcnemes, 6 pairs perfect and fertile. More mesenteries at the margin than at the physa. Retractors of the macrocnemes strong, somewhat restricted. Parietal muscles rather weak. Acontia few.

*S. (Andwakia) Hozawai* Uchida 1932 b p. 394, 1938 p. 291, *Synandwakia* Carlgren 1947 p. 2, Japan, Asamushi Bay.

The place of this genus is somewhat doubtful as the categories of the nematocysts of the acontia are unknown.

### Tribus **Boloceroidaria** Carlgren 1924 a p. 19.

Nynantheae without basilar muscles. Aboral end of the body not physa-like. Longitudinal muscles and sometimes spirocysts in the ectoderm of the column. No distinct sphincter. Perfect pairs of mesenteries usually few, 6 or (especially in the case of asexual propagation) rather more. Longitudinal muscles of mesenteries weak.

2 families:

- I. Tentacles typically arranged provided with sphincters at their bases..... *Boloceroididae*.  
 II. Tentacles atypically arranged, without sphincters at their bases ..... *Nevadneidae*.



Fam. **Boloceroididae** Carlgren 1924 a p. 17.

Boloceroidaria with broad pedal disc, without basilar muscles. Column smooth, without outgrowths, or with outgrowths in its lower part. Ectodermal longitudinal muscles in the whole column. Margin tentaculate, sphincter absent. Tentacles not retractil, easily deciduous, each with an endodermal sphincter at its base by the contraction of which it may be thrown off, with or without stinging spots. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. No distinct siphonoglyphs. 6 perfect pairs of mesenteries, or sometimes more especially if the species propagates asexually. Muscles of the mesenteries weak. No differentiation into macro- and microcnemes. Gonads develop from the mesenteries of the first cycle.

## 3 Genera:

I. Column smooth. Asexual reproduction from the oral disc and tentacles.

1) Column with spirocysts in its ectoderm. All stronger mesenteries, apart from the directives, fertile ..... *Boloceroides*.

2) Column without spirocysts. 6 to 8 pairs of perfect usually sterile mesenteries.... *Boloceractis*.

II. Lower part of the column with spheroidal, simple or compound vesicles. Asexual reproduction may occur from the base ..... *Bunodeopsis*.

Genus *Boloceroides* Carlgren 1899 a p. 43.

*Bolocera* Kwietniewski 1898.

*Gonactinia* Okada 1926.

*Nectothela* Verrill 1928.

Boloceroididae with smooth column without outgrowths. The whole column with spirocysts and well developed longitudinal muscles. Tentacles without stinging spots, the inner very long, the outer considerably shorter. No sphincter. All mesenteries, apart from the directives, fertile. More mesenteries distally than proximally. Monoecious or dioecious. Asexual reproduction from oral disc and tentacles. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors. microbasic amastigophors. The species are able to swim by movements of the tentacles.

Genotype: *B. (Bolocera) mc murrichi* Kwietniewski 1898 p. 394; *Boloceroides* Carlgren 1899 a p. 43, 1900 p. 16 (36), Uchida 1938 p. 627. *Gonactinia* Okada 1926 p. 482, probably = *B. hermafroditica* Carlgren 1900 p. 18 (38). The Red Sea, Suez Canal, Zanzibar, Mosambique, Ambon, Sharks Bay South West Australia, Bonin Isl., Japan, pacific coasts of Honsyu and Kynsyu.

*B. (Nectothela) liliae* Verrill 1928 p. 14, Hawaii Isl. (probably identical with *mc murrichi*).

Genus *Boloceractis* Panikkar 1937 a p. 76.

Column smooth, broader in the distal part than in the proximal, without spirocysts. Tentacles as in *Boloceroides*. Siphonoglyphs distinct, variable in number. Mesenteries more numerous distally than proximally. 6-8 perfect pairs of mesenteries, which usually are sterile, imperfect mesenteries fertile. Asexual reproduction from oral disc and tentacles. The species is able to swim by movements of the tentacles.

*B. gopalayi* Panikkar 1937 a p. 76, India, Madras, Travancore, Astamudi Lake, brackish waters.

Uchida (1938 p. 627, 634) is of the opinion that *B. gopalayi* is identical with *Boloceroides*.

Genus *Bunodeopsis* Andres 1880 p. 315.

*Tetractis* Goette 1897.

*Viatrix* Verrill 1899.

Boloceroididae with thin column which in its lower part is provided with simple, spheroidal or compound vesicles, sessile or stalked, and containing microbasic amastigophors. Upper part of column, capitulum,

smooth. A weak longitudinal musculature in the column as well as in the actinopharynx. Sphincter absent or indistinct diffuse. Tentacles long, with stinging spots, deciduous by contraction of the endodermal sphincter at their base, their longitudinal muscles ectodermal. No distinct siphonoglyphs. Number of perfect mesenteries variable about 4–20 pairs probably owing to asexual reproduction from the base. Muscles of mesenteries weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *B. strumosa* Andres 1880 p. 315, 1883 p. 236, Duerden 1897 p. 11, Carlgrén 1924 a p. 5 = *Tetractis jonica* Goette 1897 p. 355, the Mediterranean, upper littoral.

*B. antillensis* Duerden 1897 p. 7, 1898 p. 455, 1902 p. 455, Jamaica, shallow water.

*B. (Viatris?) globulifera* Verrill 1899 p. 146, 1900 p. 559, Duerden 1902 a p. 298, Pax 1924 a p. 100. *B. n. sp.* Duerden 1898 p. 456, Jamaica, Bermudas Isl. Curaçao.

*B. sp.* Panikkar 1937 a p. 84, India, Madras.

*B. sp. commensal* with *Melia tesselata* see Duerden 1905 p. 494–495, Mauritius, Seychelles Isl., Hawaii Isl.

*B. australis* Haddon 1898 p. 435 Albany Pass, Cape York 18 m (possibly a young *Alicia*).

### Fam. **Nevadneidae** Carlgrén 1925 p. 3.

Boloceroidea, the column of which has longitudinal muscles at least in its upper part, but is devoid of spirocysts. Margin tentaculate. No sphincter. Tentacles not deciduous, atypically arranged, without sphincters at their bases. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Weak siphonoglyphs. More than 6 pairs of perfect mesenteries. No differentiation into macro- and microcnemes. 6 first pairs of mesenteries usually sterile. Muscles of mesenteries weak. Origin of the youngest mesenteries and tentacles diverging from the usual type.

Genus *Nevadne* Stephenson 1922 p. 263.

*Gyrostoma* Annandale 1915.

Nevadneidae with small pedal disc and elongate body, broader in the distal part than in the proximal. Column smooth, but its nematocysts arranged in small groups. The outermost exocoelic tentacles are the largest. Mesenteries of the youngest cycle doubled, as a result of an extraordinary increase in the outermost tentacles, accompanied by the origin of an exocoelic tentacle and thereafter of an endocoelic one on either side of each outermost tentacle. As a rule only the mesenteries of the second cycle are fertile, but traces of gonads may occur on some mesenteries of the first cycle.

*N. (Gyrostoma) glauca* Annandale 1915 p. 70, *Nevadne* Stephenson 1922 p. 264, Carlgrén 1925 p. 3, Panikkar 1937 b p. 372, India, Chilka Lake, brackish water.

### Tribe **Thenaria** Carlgrén 1899 p. 9.

Nyantheae with basilar muscles. Aboral end flattened and usually adherent, distinctly differentiated from the column. Bodywall of variable appearance, sometimes divisible into different regions; often with verrucae, marginal spherules or pseudospherules, vesicles or other protuberances. Sphincter usually endodermal or mesogloal, but sometimes there is no sphincter. Tentacles and mesenteries usually numerous, the former cyclically or radially arranged. Mesenteries rarely differentiated into macro- and microcnemes. Retractors weak or strong, rarely circumscribed. Acontia present or absent.

Stephenson (1921 p. 541) did not accept the subtribe Thenaria proposed by me, but divided the genera belonging to this group at once into two, Endomyaria and Mesomyaria, the latter including also the genera

provided with acontia. As, however, some genera with acontia have no sphincter, it became necessary to set the genera with acontia apart, in a group of equal rank with the Endo- and Mesomyaria (see Stephenson 1935 pp. 28–9). But as I have pointed out several times, it is very doubtful whether the three groups include genera which are always genetically related to each other. For instance the family Aliciidae has certainly nothing to do with the other Endomyaria, but its origin may be found in the subtribe Boloceroi-daria. The Mesomyaria also is, to my mind, not a genetically homogenous group, because the mesogloal sphincter may sometimes have arisen directly from undifferentiated endodermal circular muscles of the column, sometimes from an already differentiated endodermal sphincter. That an endodermal sphincter can in fact become transformed into a more or less mesogloal one can be seen in *Isosisyoniis alba* (CARLGRÉN 1927 p. 54). I have now examined smaller specimens of this species and find that they have an endodermal aggregate sphincter. The Acontiaria also is probably not homogeneous. In support of this opinion the genus *Nemanthus* gives an instance. At the place where the acontia occur in this genus, organs have appeared which are partly different in structure from acontia. If, therefore, I retain these groups, it is for practical reasons and is only a provisional arrangement.

- I. Families having no acontia. Sphincter endodermal or absent; exceptionally there is a meso-endodermal to endo-mesogloal sphincter ..... *Endomyaria*.
- II. Families having a mesogloal sphincter but no acontia ..... *Mesomyaria*.
- III. Families provided with acontia or acontiid organs. Sphincter commonly mesogloal but sometimes absent ..... *Acontiaria*.

Sub-tribe **Endomyaria** Stephenson 1921 p. 541.

Thenaria without sphincter or with an endodermal one, which occasionally shows a strong tendency to be more or less mesogloal. No acontia.

10 families:

- I. Tentacles arranged in cycles, never more than one tentacle communicating with each endo- and exocoel.
  - 1) Column with vesicles containing macrobasal amastigophors. No sphincter ..... *Aliciidae*.
  - 2) Column without vesicles. Mesenteries divisible into macro- and microcnemes ..... *Condylanthidae*.
  - 3) Column sometimes with vesicles which, however, never have macrobasal amastigophors. With or without marginal spherules, which always have atrichs. Mesenteries never divisible into macro- and microcnemes. Sphincter usually endodermal but sometimes absent ..... *Actiniidae*.
- II. More than one tentacle communicating with each stronger endocoel, and sometimes with each stronger exocoel too. Exceptionally some of the tentacles are arranged in cycles and others in radiating rows.
  - 1) Oral disc thrown into permanent arms or lobes which are arranged cyclically. The arms or lobes bear the tentacles.
    - a) Arms large, from few to 48 in number bearing branched tentacles. Tentacles not transformed into nematospheres ..... *Actinodendridae*.
    - aa) Lobes shorter bearing (a) branched tentacles and (b) nematospheres .... *Thalassianthidae*.
  - 2) Oral disc never running out into permanent lobes or arms. Tentacles not cyclically arranged.
    - a) More than one tentacle communicating with each stronger endo- and exocoel.
    - b) 2–4 (6) tentacles communicating with each endocoel, 2–3 with each exocoel. 1 siphonoglyph. Sphincter strong, circumscribed. Base of typical appearance ..... *Aurelianidae*.
    - bb) Many tentacles in communication with each stronger endo- and exocoel.
    - c) 1 siphonoglyph. Sphincter circumscribed. Endocoels much larger than the exocoels, giving an appearance as if there were many directives. Aboral end invaginated so that only a slight opening is visible ..... *Minyadidae*.

- cc) 2 siphonoglyphs. Sphincter very weak, diffuse. Retractors diffuse. Mesenteries regularly arranged. Base not invaginated ..... *Homostichanthidae*.  
 aa) More than one tentacle communicating with each stronger endocoel, only one with each exocoel ..... *Stoichactiidae*.  
 3) Outer tentacles cyclically arranged, inner tentacles very small radially arranged, rarely almost inconspicuous or even ..... *Phymanthidae*.

Fam. **Aliciidae** (Duerden 1897 p. 215).

Thenaria (Endomyaria) with a broad pedal disc. Column with simple or compound vesicles or with outgrowths which are branched in their ends. Vesicles may also occur on the branches, and peduncles of the outgrowths. Vesicles with macrobasic amastigophors. The smooth upper part of the column may have weak longitudinal muscles, and spots containing spirocysts and few nematocysts. No distinct sphincter. Margin tentaculate. Tentacles long to rather long with spots as in the upper part of the column. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs. Pairs of perfect mesenteries 6, sterile or fertile. 2 pairs of directives. Retractors weak or rather strong but always diffuse. Basilar muscles weak or well developed.

4 genera:

- I. Lower part of column with vesicles (simple or compound), upper part smooth. Perfect mesenteries sterile ..... *Alicia*.  
 II. Lowest part of column smooth, above it a broad zone of radially arranged outgrowths, which distally bear short branches and vesicles. Uppermost part of column smooth. Perfect mesenteries sterile ..... *Phyllodiscus*.  
 III. In the middle of the column a ring of several branched outgrowths. On the stalks of the outgrowths and on the column on the oral side of the stalks there are vesicles. Other parts of the column smooth ..... *Triactis*.  
 IV. Close to the tentacles on the column a ring of 4–8 large branched outgrowths. Vesicles on the branches. Other parts of the column smooth. Perfect mesenteries fertile ..... *Lebrunia*.

Genus *Alicia* Johnson 1861 p. 303.

*Cladactis Panceri* 1868, 1869, Andres 1883.  
 ? *Thaumactis* Fowler 1889.

Aliciidae with well-developed basal disc. Column delicate, divisible into scapus and capitulum. Scapus with vesicles, simple or stalked and compound, containing microbasic and macrobasic amastigophors. Capitulum naked, with spots of spirocysts and nematocysts, and with ectodermal longitudinal muscles. Margin tentaculate. No distinct sphincter. Tentacles long and slender, ordinarily numerous with spots as in the capitulum. 2 weak siphonoglyphs. Six pairs of perfect and sterile mesenteries. 2 pairs of directives. Retractors diffuse, rather weak. Parietobasilar muscles and basilar very weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic and macrobasic amastigophors.

Genotype: *A. mirabilis* Johnson 1861 p. 303, Andres 1883 p. 443, Duerden 1897 p. 3, Madeira.

*A. (Cladactis) costae* Panceri 1868 p. 30, 1869 p. 1, Andres 1880 p. 318, 1883 p. 442, *Alicia* Duerden 1895 p. 213. The Mediterranean.

*A. uruguayensis* Carlgren 1927 p. 18, Off Uruguay 80 m.

*A. sansibarensis* Carlgren 1900 p. 28 (48), Suez, Zanzibar, Mauritius.

*A. rhadina* Haddon and Shackleton 1893 p. 127, Haddon 1898 p. 433, Albany Pass, Cape York 18 m.

- A. (Actinia) pretiosa* Dana 1849 p. 3, 1859 p. 8, Fidji Isl.  
 ? *A. (Thaumactis) medusoides* Fowler 1889 p. 143, Papeete.  
*A. beebei* Carlgren 1940 e p. 211, Lower California, Arena Bank, 54 m. Puerto Escondido.

Genus *Phyllodiscus* Kwietniewski 1898 p. 467.

Aliciidae with broad pedal disc. Column in its lowermost part smooth, above this a broad zone with thick stalked outgrowths more or less distinctly radially arranged, which are drawn out distally into several short branches. On the branches, and rarely on the stalks also are found hemispheric vesicles containing microbasic and macrobasic amastigophors. There are few, but branched bands of longitudinal endodermal muscles in the stalks. Upper part (capitulum) of the column short with ectodermal longitudinal muscles. Sphincter indistinct, diffuse. Margin tentaculate. Tentacles numerous (up to about 160), hexamerously arranged with small stinging spots. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 rather weak siphonoglyphs. 6 pairs of perfect and sterile mesenteries. Retractors diffuse, weak. Basilar muscles rather well developed. Gonads from the mesenteries of second cycle. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic and macrobasic amastigophors.

*P. semoni* Kwietniewski 1897 a p. 407, Carlgren 1924 a p. 11. Ambon.

Genus *Triactis* Klunzinger 1877 p. 85.

- ? *Thelactis* Klunzinger 1877.  
*Viatrix* p. p. Haddon and Shackleton 1893.†  
*Hoplophoria* p. p. Haddon 1898.  
*Phyllodiscus* p. p. Stephenson 1922, Carlgren 1940.

Aliciidae with well developed pedal disc. Column smooth, in its middle provided with a ring of stalked outgrowths, which in young specimens occur sparingly and are little branched, in older ones being close-set and dichotomously ramified. On the stalk near the branches, and on the column close to the oral side of the stalk are found hemispheric vesicles containing microbasic and macrobasic amastigophors. Stalk with few, longitudinal, very weak bands of endodermal muscles. Upper part of column with spots of spirocysts and nematocysts and with ectodermal longitudinal muscles. No distinct sphincter. Margin tentaculate. Tentacles not numerous, hexamerously arranged, in their distal part with extraordinarily numerous microbasic amastigophors, in their basal part with spots as on the column. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 distinct siphonoglyphs. Six pairs of perfect mesenteries and several imperfect. 2 pairs of directives. Retractors weak, parietobasilar muscles very weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic and macrobasic amastigophors.

Genotype: *T. producta* Klunzinger 1877 p. 85, The Red Sea.

- T. (Viatrix) cincta* Haddon and Schackleton 1893 p. 127, *Hoplophoria* Haddon 1898 p. 438, *Phyllodiscus* Stephenson 1922 p. 280, Carlgren 1940 p. 31, *Triactis* Carlgren 1947 p. 14, Torres Strait, Mabuiag, Great Barrier Reef, upper littoral; = ? *Phyllodiscus indicus* Stephenson 1922 p. 280, India, Maledive Islands.

Genus *Lebrunia* Duchassaing and Michelotti 1860 p. 48.

- Taractea* Andres 1883.  
*Oulactis* p. p. Duchas. and Mich. 1860, 1866.  
*Hoplophoria* Wilson 1890, Duerden 1898.  
*Rhodactis* p. p. Duchas. and Mich. 1866.

Aliciidae with broad pedal disc. Column smooth, but in its uppermost part just below the tentacles provided with 4–8 large outgrowths, which in young specimens are not or only a little branched, in older

ones more or less strongly ramified. On the branches, and more rarely on the stalk, are hemispheric vesicles which seem to appear rather late and contain micro- and macrobasic amastigophors. Stalks with numerous longitudinal bands of endodermal muscles alternating with the circular muscles. Uppermost part of the column, above the outgrowths, with weak longitudinal muscles and spots of spirocysts and nematocysts. No sphincter. Margin tentaculate. Tentacles with stinging spots as in the column. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 distinct siphonoglyphs. 6 perfect pairs of mesenteries and several imperfect. Retractors diffuse, moderately developed. Parietobasilar muscles weak, basilar muscles well developed. Perfect mesenteries, except the directives, fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic and macrobasic amastigophors.

Genotype: *L. (Oulactis) Danae*. Duchassaing and Michelotti 1860 p. 47, *Rhodactis* 1866 p. 37, *Lebrunia* Verrill 1899 p. 48, 1907 p. 269, *Taractea* Andres 1883 p. 499 = *Lebrunia neglecta* Duchassaing and Michelotti 1860 p. 48, Mc Murrich 1889 p. 33, 1905 p. 8, Duerden 1898 p. 456, Verrill 1899 p. 48, 1907 p. 269, Pax 1910 p. 209, Watzl 1922 p. 45, Bermudas Isl. St. Thomas, Jamaica, Tortugas, Bahama Isl., Curaçao.

*L. (Hoplophoria) coralligens* H. W. Wilson 1890 p. 379, Duerden 1898 p. 456, Bahamas, Jamaica (probably a young *L. Danae*).

#### Fam. **Condylanthidae** Stephenson 1922 p. 262.

Thenaria (Endomyaria) the column of which is usually divisible into scapus and scapulus. Marginal pseudospherules sometimes present. Sphincter absent, diffuse or circumscribed. Tentacles few. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal or mesogloal. 2 siphonoglyphs. Mesenteries divisible into macro- and microcnemes, the latter often present only in the lowermost part of the body. Macrocnemes often 6 pairs with strong retractors, which may be circumscribed or strongly restricted. Parietobasilar muscles often very strong. Basilar muscles distinct.

#### 5 genera:

- I. Column divisible into scapus and scapulus. No marginal pseudospherules. Retractors pinnate circumscribed.
  - a) Column without tubercles. Sphincter diffuse. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal ..... *Condylanthus*.
  - aa) Column with tubercles. Sphincter circumscribed. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal ..... *Pseudhormathia*.
- II. Column not divisible into scapus and scapulus. Pseudospherules present or not.
  - b) Six pairs of macrocnemes.
  - c) Column with marginal pseudospherules. Sphincter circumscribed ..... *Macrocnema*.
  - cc) Column without pseudospherules. Sphincter diffuse, weak (or absent) ..... *Charisea*.
  - bb) Twelve pairs of macrocnemes, marginal pseudospherules present. Sphincter diffuse, very weak ..... *Charisella*.

#### Genus *Condylanthus* Carlgrén 1899 p. 15.

Condylanthidae with well-developed pedal disc. Column divisible into scapus and scapulus, the former with a cuticle. No pseudospherules. Ectoderm of scapulus with spirocysts. Sphincter weak, diffuse. Tentacles short, considerably fewer than the mesenteries. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal. Retractors of the macrocnemes pinnate circumscribed. Parietobasilar muscles of the macrocnemes very strong. Basilar muscles well-developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *C. magellanicus* Carlgren 1899 p. 15, 1927 p. 19, 1928 p. 140; Tierra del Fuego, Strait of Magellan; Agulhas Bank 36-500 m.

*C. aucklandicus* Carlgren 1924 p. 192, Masked and Auckland Isl., upper littoral.

Genus *Pseudhormathia* Carlgren 1943 p. 24.

Condylanthidae with very wide pedal disc. Column divisible into scapus and scapulus, the former with tubercles. Fosse and margin distinct. Sphincter circumscribed. Tentacles not numerous, considerably fewer than the mesenteries, their longitudinal muscles ectodermal. Radial muscles of oral disc ectodermal. Actinopharynx with 2 well developed siphonoglyphs. 24 pairs of macrocnemes with circumscribed retractors. Parietobasilar muscles well developed, strong in the lower part of macrocnemes. Small, numerous, naked mesenteries in the lower part of the body. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*P. bocki* Carlgren 1943 p. 24, Goto Isl., littoral.

Genus *Macrocnema* Carlgren 1928 p. 140.

Condylanthidae the column of which is not divisible into regions but has marginal pseudospherules. Fosse deep, sphincter circumscribed. Few, rather robust tentacles, the inner longer than the outer ones. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs. The same number of tentacles and mesenteries. 6 pairs of macrocnemes, 2 pairs of directives, all with very strong circumscribed retractors. Microcnemes few.

*M. nicobarica* Carlgren 1928 p. 140. Entrance to Sombreso Channel, 805 m.

Genus *Charisea* Torrey 1902 p. 388.

Condylanthidae with elongate body. Pedal disc of about same breadth as the oral. Column smooth, not divisible into regions, without marginal pseudospherules. No sphincter or a weak diffuse one. Tentacles rather short, their longitudinal muscles ectodermal. 2 siphonoglyphs. 6 pairs of macrocnemes, 2 pairs of directives. Not more mesenteries at the limbus than at the margin. Retractors of the macrocnemes strongly restricted, reniform. Muscles of microcnemes weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*C. saxicola* Torrey 1902 p. 388, Carlgren 1934 b p. 348. Sitka, Aleutian Isl., Unalaska, intertidal.

TORREY says that there is no sphincter in *saxicola*. In my specimens there is a weak diffuse sphincter. Possibly we have to do with two distinct species.

Genus *Charisella* n. gen.

Condylanthidae with cylindrical, elongate body, not divisible into regions, smooth. At the margin an annulus of pseudospherules. Sphincter very weak, diffuse. Tentacles about 48 in number, short, hexamerously arranged, their longitudinal muscles ectodermal. Two distinct siphonoglyphs. Mesenteries divisible into macro- and microcnemes. Two cycles of macrocnemes, one of microcnemes which are very weak and thin. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*C. elongata* n. sp. Great Barrier Reef, Low Isles.

Fam. **Actiniidae** (Gosse 1858).

Thenaria (Endomyaria). Column smooth or provided with projections in the form of verrucae, marginal spherules, pseudospherules or vesicles which never have macrobasic amastigophors. Sphincter absent or

endodermal diffuse to circumscribed. Tentacles simple, arranged in cycles. Never more than one tentacle communicating with each endo- and exocoel. Mesenteries not divisible into macro- and microcnemes. Perfect pairs of mesenteries rarely six, as a rule more than six.

## 43 genera:

I. Marginal spherules, containing atrichs, present in older specimens: in young specimens there are sometimes absent or very scarce. Sometimes there are also atrichs in other parts of the column.

1) Column smooth, without vesicles or verrucae.

a) Marginal spherules in the deep fosse. Sphincter diffuse. Tentacles retractile .. *Actinia*.

aa) Marginal spherules at the margin.

b) More mesenteries at the base than at the margin. Tentacles long, imperfectly retractile. Sphincter not very strong, diffuse to restricted ..... *Anemonia*.

bb) Same number of mesenteries distally and proximally. Between the marginal spherules are pseudospherules. Column may have spots of unknown nature. Tentacles rather short. Sphincter well developed, diffuse..... *Anthostella*.

2) Column with non-adhesive vesicles, simple, compound or branched (more or less weak nematocyst batteries).

a) Vesicles distributed over the whole or almost the whole of the column, simple or compound.

b) Sphincter well developed, distinctly diffuse, atrichs of marginal spherules relatively sparse, basitrichs on the other hand very numerous and long ..... *Phymactis*.

bb) Sphincter well developed, circumscribed. Atrichs of marginal spherules numerous, basitrichs more sparse, short ..... *Bunodosoma*.

aa) Vesicles only in the uppermost part of the column, close to the marginal spherules 1-5 horizontal submarginal rows of vesicles, column otherwise smooth. Sphincter diffuse

*Pseudactinia*.

3) Column without vesicles but with adhesive verrucae.

a) Verrucae below the margin very numerous and set on small lobes of the column. Sphincter decidedly diffuse ..... *Oulactis*.

aa) Verrucae below the margin not set on lobes. Sphincter more or less circumscribed

*Anthopleura*.

II. Marginal spherules absent. Column smooth (apart from marginal pseudospherules).

1) Tentacles with endodermal sphincters at their base.

a) Tentacles long numerous, occupying only the outer half of oral disc, sphincter diffuse

*Bolocera*.

aa) Tentacles short, extraordinarily numerous, very close set. Sphincter diffuse to circumscribed.

b) Tentacles occupying almost the whole disc. Sphincter diffuse, rarely with a slight tendency to be circumscribed..... *Liponema*.

bb) Tentacles occupying the outer half or two thirds of oral disc. Sphincter extraordinarily strong, pinnate circumscribed ..... *Leipsiceras*.

2) Tentacles without endodermal sphincters at their bases.

a) A ring of perforated pseudospherules at the margin.

b) Mesenteries more numerous distally than proximally. All stronger mesenteries except the directives fertile.

c) Narrow pedal disc. Body very elongate. Oral disc never lobed ..... *Paracondylactis*.

ce) Pedal disc rather broad. Body not elongate. Oral disc sometimes lobed in older specimens

*Isactinia*.

bb) About same number of mesenteries distally and proximally. Body not elongate.



- d) Mesenteries of first cycle sterile. Sphincter diffuse to onesidely circumscribed  
*Tealanthus.*
- dd) Mesenteries of the 2 first cycles sterile. Sphincter circumscribed..... *Isotealia.*
- bbb) Probably more mesenteries at the base than at the margin. Sphincter diffuse to restricted.  
All stronger mesenteries, except the directives, fertile. Body not elongate  
*Myonanthus.*
- aa) No marginal pseudospherules.
- e) Only the youngest mesenteries fertile, but without filaments. Sphincter partly mesogloal  
*Isosicyonis.*
- ee) Fertile mesenteries always with filaments. Sphincter endodermal, or absent.
- f) Numerous spirocysts in the column. Sphincter diffuse. More mesenteries proximally than  
distally ..... *Isantheopsis.*
- ff) Spirocysts absent from the column or when present very few.
- g) All or all stronger mesenteries (with or without the directives) fertile.
- h) Tentacles very large with papillae forming nematocyst batteries. Sphincter diffuse  
*Dofleinia.*
- hh) Tentacles very long, longitudinally ridged with very long basitrichs. No nematocyst batte-  
ries. Sphincter diffuse ..... *Boloceropsis.*
- hhh) Tentacles relatively short without any special differentiation.
- i) Sphincter circumscribed, usually strong ..... *Epiactis.*
- ii) Sphincter diffuse, never strong. Margin distinct. Fosse distinct, usually deep  
*Gyrostoma.*
- iii) Sphincter absent. Margin tentaculate. No fosse.
- j) Tentacles long. Oral disc not lobed. More mesenteries at the base than at the margin  
*Paranemonia.*
- jj) Tentacles short. Oral disc lobed. Considerably more mesenteries at the margin than at  
the base ..... *Phialoba.*
- gg) The two first cycles of mesenteries sterile (in *Glyphostylum?*).
- k) Elongate forms. Sphincter restricted to circumscribed. Longitudinal muscles of tentacles  
uniformly developed. More mesenteries at the margin than at the base *Glyphoperidium.*
- kk) Elongate forms. No sphincter. Longitudinal muscles of tentacles considerably weaker on  
the one side than on the other ..... *Glyphostylum.*
- kkk) Low forms. Not more mesenteries proximally than distally. Sphincter strong, circumscribed  
*Urticinopsis.*
- ggg) The three first cycles of mesenteries sterile. Sphincter circumscribed. Pedal disc secreting  
a cuticle, projecting beyond the mouth of the shell to which it is fastened. Lives in symbio-  
sis with hermit crabs ..... *Isadamsia.*
- III. Marginal spherules absent. Column with verrucae, vesicles or other protuberances.
- 1) Whole column with close set vesicles.
- a) Sphincter diffuse.
- b) Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal  
*Phlyctenactis.*
- bb) Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal  
*Cladactella.*
- aa) Sphincter decidedly circumscribed, longitudinal muscles of tentacles ectodermal  
*Phlyctenanthrus.*
- 2) Lower part of column with close rows of low protuberances provided with extraordinarily numerous  
nematocysts (atrichs?) ..... *Cnidopus.*

- 3) Column with verrucae (in *Tealia* and *Condylactis* these are often reduced), rarely with marginal pseudospherules also.
- a) Aboral sides of tentacles not thickened.
  - b) Column with perforated pseudospherules ..... *Actiniogeton*.
  - bb) Column without pseudospherules.
  - c) Body elongated, cylindrical.
  - d) No distinct sphincter. Most of the mesenteries perfect.
  - e) Tentacles short. Verrucae well developed ..... *Parantheopsis*.
  - ee) Tentacles long. Verrucae weak, rarely absent ..... *Condylactis*.
  - dd) Sphincter restricted, rather weak. Tentacles long and stout, 6 pairs of perfect mesenteries  
*Macroactyla*.
  - cc) Body as a rule not elongated.
  - f) 10–20 (rarely 6) pairs of the oldest mesenteries sterile. Longitudinal muscles of tentacles ectodermal to ecto-mesogloal. Verrucae well developed to wholly reduced. Same number of mesenteries proximally and distally..... *Tealia*.
  - ff) All stronger mesenteries, with or without the directives, fertile.
  - g) Outer tentacles longer than the inner ones. Column with cinclides. Sphincter circumscribed, more or less unequally bipinnate ..... *Evactis*.
  - gg) Outer tentacles shorter than the inner ones. No cinclides.
  - h) Sphincter strong, circumscribed, palmate or pinnate. Longitudinal muscles of tentacles principally mesogloal. Verrucae weak ..... *Cribrinopsis*.
  - hh) Sphincter more or less circumscribed to restricted, rarely weak. Longitudinal muscles of tentacles ectodermal to ecto-mesogloal. Verrucae well developed, sometimes compound in the distal part. Younger mesenteries growing from the base upward ... *Bunodactis*.
  - hhh) Sphincter well developed, diffuse, elongate. Verrucae simple in the lower part of the column, in the upper part lobed. More mesenteries at the margin than at the base  
*Isocradactis*.
  - aa) Aboral sides of tentacles strongly thickened. Verrucae well developed .. *Parabunodactis*.
- IV. Lower part of the column with verrucae. Between the verrucae and the margin a ruff, frill or collar formed by numerous small vesicles containing basitrichs. Sphincter more or less circumscribed  
*Phyllactis*.

Genus *Actinia* Browne 1756 p. 387.

*Anemonia* Duchassaing and Michelotti 1860.

*Diplactis* Mc Murrich 1889 a.

Actiniidae with very wide pedal disc and smooth, rather low column. A ring of simple or slightly compound marginal spherules in the deep fosse. These are commonly conspicuous but can be covered up by the margin in contraction. Sphincter weaker or stronger, diffuse, rarely with a slight tendency to be meso-ectodermal. Tentacles retractile of ordinary length, their longitudinal muscles ectodermal. Perfect mesenteries numerous. All stronger mesenteries, save the directives, fertile. More mesenteries at the base than at the margin. Retractors of the mesenteries diffuse. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. equina* Linné 1758 p. 656, Andres 1883 p. 396, Simon 1892 p. 42, Pax 1920 p. 2, Carlgren 1921 p. 137, Stephenson 1935 p. 113, Jaworski 1938 = *A. mesembryanthemum* Ellis and Solander 1786 p. 4. Kola Peninsula, Norway, North Sea, Great Britain, Faroe Isl. Atlantic coast of Europe, West coast of Africa to St. Thomas Isl., Canaries, Madeira, Cape Verde Isl., South Africa, The Mediterranean, Black Sea, Sea of Asov., Japan, upper littoral, intertidal.

*A. cari* Delle Chiaje 1841 p. 138. The Mediterranean.

- A. (Diplactis) bermudensis* Mc Murrich 1889 a p. 111, 1896 p. 186, *Actinia* Verrill 1898 p. 495, 1907 p. 256, Watzl 1922 p. 22. Bermudas, Bahamas, Curaçao = *Anemonia depressa?* Duchassaing and Michelotti 1860 p. 313.
- A. Grobbeni* Watzl 1922 p. 24, Bahamas.
- A. melanaster* Verrill 1901 p. 51, 1907 p. 257, Bermudas.
- ? *A. infecunda* Mc Murrich 1893 p. 146. Abrolhos Isl.
- ? *A. kraemeri* Pax 1914 b p. 413. Samoa (probably no *Actinia* as PAX states that the nematocysts of the marginal spherules are 15  $\mu$ ).
- A. tenebrosa* Farquhar 1898 p. 535, Stuckey 1909 b p. 380 Pl. 23 Fig. 1, 2, Textfig. 5, Carlgren 1924 p. 196 fig. 14. New Zealand, Stewart, Auckland and Kermadec Islands, N. S. Wales Port Jackson.

#### Genus *Anemonia* Risso 1826 p. 288.

- Anthea* Johnston 1838.  
*Paractis* Klunzinger 1877.  
*Isactinia* Carlgren 1945.

Actiniidae with wide pedal disc and smooth body, which at the margin is provided with marginal spherules, which are sometimes, in the smaller individuals, absent. Sphincter weak, circumscribed or rather well developed, diffuse. Tentacles usually long, not as a rule covered by the upper part of the column, their longitudinal muscles ectodermal. Siphonoglyphs variable in number, not always connected with directives. Perfect mesenteries numerous. Retractors diffuse. Gonads appearing from the first cycle of mesenteries onwards. More mesenteries at the base than at the margin. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors (and possibly sometimes holotrichs?).

Genotype: *A. (Actinia) sulcata* Pennant 1766 p. 40 (48), Simon 1892, p. 38, Carlgren 1942 p. 67, Stephenson 1935 p. 124 = *Anthea (Actinia) cereus* Ellis and Solander 1786 p. 2, *Anemonia vagans* Risso 1826 p. 288 Norway, West coast of Scotland and England, Ireland, Atlantic coast of France, Spain, Madeira, Canaries, The Mediterranean; upper littoral.

- A. sargassiensis*, Hargitt 1908 p. 117, 1912 p. 239, Woods Hole.
- ? *A. elegans* Verrill 1901 p. 50, 1907 p. 261, Watzl 1922 p. 27, Bermudas, Bahamas.
- A. antilliensis* Pax 1924 p. 99, Curaçao.
- ? *A. (Paractis) Hemprichi* Klunzinger 1877 p. 72, Pax 1907 p. 57, *Anemonia* Andres 1883 p. 411, Carlgren 1947 p. 11. *Isactinia* Carlgren 1945 p. 16. The Red Sea.
- A. (Entacmaea) erythrea* H. and E., Ehrenberg 1834 p. 37, *Paractis* Klunzinger 1877 p. 71, *Isactinia* Carlgren 1900 p. 41 (61) Pax 1907 p. 67. The Red Sea.
- A. manjano* Carlgren 1900 p. 41, Zanzibar, upper littoral.
- A. natalensis* Carlgren 1938 p. 36. Durban, upper littoral.

#### Genus *Anthostella* Carlgren 1938 p. 38.

- ? *Isactinia* Carlgren 1900.

Actiniidae with smooth column which has more or less distinct longitudinal rows of spots (nematocyst batteries or suckers?). Fosse slightly developed. At the margin large, club-shaped marginal spherules, between them pseudospherules. Sphincter diffuse. Tentacles not very long, their longitudinal muscles ectodermal. Radial muscles of oral disc ectodermal. 2 siphonoglyphs. Mesenteries rather few, not more numerous at the base than at the margin. 2 pairs of directives. Mesenteries of the first and second orders perfect. All mesenteries, save the directives and the weakest ones, fertile. Retractors diffuse. Parieto-basilar muscles rather strong, basilar muscles rather weak. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. Stephensoni* Carlgren 1938 p. 38. South Africa Table and False Bay, intertidal.

- ? *A. (Isactinia) badia* Carlgren 1900 p. 34, 1947 p. 12. Zanzibar.

Genus *Phymactis* Milne-Edwards 1857 p. 274.

Rivetia Pax 1912.

Actiniidae with well-developed basal disc. Column covered thickly with vesicles, simple or more or less compound, and sometimes fused inseparably with each other. Margin distinct, with well-developed fosse. Marginal spherules present containing, in comparison with other Actiniidae, rather few atrichs but very numerous and very long basitrichs and numerous spirocysts. Sphincter decidedly diffuse. Tentacles short, usually hexamerously arranged, their longitudinal muscles ectodermal. Radial muscles of oral disc partly mesogloal. Two to several siphonoglyphs which need not correspond to directives. Numerous perfect mesenteries, at least the two oldest cycles fertile. Parietobasilar and basilar muscles well-developed. Cnidom: spirocysts, atrichs, basitrichs and microbasic *p*-mastigophors.

Genotype: *P. (Actinia) clematis* Dana 1849 p. 1, 1859 p. 6, Milne-Edwards 1857 p. 275, Carlgren 1899 p. 17, 1920 p. 145, 1945 p. 9, Mc Murrich 1904 p. 259 = *P. (Actinia) florida* Dana 1849 p. 2, 1859 p. 6, Milne Edwards 1857 p. 274, Lower California, Puerto Escondido, San Salvador, Nicaragua, Panama, Pearl Isl., West coast of South America to South Terra del Fuego, Juan Fernandez, Easter Isl., upper littoral.

*P. (Rivetia) papillosa* Pax 1912 p. D 6, *Phymactis* Stephenson 1922 p. 286, Carlgren 1924 a p. 12-15, Peru, Payta.  
*P. (Actinia) sanctae helenae* Lesson 1830 p. 74, *Phymactis* Milne-Edwards 1857 p. 275, Carlgren 1941 p. 5, St. Helena, upper littoral.  
*P. (Actinia) pustulata* Dana 1849 p. 4, 1859 p. 6, *Phymactis* Milne-Edwards 1857 p. 275 = *P. clematis* Stephenson 1918 p. 23, (*brasiliensis* see Carlgren 1939 p. 795), Brazil, Rio de Janeiro, South Trinidad Isl. intertidal.

Genus *Bunodosoma* Verrill 1899 p. 44.

Urticina Duchassaing 1850 p. p.  
 Phymactis Milne-Edwards 1857 p. p. Andres 1883 p. p.  
 Bunodes p. p., Verrill 1864, Mc Murrich 1889.  
 Bunodactis p. p. Pax 1922, 1926.  
 Cladactis Verrill 1869 b.  
 Eucladactis Verrill 1899.

Actiniidae with well-developed pedal disc. The whole or almost the whole column provided with rounded uniform vesicles forming weak nematocyst-batteries. A ring of marginal spherules in the fosse, rarely absent. Atrichs in the marginal spherules very numerous, spirocysts and basitrichs fewer, the latter short. Sphincter well developed, more or less circumscribed. Tentacles and mesenteries hexamerously arranged. As a rule 2 siphonoglyphs and 2 pairs of directives, rarely several siphonoglyphs not connected with directives. Perfect pairs of mesenteries usually numerous. All stronger mesenteries, sometimes except the directives, fertile. More mesenteries at the limbus than at the margin. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors.

Genotype: *B. (Actinia) granulifera* Leseur 1817 p. 173, *Bunodes taeniatus* Mc Murrich 1889 p. 23, *Bunodosoma* Verrill 1899 p. 49, Duerden 1898 p. 454, 1902 p. 38, Watzl 1922 p. 36 = *Urticina lessonii* Duchassaing 1850 p. 9, West India, Jamaica, Porto Rico, Bahamas, Barbados, Curaçao, Guadeloupe, Martinique, St. Thomas.

*B. (Actinia) cavernata* Bosc 1802 p. 22, *Bunodes* Verrill 1864 p. 17, *Cladactis* Verrill 1869 b p. 473, *Phymactis* Andres 1883 p. 448, Mc Murrich 1887 p. 61, *Bunodosoma* Verrill 1899 p. 45, South Carolina to Cape Hatteras, low-water.  
*B. spherulata* Duerden 1902 p. 350, Porto Rico.  
*B. kükenethali* Pax 1910 p. 189, 1924 p. 103, Barbados, Curaçao, Loango.  
*B. (Actinia) diadema* Dana 1849 p. 2, 1859 p. 7, *Phymactis* Milne-Edwards 1857 p. 274, Carlgren 1934 a p. 21, 1939 p. 794, Cape Verde Isl., Porto Praya, Morocco?  
*B. (Actinia) capensis* Lesson 1830 p. 76, *Phymactis* Milne-Edwards 1857 p. 274, Pax 1908 p. 485, 1920 p. 30 p. p., *Bunodosoma* Carlgren 1928 p. 169, 1938 p. 51, S. Africa from Lüderitz Bay to Durban.

- B. (Bunodactis) fallax* Pax 1922 p. 79, 1926 p. 25, *Bunodosoma* Carlgren 1928 p. 249, New Amsterdam Isl.  
*B. (Cladactis) grandis* Verrill 1869 b p. 472, Andres 1883 p. 443, *Eucladactis* Verrill 1899 p. 49, *Phymactis* Stephenson 1922 p. 285, Panama, Pearl Islands, San Salvador, Nicaragua, Peru.  
*B. californica* Carlgren n. sp., Gulf of California.

Genus *Pseudactinia* Carlgren 1928 p. 152.

- Comactis* p. p. Hertwig 1882.  
*Anemonia* Pax 1907, 1908.  
*Actinia* Pax 1922, 1926.

Actiniidae with broad pedal disc and rather low body, at least in the contracted state. Column smooth with 1–5 horizontal rows of vesicles at the margin, these forming weak nematocyst batteries. Inside the uppermost of them, in the fosse, a circlet of more or less strongly developed marginal spherules, which are sometimes absent in small individuals. Sphincter diffuse. Tentacles rather long, they can apparently not be wholly covered by the upper part of the column. Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc ectodermal or principally ectodermal. Actinopharynx well developed. Number of siphonoglyphs very variably. Mesenteries hexamerously or irregularly arranged. Numerous perfect mesenteries. Directives mesenteries present or absent. Retractors of mesenteries diffuse. Parietobasilar and basilar muscles distinct. Distribution of the reproductive organs varying, the mesenteries of the first cycle apparently always sterile. More mesenteries at the limbus than at the margin. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. (Comactis) flagellifera* Hertwig 1882 p. (28), *Pseudactinia* Carlgren 1928 p. 157 (*plettenbergensis*), 1938 p. 54; = *Anemonia thelcteria*, Pax 1907 p. 69, *Anemonia infecunda* Pax 1908 p. 489, *Actinia anachoreta*, *psaphoderma*, *suspecta* Pax 1922 p. 76–77, 1926 p. 11–14. South West Africa from Lüderitz Bay, South Africa, Durban, upper littoral.

*P. varia* Carlgren 1938 p. 57, *flagellifera* 1928 p. 153, East coast of Cape Province to East London, St. Helena, littoral.  
 ? *P. (Actinia) infecunda* Mc Murrich 1893 p. 146, Abrolhos Isl.

Genus *Oulactis* Milne-Edwards and Haime 1851 p. 12.

- Saccactis* Lager 1911.  
*Cradactis* Stuckey 1909 b.  
 ? *Tealidium* Stuckey 1909 b.

Actiniidae with well-developed pedal disc. Column smooth in its lowest part, otherwise provided with longitudinal rows of verrucae which below the margin are small and very close set on small lobes of the column forming fronds-like formations. Fosse distinct. Marginal spherules present. Sphincter decidedly diffuse. Tentacles rather short, hexamerously arranged, their longitudinal muscles ectodermal. Two well-developed siphonoglyphs and 2 pairs of directives. Most of the mesenteries perfect and fertile (sometimes the directives may be sterile). Retractors more or less band-like. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors.

Genotype: *O. (Metridium) muscosa* Dana 1849 p. 3, 1859 p. 12, *Oulactis* Milne-Edwards and Haime 1851 p. 12, Milne-Edwards 1857 p. 292, New-South-Wales.

*O. plicata* Hutton 1878 p. 311, *Cradactis* Stuckey 1909 b p. 392; probably = *O. muscosa*, New Zealand, Dunedin, Cook Straits.

*O. (Saccactis) macmurrichi* Lager 1911 p. 220. South West Australia, Albany distr., low water.

*O. (Saccactis) australis* Lager 1911 p. 223. South West Australia Sharks Bay, low water.

*O. (Saccactis) musculosa* Lager 1911 p. 225. South West Australia, Albany district, low water.

? *O. (Tealidium) cinctum* Stuckey 1909 b p. 389. New Zealand, Island Bay.

Genus *Anthopleura* Duchassaing and Michelotti 1860 p. 48.

- Bunodes p. p. Gosse 1855, 1860, Johnson 1861, Klunzinger 1877, Andres 1880, 1883, Duerden 1898, Carlgren 1899, 1900, Stuckey 1909.  
 Aulactinia Andres 1883, Haddon 1898.  
 Aegeon Gosse 1865.  
 Gyraetis Boveri 1899.  
 Condylactis Haddon and Shackleton 1893.  
 Actinioides Haddon and Shackleton 1893, Haddon 1898, Kwietniewski 1898, Duerden 1898, Carlgren 1900, Pax 1907, 1908.  
 ? Phymactis Hutton 1878.  
 Cribrina Mc Murrich 1904, Pax 1908.  
 Bunodactis Pax 1920, 1926, Stephenson 1921, 1922, 1929.  
 Evactis Verrill 1869, Andres 1883.

Actiniidae with well-developed pedal disc. Column with adhesive verrucae arranged in more or less distinct longitudinal rows, especially in its upper part. Marginal spherules present. Sphincter weak or strong, restricted to circumscript. Tentacles simple, hexamerously or irregularly arranged, their longitudinal muscles ectodermal or meso-ectodermal. Numerous perfect mesenteries, all the stronger ones fertile. Retractors of the stronger mesenteries diffuse, sometimes restricted. Younger mesenteries growing from the basal disc upwards. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. Krebsi* Duchassaing and Michelotti 1860 p. 49 (*Bunodes*) Duerden 1898 p. 454, St. Thomas, Jamaica.

- A. vario-armata* Watzl 1922 p. 33, Bahamas, Andros.  
*A. pallida* Duchassaing and Michelotti 1866 p. 126, (*Actinioides*) Duerden 1898 p. 453, Jamaica.  
*A. (Bunodes) thallia* Gosse 1855 p. 274, 1860 p. 195, (*Bunodactis*) Stephenson 1922 p. 271, 1929; *Anthopleura* Stephenson 1935 p. 162, West coast of Scotland, Irish Sea, Ireland, South England, Atlantic coast of France, The Mediterranean; upper littoral, shore form.  
*A. (Actinia) ballii* Cocks 1849 p. 94, (*Bunodes*) Gosse 1860 p. 198, *Bunodactis* Stephenson 1921 p. 529, 1922 p. 271, *Anthopleura* Stephenson 1935 p. 167 = *Aegeon alfordi* Gosse 1865 p. 42, South England, Atlantic coast of France, The Mediterranean.  
*A. (Bunodes) crassa* Andres 1880 p. 318; *Aulactinia Andres* 1883 p. 318, The Mediterranean.  
*A. (Bunodes) Listeri* Johnson 1861 p. 302, (*Cribrina*) Pax 1908 p. 474; Gravier 1918 a p. 12, Madeira, West Africa, Fernando Dias.  
*A. mortenseni* Carlgren 1941 p. 3, St. Helena, upper littoral.  
*A. sanctae helenae* Carlgren 1941 p. 4, St. Helena, upper littoral.  
*A. (Bunodactis) michaelseni* Pax 1920 p. 31, Carlgren 1938 p. 35 = *Bunodactis gigas* pp., Pax 1926 p. 23 = *Actinoides angre pequense* pp. Pax 1907 p. 79, 1908 p. 490. South West Africa, South Africa to Durban, upper littoral.  
*A. anaeae* Carlgren 1940 a p. 1, Natal.  
*A. insignis* Carlgren 1940 a p. 3, South Africa, Port St. John, Kleinmond Cape Province.  
*A. (Actinia) stellula* Ehrenberg 1834 p. 34, (*Bunodes*) Klunzinger 1877 p. 78; Carlgren 1900 p. 47 (67), The Red Sea, Zanzibar.  
*A. fuxi* Carlgren 1927 a p. 444, Suez Canal.  
*A. (Actinioides) africana* Carlgren 1900 p. 44 (64), 1938 p. 32-33, Zanzibar.  
*A. (Gyraetis) pallida* Boveri 1893 p. 251, *Anthopleura* Carlgren 1947 p. 14, Ceylon, Galle.  
*A. (Gyraetis) excavata* Boveri 1893 p. 250, Ceylon, Galle.  
*A. japonica* Verrill 1899 p. 218, Uchida 1939 8 a p. 302 = *A. mc murrichi* Wassilieff 1908 p. 19, Japan Honshu, Kyushu, Shimodu Isu Prov., Sagami Bay, intertidal.  
*A. pacifica* Uchida 1938 a p. 305 = ? *Anthopleura xanthogrammica* Mc Murrich 1901 p. 36, Japan, Hokkaido, Mutsu Bay, Southern part of Corea, low-water.  
*A. (Actinia) xanthogrammica* Brandt 1835 p. 12, *Evactis* Verrill 1869 p. 471, Andres 1883 p. 452, *Anthopleura* Mc Murrich 1891 p. 36 p. p., Torrey 1906 p. 41, Carlgren 1934 a p. 349, Uchida 1938 a p. 298; California, Alaska, Sitka Isl., Bering Isl., Kamchatka, Japan: Honshu, Kyushu.  
*A. fusco-viridis* nov. nom. = ! *A. (Bunodes) stella* Verrill, Uchida 1938 a p. 293. Japan from Hokkaido to Kyushu.  
*A. (Actinoides) haddoni* Kwietniewski 1897 a p. 391 (see Carlgren 1938 p. 32-33, 1947 p. 16), Ambon.

- A. (Actiniooides) dixoniana* Haddon and Shackleton 1893 p. 126, Haddon 1898 p. 424, Torres Straits, Jarvis Isl., Mabuiaig.  
 ?*A. (Condylactis) Gelam* Haddon and Shackleton 1893 p. 123; *Aulactinia* Haddon 1898 p. 442, Torres Straits, Mabuiaig, Mer.  
*A. (Bunodes) aureo-radiata* Stuckey 1909 p. 368, Carlgren 1924 p. 208, New Zealand, Oriental Bay, Bay of Island, Wellington.  
*A. kohli* Carlgren 1930 p. 4, Stewart Isl.  
 ? *A. (Phymactis) inconspicua* Hutton 1878 p. 313, (Stuckey 1909 b p. 394), New Zealand.  
*A. dowii* Verrill 1869 p. 474, Gulf of California, Panama, Realejo, San Salvador, Pearl Isl., upper littoral.  
*A. (Bunodes) hermafroditica* Carlgren 1899 p. 23, *Cribrina* Mc Murrich 1904 p. 287, *Anthopleura* Carlgren 1921 p. 148, 1927 p. 32, Chile.

Genus *Bolocera* Gosse 1860 p. 185.

*Anthea* Johnston 1847.

? *Polystomidium* Hertwig 1882.

Actiniidae with well developed pedal disc. Column elongate, smooth, without spherules or verrucae. Sphincter diffuse. Tentacles long, hexamerously arranged, occupying only the outer half of the oral disc, each provided with an endodermal sphincter at its base, by the contraction of which it may be thrown off; the longitudinal muscles ectodermal. Siphonoglyphs well developed. Perfect pairs of mesenteries more or less numerous, 2 pairs of directives. Retractors diffuse. Distribution of the gonads variable. Mesenteries not more numerous at the margin than at the limbus. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- Genotype: *B. (Actinia) Tuediae* Johnston 1832 p. 163, *Anthea* Johnston 1847 p. 242, *Bolocera* Gosse 1860 p. 186, Carlgren 1921 p. 141, Stephenson 1918 p. 112, 1935 p. 130 = *longicornis* Carlgren 1891 a p. 241, 1893 p. 50, Stephenson 1918 p. 116. ? Wasilieff 1908 p. 14, The Sound, Cattedgatt, Skagerrak, Norway, North Sea, Great Britain, North Atlantic, West Greenland, Northern Atlantic part of North America, ? Japan, Sagami, (10?) 40–2023 m.  
*B. maxima* Carlgren 1921 p. 145, Davis Straits 3229–3521 m.  
*B. occidua* Mc Murrich 1893 p. 154, W of Falkland Isl., Strait of Magellan, 51°02'30" S 74°08'30" W = ? *longicornis* Stephenson 1918 a p. 20, Off Falkland Isl. 92–229 m.  
*B. capensis* Carlgren 1928 p. 146, 1938 p. 41, Coast of South Africa 73–326 m.  
*B. kerguelensis*, Studer 1878 p. 198, Kwietniewski 1896 p. 592, Carlgren 1928 p. 144, Kerguelen.  
*B. somaliensis* Carlgren 1928 p. 143, 6°41' N 49°31' E, 4°42' N 48°39' E, 628–823 m.  
*B. pannosa* Mc Murrich 1893 p. 156, Off California 33°08' N 118°40' W 757 m.  
 ? *B. (Polystomidium) patens* Hertwig 1882 p. 67 (59) 38°6' S 88°2' W 3329 m (young *Bolocera*?).

Genus *Liponema* R. Hertwig 1882 p. 120.

*Bolocera* p. p. Verrill 1879, Mc Murrich 1893, Carlgren 1902, Gravier 1922.

*Eubolocera* Verrill 1922.

Actiniidae with well developed pedal disc. Column low, smooth, without any sort of projections. Sphincter diffuse, rarely with a tendency to be circumscribed. Tentacles short, extraordinarily numerous, very close set, but arranged in cycles; occupying almost the whole oral disc and each provided with an endodermal sphincter at its base by the contraction of which it may be thrown off. Longitudinal muscles of tentacles ectodermal. Siphonoglyphs well developed. Perfect pairs of mesenteries numerous. 2 pairs of directives. Retractors diffuse. Distribution of the gonads unknown. Mesenteries more numerous distally than proximally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- Genotype: *L. multipora* Hertwig 1882 p. 119 (114), South Chile 219 m, between Marion Isl. and Crozet Island 2 926 m; probably two species, that from 2 926 m probably identical with *brevicirrata*.

- L. (Bolocera) multicornis* Verrill 1879 p. 198, *Eubolocera* Verrill 1922 p. 117, *Bolocera* Carlgren 1902 p. 36, 1921 p. 143, Gravier 1922 p. 21 (*longicornis*) p. p. *Liponema* Carlgren 1928 p. 148, low arctic 82–872 m.  
*L. brevicirrata* Carlgren 1928 p. 149, 1938 p. 42. South Africa 500 m.  
*L. (Bolocera) brevicornis* Mc Murrich 1893 p. 158; off California 33°08' N 118°40' W 755 m.

Genus *Leipsiceras* Stephenson 1918 b. p. 112.

*Bolocera* p. p. Mc Murrich 1898.

Actiniidae with very broad pedal disc. Column low. Tentacles very numerous, fairly short, at the base provided with an endodermal sphincter and occupying the outer half or two thirds of the oral disc. Sphincter very to extraordinarily strong, pinnate circumscribed. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Actinopharynx with numerous longitudinal furrows and ridges. Siphonoglyphs broad. At least 2 cycles of mesenteries and a part of the third perfect. Mesenteries thin, their retractors diffuse. Gonads at least sometimes appearing on the mesenteries of the first cycle, but their distribution probably irregular. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *L. (Bolocera) pollens* Mc Murrich 1898 p. 230, *Leipsiceras* Stephenson 1918 p. 112, American Shoal, Virgin Isl. 200–400 m.

*L. valens* Carlgren 1943 p. 28, Goto Isl. 201 m.

Genus *Paracondylactis* Carlgren 1934 a p. 28.

*Condylactis* p. p. Wasilieff 1908.

Actiniidae with very elongate body and narrow pedal disc. Column smooth, sometimes with nematocysts collected in groups (rarely with verrucae or vesicles? in its upper part). At the margin an annulus of perforated pseudospherules. Sphincter diffuse. Tentacles hexamerously arranged, up to 96, rather short. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 well developed siphonoglyphs very prolonged aborally. Mesenteries somewhat more numerous distally than proximally, hexamerously arranged, all or almost all perfect. 2 pairs of directives. Retractors strong but diffuse, parietobasilar muscles distinct. All mesenteries with or without the directives fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. (Condylactis) hertwigi* Wasilieff 1908 p. 11, *Paracondylactis* Carlgren 1934 a p. 23, Jangsekiang, Swatow, Japan: Surugu Bay, Envura Bay, Amakusa, Tomioka; upper littoral.

*P. sinensis* Carlgren 1934 a p. 26, Jangsekiang, Swatow, Schönau; Tschou-sihau Isl.

*P. davydoffi* Carlgren 1943 p. 27, Cochinchina, Paulo Condore.

Genus *Isactinia* Carlgren 1900 p. 33 (53).

*Anemonia* Hadd. and Shاكل. 1893.

*Actinia* Haddon 1898.

Pedal disc well developed. Body not elongate. Column smooth, at the margin with an annulus of well developed, perforated pseudospherules. Fosse shallow. Sphincter endodermal, diffuse or almost absent. Oral disc in older specimens often lobed. Tentacles conical, short, numerous up to about 400, their longitudinal muscles ectodermal. Siphonoglyphs 0–2. Pairs of directives 0–2. Several pairs of mesenteries perfect. Sometimes the mesenteries of a pair are of very different size. Considerably more mesenteries at the margin than at the base. Most of the mesenteries including the directives fertile. Retractors diffuse. Parietobasilar muscles distinct but weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.



Genotype: *I. (Anemonia) citrina* Hadd. and Shackl. 1893 p. 125, *Actinia* Haddon 1898 p. 416, *Isactinia* Carlgren 1900 p. 33 (53), Torres Straits, Mabuiaig.

*I. ignota* Carlgren n. sp. = *citrina* Carlgren 1947 p. 11, Great Barrier Reef, Low Isles.

*I. lobata* Carlgren n. sp., Great Barrier Reef, Low Isles.

Genus *Tealanthus* Carlgren 1927 p. 38.

*Isotealia* Pax 1922, 1923, 1926.

Actiniidae with wide pedal disc. Column smooth, not elongate, divisible into scapus and scapulus. Margin with pseudospherules. Sphincter diffuse to asymmetrically circumscribed. Tentacles short, hexamerously arranged, the inner longer than the outer. More than 6 pairs of mesenteries perfect. Probably same number of mesenteries proximally and distally. Retractors diffuse. Parietobasilar muscles very strong. Mesenteries of the first cycle sterile, those of the second and following cycles fertile.

*T. (Isotealia) pachyderma* Pax 1922 p. 79, 1926 p. 28, = *Isotealia antarctica* p. p. Pax 1923 p. 5, 1926 p. 27 = *Tealanthus incertus* Carlgren 1927 p. 38, 1928 p. 247, 65°33' S 85°34' E, South Shetland Isl. 380–420 m.

Genus *Isotealia* Carlgren 1899 p. 25.

? *Leiothealia* Mc Murrich 1893.

Actiniidae with well developed pedal disc. Column not elongate, divisible into scapus and scapulus, smooth. Scapus with an easily deciduous cuticle. Margin with perforated pseudospherules. Sphincter well developed, circumscribed. Tentacles short, hexamerously arranged, the inner longer than the outer. 2 siphonoglyphs. About same number of mesenteries proximally and distally. Retractors of ordinary shape. Parietobasilar and basilar muscles distinct. Mesenteries of the first and second cycle sterile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *Isotealia antarctica* Carlgren 1899 p. 25, 1927 p. 37, South Argentina 40°32' S 61°25' W = ? *Leiothealia badia* Mc Murrich 1893 p. 194, 1901 p. 39, 53°06' S 70°40'30'' W 152 m.

*I. dubia* Wasilieff 1908 p. 20, Japan.

Genus *Myonanthus* Mc Murrich 1893 p. 151.

Actiniidae with broad pedal disc. Column smooth, in its uppermost part provided with longitudinal mesogloal thickenings terminating at the margin in endodermal evaginations provided with a pore (probably modified marginal pseudospherules). Margin distinct, crenulated. Fosse distinct. Tentacles of ordinary length, retractile, probably not so numerous as the mesenteries, the outer shorter than the inner. Sphincter diffuse to circumscribed-diffuse. Siphonoglyphs well developed, aborally prolonged. More than 6 pairs of mesenteries perfect. Retractors weak, parietobasilar and basilar muscles distinct. The stronger mesenteries except the directives fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *M. ambiguus* Mc Murrich 1893 p. 151, Carlgren 1934 a p. 2, off California 33°08' N 80°15' W 747 m.

*M. bankamensis* Carlgren 1928 p. 160, Nias North Channel, South of Bankam 141 m.

Genus *Isosicyonis* Carlgren 1927 p. 52.

*Paractis* Studer 1879, Andres 1883.

Actiniidae with very broad base enclosing shells of Gastropods. Column smooth, fairly broad, with well developed fosse. Sphincter aggregated endodermal (in younger individuals) to chiefly mesogloal

in adults. Tentacles up to about 80, conical, in at least 4 cycles, about half as numerous as the mesenteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal, very strong. Siphonoglyphs irregularly arranged (always?), fairly well developed. Two pairs (or only one pair?) of directives. Several pairs (up to about 20) of mesenteries perfect, an equal number of imperfect mesenteries, all these filamented and sterile. The mesenteries of the last cycle do not reach the margin and are fertile but lack filaments. Retractors and, especially the parietobasilar muscles, weak. Very large basitrichs in all parts of the ectoderm, especially in the column, where they are collected into spots containing a few spirocysts also. Cnidom: spirocysts, basitrichs (microbasic *p*-mastigophors?).

I have previously referred this interesting genus (see p. 42) to the Mesomyaria. I think, however, that it is better to place it in the Endomyaria. The mesogloea of the ciliated tract of the filament is provided with numerous cells as in many genera of the family Actiniidae.

*I. (Paractis) alba* Studer 1878 p. 545, *Isosicyonis* Carlgren 1927 p. 52, off East Patagonia; King George's Isl. S. Shetland 109-383 m, Shollert Channel Palmer Archipelago.

Genus *Isantheopsis* Carlgren 1942 p. 86.

*Actinopsis* Studer 1878.

Actiniidae with well developed pedal disc. Column smooth. Pedal disc and column with numerous spirocysts. Margin not distinct. Sphincter diffuse. Tentacles hexamerously arranged, rather long, the inner longer than the outer. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs, well developed. Mesenteries at the base more numerous than the tentacles, the last cycle existing only in the proximal part of the body. More than 6 perfect pairs of mesenteries. 2 pairs of directives. Retractors diffuse, weak, parietobasilar muscles weak, basilar muscles well developed. Distribution of gonads unknown.

*I. (Actinopsis) rosea* Studer 1878 p. 544, Carlgren 1928 p. 150. *Isantheopsis* Carlgren 1942 p. 86, Kerguelen 201 m.

Genus *Dofleinia* Wasilieff 1908 p. 14.

Actiniidae with broad base. Column smooth. Sphincter diffuse weak. Tentacles hexamerously arranged, plump, not numerous, very large, the inner at least twice as large as the outer ones. The tentacles, the longitudinal muscles of which are ectodermal, are provided with papillae, plainly visible to the naked eye, which represent strong batteries of very large basitrichs. Weaker papillae are present also on the oral disc. 2 broad siphonoglyphs, aborally very prolonged. Mesenteries hexamerously arranged, probably all fertile apart from the directives. Retractors diffuse. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*D. armata* Wasilieff 1908 p. 14, Carlgren 1945 p. 12, Japan, Sagami Bay 20 m.

Genus *Boloceropsis* Mc Murrich 1904 p. 255.

Actiniidae with well developed pedal disc and smooth column. Margin tentaculate. Sphincter diffuse, well developed. Tentacles long, longitudinally sulcated, without sphincter at the base, but the mesogloea is strongly attenuated at their bases. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 distinct siphonoglyphs. Mesenteries hexamerously arranged. At least 12 pairs of mesenteries perfect. Retractors, parietobasilar and basilar muscles weak. All stronger mesenteries, apart from the 2 pairs of directives, fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors. Basitrichs very long in tentacles and actinopharynx.

*B. platei* Mc Murrich 1904 p. 255, Carlgren 1927 p. 22, 1945 p. 12, Chile: Calbuco, Golfo de Corcovado, Renikefiord 8-37 m.

Genus *Epiactis* Verrill 1869 a p. 492.

Phellia Verrill 1868.

Epigonactis Verrill 1899.

Pseudophellia Verrill 1899.

Leiothealia Stuckey 1908 a.

? Bunodactis Verrill 1869.

Actiniidae with well developed base and smooth column rarely provided with a cuticle. Margin and fosse distinct. Sphincter usually circumscribed, often strong, rarely restricted. Tentacles simple, short, not attenuated at the base. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal to more or less mesogloal. Mesenteries hexamerously arranged. Younger mesenteries growing from the base to the margin wherefore there are usually more mesenteries at the base than at the margin. At least 12 pairs of mesenteries perfect. Retractors diffuse to restricted, often very strong. Gonads in all stronger mesenteries. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors. Embryos often developing in brood-pouches or adherent to column.

Genotype: *E. prolifera* Verrill 1869 a p. 492, Mc Murrich 1901 p. 39, Torrey 1902 p. 392, Carlgrén 1945 p. 11 = *fertilis* Andres 1883 p. 574, California to Puget sound; embryos adherent to column.

*E. marsupialis* Carlgrén 1901 p. 482, 1921 p. 175, Arctic Sea of Siberia 16–26.5 m; brood-pouches.

*E. incerta* Carlgrén 1921 p. 181, Arctic Sea of Siberia 21 m.

*E. (Phellia) arctica* Verrill 1868 p. 328, *Pseudophellia* 1899 p. 377, *Epiactis* Carlgrén 1921 p. 177, North of Bering Sound, Norwegian Sea 64°53' N 10° W 54–630 m; brood-pouches.

*E. nordmanni* Carlgrén 1921 p. 180, West Greenland 325–330 m.

*E. (Epigonactis) fecunda* Verrill 1899 p. 378 = *regularis* Verrill 1899 p. 380, = ? *spetsbergensis* p. p. Kwietniewski 1898 p. 134, Nova Scotia, Newfoundland Bank, Spitzbergen? 27–366 m; brood-pouches.

*E. vincentina* Carlgrén 1939 p. 792, Cape Verde Isl., upper littoral.

*E. georgiana* Carlgrén 1927 p. 40, South Georgia 75 m.

*E. brucei* Carlgrén 1939 p. 792, Off Coats Land 2 577 m.

*E. crateriformis* Carlgrén and Stephenson 1929 p. 14, 66°32' S 14°139' E 287 m.

*E. adeliata* Carlgrén and Stephenson 1929 p. 16, Adelii Land 73–91 m.

*E. lewisi* Carlgrén 1940 b p. 23, 68°30' N 169°20' W 55 m; brood-pouches.

? *E. (Bunodactis) japonica* Verrill 1869 p. 62 = *Epiactis prolifera* Uchida 1934 p. 31, 1939 p. 309, Kurile Isl., Japan: Hokkaido, Northern part of Houshu southwards to Misaki. Brood adherent to column.

*E. nova-zealandica* Stephenson 1918 p. 24, New Zealand, East of North Cape.

*E. (Actinia) Thomsoni* Coughtrey 1874 p. 280, *Leiothealia* Stuckey 1909 a p. 370, *Epiactis* Stephenson 1922 p. 274, Carlgrén 1924 p. 221, New Zealand, probably = *nova-zealandica*.

*Epiactis irregularis* nov. sp. Gulf of California.

Genus *Gyrostoma* Kwietniewski 1898 p. 424.

Anemonia Milne-Edwards 1857, Andres 1883, Mc Murrich 1893, Haddon 1898.

Corynactis p. p. Klunzinger 1877.

Paractis Klunzinger 1877.

Condylactis Pax 1907, Stephenson 1922.

Actiniidae with well developed pedal disc. Column smooth, rather low. Margin well marked. Fosse always distinct, usually deep. Sphincter diffuse, sometimes very weak. Tentacles simple, not long, their longitudinal muscles ectodermal. Siphonoglyphs variable in number as also the directives, which may be absent. Mesenteries numerous, many perfect. Retractors weak or strong, diffuse, often band-like. All stronger mesenteries with or without the directives fertile. Tentacles more numerous than the mesenteries at the base. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *G. hertwigi* Kwietniewski 1897 c p. 30, 1897 a p. 424, Torres Str. Thursday Isl. = *Anemonia Ramsayi* Haddon and Shackleton 1893 p. 124, Haddon 1898 p. 420, Torres Str. Murray Isl., Great Barrier Reef, Three Isles, Lizard Isl.

? *G. Sancti-Thomae* Pax 1910 p. 177, St. Thomas. Probably a young *Actinia*.

- ? *G. monodi* Carlgren 1927 b p. 478, Cameroon, low-water.  
*G. (Actinia) erythrosoma* Hemprich and Ehrenberg 1851 p. 257, Ehrenberg 1834 p. 33, *Condylactis* Pax 1907 p. 30, *Gyrostoma* Carlgren 1947 p. 9, The Red Sea.  
*G. (Actinia) quadricolor* Leuckari in Rüppel 1828, *Corynactis* Klunzinger 1877 p. 73, *Gyrostoma* Carlgren 1945 p. 10, 1947 p. 7, The Red Sea.  
*G. (Actinia) Helianthus* Hemprich and Ehrenberg, Ehrenberg 1834 p. 35, *Paractis* Klunzinger 1877 p. 70, The Red Sea, Tor.  
*G. (Actinia) adherens* p. p. Ehrenberg 1834 p. 34, *Anemonia* Milne-Edwards 1857 p. 234, *Paractis* Klunzinger 1877 p. 69, *Gyrostoma* (?) Pax 1907 p. 51. See Carlgren 1947 p. 7-9, The Red Sea.  
*G. (Isacmaea) euclora* H. and E. Ehrenberg 1834 p. 34, *Paractis* Klunzinger 1877 p. 72, *Gyrostoma* Carlgren 1947 p. 10, The Red Sea.  
*G. tristis* Carlgren 1900 p. 36 (56), Zanzibar.  
*G. dubia* Carlgren 1900 p. 38 (58), Zanzibar.  
*G. stuhlmanni* Carlgren 1900 p. 39 (59), Zanzibar.  
*G. dysancritum* Pax 1907 p. 48, 1909 p. 403, Zanzibar.  
*G. tulearense* Pax 1909 p. 404, South West Madagaskar.  
*G. (Anemonia) kwoiam* Haddon and Shackleton 1893 p. 125, Haddon 1898 p. 422, Torres Str. Jervis Isl.  
*G. Haddoni* Lager 1911 p. 229. South West Australia, Fremantle district.  
*G. sulcatum* Lager 1911 p. 230, South West Australia, Sharks Bay.  
? *G. selkirkei* Mc Murrich 1904 p. 227, Juan Fernandez.  
? *G. incertum* Mc Murrich 1904 p. 230, Chile, Talcahuano, Puerto Montt.  
*G. (Anemonia) ? inaequale* Mc Murrich 1893 p. 149, *Gyrostoma* Mc Murrich 1904 p. 227, Lower California, Pichilingue Bay.  
? *G. (Anemonia) stimpsoni* Fewkes 1889, *Gyrostoma* Mc Murrich 1904 p. 227, California.

Genus *Paranemonia* Carlgren 1900 p. 61.

- Anemonia* p. p. Contarini 1844, Andres 1883.  
*Gyrostoma* Stephenson 1922.

Actiniidae with broad pedal disc. Column smooth, low. Margin tentaculate, no fosse. Sphincter absent or with tendency to form a very weak, elongate, diffuse one. Tentacles in comparison with the length of the body long, not retractile, their longitudinal muscles ectodermal, as also the radial muscles of oral disc. Siphonoglyphs indistinct. Mesenteries numerous, no directives (always?). A variable number of mesenteries perfect, the stronger fertile. Considerably more mesenteries at the base than at the margin. Retractors diffuse. Parietobasilar muscles well developed forming a fold on the stronger mesenteries. Propagation by longitudinal fission. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- P. (Anemonia) cinerea* Contarini 1844 p. 183, *Paranemonia contarini* Carlgren 1900 p. 41, *cinerea* Pax 1907 p. 37, *Gyrostoma* Stephenson 1922 p. 267, the Mediterranean.

Genus *Phialoba* Carlgren n. gen.

Actiniidae. Pedal disc well developed, but considerably narrower than the oral disc. Column smooth. No fosse, no distinct sphincter. Tentacles short, conical, up to more than 400, not retractile, their longitudinal muscles ectodermal. Oral disc very wide, lobed. 2 siphonoglyphs, 2 pairs of directives. Numerous pairs of perfect mesenteries which are fertile, including the directives. Considerably more mesenteries distally than proximally. Retractors band-like, diffuse, weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- P. steinbecki* nov. sp., Gulf of California.

Genus *Glyphoperidium* Roule 1909 p. 10.

- Epiactis* (?) Pax 1922, Stephenson 1922.

Actiniidae with well developed pedal disc and elongate body. Column broader distally than proximally without verrucae or spherules. Margin and fosse distinct. Sphincter variable from diffuse to more or less

circumscribed. Tentacles extraordinarily numerous, hexamerously arranged, in comparison to the size of the body small and delicate, imperfectly retractile, the inner longer than the outer. Longitudinal muscles of tentacles uniformly developed all round the tentacles. Oral disc wide. Actinopharynx long, with 2 very broad siphonoglyphs aborally prolonged. Mesenteries rather thin, more numerous distally than proximally. Not half of the mesenteries perfect. Retractors weak, forming no distinct pennons. Parietobasilar muscles distinct, forming a fold, basilar muscles well developed. The two first cycles of mesenteries sterile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*G. bursa* Roule 1909 p. 11, Carlgrén 1927 p. 33, 1928 p. 166, 1930 p. 4, *Epiactis* Stephenson 1922 p. 274 = *G. vas* Roule 1909 p. 13, *Epiactis* Stephenson 1924, 275, *Epiactis ? stephensoni* Pax 1922 p. 80, 1923 p. 6, Subantaretis and Ant-artis, 10–534 m.

#### Genus *Glyphostylum* Roule 1909 p. 14.

Actiniidae with well developed pedal disc and elongate body. Column smooth. Margin distinct. A fosse present? No sphincter. Tentacles extraordinarily numerous, hexamerously arranged, in comparison to the size of the body small, the inner longer than the outer ones; their longitudinal muscles considerably weaker on the one side than on the other, accompanied by a weaker development of the mesogloea and ectoderm on the former side. 2 very broad siphonoglyphs. Mesenteries probably more numerous distally than proximally. 12 pairs of mesenteries perfect.

*G. calyx* Roule 1909 p. 16, Antarctic, Booth-Wandell Isl. 25 m.

The description of Roule is incomplete. The genus is undoubtedly nearly related to *Glyphoperidium* and it is possible that we have to do with one genus only.

#### Genus *Urticinopsis* Carlgrén 1927 p. 41.

*Rhodactinia* Clubb 1908.

*Urticina* Verrill 1922.

Actiniidae with well developed pedal disc. Column smooth without verrucae or spherules. Sphincter strong, circumscribed. Tentacles hexamerously arranged, short, about half as numerous as the mesenteries at the base. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal or mesoectodermal. Actinopharynx well developed as also the siphonoglyphs. Mesenteries hexamerously arranged, more numerous proximally than distally. At least 2 cycles of mesenteries perfect. Retractors of the mesenteries diffuse, not strong. Parietobasilar muscles forming a distinct fold. The first 2 cycles of mesenteries sterile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *U. (Urticina) antarctica* Verrill 1922 p. 109. *Urticinopsis* Carlgrén 1927 p. 42 = *Rhodactinia crassicornis* Clubb 1908 p. 9, *Rhodactinia clubbi* Pax 1923 p. 25, Mc Murdo Bay 16–36 m.

*U. crassa* Carlgrén 1928 p. 42, South Africa, off Cape Point 567–1024 m.

#### Genus *Isadamsia* Carlgrén 1928 p. 167.

Actiniidae with very wide pedal disc forming a cuticle which may project beyond the mouth of the shell to which it is fastened. Column smooth, without cinclides. Sphincter circumscribed. Tentacles short, hexamerously arranged, somewhat fewer than the mesenteries at the base. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Mesenteries numerous, several cycles of perfect mesenteries. Mesenteries of the three first cycles sterile. Retractors weak, diffuse, parietobasilar and basilar muscles distinct. The species of the genus live in symbiosis with hermit crabs in such a way that their mouths are always situated beneath that of the hermits (as in *Adamsia*). No acontia.

*I. cancrisocia* Carlgrén 1928 p. 167, 1928 b p. 165, The Pemba Channel 818 m.

Genus *Phlyctenactis* Stuckey 1909 b p. 396.

*Cystiactis* Duerden 1895, Haddon and Duerden 1896, Stephenson 1922.

Actiniidae with broad pedal disc. The whole column with large, oval, simple vesicles very close set in somewhat irregular rows. No spherules. Fosse well developed. Sphincter broad, diffuse. Tentacles rather short numerous. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal. 2 broad siphonoglyphs. Mesenteries numerous, hexamerously arranged. Retractors diffuse, parietobasilar muscles well developed, basilar muscles distinct. Primary and secondary mesenteries may be sterile. More mesenteries at the base than at the margin. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. (Actinia) tuberculosa* Quoy and Gaimard 1833 p. 159, *Cystiactis* Haddon and Duerden 1896 p. 156, Lager 1911 p. 217, Stephenson 1922 p. 286, Australia: New South Wales, Sydney Coogie, King George's Port, Bass Straits, South West Australia, Koombana Bay.

*P. retifera* Stuckey 1909 b, p. 396. Probably = *P. tuberculosa*, New Zealand, Kennedie Isl. (Cock Str.) to Stewart Isl.  
? *P. morrisoni* Stuckey 1909 b, p. 396, Stewart Isl.

Genus *Cladactella* Verrill 1928 p. 22.

*Bunodactis* p. p. Verrill 1899.

Actiniidae. Pedal disc broad. Column cylindrical, entirely covered with longitudinal rows of non adhesive, rounded or elliptical vesicles, very close set. Fosse distinct. Sphincter diffuse, rather broad, no marginal spherules. Tentacles of moderate length, rather numerous (up to 96), conical, imperfectly retractile. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 well developed siphonoglyphs and two pairs of directives. Numerous perfect pairs of mesenteries. Considerably more mesenteries at the base than at the margin. Distribution of the gonads not certain, but they are borne on the narrow imperfect mesenteries and many of the perfect ones (Verrill). Retractors of the mesenteries very weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *C. (Bunodactis) manni* Verrill 1899 p. 218, *Cladactella* Verrill 1928 p. 22, Hawaii Isl., Oahu, Kauoi, low-water.

*C. obscura* Verrill 1928 p. 24, Hawaii Isl., Honolulu, Pearl Harbour 1.5–2.5 m.

Genus *Phlyctenanthus* n. gen.

Actiniidae. Pedal disc well developed. Column entirely covered with large simple vesicles very close set. No spherules. Fosse well developed. Sphincter strong, decidedly circumscribed. Tentacles rather short, up to 96. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Two broad siphonoglyphs and two pairs of directives. There are 48 pairs of mesenteries, all seemingly perfect and fertile apart from the directives. Retractors of the stronger mesenteries diffuse, band-like, those of the weaker more restricted. Parietobasilar and basilar muscles strong. Same number of mesenteries proximally and distally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*P. australis* Carlgren nov. sp., Australia, Sydney.

Genus *Cnidopus* Carlgren 1934 b p. 351.

*Epiactis* p. p. Torrey 1902.

Actiniidae with broad pedal disc. Column smooth in its upper part, in its lower, from the limbus upward, provided with transverse and longitudinal rows of low protuberances square at the base, very close-set, and provided with extraordinarily numerous nematocysts (probably atrichs). Sphincter circumscribed.

Tentacles rather short, comparatively numerous, as a rule arranged hexamerously. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Usually two siphonoglyphs. Mesenteries for the most part perfect, and more numerous than the tentacles. Retractors not strong, parietobasilar and basilar muscles strong. Mesenteries of the first and second cycles probably sterile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors (and probably atrichs).

*C. (Epiactis) ritteri* Torrey 1902 p. 393, *Cnidopus* Carlgrén 1934 b p. 351, Bering Isl., Alaska, Popop Isl., upper littoral.

#### Genus *Actiniogeton* Carlgrén 1938 p. 32.

*Actinioides* Haddon and Shackleton 1893, Haddon and Duerden 1896, Carlgrén 1920.

Actiniidae with well developed pedal disc. Column with longitudinal rows of adhesive verrucae. At the margin perforated pseudospherules. Sphincter very weak, circumscribed or diffuse. Tentacles and mesenteries irregularly arranged (always?). Longitudinal muscles of tentacles ectodermal. Usually more than two siphonoglyphs, which may or may not be connected with directives. Retractors diffuse, weak. Distribution of the gonads irregular. Not more mesenteries at the base than at the margin. Asexual reproduction probably frequent. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. (Actinioides) sultana* Carlgrén 1900 p. 43 (63), *Actiniogeton* 1938 p. 33, Zanzibar, Durban, low-water.

*A. (Actinioides) rapanuiensis* Carlgrén 1920 p. 151, Easter Isl., Hango Piko, upper littoral.

? *A. (Actinioides) Sesere* Haddon and Shackleton 1893 p. 126, Haddon 1898 p. 428, Torres Straits Mabubiag, Jarvis Isl., upper littoral.

*A. (Actinioides) spenceri* Haddon and Duerden 1896 p. 159, Port Philip, Australia.

? *A. (Actinioides) papuensis* Haddon 1898 p. 426, Torres Straits, Mabubiag, Jarvis Isl., upper littoral.

? *A. (Actinioides) ambonensis* Kwietniewski 1898 p. 389 Ambon.

As *dixoniana*, the type of the genus *Actinioides* probably is an *Anthopleura*, I have (1938 p. 32) proposed the name *Actiniogeton* for *sultana*. If marginal spherules are absent in *dixoniana*, the genus *Actiniogeton* may drop.

#### Genus *Parantheopsis* Mc Murrich 1904 p. 232.

*Bunodes* p. p. Gosse 1860, Studer 1878, Verrill 1869, Andres 1883, Mc Murrich 1893.

*Bunodella* p. p. Pfeffer 1889.

*Condylactis* p. p. Mc Murrich 1893, Carlgrén 1899, Pax 1922, 1926.

*Bunodactis* p. p. Verrill 1899.

*Anthea*? Kwietniewski 1896.

*Anemonia* Kirk and Stuckey 1909.

Actiniidae with more or less elongated body and well developed pedal disc. Verrucae in longitudinal rows at least in the upper part of the body. Margin and fosse distinct. (Little? or) no sphincter. Tentacles short, the outer almost as long as the inner. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Siphonoglyphs well developed. Mesenteries arranged octa-, penta- or hexamerously. All or most of the mesenteries perfect. 2 pairs of directives. Retractors well developed, parietobasilar muscles forming a distinct fold, basilar muscles well developed. Gonads on the mesenteries of the first cycle and on all or almost all of the other cycles. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. (Actinia) cruentata* Dana 1849 p. 3, 1859 p. 8, *Parantheopsis* Mc Murrich 1904 p. 233, Carlgrén 1924 p. 201, 1927 p. 24 = *Bunodes kerguelensis* Studer 1878 p. 543 = *Anthea* ? *kerguelensis* Kwietniewski 1896 p. 595, *Anemonia dichogama* Kirk and Stuckey 1909 p. 384; = *Condylactis crassa* Pax 1922 p. 78. Chile: Talcahuano, Strait of Magellan, Terra del Fuego, Falkland Isl., Inaccessible Archipelago, Kerguelen, Campbell, Masked and Auckland Isl., upper littoral (brood-pouches?).

- P. (Bunodella) georgiana* Pfeffer 1889 p. 15; *Condylactis* Carlgrén 1899 p. 13, *Parantheopsis* Carlgrén 1927 p. 24, South Georgia, upper littoral, brood-pouches.  
*P. (Actinia) ocellata* Lesson 1830 p. 79, *Bunodes* Andres 1883 p. 433, *Parantheopsis* Mc Murrich 1904 p. 235, Carlgrén 1927 p. 25, Peru, Chile, Puerto Madryn, low-water.  
 ? *P. (Bunodactis) vanhoeffeni* Pax 1922 p. 78, 1926 p. 17. *Parantheopsis?* Carlgrén 1928 p. 245, Kerguelen, brood-pouches.

Genus *Condylactis* Duchassaing and Michelotti 1866 p. 125.

- Anthea* p. p. Weinland 1860.  
*Cereactis* Andres 1880, 1883.  
*Ilyanthopsis* Hertwig 1888.

Actiniidae with elongate body. Column smooth or provided with more or less distinct verrucae in its upper part. Margin with a collar. No sphincter, no spherules. Tentacles simple, rather long, hexamerously arranged, they can probably not be wholly covered by the upper part of the body, their longitudinal muscles ectodermal. Most of the mesenteries perfect and fertile, except sometimes the directives. Retractors diffuse. Not more mesenteries at the base than at the margin. Cnidom: spirocysts, basitrichs, microbasie *p*-mastigophors.

- Genotype: *C. (Actinia) aurantiaca* Delle Chiaje 1825 p. 438, *Cereactis* Andres 1880 p. 319, 1883 p. 455, *Condylactis* Mc Murrich 1889 p. 21, Pax 1907 p. 22, The Mediterranean.  
*C. (Anthea) gigantea* Weinland 1860 p. 33, 34, Verrill 1907 p. 258 = *Condylactis passiflora* Duchassaing and Michelotti 1866 p. 31, Mc Murrich 1889 p. 18, Duerden 1898 p. 453 = *Cereactis bahamensis* Mc Murrich 1889 p. 30 = *Ilyanthopsis longijilis* Hertwig 1888 p. 13, Bermudas, Bahamas, Haiti, Jamaica, Curaçao, Barbados, Thack Isl., St. Thomas, Portorico, Tortugas.  
*C. natalensis* Carlgrén 1938 p. 31, Durban.  
 ? *C. parvicornis* Kwietniewski 1898 p. 392, Ambon.

Genus *Macroactyla* Haddon 1898 p. 431.

- Condylactis* p. p. Haddon and Shackleton 1893.

Actiniidae with distinct base. Column with adhesive verrucae in its upper part, without fosse or spherules. Sphincter restricted, rather weak. Tentacles long and stout, about 48, the inner considerably longer than the outer. 2 siphonoglyphs. Six pairs of perfect mesenteries, 2 pairs of directives. Retractors band-like but restricted. Parietobasilar muscles well developed, forming a fold. All mesenteries fertile.

- M. (Condylactis) aspera* Haddon and Shackleton 1893 p. 124, *Macroactyla* Haddon 1898 p. 431, Torres Straits, Mer.

Genus *Tealia* Gosse 1858 p. 417.

- Rhodactinia* p. p. Agassiz 1847.  
*Cereus* p. p. Milne-Edwards 1857.  
*Bunodes* p. p. Gosse 1855.  
*Bolocera* p. p. Gosse 1860.  
*Urticina* Marenzeller 1877.  
*Madoniactis* Danielsson 1890.  
*Leiothealia* p. p. Kwietniewski 1898.  
*Stomphia* Elmhirst 1915.

Actiniidae with well developed pedal disc. Column with adhesive verrucae or less commonly without these. Spherules absent. Fosse well developed. Sphincter strong, palmate or pinnate circumscribed. Tentacles short, cylindrical, stout, their longitudinal muscles ectodermal to more or less mesogloea. Radial



muscles of oral disc ectodermal to mesoectodermal. Numerous perfect mesenteries as a rule decamerously arranged. Usually the 10–20 oldest pairs are sterile, rarely only 6 pairs. Basitrichs of the actinopharynx much larger than those of the tentacles. Same number of mesenteries proximally and distally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *T. (Actinia) felina* Linné 1767 p. 1088, *Tealia crassicornis* Gosse 1858 p. 417, 1860 p. 209, Andres 1883 p. 415, *felina* Faurot 1895 p. 174, Stephenson 1935 p. 139, *Urticina crassicornis* Carlgren 1893 p. 58, *felina* Mc Murrich 1901 p. 28, 1911 p. 65, Carlgren 1921 p. 161. (Literature see Andres 1883, Carlgren 1893, 1921.) Arctic and boreal species. North Atlantic and North Pacific Oceans.

? *T. (Urticina) columbiana* Verrill 1922 p. 9, 107, Puget Sound, Port Thousand Bay.

#### Genus *Evactis* Verrill 1869 a p. 471.

*Cereus* p. p. Milne-Edwards 1857.

Actiniidae. Pedal disc well developed. Column with longitudinal rows of adhesive verrucae, which are most numerous in its uppermost part; and provided with cinclides. Sphincter circumscribed, more or less unequally bipinnate. Tentacles rather short, hexamerously arranged, the outer longer than the inner (or both of same length?). Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs. Most of the mesenteries perfect. 2 pairs of directives. Retractors strong, band-like, parietobasilar and basilar muscles well developed. Probably more mesenteries than tentacles. All mesenteries, apart from the directives and those of the last cycle, fertile.

*E. (Actinia) artemisia* Dana 1849 p. 4, 1859 p. 11, *Evactis* Verrill 1869 a p. 471, 1922 p. 113, Mc Murrich 1901 p. 23, Torrey 1902 p. 390, Carlgren 1934 a p. 16, *Cereus* Milne-Edwards 1857 p. 268, Alaska to Puget Sound.

This genus proposed by VERRILL is doubtful.

#### Genus *Cribrinopsis* Carlgren 1921 p. 155.

Actiniidae with usually feebly developed verrucae on the column. Pedal disc well developed. Pseudo-spherules absent or present. Fosse distinct. Sphincter strong, palmate or pinnate circumscribed. Tentacles simple, sometimes papillose, short, thick. Longitudinal muscles of tentacles principally mesogloal, radial muscles of oral disc meso-ectodermal to ecto-mesogloal. Numerous perfect mesenteries, decamerously, hexamerously or irregularly arranged. Well developed mesenterial muscles. Gonads on mesenteries of the first cycle and on the other stronger mesenteries, often absent on the directives. Mesenteries more numerous proximally than distally. Basitrichs of tentacles and actinopharynx of about same length. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *C. similis* Carlgren 1921 p. 156, 1942 p. 75, low-arctic, 11–620 m.

*C. williamsi* Carlgren 1940 b p. 24, Alaska, Humpback Bay, 27.5 m.

#### Genus *Bunodactis* Verrill 1899 p. 42.

*Taractostephanus* Brandt 1935.

*Anthopleura* Verrill 1868.

*Bunodes* Gosse 1855, 1860, Verrill 1869, Fisher 1874, 1889, Andres 1880, 1883, Carlgren 1899, 1900.

*Aulactinia* Verrill 1864, Andres 1880, 1883, Mc Murrich 1889, Fischer 1890.

*Bunodella* Verrill 1899.

*Urticina* p. p. Clubb 1902.

*Cereus* p. p. Milne-Edward 1857.

*Cribrina* p. p. Mc Murrich 1901, 1904, 1911, Clubb 1908, Lager 1911, Carlgren 1921.

*Tealia* p. p. Hertwig 1882, Stephenson 1922.

*Tealiopsis* Verrill 1922, 1928.

*Cystiactis* p. p. Milne-Edwards 1857.

*Epiactis* Carlgren 1934.

*Phymactis* Pax 1908, 1920.

Actiniidae with well developed pedal disc. The whole or the most part of the column with more or less distinct adhesive verrucae, which are often simple but sometimes lobed in the distal part of the body. They may or may not be arranged in obvious vertical rows. Foreign bodies often attached to the verrucae. No marginal spherules present, but there may be pseudospherules. Sphincter more or less circumscribed, sometimes circumscribed-diffuse. Tentacles rather short, simple. Longitudinal muscles of the tentacles ectodermal or meso-ectodermal. Commonly 2 well developed siphonoglyphs. Pairs of mesenteries usually numerous. Usually 2 pairs of directives. All stronger mesenteries fertile, sometimes the directives are sterile. Retractors commonly strong, more or less restricted. The younger mesenteries grow from the proximal end upwards and therefore the mesenteries are often more numerous in the proximal part than in the distal. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *B. (Actinia) verrucosa* Pennant 1777 p. 41, *Bunodactis* Stephenson 1935 p. 156 = *B. (Actinia) gemmacea* Ellis and Solander 1786 p. 3, *Bunodes* Gosse 1860 p. 190, Andres 1883 p. 424, *Bunodactis* Stephenson 1921 p. 527, South England to Isle of Man, Ireland, Channel Isl., Belgia, Atlantic coast of France, the Mediterranean, upper littoral.

*B. (Bunodes) stella* Verrill 1864 p. 16, *Bunodactis* Verrill 1899 p. 43, *Cribrina* Mc Murrich 1911 p. 76, Carlgren 1921 p. 148, 1942 p. 74, *Tealiopsis* Verrill 1922 p. 429, North America from W. Greenland to Cape Cod. E. Greenland, Iceland, Spitzbergen, North Norway, Kola peninsula, Kara Sea, Arctic Sea of Siberia, Unalaska 1-102 m.

*B. (Cribrina) spetsbergensis* Carlgren 1921 p. 151, 1942 p. 74, low-arctic 16-640 m.

*B. (Bunodes) Biscayensis* Fischer 1874 p. 229, South West coast of France.

*B. (Bunodes) Duregnei* Fischer 1889 p. 301, South West coast of France.

*B. (Bunodes) rigidus* Andres 1880 p. 317, 1883 p. 428, The Mediterranean.

*B. (Bunodes) sabelloides* Andres 1880 p. 318, 1883 p. 431, the Mediterranean.

*B. steinitze* Pax 1925 a p. 194, Coast of Palestina.

*B. (Aulactinia) capitata* Verrill 1864 p. 20, Cape Cod to Florida.

*B. (Aulactinia) stelloides* Mc Murrich 1889 p. 28, *Bunodella* Verrill 1899 p. 43, *Bunodactis* Verrill 1907 p. 32, Bermudas, Bahamas, Curaçao, Jamaica.

*B. curacaoensis* Pax 1924 a p. 102, Curaçao.

*B. (Tealia) bunodiformis* Hertwig 1882 p. (30), *Bunodactis* Carlgren 1941 a, p. 5. Inaccessible Archipelago, intertidal to 13 m.

*B. (Bunodes) patagoniensis* Carlgren 1899 p. 21, 1927 p. 27, East Patagonia, Puerto Madryn.

*B. (Bunodes) octoradiata* Carlgren 1899 p. 20, *Bunodactis* Carlgren 1927 p. 30, Magellan Strait, Terra del Fuego, Falkland Isl., brood-pouches.

*B. (Cystiactis) reynaudi* Milne-Edwards 1857 p. 276, *Bunodactis* Carlgren 1938 p. 42 = *Phymactis capensis* p. p. Pax 1908 p. 485, 1920 p. 30, South West Africa, South Africa to Durban, upper littoral.

? *B. vanhoeffeni* Pax 1922 p. 78, 1926 p. 19, *Parantheopsis*? Carlgren 1928 p. 245, Kerguelen (brood-pouch).

*B. (Urticina) sulcata* Clubb 1902 p. 295, *Tealia* Stephenson 1922 p. 272, *Bunodactis* Carlgren 1924 p. 196, Carlgren and Stephenson 1929, p. 11, Antarctic.

*B. (Urticina) carlgreni* Clubb 1902 p. 297, *Tealia* Stephenson 1922 p. 272, *Bunodactis* Carlgren 1924 p. 196, South Victoria Land Cape Adare; 65°20' S 95°27' E 36.5-439 m, brood-pouch.

*B. (Bunodes) varidi* Carlgren 1900 p. 46 (66), Zanzibar, upper littoral.

*B. nicobarica* Carlgren 1928 p. 164, South West of Great Nicobar 296 m.

*B. (Actinia) inornata* Stimpson 1855 p. 376, *Bunodes* Verrill 1869 p. 61, *Bunodactis* 1899, p. 375, Hong Kong, low-water.

*B. (Anthopleura) Stimpsoni* Verrill 1868 p. 66, 1899 p. 44, Hong Kong.

? *B. (Bunodes) japonica* Verrill 1868 p. 62 = ? *Epiactis prolifera* Verr. Uchida 1934 p. 17, 1938 p. 309, see Carlgren 1947 p. 3, Japan, Hokkaido, Honshu, northern part of Honshu to Misaki, Kurile Isl.

*B. (Tealiopsis) nigrescens* Verrill 1928 p. 25, Hawaii Isl.

*B. (Cribrina) verruculata* Lager 1911 p. 233, South West Australia, Fremantle dist., low-water.

*B. (Cribrina) altifossa* Lager 1911 p. 234, South West Australia, Sharks Bay.

*B. rubro-fusca* Carlgren 1924, p. 204, New Zealand: Bay of Island, North Cape, Slipper Isl., upper littoral.

*B. (Bunodes) rosea* Stuckey and Walton 1910 p. 542, New Zealand, Pukeroa.

- B. (Bunodes) minima* Stuckey and Walton 1910 p. 543, New Zealand.  
*B. (Epiactis) mortenseni* Carlgren 1924 p. 216, *Bunodactis* Carlgren 1924 p. 261, Auckland, Isl., Campbell Isl., intertidal, brood-pouches.  
*B. aucklandica* Carlgren 1927 p. 28 = (*Cribrina*) *hermafroditica* Clubb 1908 p. 8, Enderby Isl., Auckland Isl., upper littoral.  
 ?*B. (Actinia, Taractostephanus) elegantissima* Brandt 1835 p. 13, *Cribrina* Mc Murrich 1901 p. 18, Puget Sound, upper littoral.  
*B. mexicana* n. sp., Gulf of California.  
*B. (Bunodes) papillosa* Verrill 1869 a p. 468, Peru, Chile.  
*B. (Bunodes) pluvia* Verrill 1869 a p. 468, Peru.  
*B. (Cribrina) elongata* Mc Murrich 1904 p. 289, Chile, Iquique, 20 m.  
*B. (Cribrina) conica* Mc Murrich 1904 p. 284, Juan Fernandez.

Genus *Isocradactis* Carlgren 1924 p. 212.

*Cradactis* Stuckey 1909 b.

Actiniidae with well developed pedal disc. Column cup-like with adhesive verrucae arranged in longitudinal rows and increasing enormously in number a short distance below the tentacles. Several verrucae, in bunches projecting from a common stalk, here form in each intermesenterial compartment, "frond"-like formations. Sphincter decidedly diffuse. Tentacles numerous, short, conical, hexamerously arranged, the inner a little longer than the outer. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Oral disc very wide, folded. Two well developed siphonoglyphs. Mesenteries hexamerously arranged, most of them perfect. Retractors diffuse, bandlike. Parietobasilar and basilar muscles very strong. All mesenteries, apart from the directives, fertile; about the same in number proximally and distally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors (and microbasic *b*-mastigophors?).

- I. (Cradactis) magna* Stuckey 1909 b p. 394, *Isocradactis* Carlgren 1924 p. 213, 1947 p. 16, New Zealand, Cape Maria van Diemen, Plimmerton, commensal with the crab *Halicarcinus planatus*, low-water.

Genus *Parabunodactis* Carlgren 1928 p. 162 (sub. gen.).

*Bunodactis* Carlgren 1928.

Actiniidae with well developed pedal disc. Column thick with 48 longitudinal rows of very large verrucae distributed over almost the whole surface. Sphincter strong, circumscribed. Fosse distinct. Tentacles rather short, about 96 with strong mesogloal thickenings on their abaxial side. Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc meso-ectodermal. 2 distinct siphonoglyphs. All mesenteries perfect and fertile, possibly except the directives. Retractors well developed, band-like. Parietobasilar muscles strong, forming a fold. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- P. (Bunodactis) inflexibilis* Carlgren 1928 p. 162, South West of Great Nicobar 296 m.

Genus *Phyllactis* Milne-Edwards and Haime 1851 p. 12.

*Oulactis* Milne-Edwards and Haime 1851, Duchassaing and Michelotti 1860, Andres 1883, Mc Murrich 1889, 1893, Hutton 1878.

*Actinostella* Duchassaing 1850, Mc Murrich 1905.

*Asteractis* Verrill 1869, 1899, 1907, Duerden 1898, Pax 1912, Watzl 1922.

*Lophactis* Verrill 1869, Andres 1883.

*Cradactis* Mc Murrich 1893, Stuckey 1909, ?Wasilieff 1908.

*Metridium* p. p. Dana 1846.

Actiniidae with well developed pedal disc. Column more or less elongate, usually with verrucae in its lower part. Above the verrucae and below the margin proper lies a definite ruff, frill or collar which may

be quite wide, and which is formed of a number of shorter or longer series of small vesicles containing basitrichs. Above the vesicles a more or less distinct fosse. Sphincter strong to very weak, circumscribed. Longitudinal muscles of tentacles ectodermal. As a rule 2 siphonoglyphs. Retractors typically strong, diffuse to restricted. Parietobasilar muscles well developed. Same number of mesenteries proximally and distally. Cnidom: spirocysts, basitrichs, microbasie *p*-mastigophors.

Genotype: *P. (Metridium) praetexta* Dana 1849 p. 5, 1859 p. 11, *Phyllactis* Milne-Edwards and Haime 1851 p. 12, Milne-Edwards 1857, Rio de Janeiro.

*P. (Actinia) flosculifera* Leseur 1817 p. 174, *Oulactis* Mc Murrich 1889 p. 56, *Asteractis* Verrill 1907 p. 266, Watzl 1922 p. 38; = *Oulactis fasciculata* Mc Murrich 1889 a p. 108, *Cradactis* Mc Murrich 1893 p. 197, *Phyllactis* Stephenson 1922 p. 284, Bahamas, Bermudas, St. Thomas.

*P. (Oulactis) conquirega* Duchassaing and Michelotti 1860 p. 49, *Actinostella* Mc Murrich 1905 p. 4 = *Asteractis* n. sp. Duerden 1898 p. 455, *expansa* Duerden 1902 p. 343; = *Oulactis foliosa* Andres 1883 p. 565, *Phyllactis* Stephenson 1922 p. 283, Curaçao, Barbados, Haiti, Cuba, Porto Rico, Jamaica.

*P. (Actinostella) formosa* Duchassaing 1850 p. 10, Mc Murrich 1905 p. 7, *Oulactis* Duchassaing and Michelotti 1860 p. 47, *Asteractis* Verrill 1899 p. 47, Guadeloupe.

*P. (Oulactis) radiata* Duchassaing and Michelotti 1860 p. 47, 1866 p. 129, *Actinostella* Mc Murrich 1905 p. 6, *Lophactis* Andres 1883 p. 507, *Phyllactis* Stephenson 1922 p. 284, West India.

*P. (Cradactis) digitata* Mc Murrich 1893 p. 198, *Phyllactis* Carlgrén 1934 a p. 14; 36°47' S 51°23' W 19 m.

*P. (Oulactis) californica* Mc Murrich 1893 p. 196, *Phyllactis* Stephenson 1922 p. 284, Gulf of California, Pichilingue Bay.

*P. (Asteractis) bradleyi* Verrill 1869 a p. 465, 1899 p. 46, *Phyllactis* Stephenson 1922 p. 283, Gulf of California, Panama, low-water.

*P. (Metridium) concinnata* Dana 1849 p. 5, 1859 p. 11, *Asteractis* Pax 1912 p. 12, *Phyllactis* Stephenson 1922 p. 283, Gulf of California, Peru, Callao.

*P. (Lophactis) ornata* Verrill 1869 a p. 464, Pearl Isl.

*P. cichoracea* Haeckel 1875 p. 44, The Red Sea.

? *P. (Oulactis) plicata* Hutton 1878 p. 311, *Cradactis* Stuckey 1909 a p. 392, New Zealand, Dunedin, Cook Strait, brood-pouches?

? *P. (Cradactis) striata* Wasilieff 1908 p. 22, Japan, Sagami Bay.

? *P. (Cradactis) excelsa* Wasilieff 1908 p. 23, Japan, Sagami Bay.

#### Fam. **Actinodendronidae** Haddon 1898 p. 488.

Thenaria (Endomyaria) with well developed basal disc. Column smooth. No sphincter. Oral disc thrown into long, tentacle-like arms (lobes) which up to 48 in number are cyclically arranged, and bear either dendritic tentacles or conical, simple ones. Tentacles with large nematocysts. 2 well developed siphonoglyphs. Pairs of mesenteries up to 48, all or almost all perfect and, apart from the directives, fertile. Retractors diffuse, broad, band-like. Parietobasilar and basilar muscles distinct. Cnidom: spirocysts, basitrichs. 3 genera:

##### I. Tentacles branched.

1) Tentacles arranged more or less spirally all round the arms..... *Actinodendron*.

2) Tentacles arranged bilaterally on the sides of the arms ..... *Megalactis*.

II. Tentacles simple, conical, irregularly arranged on the arms ..... *Actinostephanus*.

#### Genus *Actinodendron* Blainville 1930 p. 287.

*Acremodactyla* Kwietniewski 1898.

Actinodendronidae with the oral disc thrown into long arms, 10–48 in number. Sphincter absent. Tentacles arranged more or less spirally all round the arms, and themselves branched. The tips of the tentacles are provided with long basitrichs forming nematocyst batteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 broad siphonoglyphs, 2 pairs of directives. Mesenteries few,

all or almost all perfect. Retractors very strong, diffuse. All mesenteries apart from the directives fertile. Cnidom: spirocysts, basitrichs.

Genotype: *A. (Actinia) arboreum* Quoy and Gaimard 1833 p. 154, Blainville 1830 p. 287, 1834 p. 320, New Guinea.

*A. (Actinia) alcyonidium* Quoy and Gaimard 1833 p. 154, Blainville 1834 p. 350, Tonga.

*A. (Acremodactyla) ambonense* Kwietniewski 1897 a p. 401, Ambon.

*A. plumosum* Haddon 1898 p. 490 = *arboreum* Haddon and Shackleton 1893 p. 117 = *alcyonidium* Saville Kent 1893 p. 34, Torres Straits, Mer, Cape York, Great Barrier Reef, Low Isl., West Australia, Lacapide Isl.

*A. glomeratum* Haddon 1898 p. 492, Torres Straits, Mer.

*A. hansingorum* Carlgrén 1900 p. 98 (118), Zanzibar.

#### Genus *Megalactis* Ehrenberg 1834 p. 39.

*Actinaria* Klunzinger 1877.

Actinodendronidae with very long arms, the oral faces of the arms free from tentacles, which are set along their sides. The ultimate branches of the tentacles simple and pointed.

Genotype: *M. hemprichii* Ehrenberg 1834 p. 39, *Actinaria*, Klunzinger 1877 p. 90, The Red Sea, Ras Kafil Isl.

*M. griffithsii* Saville Kent 1893 p. 35, 147, Torres Straits.

#### Genus *Actinostephanus* Kwietniewski 1897 a p. 403.

Actinodendridae with well developed pedal disc which is, however, not so broad as the oral. Column smooth. Oral disc thrown into 4 cycles of long arms which bear simple, larger and smaller conical tentacles irregularly arranged. Longitudinal muscles of tentacles radial muscles of oral disc ectodermal. 2 broad siphonoglyphs. All mesenteries perfect and save the directives, fertile. Retractors well developed, forming a broad band with numerous close folds. Parietobasilar muscles weak. Cnidom: spirocysts, basitrichs.

*A. haeckeli* Kwietniewski 1897 a p. 403, Ambon.

#### Fam. **Thalassianthidae** Milne-Edwards 1857 p. 293.

Thenaria (Endomyaria) with well developed base. Column with more or less distinct verrucae in its upper part. Sphincter weak, restricted or circumscribed. Oral disc sometimes thrown into numerous short, cyclically arranged, permanent lobes; or sometimes not. The lobes, when present, bear on the oral side dendritic tentacles which are continued on the disc and radially arranged, on the aboral side a group of nematospheres. At the margin a cycle of dendritic exocoelic tentacles. Longitudinal muscles of tentacles absent or very weak. 2 siphonoglyphs or several, the latter not connected with directives. Pairs of mesenteries numerous, many perfect, directives present or absent. Retractors well developed, diffuse, band-like. Parietobasilar muscles weak, basilar muscles well developed. Distribution of gonads varying, the mesenteries of the first cycle, apart from the directives, may be fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

4 genera:

I. Oral disc thrown into numerous permanent lobes which on their aboral side bear nematospheres.

1) Oral disc not folded. No directives. No more mesenteries distally than proximally

*Thalassianthus*.

- 2) Oral disc more or less folded. Directives present.
- a) The greater part of oral disc without tentacles. Exocoelic tentacles large . . . . . *Actinaria*.
- aa) Almost the whole disc with close set tentacles. Exocoelic tentacles small, flattened. More mesenteries distally than proximally . . . . . *Heterodactyla*.
- II. Oral disc not thrown into permanent lobes. The nematospheres form a continuous band inside the exocoelic tentacles . . . . . *Cryptodendron*.

Genus *Thalassianthus* Leuckart 1828 p. 5.

Epicladia Ehrenberg 1834 p. 42.

Thalassianthidae with well developed pedal disc and rather small to medium-sized body. Column with verrucae in its upper part. Sphincter weak, restricted to circumscribed. The endocoelic tentacles (which are provided with accessory tentacles arranged in more or less distinct longitudinal rows) occupy partly the oral disc partly the oral sides of the cyclically arranged discal lobes. The aboral side of the lobes bear bunches of grape-like nematospheres. The marginal tentacles, not more than one per exocoel, are orally-aborally flattened, and their accessory tentacles are more irregularly arranged. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal, the former very weak. Oral disc not folded, about half to two thirds of the oral disc without tentacles. Mouth round. Several distinct siphonoglyphs not connected with directives. Numerous mesenteries, several perfect. No directives. No more mesenteries distally than proximally. Retractors well developed, diffuse, band-like. Parietobasilar muscles weak but forming a fold. Some of the perfect and the stronger imperfect mesenteries fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *T. aster* Leuckart in Rüppel 1828 p. 5, Klunzinger 1877 p. 89, Carlgrén 1900 p. 87 (107) = *Epicladia quadrangula* Ehrenberg 1834 p. 42, The Red Sea, Koseir, Tor; Zanzibar.

*T. kraepelini* Carlgrén 1900 p. 91 (101), Zanzibar.

*T. senckenbergianus* Kwietniewski 1897 p. 337, Ternate.

Genus *Actinaria* Blainville 1830 p. 322.

Metridium p. p. Ehrenberg 1834 p. 39.

Thalassianthidae with wide pedal disc. Column with vertical rows of verrucae in its upper part. Margin a little notched. Sphincter weak, restricted. Oral disc irregularly folded, for the most part bare, at the margin thrown into very numerous, small lobes issuing from the endocoels. Oral sides of the lobes provided with very small dendritic tentacles, which are continued a short way on to the oral disc; aboral sides of the lobes with nematospheres. Exocoelic tentacles dendritic, somewhat swollen at the base. Two siphonoglyphs. Many mesenteries perfect, all stronger mesenteries, except perhaps the directives, fertile.

Genotype: *A. (Actinia) villosa* Quoy and Gaimard 1833 p. 156, Blainville 1834 p. 322, *Metridium* Ehrenberg 1834 p. 39, Tonga Isl.

*A. dendrophora* Haddon and Shackleton 1893 p. 123, Haddon 1898 p. 487, Torres Straits, Mer, surface of reef.

As the anatomy of the genotype is unknown the diagnosis is based on *A. dendrophora*.

Genus *Heterodactyla* Hemprich and Ehrenberg 1851 p. 12.

Thalassianthus p. p. Stephenson 1922 p. 295.

Medium-sized to very large Thalassianthidae with well developed pedal disc. Upper part of column with verrucae. Sphincter very weak, restricted to circumscribed. Oral disc more or less strongly folded.

Endocoelic tentacles short, branched all round in their upper parts, radially arranged on the greater part of the oral disc, and on the oral sides of short, permanent, cyclically arranged lobes. On the aboral sides of the lobes are bunches of grape-like nematospheres. Exocoelic tentacles orally-aborally flattened, branched at the margin. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 well developed siphonoglyphs and two pairs of directives. Numerous pairs of mesenteries, at least 3 cycles perfect. More mesenteries distally than proximally. Retractors well developed, diffuse, band-like. Parietobasilar muscles weak, basilar muscles well developed. All stronger mesenteries, apart from the directives, fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *H. Hemprichii* Ehrenberg 1834 p. 42, Klunzinger 1877 p. 90, Carlgren 1900 p. 94 (114), *Thalassianthus* Stephenson 1922 p. 296, The Red Sea, Koseir, Scherm, Zanzibar, Sumatra, Emma Bay, Queensland from Torres Straits to Cape Flattery, Great Barrier Reef, Low Isl.

? *H. hypnoides* Saville Kent 1893 p. 148, *Thalassianthus* Stephenson 1922 p. 296, Stephenson & Tandy 1931 p. 47, Barrier Reef, Cape Flattery, Low Isl.

*H. sp.*? Kwietniewski 1896 p. 601, Ceylon.

Genus *Cryptodendrum* Klunzinger 1877 p. 86.

Thalassianthidae with broad pedal disc. Upper part of column with small verrucae. Sphincter weak, to very weak, more or less circumscribed. Margin somewhat crenulated. Wide, irregularly folded oral disc. Tentacles of two kinds, partly short, dendritic, partly spherical. At the margin there is a single row of dendritic, exocoelic tentacles, inside those a continuous, broad band of globular nematospheres. The inner greater part of the oral disc is occupied by short branched endocoelic tentacles radially arranged. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Two well developed siphonoglyphs. Pairs of mesenteries numerous, at least those of the three first cycles perfect. All stronger mesenteries except the directives, fertile. More mesenteries at the margin than at the base. Retractors diffuse, well-developed, band-like. Parietobasilar muscles weak, basilar muscles distinct. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*C. adhesivum* Klunzinger 1877 p. 86, Studer 1878 p. 545, Kwietniewski 1896 p. 600, Haddon 1898 p. 483, The Red Sea, Koseir; Billeton, Mendanau; North West Guinea, coast of Salvatti; Murray Isl.; Great Barrier Reef, Batt Reef, Low Isles.

Fam. **Aurelianidae** Andres 1883 p. 494.

Thenaria (Endomyaria) with distinct, often wide pedal disc. Column smooth, or with vesicles in its upper part. Sphincter strong, circumscribed. Tentacles very short, vesicle-like, often slightly lobed, few or many communicating with each of the main exo- and endocoels. Longitudinal muscles of tentacles and radial muscles of oral disc endodermal or mesogloal. A single siphonoglyph, but two pairs of directives. All or most of the mesenteries perfect and fertile. Retractors very strong, strongly restricted or usually circumscribed.

2 genera:

I. Column smooth. Few tentacles arising from each stronger exo- and endocoel . . . . . *Aureliana*.

II. Upper part of column with vesicles. Numerous tentacles from each exo- and endocoel  
*Actinoporus*.

Genus *Aureliana* Gosse 1860 p. 282.

*Corynactis p. p.* Thomson 1853.

*Capnea* Forbes 1841.

*Stephanactis* Verrill 1868.

? *Leiotelia* Hertwig 1882.

Aurelianidae with very wide pedal disc. Column without vesicles, smooth, divisible into scapus and capitulum, the former provided with a more or less distinct periderm, the latter containing spirocysts

which are absent or almost so from the scapus. Fosse distinct. Sphincter fairly to very strongly pinnate circumscribed, with a distinct central axis of the mesogloea. Tentacles short, simple or somewhat lobed, comparatively few, arranged in cycles; two tentacles communicating with each main exocoel, two to four (six) with each main endocoel. Longitudinal muscles of tentacles and radial muscles of oral disc chiefly mesogloea. One siphonoglyph. Mesenteries more numerous proximally than distally. All stronger mesenteries perfect, fertile and with strong pinnate, circumscribed retractors. Parietobasilar and basilar muscles well developed. The weaker mesenteries, in the proximal part of the body, without filaments. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. (Corynactis) heterocera* Thompson 1853 p. 107, *Aureliana* Gosse 1860 p. 285, Stephenson 1935 p. 174 = *Capnea sanguinea* Forbes 1941 p. 82; = *A. augusta* Gosse 1860 p. 283, Stephenson 1922 p. 292; = *A. regalis* Andres 1883 p. 496, Carlgren 1900 b p. 279, Isle of Man, Plymouth, Falmouth, Weymouth, Ilfracombe, Channel Isl., North West France, Roscoff, The Mediterranean low water to 549 m.

*A. georgiana* Carlgren 1927 p. 91 = *tricirrata* Carlgren and Stephenson 1929 p. 28, South Georgia, Schollert Isl., Palmer Archipelago; 65°48' S 137°32' E 179-419 m.

? *A. (Leiotelia) nymphaea* Hertwig 1882 p. 38 (33). Kerguelen 219 m.

*A. japonica* Carlgren 1940 p. 35, 60, Japan, Sagami, Misaki.

*A. (Stephanactis) indica* Verrill 1869 p. 72, Selio Island, Gaspar Straits.

#### Genus *Actinoporus* Duchassaing 1850 p. 10.

*Aureliana* Andres 1883.

Aureliidae of considerable length. Pedal disc rather small. Column with longitudinal rows of vesicles in its upper part below the sphincter. Fosse deep. Sphincter strong, pinnate circumscribed. Tentacles short vesicular knobs, sometimes lobed arranged in radial rows. Two principal rows of tentacles communicate with each exo- and endocoel. Longitudinal muscles of tentacles and radial muscles of oral disc absent or very weak, ectodermal. Oral disc not extensive but notched into little lappets at the margin which correspond in number to the exo- and endocoels. A single, deep siphonoglyph but 2 pairs of directives. Mesenteries all perfect and all or mostly fertile. Retractors strongly restricted to circumscribed. Parietobasilar muscles well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. elegans* Duchassaing 1850 p. 10, Duchassaing and Michelotti 1860 p. 46, Duerden 1898 p. 451, 1900 p. 175, *Aureliana* Andres 1883 p. 497, Guadeloupe, Jamaica.

*A. elongatus* Carlgren 1900 b p. 283, off Mozambique, Querimba Isl.

#### Fam. **Minyadidae** (Milne-Edwards 1857 p. 227).

Thenaria (Endomyaria) the base of which forms a float. It is hollowed out and has indrawn edges with only a slight opening (abnormally two), the cavity being filled by a chitinous, porous mass. Sphincter circumscribed. Tentacles simple or branched, arranged in radial series over the endocoels as from the exocoels. In very young specimens the arrangement of tentacles in rows is not conspicuous. Arrangement of mesenteries curious owing to the strong enlargement of the endocoels and strong diminution of the exocoels.

#### Genus *Minyas* Cuvier 1827 p. 24.

Stichophora Brandt 1835.

Actinecta Blainville 1830.

Nautactis p. p. Milne-Edwards 1857.

Phlyctaenomyas Andres 1883.

Column smooth or with papillae in its upper part, with spirocysts. Fosse distinct. Sphincter weaker or stronger circumscribed. Tentacles short, papilliform, the exocoelic tentacles in a single row, the endo-



coelic tentacles may show a tendency to form two rows? Usually ten pairs of perfect mesenteries and ten pairs imperfect ones (sometimes some of the latter can reach the uppermost part of actinopharynx). The endocoels are strongly enlarged, the exocoels strongly reduced so that perfect and imperfect mesenteries lie close to each other in longitudinal furrows on the column and form secondary pairs with the retractors facing away from each other (see Pl. 1 fig. 4). Retractors strongly restricted, parietobasilar muscles broad but not folded. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *M. (Actinia) ultramarina* Leseur 1817 p. 169, *Minyas cyanea* Cuvier 1827 p. 24, The Southern Ocean.

*M. coerulea* Lesson 1830 p. 13, Carlgren 1924 c p. 464, SE of Madagascar.

*M. torpedo* Bell 1885 p. 114, Haddon and Shackleton 1893 p. 117, Haddon 1898 p. 464, Carlgren 1894 p. 19, South Atlantic, Golf of Siam, Murray Isl., Torres Str.

*M. (Actinia) olivacea* Leseur 1817 p. 152, *Actinecta* Blainville 1830 p. 285, *Nautactis* Milne-Edwards 1857 p. 230, The Antilles.

*M. (Stichophora) cyanea* Brandt 1835 p. 17, *Phlyctaenominyas Brandtii* Andres 1883 p. 564, The Southern Ocean.

#### Fam. **Homostichanthidae** Carlgren 1900 p. 118 (138).

Thenaria (Endomyaria) with well developed base. Column smooth, its distal part somewhat folded. Sphincter very weak, restricted. Tentacles all of one sort, simple short, radially arranged over the endocoels as well as over the exocoels. Numerous perfect mesenteries.

Genus *Homostichanthus* Duerden 1900 p. 166.

*Discosoma* Duchassaing 1850.

Homostichanthidae with rather elongate body the distal part of which is much folded. Margin somewhat crenulated, fosse slight. Sphincter very weak, restricted. Tentacles very short, smooth, slightly capitate with numerous basitrichs in their tips, arranged in a single row over each endo- and exocoel; their longitudinal muscles ectodermal. 2 well developed siphonoglyphs. Numerous perfect pairs of mesenteries, many with diffuse retractors. Parietobasilar muscles well developed. All stronger mesenteries fertile. Considerably more mesenteries distally than proximally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*H. duerdeni* Carlgren 1900 p. 117 (137) = ? *Actinia anemone* Ellis 1767 p. 436, *Discosoma* Duchassaing 1850 p. 9, *Homostichanthus anemone* Duerden 1898 p. 450, 1900 p. 167 = ? *Actinia denticulosa* Leseur 1817 p. 174 (see Mc Murrich 1905 p. 11), West India, Jamaica.

#### Fam. **Stoichactiidae** Carlgren 1900 p. 72 (92).

Thenaria (Endomyaria) with well developed pedal disc. Column usually with verrucae. Sphincter diffuse to circumscribed, usually not very strong. Tentacles short, wart-like or longer, never very long. From all or some of the endocoels the tentacles arise in radial series; sometimes there is more than one row per endocoel, sometimes only one; rarely the radial arrangement is indistinct or absent. Only one tentacle communicates with each exocoel. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Pairs of perfect mesenteries numerous, all the stronger ones, with or without the directives, fertile. Retractors weaker or stronger, always diffuse. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

2 genera:

I. Tentacles wart-like to very short, usually more than one row communicating with each endocoel

*Stoichactis*.

- II. Tentacles never wart-like, not very short, never more than one row of tentacles per endocoel. Tentacles in the rows never numerous, sometimes few, occasionally the arrangement in rows is indistinct or possible even absent ..... *Radianthus*.

Genus *Stoichactis* Haddon 1898 p. 472.

Priapus p. p. Forskål 1775.

Discosoma p. p. Milne-Edwards 1857, Klunzinger 1877, Mc Murrich 1889, Kwietniewski 1898.

? *Homactis* Verrill 1869.

Discosomoides Haddon 1898.

Stoichactiidae whose pedal disc is well developed, but narrower than the oral, which is sometimes strongly lobed. Column with more or less distinct verrucae, which, however, may be absent. Sphincter restricted to circumscribed, usually not strong. Tentacles wart-like, digitiform or subulate, short. Only one tentacle per exocoel; usually more than one row per endocoel. Number of siphonoglyphs and directives variable. Some species of the genus are commensal with crustaceans and fishes and reach an enormous size. Cnidom: see the family.

Verrill's description of *Homactis* indicates that we have to do with the same genus as *Stoichactis*. The appearance and arrangement of tentacles and the description of the mouth, "large with thickened lips, which have many small folds with two rounded tubercles at one angle" make this supposition likely. In such case the name *Homactis* has priority.

Genotype: *S. kenti* Haddon and Shackleton 1893 p. 119, Haddon 1898 p. 473, Torres Straits, Great Barrier Reef, Low Isles, Tropical coast of Australia to Sharks Bay and Mackey, commensal with fishes.

*S. (Priapus) giganteum* Forskål 1775 p. 100, *Discosoma* Klunzinger 1877 p. 83, *Stoichactis* Carlgrén 1900 p. 77 (97), The Red Sea, Zanzibar, Mozambique.

*S. (Actinia) tapetum* Ehrenberg 1834 p. 32, *Discosoma* Klunzinger 1877 p. 83, *Discosomoides* Haddon 1898 p. 470, *Stoichactis* Carlgrén 1900 p. 74 (94), The Red Sea, Zanzibar.

? *S. (Homactis) rupicola* Verrill 1869 p. 70, Hongkong, littoral.

*S. (Discosoma) ambonensis* Kwietniewski 1897 a p. 410, *Stoichactis* Carlgrén 1900 p. 73 (93), Ambon.

*S. haddonii* Saville Kent 1893 p. 32, Haddon 1898 p. 474. Distribution as *S. kenti*, commensal with fishes.

*S. (Actinia) helianthus* Ellis 1767 p. 436, *Stoichactis* Duerden 1900 p. 162, 1902 p. 365 = *Discosoma anemone* Ellis Mc Murrich 1889 p. 37, Bermudas, Curaçao, St. Jan, Loango, St. Thomas, Barbados, Tortugas, Bahamas, Jamaica, Puerto Rico, Haiti, St. Thomas, Guadeloupe.

*S. laevis* Lager 1911 p. 240, South West Australia, Sharks Bay.

*S. intermedia* Lager 1911 p. 238, North West Australia.

*S. australis* Lager 1911 p. 241, South West Australia, Sharks Bay, Java.

Genus *Radianthus* Kwietniewski 1897 p. 331.

Antheopsis Simon 1892, Carlgrén 1900, Lager 1911, Stephenson 1922.

Bunodes p. p. Klunzinger 1877.

Stichodactis Kwietniewski 1898, Lager 1911.

Helianthopsis Kwietniewski 1898, Carlgrén 1900.

Discosoma p. p. Haddon and Shackleton 1893.

? *Myriactis* Haddon 1888 p. 248.

Stoichactiidae with well developed pedal disc. Upper part of the column usually with prominent verrucae, rarely smooth. Sphincter weak, restricted to circumscribed, rarely diffuse. Tentacles rather short or of ordinary length, never papilliform, distributed over the greater part of the oral disc. More than one tentacle communicates with every endocoel or with the older endocoels, but there is only one row on each, and each row consists of more or less numerous tentacles. Rarely the radial arrangement is indistinct. Only one tentacle per exocoel. Longitudinal muscles of tentacles and radial muscles of oral disc ectoder-

mal. Oral disc sometimes lobed or broader than the base. Siphonoglyphs and directives variable in number. Mesenteries numerous. All mesenteries, with or without the directives, fertile. Probably more mesenteries distally than proximally (always?). Retractors diffuse, parietobasilar muscles strong. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *R. Kuekenhali* Kwietniewski 1896 a p. 2, 1897 p. 331, *Antheopsis* Stephenson 1922 p. 300, Ternate.

*R. (Bunodes) koseiriensis* Klunzinger 1877 p. 77, *Antheopsis* Simon 1892 p. 30, Carlgren 1900 p. 85 (105), The Red Sea, Zanzibar.

? *R. (Actinia) crispus* Ehrenberg 1834 p. 36 (see Simon 1892 p. 37 and Carlgren 1900 p. 84, (104), The Red Sea.

*R. (Helianthopsis) mabrucki* Carlgren 1900 p. 82 (102), *Radianthus* Stephenson 1922 p. 299, Zanzibar.

*R. (Helianthopsis) ritteri* Kwietniewski 1897 a p. 417, Carlgren 1900 p. 81 (101), *Antheopsis* Stephenson 1922 p. 300, Ambon, Zanzibar, Poeloe-Wah Isl.

*R. lobatus* Kwietniewski 1897 a p. 414, Ambon.

*R. (Stichodactis) papillosa* Kwietniewski 1897 a p. 415, *Antheopsis* Stephenson 1922 p. 300, Amboina, Java.

? *R. (Actinia) parvitenaculata* Quoy and Gaimard 1833 p. 314, *Radianthus* Pax 1912 p. 314, New Ireland.

*R. (Discosoma) macrodactylus* Haddon and Shackleton 1893 p. 120, *Radianthus* Haddon 1898 p. 471, *Antheopsis* Stephenson 1922 p. 300, Torres Straits, Mer.

*R. (Discosoma) malu* Haddon and Shackleton 1893 p. 120, *Radianthus* Haddon 1898 p. 472, *Antheopsis* Stephenson 1922 p. 300, Torres Str., Mer.

*R. (Stichodactis) glandulosa* Lager 1911 p. 246, *Antheopsis* Stephenson 1922 p. 300, North West Australia, Broome.

*R. (Stichodactis) kwietniewskii* Lager 1911 p. 247, *Antheopsis* Stephenson 1922 p. 300, North West Australia, Barrow Isl.

*R. (Antheopsis) carlgreni* Lager 1911 p. 243, Stephenson 1922 p. 300, South West Australia, Sharks Bay.

*R. (Antheopsis) concinnata* Lager 1911 p. 244, Stephenson 1922 p. 300, South West Australia, Sharks Bay.

? *Myriactis tubicola* Haddon 1888 a p. 248, Mergui Archipelago, King Isl., low-water.

#### Fam. **Phymanthidae** (Andres 1883 p. 500).

Thenaria (Endomyaria) with usually well developed, but sometimes small base. Column with more or less distinct verrucae in its upper part. No sphincter or a weak endodermal one. Tentacles of two sorts, marginal and discal. Marginal tentacles arranged in cycles, discal tentacles in radial series, the former are smooth or have lateral protuberances, the latter are very short, usually papilliform, rarely they are indistinct or even absent. Many perfect pairs of mesenteries. Retractors of mesenteries strong.

- I. Marginal tentacles with lateral, papilliform or ramified protuberances. No sphincter or an indistinct, diffuse one ..... *Phymanthus*.  
 II. Marginal tentacles without protuberances. Sphincter weak circumscribed ..... *Heteranthus*.

#### Genus *Phymanthus* Milne-Edwards 1857 p. 297.

*Actinodendron* p. p. Ehrenberg 1834.

*Epicystis* p. p. Ehrenberg 1834.

*Thelaceros* Mitchell 1890.

? *Ragactis* Andres 1883.

? *Ixalactis* Haddon 1898.

Phymanthidae with base and column of variable appearance. Upper part of column with verrucae, which sometimes may be indistinct. A row of perforated marginal pseudospherules (always?). Cinclides may be present at the base. No sphincter or a very weak, diffuse one. Marginal tentacles arranged hexa- or octomerously. Laterally the marginal tentacles are provided with weak or well developed protuberances in the form either of low knobs or of ramified branches. The discal tentacles sometimes resemble the marginal tentacles in part, more usually they are papilliform, sometimes very indistinct or even wholly

absent? Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal, sometimes with a slight tendency to be meso-ectodermal. Pairs of mesenteries arranged hexa- or octomerously, many are perfect, the stronger; with or without the directives, fertile. Retractors well developed, strong, diffuse or strongly restricted, reniform. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. (Actinodendron) loligo* H. and E. Ehrenberg 1834 p. 41, *Phymanthus* Milne-Edwards 1857 p. 297, Klunzinger 1877 p. 87, Carlgren 1900 p. 71 (91), The Red Sea, Koseir, Tor, Ras el Kafil, Zanzibar.

*P. (Actinia) crucifer* Leseur 1817 p. 174, *Phymanthus* Andres 1883 p. 501, Mc Murrich 1889 p. 51, Duerden 1898 p. 452, 1902 p. 368, Pax 1910 p. 222, *Epicystis* Verrill 1898 p. 496, Bermudas, Curaçao, Barbados, Bahamas, Jamaica, Puerto Rico, St. Thomas.

*P. sansibaricus* Carlgren 1900 p. 67 (87), Zanzibar.

*P. Strandesi* Carlgren 1900 p. 68 (88), Zanzibar.

*P. pinnulatum* Martens (see Klunzinger 1877 p. 87), Singapore.

*P. (Thelaceros) rhizophoreae* Mitchell 1890 p. 557, Stephenson 1922 p. 290, Celebes.

*P. laevis* Kwietniewski 1898 p. 421, Ambon.

*P. buitendijki* Pax 1924 a p. 12, Batavia, Java Sea, Poeloe-Wah.

*P. muscosus* Haddon and Shackleton 1893 p. 122, Haddon 1898 p. 496, Kwietniewski 1898 p. 420, Lager 1911 p. 236, Ambon, Torres St., Mer, North West Australia, Turtle Isl., Great Barrier Reef, Low Isl.

*P. (Actinia) coeruleus* Quoy and Gaimard 1833 p. 157, *Phymanthus* Pax 1912 p. 312, Vanikoro Isl.

? *P. simplex* Haddon and Shackleton 1893 p. 123, *Ixalactis* Haddon 1898 p. 443, Torres Straits, Mer.

? *P. (Ragactis) pulchra* Andres 1883 p. 467, Fischer 1887 p. 428, Naples, Banyuls, Gulf of Marseilles.

I have referred *Ragactis pulchra* with a query to *Phymanthus*. Andres' description of this species indicates that there are very small tentacles on the inner part of the oral disc. He notes: "Peristoma ampio concavo, non liscio ma accidentato da molti rilievi simili a quella dei tentaculi" and Fischer 1887 p. 428 adds: "J' ai échoué également en cherchant l'expulsion des acontia". Unfortunately we do not know anything about its anatomy. The position of *Ixalactis* seems to me more uncertain but Haddon's division of the tentacles into inner tentacles and marginal tentacles indicates, however, that the species is possibly a stichodactyline form and if so it may be a *Phymanthus* or nearly related to it.

#### Genus *Heteranthus* Klunzinger 1877 p. 84.

Phymanthidae with well developed pedal disc. Column, apart from its lowermost part, provided with large verrucae, which at the margin are small and more numerous and overhang the fosse. Sphincter weak circumscribed, forming only few folds. Tentacles divisible into marginal and discal tentacles. Marginal tentacles conical, simple, arranged in cycles, discal tentacles wart-like in radial rows. 2 well developed siphonoglyphs. Fairly numerous perfect pairs of mesenteries. 2 pairs of directives. Retractors of mesenteries diffuse, well developed. Parietobasilar muscles weak to fairly strong. Distribution of gonads unknown. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *H. verruculatus* Klunzinger 1877 p. 84, Carlgren 1900 p. 72 (92), The Red Sea, Great Barrier Reef.

*H. insignis* Carlgren 1943 p. 30, Cochinchina, Poulo Condore.

#### Sub-tribe **Mesomyaria** Stephenson 1921 p. 541.

Thenaria without acontia. Sphincter mesogloal.

I. Mesenteries divisible into macro- and microcnemes ..... *Isanthidae*.

II. Mesenteries not divisible into macro- and microcnemes.

1) Arrangement of tentacles regular, in cycles. Younger mesenteries not bilaterally arranged

*Actinostolidae*.

2) Tentacles not regularly arranged. In the exocoels between the mesenteries of the first and second cycles the younger mesenterial pairs are bilaterally arranged with the youngest mesenteries in the middle of the exocoels ..... *Exocoelactiidae*.

Fam. **Isanthidae** Carlgren 1938 p. 59.

Thenaria (Mesomyaria) with well developed mesogloal sphincter. Mesenteries divisible into macro- and microcnemes. No acontia. Retractors of mesenteries very strong, strongly restricted (reniform) to almost circumscribed.

2 genera:

- I. Column smooth. 6 pairs of perfect mesenteries ..... *Isanthus*.  
 II. Column divisible into scapus and scapulus. Scapus with tenaculi? 12 pairs of perfect mesenteries  
*Neophellia*.

Genus *Isanthus* Carlgren 1938 p. 59.

Isanthidae with cylindrical, elongated body. Column smooth without any kind of projections. Margin distinct. Sphincter mesogloal, not strong. Tentacles hexamerously arranged, their longitudinal muscles ectodermal, as also the radial muscles of the oral disc. 2 siphonoglyphs and 2 pairs of directives. 6 pairs of perfect fertile mesenteries, with kidney-shaped retractors, the other mesenteries microcnemes. No more mesenteries proximally than distally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*I. capensis* Carlgren 1938 p. 59, South Africa, West and East coast of Cape Peninsula, low-water.

Genus *Neophellia* Uchida 1939 p. 310.

Isanthidae with well developed pedal disc. Column divisible into scapus and scapulus, on the former sand-grains may adhere (tentaculi present?). Sphincter strong, mesogloal. Tentacles up to about 100, the inner longer than the outer ones, their longitudinal muscles ectodermal. Mesenteries divisible into macro- and microcnemes. 12 pairs of mesenteries perfect with filaments and gonads. One mesentery of each pair of the second cycle is, however, weaker than its partner and is devoid of retractor which is present in the other perfect mesenteries. Retractors restricted to almost circumscribed. Microcnemes weak without filaments. Probably more mesenteries distally than proximally.

*N. mutsuensis* Uchida 1939 p. 311, Japan, Mutsu Bay off Urata between Futago and Oshima.

The systematic position of this genus is somewhat doubtful. Uchida's diagnosis of the genus disagrees in some ways with his description of the species. In the description of the species he notes that the mesenteries of the third series are devoid of filaments and that gonads occur in the mesenteries of the first and second series apart from the directives. In the diagnosis of the genus he says that there are "another 12 pairs which are imperfect, having gonads, mesenterial filaments but lacking retractors. All the mesenteries are fertile." As the specimen had nearly 100 tentacles but according to Uchida only 24 pairs of mesenteries it is clear that there may have been a fourth cycle of mesenteries in the distal part of the body. Uchida supposes that the genus is related to *Actinostola*. That is certainly not the case.

Fam. **Actinostolidae** Carlgren 1932 p. 261.

Thenaria (Mesomyaria) whose the column is commonly smooth, rarely tuberculate or with papillae, but without verrucae and other hollow outgrowths. Sphincter mesogloal. Tentacles sometimes with nematocyst-batteries on their aboral sides, where they are also sometimes thickened; their arrangement

regular. Mesenteries not divisible into macro- and microcnemes. Younger mesenteries not bilaterally arranged. Retractors diffuse, rarely circumscribed. No acontia.

20 genera:

- I. In the younger cycles the mesenteries of each pair are usually unequally developed in such a way that the mesentery which turns its longitudinal muscle towards nearest mesentery of the preceding cycle is larger than its partner (the *Actinostola*-rule). Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal (in *Stomphia* the longitudinal muscles of the tentacles are ecto-mesogloal).
- A) Mesenteries distinctly arranged according to the *Actinostola*-rule.
- a) The mesenteries not divisible into filament-free fertile and filament-bearing sterile mesenteries.
  - b) Sphincter weak, so that the tentacles are not perfectly retractile. Aboral sides of tentacles often thickened at the base. The two oldest cycles of mesenteries sterile.
  - c) Oral disc not lobed. Never more mesenteries distally than proximally *Actinostola*.
  - cc) Oral disc more or less distinctly lobed. More mesenteries distally than proximally  
*Paractinostola*.
  - bb) Sphincter strong. Tentacles wholly retractile. Usually 16 pairs of perfect and sterile mesenteries ..... *Stomphia*.
  - aa) The mesenteries divisible into filament-free fertile and filament-bearing sterile mesenteries. Tentacles arranged in a single corona ..... *Ophioidiscus*.
- AA) Mesenteries indistinctly arranged according to the *Actinostola*-rule.
- d) Only the last cycle of mesenteries are fertile, but they have filaments  
*Parasicyonis*.
  - dd) Only the last cycle of mesenteries are fertile and they are devoid of filaments.
  - e) The mesenteries of the last fertile cycle do not reach the margin..... *Sicyonis*.
  - ee) The mesenteries of the last fertile cycle are present only in the upper part of the body  
*Synsicyonis*.
- II. The mesenteries are not arranged according to the *Actinostola*-rule. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal or mesogloal.
- B) All or all stronger mesenteries fertile.
- f) Each outer tentacle, on its aboral side (principally at the base) with a battery of large nematocysts (microbasic *b*-mastigophors).
  - g) Column with numerous, small mesogloal papillae. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal ..... *Tealidium*.
  - gg) Column smooth, without papillae. More mesenteries proximally than distally.
  - h) Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc ecto-mesogloal  
*Anthosactis*.
  - hh) Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal  
*Hormosoma*.
  - ff) Tentacles without distinct basal nematocyst-batteries but with scattered microbasic *b*-mastigophors. Same number of mesenteries and tentacles? ..... *Cnidanthus*.
  - fff) Tentacles without nematocyst-batteries or microbasic *b*-mastigophors.
  - h) At least 12 pairs of mesenteries perfect. Strong, diffuse retractors. Tentacles rather numerous. More mesenteries distally than proximally. Body elongate .. *Paranthus*.
  - hh) Six pairs and some single mesenteries perfect. Sphincter ecto-mesogloal, strong, forming a fold. Tentacles few (14). More mesenteries proximally than distally. Retractors weak ..... *Bathydactylus*.
  - hhh) Six pairs of perfect mesenteries. Retractors strong, circumscribed ..... *Isoparactis*.

- BB) The oldest six pairs of mesenteries perfect and sterile, the other stronger mesenteries fertile.
- i) Tentacles in 2 cycles at the margin, their aboral side thickened ... *Actinoscyphia*.
  - ii) Tentacles closely packed at the rim, at least in 2 cycles, not thickened on their aboral sides ..... *Epiparactis*.
  - iii) Tentacles in more than 2 cycles, not thickened at their aboral side... *Antiparactis*.
  - iiii) Column divisible into scapus and capitulum. Possibly 2 sphincters *Pseudoparactis*.
- BBB) The oldest 12 pairs of mesenteries sterile ..... *Pycnanthus*.
- BBBB) The three oldest cycles of mesenteries sterile. Oral disc lobed. Sphincter very long. The mesenteries not divided into filament-free fertile and filament-bearing sterile mesenteries *Antholoba*.

Genus *Actinostola* Verrill 1883 p. 56.

*Dysactis* p. p. Hertwig 1882.

*Urticina* Verrill 1882.

*Kyathactis* Danielssen 1890.

*Bunodes* Danielssen 1890.

*Catadiomene* Stephenson 1920 a.

Actinostolidae with the body sometimes short, sometimes cup-like, sometimes long, cylindrical. Column usually thick, firm, slightly rugose or almost smooth, or with flat tubercles produced by mesogloal thickenings. Sphincter comparatively weak, mesogloal, so that the upper part of the column cannot perfectly cover the tentacles. Tentacles short, the inner considerably longer than the outer, never more numerous than the mesenteries at the base; sometimes with mesogloal thickening on their aboral sides at the base; outside provided at their tips with microbasic *b*-mastigophors. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal. Two well developed siphonoglyphs. Numerous perfect mesenteries, hexamerously arranged. The two mesenteries in one and the same pair, from the third or the fourth cycle, irregularly arranged but as a rule orientated so that the mesentery which turns its longitudinal muscle towards the nearest mesentery of the preceding cycle is more developed than its partner. Retractors of mesenteries diffuse, parietobasilar and basilar muscles strong. Mesenteries of the two first cycles sterile. Cnidom: spirocysts, bâsitrichs, microbasic *p*- and *b*-mastigophors.

Genotype: *A. (Urticina) callosa* Verrill 1882 p. 224, 315, *Actinostola* Verrill 1883 p. 57, Carlgrén 1893 p. 71, 1921 p. 227 = *Catadiomene atrostoma* Stephenson 1918 a p. 118, Skagerak, Norway, The North Atlantic, West Greenland to Cape Fear, Japan? 40–2 051 m; probably not *A. callosa* Mc Murrich 1893 p. 167, Off Peru 746–1480 m.

*A. spetsbergensis* Carlgrén 1893 p. 222, 1921 p. 229, 1933 p. 15 = *A. sibirica* Carlgrén 1901 p. 481 = *A. walteri* Kwietniewski 1898 p. 230, probably = *Kyathactis hyalina* Danielssen 1890, arctic, circumpolar 4–630 m.

*A. (Bunodes) abyssorum* Danielssen 1890 p. 39, *Actinostola* Carlgrén 1893 p. 199, 1921 p. 229, North Norway 183–232 m.

*A. groenlandica* Carlgrén 1899 p. 33, 1921 p. 230, West Greenland 18–424 m.

*A. pergamentacea* Mc Murrich 1893 p. 371, 45°22' S 64°20' W 94 m.

*A. (Dysactis) crassicornis* Hertwig 1882 p. 44 (39), *Actinostola* Carlgrén 1899 p. 31, 1927 p. 63, E off Patagonia, Burdwood Bank (18–150 m).

*A. intermedia* Carlgrén 1899 p. 31, 1927 p. 58, *Catadiomene* Stephenson 1920 a p. 558 = *A. chilensis* Mc Murrich 1904 p. 247, Cape St. Vincent, Chile, Calbuco, 29–267 m.

*A. excelsa* Mc Murrich 1893 p. 170, 48°37' S 65°46' W. — 51°34' S 68° W 92–106 m.

*A. georgiana* Carlgrén 1927 p. 61, South Georgia, Clarence Isl., South Shetland, E off Bouvet Isl. 120–830 m.

*A. clubbi* Carlgrén 1927 p. 66 = *A. chilensis* Clubb 1908 p. 4, Off Oates Land, 465 m.

*A. kerguelensis* Carlgrén 1928 p. 179, E of Kerguelen, 88 m.

*A. carlgreni* Wasilieff 1908 p. 28, *Catadiomene* Stephenson 1920 a p. 558, Japan, Sagami Bay, 730 m.

Genus *Paractinostola* Carlgrén 1928 p. 181.

? *Cymbactis* Mc Murrich 1893 p. 174.

Actinostolidae with the body, especially in larger individuals, cup-shaped, broad in the upper part, and here more or less distinctly lobate. Column thick, smooth, or with weaker or stronger flattened tuberc-

les. Margin indistinct. Sphincter mesogloaeal, very weak in comparison with the size of the body, so that the tentacle cannot be wholly covered by the upper part of the body. Tentacles short, especially the outer ones, hexamerously arranged, in the contracted state irregularly rugose, with or without thickenings of the mesogloea at the base on the aboral side. Large microbasic *b*-mastigophors in the distal part of the tentacles. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloaeal. 2 broad siphonoglyphs. Mesenteries at the base fewer than those at the margin. 2 pairs of directives. The two mesenteries of one and the same pair, in the youngest cycles, are developed in such a way that the mesentery which has its retractor facing towards the nearest mesenterial pair of the preceding cycle is larger than its partner. Retractors diffuse, parietobasilar and basilar muscles strong. Mesenteries of the two first cycles sterile. The fertile mesenteries have filaments. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors.

Genotype: *P. bulbosa* Carlgrén 1928 p. 182, Off Somali Land, 628–823 m.

*P. capensis* Carlgrén 1928 p. 184, 1938 p. 64, South Africa, off Cape Point, 178–500 m.

? *P. (Cymbactis) faeculenta* Mc Murrich 1893 p. 174, 33° N 118° W 747 m (see Carlgrén 1934 a p. 6).

#### Genus *Stomphia* Gosse 1859 p. 48.

*Kylindrosactis* Danielssen 1890.

*Tealiopsis* Danielssen 1890.

*Sagartia* p. p. Danielssen 1890.

*Cymbactis* Stephenson 1918, Pax 1922.

*Paractis* p. p. Mc Murrich 1893.

Actinostolidae with broad base. Column smooth, variable in thickness, margin tentaculate. Sphincter mesogloaeal strong so that the upper part of the body can cover the tentacles. Tentacles short, conical, fairly numerous without mesogloaeal thickenings on their outer sides, with large microbasic *b*-mastigophors in their distal parts. Longitudinal muscles of tentacles mesogloaeal to ecto-mesogloaeal, radial muscles of oral disc mesogloaeal. 2 well developed siphonoglyphs. Tentacles and pairs of mesenteries frequently arranged 16 (6+10), 16, 32; 16–18 pairs perfect. Perfect mesenteries generally sterile but when the perfect pairs are more than 16 the exceeding pairs are often fertile, at least the stronger imperfect mesenteries fertile. Considerably more mesenteries at the base than at the margin. In the youngest cycles the mesenteries of one and the same pair are unequally developed in such a way that the partner furthest away from the adjacent mesenterial pair of the next oldest cycle is the larger (as in *Actinostola*) (see Pl. 1 fig. 5). Retractors diffuse, well developed, parietobasilar and basilar muscles strong. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors.

Genotype: *S. (Actinia) coccinea* O. F. Müller 1776 p. 231, 1778 p. 30, *Stomphia* Carlgrén 1893 p. 138, 1921 p. 234, 1942 p. 75, Stephenson 1935 p. 381 = *Stomphia Churchiae* Gosse 1859 p. 48, 1860 p. 222, Stephenson 1918 a p. 126; = *Actinia carneola* Stimpson 1853 p. 7, *Stomphia* Verrill 1899 p. 206, 1922 p. 1189; = *Kylindrosactis elegans* Danielssen 1890 p. 4; = *Sagartia repens* Danielssen 1890 p. 27.

*S. (Tealiopsis) polaris* Danielssen 1890 p. 45, *Stomphia* Carlgrén 1902 p. 48, 1921 p. 239, Spitzbergen, Norway-Beeren Isl. 30–408 m.

*S. (Cymbactis) selaginella* Stephenson 1918 p. 36, *Stomphia* Stephenson 1920 p. 559, Carlgrén 1928 p. 253, Carlgrén and Stephenson 1929 p. 22 = *Cymbactis frigida* Pax 1922 p. 81, 1926 p. 32, 9–552 m, Antarctic.

*S. japonica* Carlgrén 1943 p. 32, Japan, Tsugaru Strait.

*S. (Paractis) vinosa* Mc Murrich 1893 p. 163, *Stomphia?* Stephenson 1920 a p. 559, 33°08' N 118°40' W, 757 m.

#### Genus *Ophiodiscus* R. Hertwig 1882 p. 57 (49).

Actinostolidae with well developed pedal disc. Column smooth, margin tentaculate. Tentacles simple, long, in a single cycle, their longitudinal muscles mesogloaeal but present only on the oral side of the ten-



tacles. Radial muscles of oral disc mesogloea. 2 broad siphonoglyphs. Mesenteries not numerous, the oldest with weak muscles and filaments but no gonads. 2 cycles of mesenteries perfect. The youngest, unmuscular mesenteries are without filaments or gonads, and unequally developed as in *Actinostola* viz. in such a way that in each pair the partner furthest away from the adjacent mesenterial pair of the next oldest cycle is the larger.

Genotype: *O. annulatus* R. Hertwig 1882 p. 57 (50), 33°31' S 74°43' W 3951 m.

*O. sulcatus* R. Hertwig 1882 p. 61 (54), 33°42' S 78°18' W 2515 m.

Genus *Parasicyonis* Carlgren 1921 p. 208.

*Cymbactis* Wasilieff 1908, Stephenson 1920.

Actinostolidae with well developed pedal disc. Body usually broader than long. Column thick, smooth, without tubercles. Margin tentaculate. Tentacles rather short, robust, wrinkled in the contracted state, the inner longer than the outer. Sphincter mesogloea, rather weak, so that the column commonly does not wholly cover the tentacles. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloea. Two deep siphonoglyphs. Numerous perfect mesenteries. Mesenteries often slightly irregularly arranged, so that in the last, sterile cycle the two partners of a pair are sometimes differently developed, one mesentery being larger than the other; but not regularly as in *Actinostola*. Number of mesenteries about twice as many as that of the tentacles. Only the mesenteries of the last cycle fertile. These mesenteries do not reach the oral part of the column and are, like all other mesenteries, provided with filaments. Retractors diffuse, rather weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. sarsii* Carlgren 1921 p. 208, Norway, Faroe Isl., East of Iceland, 200–460 m.

*P. ingolfi* Carlgren 1942 p. 67, East of Iceland, 1435 m.

*P. groenlandica* Carlgren 1933 p. 17, Davis Straits, 1200 m.

*P. antarctica* Carlgren n. sp., Clarence Isl., South Shetland, 830 m.

*P. (Cymbactis) actinostoloides* Wasilieff 1908 p. 25, Stephenson 1920 a p. 553, *Parasicyonis* Carlgren 1921 p. 208, Japan, Sagami Bay.

*P. (Cymbactis) maxima* Wasilieff 1908 p. 27, Stephenson 1920 p. 553, *Parasicyonis* Carlgren 1921 p. 208, Japan, Sagami Bay.

Genus *Sicyonis* R. Hertwig 1882 p. 98 (86).

*Paractis* Hertwig 1882.

*Cymbactis* Stephenson 1918 b, 1920, Pax 1922.

Actinostolidae with well developed basal disc and rather thick column, the upper part of which is able to cover the tentacles. Sphincter weak or fairly well developed, mesogloea. Tentacles short, the inner considerably stronger than the outer, often more or less thickened on the outer side at the base, about half as numerous as the mesenteries. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloea, 2 broad siphonoglyphs. Often 16 pairs of perfect mesenteries, a variable number of pairs in which one mesentery is perfect, its partner imperfect. Arrangement of mesenteries not as regular as in *Actinostola*, but with a strong tendency to different development of the two mesenteries in a pair. Retractors weak, diffuse, parietobasilar and basilar muscles well developed. Mesenteries differentiated into stronger, fertile mesenteries with well developed filaments and into weaker fertile mesenteries without filaments; the latter appear at the base and grow from there in an oral direction but do not reach the most distal part of the body. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *S. crassa* Hertwig 1882 p. 98 (87), 46°16' S 48°27' E, 2926 m.

*S. tuberculata* Carlgren 1921 p. 212, Davis and Denmark Straits, 598–2448 m.

- S. ingolfi* Carlgren 1921 p. 217, S of Greenland, 3192 m.  
*S. variabilis* Carlgren 1921 p. 218, 60°37' N 27°52' W, 1505 m.  
*S. (Cymbactis) gossei* Stephenson 1918 p. 123, 1920 a p. 553, *Sicyonis* Carlgren 1921 p. 212, 51°12'30" N 12°18'–12°16' W, 1633–1231 m.  
*S. hemisphaerica* Carlgren 1934 p. 9, 28°8' N 13°35' W, 1365 m.  
*S. (Actinernus) obesa* (Verrill?) see Carlgren 1934 a p. 7, Cheasapeake Bay, 1239–2908 m.  
*S. antarctica* Carlgren 1939 p. 795, Off Coats Land, 2570 m.  
*S. (Cymbactis) erythrocephala* Pax 1922 p. 82, 1923 p. 11, *Sicyonis* Carlgren 1927 p. 57, 70°10' S 80°50' W (Paris), 460 m.  
*S. sumatriensis* Carlgren 1928 p. 177, Off West Sumatra, 903 m.  
*S. aurora* Carlgren and Stephenson 1929 p. 19, Off Maria Land, Tasmania, 2370 m.  
*S. (Paractis) tubulifera* Hertwig 1882 p. 119 (114), Simon 1892 p. 49, 34°37' N 140°32' E, 3375 m.

Genus *Synsicyonis* Carlgren 1921 p. 212.

Actinostolidae with well developed basal disc. Column thick, smooth. Sphincter, tentacles, oral disc and siphonoglyphs as in *Sicyonis*, the number of tentacles, however, the same as that of the mesenteries. Arrangement of mesenteries probably recalling that of *Sicyonis*, but irregular owing to the alternation of isolated genital mesenteries with isolated complete ones. Mesenteries differentiated into stronger sterile and weaker fertile ones, the latter occurring only in the distal part of the body and without filaments.

- S. elongata* Hertwig 1888 p. 33, 35°22' N 169°53' E, 5304 m.

Genus *Tealidium* R. Hertwig 1882 p. 51 (44).

Actinostolidae with well developed, enlarged basal disc. Column with numerous, small mesogloal papillae, all of the same size, and with more or less distinct longitudinal furrows, in the contracted state very low, almost disc-like. Sphincter mesogloal, very strong, in certain states of contraction projecting as a strong, circular fold in the uppermost part of the column. Tentacles short, conical, hexamerously arranged, not numerous, the inner longer than the outer or both of about same length. Stinging-batteries (probably microbasic *b*-mastigophors) at the bases of the outer tentacles. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Oral disc wide. Actinopharynx short, with 2 distinct siphonoglyphs. Pairs of mesenteries few, hexamerously arranged, thin and with weak retractors, 6 pairs or a few more perfect. The mesenteries of the first cycle, including the directives, fertile. Cnidom: spirocysts and probably basitrichs, microbasic *b*- and *p*-mastigophors.

- Genotype: *T. cingulatum* R. Hertwig 1882 p. 51 (45), 50°1' S 123°4' E, 3292 m.

- T. jungerseni* Carlgren 1921 p. 197, Danmark and Davis Straits, 2448–3521 m.

Genus *Anthosactis* Danielssen 1890 p. 26.

- Alloactis* Verrill 1899.  
*Paractis* p. p. Hertwig 1882.  
*Antholoba* p. p. Pax 1922.  
*Sagartia* p. p. Pax 1922.

Actinostolidae with well developed pedal disc. Column smooth, rather low, often longitudinally sulcated in the contracted state. Sphincter strong, mesogloal. Tentacles short, rather few, conical, robust, hexamerously or octamerously arranged, the outer only a little shorter than the inner ones. Outer tentacles on their aboral sides at the base provided with a stinging battery of microbasic *b*-mastigophors, which are sometimes distributed along the whole aboral side of the tentacle, though more numerous at the base. Longitudinal muscles of tentacles ectodermal, strongest on the oral side. Radial muscles of oral disc ectodermal to ecto-mesogloal. Actinopharynx short with two well developed siphonoglyphs. Pairs

of perfect mesenteries 6, 6 + 2 single, 8, or 12. 2 pairs of directives. Retractors rather weak, parietobasilar muscles fairly well developed. At least the younger mesenteries growing from the basal disc upwards. All stronger mesenteries fertile. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors.

Genotype: *A. jan mayeni* Danielssen 1890 p. 24, Carlgren 1921 p. 191, 1933 p. 13, Arctic Ocean, 110–445 m.

*A. ingolfsi* Carlgren 1921 p. 104, 66°08' N 16°02' W, 1373 m.

*A. (Paractis) excavata* Hertwig 1882 p. 41 (36), *Alloactis* Verrill 1899 p. 144, *Anthosactis* Carlgren 1921 p. 191, 33°42' S 78°18' W, 2515 m.

*A. capensis* Carlgren 1938 p. 62, 33°23' S 18°8' E, 287 m.

*A. (Antholoba) epizoica* Pax 1922 p. 84, 1926 p. 36, *Anthosactis* Carlgren 1928 p. 251 = *Sagartia antarctica* Pax 1922 p. 88, 1926 p. 42, 65°33' S 85°34' E.

*A. georgiana* n. sp. N of S. Georgia, 53°51'30'' S 36°18'30'' W, 53°51' S 36°21'30'' W, 200–385 m.

#### Genus *Hormosoma* Stephenson 1918 p. 29.

*Actinostola* p. p. Pax 1923.

*Paractis* p. p. Clubb 1908.

Actinostolidae with well developed pedal disc. Column smooth, thick, with a submarginal collar. Sphincter strong, mesogloal. Tentacles short, but thick, arranged in several cycles, the inner longer than the outer. Outermost cycle of tentacles on their aboral sides at the base provided with a more or less distinct battery of microbasic *b*-mastigophors. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal. Oral disc wide. 2 very broad siphonoglyphs, aborally prolonged. Tentacles and mesenteries hexamerously arranged. 2 pairs of directives. About same number of tentacles and mesenteries. Perfect pairs of mesenteries fairly numerous. Retractors with coarse folds forming a small pennon close to the gonads. Parietobasilar muscles very broad, forming a deep fold, basilar muscles strong. All mesenteries, sometimes except the directives, fertile. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors.

*H. scotti* Stephenson 1918 p. 29, Carlgren 1927 p. 47 = *violaceum* Pax 1922 p. 83, 1923 p. 13 = *Actinostola rufostriata* Pax 1922 p. 86, 1923 p. 17 = *Paractis papaver* Dana, Clubb 1908 p. 3, South Georgia, Antarctic ocean, 35.5–631 m.

#### Genus *Cnidanthus* Carlgren 1927 p. 50.

Actinostolidae with broad pedal disc. Column smooth, rather thin. Margin distinct. Sphincter mesogloal, rather well developed. Tentacles short and thick, with scattered microbasic *b*-mastigophors, the inner longer than the outer. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal. 2 well developed siphonoglyphs. Mesenteries and tentacles the same in number? At least the mesenteries of the two first cycles perfect. Retractors diffuse, rather weak, parietobasilar muscles distinct. All mesenteries, including the directives, fertile. Cnidom: spirocysts, basitrichs, microbasic *b*-mastigophors and probably microbasic *p*-mastigophors.

*C. polaris* Clubb 1908 p. 3, *Cnidanthus* Carlgren 1927 p. 50, Mc Murdo Bay, Bouvet Isl. 45.5–200 m.

#### Genus *Paranthus* Andres 1883 p. 472.

*Sagartia* p. p. Verrill 1869.

*Paractis* p. p. Milne-Edwards 1857, Andres 1880, Verrill 1899, Mc Murrich 1904.

? *Dysactis* p. p. Hertwig 1882.

? *Isacmaea* Ehrenberg 1834.

*Aiptasia* p. p. Andres 1883.

*Ammophilactis* Verrill 1899.

*Parantheoides* Carlgren 1899.

Actinostolidae with rather small pedal disc. Column elongate, smooth (or with small suckers in its distal part?). Sphincter well developed, mesogloal. Tentacles rather short, hexamerously arranged, the inner

longer than the outer. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 distinct siphonoglyphs. Mesenteries more numerous distally than proximally. At least 12 pairs of mesenteries perfect. 2 pairs of directives. Retractors strong diffuse. Parietal part of the muscles recalling the muscles of the weaker mesenteries. Gonads on all stronger mesenteries. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. (Entacmea) chromatoderus* Schmarda 1852 p. 15, *Paranthus* Andres 1883 p. 472, Maguire 1898 a p. 722, Carlgrén 1921 p. 186 = *Paractis rugosa* Andres 1880 p. 314, *Paranthus* Fischer 1889 p. 265; possibly = ? *P. (Isacmaea) crystallina* Ehrenberg 1834 p. 33. According to Ehrenberg *crystallina* is a swimming form, which he rarely has seen attached. The Mediterranean, South-west coast of France, Archachon.

*P. (Actinia) rapiformis* Leseur 1817 p. 171, *Ammophilactis* Verrill 1899 p. 213, *Paranthus* Carlgrén 1934 a p. 17, New Haven, Clyde, New Jersey, Fort Macon N. C., Great Isl. Savannah, Texas Port. Aransas, low-water.

*P. (Parantheoides) crassus* Carlgrén 1899 p. 27, Stephenson 1920 p. 555, *Paranthus* Carlgrén 1927 p. 44, South Argentina, 40° S 60° W, 110 m.

*P. (Actinia) niveus* Lesson 1832 p. 81, *Sagartia* Verrill 1869 a p. 485, *Aiptasia* Andres 1883 p. 390, *Paractis* Verrill 1899 p. 209, Mc Murrich 1904 p. 239, Peru, Callao, Paita, Chile, Coquimba.

? *P. (Paractis) ignotus* Mc Murrich 1904 p. 242, Chile, Iquique.

? *P. (Dysactis) rhodorus* Dana Hertwig 1882 p. 49 (43), *Parantheoides* Stephenson 1920 a p. 555, 52°20' S 68°0' W, 103 m.

#### Genus *Bathydactylus* Carlgrén 1928 p. 172.

Actinostolidae with broad pedal disc. Column smooth or provided with small papillae in its distal part. Sphincter very strong, principally mesogloal, forming a projecting wall. Few, stout tentacles, without any nematocyst-batteries. Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc principally ectodermal but at the insertions of the mesenteries mesogloal. Oral disc broad. 2 deep siphonoglyphs. Mesenteries twice as many as the tentacles, the mesenteries of the last cycle present only in the proximal part of the body. 2 pairs of directives. Mesenteries not hexamerously arranged. All mesenteries in the distal part of the body fertile. Retractors, parietobasilar and basilar muscles weak.

*B. valdiviae* Carlgrén 1928 p. 172, 63°16.5' S 57°51' E, 4635 m.

#### Genus *Isoparactis* Stephenson 1920 a p. 543.

*Paractis* Stuckey 1909, 1913.

Actinostolidae with distinct base. Column smooth. Tentacles in more than 2 cycles in the adult, their longitudinal muscles ectodermal as also the radial muscles of oral disc. Six pairs of perfect mesenteries, which are, apart from the directives, fertile. The mesenteries of the second and third cycle are feebly developed but are fertile. Retractors of the perfect mesenteries circumscribed.

*I. (Paractis) ferax* Stuckey 1909 c p. 387, 1913 p. 132, *Isoparactis* Stephenson 1920 a p. 543, New Zealand, Kermadec Isl. to Cook Straits, Manokua.

#### Genus *Actinoscyphia* Stephenson 1920 a p. 540.

*Actinernus* p. p. Verrill 1882, Mc Murrich 1893, Stephenson 1918, ? Gravier 1918, 1922.

Actinostolidae with the pedal disc definite but sometimes very small and often embracing worm-tubes or needles of *Hyalonema*. Column thick to very thick, smooth. Tentacles arranged in two cycles at the margin of the wide oral disc, and provided with mesogloal swellings at the bases of their outer sides. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Sphincter mesogloal, weak in comparison with the size of the body. Siphonoglyphs well developed. Mesenteries more numerous than tentacles. Six pairs of perfect and sterile mesenteries with diffuse retractors, other mesenteries, at least the older ones, fertile. Animals of fairly large size. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- Genotype: *A. (Actinernus) saginata* Verrill 1882 p. 225, Stephenson 1918 a p. 128, *Actinoscyphia* Stephenson 1920 a p. 541, Carlgren 1934 p. 8, Marthas Vineyard, W. of Ireland, 35°32' N 7°7' W, 28°8' N 13°35' W, 699–1365 m.
- A. (Actinernus) plebeia* Mc Murrich 1893 p. 166, *Actinoscyphia* Stephenson 1920 a p. 541, 38°08' S 75°53' W, 1238 m.
- A. (Actinernus) aurelia* Stephenson 1918 a p. 131, *Actinoscyphia* Stephenson 1920 a p. 541, SW of Ireland, 1218–1633 m.  
? Carlgren 1928 p. 176, 3°31.0' N 7°25.6' E probably another species; *aurelia* may be type of a new genus *Actinoscyphiopsis* (Carlgren 1928 p. 175). A nearer examination of the mesenteries at the base is, however, desirable.
- ? *A. (Actinernus) Verrilli* Gravier 1918 p. 6, 1922 p. 31, 31°43'30" N 10°46'45" W, 2165 m.

Genus *Epiparactis* Carlgren 1921 p. 198.

Actinostolidae with well developed pedal disc. Column smooth with thick mesogloea, without distinct margin. Sphincter mesogloea, not strong. Tentacles rather short, closely packed at the outer rim of the wide oral disc, arranged in at least 2 cycles, the inner longer than the outer, without basal thickenings or nematocyst-batteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 distinct siphonoglyphs. Mesenteries considerably more numerous than tentacles, arranged in 5 cycles, thin. Only 6 pairs perfect. Retractors diffuse, very weak. Cnidom: spirocysts (very large), basitrichs, microbasic *p*-mastigophors.

*E. dubia* Carlgren 1921 p. 199, 1947 p. 16, 60°37' N 27°52' W, 1504 m.

Genus *Antiparactis* Verrill 1899 p. 212.

*Paractis* Mc Murrich 1893.

*Pycnanthus* Mc Murrich 1904.

Actinostolidae with well developed pedal disc. Column smooth, without tubercles, in the contracted state low and thin and with more or less distinct longitudinal ridges in its uppermost part. Margin tentaculate, not lobed. Sphincter mesogloea, strong. Tentacles short, without stinging-batteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Actinopharynx long, with two siphonoglyphs. Mesenteries hexamerously arranged, twice as many as the tentacles. 6 pairs perfect and sterile. Mesenteries of the second and third cycle fertile. No differentiation into filament-lacking fertile and filamented sterile mesenteries. Retractors diffuse, weak.

*A. (Paractis) lineolatus* Mc Murrich 1893 p. 162, *Pycnanthus* Mc Murrich 1904 p. 245, *Antiparactis dubia* Verrill 1899 p. 212, Gulf of Panama, 8°16'30" N 79°37'45" W, Juan Fernandez, 55–86 m.

Genus *Pseudoparactis* Stephenson 1920 p. 556.

*Paractis* Mc Murrich 1904.

Actinostolidae with distinct base. Column divisible into a thinner upper smooth part (capitulum) and a thicker lower part, (scapus), which may bear longitudinal ridges, these may terminate rather abruptly above. Margin tentaculate. A weak sphincter in the capitulum and apparently a second sphincter in the upper part of the scapus. Tentacles probably in more than 2 cycles in the adult. Longitudinal muscles of tentacles ectodermal. 2 siphonoglyphs. Mesenteries of the first cycle sterile. Retractors diffuse, band-like.

*P. (Paractis) tenuicollis* Mc Murrich 1904 p. 243, *Pseudoparactis* Stephenson 1920 a p. 557, Chile, Calbuco.

Genus *Pycnanthus* Mc Murrich 1893 p. 172.

*Cymbactis* Stephenson 1920.

Actinostolidae with well developed, enlarged pedal disc. Column smooth, in the contracted state low, sometimes with more or less distinct longitudinal ridges in its upper part, which is capable of involution.

Margin tentaculate, not lobed. Sphincter weak or well developed, mesogloal. Tentacles short, the inner considerably stronger than the outer, without stinging-batteries at their bases. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal. 2 deep siphonoglyphs. Mesenteries hexamerously arranged but not always regularly, at least the first 2 cycles perfect. Mesenteries of the third and fourth cycles, sometimes also some of the fifth, fertile. The weakest mesenteries only present in the most proximal part of the body, without filaments or gonads. Retractors weak, forming no distinct pennons. Parietobasilar muscles more or less strong. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors (and microbasic *b*-mastigophors?).

Genotype: *P. maliformis* Mc Murrich 1893 p. 172, *Cymbactis* Stephenson 1920 p. 552, 38°08' N 118°40' W, 987 m.

*P. laevis* Carlgren 1921 p. 202, Davis Straits, West of Faroe Isl., 598–1356 m.

*P. densus* Carlgren 1921 p. 204, Norway-Beeren Isl. 73°27' N 23°11' E, 64°53' N 10°0' E, 460–630 m.

Genus *Antholoba* R. Hertwig 1882 p. 53 (46).

*Metridium* p. p. Milne-Edwards 1857.

*Actinoloba* p. p. Gosse 1860.

*Urticina* p. p. Verrill 1882.

*Actinobolopsis* Verrill 1899.

*Archactis* Verrill 1899.

*Actinostola* p. p. Rees 1913.

*Discosoma* p. p. Mc Murrich 1893.

Actinostolidae with well developed base. Column smooth. Margin not distinct. Sphincter mesogloal, extraordinarily long. Uppermost part of column, and the oral disc, usually folded. Tentacles short but very numerous, hexamerously arranged. Longitudinal muscles of tentacles ectodermal to meso-ectodermal. Radial muscles of oral disc ecto-mesogloal. 2 well developed siphonoglyphs, aborally prolonged. Mesenteries very numerous but fewer proximally than distally. 2 pairs of directives. Perfect pairs of mesenteries at least 24. The three first cycles of mesenteries sterile. Retractors fairly weak, parietobasilar muscles weak, basilar muscles well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. (Actinia) aches* Dana 1849 p. 3, 1859 p. 9, *Metridium* Milne-Edwards 1857 p. 254, *Antholoba* Mc Murrich 1904 p. 250, Carlgren 1927 p. 56 = *A. (Actinia) reticulata* Dana 1849 p. 4, 1859 p. 10, *Antholoba* Hertwig 1882 p. 53 (47), Mc Murrich 1893 p. 164, Carlgren 1899 p. 29, *Actinobolopsis* Verrill 1899 p. 144 = *Discosoma fuegiensis* Dana, p. p. Mc Murrich 1893 p. 200 (see Carlgren 1934 a p. 6), *Actinostola crassicornis* Rees 1913 p. 382, Galapagos Isl., Coasts of Peru, Bolivia, Chile, Tierra del Fuego, Falkland Isl., low-water, 162 m.

*A. (Urticina) perdix* Verrill 1882 p. 223, 1883 p. 49, *Paractis (Archactis)* Verrill 1899 p. 210, Cape Cod to Cape Hatteras, 113–351 m.

Fam. **Exocoelactiidae** Carlgren (1925 b p. 91) 1928 p. 187.

Thenaria (Mesomyaria) with irregular arrangement of tentacles in connection with the bilateral development of the younger mesenteries. After the stage with 12 pairs of mesenteries the later mesenteries arise bilaterally in each sector of the animal, so that the youngest mesenteries appear in the middle of the secondary exocoels. In each pair of the younger mesenteries one mesentery is larger than its partner.

Genus *Exocoelactis* Carlgren 1925 b p. 91.

*Polysiphonia* Hertwig 1882.

Exocoelactiidae with well developed base. Column smooth or somewhat nodular, thick-walled and vase-shaped. Margin tentaculate, undulating or drawn out in 12 or more lobes, which are more or less distinctly

marked. Sphincter mesogloal, weak, so that the upper part of the column cannot cover the tentacles. Tentacles fairly short to short, sometimes thickened on the outer side at the base. At least the 12 first tentacles, and sometimes at least some of those of the third cycle, are typically arranged; the other tentacles are set in two rows, forming triangular groups continuous with one another. The 12 inner tentacles (or a few more) are the largest and lie in the depressions between the disc-lobes. The outer tentacles decrease in size towards the apices of the lobes. The outermost tentacles communicate with the exocoels, the inner with the endocoels. Longitudinal muscles of tentacles and radial muscles of oral disc mesogloal, at least the former placed near the endoderm. 2 broad siphonoglyphs and two pairs of directives. The pairs of the mesenteries of the 2 first cycles are normally developed, perfect and sterile. Each of the later pairs consists of a larger and a smaller mesentery, arranged bilaterally with the youngest pairs in the middle of the secondary exocoels (see Pl. 1 fig. 3). The stronger partner in each of these pairs is perfect and may be sterile, all the other mesenteries are fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *E. (Polysiphonia) tuberosa* R. Hertwig 1882 p. 63 (56), Carlgren 1918 p. 36, *Exocoelactis* Carlgren 1925 b p. 91, 1928 p. 190, East coast of Japan, Siberut Straits, 371–1020 m.

*E. valdiviae* Carlgren 1928 p. 187, Off Somali, East Africa, 741–823 m.

#### Sub-tribe **Acontiaria** Carlgren in Stephenson 1935 p. 181.

Thenaria with acontia or acontia-like organs. Sphincter sometimes absent or endodermal, more commonly mesogloal.

#### 11 families:

- I. Typical acontia with very numerous nematocysts.
- A. Mesenteries divisible into macro- and microcnemes more or less distinctly.
- a) No sphincter ..... *Acontiophoridae*.
- aa) Sphincter mesogloal.
- b) Acontia containing only basitrichs ..... *Batyphelliidae*.
- bb) Acontia with basitrichs and microbasic amastigophors. Some of the oldest microcnemes may be provided with filaments and acontia ..... *Isophelliidae*.
- AA. Mesenteries not divisible into macro- and microcnemes.
- c) Sphincter mesogloal.
- d) Sphincter strong. Acontia with basitrichs only ..... *Hormathiidae*.
- dd) Sphincter strong. Acontia with microbasic amastigophors only. Atrichs in the inner tentacles ..... *Sagartiomorphidae*.
- ddd) Sphincter usually strong. Acontia with basitrichs and microbasic amastigophors ..... *Sagartiidae*.
- dddd) Sphincter well developed. Acontia with microbasic *b*-mastigophors and microbasic amastigophors, the latter sometimes absent in the adult ..... *Metridiidae*.
- ddddd) Sphincter weak. Acontia with basitrichs and microbasic *p*-mastigophors ..... *Aiptasiidae*.
- ce) No sphincter or a weak diffuse endodermal one.
- e) Never atrichs, nor holotrichs, nor macrobasic amastigophors in the tentacles. Acontia with basitrichs and microbasic *p*-mastigophors? ..... *Aiptasiomorphidae*.
- ee) Inner tentacles with atrichs and holotrichs, outer tentacles sometimes with macrobasic amastigophors. Acontia with basitrichs and microbasic *p*-mastigophors ..... *Diadumenidae*.
- II. Acontia-like organs containing only few nematocysts ..... *Nemanthidae*.

Fam. **Acontiophoridae** Carlgren 1938 p. 65.

Thenaria (Acontia) without sphincter. Mesenteries divisible into macro- and microcnemes. Acontia with basitrichs and probably microbasic amastigophors.

Genus *Acontiophorum* Carlgren 1938 p. 65.

Acontiophoridae with well developed base. Column smooth with cinclides. No sphincter. Tentacles of ordinary length; hexamerously arranged. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs. Mesenteries divisible into macro- and microcnemes, more numerous proximally than distally. 2 pairs of directives. Macrocnemes, including the directives, fertile, with very strong retractors. Parietobasilar muscles very weak. Basilar muscles distinct. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors and probably microbasic amastigophors.

*A. mortenseni* Carlgren 1938 p. 65, 1947 p. 15, South Africa, Agulhas Bank, 75 m.

Fam. **Bathypheiliidae** Carlgren 1932 p. 262.

Thenaria (Acontia) whose acontia carry only basitrichs. Mesenteries divisible into macro- and microcnemes. Sphincter mesogloal. Body usually elongate. Macrocnemes with more or less restricted to circumscribed retractors.

4 genera:

## I. Column divisible into scapus and scapulus.

## A. Scapus with cuticle and tenaculi.

a) 6 pairs of perfect mesenteries. Tentacles fewer than the mesenteries . . . . . *Bathypheilia*.

aa) 12 pairs of perfect mesenteries. Same number of tentacles and mesenteries

*Daontesia*.

AA. The indistinct scapus without cuticle or tenaculi. 6 pairs of perfect mesenteries. Tentacles fewer than the mesenteries . . . . . *Phelliogeton*.

II. Column smooth. 6 pairs of perfect mesenteries. Mesenteries more numerous distally than proximally  
*Acraspedanthus*.Genus *Bathypheilia* Carlgren 1932 p. 262.

*Phellia* p. p. Danielssen 1890.

Bathypheiliidae with broad base. Column divisible into scapus and scapulus, the former with cuticle and tenaculi. Sphincter, strong, mesogloal. Tentacles hexamerously arranged, fewer than the mesenteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Two siphonoglyphs. Mesenteries hexamerously arranged, those of the last cycle growing from the base upwards. 6 pairs perfect, 2 pairs of directives, the perfect pairs fertile and provided with filaments and acontia. Retractors of the perfect mesenteries restricted, present but weak also on the stronger microcnemes, which are devoid of filaments, gonads and acontia. Nematocysts of acontia basitrichs only. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*B. (Phellia) margaritacea* Danielssen 1890 p. 54, *Bathypheilia* Carlgren 1932 p. 262, 1942 p. 3, 76, Norwegian Deep-Sea, 1619-2750 m.

Genus *Daontesia* Carlgren 1942 p. 5.

*Sagartiogeton* Carlgren 1928 a.

Bathypheiliidae with broad pedal disc. Column divisible into scapus and scapulus, the former with tenaculi and cinclides at the limbus. Sphincter strong, mesogloal. Tentacles not numerous, hexamerously



arranged, the same in number as the mesenteries. Two siphonoglyphs and 2 pairs of directives. Perfect pairs of mesenteries 12, provided with filaments, a third cycle without filaments. At least the mesenteries of the first cycle fertile. Retractors diffuse but strong. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*D. (Sagartiogeton) praelonga* Carlgren 1928 a p. 302, *Daontesia* Carlgren 1942 p. 5, 76, North Atlantic, 1041–1960 m.

Genus *Phelliogeton* Carlgren 1927 p. 68.

Bathypheilliidae with enlarged pedal disc. Column indistinctly divisible into scapus and scapulus, the former with very numerous gland cells but without cinclides. Sphincter mesogloal, well developed. Tentacles few, short, fewer than the mesenteries, outer tentacles shorter than the inner. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Mesenteries divisible into macro- and microcnemes. 6 pairs of fertile macrocnemes with strongly restricted to almost circumscribed retractors, filaments and acontia; microcnemes sterile, without filaments, retractors or acontia. The youngest cycle of microcnemes present only in the proximal part of the body. Basilar muscles present but not strong. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. falklandicus* Carlgren 1927 p. 68, Falkland Isl., 17 m.

*P. kerguelensis* Carlgren 1928 p. 239, Kerguelen, 9–18 m.

Genus *Acraspedanthus* Carlgren 1924 p. 224.

Bathypheilliidae with well developed base. Column smooth with cinclides in its lower part. Sphincter mesogloal, weak. Margin fairly distinct, without fosse. Tentacles short, hexamerously arranged, the outer tentacles considerably shorter than the inner ones. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 well developed siphonoglyphs. Mesenteries more numerous distally than proximally. Six perfect pairs of mesenteries, (macrocnemes) which have gonads, strong circumscribed retractors, filaments and acontia, microcnemes without these organs. Basilar muscles well developed, also on the stronger imperfect mesenteries. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*A. elongatus* Carlgren 1924 p. 225, New Zealand, North Cape, Slipper Isl., low-water.

Fam. **Isophelliidae** Stephenson 1935 p. 183.

Thenaria (Acontiarina). Sphincter mesogloal. Mesenteries divisible into macro- and microcnemes, the older microcnemes may, however, be provided with filaments and acontia. Acontia with 2 categories of nematocysts, basitrichs and microbasic amastigophors.

7 genera:

I. Body divisible into scapus and scapulus.

A. Scapus with tenaculi.

- a) 6 pairs and 6 single mesenteries perfect, all distinct macrocnemes, the other mesenteries of the second cycle more or less macrocnemes. Sphincter strong. Mesenteries more numerous distally than proximally. Column with cinclides ..... *Isophellia*.
- aa) 12 pairs of macrocnemes. Some of the microcnemes with acontia. Sphincter small, situated in the upper part of the scapulus. Cinclides probably absent ..... *Flosmaris*.
- aaa) 10 macrocnemes ..... *Decaphellia*.
- aaaa) 6 pairs of macrocnemes. Sphincter long ..... *Epiphellia*.

AA. Scapus without tenaculi.

b) 6 pairs of distinct macrocnemes, but the older imperfect mesenteries may have filaments and acontia. Sphincter strong. Probably no cinclides ..... *Telmatactis*.

bb) 6 pairs of macrocnemes. Sphincter strong. Cinclides in longitudinal rows.. *Euphellia*.

II. Body smooth, not divisible into scapus and scapulus. Sphincter fairly strong. Tentacles and mesenteries octomerously arranged. Eight pairs of macrocnemes, 1 siphonoglyph and 1 pair of directives. Same number of mesenteries proximally as distally ..... *Litophellia*.

Genus *Isophellia* Carlgren 1900 p. 52 (72).

Isophelliidae with small pedal disc and cylindrical, elongate body. Column divisible into scapus and scapulus, the former with tenaculi and cinclides. Sphincter mesogloal, strong to fairly weak. Tentacles short, the inner longer than the outer, hexamerously arranged, more numerous than the mesenteries at the base. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 narrow siphonoglyphs. Mesenteries divisible into macro- and microcnemes. The mesenteries of the first cycle and at least half the mesenteries of the second cycle are definite macrocnemes, the other of this cycle may be more or less marked macrocnemes, but with weaker retractors than the former. Each pair of the second cycle consists of a stronger and a weaker mesentery, all arranged in the same manner in relation to the directive plane. Retractors of the macrocnemes strong, restricted, with high folds. Parietal muscles weak to rather well developed, basilar muscles distinct. Mesenteries of the first cycle and at least the stronger ones of the second, fertile. Cnidom: spirocysts, basitrichs and probably microbasic *p*-mastigophors and microbasic amastigophors.

Genotype: *I. sabulosa* Carlgren 1900 p. 52 (72), Zanzibar, low-water.

*I. algonensis* Carlgren 1928 p. 236, South Africa, Algoa Bay, 22 m.

Genus *Flosmaris* Stephenson 1920 a p. 484.

Isophelliidae with the elongate column divisible into scapus and scapulus, the former with tenaculi. Cinclides probably absent. Margin tentaculate. Tentacles simple, their longitudinal muscles ectodermal as are the radial muscles of oral disc. Sphincter mesogloal situated in the upper part of the scapulus. 12 pairs of macrocnemes bearing gonads, filaments and strongly restricted (circumscribed?) retractors, all perfect. Microcnemes weak, consisting chiefly of a parietal muscle. Acontia present on the macrocnemes and on at least some microcnemes.

*F. phellioides* Stephenson 1920 a p. 441. Hulule, close to low-water.

Genus *Decaphellia* Bourne 1918 p. 60.

Isophelliidae with the column divisible into scapus and scapulus (capitulum?). Scapus probably with tenaculi. Sphincter weak, mesogloal situated in the uppermost part of the column. Tentacles 24. Two well developed siphonoglyphs. 12 pairs of mesenteries. 10 mesenteries are macrocnemes, the 2 ventral mesenteries of the ventrolateral pairs in the first cycle are microcnemes. Retractors almost circumscribed, parietal muscles forming few, coarse folds. No more mesenteries distally than proximally. Acontia present only on the micromesenteries?

*D. psammomitra* Bourne 1918 p. 60, New Guinea, Lifu, Loyalty Islands.

Genus *Epiphellia* n. gen.

Isophelliidae with small base. Column elongate, divisible into scapus and scapulus, the former with tenaculi, probably without cinclides. Sphincter mesogloal, elongate, usually strong. Longitudinal musc-

les of tentacles and radial muscles of oral disc ectodermal. 2 distinct siphonoglyphs and 2 pairs of directives. No more mesenteries distally than proximally. 6 pairs of macrocnemes, microcnemes recalling the parietal part of the macrocnemes. Retractors of the macrocnemes strongly restricted to circumscribed, very strong. Parietal muscles of the microcnemes which may be provided with filaments and acontia, strong. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *E. anneae* n. sp., Great Barrier Reef, Low Isles.

*E. elongata* n. sp., Great Barrier Reef, Low Isles.

*E. australis* n. sp., Port Jackson.

? *E. (Phellia) browni* Willsmore 1911 p. 46, Broken Bay.

? *E. (Phellia) capitata* Willsmore 1911 p. 50, Broken Bay.

It is very difficult to decide whether there are tenaculi in *browni* and *capitata*. That is also the case with some of the forms here referred to *Telmatactis*.

#### Genus *Telmatactis* Gravier 1918 p. 16.

Phellia Auct.

Capnea Duchassaing & Michelotti 1860, 1866.

Edwardsia Stimpson 1855.

Paractis Verrill 1869.

Phelliopsis Verrill 1899.

Isophelliidae with elongated, more or less cylindrical body, divisible into scapus and scapulus. Scapus with a rough, wrinkled cuticle, without tenaculi proper. Scapulus short. No cinclides. Tentacles rather short, about the same in number as the mesenteries, their apices sometimes more or less distinctly differentiated from their proximal parts. Siphonoglyphs well developed. Only the mesenteries of the first cycle are typical macrocnemes and perfect, the 6 pairs of the second cycle and some of the third may, however, be provided with filaments and acontia. The latter may be atypically arranged. Retractors of the macrocnemes very strong more or less kidney-shaped in cross-section. Acontia slender. Cnidom: spirocysts, basitrichs, microbasic *b*-mastigophors, microbasic amastigophors.

Genotype: *T. Valle Flori* Gravier 1918 p. 16, Carlgrén 1941 p. 7, Gulf of Guinea, San Thomé, St. Helena.

*T. (Actinia) elongata* Delle Chiaje 1825, *Phellia* Jourdan 1880 p. 39, Andres 1883 p. 332, Fischer 1889 p. 296 = *cylinder, armata* Andres 1880 p. 327, The Mediterranean, South-West coast of France, littoral down to 100 m.

*T. (Phellia) limicola* Andres 1880 p. 327, 1883 p. 334, Naples, 8 m.

? *T. (Entacmaea) Forskalii* H. and Ehr. Ehrenberg 1834 p. 37 = *elongata*? Carlgrén 1947 p. 11, Alexandria.

? *T. (Phellia) rufa* Verrill 1900 p. 557, 1907 p. 254, Pax 1924 a p. 104, Bermudas, Curaçao.

*T. (Phellia) roseni* Watzl 1922 p. 48, Bahamas.

*T. (Phellia) pseudoroseni* Pax 1924 a p. 105, Curaçao.

? *T. (Phellia) simplex* Verrill 1901 p. 48, Bermudas.

*T. (Paractis) americana* Verrill 1869 p. 327 = *Phellia clavata* Duchassaing and Michelotti 1860 p. 40, *Capnea* Duchassaing and Michelotti 1860 p. 40, 1866 p. 33, *Phellia* Duerden 1898 b p. 459, St. Thomas, Jamaica.

*P. vestita* Johnson 1861 p. 179, Madeira.

*T. (Actinia) decora* Ehrenberg 1834 p. 37, *Phellia* Klunzinger 1877 p. 74, Carlgrén 1900 p. 50 (70). The Red Sea, Zanzibar.

*T. natalensis* Carlgrén 1938 p. 68, Durban. Isipingo, low-water.

*T. (Edwardsia) clavata* Stimpson 1855 p. 376, *Phellia* Verrill 1865 p. 150, 1869 p. 326 = *inequalis* Verrill 1869 p. 325 — = *decora* Ehr., Uchida 1938 p. 623, Japan; Hong Kong, Bonin Isl.,

? *T. (Phellia) inequalis* Verrill 1868 p. 325, Bonin Isl., littoral.

? *T. (Edwardsia) collaris* Stimpson 1855 p. 376, *Phellia* Verrill 1865 p. 250, 1868 p. 327, Hong Kong.

*T. (Phellia) castanea* Bourne 1918 p. 35, New Guinea, Rakaiya, New Britain.

*T. (Phellia) phassonesiotes* Bourne 1918 p. 48, Stephenson 1920 p. 457, New Guinea, Pigeon Island, New Britain.

*T. (Phellia) allantoides* Bourne 1918 p. 53, New Guinea, Uvea, Loyalty Islands.

? *T. (Phellia) cylicodes* Bourne 1918 p. 57, New Guinea, Uvea, Loyalty Islands.

*T. (Phellia) ambonensis* Kwietniewski 1897 a p. 398, Ambon.

- T. (Phellia) ternatana* Kwietniewski 1897 p. 328, Ternate.  
*T. (Phellia) vermiformis* Haddon 1898 p. 454. Thursday Isl. upper littoral.  
*T. (Phellia) sipunculooides* Haddon and Shackleton 1893 p. 128, Haddon 1898 p. 454, North Queensland, Cockburn reef, low-water.  
*T. (Phellia) Devisi* Haddon and Shackleton 1893 p. 128, Haddon 1898 p. 455, North Queensland, Cockburn reef.  
*T. stephensoni* n. sp., Great Barrier Reef, Low Isles.  
*T. insignis* n. sp., Great Barrier Reef, Low Isles.  
*T. australiensis* n. sp., Great Barrier Reef, Three Isles.  
*T. (Phellia) humilis* Verrill 1928 p. 21, Hawaii, low-water.  
*T. (Phellia) Sollasi* Haddon 1898 a p. 693, Maguire 1898 a p. 717, Funafuti, Ellice group.  
*T. (Phellia) rapanuiensis* Carlgrén 1920 p. 153, Easter Isl.  
*T. (Phellia) panamensis* Verrill 1869 a p. 489, *Phelliopsis* Verrill 1899 p. 214, Gulf of California, Panama.

Genus *Euphellia* Pax 1908 p. 475.

? Isophelliidae with the column divisible into scapus and scapulus (capitulum?). Scapus with cuticle. Cinclides present. Sphincter strong, mesogloal. Tentacles arranged in 3 cycles. Probably a single siphonoglyph. 6 pairs of perfect mesenteries.

*E. cinclidifera* Pax 1908 p. 475. Teneriffa.

As the description of the species is very incomplete, the position of the genus is not sure.

Genus *Litophellia* Carlgrén 1938 p. 70.

Isophelliidae with small but distinct base. Column elongate smooth, without tenaculi or cuticle. Cinclides present. Margin tentaculate. Sphincter rather strong, mesogloal. Tentacles and mesenteries octamerously arranged. A single siphonoglyph and one pair of directives. Mesenteries as many at the base as at the margin, distinctly divisible into macro- and microcnemes. Eight pairs of macrocnemes. Two cycles of weak microcnemes. Retractors of macrocnemes strongly restricted, reniform. Parietobasilar muscles weak. Basilar muscles and acontia present. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

*L. octoradiata* Carlgrén 1938 p. 70, Durban, Isipingo, low-water.

Fam. **Hormathiidae** Carlgrén 1925 c.

Thenaria (Acontaria) with strong mesogloal sphincter. Mesenteries not divisible into macro- and microcnemes. Usually 6 pairs of perfect mesenteries, sometimes more, but they are never numerous. Perfect mesenteries usually sterile, rarely fertile. Nematocysts of the acontia basitrichs only. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors. Usually the spirocysts are large and broad.

15 genera:

I. Usually six pairs of perfect sterile mesenteries; rarely a few more.

1) About the same number of mesenteries distally and proximally.

a) Column divisible into scapus and scapulus, the former with rows of tubercles, which are sometimes reduced to a single corona in its uppermost part. Cinclides usually absent, rarely present.

b) Without cinclides.

c) Tentacles without thickenings on their aboral sides, never more than about 96. Pedal disc never cup-like ..... *Hormathia*.

- cc) At least some of the tentacles with thickenings on their aboral sides, never more than about 96. Pedal disc often cup-like enclosing sand, mud or other objects ..... *Actinauge*.
- ccc) Tentacles with or without thickenings on their aboral sides, considerably more than 96. Pedal disc never cup-like. Scapus with large tubercles, its cuticle very strong. Probably a few more mesenteries distally than aborally ..... *Paraphelliactis*.
- cccc) With wide base secreting a cuticle which may extend the mouth of the shell to which it is fastened. Scapus with a thin, easily deciduous cuticle, smooth or with a corona of tubercles. Tentacles up to about 96. Commensal with hermit crabs ..... *Paracalliactis*.
- bb) With cinclides just above the base. Scapus with small tubercles, sometimes reduced, in short rows in its uppermost part ..... *Cataphellia*.
- aa) Column smooth, not divisible into scapus and scapulus. No cinclides ..... *Allantactis*.
- 2) More mesenteries at the base than at the margin. No cinclides.
- a) Column smooth, thin, not divisible into scapus and scapulus. Retractors of mesenteries weak ..... *Cricophorus*.
- aa) Column divisible into scapus and scapulus.
- b) Scapus smooth, often incrustated with sand. Radial muscles of oral disc ectodermal. Sometimes more than 6 pairs of perfect mesenteries, their retractors strong, restricted to circumscribed ..... *Paraphellia*.
- bb) Scapus with a weaker or stronger cuticle and irregularly arranged tubercles. Radial muscles of oral disc ectodermal or ecto-mesogloal, stronger over the exocoels than over the older endocoels. 6-8 pairs of perfect mesenteries. Retractors of mesenteries diffuse *Phelliactis*.
- 3) Mesenteries more numerous at the margin than at the base.
- a) Column distinctly divisible into scapus and scapulus. Scapus with more or less numerous tubercles, sometimes reduced so that in its uppermost part only a corona of tubercles remains in its uppermost part. No cinclides ..... *Hormathianthus*.
- aa) Column not or but slightly divisible into scapus and scapulus. Cinclides present. Often numerous ectodermal invaginations in the column. Often commensal with hermit crabs *Calliactis*.
- II. 12 pairs of perfect and sterile mesenteries. Pedal disc wide secreting a cuticle which may project beyond the mouth of the shell to which it is fastened. Mesenteries more numerous at the margin than at the limbus. Cinclides present. Often commensal with hermit crabs *Adamsia*.
- III. 6-12 or more pairs of perfect but fertile mesenteries.
- a) Body elongated, divisible into scapus and scapulus, the former with cuticle and a corona of tubercles in its uppermost part. About same number of mesenteries distally and proximally. The third and following cycles of mesenteries without filaments and acontia. Always 6 pairs of perfect mesenteries. No cinclides ..... *Chondrophellia*.
- aa) Body low, often drawn out in the transversal plane, smooth or provided with smaller or larger tubercles arranged in longitudinal rows. All mesenteries with filaments. Cinclides few, almost always belonging to the directive compartment. 6 to 12 or more perfect mesenteries.
- b) Considerably more mesenteries at the base than at the margin ..... *Amphianthus*.
- bb) Same number of mesenteries proximally and distally or more mesenteries at the margin. Acontia few or reduced? ..... *Stephanauge*.

Genus *Hormathia* Gosse 1859 p. 47.

Bunodes p. p. Gosse 1858.

Tealia p. p. Gosse 1860.

- Chondractinia Lütken 1860, Carlgren 1893, Verrill 1922.  
 Chitonactis Fischer 1874, Haddon 1889.  
 Cereus R. Hertwig 1882.  
 Phellia R. Hertwig 1882.  
 Chitonanthus Mc Murrich 1893, 1904, Gravier 1918, 1922.  
 Actinauge Verrill 1922.  
 ?Leptoteichus Stephenson 1918 b.  
 Lilliella Stephenson 1918 b.  
 Paranthus Pax 1922.  
 Paranthoides Pax 1922.

Hormathiidae with well developed base which is often attached to shells. Column divisible into scapus and scapulus, the former provided with tubercles sometimes showing a tendency to be arranged in rows, more rarely most of the tubercles are reduced so that only a ring of tubercles, coronal tubercles, remain, in the uppermost part of the scapus. In young specimens the tubercles are often small or absent. Scapus usually with a more or less strong cuticle. Sphincter mesogloal, strong. Tentacles without mesogloal swellings on their outer sides, not more than 96 (or exceptionally a few more). Same number of mesenteries proximally as distally. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal, the latter sometimes meso-ectodermal. Two well developed siphonoglyphs. 6 pairs of perfect and sterile mesenteries. Retractors diffuse. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- Genotype: *H. (Actinia) digitata* O. F. Müller 1776, 1806 p. 16 (= *H. margaritae* Gosse 1859 p. 47, 1860 p. 219), *Tealia* Gosse 1860 p. 206, *Chondractinia* Lütken 1860 p. 188, Carlgren 1893 p. 110, *Hormathia* Haddon 1898 p. 459, Stephenson 1935 p. 259, Carlgren 1933 p. 25, 1942 p. 43, ?*Chitonanthus incubans* Gravier 1920 p. 60, see Carlgren 1939 p. 13, a boreal and low arctic form, var. *vegae* Carlgren 1942 p. 45, arctic; 20–1 000 m.
- H. (Actinia) nodosa* Fabricius 1780 p. 350, *Chondractinia* Haddon 1889 p. 308, Carlgren 1893 p. 115, *Hormathia* Haddon 1898 p. 459, Carlgren 1928 a p. 294, 1933 p. 26, 1942 p. 46 = *Actinauge rugosa*, *borealis*, *Chondractinia tuberculosa*. Verrill 1922 p. 95, 98, 102, an arctic form, possibly circumpolar; 9–650 m.
- H. (Chitonanthus) incubans* Gravier 1918 p. 11, 1922 p. 60, Carlgren 1934 a p. 13, probably = *H. digitata*.
- H. (Bunodes) coronata* Gosse 1858 a p. 194, 1860 p. 202, *Chitonactis* Haddon 1889 p. 312, Faurot 1895 p. 74. *Hormathia* Haddon 1898 p. 459, Stephenson 1935 p. 269, SW England, SW Ireland, Atlantic coast of France, The Mediterranean; up to 91 m, sometimes deeper.
- H. (Chitonactis) marioni* Haddon 1889 p. 313, *Hormathia* Haddon 1898 p. 459, Stephenson 1920 a p. 535, SW of Ireland; 592 m.
- H. mediterranea* Carlgren 1935 p. 4, The Mediterranean Gulf of Genoa; 200–350 m.
- H. Phellia) pectinata* Hertwig 1882 p. 81 (72), Mc Murrich 1893 p. 190 = *Phellia spinifera* Hertwig 1888 p. 24, *Hormathia* Haddon 1889 p. 309, 37°17' S 53°52' W, 49°24' S 74°23' W, 52°43'30'' S 73°46' W, 53° S 73°42' W 269–1095 m.
- H. georgiana* Carlgren 1927 p. 85, South Georgia, Shag Rock Bank 160–310 m.
- H. (Paranthus) erythrosoma* Pax 1922 p. 81, 1923 p. 8, *Hormathia* Carlgren 1927 p. 88, South Shetland, King George's Isl. 75 m.
- H. (Paranthoides) rhododactyla* Pax 1922 p. 84, 1923 p. 20, *Hormathia* Carlgren 1927 p. 89, South Shetland, King George's Isl.; 75 m.
- ? *H. (Leptoteichus) insignis* Stephenson 1918 p. 57, entrance Mc Murdo sound; 379 m.
- H. (Lilliella) lacunifera* Stephenson 1918 p. 33, *Hormathia* Carlgren and Stephenson 1929 p. 24, Mc Murdo Sound, from 64°44' S to 65°48' S and from 95°27' E to 137°32' E 418–602 m.
- ? *H. Andersoni* Haddon 1888 a p. 251. Mergui Archipelago, Sullivan Isl., possibly = *Hormathianthus tuberculatus* Carlgren 1943 p. 33.
- H. (Cereus) spinosa* Hertwig 1882 p. 76 (68), *Hormathia* Haddon 1898 p. 459; 53°53' S 108°35' E, 34°37' N 140°32' E 3565–3428 m.
- H. (Chitonanthus) castanea* Mc Murrich 1904 p. 282, *Hormathia* Stephenson 1920 a p. 535, Carlgren 1927 p. 90, Juan Fernandez; 37–73 m.

Genus *Actinauge* Verrill 1883 p. 50.

- Urticina* p. p. Verrill 1873, 1882, 1883.  
*Chitonactis* Marion 1882, Haddon 1889.

Hormathia p. p. Stephenson 1820.

Chondractinia p. p. Gravier 1922.

Hormathiidae either with a flat adherent pedal disc or with a cup-like base which encloses a cavity full of mud or foreign matter such as small stones. Column usually elongate divisible into scapus and scapulus, the former tuberculate and provided with a weaker or stronger cuticle. Arrangement of the tubercles variable, sometimes they show a tendency to form longitudinal rows. Coronal tubercles mostly 12 or a multiple of 12, sometimes merging into ridges of the scapulus. Scapulus usually with 12 ridges, which are sometimes broken up into tubercles. No cinclides. Sphincter strong, mesogloal. Tentacles 96 in number or a few more, hexamerously arranged. All the tentacles or at least some of them more or less distinctly thickened on the aboral side at the base. Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc ectodermal or more or less mesogloal, not decidedly stronger over the exocoels than over the older endocoels. 2 well developed siphonoglyphs. Pairs of mesenteries 48 or a few more, 2 pairs of directives. Six pairs of perfect and sterile mesenteries. No more mesenteries distally than proximally. Retractors of mesenteries as a rule diffuse. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. (Urticina) longicornis* Verrill 1882 p. 222, *Actinauge* Verrill 1883 p. 53, Carlgren 1942 p. 36, N. Carolina to Marthas Vineyard; 73–595 m. Var. *charibea* off Grenada, St. Vincent, Barbados, 18°20'30" N 87°16'40" W 182–594 m.

*A. (Chitonactis) richardi* Marion 1882 p. 458, Durègne 1889 p. 112, *Actinauge* Haddon 1889 p. 319, Stephenson 1918 a p. 148, 1935 p. 289, Carlgren 1928 a p. 204, 1942 p. 37, *Chondractinia nodosa* p. p. Gravier 1922 p. 54, North Sea, W, SW and S Ireland, Bay Biscay to Senegal, The Mediterranean; 60–2000 m.

*A. verrillii* Mc Murrich 1893 p. p., p. 184, Verrill 1922 p. 94, Carlgren 1933 p. 28, 1942 p. 38 = *Urticina nodosa* Verrill 1873 p. 440, p. p. 1883 p. 50, Baffin Bay to Chesapeake Bay, NW and E coast of Ireland; Mc Murrich's specimens from 33°08' N 118°40' W, 0°29' S 89°54'30" W, 38°08' S 75°53' W belong probably to another species.

*A. abyssorum* Carlgren 1934 p. 16, 45°26' N 9°20' W 4700 m.

*A. granulata* Carlgren 1928 p. 201, 1938 p. 81, S. Africa, off Cape Town, Cape Barraconta; 64–500 m.

*A. bocki* Carlgren 1943 p. 35, Gote Isl., Kin Shin.

#### Genus *Paraphelliactis* Carlgren 1928 a p. 291.

Hormathiidae with well developed base. Column divisible into scapus and scapulus, the former strongly tuberculated and provided with a thick cuticle. Sphincter mesogloal. Tentacles arranged in more than 5 cycles, probably more numerous than the mesenteries at the base, without or with mesogloal thickenings on the aboral side. Radial muscles of oral disc not weaker in the parts corresponding to the stronger endocoels than in other places. 2 well developed siphonoglyphs. Pairs of mesenteries more than 48, 6 pairs perfect and sterile, 2 pairs of directives. Retractors of mesenteries strongest in the distal part, diffuse, band-like. Parietobasilar muscles weak. Acontia well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *P. spinosa* Carlgren 1928 a p. 291, 1942 p. 42, 77, Denmark Straits; 1416 m.

*P. michaelsarsi* Carlgren 1934 p. 13, 27°27' N 14°52' W 2603 m.

#### Genus *Paracalliactis* Carlgren 1928 p. 193.

*Adamsia* ? Mc Murrich 1893.

Hormathiidae with wide basal disc forming a cuticle which may project beyond the mouth of the shell to which it is fastened. Column divisible into scapus and scapulus, the former smooth or provided in its distal part with a more or less complete corona of tubercles, with a thin, easily deciduous cuticle. Scapulus, at least in the preserved state, with deep longitudinal furrows. Margin distinct, more or less crenula-

ted. Fosse deep, sphincter mesogloal. Tentacles thin, hexamerously arranged. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 deep siphonoglyphs. Mesenteries hexamerously arranged, 6 pairs perfect and sterile. About same number of mesenteries distally and proximally. Retractors rather weak to weak, parietobasilar and basilar muscles weak. Acontia thin but long. The species of the genus live in symbiosis with hermit crabs. Their mouth may be situated dorsally as well as ventrally with relation to the mouth of the hermit. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors (the mastigophors in the column too).

Genotype: *P. valdiviae* Carlgrén 1928 p. 193, Off E. Africa 628–823 m.

*P. stephensoni* Carlgrén 1928 b p. 170, 51°22' N 12°41' W; 1976 m.

*P. michaelsarsi* Carlgrén 1928 b p. 172, 1934 p. 13, 45°26' N 9°20' W; 4700 m.

*P. (Adamsia?) involvens* Mc Murrich 1893 p. 182, *Paracalliactis* Carlgrén 1947 p. 15. 1355 m.

#### Genus *Cataphellia* Stephenson 1929 p. 133.

*Phellia* p. p. Gosse 1859.

*Paraphellia* p. p. Walton 1908.

Hormathiidae with well developed base. Column divisible into scapus and scapulus, the former with a more or less deciduous cuticle and small tubercles, sometimes reduced, tending to arrangement in short, longitudinal rows on upper part of scapus. Scapulus with distinct ridges. Cinclides just above the limbus. Sphincter strong, mesogloal. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Two siphonoglyphs and two pairs of directives. Six pairs of perfect and sterile mesenteries. Mesenteries equally numerous proximally and distally. Retractors diffuse. Acontia well developed on all mesenteries.

*C. Phellia) brodricii* Gosse 1859 p. 46, 1860 p. 349. *Paraphellia expansa* p. p. Walton 1908 p. 210, *Cataphellia* Stephenson 1929 p. 132, 1935 p. 252, SW of England, low-water.

#### Genus *Allantactis* Danielssen 1890 p. 20.

*Calliactis* Danielssen 1890.

Hormathiidae with well developed base. Column smooth, fairly thick; devoid of cuticle and cinclides. Margin distinct. Sphincter very strong, mesogloal. Tentacles fairly short, without thickenings at the aboral side, hexamerously arranged, not more than 96 in number. Longitudinal muscles of tentacles ectodermal, radial muscles of oral disc meso-ectodermal. 2 broad siphonoglyphs and 2 pairs of directives. 6 pairs of perfect and sterile mesenteries. Same number of mesenteries distally and proximally. Retractors of mesenteries diffuse. Parietobasilar and basilar muscles fairly weak. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

*A. parasitica* Danielssen 1890 p. 20, Kwietniewski 1898 p. 122, Carlgrén 1928 a p. 292, 1933 p. 30, 1942 p. 34; an arctic, circumpolar form, 6–1448 m = *Calliactis Krøyeri* Danielssen 1890 p. 36.

#### Genus *Cricophorus* Carlgrén 1924 p. 252.

*Sagartia* Stuckey 1909.

Hormathiidae with broad pedal disc. Column thin, smooth, without cinclides. Sphincter strong, mesogloal. Tentacles fairly short, fewer than the mesenteries, the inner considerably longer than the outer. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Mesenteries hexamerously arranged, more numerous proximally than distally. Only six pairs of mesenteries perfect, 2 pairs of directives. The six oldest pairs sterile. Longitudinal muscles of mesenteries weak, forming no distinct pennons.



Parietobasilar and basilar muscles weak. Acontia slender, with very short nematocysts. Cnidom: spirocysts, basitrichs, microbasal *p*-mastigophors.

*C. (Sagartia) nutrix* Stuckey 1909 b p. 382, *Cricophorus* Carlgrén 1924 p. 252. New Zealand, several localities, upper littoral; with brood-room.

Genus *Paraphellia* Haddon 1889 p. 321.

*Chitonactis* Haddon 1886.

*Sagartiomorpha* Stephenson 1920.

Hormathiidae with broad pedal disc which may be widely expanded. Column divisible into scapus and scapulus, the former smooth or slightly corrugated, without cuticle (always?) but sometimes incrustated with sand and with a thin coating of hardened mucus in which sand may be embedded, or a thick, wrinkled coating. Scapulus narrow and smooth. Sphincter mesogloal. Tentacles in more than two cycles. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs and 2 pairs of directives. Six pairs (or perhaps up to 12 pairs) of perfect mesenteries. The six first pairs sterile, with strongly restricted to circumscribed retractors and weak parietobasilar muscles. Retractors of the second cycle diffuse. Youngest mesenteries growing from the proximal end upwards. Cnidom: spirocysts, basitrichs, microbasal *p*-mastigophors.

Genotype: *P. (Chitonactis) expansa* Haddon 1886 p. 616, *Paraphellia* Haddon 1889 p. 321, Stephenson 1935 p. 276, S. W. England, Irish Sea, S. and W. Ireland; upper littoral down to about 200 m.

*P. Sanzoi* Calabresi 1926 p. 146, The Red Sea, Port Said 11–13 m.

? *P. lineata* Haddon and Shackleton 1893 p. 130, Haddon 1898 p. 462, *Sagartiomorpha* Stephenson 1920 a p. 538, Torres Straits, Brother Isl.

? *P. Hunti* Haddon and Shackleton 1893 p. 129, Haddon 1898 p. 461, *Sagartiomorpha* Stephenson 1920 a p. 538, Torres Str., Murray Isl. 27 m.

Genus *Phelliactis* Simon 1892 p. 74.

*Chondrodactis* Wasilieff 1908, Stephenson 1918 a.

Hormathiidae with well developed base. Body often asymmetrical. Column divisible into scapus and scapulus, the former with weaker or stronger cuticle and numerous irregularly arranged tubercles of varying size. Sphincter mesogloal. Tentacles more than 100, fewer than the mesenteries at the base, provided on the aboral side with strong thickenings of the mesogloea, arranged in 2 (or more?) more or less distinct cycles. Longitudinal muscles of tentacles ectodermal. Oral disc wide, sometimes forming two lobes. Radial muscles of oral disc ectodermal or meso-ectodermal, stronger over the exocoels than over the older endocoels. 2 well developed siphonoglyphs. 6–8 pairs of mesenteries, perfect and sterile. When more than 6 perfect pairs are present the supernumerary mesenteries often consist of single perfect mesenteries forming pairs with imperfect mesenteries. Pairs of mesenteries of the last cycle originating earlier nearer to the mesenteries of the first and second orders than to those of the third. Retractors of mesenteries diffuse, rather weak. Parietobasilar muscles distinct but weak. Acontia well developed. Cnidom: spirocysts, basitrichs, microbasal *p*-mastigophors.

Genotype: *P. hertwigi* Simon 1892 p. 75, Carlgrén 1928 p. 207, 1942 p. 39 = *Chondrodactis duplicata* Stephenson 1918 a p. 142, North Atlantic; 615–1960 m.

*P. (Chondrodactis) coccinea* Stephenson 1918 a p. 136, 51°53' N 11°59' W, *Phelliactis* Carlgrén 1928 p. 207, 585–670 m.

*P. (Chondrodactis) pulchra* Stephenson 1918 a p. 139, *Phelliactis* Carlgrén 1928 p. 207, Off Ireland.

*P. robusta* Carlgrén 1928 a p. 290, 1942 p. 40, 76, Davis and Denmark Straits, North Atlantic, 600–2450 m.

*P. incerta* Carlgrén 1934 p. 15, 35°32' N 7°7' W 1215 m.

*P. capensis* Carlgrén 1938 p. 83, South Africa off Cape Point, 557–1023 m.

*P. algaensis* Carlgrén 1928 p. 208, 1938 p. 82, Algoa Bay, 40 m?

*P. somaliensis* Carlgrén 1928 p. 211, Off Somali Land, E. Africa, 628–823 m.

*P. siberutiensis* Carlgrén 1928 p. 213, 0°39.2' S 98°52.3' E, 750 m.

- P. (Chondrodactis) japonica* Wasilieff 1908 p. 38, *Phelliactis* Carlgren 1928 p. 207, Japan, Sagami Bay.  
*P. (Chondrodactis) magna* Wasilieff 1908 p. 36, *Phelliactis* Carlgren 1928 p. 207, Japan Hokkaido, Taraku Isl.  
 ? *P. (Chondrodactis) crassa* Wasilieff 1908 p. 39, Japan, Sagami Bay.

Genus *Hormathianthus* Carlgren 1943 p. 33.

- ? *Hormathia* p. p. Haddon 1888.  
 ? *Chitonanthus* p. p. Haddon 1898.

Hormathiidae with well developed base. Column fairly thick, divisible into scapus and scapulus. Scapus with a ring of coronial tubercles, with or without a cuticle, otherwise smooth or provided with small tubercles. Sphincter mesogloal, strong. Tentacles conical, hexamerously arranged, considerably more numerous than the mesenteries at the base, without any thickenings on their outer sides. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 broad siphonoglyphs. Mesenteries hexamerously arranged, in the uppermost part considerably more numerous than at the base, where they are 96 in number. 2 pairs of directives, 6 pairs of perfect and sterile mesenteries. Retractors of the mesenteries diffuse, not strong. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- H. tuberculatus* Carlgren 1943 p. 33, S. Annam, Cambodja, Cochinchina, Paulo Condore, Great Barrier Reef Pinguin Channel (possibly identical with *Hormathia andersoni* Haddon 1888 a p. 251, *Chitonanthus* Haddon 1898 p. 460).

Genus *Calliactis* Verrill 1869 a p. 481.

- Priapus* p. p. Forskål 1775.  
*Cereus* Studer 1878, Kwietniewski 1896.  
*Adamsia* Forbes 1840, *Adamsia* Milne-Edwards 1857, Duchassaing & Michelotti 1860, Mc Murrich 1898, Duerden 1898.  
*Sagartia* p. p. Gosse 1860.  
*Heliactis* p. p. Andres 1883.

Hormathiidae with well developed base. Column smooth, not or only slightly differentiated into scapus (which is often provided with a weak cuticle) and scapulus, often thick, sometimes with numerous ectodermal invaginations, which do not pierce the wall. Cinclides present (always?) in the proximal part of the column. Sphincter strong, mesogloal. Tentacles rather short, conical, more numerous than the mesenteries at the base, their longitudinal muscles ectodermal. Radial muscles of oral disc more or less embedded in the mesogloea. 2 broad siphonoglyphs. Six pairs of perfect and sterile mesenteries, 2 pairs of directives. Retractors of mesenteries fairly weak, diffuse. Parietobasilar and basilar muscles weak or rather well developed. Often commensal with hermit crabs. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

- Genotype: *C. (Actinia) decorata* Dana 1849 p. 3, 1859 p. 8, *Adamsia* Milne-Edwards 1857 p. 281, Honden Isl.  
*C. (Actinia) parasitica* Couch 1838 p. 80, *Sagartia* Gosse 1860 p. 112, *Calliactis* Stephenson 1920 a p. 529, 1935 p. 233, English Channel, SW. England, S. and SW. Ireland, Atlantic coast of France, the Mediterranean, upper littoral.  
*C. (Actinia) tricolor* Leseur 1817 p. 171 = *Actinia bicolor* Leseur 1817 p. 171 = *Adamsia egletes* Duchassaing and Michelotti 1866 p. 134, *Adamsia* Mc Murrich 1898 p. 234, Duerden 1898 p. 458, *Calliactis* Haddon 1898 p. 457, Duerden 1902 p. 359, West India on several localities littoral; Florida; Texas, Port Aransas.  
*C. vincentina* Pax 1922 p. 88, 1926 p. 40. Cap Verde, St. Vincent.  
*C. (Cereus) brevicornis* Studer 1878 p. 542, Kwietniewski 1896 p. 596, *Heliactis* Andres 1883 p. 390, *Calliactis* Carlgren 1928 p. 199; 10°6.9' N 17°16.5' W, 5°47.4' S 11°30.6' E 214-273 m.  
*C. reticulata* Stephenson 1918 p. 53, 42°22'56" S 41°34' W, 73 m.  
*C. algoaënsis* Carlgren 1938 p. 74, Algoa Bay, 91 m.  
*C. (Priapus) polypus* Forskål 1795 p. 102, *Calliactis* Klunzinger 1877 p. 76, Carlgren 1900 p. 55 (75), 1928 p. 197, The Red Sea, Zanzibar, Durban.  
*C. valdiviae* Carlgren 1938 p. 77 = *polypus* Carlgren 1928 p. 197; 0°27.4' N 42°47.3 E, 1°48.1' N 97°6' E, 141-638 m.  
*C. (Adamsia) fusca* Milne-Edwards 1857 p. 281 = *Actinia fusco-rubra* Quoy and Gaimard 1833 p. 145, Amboina.

- ? *C. (Cereus) sinensis* Verrill 1869 p. 54, Hongkong.  
*C. japonica* Carlgrén 1928 b p. 172, Japan, Sagami, Misaki, Isote Isl.  
*C. miriam* Haddon and Shackleton 1893 p. 130, Haddon 1898 p. 457, Torres Str. Mer, E. Australia, Great Barrier Reef.  
*C. armillatus* Verrill 1928 p. 20, Hawaii Isl., Laisan Isl.  
*C. variegata* Verrill 1869 a p. 481, Gulfs of California and Panama 3,5—11 m.

Genus *Adamsia* Forbes 1840 p. 180.

? *Sagartia* Verrill 1869.

Hormathiidae with very wide base forming a cuticle which may project beyond the mouth of the shell to which it is fastened. Column smooth, provided with cinclides, sometimes situated on slight elevations. Sphincter well developed, mesogloal. Tentacles in several cycles, never long. Two siphonoglyphs and two pairs of directives. 12 pairs of perfect and sterile mesenteries. Mesenteries more numerous at the margin than at the limbus. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors. The species of this genus live in symbiosis with hermit crabs in such a way that their mouth is always situated beneath that of the hermit crab.

Genotype: *A. (Medusa) palliata* Bohadsch 1761 p. 136, *Adamsia maculata* Forbes 1840 p. 180, *A. palliata* Faurot 1895 p. 153, Stephenson 1935 p. 245, Norway, North Sea, Great Britain and Ireland. Atlantic coast of France, the Mediterranean, 11–182 m, commensal with *Eupagurus prideauxi*.

? *A. (Sagartia) paguri* Verrill 1869 p. 57, Mc Murrich p. 427, China Sea, Japan, Wakanoura Kii, adherent to the chela of *Diogenes Edwardsia*, 36–55 m. (possibly an *Anthothoë*).

? *A. sociabilis* Verrill 1882 p. 225, 1883 p. 45, 145–888 m; commensal with *Catapagurus socialis* Smith.

Genus *Chondrophellia* Carlgrén (1925 a p. 6) 1928 p. 215.

Actinauge p. p. Verrill 1883, Mc Murrich 1893.

Hormathia p. p. Gravier 1918.

Hormathiidae with well developed base. Body elongated, without cinclides, divisible into scapus and scapulus, the former with a cuticle and tubercles at least in its uppermost part, where 12 short rows of a few tubercles are distinctly conspicuous. Scapulus longitudinally sulcated. Sphincter very strong, mesogloal. Tentacles hexamerously arranged, almost as numerous as the mesenteries at the base. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 6 pairs of perfect mesenteries. Mesenteries of the first and second cycles, including the directives, fertile and provided with filaments and acontia, other cycles sterile and without these organs. More mesenteries in the distal and especially proximal part than in the middle of the body. Perfect mesenteries and the stronger imperfect ones with diffuse retractors usually situated fairly close to the column. Below the actinopharynx the inner parts of the non-directives are curved towards the exocoels. Parietobasilar muscles weak. Acontia well developed. Cnidom: spirocysts, basitrichs and microbasic *p*-mastigophors.

Genotype: *C. (Actinauge nodosa* var.) *coronata* Verrill 1883 p. 53, *Actinauge fastigiata* Mc Murrich 1893 p. 187, *Hormathia elongata* Gravier 1918 p. 14, *Chondrophellia* Carlgrén 1925 a p. 6, 1928 a p. 215, 1942 p. 32, 77, North Atlantic, ? Coast of Chile, 600–2448 m.

*C. africana* Carlgrén 1928 p. 216, off Somali Land, 1079 m.

Genus *Amphianthus* R. Hertwig 1882 p. 91 (1882 p. 80).

Gephyra v. Koch 1878.

Bunodes p. p. Hertwig 1882.

Cylista p. p. Hertwig 1888.

Korenia Danielssen 1890.

Stelidiactis Danielssen 1890.

Sagartia Mc Murrich 1893.

- Synanthus p. p. Verrill 1899.  
 Raphactis p. p. Verrill 1899.  
 Gliatactis Gravier, 1918, 1922.  
 Stephanactis p. p. Gravier 1918, 1922.  
 Gephyropsis Carlgren 1925 a.  
 Chondranthus Migot and Portmann 1926.

Hormathiidae with broad pedal disc, often elongated in the transversal or sagittal plane. Column smooth or provided in its upper part with usually small mesogloal papillae, arranged in longitudinal rows. Cinclides occurring as a rule only over the directive endocoels, few in number (1–3 or a few more?), their external opening often mounted on a papilla; in very young specimens cinclides may be indistinct or absent? Sphincter mesogloal, usually strong. Tentacles rather robust, sometimes with mesogloal thickenings on the aboral side at the base, always fewer than the mesenteries at the limbus. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 1–3 siphonoglyphs. Pairs of perfect mesenteries at least 6, their arrangement often irregular. 1–3 pairs of directives. The stronger mesenteries fertile except sometimes the directives. Retractors diffuse, usually fairly weak. Acontia well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *A. bathybium* R. Hertwig 1882 p. 91 (80), 35°41' N 157°42' E 4192 m.

- A. (Korenia) margaritaceus* Danielssen 1890 p. 1, *Amphianthus* Carlgren 1928 a p. 300, 1933 p. 32, 1942 p. 51, Baffin Bay, Norwegian Sea, Ochotsk Sea 1200–3500 m.  
*A. norvegicus* Carlgren 1942 p. 53, Norway, Trondheim to Jäderen, 130–300 m.  
*A. (Stelidiactis) mopsiae* Danielssen 1890 p. 17, *Amphianthus* Carlgren 1942 p. 55, Norway, Westfiord, 64°48' N 6°32' E 283–624 m.  
*A. (Stephanactis) inornata* Gravier 1918 p. 17, 1922 p. 74, 31°43'30" N 10°46'45" W 2165 m.  
*A. islandicus* Carlgren 1942 p. 56, 63°15' N 22°23' W 326–216 m.  
*A. ingolfi* Carlgren 1942 p. 57, 60°37' N 27°52' W, 1505 m.  
*A. vermiculatus* Carlgren 1942 p. 57, North Atlantic 600–1587 m.  
*A. (Gephyra) dohrni* v. Koch 1878 p. 78, Haddon 1889 p. 325, *Gephyropsis* Carlgren 1925 a p. 4, *Amphianthus* Carlgren 1928 p. 219, Stephenson 1935 p. 282, *Chondranthus* Migot and Portmann 1926 p. 19, S. England, S. and SW. Ireland, Atlantic coast of France, N. Spain, The Mediterranean 18–750 m.  
*A. (Raphactis) nitidus* Verrill 1899 p. 144, *Amphianthus* Carlgren 1934 a p. 10. East coast of U. S., Delaware Bay, 236 m.  
*A. (Gliatactis) crassus* Gravier 1918 p. 7, 1922 p. 38, *Amphianthus* Carlgren 1934 a p. 13, 42° 42'–43° N 4° 17'–23" W 400 m.  
 ? *A. (Synanthus) mirabilis* p. p. Verrill 1899 p. 205 Nova Scotia 272–605 m.  
 ? *A. (Raphactis) Caribea* Verrill 1899 p. 205. West India, off St. Vincent 226 m.  
*A. michaelsarsi* Carlgren 1934 p. 12, 34°59' N 33°1' W 2615–2865 m.  
*A. (Stephanactis) impeditus* Gravier 1918 p. 16, 1922 p. 70 32°28' N 16°37'30"; off Azores 1330–2286 m.  
*A. radiatus* Carlgren 1928 p. 227, 2°0' N 8°4.3' E, 1°14.3' N 2°10' W; 2492–3550 m.  
*A. sanctae helenae* Carlgren 1941 p. 11, St. Helena 360–380 m.  
 ? *A. (Stephanauge?) giganteus* Carlgren 1941 p. 12, St. Helena 360–380 m.  
*A. laevis* Carlgren 1938 p. 78, S. Africa, off Cape Town?  
*A. capensis* Carlgren 1928 p. 222, 1938 p. 80, Agulhas Bank; E. of St. Paul 155–672 m.  
*A. natalensis* Carlgren 1938 p. 79 off Durban 800 m.  
*A. (Bunodes) minutus* Hertwig 1882 p. 84 (74), *Cylistia* Hertwig 1888 p. 26, 46°16' S 48°27' E 2916 m.  
*A. valdiviae* Carlgren 1928 p. 229, 6°24.1' N 49°31.6' E, 628 m.  
*A. armatus* Carlgren 1928 p. 225, SW of Great Nikobar, SE of P. Pias 362–646 m.  
 ? *A. (Gephyra) brunneus* Pax 1909 p. 401, Mauritius.  
 ? *A. rosaceus* Wasilieff 1908 p. 41, Japan, Dogetzuba.  
*A. ornatus* Hertwig 1888 p. 26, 35°41' N 157°42' E, 35°22' N 169°53' E, 4192–5285 m.  
*A. californicus* Carlgren 1936 p. 20, California, Monterey Bay.  
*A. (Sagartia) lacteus* Mc Murrich 1893 p. 176, *Amphianthus* Carlgren 1947 p. 15, Coast of Chile 818 m.

Genus *Stephanauge* Verrill 1899 p. 145.

- Stephanactis* Hertwig 1882.  
*Actinauge* p. p. Verrill 1883.  
*Sagartia* p. p. Verrill 1883.

Hormathiidae with well developed base often elongated in the transversal axis, often attached to gorgonians, sponges or worm-tubes. Column rather low, smooth or with longitudinal rows of mesogloal papillae in its distal part. Cinclides, if present, few, occurring only over the directive chambers. Sphincter well developed, mesogloal. Tentacles possibly more numerous than the mesenteries at the base, or of the same number; fairly short, with or without mesogloal thickenings at the base on their outer sides. Longitudinal muscles of tentacles ectodermal. Radial muscles of oral disc ectodermal to ecto-mesogloal. 2 distinct siphonoglyphs. Perfect pairs of mesenteries 6–12. Retractors and parietobasilar muscles weak. Gonads on all stronger mesenteries except possibly the directives. Acontia few or perhaps sometimes absent. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *S. (Actinauge) nexilis* Verrill 1883 p. 55, *Stephanauge* Verrill 1899 p. 145, 1922 p. 999, Carlgren 1942 p. 37. E and NE coast of North America, 182–547 m.

*S. (Sagartia) acanellae* Verrill 1883 p. 46 = ? *Actinia abyssicola* Moseley 1877 p. 297, Carlgren 1942 p. 49, NE of North America, North Atlantic, 443–2931 m.

*S. (Sagartia) spongicola* Verrill 1883 p. 47, Mc Murrich 1898 p. 238, Northeast coast of U. S. 144–578 m.

*S. bulbosa* Carlgren 1928 p. 220, SW of Great Nikobar, 296 m.

*S. (Stephanactis) tuberculata* Hertw. 1882 p. 88 (79), *Stephanauge* Verrill 1922 p. 100; 35°11' N 139°28' E, 629 m.

*S. annularis* Carlgren 1936 p. 22, California, Monterey Bay, 128 m.

? *S. (Stephanactis) hyalonematis* Mc Murrich 1893 p. 193, 0°24' S, 89°06' W, 1469 m.

#### Fam. **Sagartiomorphidae** Carlgren 1934 a p. 34.

Thenaria (Acontaria) whose acontia carry microbasic amastigophors only. Sphincter mesogloal.

#### Genus *Sagartiomorpe* Kwietniewski 1898 p. 396.

Sagartiomorphidae with broad base. Column smooth, without cinclides. Sphincter strong mesogloal. Tentacles short, conical, hexamerously arranged, the inner tentacles with atrichs. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 siphonoglyphs. Mesenteries about twice as numerous at the limbus as at the margin. 2 pairs of directives. 12 pairs perfect and sterile, the other mesenteries fertile and with very weak filaments. Retractors diffuse, parietobasilar and basilar muscles very weak. Acontia with microbasic amastigophors only. Cnidom: spirocysts, atrichs, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

*S. carlgreni* Kwietniewski 1897 a p. 396, Carlgren 1934 a p. 32, Thursday Isl.

#### Fam. **Sagartiidae** (Gosse 1858) s. str.

Thenaria (Acontaria) with mesogloal sphincter. Mesenteries not differentiated into macro- and microcnemes. Acontia with microbasic amastigophors and basitrichs.

10 genera:

- I. Column with somewhat modified but adhesive verrucae (suckers).
  - a) about the same number of mesenteries at the base and at the margin ..... *Sagartia*.
  - aa) more mesenteries at the margin than at the base ..... *Cereus*.
- II. Column smooth without suckers.
  - a) all or all stronger mesenteries fertile
  - b) more mesenteries distally than proximally ..... *Sagartianthus*.

- bb) more mesenteries proximally than distally ..... *Artemidactis*.  
 bbb) about the same number of mesenteries proximally and distally ..... *Actinothoë*.  
 aa) at least the first cycle of mesenteries sterile. About same number of mesenteries proximally and distally ..... *Anthothoë*.  
 III. Column with flat tubercles arranged in more or less longitudinal rows. About the same number of mesenteries proximally and distally ..... *Choriactis*.  
 IV. Column with tenaculi (rarely absent)  
 a) more mesenteries at the base than at the margin  
 b) Tenaculi with a strong cuticle, forming stout papillae. Mesenteries irregularly arranged, as are the directives also. Retractors of older mesenteries very strong, restricted  
*Phellia*.  
 bb) Tenaculi weak or stronger, but with a stratified cuticle. Mesenteries sometimes irregularly arranged. Retractors of older mesenteries diffuse, broad, band-like ..... *Kadosactis*.  
 aa) Younger mesenteries growing simultaneously from the margin and from the limbus. Tenaculi weak, sometimes absent. Retractors of older mesenteries restricted, reniform to circumscribed  
*Sagartiogeton*.

Genus *Sagartia* Gosse 1855 p. 272.*Cereus* p. p. Milne-Edwards 1857.*Adamsia*? p. p. Milne-Edwards 1857.*Heliactis* p. p. Andres 1883.

*Sagartiidae* with well developed base. Column with cinclides and with modified adhesive verrucae (suckers) capable of attaching foreign bodies. Sphincter mesogloal, stronger or weaker. Tentacles fairly numerous. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Siphonoglyphs variable in number. About the same number of mesenteries proximally and distally. More than 6 pairs of mesenteries perfect. No differentiation of mesenteries in macro- and microcnemes. Retractors of mesenteries diffuse or somewhat restricted, never circumscribed. Gonads present from the mesenteries of first cycle onwards. Sometimes asexual reproduction. Acontia well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *S. (Actinia) elegans* Dalyell 1848 p. 225, *Sagartia* Gosse 1855 p. 274, Stephenson 1935 p. 305, Carlgren 1942 p. 8, *Cereus venusta* Milne-Edwards 1857 p. 117, *Adamsia* Milne-Edwards 1857 p. 280, *Heliactis miniata, venusta* Andres 1883 p. 355, 356, Cattegat, Skagerak, West Norway, North Sea, Iceland, coast of Great Britain and Ireland, Atlantic coast of France, the Mediterranean, low-water down to about 42 m.

*S. (Actinia) troglodytes* Price in Johnston 1847 p. 216, *Sagartia* Gosse 1855 p. 274, Stephenson 1935 p. 325, Carlgren 1942 p. 7, Cattegat, Skagerak, West Norway, North Sea, Faroë Island, Iceland, Great Britain and Ireland, Atlantic coast of France, probably also the Mediterranean, 5—45 m or somewhat deeper.

*S. herpetodes* Mc Murrich 1904 p. 268, Chile, Talcahuano, Puerto Montt.

Genus *Cereus* Oken 1815 p. 349.*Sagartia* v. Heider 1877.*Heliactis* Thomson 1858.

*Sagartiidae* with well developed base. Column with cinclides and verrucae capable of attaching foreign bodies to themselves. Margin tentaculate. Sphincter well developed, mesogloal. Tentacles fairly short, hexamerously arranged, extraordinarily numerous, their longitudinal muscles ectodermal. Oral disc more or less undulate. Two siphonoglyphs. Mesenteries hexamerously arranged, more numerous distally than

proximally. More than 12 pairs of perfect mesenteries. Retractors of mesenteries fairly restricted, band-like. All stronger mesenteries fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

*C. (Actinia) pedunculatus* Pennant 1777 p. 41, *Cereus bellis* Oken 1815 p. 349, *Heliactis* Thompson 1858 p. 233, *Cereus pedunculatus* Haddon 1889 p. 348, Stephenson 1935 p. 363 = *Sagartia troglodytes* v. Heider 1877 p. 367, SW. England, Irish Sea, W. Scotland, Ireland, Atlantic coast of France, Portugal, the Mediterranean, upper littoral.

Genus *Sagartianthus* Carlgren 1943 p. 40.

Sagartiidae with small pedal disc. Body elongate, smooth with cinclides in its uppermost part. Margin distinct. Sphincter mesogloal, fairly strong. Tentacles rather short, numerous, hexamerously arranged. 2 distinct siphonoglyphs. Mesenteries considerably more numerous distally than proximally. 2 pairs of directives. Perfect pairs of mesenteries at least 12. Retractors of mesenteries well developed, diffuse, band-like. Parietobasilar muscles generally fairly weak. All mesenteries apart from the youngest ones fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

*S. indosinensis* Carlgren 1843 p. 40, Cochin-China, Poulo Condore, Cambodia, Réam, littoral.

Genus *Artemidactis* Stephenson 1918 p. 40.

Sagartiidae with well developed, broad base. Wall of the column fairly thin in proportion to the size of the species. Cinclides of the column scattered. Sphincter well developed, mesogloal. Margin distinct. Tentacles very numerous, small in proportion to the size of the animal, hexamerously arranged. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. 2 broad siphonoglyphs. Mesenteries more numerous proximally than distally. Numerous perfect pairs of mesenteries. Muscles of the mesenteries weak, the longitudinal as well as the parietobasilar muscles. Basilar muscles fairly well developed. All mesenteries fertile. Acontia well developed, with large nematocysts. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

*A. victrix* Stephenson 1918 p. 41, Carlgren 1927 p. 81, Carlgren and Stephenson 1929 p. 24, South Georgia, Burdward Bank, Antarctic Ocean, probably circumpolar, 75—437 m.

Genus *Actinothoë* Fischer 1889 p. 290.

Thoë p. p. Gosse 1860, Carlgren 1924, 1927, 1928.

Cylista p. p. Andres 1883.

Sagartia p. p. Gosse 1858, 1860, Verrill 1866, 1869, 1922, Fischer 1875, Haddon 1898, Mc Murrich 1893, Carlgren 1899.

Gregoria Hutton 1878.

Sagartiidae with well developed base. Column smooth, not divisible into regions, with cinclides. Margin tentaculate. Sphincter well developed, mesogloal. Tentacles and mesenteries arranged hexamerously or otherwise. Perfect mesenteries variable in number, more than 6 pairs, usually 12 or more. Older mesenteries fertile. Mesenteries about in equal number proximally and distally. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *A. (Sagartia) sphyrodeta* Gosse 1858 p. 415, 1860 p. 73, *Actinothoë* Nafilyan 1912 p. 24, Stephenson 1935 p. 342, SW. England, SW. Ireland, Irish Sea, Atlantic coast of France, upper littoral.

*A. (Sagartia) ignea* Fischer 1875 p. 219, Atlantic coast of W. France, 2—3 m.

? *A. (Sagartia) modesta* Verrill 1866 p. 337. East coast of U. S., Long Island Sound to Vineyard Sound, low-water.

? *A. (Sagartia) gracillima* Mc Murrich 1887 p. 61, East coast of U. S., Cape Cod to Cap Hatteras, shallow water.

? *A. (Sagartia) pustulata* Mc Murrich 1907 p. 60, North Carolina.

- A. (Sagartia) georgiana* Carlgren 1899 p. 34, *Actinothoë* Carlgren 1930 p. 6, South Georgia.  
*A. (Sagartia) patagonica* Carlgren 1899 p. 34, *Thoë* Carlgren 1927 p. 74, Patagonia, Puerto Madryn, N. Argentina, low-water, 100 m.  
*A. (Sagartia) paradoxa* Mc Murrich 1893 p. 180, 36°47' S 56°23' W, 21 m.  
*A. (Sagartia) Sancti Matthaei* Mc Murrich 1893 p. 179, 36°42' S 56°23' W, 19 m.  
*A. (Sagartia) kerguelensis* Pax 1922 p. 90, 1926 p. 39, *Thoë* Carlgren 1928 p. 255.  
? *A. (Sagartia) pugnax* Verrill 1928 p. 18, Hawaii Isl., Palmyra, Washington, Christmas and Howland Isl., commensal with *Lybia tessellata*.  
? *A. (Sagartia) longa* Verrill 1928 p. 17, Hawaii Isl., Christmas Isl.  
? *A. (Sagartia) pusilla* Verrill 1928 p. 16, Hawaii Isl., low-water.  
*A. (Sagartia) plebeia* Haddon 1898 p. 451, Murray Isl.  
*A. Milmani* Haddon and Shackleton 1893 p. 130, Haddon 1898 p. 449, Albany Pass, Cape York, Torres Str., 18 m.  
*A. (Sagartia) Carlgreni* Haddon and Duerden 1896 p. 161, Australia, Port Philip.  
? *A. (Gregoria) albocincta* Hutton 1878 p. 312, *Sagartia* Stuckey 1909 b p. 37, New Zealand, Wellington, Lyttelton, Dunedin.  
? *A. (Thoë) neozealandica* Carlgren 1924 p. 250, New Zealand, Hawaii Isl., 18 m.  
? *A. (Thoë) albens* Stuckey 1909 b p. 385, New Zealand, Island Bay.  
*A. californica* Carlgren 1940 c p. 217, California, Santa Inez Bay, 73 m.  
*A. (Sagartia) Bradley* Verrill 1869 a p. 484; near half-tide mark.  
*A. (Sagartia) gravieri* Pax 1912 p. 1021, Coast of Peru up to Lima.  
? *A. (Actinia) chilensis* Lesson 1830 p. 76, *Sagartia* Mc Murrich 1904 p. 265, Carlgren 1927 p. 75, Chile, Talcahuano, Coquimbo, Calbuco, low-water to 36 m.  
*A. (Sagartia) lobata* Carlgren 1899 p. 36, Chile, Talcahuano, 9 m.

Genus *Anthothoë* Carlgren 1938 p. 85.

- Cereus* p. p. Verrill 1868 p. 53.  
? *Mitactis* Haddon and Duerden 1896.  
*Actinioides* p. p. Pax 1907, 1908.  
*Paraphellia* p. p. Pax 1908.  
*Sagartia* Stuckey 1909 b.  
*Calliactis* p. p. Pax 1922.  
? *Thoë* p. p. Carlgren 1928.  
*Parathoë* Carlgren 1928.

Sagartiidae with well developed base. Column smooth, with cinclides, which are sometimes indicated by small elevations. Margin distinct. Sphincter strong, mesogloal, wholly separated from the endodermal muscles of the column. Tentacles numerous, rather short, the inner considerably longer than the outer. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Oral disc broad. Typically two siphonoglyphs and two pairs of directives. Mesenteries numerous, about the same number proximally and distally. At least 3 cycles of perfect mesenteries. At least the first cycle of mesenteries sterile. Retractors of mesenteries diffuse, band-like. Parietobasilar muscles weak, basilar muscles distinct. Acontia numerous.

- Genotype: *A. (Cereus) stimpsoni* Verrill 1868 p. 53, *Actinoides angrae pequense*, Pax 1907 p. 79, 1908 p. 490, *Paraphellia polytycha* Pax 1908 p. 493, *Parathoë* Carlgren 1928 p. 233, *Anthothoë* Carlgren 1938 p. 86 (here synonymy). Lüderitz Bay, Port Nolloth to Durban, Inaccessible Archip., St. Helena, low-water to 36 m.  
? *A. (Calliactis) vincentina* Pax 1922 p. 87, 1926 p. 40, *Parathoë?* Carlgren 1928 p. 257.  
? *A. (Entacmaea) olivacea* H. and E. Ehrenberg 1834 p. 38, Klunzinger 1877 p. 70, Carlgren 1947 p. 12. Red Sea, Tor.  
? *A. (Mitactis) Australiae* Haddon and Duerden 1896 p. 162, Port Philip.  
? *A. (Mitactis) similis* Haddon and Duerden 196 p. 163, Port Philip.  
*A. australiensis* n. sp. Great Barrier Reef, Batt Reef.  
*A. (Sagartia) vagrans* Stuckey 1909 b p. 384, *Thoë* Carlgren 1924 p. 246, New Zealand, Plimmerton, Wellington and Manakua harbour, Slipper Isl.  
*A. panamensis* Carlgren n. sp., Gulf of California.



Genus *Choriactis* Mc Murrich 1904 p. 272.

*Paractis* p. p. Milne-Edwards and Haime 1851.

*Sagartia* p. p. Verrill 1869.

*Cylista* Andres 1883.

Sagartiidae with wide basal disc. Column thick, longitudinally sulcated, in young specimens smooth, in older ones sometimes with flat tubercles in more or less distinct longitudinal rows. Cinclides small and few, or absent. Sphincter strong, mesogloal. Tentacles fairly short, the outer tentacles considerably smaller than the inner ones. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Mesenteries and tentacles present in equal numbers or the former somewhat more numerous. At least 2 cycles of perfect mesenteries. Retractors of ordinary development or weak. Gonads developing from the mesenteries of the first cycle. Acontia well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *C. (Actinia) impatiens* in Dana 1849 p. 3, 1859 p. 8, *Paractis* Milne-Edwards 1857 p. 248, *Sagartia* Verrill 1869 p. 483, *Cylista* Andres 1883 p. 390, *Choriactis* Mc Murrich 1904 p. 272, Carlgren 1927 p. 77, Terra del Fuego, Oranje Harbour, Punta Arenas, upper littoral.

? *C. subantarctica* Pax 1922 p. 91, 1926 p. 48, Carlgren 1928 p. 256, Kerguelen.

Genus *Phellia* Gosse 1858 a p. 192.

*Octophellia* p. p. Andres 1883.

*Hormathia* p. p. Mc Murrich 1904.

*Synphellia* Carlgren 1924, 1928.

Sagartiidae with the pedal disc broader than the oral. Column divisible into scapus and scapulus, the former with strong tenaculi provided with a thick cuticle and forming papilla-like elevations. Sphincter strong, long, mesogloal. Tentacles considerably fewer than the mesenteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Siphonoglyphs variable in number. Mesenteries usually irregularly arranged, as also the directives, the number of which varies. More mesenteries proximally than distally. Perfect mesenteries with strong restricted retractors and fairly well developed basilar muscles. Imperfect mesenteries without retractors, the stronger of them with filaments. Perfect mesenteries and at least the strongest of the imperfect ones fertile. Asexual reproduction probably always common. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *Phellia gausapata* Gosse 1858 a p. 194, 1860 p. 140, Stephenson 1929 p. 123, 1935 p. 371, Carlgren 1942 p. 31, *Octophellia* Andres 1883 p. 329. NE. coast of Scotland, Wick, Iceland, Westmannaeyar, Norway, Sklinna.

*P. (Hormathia) exlex* Mc Murrich 1904 p. 279, *Synphellia* Carlgren 1927 p. 71, *Phellia* Carlgren 1928 p. 236, Chile, Calbuco, upper littoral.

*P. (Synphellia) aucklandica* Carlgren 1924 p. 230. *Phellia* Carlgren 1928 p. 236, 1938 p. 84, 1941 p. 6, Auckland Isl., West coast of Cape Peninsula, Inaccessible Archip., Gough Isl. 5—141 m.

? *P. (Synphellia) dubia* Carlgren 1928 p. 240, 54°29.3' S 3°43' E, 5—67 m.

Genus *Kadosactis* Danielssen 1890 p. 8.

*Phellia* Danielssen 1890.

*Hormathia* Gravier 1918, 1922.

*Sicyopus* Gravier 1918, 1922.

*Kadosanthus* Carlgren 1924.

Sagartiidae with well developed base. Column divisible into scapus and scapulus, the former with a cuticle, usually easily deciduous, and with tenaculi which rarely are very weak, but usually strong and with a stratified cuticle. Column with cinclides formed by ectoderm as well as by endoderm and situated in various places, sometimes in reduction. Margin more or less distinct. Sphincter strong, mesogloal.

Tentacles of variable length, conical, hexamerously or irregularly arranged. Outer tentacles with or without basal thickenings on the aboral side. Number of tentacles usually fewer than that of the mesenteries. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. One to four siphonoglyphs, 1–4 pairs of directives. Arrangement of mesenteries hexamerous or irregular. At least 6 pairs of mesenteries, usually 12 or more are perfect. Mesenteries growing from the limbus upwards. Perfect mesenteries and sometimes the stronger imperfect ones with strong diffuse retractors which are extended over the whole surface, but never restricted nor circumscribed. Parietobasilar muscles not strong. The stronger mesenteries, including the directives, fertile. Acontia well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *K. rosea* Danielssen 1890 p. 8, Carlgren 1933 p. 20, 1942 p. 9 = *Phellia bathybia* and *violacea* Danielssen 1890 p. 64, 70 = *Hormathia musculosa* Gravier 1918 p. 15, 1922 p. 69, Norwegian Deep-Sea, Baffin Bay, 1619–2465 m.

*K. (Phellia) abyssicola* Danielssen 1877 p. 78, *Kadosactis* Carlgren 1942 p. 12, West coast of Norway, Skagerak, 70–471 m.

? *K. (Phellia) spitzbergensis* Danielssen 1890 p. 74, *Kadosactis*? Carlgren 1932 p. 264, 1942 p. 14, 80°03' N 8°28' E, 475 m.

*K. (Kadosanthus) sulcatus* Carlgren 1934 p. 10, 35°32' N, 7°7' W, 1215 m.

? (*K. (Sicyopus) commensalis* Gravier 1918 p. 21, 1922 p. 81, *Kadosactis* Carlgren 1934 a p. 10.

#### Genus *Sagartiogeton* Carlgren 1924 b p. 26.

*Sagartia* p. p. Gosse 1858, 1860, Verrill 1882, Carlgren 1893, Haddon 1891, 1898.

*Phellia* p. p. Gosse 1860, Danielssen 1877, 1890.

*Cylista* p. p. Andres 1883.

*Aiptasia* p. p. Andres 1883.

*Actinothoë* Stephenson 1935, Carlgren 1940.

Sagartiidae with well developed base. Body sometimes divisible into scapus and scapulus, sometimes not. Scapus often but not necessarily with a cuticle and tenaculi which as a rule are weaker than in *Kadosactis*, sometimes they are reduced and not uncommonly absent. Column with cinclides in its upper part, usually near on the limbus. Margin distinct or tentaculate. Sphincter mesogloal, well developed. Tentacles usually long, conical, hexamerously, octamerously, decamerously or irregularly arranged, never thickened on their aboral side. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Usually two siphonoglyphs, sometimes only one, rarely three, 1–3 pairs of directives. As a rule at least 6 pairs of perfect mesenteries, usually more. Younger mesenteries growing from the limbus as well as from the margin, but originating somewhat earlier at the margin than at the limbus. Perfect and stronger imperfect mesenteries, in the region of the actinopharynx provided with fairly restricted, often kidney-shaped, rarely circumscribed retractors. Parietobasilar muscle not strong. All stronger mesenteries fertile. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors and microbasic amastigophors.

Genotype: *S. robustus* Carlgren 1924 b p. 26, 1942 p. 16. Rockall Bank, 240 m.

*S. (Phellia) tubicolus* Danielssen 1877 p. 77, *Sagartiogeton* Carlgren 1942 p. 28, Norway, Korsfjord, Finmarken, 200–350 m.

*S. (Phellia) flexibilis* Danielssen 1890 p. 51, *Sagartiogeton* Carlgren 1942 p. 21. Sognefjord, 61°N 4°49' E, 366–1189 m.

*S. (Actinia) undatus* O. F. Müller 1788 p. 30, *Sagartia* Carlgren 1893 p. 94 p. p. *Actinothoë anguicomma* Stephenson 1935 p. 357, Pax 1939 p. 115, *Sagartiogeton* Carlgren 1942 p. 24, Kiel, The Sound, The Belts, Cattedgat, Skagerak, W. Norway, North Sea, SW. England, Irish Sea, W. Ireland, Atlantic coast of France?, Black Sea?, low-water to 30 m.

*S. (Actinia) viduatus* O. F. Müller 1776 p. 231. *Sagartia* Carlgren 1893 p. 88, *Actinothoë* Stephenson 1935 p. 342, *Sagartiogeton* Carlgren 1942 p. 25 = ? *Actinia filiformis* Rapp 1829 p. 57, Cattedgat, Skagerak, W. Norway, 0.5–25 m.

*S. (Actinia) laceratus* Dalyell 1848 p. 228, *Aiptasia* Andres 1883 p. 374 = *Sagartia coccinea* Gosse 1858 p. 416, 1860 p. 84 = *Sagartia undata* p. p. Carlgren 1893 p. 94 = *Phellia picta* Gosse 1860 p. 143 = *Sagartia herdmanni* Haddon 1891 p. 199, *Sagartiogeton* Carlgren 1942 p. 26, The Sound, Cattedgat, Skagerak, W. Norway, North Sea, British Isles, about 8–100 m.

*S. abyssorum* Carlgren 1942 p. 23, 62°06' N 19° W, 1960 m.

*S. ingolfs* Carlgren 1928 a p. 301, 1942 p. 19, Danmark Straits, 1838 m.

*S. verrilli* Carlgren 1942 p. 18 = *Sagartia abyssicola* Verrill 1882 p. 314, *Sagartiogeton abyssicola* Carlgren 1928 a p. 260, E. coast of North America, Davis Strait, 139–1416 m.

*S. antarcticus* Carlgrén 1928 p. 231, 63°16.5' S 57°51' E, 4636 m.

*S. (Actinothoë) californicus* Carlgrén 1940 c p. 217, California, Sancta Inez Bay, 91 m.

### Fam. **Metridiidae** (Carlgrén 1893 p. 101).

Thenaria (Acontaria) whose acontia are provided with microbasic *b*-mastigophors and microbasic amastigophors, the latter sometimes very rare or absent in the adult. Sphincter mesogloal. Mesenteries not divisible into macro- and microcnemes.

Sphincter situated in the uppermost part of the scapus ..... *Metridium*.

Sphincter in the uppermost part of the scapus and also in the whole capitulum ..... *Isometridium*.

### Genus *Metridium* Oken 1815 p. 349.

*Sagartia* p. p. Gosse 1855.

*Actinoloba* Blainville 1830.

Metridiidae with well developed base. Column divided into scapus and capitulum, the former ending above in a decided collar which is especially distinct in older individuals. The capitulum lies above the collar and is extensive. Cinclides scattered below the collar. Sphincter in the uppermost part of the scapus, mesogloal. Tentacles short, numerous, their longitudinal muscles ectodermal. Radial muscles of oral disc ectodermal to meso-ectodermal. Oral disc circular in the young, but deeply and conspicuously lobed in the adult. Siphonoglyphs variable in number, usually one or two. Perfect mesenteries very variable in number, typically 6 pairs but often more. The six primary pairs sterile in typical individuals. Retractors diffuse, sometimes short and broad in sections. Acontia well developed, their nematocysts microbasic *b*-mastigophors and microbasic amastigophors, the latter sometimes absent in older individuals. Cnidom: spirocysts, basitrichs, microbasic *b*- and *p*-mastigophors, microbasic amastigophors.

Genotype: *M. (Actinia) senile* Linneus 1767 p. 1088, *Metridium dianthus* Ellis Oken 1815 p. 350, Carlgrén 1893 p. 102, 1933 p. 22, *Actinoloba* Blainville 1830 p. 288, *Sagartia* Gosse 1855 p. 274, *Metridium senile* Mc Murrich 1911 p. 60, Stephenson 1935 p. 214, Carlgrén 1942 p. 59 = *Actinia pallida* Holsworth 1855 p. 236, *marginata* Le Seur 1817 p. 172 = *Metridium fimbriatum* Verrill 1865 p. 150; boreal, circumpolar, low-water, 100 m.

? *M. parvulum* Mc Murrich 1904 p. 276, Chile, Coquimbo, Calbuco.

? *M. canum* Stuckey 1914 p. 134, New Zealand.

### Genus *Isometridium* n. gen.

Metridiidae ? with broad base. Column divisible into a smooth very thick scapus and a thinner capitulum, the former ends above in a distinct collar. No cinclides. Sphincter mesogloal in the capitulum and in the uppermost part of the scapus. Uppermost part of capitulum and the oral disc drawn out in very numerous permanent lobes. At the apices of these lobes there are extraordinarily numerous, short, filiform tentacles of about same length, their longitudinal muscles ectodermal. Oral disc forming a fold inside the tentacles. Radial muscles well developed, ectodermal on the outer side of the fold and on the inner side of the lobes (in a groove), seemingly absent in other parts. 2 very broad siphonoglyphs. Mesenteries very numerous. Several perfect pairs of mesenteries. The 12 first pairs sterile. Retractors of the mesenteries diffuse, weak. Acontia numerous. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors (and microbasic *b*-mastigophors?).

The systematic position of this genus is doubtful. The nematocysts of the acontia were unexploded, so that it was very difficult to clear up their types.

*I. Richettsi* n. sp., Guayamas, Mexico.

Fam. **Aiptasiidae** Carlgren 1924 p. 237.

Thenaria (Acontiarina) whose acontia are provided with basitrichs and microbasic *p*-mastigophors. Uppermost part of column with longitudinal muscles. Cinclides in the middle of the body, margin tentaculate. Sphincter mesogloal, but very weak, so that the upper part of the body is not able to cover the tentacles. Mesenteries not divisible into macro- and microcnemes. Six, rarely eight, pairs of mesenteries perfect and fertile.

3 genera:

- I. Tentacles smooth, without any differentiations ..... *Aiptasia*.  
 II. Tentacles with spiral or incompletely annular raised bands of nematocyst-batteries ..... *Bartholomea*.  
 III. Tentacles with scattered, spherical, hollow outgrowths forming nematocyst batteries ..... *Heteractis*.

Genus *Aiptasia* Gosse 1858 p. 416.

*Anthea* Cocks 1851.  
*Dysactis* Verrill 1864.  
*Paranthea* Verrill 1866.  
*Adamsia* Milne-Edwards 1857.  
*Bartholomea* Duchassaing and Michelotti 1866.  
*Aiptasioides* Stephenson 1918.

Aiptasiidae with elongate, smooth column provided with cinclides which are commonly arranged in a girdle about the middle of the body. Sphincter mesogloal, very weak, margin tentaculate. Tentacles rather or very long, simple, always smooth, without any kind of projections. Upper part of the column unable wholly to cover the tentacles. Longitudinal muscles of tentacles ectodermal. Siphonoglyphs present. 6 pairs of perfect mesenteries. Gonads on the mesenteries of the first cycle and at least on the strongest imperfect ones. Acontia well developed. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors and probably microbasic amastigophors.

- Genotype: *A. (Anthea) couchii* Cocks 1851 p. 11, *Aiptasia* Gosse 1860 p. 152, Stephenson 1920 a p. 437, 530, 1935 p. 208 = *A. amacha* Gosse 1858 p. 416, SW. England, probably SW. and W. Ireland, NW. France, ? Canary Isl., Madeira, Gulf of Guinea, low-water to slight depths.
- A. (Actinia) diaphana* Rapp 1829 p. 57, Andres 1883 p. 378, *Adamsia?* Milne-Edwards 1857 p. 282 = *A. chamaeleon* Andres 1880 p. 325, The Mediterranean, Suez Canal, Suez.
- A. saxicola* Andres 1880 p. 325, 1883 p. 378, Naples.
- ? *A. carnea* Andres 1880 p. 326, 1883 p. 375, Naples.
- ? *A. leiodactyla* Pax 1910 p. 198, Haiti.
- A. (Dysactis) pallida* Verrill 1864 p. 26, *Paranthea* Verrill 1866 p. 322, *Aiptasia Agassizii* Andres 1883 p. 391, Mc Murrich 1887 p. 59, *Aiptasia sp.?* Mc Murrich 1889 a p. 102, Coast of North and South Carolina, Bermudas?
- A. (Bartholomea) tagetes* Duchassaing and Michelotti 1866 p. 133, *Aiptasia* Mc Murrich 1889 p. 12, Duerden 1898 p. 457, Verrill 1907 p. 251, Watzl 1922 p. 56, Bermudas, Bahamas, Curaçao, Jamaica.
- A. (Aiptasioides) prima* Stephenson 1918 p. 451, *Aiptasia* Stephenson 1920 a p. 530, South Trinidad Isl.
- A. insignis* Carlgren 1941 p. 9, St. Helena, upper littoral.
- A. parva* Carlgren 1938 p. 72, South Africa, East London, low-water.
- A. pulchella* Carlgren 1943 p. 38, Japan, Sagami, Misaki, upper littoral.
- A. californica* n. sp. California, San Diego.

Genus *Bartholomea* Duchassaing and Michelotti 1866 p. 133.

*Aiptasia* Mc Murrich 1889, Duerden 1898, 1902, Verrill 1907, Pax 1910, 1912, Watzl 1922.  
*Carlgreniella* Watzl 1922.

Aiptasiidae with distinct base. Column smooth (or with minute papillae ?), with cinclides typically in a horizontal zone near the middle of the body, which may be very long. Margin tentaculate. Sphincter weak, mesogloal. Oral disc not lobed. Tentacles in more than 2 cycles, their longitudinal muscles ectodermal. They may be long, are not fully retractile, and are provided with spiral or incompletely annular raised band containing batteries of microbasic *p*-mastigophors and basitrichs, these bands may occur throughout the extent of the tentacle or near the tip only. Perfect mesenteries 6–8 pairs, fertile. Retractors diffuse, sometimes fairly restricted. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *B. (Actinia) annulata* Leseur 1817 p. 172, *Aiptasia* Mc Murrich 1889 p. 7, Duerden 1898 p. 457, 1902 p. 355, Verrill 1907 p. 249, Pax 1910 p. 206, Watzl 1922 p. 60 = *Actinia solifera* Le Seur 1817 p. 173, *Bartholomea* Duchassaing and Michelotti 1866 p. 133 = *Carlgræniella robusta* Watzl 1922 p. 60. Bermudas, Bahamas, Curaçao, St. Thomas, Jamaica, Puerto Rico.

*B. wernerii* Watzl 1922 p. 62, Bahamas.

*B. (Aiptasia) sp.? (tagetes)* Pax 1910 p. 203, Jamaica.

*B. (Aiptasia) lucida* Pax 1910 p. 201 = *B. pseudoheteractis* Watzl 1922 p. 72, Barbados.

*B. (Aiptasia) peruviana* Pax 1912 p. 62, *Bartholomea* Stephenson 1920 a p. 532, Payta, Peru.

#### Genus *Heteractis* Milne-Edwards 1857 p. 260.

*Capnea* Duchassaing and Michelotti 1860.

*Ragactis* p. p. Andres 1883.

*Aiptasia* Duerden 1898.

Aiptasiidae with distinct base. Column smooth, with cinclides in a horizontal zone near the middle of the column. Margin tentaculate. Sphincter weak, mesogloal. Tentacles up to 192 in number, not fully retractile with scattered, spherical, hollow protuberances on their surface, differing from the rest of the tentacle chiefly in that they possess many nematocysts and have reduced longitudinal muscles. Longitudinal muscles of tentacles ectodermal. Oral disc not lobed. Six pairs of perfect and fertile mesenteries, 2 pairs of directives. Probably more mesenteries distally than proximally. Retractors diffuse, parietobasilar muscles weak. Acontia numerous. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors, microbasic amastigophors.

Genotype: *H. (Actinia) aurora* Quoy and Gaimard 1833 p. 141, *Heteractis* Milne-Edwards 1857 p. 261, New Ireland, upper littoral.

*H. (Capnea) lucida* Duchassaing and Michelotti 1860 p. 41, *Heteractis* Mc Murrich 1896 p. 182, Watzl 1922 p. 71, *Ragactis* Andres 1883 p. 468, *Aiptasia* Duerden 1898 p. 457, St. Thomas, Bahamas, Jamaica.

As the anatomy of *aurora* is unknown the diagnosis of the genus is based on *lucida*.

#### Fam. Aiptasiomorphidae.

Thenaria (Acontaria) with no sphincter or a weak endodermal one. Never atrichs, holotrichs and macrobasic amastigophors in the tentacles. Acontia with basitrichs and microbasic *p*-mastigophors?

#### Genus *Aiptasiomorpha* Stephenson 1920 p. 530.

*Diadumene* p. p. Carlgrén 1924, Stephenson 1935.

*Aiptasia* Andres 1880, 1883, Simon 1890, Pax 1909.

*Sagartia* Jourdan 1880.

Aiptasiomorphidae with distinct pedal disc. Column varying from low to pillarlike or trumpetshaped, divided into scapus and capitulum. The scapus ends above in a fold or collar, from within which arises

the delicate capitulum. Margin of capitulum tentaculate. Cinclides present. Sphincter absent or weak endodermal. Tentacles smooth, retractile or not, their longitudinal muscles ectodermal. Typically six pairs of perfect mesenteries, which may be fertile; but in forms with asexual reproduction the arrangement of mesenteries is very variable, the siphonoglyphs and pairs of directives varying from 1 to 5, and the number of pairs of perfect mesenteries at least from 5 to 12. Mesenteries more numerous distally than proximally (? always). Retractors more or less restricted. Acontia with basitrichs and microbasic *p*-mastigophors?

As to this genus and *Diadumene*, *Farsonia* and *Jancis* see Stephenson 1935 p. 184—187.

Genotype: *A. (Aiptasia) minima* Stephenson 1918 p. 49, 1920 a p. 531, *Diadumene* Carlgren 1924 p. 243, New Zealand, Bay of Islands.

*A. (Sagartia) luciae* Verrill 1899 p. 493, *Diadumene* Stephenson 1935 p. 197 (here literature) moreover *Hargitt* 1912 p. 241. East coast of U. S., Plymouth, Holland, Büsum, Naples, Venice, Suez Canal, Japan, West coast of N. America.

? *A. (Actinia) mutabilis* Gravenhorst 1831 p. 141, *Aiptasia turgida* Andres 1880 p. 325, *mutabilis* 1883 p. 376, Simon 1892 p. 166, *Sagartia Penoti* Jourdan 1880 p. 33, W. Mediterranean, Adria.

? *A. paxi* Stephenson 1920 a p. 531 = *Aiptasia couchi* Pax 1909 p. 337.

*A. elongata*, n. sp. Gulf of California.

#### Fam. **Diadumenidae** Stephenson 1920 a p. 520 s. str.

Thenaria (Acontia) whose acontia are provided with basitrichs and microbasic *p*-mastigophors. No distinct sphincter. Some or all of the inner tentacles typically forming catch-tentacles provided with atrichs and holotrichs; but sometimes apparently these special nematocysts are lacking in individuals of a species which does possess them.

#### Genus *Diadumene* Stephenson 1920 a p. 521.

*Sagartia* p. p. Stoliczka 1869.

*Metridium* Annandale 1907.

Diadumenidae with well developed basal disc. Column smooth, divisible into scapus and capitulum which are separated from each other by a collar round the upper margin of the scapus. Scapus with cinclides. Margin of capitulum tentaculate. Sometimes the collar smooths away when the body is fully extended. No distinct sphincter. Tentacles long, numerous, more or less regularly arranged not or imperfectly retractile. Some or all of the inner tentacles are typically thicker than the other tentacles, and form catch-tentacles containing, among other nematocysts, atrichs and holotrichs. In some individuals, however, these special tentacles may be absent. Outer tentacles sometimes with macrobasic amastigophors. Siphonoglyphs and directive mesenteries variable in number in connection with asexual reproduction. Six or a few more perfect pairs of mesenteries. Mesenteries more numerous above than below. Retractors diffuse, more or less restricted. Parietobasilar and basilar muscles weak. Perfect mesenteries and the stronger imperfect ones fertile. Acontia well developed, with basitrichs and microbasic *p*-mastigophors. Cnidom: spirocysts, basitrichs, atrichs, holotrichs, microbasic *p*-mastigophors, microbasic and macrobasic amastigophors.

Genotype: *D. (Sagartia) schilleriana* Stoliczka 1869 p. 28, *Metridium* Annandale 1907 p. 47, 1915 p. 72, *Diadumene* Stephenson 1920 a p. 521, India, Chilka Lake.

*D. cincta* Stephenson 1925 p. 880, 1935 p. 187, Carlgren 1929 p. 109, 1940 p. 37, Plymouth, Essex, Holland, Atlantic coast of France.

*D. (Sagartia) leucolena* Verrill 1866 p. 366, N. America, Long Island Sound, Woods Hole, New York to North Carolina.

*D. kameruniensis* Carlgren 1927 b p. 475, 1920 p. 112, Cameroon.

*D. neozelandica* Carlgren 1924 p. 239, 1929 p. 112, New Zealand, Slipper Isl., Kaipara, intertidal.

Fam. **Nemanthidae** Carlgren 1940 c p. 212.

Thenaria (Acontiaria) with mesogloeaal sphincter. No acontia proper but acontia-like organs attached at the termination of the filaments and not forming any distinct batteries of nematocysts.

Genus *Nemanthus* Carlgren 1940 c p. 212.

*Sagartia* p. p. Wassilieff 1908.

Nemanthidae with wide pedal disc, smooth column and long tentacles considerably fewer than the mesenteries at the base. Sphincter mesogloeaal, well developed. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Actinopharynx with distinct, fairly broad siphonoglyphs, as a rule 2, but possibly variable in connection with asexual reproduction. Usually 2 pairs of directives. Perfect pairs of mesenteries 6–12, frequently irregularly arranged, so that the one side of the animal has more than the other, sterile. Stronger imperfect mesenteries fertile. Retractors of the mesenteries weak, parietobasilar muscles moderately weak or weak. Acontia-like organs "acontoids", considerably thicker than acontia and containing very few to rather few nematocysts of the same kind as in the filaments, present on at least some of the mesenteries. The individuals often live together in colonies sometimes so closely packed that the edges of their pedal discs touch each other intimately. Cnidom: spirocysts, basitrichs, microbasic *p*-mastigophors.

Genotype: *N. (Sagartia) nitidus* Wassilieff 1908 p. 31, *Nemanthus* Carlgren 1940 c p. 114, Japan, Sagami Bay, Bonin Isl. Port Lloyd, 6–128 m.

*N. annamensis* Carlgren 1943 p. 37, S. Annam, Bay of Nhatrang, Cambodia, Réam.

*N. californicus* Carlgren 1940 c p. 217, California, Arena Bank, 82 m.

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For further references see Andres 1883, Stephenson 1920 a, 1922, 1928, 1935, Carlgrén 1942.

Tryckt den 24 mars 1949.

**Plate I.**

Fig. 1. Tentacles and mesenteries of an *Edwardsia*.

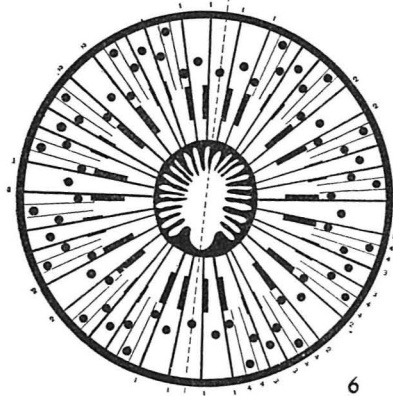
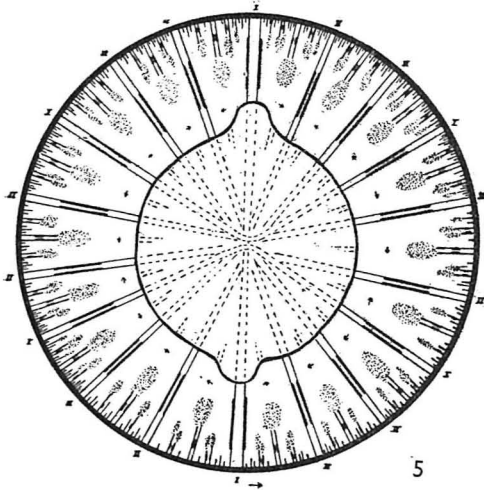
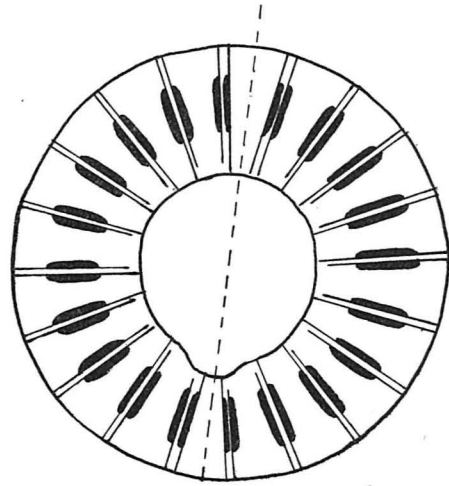
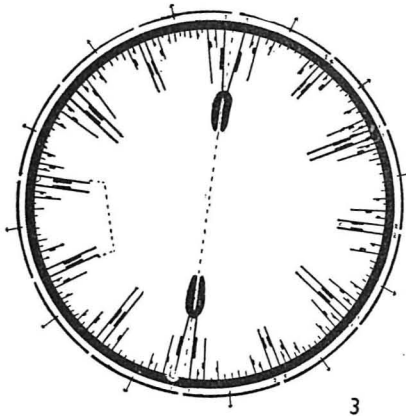
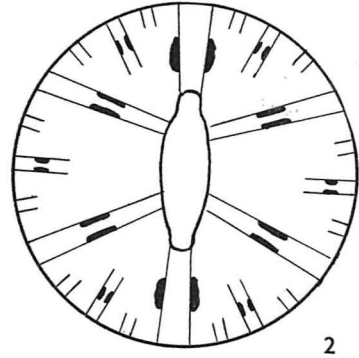
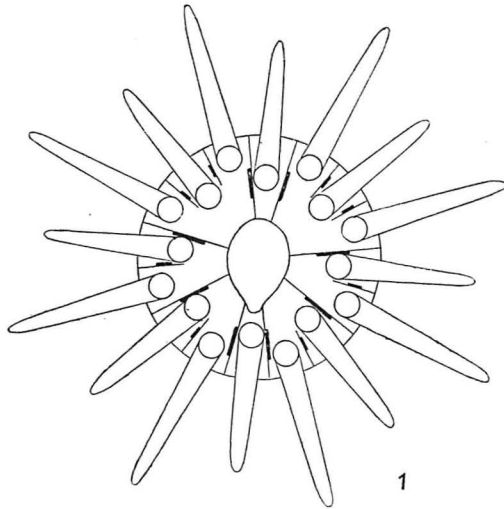
Fig. 2. Arrangement of mesenteries in a typical Actiniarian provided with 3 cycles of mesenteries, 6 pairs of which are perfect.

Fig. 3. Mesenterial arrangement of *Exocoelactis tuberosa* (R. Hertw.).

Fig. 4. Arrangement of mesenteries in a Minyadid.

Fig. 5. Mesenterial arrangement of *Stomphia coccinea* (O. F. M.).

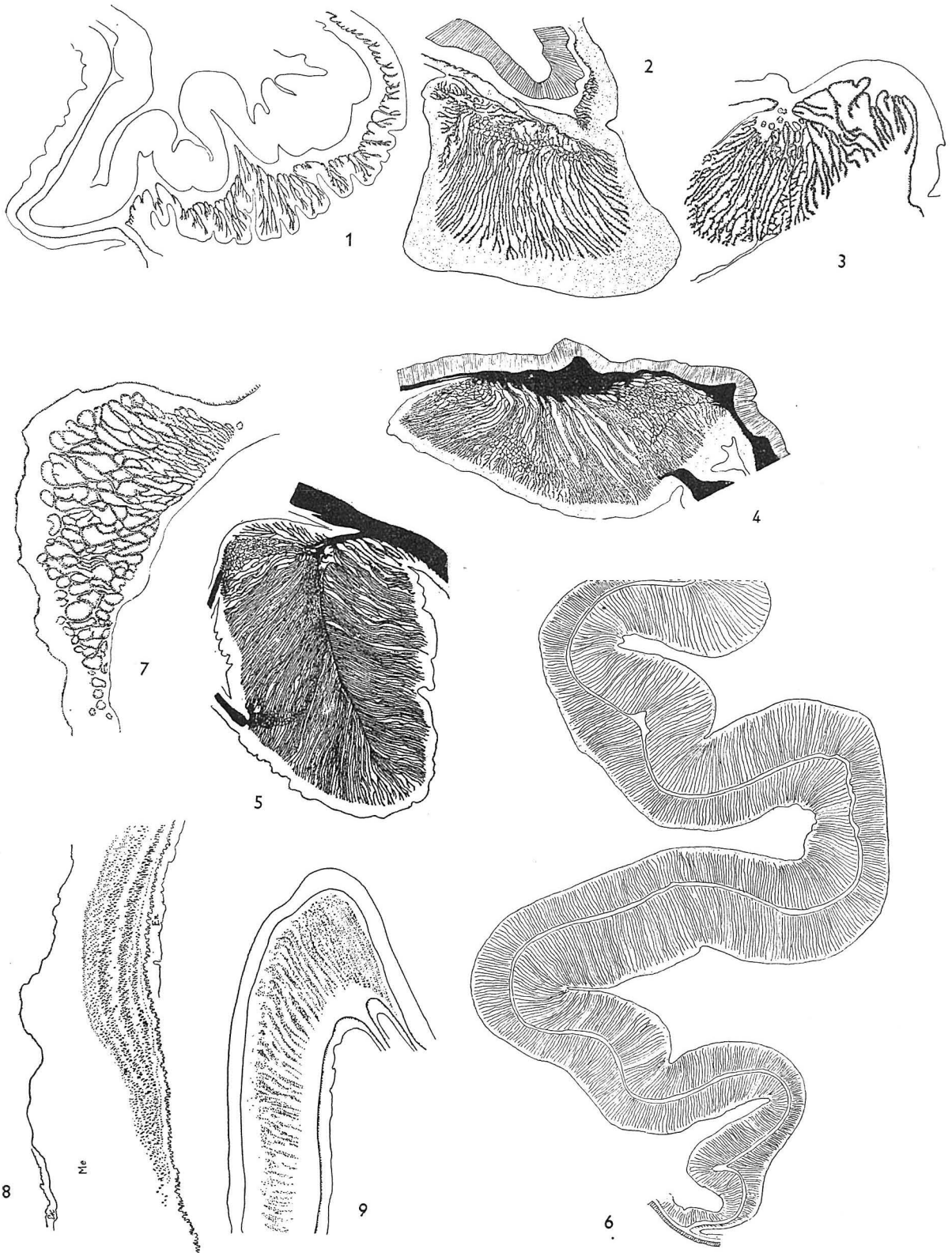
Fig. 6. Arrangement of mesenteries in *Halcurias carlgreni* M. Murr.





**Plate II.**

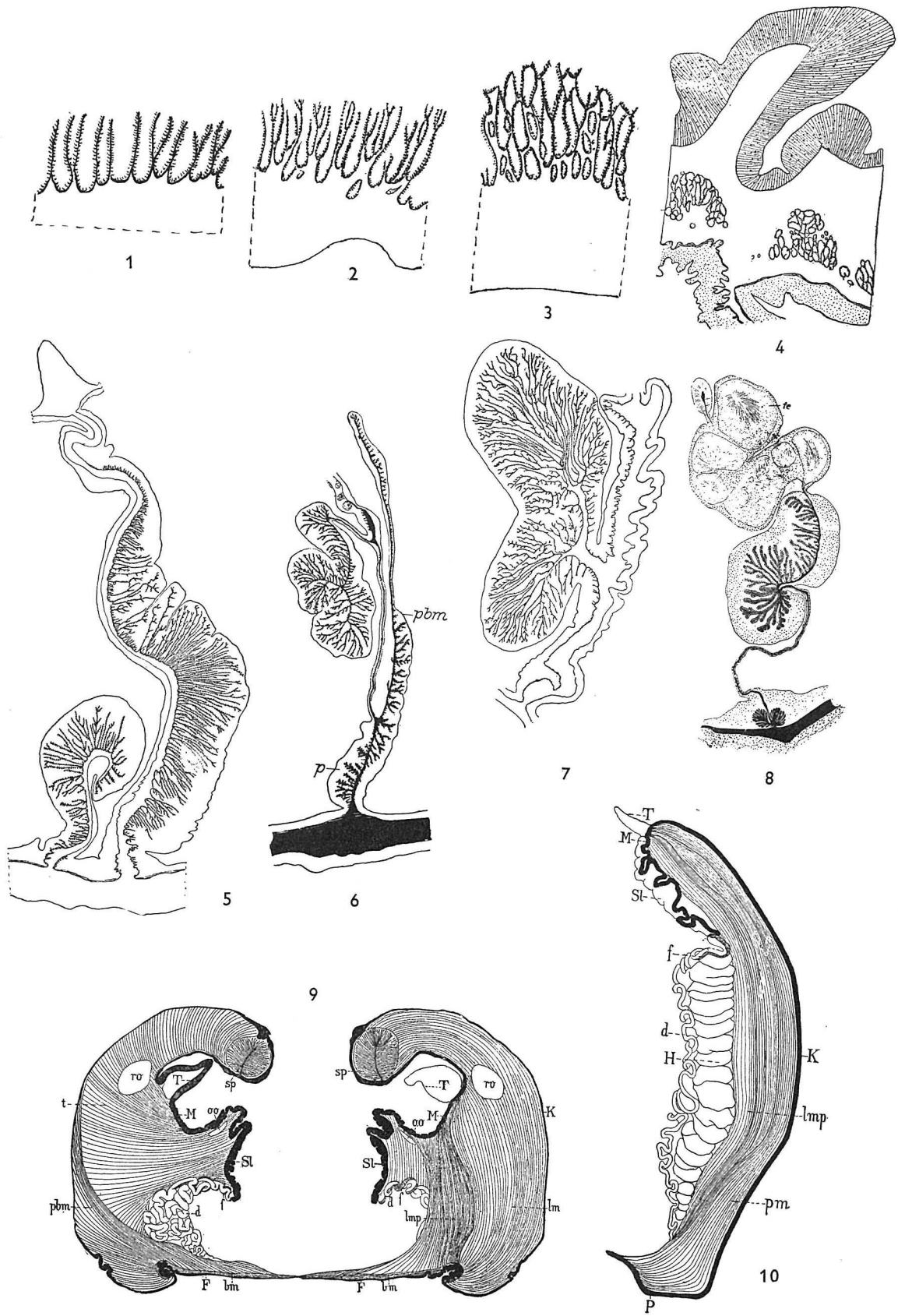
- Fig. 1. Diffuse, endodermal sphincter of *Actinia tenebrosa* Farqh.  
Fig. 2. Restricted, endodermal sphincter of *Anthopleura hermafroditica* (Carlgr.).  
Fig. 3. Diffuse-circumscribed, endodermal sphincter of *Myonanthus ambiguus* Mc Murr.  
Fig. 4. Palmate, circumscribed, endodermal sphincter of *Glyphoperidium bursa* Ronle.  
Fig. 5. Pinnate, circumscribed, endodermal sphincter of *Bunodactis spetsbergensis* (Carlgr.).  
Fig. 6. Half of the pinnate, circumscribed sphincter of *Leipsiceras valens* Carlgr.  
Fig. 7. Mesogloedal, reticular sphincter of *Mena chilkaea* (Annand.).  
Fig. 8. Mesogloedal, longitudinally stratified sphincter of *Metridium senile* (L.) *M*: mesogloea, *En*: endoderm.  
Fig. 9. Mesogloedal, transversally stratified sphincter of *Cricophorus nutrix* (Stuck.).





**Plate III.**

- Fig. 1. Ectodermal muscles of oral disc in *Tealia felina coriacea* (L.).
- Fig. 2. Meso-ectodermal muscles of tentacles in *Bunodactis spetsbergensis* (Carlgr.).
- Fig. 3. Ecto-mesogloal muscles of tentacles in *Cribrinopsis similis* Carlgr.
- Fig. 4. Mesogloal tentacle muscles of *Parasicyonis sarsii* Carlgr.
- Fig. 5. Diffuse retractor of *Kadosactis rosea*.
- Fig. 6. Circumscribed retractor of *Condylanthus magellanicus* Carlgr. *p*: parietal part of the longitudinal muscles, *pbm*: parietobasilar muscle.
- Fig. 7. Circumscribed retractor of *Acraspedanthus elongatus* Carlgr.
- Fig. 8. Retractor and parietal muscles of *Paraedwardsia arenaria* Carlgr.
- Fig. 9. Longitudinal section of *Tealia felina crassicornis* (L.). On the left a mesentery seen from the parietobasilar muscle side, to the right from the retractor side. *T*: tentacles, *M*: oral disc, *Sl*: actinopharynx, *K*: column, *F*: pedal disc, *sp*: sphincter, *ro*: marginal stoma, *oo*: oral stoma, *t*: transversal muscles, *pbm*: parietobasilar muscle, *bm*: basilar muscle, *lm*: longitudinal muscles, *lmp*: retractor, *d*: cnidoglandular tract and *f*: ciliated tract of the filament.
- Fig. 10. Mesentery of *Halcampoides purpurea* (Stud.) *H*: testes, *P*: physa, *pm*: parietal muscle. Other markets see fig. 9.





#### Plate IV.

- Fig. 1. Exploded holotrich of *Diadumene cincta* Steph.
- Fig. 2. Unexploded holotrich of *Sideractis glacialis* Dan.
- Fig. 3. Unexploded atrich of *Protanthea simplex* Carlgr.
- Fig. 4. Exploded atrich of *Protanthea simplex* Carlgr.
- Fig. 5. Unexploded basitrich of *Actinostephanus haeckeli* Kwiet.
- Fig. 6. Exploded basitrich of *Actinostephanus haeckeli* Kwiet.
- Fig. 7. Unexploded microbasic amastigophor of *Sagartiomorphe carlgreni* Kwiet.
- Fig. 8. Exploded microbasic amastigophor of *Protanthea simplex* Carlgr.
- Fig. 9. Unexploded macrobasic amastigophor of *Alicia beebei* Carlgr.
- Fig. 10. Unexploded microbasic *p*-mastigophor of *Halcampoides purpurea* (Stud.).
- Fig. 11. Exploded microbasic *p*-mastigophor of *Halcampoides purpurea* (Stud.).
- Fig. 12. Unexploded, hoplotelic microbasic *p*-mastigophor of *Metarhodactis boninensis* Carlgr.
- Fig. 13. Exploded microbasic *b*-mastigophor of *Stomphia coccinea* (O. F. M.).
- Fig. 14. Unexploded hoplotelic microbasic *b*-mastigophor of *Edwardsia longicornis* Carlgr.
- Fig. 15. Exploded, hoplotelic microbasic *b*-mastigophor of *Edwardsia longicornis* Carlgr.

