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by V. M. Koltun

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Kremnerogovye gubki severnykh i dal'nevostochnykh morei SSSR (Corneosiliceous sponges of the northern and far eastern seas of the USSR).

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FOREWORD.

One of the most urgent tasks of zoologists in our country is to study in detail the composition of the animal populations of our seas and land. Even though intensive investigations of the fauna have been conducted in our country for many decades, there are still groups of animals which have been very little studied. Sponges (Porifera) figure prominently among this group. Our knowledge of the specific composition of the sponges which inhabit the seas of the Soviet Union is extremely incomplete and fragmentary, while the available classification of sponges has become out of date in many respects and has been scarcely developed at all in its major part. Yet sponges form an independent group of the animal kingdom, a group offerring a great deal of interest to science.

Study of these extremely primitive multicellular animals is exceptionally important for the correct interpretation of the origin of the Metazoa. Data on the embryology, physiology and morphology of sponges form part of the most important evidence for the theory that multicellular animals arose from unicellular flagellated progenitors.

Widely distributed in the seas, from the littoral to the abyssal depths, and occurring often in large aggregations, sponges play a significant part in the overall marine economy. They form part of a multitude of biocoenoses and are guide forms in a number of them. Similarly to other animals inhabiting the seas, sponges may be used to characterise the hydrology of this or that body of water, as well as to substantiate various kinds of hydrobiological conclusions. Many stenobiontic species of sponges are excellent indicators of physico-chemical conditions in the areas which these animals inhabit.

Sponges also have a direct practical importance. The so-called bath sponges representing objects of commerce in a number of countries at the present time are universally known. Some horny sponges contain large quantities of iodine and may serve as the initial raw material in the production of iodine. A fresh-water sponge is used in homoeopathy and in the treatment of rheumatism. In the past iodine-containing preparations made from sponges were taken internally in the event of goiter. Sponges are used in various branches of industry: for example, in cleansing and polishing metals, in polygraphy etc. p.4

Sponges would probably be used even more widely if they were studied as intensively as are other commercial animals.

The aforegone characterizes only to a small degree the significance of sponges, but it shows nevertheless how important it is to study this specific group of animals. Yet for a number of reasons systematic study of sponges had been neglected in our country for a long time. Research on sponges from the seas of the Soviet Union began again only a few years ago in the Institute of Zoology of the AN SSSR. The first result of this research is this guide to corneosiliceous sponges of our northern and far eastern seas.

The extremely rich collections which are preserved in the Institute of Zoology of the AN SSSR, including over 6 thousand specimens of corneosiliceous sponges alone, served as the material on the basis of which corneosiliceous sponges were studied and this key was written. The materials that have been classified and studied in full are from the earliest collections gathered by E.G.Voznesenskii over hundred years ago in the north Pacific Ocean, from the numerous collections obtained at a later date by various Russian expeditions to the Arctic and Pacific Oceans, mainly during the period of 1900 to 1938, as well as by the 1947-1949 expedition of the Institute of Zoology of the AN SSSR and Pacific Institute of Fisheries and Oceanography, and by the "Vityaz'" expedition of the Institute of Oceanography of the AN SSSR in 1949-1950.

Collections from the Barents Sea, partly from the White, Kara and Laptev Seas, are most abundantly represented. Collections from the East Siberian and Chukchi Seas are very scant and are mainly from shallow littoral regions. Collections from the Bering and Okhotsk Seas and from the Sea of Japan are fairly large quantitatively, but do not cover to a sufficient extent the various regions of the far eastern seas.

Only a negligible portion of this material had been identified in the past by K.S.Merezhkovskii, B.A.Svarchevskii, L.L.Breitfuss and, particularly, by P.D.Rezvoi and M. Burton. Moreover, the author was compelled to re-identify even this portion of the collections in order to verify the descriptions of a number of species and to correct possible inaccuracies in classification. Such inaccuracies were indeed found in a number of instances.

Despite the abundance of material, we are forced to state that there are not enough whole specimens. Many specimens, particularly those of fragile sponges, are represented by fragments which frequently make it impossible to clearly visualize the body shape. Yet we have become convinced in the process of our research that the shape of the body can often be used as a fairly important additional feature in the identification of sponges.

Descriptions of the previously known species of sponges presented in the systematic part of this work have been, for the most part, considerably expanded, defined with greater precision and, in some instances, corrected on the basis of analyses of the materials found in collections. p.5

Furthermore, a number of genera and families of sponges included into the present work have been re-examined. In doing so, we aimed at presenting the systematic classification of sponges in a more natural form. We were able to carry out this task only in part, since it requires study of considerably more extensive materials than those used in the present work.

In view of the difficulties involved in identification of sponges and because of the obvious inadequacy of descriptions alone, particularly close attention was paid to the illustrations accompanying the descriptions. Most species of sponges are furnished with drawings of spicules and with pictures showing their external appearance. A considerable portion of these illustrations is original, only a few have been borrowed from W. Lundbeck, M. Burton and other authors.

This work includes descriptions of 214 forms of sponges belonging to 191 species, 55 genera and 17 families. It is obvious that these species do not represent the entire fauna of corneosiliceous sponges of our northern and far eastern seas. We can anticipate with certainty that further research will reveal many new species of sponges, particularly in the far eastern seas, which have been least thoroughly studied in this respect.

This work is the first attempt to present the entire diversity of the corneosiliceous sponges populating our northern and far eastern waters in the form of a key and is evidently not free of shortcomings, mainly due to the insufficiently detailed study of certain genera and families of sponges.

The author feels it his duty to express his profound gratitude to the director of the Institute of Zoology of the AN SSSR for creating exceptionally favourable conditions for these investigations. The author received a great deal of assistance in his work from professors A.V.Ivanov, A.A.Strelkov and P.V.Ushakov, and wishes to express his sincere appreciation for it.

SYSTEMATIC INDEX OF THE SPECIES.
СИСТЕМАТИЧЕСКИЙ УКАЗАТЕЛЬ ВИДОВ

Order CORNACUSPONGIDA

Family I. Mycalidae

Genus 1. *Mycale* Gray, 1867

Genus 2. *Rhaphidotheca* Kent, 1870

Genus 3. *Oxymycale* Hentschel, 1929

Family II. Cladorhizidae

Genus 1. Род *Asbestopluma* Norman, 1882

Systematic index of the species

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Systematic index of the species

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INTRODUCTION.

History of the study of sponges in the USSR.

Not counting the incidental brief descriptions of and references to sponges which may be found in the works by Gmelin, Pallas, Middendorf and other Russian explorers and scholars of the XVIII and XIX centuries, the first special works on sponges of our seas belong to the pen of the famous naturalist and explorer N.N.Miklokho-Maklai. He studied sponges intensively, and, in the short period of 1868 to 1871, wrote five papers about them, four of which were published in his life time. The last paper on the Red Sea sponges was found quite recently in the form of a manuscript ready for publication in the Archives of the AN SSSR, and was published in 1952 together with Miklokho-Maklai's other works on zoology. Unfortunately, his later investigations on sponges appear to have been done in somewhat of a hurry. This is probably due to the fact that at that time Miklukho-Maklai was completely absorbed in the preparations for his first long journey to New Guinea. Nevertheless, works by this first spongiologist in Russian offer more than a strictly bibliographic interest. Many of his theories and reasonings concerning the nature of sponges, their ecology and morphology are significant even at the present time.

The first work on sponges by Miklukho-Maklai(1868) contains a detailed description of the new calcisponge species Leicosolenia blanca named by him Guancha blanca. This description includes observations on the formation of sponge colonies, on the body structure of sponges, their systematic position in the animal kingdom etc.

The second and probably most important contribution by Miklukho-Maklai in this field is a study of sponges from the Arctic Ocean and from the northern Pacific Ocean(1870a). In this work the author describes for the first time the fauna of sponges in the regions investigated. He provides brief descriptions of the various species alongside with the characterization of their habitat, and relates the variability of their body form to the physico-chemical conditions of their environment. Here,too, the author expresses his personal views on the importance of various features in the classification of sponges. These views differ markedly from those prevalent at that time. While justly criticizing O.Schmidt for overestimating the importance of the size and shape of spicules in the systematic classification of sponges, Miklukho-Maklai adopts, however, an equally extreme, though opposite, view and virtually ignores the nature of the skeleton and that of the spicules forming the skeleton, as a taxonomic feature. As a result of this, Miklukho-Maklai combines forms belonging to different species or even genera* within one single species and classifies them as varieties of this species. pl4

It so happens that most of the sponges which Miklukho-Maklai succeeded in collecting, have a very simple skeleton with regard to the spiculation. As a result of this Miklukho-Maklay apparently failed to

* A more detailed analysis of the forms described by Miklukho-Maklai is given in the appropriate places in the part of this work dealing with the systematic classification. We merely wish to mention here that this second work by Miklukho-Maklai contains descriptions of 4 species with 15 varieties.

familiarize himself with the enormous diversity of spicules in the sponges and therefore greatly underestimated their importance in classification. His theories concerning the great morphological variability and plasticity of sponges are, however, correct and must be further analyzed and studied in detail.

In a small paper on the fauna of sponges from the White Sea and Arctic Ocean Miklukho-Maklai (1870b) mentions the presence in the Arctic waters of several species of sponges with which he is familiar from the northern Pacific. Here, too, he provides a fairly accurate scheme of distribution of the calcareous and siliceous sponges in the oceans of the world.

I.I.Mechnikov was the second great scholar who studied sponges in Russia, somewhat later than Miklukho-Maklai. Mechnikov's works in 1874-1879, dealing mainly with morphology and embryology of sponges, are classical investigations which, in many respects, have not been bettered even at the present time. These are precisely the works which have firmly established in science the concept that sponges are true multicellular animals. While opposing Heckel's metaphysical gastraeic theory of the origin of Metazoa, Mechnikov formulates his theory of "parenchymella" on the basis of his own original data on the embryology and morphology of sponges and coelenterates.

After this, a number of specialists came forth who have more or less elucidated the fauna of sponges in the White, Barents, Black and, partly, Caspian sea basins. K.S.Merezhkovskii's Investigations of the sponges in the White Sea was published in 1878-1879. In this work the author recorded some 30 species of sponges from the White Sea. Though it is true that most of these "new" species proved to be well known forms that had been studied for a long time, this was due primarily to the poor development of taxonomy at that time and to the peculiar hydrology of the White Sea, which has left a marked imprint on the morphology of the sponges from this basin.

The study of the fauna of sponges from the Black and Caspian Seas also proceeded fairly intensively. Several preliminary reports published in 1879-1880, were followed by V.Chernyavskii's work Littoral sponges from the Black and Caspian Seas , containing references to 39 species found in these waters, 22 of which are described as being completely new to science.

N.I.Polezhaev, who published in 1885 his Attempt at a natural classification of the known sponges, was studying calcareous and siliceous sponges during the same period of time. In this work Polezhaev uses the materials that were collected by the British "Challenger" expedition and certain other collections, and draws a classification system of the calcareous sponges which, in many respects, remains valid even now. Polezhaev's theories on the morphology and embryology of calcareous sponges and his speculations concerning their relationship to other orders of Porifera are highly interesting and original. The mere fact that Polezhaev was offerred to examine the calcareous and siliceous sponges collected by the British "Challenger" expedition shows that this scholar was the greatest spongiologist of his time.

L.L.Breitfuss succeeded Polezhaev in the study of sponges from our seas. This researcher has written a great number of short papers on calcareous sponges. His magnum opus Die arctische Kalkschwämme(Arctic calcareous sponges) published, in 1898, is, however, of particular interest to us. In p.
this work the author mentions the presence of 15 species of calcareous

sponges in the White Sea, 30 in the Barents Sea and 4 in the Kara Sea.

B.A.Svarchevskii's work *Data on the fauna of sponges of the Black Sea(Monaxonida)* and *Data on the fauna of sponges from the White Sea and, partly, from the Murmansk littoral* appeared in 1905 and 1906. In these works the author summarizes the research carried out in these regions by the earlier spongiologists and supplements the list of the previously known species with new ones. In the Black Sea alone, this researcher recorded over 30 species, and in the White Sea - close to 40*. These works by Svarchevskii are imperfect from many viewpoints and suffer from the same shortcomings as Merezhkovskii's research. N.Kudelin's paper *On the fauna of sponges of the Black Sea(Odessa Bay)*, which appeared in 1910, complements Svarchevskii's work of 1905.

We received the first more or less modern index of the Barents Sea sponge fauna after W.Lundbeck and Breitfuss studied the collections gathered by K.M.Deryugin during the summer of 1908-1909 in Kola Bay while on board "Aleksandr Kovalevskii". The work *On the spongiofauna of the Kola Bay* published by Breitfuss (1911,1912), names 84 species of sponges found in the Barents Sea.

P.D.Rezvoi is the next spongiologist who made an important contribution to the study of the sponge fauna of the USSR. He was particularly successful in his work on fresh-water sponges. The monograph on the fresh-water sponges of our country written by this researcher on the basis of a great amount of material, probably still remains unequalled in the world

* Svarchevskii provides information on the fauna of sponges of the White Sea without taking into account the work done on calcareous sponges by Breitfuss.

literature. Of Rezvoi's most important works on the classification of marine sponges we should mention his paper Sponges of the Barents Sea on the basis of the collections made during the cruises along the Kola meridian which was published in 1928 and contains a list of 45 species, many of which are provided with brief descriptions; and his article of 1931, The sponges collected by the expedition of the Institute of Northern Studies to Novaya Zemlya in the summer of 1925, which includes descriptions of 24 species inhabiting the Barents and Kara Seas.

Further study of the fauna of sponges in our seas is associated with the name of M.Burton, a British spongiologist who was asked to identify and classify the collections gathered in the Okhotsk Sea and in the Sea of Japan by the expeditions of the State Hydrological Institute in 1925 to 1931 under the general supervision of K.M.Deryugin, and those made in 1935 by "Sadko" in the Arctic Ocean. The data obtained from the material collected in the far east were published by Burton in the short paper On the sponges of the Okhotsk Sea and of the Sea of Japan (1935), which dealt with 66 species of sponges. A simple list of the species names (37) compiled by Burton on the basis of the material collected by "Sadko" in 1935, is included by G.P.Gorbunov in the work Benthic population of the Novosibirsk shelf and of the central Arctic Ocean, published in 1946. Lastly, in recent years (1955a, 1955b, 1958) the author of this work has written several papers dealing mainly with corneosiliceous sponges of the far eastern seas. Such, in brief, is the history of the study of sponges in the USSR.

Lack of summarizing reviews and monographs on the sponge fauna of the Soviet seas is a serious shortcoming of our zoological literature. This systematic key should fill the gap in our literature to a certain extent.

However, a great deal more work must be done on the fauna of sponges, particularly on the overall taxonomy of sponges, before we can assert that this problem has been satisfactorily studied.

Anatomical and morphological characterization of corneosiliceous sponges.

Corneosiliceous sponges form an independent order Cornacuspongida, which, according to Hentschel's classification (1923), forms part of the phylum Porifera together with the orders Calcarea, Triaxonida and Dendroceratida. Most corneosiliceous sponges are sessile marine animals. Only a negligible portion of these sponges (families Spongillidae and Lubomirskiidae) have adapted to life in fresh water.

Body shape, body covers and canal system. The external appearance of corneosiliceous sponges displays an exceptionally great diversity, is rather indefinite and relatively unstable. The radial symmetry of their bodies is often imperfect due to the highly developed ability of sponges to form colonies and because of the weakly defined individuality of single specimens. The extraordinary plasticity of the body shape is the most characteristic external morphological feature of this most common group of sponges. These sponges often include specimens with a lumpy or cushion-shaped body, but are commonly irregularly lobate, coarsely tuberculate, irregularly shaped or, less often, almost regularly spherical, discoidal, or in the form of concretions. Occasionally the body of a sponge is in the form of a very thin crust or pellicle incrusting various underwater items: rocks, mollusk shells, brachiopods, Balanus, worm tubes, algae etc. When growth is upright, the sponge body becomes cone-shaped, tubular, dactylate, clavate or foliate. The branches of a ramified dendritic sponge body sometimes unite to form a network or even a plate perforated with openings.

Funnel-shaped, flabelliform and vaselike sponges ,often with a strong elastic stem, are fairly common.

Very occasionally the body of a sponge is plumose or in the form of a wire-brush (of the kind used to clean lamp chimneys). Such are representatives of the genera Asbestopluma and Cladorhiza , where the lateral appendages or ramifications often diverge symmetrically from the main axis; sponges consisting of a long stem which terminates at the top in a massive, spherical (or of a different shape), commonly appendiculate body, are also found occasionally. It is important to note that different specimens of the same species may vary widely in their body shape. For example, it may vary from discoidal to cushion-shaped, lumpy and irregularly lobate, from dactylate to flabelliform or funnel-shaped.

The size of the body of corneosiliceous sponges fluctuates in various species from several millimeters to 1m and more. Numerous representatives of the genus Hymedesmia have, as a rule, an incrusting body measuring approximately 1mm or more in thickness, and cover shells, pebbles, tubes of Polychaeta and similar items. Chondrocladia gigantea, found in large numbers in the Sea of Okhotsk, measures up to 0.5 m in height, while the tropical horny sponge Apsylina archeri is a real giant among the sponges and measures up to 1.5 m in height. p17

Corneosiliceous sponges also vary widely in colour; yellow and brown shades are most common, but orange, red, purple and other colours are also found quite often. The colour of the outer layer of a sponge may be different from that of the internal structural parts, being more intense and darker than the latter.

Sponges have a highly characteristic unpleasant, pungent odour. Although the cause of this odour has not been determined so far, it may nevertheless be assumed that it is related to important stages of the life cycle of sponges.

The body of a sponge is covered for the most part by a thin epidermis (ectoderm) under which subdermal cavities are located. In a number of forms (Myxilla incrustans, Iophon piceus, Halichondria panicea and many others) the membrane is easily detachable from the body and is in the form of a thin transparent layer. Occasionally the dermal layer is much more markedly developed and measures 1 mm and more in thickness. Conules, i.e. small excrescences of the dermal membrane having a warty, sucker-like or cone-shaped appearance, develop on the surface of many sponges. Papillae, longer projections of the body, often including elements of parenchyma alongside the dermal layer, are also present occasionally. The dermal membrane is perforated with round pores (ostia) measuring on an average approximately 0.3 mm in diameter. As a rule, the pores are distributed evenly over the entire body surface (as in the genera Haliclona, Gellius, Halichondria and others); in some sponges the pores are grouped and are located either in depressions on the body surface, or in special pore fields or furrows (genus Mycale and others). In certain sponges, the pores are located at the ends of the papillae or on other appendages (genus Hymedesmia). Oscula usually protrude somewhat above the body surface and are often grouped at the end of the cones or tubular ramifications or are arranged in a row along the edge of the body. In foliate forms the oscula are located on one side, in funnel-shaped sponges they are commonly found inside the funnel. It must be pointed out that formations which are far from homologous are often mistaken in sponges for oscula and ostia. Thus, the oscula found at the ends of the tubular forms are often pre-oscula, which correspond to the broad openings of funnel-shaped forms commonly bearing oscula proper on the inner surface of the funnel. The size of oscula fluctuates in most instances between 1 and 5 mm in diameter. Occasionally (as, for instance, in incrusting forms) oscula and pores are practically identical in size.

The presence of an irrigation or canal system and of a flagellated chamber system is a characteristic structural feature of sponges. The canal system of corneosiliceous sponges ,as compared to other orders of sponges, is the most highly developed system of this type. It consists of extensively ramified incurrent canals between which, without any apparent regularity, are located flagellated chambers. The pores perforating the dermal membrane lead for the most part into distinctly defined subdermal cavities, from the foundations of which canals of the incurrent system branch out; these terminate in the flagellated chambers. Flagellated chambers are usually round or oval in cross section (measuring approximately 0.1 mm in diameter) and communicate with the excurrent canals(passages), which often open into an indistinctly separated paragastric cavity terminating in an osculum on the surface.

Cellular composition. The sponge body consists of a large number of diverse cells which compose the fairly abundantly represented interstitial substance, the mesogloea. There is no question of tissues in the strict sense of the word, since no true tissues occur in sponges.

Three main types of cells may be distinguished in the body of a sponge: choanocytes, dermacytes and archeocytes. Choanocytes, or collared cells lining flagellated chambers, have a plasmatic body containing a nucleus and a blepharoblast with a flagellum arising from it. The flagellum is surrounded by a collar at the base. The choanocytes are remarkably similar to those of Craspedomonadidae, the flagellated representatives of xgx order Protomonadina. Among multicellular animals such cells are found only in sponges, which must be evidence in support of the theory that sponges have evolved from some of the simplest colonial forms close to Protomonadina. Archeocytes and dermacytes are present in several modified forms capable of changing under certain conditions from one to another. Archeocytes are particularly labile. These are peculiar cambial cells which become differentiated in the process of the growth (and regeneration) of the sponge and give rise to all the types of dermacytes, as well as to choanocytes. In corneosiliceous sponges archeocytes are represented by the digestive cells (phagocytes), by the primary sexual cells * and by the granular amoebocytes. Dermacytes are much more diversified and constitute the main mass of the body cells. The following are differentiated among them: 1) pinacocytes lining the exterior surface of the body; 2) porocytes** surrounding the pores; 3) myocytes - fusiform contractile cells ;

*There are data showing that sexual cells of calcareous sponges may arise from choanocytes.

**In fresh-water sponges, similarly to calcareous forms, the pores arise in the flat dermal cells (porocytes) in the form of round openings in the centre of the cell.

4) scleroblasts forming the skeletal elements (spicules); 5)glandular* cells; 6) pigment cells and others. Sponges have no true muscle or nerve cells.

Skeleton. Corneosiliceous sponges are furnished with a skeleton consisting in the main of siliceous spicules composed of hydrous silica. Megascleres and microscleres are differentiated among these spicules. The former are commonly larger. This subdivision is based, however, less on the size of the spicules, than on their structure and functional importance in the formation of the skeleton. Megascleres compose the main mass of the skeleton, whereas microscleres are of secondary importance, as is seen, for example, in their partial reduction in a number of species, or in their total absence in the sponges having a simple skeleton (such as the genera Gellius, Haliclona, Halichondria and others). Apart from spicules, the skeleton of corneosiliceous sponges contains a peculiar organic substance called spongin, which is similar to silk in its chemical composition. Occasionally, the skeleton includes foreign particles: grains of sand, fragments of spicules or skeletal debris of other animals.

Megascleres are invariably monaxons (Figs. 1 and 2). They are usually somewhat curved, less often straight, cylindrical or more or less fusiform; they are smooth or acanthaceous, apically symmetrical or asymmetrical. Stylus is here the most common shape; the spicules are then rounded at one end, pointed at the other. Styli bearing spines have been

* It could be ferriferous(or chalybeate) rather than glandular.(Translator).

given a special name of acanthostyli. Tylostyli, i.e. styli with an expanded head, are found less often. Acanthaceous tylostyli are referred to as acanthotylostyli. Styli rounded at both ends are strongyli, those with expanded [redacted] are tyloti, those with short pointed ends are tormoti; styli with long pointed ends are oxi or amphioxi. Acanthaceous apically symmetri- p. cal diactinal spicules are referred to as acanthostrongyli, acanthotyloti, acanthoxi, respectively. Forms representing various stages of transition between these types may also be found. Desmas, irregularly shaped spicules with an uneven tuberculate surface, are found very rarely. Desmas are regarded as modified megascleres whose original structure has been largely obscured by secondary depositions of silica.

All the types of microscleres may be divided into 2 groups : p. sigmoids and cheloids (Figs. 3 and 4). Representatives of both groups are in the form of small commonly curved rods or needles. In sigmoids the rod is usually free of appendages and is pointed at the ends. Sigmoids are subdivided into the following types according to the degree to which the rod is curved: rhaphidii and microrhabdes - straight, usually very slender spicules; toxi - spicules curved in the middle and forming a small arch; sigmas - C- and S-shaped spicules; forceps, which are spicules curved and bent in the middle in such a manner that both their ends are oriented in the same direction and are parallel or nearly parallel.

Cheloids are spicules highly characteristic for corneosiliceous sponges, even though they are not found in all such sponges. Cheloids consist of a rod which bears appendages varying in both structure and number and projecting from the ends of the rod, and are subdivided into ancorae and chelae by the shape of their ends. Chelae bear at each end 2 lateral projections, the so-called winglets(little wings), and a lamellar appendage located between these wings. Cheloids bearing three and more appendages are termed ancorae. Similarly to chelae, ancorae may have identical or different ends(i.e. be apically symmetrical or apically asymmetrical).

Apart from the true cheloids and sigmoids, there occur (though rarely) microscleres which are derivatives of the two former: bipocilli, sphaerae, diancisters and others.

Such microscleres, being cheloids with asymmetrical ends, are occasionally grouped into rosettes, in which the spicules are arranged around one point and are oriented with their weakly developed ends towards this point (genera Mycale, Iophon and others). Rhaphidii are often gathered into bundles known as trichodragmae.

Spicules of corneosiliceous sponges are on the whole microscopical. As a rule, megascleres are measured in hundreds of microns,though they occasinally attain a size of several millimeters. Microscleres vary in size from 5-8 microns to 100 or more microns.

A certain regularity may be observed in the distribution of different types of spicules in the sponge body. Thus, apically symmetrical megascleres (except for oxi) are usually concentrated in the dermal layer; microscleres are most abundant in the dermal membrane and in the areas adja- p.2
cent to the canals and cavities of the sponge body. On the other hand, apically asymmetrical megascleres (styli) and oxi are characteristic of the main skeleton where they serve as a supporting framework for the entire sponge.

Megascleres may be unfused in the sponge body and may be scattered through it in a disorderly fashion (diffuse skeleton), but they commonly form a coherent reticulate, reticulate-fibrous or ramified-fibrous skeleton. In the simplest forms the bundles of spicules or individual spicules are joined together by spongin in such a way that they form a typical reticulate skeleton. The size of the meshes in such a skeleton is usually determined by the length of the spicules; furthermore, the meshes are commonly three-sided to six-sided. A scalariform (stair-stepped) structure of the reticulate skeleton occurs as a transition to the reticulate-fibrous skeleton where thin parallel fibers are interconnected by loose transverse spicules. The reticulate-fibrous skeleton is formed of long more or less ramified fibers interspaced by a meshwork of short fibers, bundles of spicules and individual spicules; the fibers extending towards the surface are termed main or primary, whereas the transverse fibers interconnecting the former are referred to as secondary or auxiliary. The fibers of the ramified-fibrous skeleton are markedly branched and attain a considerable thickness; these fibers constitute the main mass of the skeleton.

Fibers having one single spicule in cross-section are termed unispicular, those with two spicules - bispicular etc. up to multispicular. Certain clavate, columnar and ramified sponges form a strong and solid axis of spicules (genera Asbestopluma, Cladorhiza and others). The spicules are held together inside the fibers by spongin, which occurs in greater or lesser quantities. Occasionally spongin is so abundant that it forms real spongin fibers enclosing spicules. As a rule, the spicules found inside the fibers are parallel to one another. A plumose arrangement of spicules is observed very rarely. Instances where the blunt ends of acanthostyli are located in the outer layer of fibers, whereas their pointed ends are free and protrude occasionally beyond the body surface of the sponge are particularly characteristic. Such fibers have been termed "spiked" and the spicules protruding from them are known as "spiking" spicules. The distribution of spicules characteristic for many incrusting forms (genus Hymedesmia and others), where individual monactinal spicules or small groups of monactinal spicules ascend to the surface of the sponge from the basal spongin membrane lying on the substratum, belongs to this type of skeleton.

A special dermal skeleton composed of spicules different from those of the main skeleton is commonly differentiated on the surface of the sponge body. The arrangement of dermal spicules is mainly tangential, less often radial or disorderly. Short tufts joined to the ends of the main skeletal fibers often diverge from the tangential dermal spicules and extend into the interior of the sponge. Spicules located in the dermal membrane, as well as those found in the main skeleton, aggregate occasionally into fibers which form a regular, irregular or diffuse meshwork.

Spicules may be completely lacking in the composition of the skeleton. In this case the skeleton is formed only of spongin which acquires the character of fibers, commonly forming a meshwork (horny sponges). The main fibers, oriented towards the surface, and the auxiliary transverse fibers may also be distinguished here. The transverse fibers interconnect the main fibers by simple bars or by an intermediate meshwork. The main fibers are usually thicker and often contain foreign particles (sand, spicules etc.), whereas the auxiliary ones are thinner and have no such foreign inclusions.

Similarly to other corneosiliceous sponges, true horny sponges may have a special dermal skeleton consisting of a meshwork stretched between the ends of the main fibers, or of foreign inclusions (grains of sand, spicules). p.22

The skeletal elements are secreted by special cells - scleroblasts and spongioblasts. Scleroblasts (silicoblasts) secrete spicules, whereas spongioblasts secrete the organic substance songin.

The formation of spicules in corneosiliceous sponges is an intracellular process. It is believed that a special scleroblast corresponds to each type of sclerites(spicules). At first the axial filament is formed in the mother cell from organic substance with an admixture of silica, and a young spicule (a megasclere) of a nearly normal length arises in this manner. Thereupon the new little spicule becomes enveloped by another cell, an auxiliary scleroblast, which secretes on its surface concentric layers of inert silica and thus completes the formation of the spicule.

Microscleres have no organic axial filament, and their formation begins and ends inside the mother cell.

Horny fibers are surrounded during their formation by a great number of spongioblasts secreting upon them concentric layers of spongin, i.e. horny fibers are formed in an extracellular (intercellular) fashion.

Reproduction and embryogenesis.

Corneosiliceous sponges are for the most part dioecious. The sex cells may be found in any part of their body. Archeocytes change either to eggs or, by intensive growth, to lumps of spermatozoids. An egg preserves amoeboidal properties through all stages of its development and does not secrete any pellicle. The eggs are frequently surrounded by follicular cells with a finely granular protoplasm. These cells serve both for protection and as a source of food for the eggs. These feeding cells are formed in the surrounding parenchyma and may be of the same origin as the cells proper.

The primary male embryonic cell, i.e. the spermatogonium, divides to produce 2 cells - a spermatocyte and an integumentary cell. The latter envelops the spermatocyte and forms around it a plasmatic membrane. When the covering cell divides, the membrane around the spermatocyte becomes multicellular forming a capsule or a spermatocyst, inside which spermatogenesis takes place. The spermatocyte produces spermatids (spermatoblasts) by appropriate divisions, and the spermatoblasts develop into fully formed spermatozoids. The mature spermatocyst breaks open, spermatozoids are released and emerge through the excurrent canals into the surrounding water. From the water they penetrate by way of the incurrent canals and flagellated chambers into the parenchyme of the female sponges, where they fertilize the mature eggs in the parenchyme. Fertilized eggs develop in the body of the mother sponge until fully formed larvae emerge.

We may thus state that sponges have no sexual organs in the true sense of the word, since such organs are represented here in their rudimentary state by a group of feeding cells forming something similar to a follicle around the egg or around the external membrane of the spermatocyst containing spermatocytes.

A mature egg of corneosiliceous sponges is filled fairly evenly with yolk cells. It divides totally and unequally (Fig.5). A small division cavity may be observed in some species, but is lacking in others.

Formation of a diploblastic embryo occurs by epiboly. Cells poor in egg yolk incrust the larger vegetative cells. They may envelop them completely or leave the posterior pole free. These cells elongate somewhat p.23
and differentiate flagella. The larvae are therefore covered with swimming flagella except at the posterior end; the mesogloea, containing stellar cells, scleroblasts and archeocytes, is found inside the larvae. Cell differentiation occurs very early in the inner cellular mass. By the time of hatching, a larva (which in corneosiliceous sponges resembles a parenchymule /Fig.6/) is already provided with spicules, megascleres and microscleres. Having swum around for a certain period of time, the larva attaches itself to the substratum by its anterior end or by the side of its body, and undergoes further metamorphosis. The larva first flattens out, whereupon the migration of flagellated cells into the inner cellular mass, a process highly characteristic for sponges, begins. The cells lying under the outer layer emerge onto the surface and form the dermal cover. The cells of the outer layer migrate to the interior, become collared cells and line the flagellated chambers, which are in the process of being formed. As a result of this, corneosiliceous sponges have a complex postlarval stage termed rhagon (Fig.7). This phase may be represented schematically by a small markedly flattened sponge with an osculum at the top and a voluminous paragastric cavity. Flagellated p.2
chambers are arranged in a layer in the thin wall, i.e. the structure of the rhagon corresponds in the character of its canal system to that of syconoid calcareous sponges. Further growth of the small sponge and further elaboration of the irrigation system leads to the formation of a young organism with the leuconoid type of irrigation system characteristic for corneosiliceous sponges.

The peculiarities of the embryonic development of sponges mentioned above have led to a conceptualization of sponges as animals "turned inside out"(Enantiozoa) in which the coleoptiles (bud leaves) become distorted in the process of the embryonic development. This makes it necessary to contrast sponges with all the other multicellular animals (Enterozoa) and even to assume that they have evolved from the most primitive animals in a manner different from that of other orgamisms (Rezvoi,1937; Beklemishev,1952, and others). This is, however, a controversial problem and it must be studied further and in greater depth.

Apart from the sexual reproduction described above, asexual reproduction by budding, formation of gemmules and sorites is common among sponges. Formation of gemmules is extremely characteristic, particularly for fresh-water sponges (family Spongillidae)(Fig.8). The gemmules arise from the aggregates of archeocytes rich in nutritive substances. Such aggregates of archeocytes are surrounded by a capsule composed of two chitinoid membranes separated by an air space. Microscleres-amphidiscs consisting of a short rod with two broad discoidal lamellae, are often concentrated in the outer ~~xxxx~~ membrane of the capsule in Spongillidae and are arranged here in the form of a regular fence. Cellular differentiation begins while the archeocytes are still inside the capsule.. The contents emerge from the interior on the exterior through the pores as a shapeless mass from which the young sponge gradually forms. The gemmule is the resting stage adapted especially for survival in unfavourable conditions and serves in the distribution of the population. Similar formations, though devoid of microscleres, are also occasionally observed in marine corneosiliceous sponges (in representatives of the genera Haliclona, Mycale, Cladorhiza, Biemna and others). Corneosiliceous sponges, as well as Triaxonida and Tetraxonida, exhibit something similar to parthenogenetic reproduction, in the course of which concentrations of archeocytes arise as a continuous syncytial mass known as a sorite.

Sorites have no compact membrane; the embryo forms from a cell feeding at the expense of the remaining mass of the syncytium. Free-swimming larvae, similar to those which form by sexual reproduction, arise from sorites.

Formation of colonies.

Colonies of corneosiliceous sponges arise through budding. Each section of the sponge body bearing an osculum is regarded as an individual. The growth of a sponge proceeds, as in budding, by way of the differentiation of archeocytes which migrate into the cortical layer. Therefore, initially only a small number of choanocytes arises from the flickering cells of the larva, whereas all the new flagellated chambers are formed from archeocytes. It is a characteristic feature of sponges that it is difficult to distinguish their normal growth from reproduction through budding, in view of which it is difficult to apply to sponges concepts such as "individual" and "colony", developed for the Metazoa which are more highly organized. In sponges individual zooids lose their identity as individuals and fuse into one whole most readily. Furthermore, not only the zooids which have formed by way of budding readily remain fused with the rest of the colony. Even initially independent individuals (even mobile larvae) and different vicinal colonies of the same species may merge forming one single colony. This phenomenon is due to the extremely simple organization of sponges, to their lack of functional centralization. In certain sponges

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the colony grows as a whole and the increase in the number of zooids merely leads to the formation of new oscula and sections of the irrigation system gravitating towards the oscula. The axis of a sponge readily loses its individual character once it becomes part of a colony. This occurs not because of a highly developed colonial integration, but because the individual identity of different specimens is very weakly developed (Beklemishev, 1952). The overall simplicity of the structure of sponges, their extremely low organic integration, is reflected in the weakness of the colonial individuality, as may be seen from the many examples of shapeless and anaxial colonies. Colonies of corneosiliceous sponges rarely acquire a regular radial symmetric form.

Vital functions.

The simplicity of sponge structure is also reflected in the highly primitive nature of their vital functions. Sponges are immobile animals, but most cells of the sponge body have the ability to move within the parenchyme (mesogloea) or at least to unfold and contract their pseudopodium. Since true nerve and muscle cells are lacking in sponges, stimulation is apparently perceived by all the surface cells. Sponges react to these stimulations very slowly and weakly. For example, oscular tubes of *Spongilla* contract for several minutes after one touches the edge of the osculum. The author observed that in a number of forms the oscula and pores close and open in response to a stimulation. The overall contraction of the body under the effect of strong mechanical irritation has also been mentioned in the literature.

Flagella of the collared cells are in constant spiral motion, due to which water is driven from the base of the flagella to their tips.

Since all the collared cells of flagellated chambers are somewhat inclined towards their exhalant openings, a current of water arises and is directed from the pores and incurrent canals to the flagellated chambers and via the excurrent canals, paragastric cavity and oscula to the outside. The water current brings along suspended food particles and dissolved oxygen which penetrate into all the cavities and canals, and this current also carries away the excretion products and undigested remains. Thus, in sponges, feeding, respiration and elimination occur with the help of the irrigational system. Food particles (consisting mainly of bacteria, protozoa, detritus) are seized by the collared cells or by amoebocytes. Digestion occurs inside the cells in the vacuoles which form around the food particles. The pH inside the food vacuoles is alkaline. In some sponges the food is p.26
seized and digested by collared cells and the excess of the particles seized is thrown out through the basal part of the cells into the mesogloea, where these particles are seized by amoebocytes. In sponges having a more highly developed parenchyme, the food is seized and digested by amoebocytes. On the whole it may be stated that the higher the organization of the sponge, the lesser (relatively speaking) is the role of the choanocytes in its nutrition, to the point that choanocytes may retain only the locomotive function (a continuous water current is formed in the irrigation system).

Undigested remains of food are thrown out into the mesogloea, where they accumulate in certain places near the excurrent passages. Periodic accumulations are eliminated into the excurrent canal system. Cells have also been observed to eliminate vacuoles with granular contents into the excurrent system. We see here the process of elimination of metabolic products.

Brief data on ecology of corneosiliceous sponges.

Corneosiliceous sponges form part of many biocoenoses and often play part of leading organisms in these biocoenoses, forming thickets at the bottom of water basins. As far as we know, sponges rarely serve as food for other animals because of the presence in their body of a mineral skeleton, as well as of substances which are apparently toxic to many animals. Various small animals may be found on the surface or inside the body of a sponge. These are sponge parasites. Thus, insect larvae (caddis fly, mosquitoes) are invariably found on fresh-water sponges; Acanthogammarus parasiticus is characteristic for the Baikal sponge. It is well known that nudibranch mollusks (sea-slugs) lead a parasitic existence on marine sponges (genus Halichondria) whose body serves them for food. The number of animals which use the sponge body as a shelter is considerably greater. Such "tenants" of corneosiliceous sponges are found most often among the crustaceans, ophiurans, polychaetes and others. Eggs laid by other animals (polychaetes, fish, cephalopods) are often found inside the sponges, particularly in representatives of the genera Mycale and Asbestopluma. Corneosiliceous sponges are often found in symbiosis with various algae. Thus, the greenish colour characteristic of fresh-water sponges is commonly due to the green algae Chlorella which live on the protoplasm of the sponge cells. The constant symbiosis of the horny sponge Cryptospongia enigmatica and polychaete Potamilla symbiotica is extremely characteristic.

Many animals (such as foraminifers, worms and others) build their houses completely or partially of sponge spicules. The holothuria *Pseudostychopus trachus* , whose external skeleton is formed entirely of long sponge spicules, which cover the body of the holothuria by a protective layer of thick bristly felt, is highly interesting.

Most marine corneosiliceous sponges live in waters having a normal salt content, but there are forms capable of existing in considerably desalinified (fresher) waters (*Mycale lobata*, *Halichondria panicea* and others). On the other hand, fresh-water sponges can endure a certain degree of salinification, as is found in river estuaries. As a rule, sponges live in pure water and in conditions of good oxygen supply; a certain degree of organic pollution does not harm them, however, but, on the contrary, contributes to their growth and development (as is the case of fresh-water sponges).

From the viewpoint of temperature, sponges, like a number of other benthic animals, may be divided into eurythermic and stenothermic, warm-water and cold-water forms. Most corneosiliceous sponges are eurythermic p.27
rather than cold-loving animals. Stenothermic sponges adapted in their habitat to definite above-zero or sub-zero temperatures are especially interesting. Thus, *Asbestopluma infundibulum* is found at a temperature of -1.45 to -0.4°; *Cladorhiza gelida* - from -1.1 to 0.9°; *Cladorhiza tenuisigma* - from -1.1 to 0.3°, *Chondrocladia gigantea* - from 0.66 to 2.7°; *Esperiopsis forcipula* from 1.3 to 2.4°; *Homoedictya flabelliformis* from 1.16 to 4.3°; *Tylodesma rosea* from 1.1 to 3.2° etc.

Since sponges are sessile immobile animals, the sea bottom is an important factor in their existence. Within the boundaries of the neritic area, on rocky and pebbly bottoms, sponges become attached to the substratum, mainly to the rocks, shells etc. Tides, turbulence and strong currents make the firm attachment necessary; for the same reason we find here incrusting, cushion-shaped and elastic forms. In the depths, where oozy bottoms predominate, sponges are obliged to adapt to a loose substratum. Such forms develop rhizoids, thin branching appendages by means of which the sponge is anchored to the ooze bottom (family Cladorhizidae and others). Tall upright forms, which cannot be engulfed by ooze as readily, here predominate among the sponges.

Sponges, which are dependent to such a great extent on the sea bottom, may themselves participate in the formation of the ground as biological filterers and by depositing at the bottom remains of their skeletons(spicules) after death.

Corneosiliceous sponges are represented most abundantly at depths of 20 to 350m, on sandy - pebbly sea bottoms, but may also be found in all the littoral zones, down to abyssal depths inclusively. (Specimens of sponges were obtained during the"Vityaz'" expedition in the Pacific Ocean from the depths of more than 6000 meters).

Geographic distribution of corneosiliceous sponges.

The relatively large faunal material obtained through the analyses of the available collections makes it possible to carry out a certain zoogeographic study of corneosiliceous sponges from our northern and far eastern seas. In this chapter we shall merely examine the composition and character of the sponge fauna in each individual sea and endeavour to trace the possible present or past relationships between the faunae of sponges in the Arctic, northern Atlantic and northern Pacific basins. Before we proceed to a detailed survey, we should examine, however, be it briefly and superficially, the zoogeographic groups or categories used in this work.

The system of zoogeographic subdivision of the fauna which reflects simultaneously the territorial origin of various forms and the contemporary pattern of their distribution in the oceans of the world appears to be more effective. At the present time, however, it would be difficult to adopt this apparently correct system because of the insufficient degree to which spongiofaunae of the areas adjacent to the regions examined have been studied, as well as because of the insufficient information available on the ecology and paleontology of sponges. As a preliminary working scheme we are proposing, therefore, a system of zoogeographic subdivision of fauna according to which all the species of known corneosiliceous sponges of the northern and far eastern seas are divided into the following groups. p.28

A. Continental shelf and continental slope species (179 species)

1. Arctic species (22 species)

2. Arctic-boreal species (27 species)

- a) wide-spread species (13 species)
- b) Atlantic (9 species)
- c) Pacific (5 species)

3. Boreal species (126 species)

- a) North Atlantic (21 species)
- b) Greenland-Scandinavian (21 species)
- c) Amphiboreal (21 species)

d)Wide-spread northern Pacific (12 species)

e) Amphi-Pacific* (5 species)

f) Okhotsk-Bering (north boreal Pacific; 7 species)

g) Aleutian-Komandorskii-Kuril (moderately boreal Pacific; 25 species)

h) Sea of Japan- southern Kuril (south boreal Pacific; 25 species)

i)Bipolar (2 species)

4. Subtropic-boreal species(12 species)

B. Abyssal species (12 species)

1. Deep-sea (abyssal) species of the Arctic basin (6 species)

2. Abyssal species of the Pacific Ocean (4 species)

3. Abyssal species of the Arctic basin, Atlantic and Pacific Oceans (1 species)

4. Abyssal species of the Pacific and Indian Oceans (1 species).

All the species of the corneosiliceous sponges are thus divided first of all in two groups: 1) species of the continental shelf and slope; 2) abyssal species. The former constitute the predominant majority of corneosiliceous sponges and are found mainly within the boundaries of the continental shelf and slope; these forms are rarely found at depths of more than 1000 m. Abyssal forms commonly occur, however, at the depth of 100-4000 and more meters.

The species characteristic for the continental shelf and continental slope are subdivided, in their turn, into 4 categories: Arctic species, Arctic-boreal species, boreal and subtropic-boreal species. Arctic species

* After Andriyashev (1939).

include the species more or less widely distributed in the Arctic region*; furthermore, some of these species may be found outside the boundaries of the Arctic region, in the cool areas of the northern Atlantic and north Pacific Oceans. Arctic-boreal species are widely distributed in both Arctic and boreal regions. It is expedient to subdivide this group into the Atlantic-Arctic-boreal group whose areal lies in both northern Atlantic and Arctic, Pacific-Arctic-boreal forms with the areal in the northern Pacific Ocean and in the Arctic, and Arctic-boreal species widely distributed in the Arctic, northern Atlantic and northern Pacific.

This subdivision of the Arctic-boreal species ,carried out at the present time only on the basis of their distribution, shows the heterogeneity of this group and may be evidence of two or even three different origins.

Boreal species, forming the most numerous group, are subdivided into 9 categories.

a) North Atlantic-boreal species with the main areal in the northern Atlantic. Some of them may penetrate with the warm current down to the southwestern shores of the Barents Sea, to the north of Spitzbergen and Franz Josef Land and, in exceptional cases, into the Kara Sea canals and northwestern Laptev Sea, as far as the Novosibirsk Islands (Map 1). p.29

b) Greenland-Scandinavian species are boreal (or subarctic) in character, have their main areal in the warmer regions of the Greenland-

* Boundaries of the Arctic region are accepted here as those defined by Soviet geographers specialized in zoogeography(Gur'yanov,1939,1951; D'Yakonov, 1945).

-Scandinavian sector and penetrate often to the east, similarly to certain northern Atlantic-boreal species. As a rule, they do not penetrate into the northern Atlantic beyond the Arctic region (Map 2).

c) Amphiboreal species (after Berg) are boreal in their nature, but have a discontinuous areal in the waters of the northern hemisphere (Maps 3 and 4).

d) Wide-spread northern Pacific species inhabit the northern Pacific Ocean from the Bering Sea to the Sea of Japan and from Alaska to the Vancouver Island; these are fairly eurybiontic species which may penetrate into the Arctic.

e) Amphi-Pacific species occur in the boreal and subtropical waters of the Asian and North American parts of the Pacific Ocean and have a break in their areal in the north; they are absent in tropical latitudes (Map 5).

f) Aleutian-Komandorskii-Kuril species are found in the region of the Kuril, Komandorskii and Aleutian islands, southeast of Kamtchatka, occasionally also northeast of Sakhalin.

g) Sea of Japan- southern Kuril species have their main areal in p.31
the Sea of Japan, in the southern Okhotsk Sea and in the region of southern Kuril islands; these species are not found in the Bering Sea, but penetrate occasionally into the northern Okhotsk Sea.

h) Bipolar species are predominantly boreal in their nature, occur in the northern hemisphere, as well as in the southern hemisphere and reveal a break in their areal in the tropical waters.

Subarctic-boreal species populating the littoral waters of China and Japan and penetrating into boreal waters (Peter the Great strait, southern

Kuril islands), constitute the last group of species characteristic for the continental shelf and slope.

Abyssal species are divided into 4 categories: 1) abyssal species of the Arctic basin; 2) abyssal species of the Pacific Ocean; 3) abyssal species of the Arctic basin, Atlantic and Pacific Oceans(able to rise to the continental shelf) and 4) abyssal species of the Pacific and Indian Oceans.

Such are the zoogeographic categories into which the entire multitude and diversity of the corneosiliceous sponges populating our northern and far eastern seas can be divided.

The forms defined as Greenland-Scandinavian and amphiboreal are of considerable interest for future analysis. Furthermore, among the amphiboreal species we established in our material species (11) encountered only in the northern Pacific Ocean and in the Greenland-Scandinavian sector of the Arctic (and in the form of relics in the White Sea). Apparently these forms are Pacific in origin (Map 4). p.32

Distribution of corneosiliceous sponges in different sea basins is as follows.

White Sea. At the present time 33 forms belonging to 31 species have been found in the White Sea.

1. Arctic species 5: 1. Арктические виды — 5:

Mycale thaumatochela
Esperiopsis typichela
Plocamia arctica
Microciona heterotoxa
Hymeniacidon gorbunovi

2. Arctic-boreal species — 15: 2. Арктическо-бореальные виды — 15:

Mycale lobata
Homoeodictya palmata
Myxilla incrustans (M. i. incrustans, M. i. var. perspinosa)
Myxilla brunnea
Hymedesmia occulta
Iophon piceus (I. p. piceus, I. p. dubius)
Tedania suctoria
Plocamia ambigua
Phakettia cribrosa
Halichondria panicea
Halichondria sitiens
Haliclona gracilis
Haliclona cinerea
Haliclona aqueductus
Dysidea fragilis

3. Boreal species - 11: 3. Бореальные виды — 11:

a) North Atlantic -4: а) североатлантические — 4:

Hymedesmia longurius
Hymedesmia irregularis
Microciona armata
Hymeraphia stellifera

b) amphiboreal- 4: б) амфибореальные — 4:

Crellomima imparidens
Haliclona rossica
Gellius angulatus
Gellius primitivus

c) Greenland-Scandinavian -3: в) гренландско-скандинавские — 3:

Artemisina arcigera
Ectyodoryx kovdaicum
Haliclona schmidti

The White Sea fauna of corneosiliceous sponges thus includes p.33 48.4% of Arctic-boreal species, 35.5% of boreal species and 16.1% of Arctic species. In order to evaluate more accurately the fauna of this peculiar body of water, the specific composition of sponges, particularly the group of boreal and Arctic species, should be examined more thoroughly. As is known, the White Sea is characterized by a considerable desalinification and by a weak communication with the Barents Sea and hence with the Arctic basin. This circumstance must have markedly affected the fauna of corneosiliceous sponges which are for the most part typical inhabitants of waters having a normal marine salt content.

Boreal species of the White Sea (at least 8 if not all of them) are true relics which have apparently been preserved here from the time when the White Sea basin was not so distinctly separated from the Barents Sea and when climatic conditions were favourable for the intensive development of the boreal fauna in the White Sea and in other Arctic seas.

The new species of this once abundant White Sea fauna are found rarely and are usually in a visibly depressed state. Arctic species of the White Sea are among the fairly eurybiontic forms, similar in character to the Arctic-boreal species; furthermore, two of them penetrate to a greater or lesser degree beyond the boundaries of the Arctic region into the northern boreal regions. The largest group of the Arctic-boreal species, which are adapted to considerable fluctuations in the salt content and temperature, constitutes the main mass of sponges in the White Sea both quantitatively and qualitatively. It is therefore justifiable to characterize the White Sea fauna of corneosiliceous sponges as eurybiontic Arctic-boreal supplemented by a considerable number of relic boreal species (of Atlantic and Pacific origin) and, to a lesser extent, by Arctic forms. The theory postulating that the spongiofauna of the White Sea is considerably endemic, a theory based on early data (Svarchevskii, Merezhkovskii etc), is erroneous. Hydrological conditions (particularly salt content) extreme for sponges often result in the development of forms with spicules of such an unusual distorted appearance that these authors were compelled to describe a number of forms as "new" species. In reality, however, there are no endemic forms among the corneosiliceous sponges of the White Sea (Ectyodoryx kovdaicum described in this work as a species found only in the White Sea, is scarcely an endemic form).

Barents Sea. In comparison with other seas of our country, the fauna of corneosiliceous sponges from the Barents Sea is the richest and the most thoroughly studied spongiofauna. It is represented by 97 forms belonging to 91 species.

Myxilla intermedia | *Crellomima incrustans*
Rhaphidotheca arctica | *Plocamia arctica*
Asbestopluma cupressiformis | *Ectyodoryx oligacantha*
Asbestopluma infundibulum | *Anchinoë roemeri*
Esperiopsis typichela | *Anchinoë arneseni*
Artemisina apollinis | *Microciona heterotoxa*
Hymedesmia dermata | *Hymeraphia spitzbergensis*
Lissodendoryx indistincta | *Hymeniacidon gorbunovi*
Inflatella rhodus | *Haliclona oblonga*

2. Arctic-boreal species - 25:

2. Арктическо-бореальные виды — 25:

Mycale lingua (M. l. lingua, M. l. placoides)
Mycale lobata
Asbestopluma lycopodium
Homoeodictya palmata
Biemna variantia (B. v. groenlandica, B. v. hamifera)
Myxilla incrustans (M. i. incrustans, M. i. var. *perspinosa, M. i. flexitornota)*
Myxilla brunnea
Hymedesmia occulta
Iophon piceus (I. p. piceus, I. p. dubius)
Tedania suctoria
Grayella pyrula
Plocamia ambigua
Axinella vermiculata
Phakettia cribrosa
Halichondria panicea
Halichondria sitiens
Hymeniacidon caruncula
Hymeniacidon assimilis
Haliclona gracilis
Haliclona cinerea
Haliclona aqueductus
Gellius porosus
Gellius fugosus
Spongionella carteri
Dysidea fragilis

3. Boreal species - 47:

3. Бореальные виды — 47:

a) North Atlantic - 16:

а) североатлантические — 16:

Asbestopluma pennatula
Esperiopsis villosa
Artemisina foliata
Hamacantha implicans
Myxilla fimbriata
Leptolabis assimilis
Anchinoë dendyi
Clathria dichotoma
Melonanchora elliptica
Hymedesmia truncata
Hymedesmia paupertas
Lissodendoryx diversichela
Lissodendoryx sophia
Coelosphaera appendiculata
Hymeraphia stellifera
Metschnikowia spinispiculum

b) Greenland-Scandinavian species-17:

б) гренландско-скандинавские виды — 17:

Asbestopluma bihamatifera
Esperiopsis forcipula
Iotrochota rotulancora
Hymedesmia trichoma
Hymedesmia storea
Hymedesmia similis
Lissodendoryx lundbecki
Lissodendoryx fragilis
Artemisina arcigera
Clathria robusta
Ectyodoryx derjugini
Ectyodoryx loyningi
Ectyodoryx olgae
Axinella ventilabrum
Phakettia arctica (P. a. arctica, P. a. setosa)
Phakettia bowerbanki
Haliclona urceolus

c) Amphiboreal species--13:

в) амфибореальные виды — 13:

Tylodesma rosea
Homoeodictya flabelliformis
Coelosphaera physa
Crellomima imparidens
Cornulum textile
Forcepia fabricans
Hymedesmia procumbens
Axinella rugosa
Haliclona tenuiderma
Haliclona ventilabrum
Gellius varius
Gellius flagellifer
Gellius angulatus

d) Bipolar species -1:

г) биполярные виды — 1:

Hircinia variabilis

As may be seen from the above lists, the Barents Sea fauna of corneosiliceous sponges includes 51.6% boreal species, 21% Arctic species and 27.4% Arctic-boreal species, i.e. is distinctly boreal in character. The main mass of boreal species is concentrated in the southwestern part of the Barents Sea; many of the species penetrate with the warm current into the region of Spitzbergen and Franz Josef Land, as well as farther east, while some of them (for example, Myxilla fimbriata) are found in the southern Barents Sea as far as the Kolguev island and Kara Gate strait(Karskie Vorota). p.35

The central Barents Sea and the regions where the warm current does not penetrate are inhabited by Arctic and Arctic-boreal species (it is obvious that the latter are also abundantly represented in the regions of the sea affected by the warm current). The abundance and diversity of corneosiliceous sponges in the Barents Sea are thus due to the penetration into these waters of a large number of boreal forms which here find favourable conditions for their existence.

Kara Sea. The fauna of corneosiliceous sponges consists of 46 species (49 forms).

The distinctly lesser effect of the warm north Atlantic waters here than in the Barents Sea, the extensive communication with the central Arctic and the highly Arctic position of the Kara Sea resulted in the distinctly Arctic appearance of its fauna of corneosiliceous sponges. Arctic species constitute here 37%, Arctic-boreal species - 43.5%, boreal species - only 19.5%.

... виды — 17 (вместе с абиссальными):

Mycale thaumatochela
Oxymycale intermedia
Rhaphidotheca arctica
Asbestopluma infundibulum
Asbestopluma cupressiformis
Asbestopluma minuta
Cladorhiza arctica *
Artemisina apollinis
Ectyodoryx clavigera
Lissodendoryx indistincta
Stelodoryx flabellata *
Forcepia topsenti *
Hymedesmia platychela
Plocamia arctica
Inflatella rhodus
Crellomima incrustans
Haliclona oblonga

2. Arctic-boreal species -20: 2. Арктическо-бореальные виды — 20:

Mycale lingua (M. l. lingua, M. l. placoides)
Asbestopluma lycopodium
Biemna variantia (B. v. capillifera, B. v. hamifera)
Myxilla incrustans (M. i. incrustans)
Myxilla brunnea
Hymedesmia occulta
Iophon piceus (I. p. piceus, I. p. dubius)
Tedania suctoria
Grayella pertusa
Grayella pyrula
Phakettia cribrosa
Hymeniacidon caruncula
Hymeniacidon assimilis
Halichondria panicea
Halichondria sitiens
Haliclona gracilis
Gellius porosus
Gellius jugosus
Dysidea fragilis
Spongionella carteri

3. Boreal species- 9: 3. Бореальные виды — 9:

а) североатлантические — 3: **a) North Atlantic species -3:**

Hymedesmia peachii
Hymedesmia nummulus
Coelosphaera appendiculata

б) гренландско-скандинавские — 6: **b) Greenland-Scandinavian species - 6:**

Asbestopluma bihamatifera
Artemisina arcigera
Myxilla pedunculata
Lissodendoryx fragilis
Haliclona urceolus
Crellomima imparidens

***Abyssal species are marked with *.**

Similarly to all the Siberian sea basins, Kara Sea may be subdivided into northern and southern zones. The southern zone is extremely poor in sponges because of its small depth and intensive continental drainage resulting in considerable desalinification of these waters. Most of the species found here belong to the most eurybiontic forms of the Arctic-boreal group (such are Halichondria panicea, Halichondria sitiens, Phakettia cribrosa, Haliclona gracilis and others). p.36

The spongiofauna of the northern zone is considerably more abundant due to the presence of deep canals connecting the sea with the abyssal regions of the Arctic and because of the penetration of warm currents into these areas. Arctic and boreal species characteristic of this region (such as Asbestopluma minuta, Inflatella rhodus, Coelosphaera appendiculata, Myxilla pedunculata and others) are found here. Abyssal forms endemic to the Arctic basin and found in the northern Kara Sea and in the canals at considerable depths are highly characteristic. Such are Stelodoryx flabellata, Cladorhiza arctica, Forcepia topsenti.

Laptev Sea. From the viewpoint of the abundance of the species, Laptev Sea ranks third in the Arctic, next to the Barents and Kara Seas. At the present time 39 forms belonging to 38 species have been found here.

1. Arctic species - 15 (together with abyssal species):
1. Арктические виды — 15 (с абиссальными):

Mycale thaumatochela
Oxymycale intermedia
Asbestopluma infundibulum
Asbestopluma cupressiformis
*Cladorhiza tenuisigma**
Cladorhiza gelida *
Esperiopsis typichela
Artemisina apollinis
Artemisina arcigera
Hymedesmia dermata
Forcepia topsenti *
Lissodendoryx stipitata *
Lissodendoryx indistincta
Inflatella rhodus
Archinoë roemeri

2. Arctic-boreal species - 18:
2. Арктическо-бореальные виды — 18:

Mycale lingua (M. l. lingua, M. l. placoides)
Mycale lobata
Asbestopluma lycopodium
Biemna variantia (B. v. capillifera)
Myxilla incrustans (M. i. incrustans)
Hymedesmia occulta
Iophon piceus (I. p. dubius)
Grayella pyrula
Grayella pertusa
Plocamia ambigua
Phakettia cribrosa
Halichondria panicea
Halichondria sitiens
Hymeniacidon assimilis
Haliclona gracilis
Gellius porosus
Spongionella carteri
Dysidea fragilis

3. Boreal species -5:
3. Бореальные виды — 5:

а) североатлантические — 1: **a) North Atlantic -1:**

Hymedesmia truncata

б) гренландско-скандинавские — 3: **b) Greenland-Scandinavian - 3:**

Asbestopluma bihamatifera
Myxilla pedunculata
Lissodendoryx complicata

в) амфибореальные виды — 1: **c) Amphiboreal species -1:**

Crellomima imparidens

The Laptev Sea differs little from the Kara Sea in the number of species and character of the fauna: it contains 39.5% Arctic species and 47.3% Arctic-boreal species. The only differences between them are the more easterly position of this sea and a respectively smaller number of boreal species (13.2%) in its sponge fauna, as well as the fact that the broad deep-sea protrusion of the Arctic abyssal into the central part of the Laptev Sea resulted in a greater number of abyssal species being found here. Boreal forms occur in the northwestern Laptev Sea, in the Shokal'skii and Vil'kitskii straits, as well as north of the Novo-Sibirskie is- p.37
lands.

The latter circumstance evidences that the waters of the warm Atlantic current penetrate into this area. The entire multiformity of the fauna concentrates in the northern half of this sea, particularly in its northwestern sections (certain samples taken in Shokal'skii strait contain up to 20 species of various sponges). The southern half of the sea is poor, considerably poorer than that of the Kara Sea, and contains an assortment of species characteristic for shallow desalinified sections of the Arctic (see distribution of sponges in the Kara Sea, p.35).

East Siberian Sea. The fauna includes 9 species of corneosiliceous sponges, six of which are Arctic-boreal (*Mycale papillosa*, *Phakettia cribrosa*, *Asbestopluma lycopodium*, *Hymeniacidon assimilis*, *Halichondria panicea*, *Spongionella carteri*), two are Arctic (*Mycale thaumatochela*, *Oxymycale intermedia*) and one (*Mycale helios*) is boreal.

The scant fauna of corneosiliceous sponges recorded for the East Siberian Sea is probably due to the total lack of information on the spongiofauna from the northern part of this sea, as well as to its severe hydrology and the presence of shallow desalinified waters in the southern part of the sea. Arctic species are here lower Arctic fairly eurybiontic forms. The remaining sponges found here most frequently are, however, representatives of the wide-spread Arctic-boreal species.

Chukchi Sea*. Eight species of sponges have been recorded. Six of them are Arctic-boreal (*Phakettia cribrosa*, *Halichondria panicea*, *H. sitiens*, *Hymeniacidon assimilis*, *Mycale papillosa*, *M. lobata*) and two are boreal species (*Plocamia fragilis* and *Mycale loveni*) which migrated here from the northern Pacific Ocean. The effect of the Bering Sea is stronger here than in the East Siberian Sea, but is still relatively weak.

*Without the Bering strait.

Bering Sea. The fauna of corneosiliceous sponges consists of 44 forms belonging to 40 species.

1. Arctic species -1:
1. Арктические виды — 1:

Mycale thaumatochela

2. Arctic-boreal species -9:
2. Арктическо-бореальные виды — 9:

Mycale lobata
Mycale papillosa (M. p. papillosa)
Myxilla incrustans (M. i. incrustans, M. i. var. *perspinosa, M. i. behringensis, M. i. gigantea)*
Phakettia cribrosa
Halichondria panicea
Halichondria sitiens
Hymeniacidon assimilis
Haliclona aqueductus
Spongionella carteri

3. Boreal species - 28:
3. Бореальные виды — 28:

a) Wide-spread north Pacific species- 11:
североотихоокеанские широко распространенные — 11:

Mycale loveni
Mycale adhaerens (M. a. adhaerens, M. a. arctica)
Mycale toporoki
Mycale helios
Esperiopsis digitata
Myxilla parasitica
Stelodoryx alascensis
Lissodendoryx amaknakensis
Forcepia uschakowi
Inflatella globosa
Phorbas salebrosus

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b. Okhotsk and Bering Sea (northern boreal) -3:
б. охотско-беринговоморские (североборсальные) — 3:

Myxichela ochotensis
Herceus orientalis
Iotrochota magna

c) Aleutian -Kommandorskii-Kuril (moderately boreal)- 9:
в) алеутско-командорско-курильские (умереннобореальные) — 9:

Asbestopluma gracilis
Monanchora pulchra
Pseudomyxilla vitiazi
Lissodendoryx behringi
Lissodendoryx firma
Microciona primitiva
Axinella blanca
Axinella hispida
Halichondria disparilis

d) Amphiboreal -5:
г) амфибореальные — 5:

Forcepia fabricans
Homaxinella subdola
Haliclona ventilabrum
Gellius angulatus
Gellius primitivus

4. Abyssal species -2:
4. Абиссальные виды — 2:

Cladorhiza rectangularis
Melonchela clathriata

The sponge fauna of the Bering Sea includes 70% boreal species, 22,5% Arctic-boreal species, 2.5% Arctic and 5% abyssal species. From the viewpoint of fauna composition this sea falls naturally into a northern and a southern zone, the latter being adjacent to the Aleutian and Kommandorskii islands. While the colder northern part of the sea is characterized by northern boreal species of sponges, the main bulk of the fauna in the southern zone of the Bering Sea consists of moderately boreal species. The region of the Aleutian and Kommandorskii islands is the route via which the exchange of moderately boreal species betwean the Pacific littoral of North America on the one hand, and Kuril islands(and Okhotsk Sea) region on the other hand, takes place. Only one true Arctic species (Mycale thaumatochela) penetrating from the Chukchi into the Bering Sea, is found here and evan this species occurs very rarely. Boreal species penetrating into the Arctic from the Bering Sea (Mycale loveni) are equally few. This probably shows that the exchange of faunae between the Arctic and Pacific Ocean is very weak at the present time. The relative uniformity of the specific composition of sponges in the Chukchi Sea appears to further corroborate this assumption.

Okhotsk Sea. The Okhotsk Sea together with the Kuril islands approaches the Barents Sea in the number of species known at the present time: 88 forms belonging to 83 species have been recorded here.

1.Arctic species -1:
1. Арктичéские виды — 1:

Mycale thaumatochela

2.Arctic-boreal species - 14:
2. Арктическо-бореальные виды — 14:

Mycale papillosa (M. p. dulkeiti)
M. lobata
Asbestopluma lycopodium
Iophon piceus (I. p. orientalis, I. p. pacificus, I. p. abipocillus)
Phakettia cribrosa
Hymeniacidon assimilis
Homoeodictya palmata
Biemna variantia (B. v. papillifera)
Myxilla incrustans (M. i. incrustans, M. i. var. *perspinosa, M. i. behringensis)*
Halichondria panicea
H. sitiens
Gellius porosus
Haliclona cinerea
H. gracilis

3.Boreal species -63:
3. Бореальные виды — 63:

а) северотихоокеанские широко распространенные — 11: **a)Wide-spread Pacific species -11:**

Mycale loveni
M. adhaerens (M. a. adhaerens, M. a. fibrosa)
M. toporoki
Stelodoryx alascensis
Lissodendoryx amaknakensis
Forcepia uschakowi
Esperiopsis digitata
Inflatella globosa
Myxilla parasitica
Phorbas salebrosus
Plocamia fragilis

б) охотско-беринговоморские (североборейльные) — 6: **b)Okhotsk-Bering Sea (northern boreal)-6:**

Mycale ochotensis
Myxichela fragilis
M. ochotensis
Iophon dogieli
Herceus orientalis
Ectyodoryx balanoides

в) алеутско-командорско-курильские (умереннобореальные) — 7: **c)Aleutian-Kommandorskii-Kuril(moderately boreal) species -7:**

Asbestopluma gracilis
Homoeodictya pulviliformis
Monanchora pulchra
Pseudomyxilla vitiazi
Lissodendoryx florida
L. oxeota
L. behringi

г) япономорско-южнокурильские (южнобореальные) — 21: **d)Sea of Japan-southern Kuril(southern boreal) species -21:**

Mycale cucumis
M. lindbergi
M. tylota
M. longistyla
Esperiopsis stipula
Artemisina stipitata
Myxilla elastica
Stelodoryx toporoki
Melonanchora kobjakovae
Myxichela spirinae
M. zenkevitchi
Lissodendoryx ivanovi
L. papillosa
Forcepia bilabifera
Tedania microrhaphidiophora
T. flexistrongyla
Cornulum tubiformis
Microciona lambei
Phorbas paucistyliferus
Gellius digitatus
Aplysinopsis lobosa

д) амфипацифические — 5: **e)Amphi-Pacific species-5:**

Mycale hispida
Tylodesma pennata
Tedania fragilis
Clathria laevigata
Gellius borealis

е) амфибореальные — 12: **f)Amphiboreal species -12:**

Tylodesma rosea
Homoeodictya flabelliformis
Cornulum textile
Crellomima imparidens
Homaxinella subdola
Haliclona ventilabrum
Haliclona tenuiderma
H. rossica
Gellius primitivus
G. varius
Aplysinopsis schmidti
Spongionella pulchella

ж) биполярные — 1: **g)Bipolar species -1:**

Guitarra fimbriata

4.Subtropic-boreal Pacific species -1:
4. Субтропическо-бореальные тихоокеанские виды—1:

Tedania dirhaphis

5.Abyssal species -4:
5. Абиссальные виды — 4:

Asbestopluma ramosa
Cladorhiza bathycrinoides
Chondrocladia gigantea
Cryptospongia enigmatica

The abundance of the fauna of corneosiliceous sponges in the Okhotsk Sea is due to its moderately boreal position and to the extensive communication with the Pacific Ocean via the straits between the Kuril islands. It is characteristic that the sponge fauna of the Kuril islands region exceeds in the number of species the fauna of the Bering Sea and is in no way inferior to that of the Okhotsk Sea proper (i.e. without the Kuril islands). For example, while 66 species have been recorded in the Okhotsk Sea proper, 66 have been found in the Kuril islands region. And when examined together with the Kuril islands region, the Okhotsk Sea contains, as was mentioned above, 85 species, 76% of which are boreal, 16.9% are Arctic-boreal, 1.1% are subtropic-boreal, 1.2% are Arctic and 4.8% are abyssal. The fauna is fairly heterogenous in composition, but is undoubtedly boreal. With regard to the distribution of corneosiliceous sponges, the Okhotsk Sea may be divided into two parts: the northern part characterized in the main by a northern boreal fauna, and the southern part where moderately boreal and southern boreal species predominate. Regions of the Shantar Islands, Ueda and Okhotsk-Ayan littoral in the northern zone are fairly remarkable, since rare forms, which can apparently be classified with the glacial Okhotsk Sea species occur here (according to Andriyashev). Such are *Mycale papillosa*, *M. ochotensis*, *Iophon dogieli*, *Herceus orientalis* and *Ectyodoryx balanoides*; furthermore, *M. papillosa* penetrates into the Arctic, i.e. into the Chukchi and East Siberian seas, while three other species are endemic for the Sea of Okhotsk (*Iophon dogieli*, *Ectyodoryx balanoides*, *Mycale ochotensis*).

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The southern Okhotsk Sea with the region of Kuril islands contains the richest (with respect to the species diversity) fauna of corneosiliceous sponges in the area examined. Moderately boreal, south boreal and abyssal forms are here concentrated for the most part. Many south boreal species are found only in the region of the southern Kuril islands. It is possible that some of them are in reality subtropic-boreal species which live farther south, near the eastern shores of Japan, but migrate here with the warm current.

The deep straits between the Kuril islands allow abyssal Pacific forms to penetrate into the central Okhotsk Sea. Moreover, many of these forms are able to rise into the bathyal areas up to their uppermost sections. Such are *Chondrocladia gigantea*, *Cladorhiza bathycrinoides*, *Asbestopluma ramosa*, *Cryptospongia enigmatica*, abundantly represented in the bathyal zone of the central Okhotsk Sea. *Chondrocladia gigantea* is also found at great depths in the Arctic and in the northern Atlantic, while *Cryptospongia enigmatica* occurs in the Indian Ocean.

Sea of Japan. The fauna of corneosiliceous sponges from the Sea of Japan (northern part) includes 58 forms belonging to 53 species.

1. Arctic-boreal species - 13:

1. Арктическо-бореальные виды — 13:

Mycale lobata
Biemna variantia (B. v. papillifera)
Myxilla incrustans (M. i. incrustans, M. i.v. perspinosa, M. i. behringensis, M. i. gigantea)
Iophon piceus (I. p. pacificus)
Phakettia cribrosa
Halichondria panicea
Halichondria sitiens
Hymeniacidon assimilis
Haliclona cinerea
H. aqueductus
Gellius porosus
G. jugosus
Dysidea fragilis

2. Boreal species - 37:

2. Бореальные виды — 37:

a) Wide-spread northern Pacific species - 8:

а) северотихоокеанские широко распространенные — 8:

Mycale adhaerens (M. a. adhaerens, M. a. fibrosa)
M. toporoki
M. helios
Esperiopsis digitata (E. d. digitata, E. d. infundibula)
Forcepia uschakowi
Lissodendoryx amaknakensis
Inflatella globosa
Phorbas salebrosus

b)Sea of Japan-southern Kuril(southern boreal)- 14:
б) япономорско-южнокурильские (южнобореальные) — 14:

Mycale lindbergi
Esperiopsis stipula
Homoeodictya ciocalyptoides
Pseudomyxilla lissostyla
Myxichela spirinae
Lissodendoryx ivanovi
Forcepia bilabifera
Tedania gurjanovae
Tedania microrhaphidiophora
Cornulum tubiformis
Phorbas paucistyliferus
Clathriella primitiva
Microciona lambei
Aplysinopsis lobosa

c)Amphiboreal- 14:
в) амфибореальные — 14:

Mycale retifera
Coelosphaera physa
Stelodoryx pluridentata
Hymedesmia procumbens
H. bractea
Homaxinella subdola
Axinella rugosa
Haliclona tenuiderma
H. ventilabrum
H. rossica
Gellius flagellifer
G. angulatus
G. primitivus
Aplysinopsis schmidti

d)Amphipacific -1:
г) амфипацифические — 1:

Tylodesma pennata

3.Subtropic-boreal Pacific species -3:
3. Субтропическо-бореальные тихоокеанские виды — 3:

Mycale japonica
Forcepia japonica
Tedania digitata

The sponge fauna of the Sea of Japan has, similarly to that of the other far eastern seas, distinctly defined boreal features. As may be seen from the lists presented above, this fauna consists of three main groups: boreal species - 69.8%, Arctic-boreal -24.5%, subtropic-boreal -5.7%. p.4

Boreal species are divided into 4 categories, among which the southern boreal forms offer the greatest interest. Their distribution shows that there is an exchange of fauna between the southern Kuril shelf and the Sea of Japan by way of the La Perusa strait. Mycale lindbergi, Esperiopsis stipula, Myxichela spirinae, Lissodendoryx ivanovi, Forcepia bilabifera, Tedania microrhaphidiophora, Cornulum tubiformis, Microciona lambei, Aplysinopsis lobosa are found in both the Sea of Japan and the region of the southern Kuril islands. These species are also common for the eastern part of the Tartar strait. Faunal exchange between the Sea of Japan and the Okhotsk Sea is fairly intensive, as may be seen from the large number (21) of Arctic - boreal and North Pacific-boreal widely spread species which were found in the northern Sea of Japan.

If we summarize the data on the specific composition of the fauna of corneosiliceous sponges in our northern and far eastern seas, we shall obtain the following comparative table showing the number of species in each of the sea basins and in different regions:

1 Арктическая область (советский сектор) — 116 видов							2 Северотихоокеанская область — 105 видов		
Белое море 3	Баренцево море 4	Карское море 5	море Лаптевых 6	Восточно-Сибирское море 7	Чукотское море (без Берингова пролива) 8	центральная часть сев. Ледовитого океана 9	Берингово море 10	Охотское море с Курильскими островами 11	Японское море (сев. часть) 12
31	91	46	38	9	8	34	40	83	53

1-Arctic region(Soviet sector) -116 species; 2- northern Pacific-105 species; 3-White Sea; 4-Barents Sea; 5-Kara Sea; 6-Laptev Sea; 7-East Siberian Sea; 8-Chukchi Sea(without the Bering strait);9-central Arctic Ocean; 10-Bering Sea; 11-Okhotsk Sea(with the Kuril islands); 12-northern Sea of Japan.

Thus, 116 species of corneosiliceous sponges have been recorded for the Arctic region, 105 for the northern Pacific. We must not conclude, however, that the Arctic spongiofauna is richer than such fauna in the northern Pacific Ocean. It must be taken into account that while the qualitative composition of the sponge fauna in the northern seas has been studied more or less exhaustively and that the new material gathered now yields very few new species, the study of corneosiliceous sponges of the far eastern seas is only beginning and mass description of the species new to science is far from completed.

It is interesting to analyze the corneosiliceous sponges from the Arctic and northern Pacific Oceans from the viewpoint of their relationship and degree of independence, and to evaluate the fauna in each of these regions in general.

If we examine the Soviet Arctic together with the southwestern part of the Barents Sea, Arctic species in the fauna of corneosiliceous sponges of this region amount to 25%, Arctic-boreal to 23.3% and boreal species to 51.7%. Even if we disregard some 20 species of sponges found only near the Murmansk coast (most of which probably occur near Spitzbergen and Franz Josef Land as well), the situation changes but little: Arctic species -30.2%, Arctic-boreal species - 28.2%, boreal species - 41.6%. It may thus be concluded that boreal forms distinctly predominate over the Arctic forms in the Arctic fauna of corneosiliceous sponges.

There are here approximately 20 species endemic to the Arctic, i.e. 17.2% of the total fauna. The 21 Greenland-Scandinavian species of the boreal type which also commonly do not migrate into the north Atlantic beyond the boundaries of the Arctic Ocean, are not included in the endemic species.

Of all the species of corneosiliceous sponges found in the Arctic, 58 are also common for the Atlantic and 42 are found in the Pacific as well. If we add that there are 21 boreal northern Atlantic species, which penetrate far into the Arctic region, that there are 11 species of corneosiliceous sponges which, as was mentioned above, are found only in the northern Pacific Ocean and in the Greenland-Scandinavian sector of the Arctic, and that only single representatives of boreal northern Pacific species have been found in the Chukchi and East Siberian Seas, at least three more fundamental conclusions may be drawn with regard to the Arctic sponge fauna. First of all, the Arctic fauna of corneosiliceous sponges is at the present time very strongly influenced by the northern Atlantic, and an extensive exchange of forms occurs between these two regions. Secondly, at the time when a considerable warming up was observed in the Arctic, and northern Pacific waters had a wider access to the Arctic, an equally intensive penetration of Pacific forms into the Arctic region took place. These forms have either been preserved in the form of relics (in the White Sea), or continue even now to thrive in the warmer areas of the Greenland-Scandinavian sector of the Arctic. And thirdly, the faunal exchange between the Arctic and Pacific Oceans is now either absent, or very negligible.

From the zoo-geographic viewpoint the fauna of corneosiliceous sponges in the northern Pacific is as follows: 1) Arctic species - 1(1.4%); 2) Arctic-boreal species - 17 (16.2%); 3) boreal* species - 82 (77.6%); 4) subtropic-boreal species - 5 (4.8%).

The predominance of the boreal forms and the negligible penetration of Arctic species (1 species) into the northern Pacific Ocean are obvious. Southern elements are present in somewhat greater numbers, but on the whole are also few. p.43

Of the 105 species recorded in this work, 58 live in the northern Pacific Ocean only, i.e. endemic species** constitute approximately 55% of the fauna of corneosiliceous sponges in the northern Pacific boreal region. It is quite possible, of course, that some of the so-called endemics will eventually prove to be widely distributed species. Nevertheless, the above figure is fairly convincing evidence of the great originality and independence of the fauna of corneosiliceous sponges in the northern Pacific Ocean (considerably greater than of the Arctic fauna).

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*Including the abyssal Pacific forms.

Since the spongiofauna of the North American littoral has been very little studied, it can be merely stated as a preliminary observation that there appear to be no significant differences in the specific composition of sponges from the Asian and American sectors of the northern Pacific. Nearly all the species recorded by researchers near the North American shores, as far as the Vancouver Island, have been encountered in our far eastern seas. The fauna of corneosiliceous sponges becomes markedly isolated only in the region of northern California and farther south (Laubenfels, 1928).

Amphipacific species concentrate for the most part near the southern Kuril islands and in the region of the Vancouver Island. These species may thus be classified as southern boreal Pacific forms. More moderately boreal species are able to penetrate along the Kuril, Kommandorskii and Aleutian islands into the American sector of the Pacific. At the present time this exchange of faunae is, however, far from extensive. The data available point to the fact that the far eastern fauna of corneosiliceous sponges is richer than that of the North American littoral. This may be due to the greater variety of environmental conditions in our seas.

Zoo-geographic analysis of the fauna of corneosiliceous sponges of the northern and far eastern seas allows us to raise anew the problem of the existence of a transitional sub-Arctic zone between the northern Atlantic -

**(on p.59a) Since a great number of genera and families have been insufficiently studied so far, we cannot argue at this time whether they are or are not endemic.

boreal and Arctic regions. So far this problem is debatable, although most contemporary hydrobiologists appear to be disinclined to isolate the sub-Arctic sub-region*.

As was shown above, the category of Greenland-Scandinavian forms represents in its essence sub-Arctic species which have their main areal in this transitional zone, affected to a very great extent by the warm Atlantic waters on the one side, by the cold Arctic waters on the other side. These species cannot be regarded as true Atlantic species, since they do not, as a rule, migrate beyond the boundaries of the Arctic basin; nor can they be regarded as Arctic forms, since they differ markedly from these latter in their reactions to temperature, distribution etc.

The list of the species classified with the Greenland-Scandinavian category may be greatly expanded if we use Burton's data (1930a) on sponges of the Norwegian Sea, where 23 more species and 2 more genera of corneosiliceous forms that are found only in the Greenland-Scandinavian sector of the Arctic and are known at present both in the northern Atlantic and in p.44
typically Arctic waters have been recorded.

The material at our disposal allows us, however, only to raise this question. A thorough re-examination of the composition of the corneosiliceous sponge fauna in the northern Atlantic and in the regions transitional to the Arctic must first be carried out. Until such a revision of this fauna, based on the accurate evaluation of the taxonomic importance of

* As is known, this problem was raised for the first time by K.M.Deryugin (1915), who decided it in the affirmative.

various features is done, it would be premature to make a final decision with regard to this problem.

Survey of the distribution and character of the spongiofauna in the Arctic and northern Pacific oceans shows that corneosiliceous sponges are found mainly on the continental shelf and, partly, on the continental slope; and that these sponges belong by their nature to boreal and subtropic-boreal species. Corneosiliceous sponges develop best with regard to both diversity of species and number of specimens, precisely in boreal (and subtropic-boreal waters.).

Method of processing and identification of sponges.

As is known, identification of sponges is done on the basis of the structure of their skeleton and of the spicules composing the skeleton. The external appearance of a sponge cannot be used alone, as a rule, as a taxonomic feature, without assessment of its skeleton. It is therefore necessary to study the skeleton of each individual specimen by making preparations of spicules and by sectioning pieces of the sponge.

The methods used in making stable preparations of spicules are fairly simple, although they do require a certain amount of practice, particularly when large quantities of material are being processed and when a large number of preparations must be made quickly. In order to extract the siliceous skeleton, a small piece of a sponge is placed in a porcelain crucible and is treated with hydrochloric acid or javex water. In order to speed up the decomposition of the organic matter and the shedding of spicules, the crucible and its contents are heated. Should for some reason the sponge fragment decompose unsatisfactorily or slowly, it is recommended that it be crushed with a glass rod. Naturally, since working with acids, it is recommended to use a fume hood. After the sponge fragment breaks up into fine particles, the spicules lying at the bottom of the crucible are decanted off; moreover, it usually suffices to repeat the decantation 4-5 times*. After that the spicules are transferred with a pippete onto a slide and dried slightly. This latter operation can be performed very conveniently on a hot plate ensuring even heating of the slide. The spicules thus dried are imbedded in balsam, whereupon the preparation is ready for examination.

The arrangement of the spicules in the skeleton is studied from sections with the help of a microtome. The methods of staining and paraffin embedding are those commonly used and are not particularly complicated. With a certain amount of practice, the sections can even be made by hand, with the help of a very sharp rasor blade; naturally, in this event embedding in paraffin is superfluous and the time required for making preparations becomes greatly reduced. The desirable thickness of the sections is 100-300 microns.

The skeleton of horny sponges is also studied either from sections or from the preparations made of the fibers alone. In this event the remaining organic matter is removed by maceration (after soaking the sponge in water for several days) or under the effect of a diluted acid. p.45

Temporary preparations may be used in preliminary identification of sponges. For this purpose a small piece of the sponge is pinched off, placed on a slide in a drop of liquid (alcohol, formalin, water) and loosened in such a way that as many isolated spicules as possible would form on the slide. As a rule, this can be easily done by crushing the sponge fragment with the tips of forceps.

* It is also possible to use a centrifuge for this purpose and thus prevent completely the loss of microscleres which may occur in working with a crucible.

When the preparations are made, we may proceed to the identification of the sponge by using the keys, descriptions of the various species and illustrations presented in the systematic part of this work.

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Systematic description.

Order Cornacuspongida - corneosiliceous sponges. p.50

These are colonial organisms, highly variable in body shape, with a weakly defined individuality and a very imperfect symmetry. In most instances the body is covered with a dermal membrane; the cortical layer forms less often.

The well developed irrigation system of the leuconoid type consists of flagellated chambers with incurrent and excurrent canals. Large subdermal cavities are often found under the dermal membrane.

The skeleton is reticulate, reticulate-fibrous, fibrous, ramified fibrous, plumose or diffused. Spongin, a horny substance with the help of which siliceous spicules are joined together in various patterns, commonly forms part of the skeleton. Monoaxial megascleres are characteristic for this order; microscleres, when present, are cheloid or sigmoid (or both). Spongin may be virtually absent, in which case the skeleton is formed of spicules alone; in other instances spongin is the main constituent of the skeleton and occurs in the form of fibers enclosing spicules. The latter may be reduced and, when spicules are lacking, the skeleton consists of spongin fibers only. Such fibers contain occasionally foreign mineral inclusions (sand, shells of protozoans, isolated spicules of other sponges etc).

KEY FOR IDENTIFICATION OF THE FAMILIES OF THE ORDER CORNACUSPONGIDA

1 (30). A mineral skeleton formed of siliceous spicules is present alongside the horny substance spongin.

2 (15). A special dermal skeleton is commonly present; the

main skeleton invariably includes spicules differing from those of the dermal skeleton. The assortment of megascleres is complex and includes at least two types of spicules.

3 (10). The skeleton is plumose or of some other kind; in the latter event supplementary or "spiking" spicules are present; in a number of incrusting forms the main skeleton is formed of monactinal spicules arranged vertically and oriented towards the surface with their pointed ends. Megascleres of the main skeleton are commonly represented by two types of spicules.

4 (7). Spicules of the main skeleton are monactinal.

5 (6). Incrusting sponge body; the main skeleton is formed of monactinal spicules arranged vertically. Cheloids, when present, are in the form of arcuate chelae or ancorae......

IX. Hymedesmiidae (p.162).

p.51

6 (5). The Body varies in shape; the main skeleton is of a different type. Cheloids of incrusting forms are in the form of palmate chelae.......

XII. Microcionidae (p.180).

7 (4). Spicules of the main skeleton are both diactinal and monactinal.

8 (9). Smooth diactinal spicules of the main skeleton......

XI. Phormasidae (p.178).

9 (8). Acanthaceous diactinal spicules of the main skeleton. ......

X. Plocamiidae (p.175).

10 (3). Reticulate, unfused, reticulate-fibrous, ramified fibrous, fibrous or some other kind of skeleton (except plumose). No supplementary or spiking spicules. Incrusting forms (if present) have a skeleton that is not formed of vertically arranged monactinal spicules. Megascleres of the main skeleton are commonly of one type.

11 (14). Smooth diactinal or monactinal dermal spicules. Megascleres of the main skeleton are represented by smooth or spiny monactinal spicules (occasionally diactinal spicules, which are derivatives of the monactinal spicules of the main skeleton, are found among them).

12 (13). Microscleres are represented by sigmoids only (rhaphidii)..... VII. Tedaniidae (p.154).

13 (12). Microscleres commonly include cheloids or their derivatives......

VI. Myxillidae (p.106).

14 (11). Dermal spicules are in the form of acanthaceous monactinal or diactinal spicules (acanthostyli, acanthostrongyli or acanthoxi). Megascleres of the main skeleton are represented by diactinal spicules.....

VIII. Crellidae (p.160)

15 (2). No special dermal skeleton; in the rare instances where dermal spicules are present, they invariably represent derivatives of the spicules of the main skeleton. The simple assortment of megascleres is composed of one, less often two types of spicules (which are usually smooth).

16 (17). The sponge has a cortical layer or a thickened dermal membrane, or else the dermal membrane is coriaceous, strong and easily detachable from the remaining body of the sponge. Megascleres are, as a rule, in the form of diactinal spicules or strongyli, tyloti or tornoti (microscleres are commonly present)... ... V. Coelosphaeridae (p.100).

17 (16). A different type of sponge. If a thickened dermal membrane is present, the main skeleton is formed of monactinal spicules or amphioxi.

18 (23). Microscleres are invariably present; cheloids have been observed among them.

19 (20). The Body is symmetrical, clavate, plumose or stalk-shaped, occasionally dendritic in shape. Cheloids are in the form of apically asymmetrical chelae or ancorae. In exceptional instances cheloids may be represented by apically symmetrical ancorae..... II. Cladorhizidae (p.72).

20 (19). A different type of body, commonly irregularly shaped. Cheloids are in the form of chelae.

21 (22). Apically asymmetrical palmate chelae are invariably present......

I. Mycalidae (p.52).

22 (21). No apically asymmetrical chelae; microscleres include apically symmetrical chelae.....

III. Esperiopsidae (p.84).

23 (18). Microscleres may be lacking; when present, they are represented exclusively by sigmoids. No cheloids have been observed.

24 (25). The skeleton is commonly formed of diactinal and monactinal spicules; moreover, the former concentrate inside the fibers; the skeleton may also consist of monactinal spicules alone, in which event the sponge body is funnel-shaped or stalk-shaped. A plumose, reticulate-fibrous or ramified fibrous main skeleton. Microscleres are commonly absent; in exceptional cases rhaphidii have been observed...... p. 52

XIII. Axinellidae (p.194).

25 (24). The skeleton consists either of diactinal, or of monactinal spicules. In the latter event the body is lumpy, spherical, cushion-shaped or incrusting; in rare instances it is funnel-shaped, but it invariably contains the microscleres in the form of sigmas.

26 (27). The skeleton is formed of monactinal spicules only. Sigmoids or their derivatives are invariably present. In rare instances the skeleton consists of diactinal spicules, in which case sigmoids include diancisters......

IV. Biemnidae (p.94).

27 (26). The main skeleton is formed of diactinal and monactinal spicules. In the former event sigmoids are occasionally present (toxi, sigmas, but no diancisters). If the skeleton consists of monactinal spicules, microscleres are invariably absent.

28 (29). The skeleton is commonly in the form of a fairly regular meshwork formed of short diactinal spicules (oxi, strongyli). Large quantities of spongin are present. Dermal membrane is commonly weakly developed. Microscleres (when present) are in the form of sigmas of toxi......

XV. Haliclonidae (p.209).

29 (28). The skeleton is in the form of an irregular or unfused meshwork formed of diactinal (oxi) or monactinal (styli) spicules. Spongin is present in small quantities or is completely unnoticeable. Commonly there is a well developed dermal membrane. Microscleres are invariably lacking.......

XIV. Halichondriidae (p.204).

30 (1). No mineral skeleton proper; only the horny substance spongin is present. The skeleton often contains foreign inclusions (sand, protozoan shells, spicules of other sponges etc.).

31 (32). The skeleton is in the form of a meshwork formed in the main of sand and of a small amount of spongin. The flagellated chambers are sacculate......

XVI. Dysideidae (p.221).

32 (31). The skeleton is in the form of a meshwork formed of spongin fibers. The fibers contain occasionally foreign inclusions. Spherical or pear-shaped flagellated chambers.......

XVII. Spongidae (p.222).

I. Family Mycalidae.

Irregularly shaped, incrusting, discoidal, lumpy,* spherical etc. body. A reticulate, reticulate-fibrous or ramified fibrous skeleton. Megascleres are commonly represented by smooth monactinal (in rare instances diactinal) spicules. No special dermal spicules; if the latter are present, they consist of monactinal spicules of the main skeleton altered to strongyli or tyloti. Microscleres invariably include apically asymmetrical palmate chelae.

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*lumpy = lump-shaped (Translator).

KEY FOR THE IDENTIFICATION OF THE GENERA OF THE FAMILY MYCALIDAE.

1 (4). The main skeleton is formed of monactinal spicules.

2 (3). Microscleres include exotyloti perforating the dermal membrane...... 2. Rhaphidotheca Kent.

3 (2). Exotyloti are lacking among the microscleres..... p.53 1. Mycale Gray.

4 (1). The main skeleton is formed of diactinal spicules.... 3. Oxymycale Hentschel.

Genus Mycale Gray, 1867.

Gray, 1867: 533; ibid. 533 (Corybas); Lundbeck, 1905:23.

Genotype: Hymeniacidon lingua Bowerbank, 1866.

Incrusting, lump-shaped, somewhat elongated or discoidal, occasionally more or less foliate or funnel-shaped body. Reticulate-fibrous or ramified fibrous skeleton. In elongated forms the skeleton is well developed and is commonly ramified fibrous; the fibers are fairly thick and are distinctly observable by naked eye. The skeleton of lump-shaped forms may be reticulate or reticulate-fibrous; in incrusting forms it is commonly represented by slightly ramified fibers arising from the basic portion of the sponge to its surace. Megascleres are styli or substyli (or may be their derivatives - diactinal spicules in the form of strongyli or tyloti, which form part of the dermal skeleton). Microscleres are apically asymmetrical palmate chelae of one or more types; most of them are gathered into rosettes; sigmas, rhaphidii (trichodragmae), microoxi, toxi, occasionally small apically symmetrical palmate chelae may be found here alongside apically asymmetrical chelae.

1 (4). Microscleres include toxi.

2 (3). Microscleres include rhaphidii. Dermal skeleton consists of closely spaced spicules......

16. M. japonica Koltun, sp.n.

3 (2). No rhaphidii among microscleres. Reticulate dermal skeleton......

8. M. retifera Topsent.

4 (1). No toxi among microscleres.

5 (26). Microscleres include sigmas.

6 (19). Microscleres include rhaphidii.

7 (12). A thin dermal membrane; dermal skeleton is reticulate, unfused or is lacking.

8 (9). Reticulate dermal skeleton........

10. M. adhaerens (Lambe).

a (d). Rhaphidii measure considerably less than 0.200 mm in length.

b (c). Fibers of the main skeleton measure on an average 0.100 mm in thickness.

Rhaphidii (in the form of trichodragmae) are 0.028 - 0.037 mm in length......

10a. M. adhaerens adhaerens (Lambe).

c (b). Fibers attain in places a thickness of 1 mm. Rhaphidii are 0.035-0.070 mm in length.....

10b. M. adhaerens fibrosa Koltun.

d (a). Rhaphidii measure more than 0.200 mm in length....

10c. M. adhaerens arctica (Fristedt.).

9 (8). Dermal skeleton is not reticulate; it is unfused or lacking.

10 (11). Unfused dermal skeleton; markedly curved chelae.....

11. M. toporoki Koltun.

11 (10). No dermal skeleton; more or less straight chelae.....

9. _M._ _lingua_ (Bowerbank).

a (b). Spicules penetrating the dermal membrane are identical in size to the spicules of the main skeleton. Styli are 0.8 mm and more in length.......

9a. _M._ _lingua lingua_ (Bowerbank). p.54

b (a). Spicules penetrating the dermal membrane are shorter than those of the main skeleton. Styli are generally not longer than 0.715 mm........

9b. _M._ _lingua placoides_ (Carter).

12 (7). A thick (up to 0.5 mm in thickness) dermal membrane; dermal skeleton consists of closely spaced spicules.

13 (14). The smooth body surface is dissected by deep furrows and is thus subdivided into irregularly shaped sections.....

14. _M._ _lindbergi_ Koltun.

14 (13). The body exterior is not smooth and bears spicules varying in length.

15 (18). The skeleton of the dermal membrane includes diactinal spicules (strongyli, tyloti, tylostrongyli), which are derivatives of the monactinal spicules of the main skeleton.

16 (17). Spicules penetrating the dermal membrane are up to 3.5 mm in length......

15. _M._ _longistyla_ Koltun.

17 (16). Spicules penetrating the dermal membrane are generally 1 mm or less in length.......

12. _M._ _tylota_ Koltun.

18 (15). The skeleton of the dermal membrane consists exclusively of monactinal spicules and includes no diactinal spicules. The smallest chelae have a markedly reduced lower end......

13. _M._ _cucumis_ Koltun.

19 (6). No rhaphidii among the microscleres.

20 (23). Large oscula measuring up to 4 mm in diameter.

21 (22). A small lump-shaped rather fragile sponge (up to 5 cm in height).

The oscula are located at the top of fairly long papillae......

2. M. papillosa Koltun, sp.n.

a (b). Slightly curved styli measuring 0.250 mm or less in length......

2a. M. papillosa papillosa Koltun, sp.n.

b (a). Markedly curved styli measuring up to 0.364 mm in length......

2b. M. papillosa dulkeiti Koltun, sp.n.

22 (21). A large (up to 18 cm in length) discoidal fairly strong sponge. The oscula open directly on the body surface or are at the summits of small cones.....

3. M. ochotensis Koltun, sp.n.

23 (20). Small oscula commonly measuring less than 1 mm or completely invisible to a naked eye.

24 (25). Common sigmas......

6. M. helios (Fristedt).

25 (24). Sigmas have an unusual appearance and are probably strongly reduced chelae......

5. M. hispida (Lambe).

26 (5). No sigmas are present among the microscleres.

27 (28). A funnel-shaped stemmed sponge. A ramified fibrous main skeleton.....

7. M. loveni (Fristedt).

28 (27). A lump-shaped, spherical, cushion-shaped, incrusting of some other body shape (but never funnel-shaped and has no stem). Reticulate main skeleton.

29 (30). Chelae are of two types, large and small; small chelae differ in shape from the large ones......

4. M. thaumatochela Lundbeck.

30 (29). Large and small chelae differing from one another only in size......

1. M. lobata (Bowerbank).

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1. Mycale lobata (Bowerbank, 1866) (Fig.9; table II,1).

Bowerbank, 1866: 326 (Isodictya); Gray 1867: 537 (Corybas); Schmidt, 1870: 38, pl. V, fig. 1 (Chalinula ovulum); Schmidt, 1875: 118 (Esperia lanugo); Merezhkovskii, 1879: 24, pl. 1, figs. 13, 14, pl. 1, figs. 4, 5, 12-19, 23-29 (E. stolonifera); Lambe, 1894: 118, pl. III, figs. 1, 1a-d (E. modesta); Thiele, 1903: 381, Taf. XXI, Fig. 11 (lanugo); Lundbeck, 1905: 34, pl. I, figs. 6-8, pl. X, fig. 1a-4 (ovulum); Rezvoi, 1931: 509 (ovulum); Burton 1935: 69 (Corybas).

Body shape is spheroid, somewhat elongated or completely irregular; the body is 1.5-2 cm (occasionally up to 8 cm) in height. The dermal membrane is thin, is penetrated by tufts of spicules, as a result of which the surface is covered with minute needles. The colour is light or dark yellow.* Ostia (up to 0.15 mm in diameter) are scattered in large numbers over the surface. Regular spherical specimens have one osculum, irregularly shaped forms have many oscula measuring 1-1.5 mm in diameter.

Skeleton. The main skeleton is in the form of a fairly regular meshwork consisting of fine fibers having an average thickness of 0.35 mm, and of singular transverse sclerites interconnecting the fibers. Dermal membrane has no skeleton.

Megascleres: gently curved styli are 0.166-0.310 mm in length and 0.006-0.011 mm in thickness. Microscleres: apically asymmetrical palmate chelae are 0.020-0.045 mm in length.

*Wherever the colour is mentioned without any further comment it is taken from the alcohol-treated material.

Distribution: White and Barents Seas, Laptev Sea (north-western part and near the Novo-Sibirskie islands), Chukchi, Bering, Okhotsk Seas and Sea of Japan, near the Pacific shores of the southern Kuril islands, Greenland and Norwegian Seas, near Iceland and Faeroe islands; to the west of Greenland, near Newfoundland, Gulf of St. Lawrence, North Sea, western Baltic Sea. Depth: 0-235 m. Sea bottoms: rock, sand, gravel. Temperature: from 0.89 to 16.2°. Salt content: 25.99 - 34.87 0/00.

This shallow-water sponge is represented by 80 specimens in the ZIN AN SSR* collections. It is often found on hydroids, bryozoans and algae in the form of globular or lobate incrustations; it settles down considerably less often on other sea bottom items (mollusk shells, tubes of polychaetes etc.) and acquires then a cushion-shaped or lumpy shape. In reference to the aforegone, we wish to mention the formation of two ecological forms differing in consistency and, partly, in appearance. While one of them is elastic, but fragile and easily torn, the other form has a much higher content of sponging and represents a resilient elastic form with a fairly strong skeleton. These latter were found in large numbers in the collections obtained in the littoral of the Shikotan islands (southern Kuril islands).

2. Mycale papillosa Koltun, sp.n. (Fig. 10; table III, 4,5).

The holotype is preserved in the Zoological Insitute of the Academy of Sciences of the USSR, preparations NoNo 2796, 2820.

The Body is cushion-shaped or lumpy with tubular papillae extending upwards and measuring up to 2 cm in length. The oscula

*Zoological Institute of the Academy of Sciences of the USSR.

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are large, up to 2.5 mm in diameter, and are at the top of the papillae. This is a soft fragile sponge, up to 5 cm in height. The colour is light-yellow or grey.

Skeleton. The main skeleton is in the form of an irregular meshwork formed of thin fibers and individual spicules. The skeleton of the walls of the papillae consists of parallel fibers and individual disorderly scattered spicules. The distance between the fibers does not exceed the length of a spicule.

Megascleres: recurved styli are 0.160-0.364 mm in length and 0.003-0.011 mm in thickness.

Microscleres: apically asymmetrical palmate chelae are 0.035-0.053 mm in length; sigmas (occasionally distorted) are 0.019-0.029 mm in length.

Distribution. Chukchi, Bering and Okhotsk Seas. Depth: 8-50 m. Sea bottoms: pebble, sandy ooze. Temperature: -0.72° - ?. Salt content: 24.67 % - ?*

The species examined resembles closely Mycale ochotensis Koltun, sp.n. in both the architecture and composition of the skeleton. It differs from the latter form mainly in the size and shape of its body, in the presence of long tubular papillae, as well as in that M. papillosa has a soft body which tears easily, whereas M. ochotensis has a stiff fragile body. The new species resembles M. helios (Fristedt) in the assortment of the skeletal elements, but differs from it in that it has considerably smaller spicules, both megascleres and microscleres, as well as because its body surface

*It must be taken into account that the data available on the depth and, particularly, on the temperature and salt content are often incomplete, since they have been obtained from a few observations only (or even from one single observation).

bears long papillae.

The ZIN AN SSSR collections include 6 specimens of M. papillosa. Microscleres of this species, particularly chelae, may be reduced to the point of virtual disappearance in certain specimens.

The species examined has two subspecies.

2a. Mycale papillosa papillosa Koltun, ssp.n. (Fig.10, plate III, 4, 5).

Styli are gently curved, are 0.160-0.250 mm in length and 0.006-0.10 mm in thickness; chelae are 0.036-0.050 mm in length; sigmas are 0.020-0.030 mm in length. The colour is light yellow. The sponge lives in the Chukchi and Bering Seas.

2b. Mycale papillosa dulkeiti Koltun, ssp.n.

Styli are markedly curved, 0.160-0.364 mm in length and 0.003-0.011 mm in thickness; chelae are 0.038-0.042 mm in length; sigmas are 0.020-0.030 mm in length. The colour is grey. The sponge is found in the northern Okhotsk Sea.

Mycale papillosa papillosa and M. p. dulkeiti differ little in external appearance. It is possible to identify a sponge as one or the other subspecies only by examing the spicules. While the styli of the former subspecies are gently curved and fluctuate negligibly in size, those of the latter form are markedly curved and appear to form a series of gradual transitions from relatively thick (up to 0.011 mm) to thin (even less than 1 micron in thickness) and from long (0.360 mm in length) to short (up to 0.160 mm) styli.

3. Mycale ochotensis Koltun, sp.n. (Fig.11; Table IV,1)

The holotype is preserved in the Zoological Institute of the AN SSSR, preparations NoNo2620, 2682.

The Body is flattened out, slightly lobate; the length is up to 18 cm, the width is 10 cm. The surface is uneven. The sponge is stiff and fragile. The colour is yellow. Numerous oscula up to 4 mm in diameter open directly on the surface or at the summits of small cones.

Skelton. The main skeleton is in the form of an irregular meshwork, the dermal skeleton and the skeleton of the walls of the oscula-bearing cones are formed of a diffuse meshwork.

Megascleres; curved styli are 0.168-0.280 mm in length and 0.009-0.017 mm in thickness. Microscleres: asymmetrical palmate chelae are 0.048-0.050 mm in length; sigmas are 0.023-0.027 mm in length.

Distribution. Okhotsk Sea (near the Shantar islands). Two specimens were obtained from the depth of 50m.

The species described closely resembles Mycale papillosa in the architecture and composition of its skeleton.

4. Mycale thaumatochela Lundbeck, 1905 (Fig. 12).

Lundbeck, 1905: 39, pl. X, figs 2a-g; Svarchevskii, 1906: 364, plate 16, fig. 32 (varpachovskii) Rezvoi, 1924:245; Hentschel, 1929:931.

The body is incrusting, cushion-shaped or even lumpy, up to 2 cm in height. The surface is rough due to protruding tufts of spicules. The colour is light-grey, greyish-brown. A thin dermal membrane. Small oscula are up to 0.35 mm in diameter.

Skeleton. The main skeleton is represented by a relatively regular meshwork of thin fibers. The skeleton of the dermal membrane is lacking.

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Megascleres: styli are 0.350-0.480 mm in length and 0.007-0.012 mm in thickness. Microscleres: apically symmetrical palmate chelae; large chelae are 0.047-0.060 mm in length, small chelae (characteristic for this species) are 0.012-0.17 mm.

Distribution. White, Barents and Kara seas, East Siberian Sea, Bering Sea (Avachinskii Bay) and northern Okhotsk Sea. East and west of Greenland. Depth: 3-64 m; sea bottoms: pebbles, oozy sand, ooze.

Analyses of the available spicule preparations of the sponge obtained in the White Sea and described by Svarchevskii as *Mycale varpachovskii*, showed that it is in reality an aberrant form of *M. thaumatochela* with somewhat unusual (distorted and shorter) subtylostyli measuring 0.287-0.440 mm in length, large (up to 0.047 mm) and small (0.007-0.011 mm in length) chelae.

5. *Mycale hispida* (Lambe, 1893) (Fig.13).

Lambe, 1893:27, pl.II, figs. 4, 4a-c (*Esperella*).

The Body of the sponge is semispherical or spheroidal, not very elastic, fragile, with a coarse surface. The sponge is commonly small (up to 3 cm in diameter); it is often attached to hydroids, bryozoans and other similar items. The colour is light-yellow.

Skeleton. The main skeleton is reticulate and consists of thin fibers 2-3 and up to 6 spiculaes in diameter. The fibers are oriented radially towards the exterior of the sponge and are intersected at a right angle by individual spicules at fairly regular intervals in such a manner that the fibers are rarely farther than the length of a spicule apart from one another. The outer ends of the radial fibers protrude on the surface in the form of tufts composed of 5-10 spicules each.

Megascleres: styli are slightly curved, 0.170-0.412 mm in length and 0.008-0.014 mm in thickness. Microscleres: apically asymmetrical palmate chelae are 0.038-0.68 mm in length; sigmas (characteristic for this species) are 0.023-0.048 mm in length.

Distribution. Near the Pacific shore of the southern Kuril islands. Near the Vancouver Island (Pacific coast of North America). Found at a depth of 45-153 m on a sandy bottom.

Four specimens have been examined. One of them, having a semispherical body form differs somewhat from the specimen initially described (Lambe, 1893:27); its spicules are: styli 0.197-0.400 mm in length and 0.008-0.011 mm in thickness, chelae 0.038-0.044 mm in length; sigmas 0.023-0.025 mm in length. Sigmas of the species examined have a fairly characteristic shape and are probably markedly reduced chelae.

6. Mycale helios (Fristedt, 1887).

Fristedt, 1887: 450, pl. XXV, figs. 25-29 (Emperia); Lambe, 1894: 117, pl. II, fig. 4 (Esperella); Hentschel, 1929:931.

The Body is spheroid or somewhat compressed, fairly strong, up to 4 cm in height. The surface is even, but rough. The colour ranges from yellow to brown. p.59

Skeleton. The main skeleton is in the form of an irregular (nearly diffuse) meshwork of distinctly outlined primary fibers, transverse tufts of spicules and individual spicules. Dermal skeleton is formed of an unfused meshwork of spicules and short fibers. Spongin is present in small quantities.

Megascleres: cylindrical, often gently curved, brevi-pointed styli are 0.270-0.438 mm in length, 0.012-0.018 mm in thickness. Microscleres: apically asymmetrical palmate chelae are 0.048-0.048-0.080 mm in length; sigmas are 0.027-0.058 (and more) mm in length.

Distribution: East Siberian Sea, Bering strait, Bering Sea (Phantom Bay/Bukhta Privideniya), northern Okhotsk Sea, Sea of Japan (Olga Bay), Beaufort Sea. Lives at the depth of 22-62m.

ZIN AN SSSR collections include 6 specimens of this species. The best preserved specimen has a spheroid body measuring approximately 2.5 cm in diameter; the size of spicules: styli are 0.270-0.410 mm in length and 0.012-0.017 mm in thickness; chelae are 0.048-0.057 mm in length and sigmas are 0.0270-0.040 mm in length.

7. Mycale loveni (Fristedt, 1887) (Fig.14; plate XLII; plate XLIII, 1).

Fristedt, 1887; 458, plate 25, figs. 70-72, plate 30, fig.24 (Clathria); Lambe, 1894:123, pl.IV, figs. 1, 1a (Clathria); Hontschel, 1929:932; Burton, 1935:69.

The Body is up to 28 cm in height; when fully developed it has the shape of a broad funnel on a tough stem. Occasionally the funnel is lacking; the sponge body may then be elastic, auricular etc.

It is always furnished with a stem, with the help of which the sponge becomes firmly attached to various hard items at the bottom (rocks, pebbles etc). Since soft portions of the sponge are attached to the skeletal framework rather loosely and are readily affected by maceration, specimens of this sponge obtained by researchers often consist only of the skeleton with negligible amounts of soft tissues. The colour is greenish-yellow in vivo, light or dark grey in alcohol. A thin dermal membrane is present.

Skeleton. The main skeleton is ramified fibrous. The funnel walls are formed of closely interwoven very thick primary and transverse secondary fibers; on the whole the skeleton appears in the form of a solid reticulate funnel. In other instances, when no funnel is formed, the skeleton is represented by ascending primary fibers which are ramified in one plane, and are interconnected by numerous transverse bars consisting of short fibers. The reticulate dermal skeleton consists of fibers, tufts of spicules and individual spicules.

Megascleres: straight, less often gently curved brevimucronate styli (or substyli) are 0.350-0.509 mm in length and 0.013-0.016 mm in thickness. Microscleres: apically asymmetrical palmate chelae; large chelae are 0.072-0.111 mm in length, small chelae are 0.031-0.054 mm in length.

Distribution. Chukchi, Bering and Okhotsk Seas, near p.60
the Pacific shore of the Kuril islands. Lives at the depth of 87-400m on rocky, pebbly and sandy bottoms. Temperature: 1.8-6.5°.

This species is distinctly different from other species of the genus Mycale, and can be easily identified by the body shape and by its megascleres having a characteristic shape.

25 specimens have been examined.

8. Mycale retifera Topsent, 1924 (Fig.15).

Topsent, 1924:104, fig. 10; Burton, 1935:69.

The Body is incrusting or cushion-shaped, elastic. The surface is smooth. The colour is yellowish-brown. Dermal membrane is in the form of a thin pellicle.

Skeleton. The main skeleton consists of ramified fibers and tufts of spicules. Dermal skeleton consists of a fairly regular meshwork with four-sided meshes.

Megascleres: subtylostyli (to tylostyli) are 0.028-0.317 mm in length and 0.004-0.008 mm in thickness. Microscleres: apically asymmetrical palmate chelae; large chelae are 0.035-0.048 mm in length, small chelae are 0.010-0.017 mm in length; sigmas are 0.060-0.073 mm in length; toxi are 0.031-0.080 mm in length.

Distribution. Sea of Japan (Pos'eta bay, near Astaf'evo). Mediterranean. Depth: 1.6-3.5 m.

Two specimens, obtained in the Sea of Japan, have been examined.

9. Mycale lingua (Bowerbank, 1866) (Figs.16-17; plate III, 1-3).

Lundbeck, 1905: 29-34, pl. IX, figs. 6a-f; ibid: 24-29, pl. IX, figs. 5a-l (placoides).

The Body is elongated, partly linguiform or irregularly shaped and up to 23 cm in height; it is covered with a thin dermal membrane. An uneven rough exterior. The colour is light yellow or grey. The ostia are located at the bottom of curved or ramified pore canals. The oscula are 2-3 mm in diameter, are located in the upper portion of the body, at the summits of small cone-shaped elevations.

Megascleres: styli or substyli of the main skeleton (occasionally with expanded retort-shaped basal parts) are 0.45-1.15 mm in length and 0.010-0.020 mm in thickness. The styli penetrating the dermal membrane, may be the same size as the spicules of the main skeleton or are shorter and thinner, measuring 0.3-0.5 mm in length and 0.07-0.010 mm in thickness. Microscleres: apically asymmetrical palmate chelae are 0.025-0.104 mm in length; sigmas are 0.017-0.032 mm in length; rhaphidii in trichodragmae are 0.042-0.085 mm in length.

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Distribution. This sponge is widely distributed in the Arctic (from the Norwegian Sea to the Novo Sibirskie islands and in the northern Atlantic (as far as the Azores). It lives on different types of bottoms at the depth of 31 to 1267 m; is most common for the depths of 50 to 300 m.

The species examined forms two closely related subspecies.

9a. Mycale lingua lingua (Bowerbank, 1886); (Fig.16, plate III, 2,3).

Bowerbank, 1866: 187 (Hymeniacidon lingua); ibid: 350 (Desmacidon constrictus); Bowerbank 1874: 119, pl. XLVII, fig.8; ibid: figs. 1-6 (Rhaphiodesma lingua); Vosmaer, 1880: 146 (Esperia lingua); Levinsen, 1886: 20, Tab. XXX, Figs. 11-14 (Esperella vosmaeri); Topsent, 1892:88 (E.lingua); Lambe, 1896: 186, pl. I, figs. 6, 6a-f (E.lingua); Lundbeck, 1905: 29-34, pl. IX, fig. 6a-f (lingua); Rezvoi, 1924: 244 (lingua, lingua var. lundbecki); Hentschel, 1929: 930 (lingua).

The spicules penetrating the dermal membrane, are identical in size to the spicules of the main skeleton. Styli or substyli are 0.53-1.15 mm in length and 0.013-0.020 mm in thickness; chelae are 0.028-0.104 mm in length; sigmas are 0.021-0.032 mm in length; rhaphidii in trichodragmae are 0.042-0.078 mm in length.

Distribution. Barents and Kara Seas, north of Spitzbergen, Laptev Sea, Shokal'skii and Vil'kitskii straits, Greenland and Norwegian Seas, Denmark straight, Gulf of Saint Lawrence, North Sea, Bay of Biscay, near the Azores islands.

9b. Mycale lingua placoides (Carter, 1876) (Fig. 17; plate III, 1)

Carter, 1876: 316, pl. XIII, fig. 12, pl. XV, fig. 32 (Esperia placoides); Topsent, 1892: 89, pl.I, fig. 15 (Esperella placoides); Lundbeck, 1905: 24-29, pl. IX, fig. 5a-l (placoides); Rezvoi, 1924: 244 (placoides); Hentschel, 1929: 929 (placoides).

The spicules penetrating the dermal membrane are shorter than those of the main skeleton. Styli or substyli of the main skeleton are 0.447-0.715 mm in length and 0.010-0.016 mm in thickness; the styli penetrating the dermal membrane are 0.3-0.5 mm in length and 0.007-0.010 mm in thickness; the chelae are 0.025-0.092 mm in length; the sigmas are 0.017-0.027 mm in length; the rhaphidii in trichodragmae are 0.043-0.085 mm in length.

Distribution. Barents and Kara Seas, Laptev Sea, Vil'kitskii and Shokal'skii straits; Greeland and Norwegian seas, near the northern shores of Iceland, near Faeroe islands and Scotland, near the shores of Ireland, northeastern shores of North America.

Until recently these two subspecies were regarded as independent species *Mycale lingua* (Bowerbank) and *M. placoides* (Carter). p.62 They are, indeed, very similar, even indistinguishable from one another in both the external appearance and general character of the skeleton. The difference between them consists mainly in the size of the spicules, which is insufficient ground for listing ~~these~~ these forms as independent species. The subspecies examined appear to have become fully stablized, since analyses of more than 180 specimens revealed practically no transitional forms. The length of styli is a highly convenient feature for preliminary identification: the styli of *M. lingua placoides* are no longer than 0.715 mm and usually include styli of 0.3-0.5 mm in length; the megascleres of *M.l.lingua*, however, are longer and nearly always include styli measuring 0.8 mm in length. Of the two subspecies *M.l.lingua* is apparently thermophilic and stenobiontic; the temperatures recorded in the places of its occurrence are 1.96-2.9° at the salt content of 34.18-35.01 %. *M.l.placoides* is found at a temperature of -1.82 to 3.6° and at a salt content of 34.16-34.88%. The two subspecies frequently occur together, however, *M.l.lingua* penetrates farther south in the Atlantic Ocean, as far as the Bay of Biscay and Azores, whereas *M.l.placoides* has not been observed south of the shores of Ireland.

10. Mycale adhaerens (Lambe, 1893)(Fig.18; plate II,2).

Lambe, 1893; 27, pl.II, figs. 5,5a-d (Esperella).

The Body is incrusting, cushion-shaped or, more often, lump-shaped and up to 9 cm in height. The surface is even or nodose, slightly rough. The colour ranges from light grey to light yellow and yellowish-brown. The soft elastic sponge is covered with a thin dermal membrane firmly adhering to the body. The pores are in the form of circular openings 0.065 mm in diameter arranged in the meshes of the dermal skeleton. Small oscula approximately 0.33 mm in diameter protrude slightly above the surface of the sponge body.

Skeleton. The main skeleton consists of fibers measuring approximately 0.100 mm and more in thickness; the fibers are intensively ramified and terminate on the surface in tufts of spicules. These tufts of spicules support the dermal skeleton and protrude slightly on the surface. Apart from the fibers, there are thinner and shorter secondary or supplementary fibers which are arranged transversely to the primary fibers and form an indistinct network. p.63
Dermal skeleton is in the form of a fairly regular meshwork of three-sided and four-sided meshes formed of fibers which consist of the same spicules as the fibers of the main skeleton.

Megascleres: styli are commonly gently curved, fusiform, 0.242-0.457 mm in length and 0.010-0.017 mm in thickness. Microscleres: apically asymmetrical palmate chelae; large chelae are 0.054-0.100 mm in length, small chelae are 0.017-0.036 mm in length;

there may also be present medium-size chelae of a characteristic shape, measuring 0.025-0.052 mm in length; sigmas are 0.027-0.088 mm in length; rhaphidii (trichodragmae) or microxi are 0.028-0.070 to 0.250 mm in length.

Distribution. Bering Sea, Okhotsk Sea and Sea of Japan, near the Pacific shores of the Kuril islands. Near the coast of North America (from Alaska to the Vancouver Island), Greenland Sea. Lives on rocky, pebbly and sandy bottoms at the depth of 0 to 270 m.

This sponge is rather large for our far eastern seas and it forms three subspecies.

10a. Mycale adhaerens adhaerens (Lambe, 1893) (Fig.18; plate II, 2).

Lambe, 1893: 27, pl. II, figs. 5, 5a-d (Esperella adhaerens); Lambe, 1894: 117, pl.II, figs. 5,5a-f (E. adhaerens); Hentschel, 1929: 931 (adhaerens); Burton, 1935: 69 (adhaerens).

The subspecies corresponds in full to the description provided by Lambe (Lambe, 1893: 27; 1894-117) in the characterization of the species Esperella adhaerens. The thickness of the fibers of the main skeleton is approximately 0.100 mm; styli are 0.242-0.384 mm in length and 0.010-0.014 mm in thickness; large chelae are 0.054-0.077 mm in length, small chelae are 0.017-0.036 mm in length; sigmas are 0.027-0.078 mm in length; trichodragmae (rhaphidii) are 0.028-0.037 mm in length.

10b. Mycale adhaerens fibrosa Koltun, 1958

Koltun, 1958: 43.

The fibers of the main skeleton attain in places a thickness of more than 1 mm; styli are 0.364-0.457 mm in length and 0.010-0.017 mm in thickness; large chelae are 0.063-0.096 mm in length, small chelae are 0.021-0.036 mm in length, medium-size chelae have a characteristic shape and measure 0.025-0.052 mm in length; sigmas are 0.042-0.088 mm in length; rhaphidii or microxi are 0.035-0.070 mm in length.

Despite a marked resemblance, these two subspecies have a number of features which make it possible to distinguish them easily from one another. First of all, the main skeleton of Mycale adhaerens fibrosa is formed of thick ramified fibers, whereas there are no such fibers in the skeleton of M.a. adhaerens and its body appears (to a naked eye) to consist of a more or less homogenous mass. Furthermore, styli of M.a.fibrosa are somewhat longer and thicker, and chelae attain a large size. Trichodragmae are highly characteristic for the typical subspecies, whereas M.a.fibrbsa is characterized by rhaphidii or micro-oxi; moreover, these latter are 1.5-2 times longer than trichodragmae. Large and small chelae are similar in both forms; however, the latter subspecies also has p.64
medium-size chelae bearing appendages at the upper end, which are longer than those of other chelae: they constitute 4/5 of the total length of each chelae and overhang its lower end. Because of this, the medium-size chelae acquire a peculiar appearance. Such chelae, generally characteristic for M.a.fibrosa, may also be found occasionally in the typical subspecies.

The areals of the subspecies fo not coincide at all. For example, the latter subspecies has never been observed in the Bering Sea or near the Pacific coast of North America.

10c. Mycale adhaerens arctica (Fristedt, 1887)

Fristedt, 1887: 449-450, plate 25, figs. 20-24, plate 29, fig. 18 (Esperia lingua var. arctica);

The Body is lumpy, cushion-shaped, up to 2.5 cm in height, fragile. The surface is nodose, but smooth. The colour is yellow. Small oscula are scattered over the surface.

Skeleton. Judging from the drawing of the sponge surface provided by Fristedt (1887: pl. 29, fig 18) in the initial description, its main skeleton consists apparently of ramified fibers, tufts of spicules and individual spicules; dermal skeleton is reticulate.

Megascleres: slightly fusiform styli are 0.350 mm in length. Microscleres: apically asymmetrical palmate chelae; large chelae in the rosettes are 0.080-0.100 mm in length, small chelae are 0.025-0.030 mm in length; sigmas are 0.060 mm in length; rhaphidii or microrhabdes are 0.200-0.250 mm in length.

Distribution. Bering Sea (near the Bering island). Greenland Sea*. Depth: 9-18 m.

This subspecies is not represented in the ZIN AN SSSR collections. It is very similar to Mycale adhaerens adhaerens. The difference between them resides mainly in the size of rhaphidii.

*Burton, who examined M. adharens arctica as an independent species, mentions that it was found in the Greenland Sea (Burton, 1934a:8-9). In our opinion this is rather dubious and must be verified.

Mycale toporoki Koltun, 1958 (Fig. 19; plate 1,2).

Koltun, 1958: 47; Fig.4.

The Body is elongated, lumpy, soft, fragile, up to 6 cm in height. The thin dermal membrane forms folds, as a result of which the sponge body is divided into a large number of irregularly shaped sections separated by small furrows. The colour is light grey or greyish-yellow. The pores, measuring 0.4 mm in diameter, are scattered over the surface. The small oscula are up to 1 mm in diameter and open directly on the body surface.

Skeleton. The main skeleton consists of ramified fibers attaining here and there a thickness of 1 mm and more. Dermal skeleton is in the form of a fairly irregular or (more frequently) unfused meshwork consisting of fibers and tufts of spicules.

Megascleres: styli of the main skeleton are straight, fusiform, 0.468-0.811 mm in length and 0.008-0.020 mm in thickness; gently curved, occasionally with a slightly rounded sharp end, styli of the dermal skeleton are 0.270-0.436 mm in length and 0.008-0.020 mm in thickness. Microscleres: apically asymmetrical palmate chelae; large (markedly curved) chelae are 0.063-0.103 mm p.65 in length, small chelae (with a reduced lower end) are 0.021-0.031 mm in length; sigmas are 0.021-0.136 mm in length; rhaphidii and trichodragmae are 0.072-0.103 mm in length.

Distribution. Bering Sea (near the Mednyi island), Okhotsk Sea, Sea of Japan (Tartar strait, Olga bay), near the Pacific shore of the southern Kuril islands. Depth: 9.5-228 m; sea bottoms: rock, gravel, sand, occasionally with an admixture of ooze. Temperature: 1.6-16.2°.

Mycale toporoki is represented in our material by 29 specimens resembling fairly closely M. lingua in external appearance and in the architecture of the main skeleton. Differences in the shape and size of the skeletal elements, particularly the presence in the former of a reticulate dermal skeleton consisting of tangentially arranged spicules, compel us to regard this form not only as an independent species, but as a species fairly remote from M.lingua. In the collection processed and examined by Burton,* specimens of this species have been classified as M. massa var. orientalis. In our opinion, it is impossible to equate M.toporoki and M.massa, described by Schmidt (1862:56) from the Mediterranean. These species differ considerably in their skeleton. It is possible that Burton's identifications were in certain instances of a preliminary nature, since information on some of the new species established by Burton as a result of his study on the collection mentioned above, remain unpublished even now.

12. Mycale Tylota Koltun, 1958 (Fig.20; plate I,1).

Koltun, 1958: 48, fig. 5.

The Body is lumpy, soft, elastic, up to 8.5 cm in height and 12 cm in width. The surface is rough, coarsely tubercular, with deep

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*Certain collections of sponges from our northern and far far eastern seas were sent to Burton in England for identification and are now preserved in the Zoological Institute of the AN SSSR.

furrows separating the tubercles from one another. The colour is light grey. Dermal membrane is thick, strong, up to 0.5 mm in thickness.

Skeleton. The main skeleton is in the form of strongly ramified thick fibers. Dermal skeleton consists of tyloti arranged horizontally in several layers.

Megascleres: styli of the main skeleton are straight, p.66
fusiform, 0.676-0.915 mm in length and 0.018-0.023 mm in thickness; dermal styli and tyloti (or tylostrongyli) are 0.420-0.582 mm in length and 0.012-0.017 mm in thickness. Microscleres: apically asymmetrical palmate chelae; large (markedly curved) chelae are 0.092-0.097 mm in length, small chelae are 0.021-0.029 mm in length; sigmas: small sigmas are 0.019-0.032 in length, large 0.042-0.095 mm in length; rhaphidii are 0.073-0.109 mm in length.

Distribution. Southern Kuril strait, near the Pacific coast of the southern Kuril islands. Depth: 73-178 m.

Two specimens have been examined.

13. *Mycale cucumis* Koltun, 1958 (Fig.21; plate I,3).

Koltun, 1958: 44, fig.1

The Body is elongated, cylindrical, slightly tapered in the upper part. The sponge is elastic, strong, up to 8 cm in height. The colouring is light grey or grey. Dermal membrane measuring 0.250-0.300 mm in thickness, bears closely spaced spicules, as a result of which the sponge surface has a velvety appearance. The surface is furnished with occasional small tubercles bearing small oscula(which measure approximately 0.5 mm in diameter).

Skeleton. The main skeleton consists of thick ramified fibers. Dermal skeleton consists of spicules arranged tangentially (horizontally) in the membrane.

Megascleres: styli of the main skeleton are straight, markedly fusiform, 0.894-1.196 mm in thickness; styli of the dermal skeleton are curved, fusiform, 0.686-0.790 mm in length and 0.016-0.021 mm in thickness. Microscleres: apically asymmetrical palmate chelae; large chelae are 0.086-0.118 mm in length; medium-size chelae (there are but a few of these) are 0.046-0.055 mm in length, small chelae (with a markedly reduced lower end) are 0.029 mm in length; sigmas are 0.016-0.040 mm in length; rhaphidii (microxi) are 0.031-0.038 mm in length.

Distribution. Near the Pacific coast of the southern Kuril islands. Depth: 273-303 m.

The description of the species is based on the examination of one specimen.

14. Mycale lindbergi Koltun, 1958 (Fig.22; plate II,3).

Koltun, 1958: 44, fig.2.

The Body is vertically erect, spherical or compressed from the sides, up to 7 cm in height. The exterior is smooth, but uneven, since it is intersected by deep furrows and is thus divided into irregularly shaped sections. The colour is light grey. The pores p.67
are 0.050-0.100 mm in diameter and are arranged at the bottom of the furrows, forming the so-called pore fields. The oscula are up to 1 mm in diameter and open directly on the surface of the sponge body.

Skeleton. The main skeleton consists of ramified fibers having a considerable thickness. Dermal skeleton consists of spicules arranged horizontally.

Megascleres: styli of the main skeleton are straight, fusiform, 0.499-0.780 mm in length and 0.014-0.022 mm in thickness; dermal styli and strongyli are gently curved, 0.312-0.478 mm in length and 0.010-0.013 mm in thickness. Microscleres are apically p.68
asymmetrical, palmate chelae; large chelae (markedly curved) are 0.088-0.113mm in length, small chelae are 0.012-0.021 mm in length, medium-size chelae (present in small numbers) are 0.028-0.040 mm in length; sigmas are 0.016-0.067 mm in length; rhaphidii and tri-chodragmae are 0.056-0.067 mm in length.

Distribution: Eastern Tartar strait, southern Kuril strait, near the Pacific coast of the Kuril islands. Lives at a depth of 132-270 m on pebbly and rocky bottoms.

The species is represented by 6 specimens in the ZIN AN SSSR collections.

15. Mycale longistyla Koltun, 1958 (Fig.23).

Koltun 1958:46; fig.3.

The Body is lumpy, soft, elastic, up to 8 cm in height. The surface is uneven and bears long spicules. The colour is light grey on the exterior and yellowish on the interior. Dermal membrane is up to 0.5 mm in thickness.

Skeleton. The main skeleton consists of thick ramified fibers formed of styli. Dermal skeleton consists of strongyli and small styli oriented tangentially and arranged in several layers;

dermal membrane is penetrated by numerous medium-size styli protruding up to 1 mm in height on the surface of the sponge body; apart from these, dermal seta consists for the most part of large styli projecting above the dermal membrane on the surface with their pointed ends up to a height of 3 mm.

Megascleres: large gently curved styli are up to 3.5 mm in length and up to 0.032 mm in thickness; medium-size fusiform styli are 1.144-1.768 mm in length and 0.023-0.032 mm in thickness; small gently curved styli are 0.416-0.530 mm in length and 0.09-0.011 mm in thickness; curved strongli are 0.624-0.728 mm in length and 0.016-0.019 mm in thickness. Microscleres: asymmetrical palmate chelae; large chelae are 0.067-0.108 mm in length, small chelae are 0.028-0.051 mm in length; sigmas are 0.030-0.042 mm in length; microxi are 0.090-0.145 mm in length.

Distribution. Near the Pacific coast of the southern Kuril islands. Found at a depth of 153m on a sandy-pebbly bottom.

The description is based on the examination of one specimen.

16. Mycale japonica Koltun, sp.n. (Fig.24).

The holotype is preserved in the Zoological Institute of the AN SSSR, preparations NoNo 2691,2856,3407. p.69

The Body is lumpy, up to 4 cm in height. The surface is densely hispid. The colour is dark grey on the exterior, yellowish on the interior. Dermal membrane is up to 0.5 mm in thickness.

Skeleton. The main skeleton consists of ramified, occasionally fairly thick fibers. Dermal skeleton consists of tangential styli and strongyli arranged in several layers. Fibers of the main skeleton bifurcate near the surface and terminate in tufts of styli. The latter penetrate the dermal membrane and protrude on the exterior producing the hispid appearance of the sponge surface.

Megascleres: styli of the main skeleton are straight, fusiform, 0.821-1.839 mm in length and 0.023-0.032 mm in thickness; strongyli and styli of the dermal skeleton are gently curved, 0.374-0.717 mm in length and 0.010-0.013 mm in thickness. Microscleres: apically asymmetrical palmate chelae; large chelae are 0.109-0.128 mm in length, small chelae are 0.027-0.056 mm in length; sigmas are 0.025-0.059 mm in length; forceps are 0.312-0.395 mm in length; rhaphidii, trichodragmae and microxi are 0.110-0.168 mm in length.

Distribution. Sea of Japan (near the shores of Hokkaido). Depth: 120-140 m.

The new species resembles Mycale tylota described above in the character and composition of the skeleton, but differs from it in that it has forceps in its skeleton.

Apart from the species of the genus Mycale described above, there is mention in the literature of the presence in our northern seas of M. strelnikovi Rezvoj (Rezvoi,1924:245; Rezvoi,1925:196; fig.2; Hentschel, 1929:930; Burton, 1934a:9). Rezvoi isolated this species (1925:196) on the basis of a small sponge fragment measuring 15 mm in length, and provided it with the following description:

"Dermal membrane is smooth; the colour is yellowish white. Spicules: 1. Subtylostyli are gently, usually irregularly curved, cylindrical; they terminate in a commonly weakly defined annular expension located at the very end of the spicule or shortly before its end. The tapered end bears a very short point curved to form a small mucro. The length is 0.551-0.670 mm at a thickness of p.70 0.012-0.014 mm; the average size is 0.600 mm in length and 0.013 mm in thickness. 2. Apically asymmetrical palmate chelae of three types: large chelae are 0.063-0.081 mm, most often 0.070 mm, and small chelae are of two structural types and measuring 0.026-0.048 mm, most often 0.033 mm. In large chelae the wings are markedly curved laterally outwards, which produces a peculiarly shaped spicule; the large dent is very slender. Small chelae have the usual structure and are of two kinds: these with diverging ends and those with parallel ends. 3. Sigmas are 0.022-0.026 mm. The skeleton consists of loose indistinctly separated tufts of spicules".

The sponge was found in the northern Kara Sea at the depth of 110 m.

Fragments of the sponge, which should be regarded as the holotype of this species, have been preserved in the ZIN AN SSSR collections; several preparations (NoNo 5982,5983) of the spicules of this sponge made by Rezvoi when he described M. strelnikovi, are also preserved in this collection. Detailed analyses of this material have shown that the new species was established erroneously. The sponge fragment belongs to the well-known species Laxosuberites capillitium (Topsent), which is characterized by megascleres (tylostyli and subtylostyli) having precisely the shape mentioned in the description provided by Rezvoi for M. strelnikovi. Microscleres, chelae and sigmas are, however, found in this fragment quite by accident and probably entered it with a minute fragment of a sponge of the genus Mycale. Indeed, repeated examinations of the preparations revealed several styli characteristic for M. lingua placoides. The species M. strelnikov should thus be stricken off as a species established by error.*

2. Genus Rhaphidothesca Kent, 1870

Kent, 1870:222.

Genotype: Rh. marshallhalli Kent, 1870.

The Body is lumpy, the main skeleton consists of thick ramified fibers. Dermal skeleton consists of exotyloti arranged radially. Megascleres: styli or subtylostyli of the main skeleton and dermal exotyloti. Microscleres: apically asymmetrical palmate chelae, sigmas and occasionally rhaphidii.

Genus Rhaphidotheca resembles closely the genus Mycale and is extremely characteristic because of its exotyloti.

1. Rhaphidotheca arctica Hentschel, 1929 (Fig.25).

Hentschel, 1929:874: plate XIV, fig.3.

The Body is lumpy, soft, up to 3 cm in height. The surface is uneven, rough. The colour is grey, greyish yellow. p.71

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*Burton (1934a:9) mentions that M. strelnikovi was found in the Greenland Sea. It is difficult to determine what kind of sponge Burton examined, since he provides no description.

Skeleton. The main skeleton is in the form of ramified fibers. Dermal skeleton consists of vertical rows of exotyloti. Megascleres: styli or subtylostyli of the main skeleton are 0.609-0.728 mm in length and 0.013-0.016 mm in thickness; dermal exotyloti are 0.546-0.686 mm in length and 0.013-0.016 mm in thickness. Microscleres: apically asymmetrical palmate chelae are 0.047-0.091 mm in length; sigmas are 0.021-0.029 mm in length.

Distribution. Barents and Kara Seas; north of Spitzbergen. Lives at the depth of 124-100 m (usually at a depth of 124-446 m) on various types of bottoms at a temperature of -1.35 to 0.63°.

Six specimens have been examined.

3. Genus Oxymycale Hentschel, 1929.

Hentschel, 1929:932.

Genotype: Esperia intermedia O. Schmidt, 1874.

The Body is lumpy. The main skeleton is reticulate and consists of diactinal spicules. Megascleres:oxi. Microscleres: apically asymmetrical palmate chelae of two types, large and small.

Genus Oxymycale resembles closely the genus Mycale and, as may be seen from the description, differs from the latter mainly in that it contains in its main skeleton diactinal spicules (oxi) instead of monactinal megascleres. Since no transition of styli to oxi has been observed in representatives of the genus Mycale, it appears expedient to preserve for the time being the genus Oxymycale, even though the difference between these two genera is somewhat formal in character.

1. Oxymycale intermedia (O.Schmidt, 1874)(Fig.26).

O. Schmidt, 1874: 433, plate I, fig. 10 (Esperia); Thiele, 1903:381, pl.XXI, fig. 12 (Mycale); Hentschel, 1929:932; Koltun, 1952:127 (wagini).

The Body is cushion-shaped, lumpy, up to 5 cm in height, often in the form of an elongated oval incrustation on the branches of hydroids, tubes of Polychaeta, algae etc. The surface bears spicules. The sponge is soft, fragile, porous. No dermal membrane has been found.

Skeleton. The main skeleton is in the form of an irregular or unfused meshwork. Thin fibres are present in small quantities.

Megascleres: curved oxi are 0.300-0.552 mm in length and 0.010-0.016 mm in thickness.

Microscleres: apically asymmetrical palmate chelae; large chelae are 0.050-0.074 mm in length, small chelae are 0.0; 8-0.027 mm in length.

Distribution. Barents Sea, Laptev Sea, northwestern Greenland Sea. Lives at a depth of 17-325 m on oozy and sandy bottoms.

Five specimens have been examined. The form described by us (Koltun, 1952:127) from the Laptev Sea as a new species Oxymycale wagini is merely a variety of O. intermedia. p.72

II. Family Cladorhizidae.

The Body is symmetrical, clavate, plumose or stalk-shaped, occasionally ramified. The skeleton is in the form of an axial rod extending along the sponge; in clavate forms the skeleton may be diffuse here and there. Megascleres are represented for the most part by smooth monactinal spicules. No special dermal spicules. In the membrane of the stem there are special short spicules - tylostyli or tylostrongyli (smooth or acanthaceous). Among the microscleres there are cheloids, which are commonly apically asymmetrical; in exceptional instances cheloids may be represented by apically symmetrical ancorae.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY CLADORHIZIDAL.

1 (4). Microscleres include apically asymmetrical cheloids (chelae and ancorae).

2 (3). Cheloids are represented by apically asymmetrical palmate chelae....... 1. *Asbestopluma* Norman,

3 (2). Cheloids are represented by apically asymmetrical ancorae..... 2. *Cladorhiza* M. Sars.

4 (1). No apically asymmetrical cheloids are found among the microscleres, but are apically symmetrical cheloids in the form of ancorae present...... 3. *Chondrocladia* W. Thomson .

1. Genus *Asbestopluma* Norman, 1875.

Lundbeck, 1905:43-44.

Genotype: *Cladorhiza pennatula* O. Schmidt, 1875

The Body is vertical, symmetrical, commonly hispid, plumose, stalk-shaped, ovoid or goblet-shaped, furnished with a stem. The skeleton is in the form of an axis, which is often divided into parallel fibers; occasionally, particularly in clavate forms, the skeleton is diffuse here and there.

The membrane of the stem contains peculiar spicules. Megascleres: styli or subtylostyli and, wherever there is a membrane on the stem, tylostyli or tylostrongyli. Microscleres: small apically asymmetrical palmate chelae of a peculiar shape with markedly different ends; apart from these, there may be large asymmetrical palmate chelae with a markedly reduced lower end, as well as sigmas and forceps.

1 (6). Sigmas are present among the microscleres.

2 (5). Apically asymmetrical palmate chelae are of two kinds, large and small; the body is not ramified.

3 (4). Pinnate body.............1. A. pennatula (O.Schmidt).

4 (3). The body is shaped like a chimney brush........
2. A. bihamatifera (Carter).

5 (2). Apically asymmetrical palmate chelae are of one type (small), the body is ramified............
3. A. ramosa Koltun.

6 (1) Sigmas are lacking among microscleres.

7 (10). The goblet-shaped or ovoid body is furnished with a thin long stem. The sponges are invariably small.

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8 (9). A goblet-shaped body (forceps are present).........
7. A. infundibulum (Levinsen).

9 (8). Oviform body (no forceps).......
8. A. minuta (Lambe).

10 (7). A different shape. The Body is pinnate, stalk-shaped or foliate.

11 (12). Apically asymmetrical palmate chelae of more than 0.020 mm in length.......... 6. A. cupressiformis (Carter).

12 (11). Apically asymmetrical palmate chelae of less than 0.020 mm in length.

13 (14). A brush-like body........ 4. A. lycopodium (Levinsen).

14 (13). A stalk-shaped body (covered with mucro-like excrescences).

5. A. gracilias Koltun.

1. Asbestopluma pennatula (O. Schmidt, 1875) Fig.27; plate VI, 2).

Schmidt, 1875: 119, plate 1, Figs. 14-16 (Cladorhiza); Vosmaer, 1882: 47, pl. 1, figs. 105-112 (C.bihamatifera); Hansen, 1885: 15, pl. III, fig. 7, pl. LV, fig. 2, pl. VII, figs. 5, 14 (Esperia bihamatifera); Fristedt, 1887: 455, pl. 25, figs. 56-59, pl. sl, fig. 25 (Cladorhiza nordenskioldii); Topsent, 1902: 24 et 28, pl. III, fig. 9a-d; Arnesen, 1903: 11, plate II, Fig. 1, plate IV, Fig. 3, plate VI, Fig. 7 (Esperella plumosa); Lundbeck, 1905: 44, pl. II, figs 1-6, pl. X figs 4a-o, 5-7; Rezvoi, 1928: 84; Hentschel, 1929: 874,933.

The Body is pinnate, thin and brittle, More or less long lateral projections diverge from the narrow sides of the main trunk of the sponge. The colour is light grey or light yellow. The sponge attains 18 cm in height. The stem is cylindrical, very long, several times the length of the pinnate portion of the body.

The skeleton of the main trunk consists of parallel fibers interspaced by canals, which extend along the entire body. The main trunk is covered with a fairly thick layer of spicules. Fibers of the lateral projections penetrate the skeleton of the main trunk.

Megascleres: styli of the axis are 0.680-1.000mm in length and 0.015-0.032 mm in thickness; subtylostyli of the outer layer and of the projections are 0.520-0.765 mm in length and 0.09-0.017 mm in thickness; tylostrongyli of the cortical layer of the stem are finely acanthaceous, unevenly curved, 0.050-0.137 mm in length and 0.001-0.004 mm in thickness. Microscleres: apically asymmetrical, palmate chelae; small chelae are of a characteristic shape, 0.010-0.011 mm in length, large chelae are 0.048-0.063 mm in length; sigmas are 0.021-0.024 mm in length.

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Distribution. Southwestern Barents Sea, north of Spitzbergen, Greenland and Norwegian Seas. Denmark strait, Gulf of St. Lawrence, western and southern coast of Norway, near Iceland and Faeroe islands, northern Atlantic. Found at the depths of 180 to 1000 m on an oozy or oozy-sandy bottom, at a temperature of 0.69 to -0.6°.

15 specimens have been examined.

2. Asbestopluma bihamatifera (Carter, 1876) (Fig.28). ~~p.74~~

The Body is brush-like, up to 10 cm in height, consists of the main trunk and very short lateral projections. The surface is smooth. The colour ranges from white to yellow. The stem is long, occasionally up to half the total body length of the sponge.

The Skeleton of the main trunk consists of an axis from which short fibers diverge laterally. The trunk is furnished with a thin membrane formed of spicules.

Megascleres: styli of the main trunk are 0.630-1.010 mm in length and 0.020-0.036 mm in thickness; subtylostyli are found in the projections and are present in small quantities in the trunk and measure 0.58-0.71 mm in length and 0.011-0.018 mm in thickness; tylostyli of the stem membrane are finely acanthaceous, unevenly curved, 0.09-0.10 mm in length and 0.001-0.003 mm in thickness.

Microscleres: apically asymmetrical palmate chelae; the small chelae, characteristic for this genus are 0.010-0.011 mm in length; large chelae with a multilobate lower end are 0.051-0.061 mm in length; sigmas are 0.018-0.021 mm in length.

Distribution. Southwestern and western Barents Sea, northern Kara Sea, Shokal'skii strait, north of Spitzbergen, Greenland Sea, Denmark strait, north and east of Iceland, between Iceland and Faeroe islands. Is commonly found at the depths of 43-536 m, occasionally descends to the depth of 1000 m. Bottoms: ooze, sand, gravel. Temperature: from -1.41 to 0.69°. Salt content: 34.19 - 34.99%.

Is represented by 6 specimens in the ZIN AN SSSR collection. Asbestopluma bihamatifera resembles closely A. pennatula, but differs from it in the external appearance and, partly, in the size of its spicules and in the shape of styli. p.75

3. Asbestopluma ramosa Koltun, 1958 (Fig.29; plate IV,2,3)

Koltun, 1958: 49, fig.7.

The Body of the sponge is stemmed, often consists of numerous more or less cylindrical branches diverging from one point and arranged in one plane; the branches may be intergrown at the bottom forming a plate, at the top they are free and divide dichotomously, uniting only here and there. Occasionally the sponge is markedly elongated in length and has a ramified stalk-like appearance. The sponge body bears thin numerous closely spaced projections. The colour is light yellow. The height of the sponge is up to 25 cm at the thickness of individual branches of up to 1.2 cm.

The Skeleton is in the form of a fairly compact axis, whose ramifications penetrate lateral projections, In the cortical part the skeleton is formed of small finely acanthaceous tylostyli.

Megascleres: styli and subtylostyli are 0.468-0.904 mm in length and 0.010-0.029 mm in thickness; tylostyli are finely acanthaceous, unevenly curved, 0.060-0.199 mm in length. Microscleres: chelae are apically asymmetrical, palmate, characteristic for the genus, 0.013-0.016mm in length; sigmas are 0.023-0.031 mm in length.

Distribution. Okhotsk Sea, near the Pacific coast of the southern Kuril islands. Found at the depths of 188-430 m; also found at the depth of 2850 m. Bottoms; ooze, sandy ooze, pebble. Temperature: 1.8-2.7°.

The description is made from the study of 7 specimens.

4. Asbestopluma lycopodium (Levinsen), 1886) (Fig.30; plate VI, 1).

Hansen, 1885, pl. 3, figs. 3,4 (Esperia bihamatifera); Levinsen, 1886: 364, Tab. XXIX, Figs. 12, 13 Tab. XXX, Figs. 15, 16d (Esperella); Lambe, 1893: 28, pl. II, figs. 6, 6a-e (E. occidentalis): Lambe, 1900: 21, pl. 1, fig. 2f-h (E. fristedtii); Lundbeck, 1905: 62, pl. II, figs. 15-17, pl. XI, figs. 6a-4, 7; Hentschel, 1929: 934; Koltun , 1955б: 47, pl. VI, fig.2 (occidentalis).

The Body is brush-like, consists of a slender trunk and of projections diverging from it laterally in all directions; the body is fairly strong, elastic, with a short stiff stem. The height of the sponge is up to 12 cm. The colour is light grey or light brown.

The Skeleton is represented by the main axis extending along the sponge body and consisting of fibers (formed of long spicules) interspaced by the ends of the fibers of the lateral projections; only small numbers of individual spicules are found outside the main axis.

Megascleres: styli are 0.238-1.5 mm in length and 0.007-0.021 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate, of a characteristic shape, 0.010-0.017 mm in length; forceps are 0.032-0.056 mm in length.

Distribution. Southwestern Barents Sea, Kara Sea, Laptev Sea, Shokal'skii and Vil'kitskii straits, East Siberian Sea (near the Novo Sibirskie islands) and near the Kuril islands, Greenland Sea, Baffin Bay, near the Jan-Mayen island, south of the Faeroe islands and near the Vancouver Island (Pacific coast of North America). Lives at the depths of 41-1134 m on oozy and oozy-sandy bottoms at a temperature of -1.64 to 4.8°.

18 specimens have been examined; one of them was found in our far eastern seas near the Kuril islands (between the islands Urup and Simushir). Lambe described in 1893, the new north Pacific species of sponge Esperella occidentalis found near the Vancouver Island. The arguments in favour of classifying this sponge as an independent species are, however, insufficient. It scarcely differs from Asbestopluma lycopodium in shape and in the structure of its spicules. The differences observed between these forms in the skeletal structure of the main trunk of the sponge are apparently due to the fact that Lambe dealt with a young specimen. E. occidentalis is therefore treated here as a synonym of A. lycopodium.

5. Asbestopluma gracilis Koltun, 1955 (Fig. 31)

Koltun, 1955b: 47, plate V, fig. 5; Koltun, 1958: 49, fig.6.

The Body is stalk-shaped, cylindrical, up to 15 cm in length and 0.4 cm in thickness. The surface bears a multitude of small mucro-like excrescences arranged in parallel rows. In view of this, the sponge resembles closely the flower-scape of plantain. The sponge body gradually changes to a short stem. The colour is brown or light yellow. p.77

The Skeleton is in the form of an axis with short lateral projections formed by long spicules. The Skeleton of the stem consists of smaller spicules.

Megascleres: fusiform styli are 0.580-1.786 mm in length and 0.010-0.027 mm in thickness; small styli are 0.160-0.400 mm in length and 0.004-0.007 mm in thickness. Microscleres: are apically chelae asymmetrical, palmate, 0.010-0.017 mm in length; forceps are 0.025-0.038 mm in length.

Distribution. Bering Sea (near the Komanndorskii islands), near the northern Kuril islands (between the islands Urup and Simushir). Lives at the depths of 126-127 m on sandy and pebbly bottoms.

Five specimens have been examined.

6. *Asbestopluma copressiformis* (Carter, 1874) (Fig. 32; Plate VII, 3,4).

Carter, 1874: 215, pl. XIV, figs. 16a-f, 17-18, pl. XV, fig. 37 (*Esperia*); Levinsen, 1886: 364, Tab. XXIX, Figs. 10-11, Tab. XXXI, Figs. 7-14a; b, c (*Esperella cupressiformis var. robusta*); Fristedt, 1887: 457, pl. 25, figs. 66-69, pl. 31, fig. 28 (*Cladorhiza*); Lambe, 1900: 21, pl. 1, figs. 2, 2a-e (*Esperella fristedtii*); Lundbeck, 1905: 58, pl. II, figs. 11-14, pl. XI, figs. 4a-f, 5; Hentschel. 1929: 934.

The Body is pinnate with very short, thin, free or intergrown lateral projections; occasionally the body expands markedly and becomes foliate. A stiff slender stem is present. The sponge is up to 8 cm in height. The colour is light grey or yellowish. The small oscula are located at the ends of hollow lateral projections.

The Skeleton of the stem is in the form of an axis, in the remaining portion of the body it is irregular, diffuse-fibrous. The fibrous skeleton of the thin projections of the body is isolated.

Megascleres: styli or subtylostyli are 0.35-0.84 mm in length and 0.008-0.014 mm in thickness. Microscleres: chelae are palmate, characteristic for the genus, 0.021-0.025 mm in length; forceps are 0.038-0.048 mm in length.

Distribution. Barents Sea, Kara Sea (west of the Taimyr peninsula), Laptev Sea, Greenland Sea, Baffin Bay, near the Faeroe islands. Lives at the depths of 18-703 m, occasionally descends to the depth of 1140 m. Bottoms: ooze, sand with ooze, pebbles. Temperature: from 1.63 to 1.7°.

Eighteen specimens have been examined.

7. Asbestopluma infundibulum (Levinson, 1886) (Fig.33).

Carter, 1874: 215, pl. XIV, fig. 19a, b (Esperia cupressiformis); Hansen, 1885: 15, pl. III, fig. 6 (E. bihamatifera); Levinsen, 1886: 366, Tab. XXIX, Fig. 14, Tab. XXXI, Figs. 17-19 (Esperella); Lundbeck, 1905: 68, pl. II, figs. 20-21, pl. XI, fig. 9a-m; Hentschel, 1929: 935.

The Body of the sponge is in the form of a small goblet measuring up to 1 cm in diameter and sitting on a long slender stem. The sponge is up to 5 cm in height. The goblet is soft, the stem is stiff. The surface bears some spicules. The colour is dirty yellow.

The Skeleton of the goblet consists of spicules arranged in a diffuse manner; the skeleton of the stem is in the form of an axis.

Megascleres: styli or subtylostyli of the stem and of the goblet walls are 0.170-0.830 mm in length and 0.005-0.011 mm in thickness; styli of the outer surface of the goblet are pointed, p.78
measure 0.44-0.6 mm in length and 0.007 mm in thickness; subtylostyli of the edges of the goblet are 0.149-0.220 mm in length and 0.006 mm in thickness. Microscleres: chelae are of a characteristic shape, apically asymmetrical, palmate, 0.018-0.027 mm in length; forceps are 0.075 mm in length.

Distribution. Barents and Kara Seas, Laptev Sea (Vil'kitskii strait). East of Greenland, north of Iceland, near the Faeroe islands. Lives at the depths of 91-710 m on oozy-sandy bottoms. Temperature: from -1.45 to -0.4°.

Examined: 2 specimens.

8. *Asbestopluma minuta* (Lambe, 1900).

Lambe, 1900:23, pl. I, figs. 3, 3a-c (*Esperella*); Hentschel, 1929:934; Gorbunov, 1946:37.

The Body is oviform, slightly flattened out, furnished with a long slender stem. The surface bears spicules. The height of the sponge is up to 13.5 mm; the length of the stem is up to 10 mm, the thickness is approximately 0.3 mm.

The Skeleton consists of loose fibers; the skeleton of the stem is in the form of a spirally twisted axis.

Megascleres: styli (and subtylostyli) are 0.327-0.548 mm in length; tylostyli are 0.196-0.294 mm in length. Microscleres: chelae are aspically asymmetrical, palmate, 0.018-0.019 mm in length.

Distribution. Kara Sea. Denmark strait. Lives at the depth of 336-698 m.

Findings of Asbestopluma minuta in the Kara Sea were recorded for the first time by Gorbunov from the "Sadko" collections (1935) studied by Burton. This species is not represented in our material. The specimens examined by Burton have not been preserved. Comparisons of the descriptions of A. minuta and A. infundibulum show that the two closely resemble one another. p.79

2. Genus Cladorhiza M. Sars, 1872.

M. Sars in G. Sars, 1872:65; Lundbeck, 1905:78.

Genotype: C. abyssicola M. Sars, 1872.

The sponge body is symmetrical, clavate or stalk-shaped, is often ramified and consists of the main trunk and of lateral branches. More or less ramified rhizoids form in the basal portion of the body. The main trunk and branches may bear short projections diverging laterally in all the directions; in clavate forms the projections of the body attain a considerable length and are gathered at the summit of the sponge.

The type of skeleton depends to a great extent on the body form and often consists of a thin fibrous axial rod including fibers which support the lateral projections. Megascleres: commonly styli, occasionally oxi; subtylostyli may also be present. Microscleres: apically asymmetrical ancorae characteristic for the genus with 3-5 dents at each end (occasionally they have as many as 9 dents at the larger end); apart from ancorae, there may be sigmas of one or two types.

1 (6). The Body is stalk-shaped, ramified or non-ramified.

2 (5). The ancorae have five dents.

3 (4). The sigmas are subdivided into small (crescent-shaped) and large, measuring more than 0.120 mm in length.........
3. C. gelida Lundbeck.

4 (3). The sigmas are subdivided into thin [redacted] and crescent-shaped [redacted] and are less than 0.100 mm in size........
4. C. tenuisigma Lundbeck.

5 (2). The ancorae have three dents......
5. C. rectangularis Ridley et Dendy.

6 (1). The Body is clavate.

7 (8). The sigmas (large and small) are present.......
2. C. bathydrinoide Koltun.

8 (7). The sigmas are lacking; spicules include acanthotoxi.......
1. C. arctica Burton.

1. Cladorhiza arctica Burton, 1946 (Fig.34).

Gorbunov, 1946: 37.

The Body of the sponge is up to 4 cm in height, clavate, tapers downwards changing to a straight slender stem terminating in rhizoids. The upper portion of the sponge bears a few short rigid projections. The colour is light yellow.

The Skeleton of the stem is in the form of an axis formed of fibers which loosen up somewhat while extending into the upper portion of the sponge body and into the projections.

Megascleres: styli are brevimucronate, straight, fusiform, 0.728-1.508 mm in length and 0.012-0.036 mm in thickness; styli are brevimucronate (to strongyli), gently curved, 0.364-0.873 mm in length and 0.006-0.011 mm in thickness; acanthoxi have a nodose exterior and are 0.135-0.239 mm in length and 0.006-0.008 mm in thickness. Microscleres: ancorae are apically asymmetrical, tridented, 0.035-0.040 mm. in length.

p.80

Distribution. Kara Sea (near the Ushakov island), central Arctic Ocean. Found at the depth of 2040-2365 m at a sub-zero temperature (-0.86°).

Examined: 6 specimens. The collections obtained by "Sadko" in 1935 and studied by Burton, contain a small fragment of the sponge named by Burton *Cladorhiza arctica*. We found a few more specimens of this species in the abyssal of the Arctic basin (north of the Kara Sea and north of the Franz Josef Land and Spitzbergen). Since Burton has not yet published the description of this species, *C. arctica* should be regarded as nomen nudum. In order to avoid possible misunderstandings, we are preserving the name given by Burton, but providing this species with the above description.

2. *Cladorhiza bathycrinoides* Koltun, 1955 (Fig. 35; plate VI, 4; plate VII, 1).

Koltun, 1955b: 48, plate VI, fig. 1

The Body is semispherical or turbinate, up to 2 cm in diameter, sits on a thin long rigid stem. Long cylindrical or crescent-shaped appendages approximately equal to the length of the body, are arranged in a circle on the sides of the body, closer to the top;

the appendages are often curved inwards and overhang the summit of the sponge. The surface is rough, the stem is smooth and forms finely fibrous rigid rhizoids at the bottom, with the help of which the sponge becomes attached to the substratum. The colour is light yellow or greyish.

The Skeleton of the stem is in the form of a gently twisted axial rod formed of thick fibers; these latter penetrate the base of the turbinate body and extend from there in the form of indistinctly separated fibers into the projections of the sponge body. The Skeleton is mainly diffuse in the remaining portion of the turbinate body.

Megascleres: fusiform styli are 0.551-2.132 mm in length and 0.010-0.042 mm in thickness. Microscleres: ancorae are apically asymmetrical, tridented, 0.035-0.059 mm in length; large sigmas are 0.033-0.111 mm in length, semicrescent sigmas are 0.037-0.044 mm in length.

Distribution. Okhotsk Sea, near the Pacific coast of the Kuril islands. Found at the depths of 151-700 and 1228-3400 m on oozy and sandy bottoms at a temperature of 2.3-5.7°.

p.81

This species, represented in our material by 17 specimens, resembles closely in body form *Cladorhiza longipinna* Ridley et Dendy described from the Pacific Ocean (Hawaian islands). The main difference consists in that *C. bathycrinoides* has ancorae, as well as two types of sigmas.

3. *Cladorhiza gelida* Lundbeck, 1905 (Fig. 36; plate V,3).

Lundbeck, 1905:83, pl. III, fig. 1 pl. XII, figs. 3a-h; Hentschel, 1929:935.

The Body consists of the main trunk and lateral branches arranged in one plane or diverging irregularly in various directions; the body is stiff, flexible at the top; at the bottom there are rhizoids or a basal plate used for attachment. The surface is smooth. The colour is light grey or light yellow. The sponge attains a height of 23 cm.

The Skeleton of the main trunk and of the branches is in the form of an axis formed of thick fibers.

Megascleres: styli are 0.400-0.770 mm in length and 0.011-0.022 mm in thickness. Microscleres: ancorae are apically asymmetrical, with five dents, 0.028-0.034 mm in length; sigmas are large, 0.120-0.160 mm in length and 0.006-0.009 mm in thickness, small sigmas have flattened ends and are 0.044-0.051 mm in length. (These are found in small numbers).

Distribution. Central Arctic Ocean, Greenland Sea, south of the Jan-Mayen island near the Faeroe islands, North Sea (near Norway). Lives at the depth of 1535-2394 m on oozy bottoms at a temperature of -1.1 to 0.9°. Examined: 4 specimens. p.82

4. Cladorhiza tenuisigma Lundbeck, 1905 (Fig. 37).

The Body of the sponge consists of the small main trunk and long branches diverging from it; the branches lie in one or two planes and terminate in a swelling. Short projections covering the main trunk and the branches are arranged more or less in a verticil. At the bottom the sponge is furnished with intensively ramified rhizoids. The surface is smooth. The colour is light grey or light yellow. The sponge attains 17 cm. in height.

The Skeleton of the main trunk and of the branches is in the form of an axis consisting of thick fibers.

Megasbleres: styli are -.58-1.010 mm in length and 0.014-0.026 mm in thickness. Microscleres: ancorae are apically asymmetrical, five-dented, 0.024-0.028 mm in length; sigmas are thin, 0.038-0.048 mm in length, or flattened at the ends and 0.048-0.056 mm in length.

Distribution. Laptev Sea, southwest of Spitzbergen, south of the Jan-Mayen island, east of Iceland. Exists at the depth of 1394-1834 m, but may be found occasionally at lesser depths. (it was encountered in the Laptev Sea at the depth of 371 m). Bottoms: ooze. Temperature: -1.1 to -0.3°.

Examined: 4 specimens (the largest specimen measures 3 cm in height).

5. Cladorhiza rectangularis Ridley et Dendy, 1887 (Fig.38).

Ridley and Dendy, 1887; 88, pl. XX, fig. 10 (abyssicola var. rectangularis).

The Body is in the form of a straight cylindrical stalk with short thin projections diverging from it in all the directions at a straight angle. The sponge is up to 7 cm in heightat a thickness of approximately 2 mm. Rounded upper portion of the body; delicate ramified rhizoids at the bottom. The colour is pale yellow.

The Skeleton. Consists of an axial rod formed of long fibers composed of spicules; the fibers extend along the entire body and penetrate into the lateral projections.

Megascleres: styli are straight, fusiform, 0.650-2 mm in length and 0.014-0.036 mm in thickness. Microscleres: ancorae are apically asymmetrical, tridented, 0.018-0.027 mm in length; sigmas are large, 0.120-0.170 mm in length and 0.006-0.010 mm in thickness, and small, 0.030-0.050 mm in length and 0.002-0.004 mm in thickness.

Distribution. Bering Sea. Central and northern Pacific Ocean. Found at the depth of 3812-5005 m.

p.83

The only specimen preserved in the ZIN AN SSSR collections, appears to be a perfect replica of the specimen obtained by the "Challenger" expedition in the central Pacific Ocean at the depth of 5005 m.

3. Genus Chondrocladia W. Thomson, 1873

Lundbeck, 1905: 12.

Genotype: Ch. virgata W. Thomson, 1873.

The Body is elongated, clavate, often in the form of a thick central trunk with lateral branches or papillae which are spherical or elongated in form; the branches may be gathered at the top. Occasionally the sponge body is dendritic or of a more irregular shape. The skeleton depends to a large extent on the body form and consists of an axial rod composed of thick fibers and of thinner fibers in the branches. Megascleres: smooth styli and (occasionally) acantlaceous styli in the special cortical layer of the stem. Microscleres: characteristic apically symmetrical ancorae of one, two or three types with 3-9 dents on each end; sigmas are also nearly always present.

1. Chondrocladia gigantea (Hansen, 1885) (Fig. 39; plate VI, 3).

Hanson, 1885: 14, pl.II, figs.12,13, pl. VII, fig.8 (Desmacidon), pl. II, fig.11 (D. clavatum), pl. III, fig.1, pl. VI, fig. 17 (D. nucleus); ibid: 15, pl. VI, fig. 16 (D. articum); Fristedt, 1887: 456, pl. 25, figs. 60-65, pl. 31, fig. 26 (Cladorhiza nobilis); Lundbeck, 1905: 102, pl. IV, fig. 1, pl. XIII, fig. 2a-l.

The Body is elongated, usually clavate, resembling papillae, up to 0.5 m in height; it is furnished in the upper portion with short branches that are often expanded at the end; the stalk-like portion of the papillae is frequently abbreviated to such an extent that the spherical expansions having the shape of warts, sit directly on the body surface of the sponge, which thus acquires a characteristic appearance. The sponge body tapers downwards and goes over into a stem. The surface is smooth. The colour is light yellow.

The Skeleton is typical for the genus; it consists of a thick axial rod twisted spirally at the bottom and extending throughout the entire sponge, and of thin fibers in the papillae.

Megascleres: styli are fusiform, 0.560-2.100 mm in length and 0.011-0.051 mm in thickness; finely acanthaceous styli (in the cortical layer of the stem) are 0.118-0.340 mm in length and 0.0015-0.004 mm in thickness. Microscleres: ancorae are apically asymmetrical, six-dented; large ancorae are 0.077-0.096 mm in length, small ancorae are 0.018-0.03 mm in length; sigmas are 0.017-0.045 mm in length.

p.84

Distribution. Okhotsk Sea, near the Pacific coast of the southern Kuril islands, Greenland and Norwegian seas, near Iceland and Faeroe islands, northeastern coast of North America. Depth: 238-615 and 1450-2127m. Bottoms: ooze, sand, Temperature: 0.66-2.7°.

This species is represented by 10 specimens in the ZIN AN SSSR collections. It must be noted that the body shape of Chondrocladia gigantea varies with depth. The specimens obtained from the depth of 200-600m resemble in external appearance cobs of corn and bear spherical papillae directly on the sponge body. At great depths Ch. gigantea acquires the shape of a sceptre, from the head of which long branches resembling papillae, diverge in all the directions.

III. Family Esperiopsidae.

The Body varies in shape, is most often irregular, less often more or less symmetrical: lumpy, spherical, dactylate, funnel-shaped; is occasionally stemmed. Dermal membrane is thin, adheres fairly firmly to the remaining body of the sponge.

The Skeleton is reticulate, reticulate-fibrous or ramified fibrous. Megascleres are represented by smooth monactinal or diactinal (of one type) spicules. Special dermal spiculas differing from those of the main skeleton are lacking. Microscleres include apically symmetrical cheloids or their derivatives. No apically asymmetrical cheloids are present.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY ESPERIOPSIDAE.

1 (2). Megascleres are represented by monactinal spicules. Microscleres are in the form of palmate chelae........

1. *Esperiopsis* Carter.

2 (1). Megascleres are represented by diactinal (occasionally apically asymmetrical) spicules.

3 (4). Cheloid microscleres are in the form of typical chelae....

2. *Homoedictya* Ehlers.

4 (3). Cheloid microscleres are represented by placochelae......

3. *Guitarra* Carter.

1. Genus *Esperiopsis* Carter, 1882

Carter, 1882a: 296; Lundbeck, 1905: 7.

Genotype: *E. villosa* Carter, 1874.

The Body may be encrusting or lumpy, as well as more or less symmetrical, elongated or foliate.

The Skeletal architecture varies in dependence with the body form. In elongated forms the skeleton consists of long well developed and ramified fibers, in incrusting and lumpy forms it is of the reticulate type. Megascleres: styli and subtylostyli. Microscleres: apically symmetrical palmate chelae (characteristic for the genus) of one or several types; apart from these chelae, arcuate chelae, sigmas, toxi, even forceps may be present in various combinations.

1 (4). Microscleres include sigmas. p.85

2 (3). Microscleres include forceps; chelae are of one type.......

3. *E. forcipula* Lundbeck.

3 (2). No forceps; chelae are of several types........
2. E. vilosa (Carter).

4 (1). No sigmas.

5 (6). Chelae are of two types. Incrusting body form.......
1. E. typichela Lundbeck

6 (5). Chelae are of one type. The body is elongated.

7 (8) Styli attain a length of more than 0.5 mm........
4. E. stipula Koltun.

8 (7) Styli are considerably smaller and measure 0.4 mm or less in length..........
5. E. digitata (Miklucho-Maclay).

a (b) The Body is flabelliform or funnel-shaped and sits on a thick short stem. The surface is extremely uneven, bears a multitude of small curved ridges..........
5b. E. digitata infundibula Koltun.

b (a). The Body varies in shape: it may be dendritic, dactylate, lumpy, clavate, in the form of a thick plate; in rare instances it is vaselike or even funnel-shaped, but its surface is then even.......
5a. E. digitata digitata (Miklucho-Maclay).

1. Esperiopsis typichela Lundbeck, 1905 (Fig.40).

Lundbeck, 1905: 22, pl. I, fig. 3, pl. IX, figs. 2a-c, 3,4; Hentschel, 1929: 938; Breitfuss, 1912:65, plate I, figs, 1-6; Rezvoi, 1931: 510.

The Body is incrusting, soft, up to 5mm in thickness. The exterior bears small excrescences and long appendages resembling flagella. The thin dermal membrane bears no spicules.

Skeleton. The main skeleton consists of multispicular fibers extending mainly from the base to the surface of the sponge.

Megascleres: styli are 0.33-0.45 mm in length and 0.0035-0.0057 mm in thickness. Microscleres: apically symmetrical palmate chelae; large chelae are 0.053-0.075 mm in length, small chelae are 0.021-0.025 mm in length.

Distribution. White and Barents Seas, Laptev Sea, East of Greenland. Lives at the depth of 36-542 m on sandy-pebbly bottoms (occasionally containing admixtures of ooze) at a temperature of 0.2-0.77° and salt content of 28-34.92%.

Examined: 6 specimens.

2. Esperiopsis villosa (Carter, 1874) (Fig.41; plate VII,2).

Carter, 1874:213, pl. XIII, figs. 13-15, pl. XV, fig.36 (Esperia); Carter, 1882a; 296; Fristedt,1887:451, pl.25, figs.33-39. pl.29, fig. 19 (Esperia); Topsent, 1904:211, pl. XVII. figs. 2a-c.

The Body is elongated, more or less irregularly compressed, elastic and strong, up to 13 cm in height. The surface is rough, velvety. The colour is grey or brown. The oscula are on small cone-shaped elevations, which are commonly located in the upper portion of the sponge. p. 86

Skeleton. The main skeleton consists of long multispicular ramified and anastomosing fibers; short fibers, on which the thin dermal membrane rests, branch off the long fibers.

Megascleres: styli or subtylostyli are 0.500-0.750 mm in length and 0.009-0.20 mm in thickness. Microscleres: apically symmetrical palmate chelae; large slender chelae are 0.080-0.120 mm in length, medium-size chelae are 0.067-0.092 mm in length, small chelae are 0.021-0.031 mm in length; sigmas are 0.045-0.199 mm in length.

Distribution. Southwestern Barents Sea, East of Greenland, Denmark and Davis straits, north of Iceland, northern Pacific Ocean up to the Azores, Antarctica. Commonly found at the depth of 37-887 m (descends occasionally to the depth of 2187 m) on oozy bottoms at a temperature of 3-7°.

Examined: 5 specimens.

3. Esperiopsis forcipula Lundbeck, 1905 (Fig. 42; plate XIII, 1).

Lundbeck, 1905:16, pl. I, fig. 2, pl. VIII, figs. 4a-c; Hentschel, 1929: 938.

The Body is lumpy, markedly cavernous, soft and elastic, up to 15 cm in height. The surface is often slightly uneven, but smooth. The colour ranges from light grey to yellow and brown.

Skelton. The main skeleton is in the form of a meshwork consisting of ramified multispicular fibers. The thin dermal p.87
membrane has its own skeleton.

The Megascleres: styli are 0.500-0.704 mm in length and 0.010-0.014 mm in thickness. Microscleres: apically symmetrical palmate chelae are 0.011-0.018 mm in length; arcuate [redacted] chelae are 0.036-0.050 mm in length; sigmas are 0.03-0.085 mm in length; forceps are 0.017-0.019 mm in length.

Distribution. Barents Sea (near the Murmansk coast). Denmark strait. Lives at the depth of 101-365 m at a temperature of 1.3-2.4°.

Examined: 18 specimens.

4. Esperiopsis stipula Koltun, 1958 (Fig.43).

Koltun, 1958: 52, fig. 9.

The Body is elongated, stalk-shaped, not ramified, soft and not very strong, up to 4 cm in height at a thickness of 0.5 cm. The surface is rough due to the protruding ends of the fibers. The colour ranges from light yellow to brown.

The Skeleton is ramified, has an axial rod and a multitude of fibers diverging from this rod; the fibers are interspaced by individual spicules occurring in a fairly disorderly manner. p.88

Megascleres: styli are straight or gently curved, 0.312-0.707 mm in length and 0.010-0.032 mm in thickness. Microscleres: apically symmetrical palmate chelae are 0.027-0.042 mm in length.

Distribution. Southern Okhotsk, Eastern Tartar strait, near the Pacific shore of the southern Kuril islands. Found at a depth of 62-291 m on sandy and rocky bottoms at the temperature of 0.4 to 3.1°.

The description is based on analysis of 10 specimens.

5. Esperiopsis digitata (Miklucho-Maclay, 1870) (Fig.44; plates IX, 2; X; XI, 1).

Hentschel, 1929:876, 937 (rigida); Burton, 1935:69 (Amphilectus rigidus).

The Body is lumpy, laminate, dactylate, funnel-shaped or vaselike. The sponge is commonly furnished with a short stem. The surface is generally rough. The colour ranges from light grey and yellow to brown.

Skeleton. The main skeleton is in the form of a meshwork formed of fibers; thick primary fibers and thinner transverse secondary fibers interconnecting the former, are distinctly visible.

Megascleres: styli are gently curved, 0.109-0.312 mm in length and 0.006-0.021 mm in thickness. Microscleres: chelae are apically symmetrical, palmate, 0.010-0.032 mm in length.

Distribution. North Pacific Ocean. Lives at the depth of 5 to 291 m.

Over 60 specimens of this species are preserved in the ZIN AN SSSR collections.

While studying the collections obtained in the Bering Sea and near the Pacific coast of Canada, Lambe (1892) established 4 species and classified them with the genus *Esperiopsis*: *E. rigida*, *E. vancouverensis*, *E. quatsinoensis* and *E. lava*. Judging from the drawings and from the descriptions provided by Lambe, he dealt with one single species. Hentschel (1929:876) and Burton (1935:69) arrived at a similar conclusion and assigned all the 4 forms to *E. rigida*. Miklukho-Maklai, who was the first to describe the north Pacific spongiofauna, provided descriptions of a number of species, including those of *Veluspa polymorpha var. digitata*, *V. polymorpha var. gyriformis* and *V. polymorpha var. repens*. Examinations of the typical specimens of these forms preserved in the Zoological Institute of the AN SSSR, proved that they are identical with *E. rigida* Lambe. In accordance with the existing rule of priority, the species examined should be named *E. digitata* (Miklucho-Maclay), which would reduce the name of *E. rigida* Lambe to the rank of a synonym.

E. digitata produces two fairly readily distinguishable subspecies in our waters.

5a. Esperiopsis digitata digitata (Miklucho-Maclay, 1870) (Plate IX, 2; XI, 1).

Miklucho-Maclay, 1870a: 5,6, plate 1, Figs. 3-4, 6-8, 9, 10 (Veluspa polymorpha var. digitata, var. gyriformis, var. repens); Lambe, 1892:68-70, pl. III, figs, 4,5,8,9,10, pl.V, figs. 3, 3a-q,4,4a-d, 8, 8a-c, 13, 13a-c (Esperiopsis rigida, E. vancouverensis, E. quatsinoensis, E. laxa); Lambe, 1894: 118, pl. II, figs. 6, 6a (Esperiopsis quatsinoensis); Hentschel, 1929: 876, 937 (E. rigida); Burton 1935: 69 (A,philectus rigidus).

p.89

The Body is often furnished with a short stem and varies markedly in form; it is strong and elastic with a large amount of spongin in the skeleton; it may be ramified, dactylate, lumpy, thickly tubular, even vaselike or funnel-shaped. The surface is commonly rough. The colour ranges from light grey to yellow and brown of various shades. The location of oscula, measuring 1 mm in diameter, depends on the shape of the body, but they are commonly arranged on the upper or lateral surface, often in a row. Certain dactylate and ramified forms have a narrow inner canal opening at the end in an osculum.

The Skeleton consists of multispicular fibers extending radially towards the exterior and interconnected by bars, which form an irregular meshwork. The skeleton may vary somewhat in architecture in dependence with the body form, but it invariably contains thicker radially oriented primary fibers and transverse secondary fibers.

Megascleres: styli are gently curved, are occasionally of the type of polytyloti, 0.109-0.312 mm in length and 0.006-0.021 mm in thickness. Microscleres: chelae are apically symmetrical, palmate, 0.010-0.032 mm in length.

Distribution. Bering strait, Bering Sea, near the Pacific coast of the southern Kuril islands. Okhotsk Sea and Sea of Japan, near the Kuril islands. Near the Pacific coast of North America. Exists at the depth of 5-2 91 m on various types of sea bottoms, at a temperature of 1.2 to 16.2° and salt content of 33.95 to 34 %.

Examined: 60 specimens.

5b. Esperiopsis digitata infundibula Koltun, 1956 (Plate X).

Koltun, 1955b:48, plate VI, Fig. 4(rigida); Koltun, 1958:51

The Body is flabelliform or funnel-shaped up to 41 cm in height, sits on a short stem. Funnel walls are thin, smooth on the interior; the surface is very uneven, bears small curved costa forming an irregular reticulate pattern. The colour is light brown.

The Skeleton consists of multispicular fibers forming a meshwork in which thicker primary fibers and short (transverse) secondary ones are distinctly visible.

Megascleres: styli are slightly curved, 0.250-0.312 mm in length and 0.010-0.021 mm in thickness. Microscleres: apically symmetrical palmate chelae are 0.015-0.032 mm in length.

Distribution. Okhotsk Sea (south of Sakhalin), near the Pacific coast of the southern Kuril islands, Sea of Japan. Lives at the depths of 28-178 m.

Examined: 7 specimens.

This subspecies differs from the typical form mainly in the shape of the body and in the structure of the dermal skeleton, which forms the surface of the sponge. p.90

2. Genus Homoeodictya Ehlers, 1870

Lundbeck, 1905: 117

Genotype: Halichondria palmata Johnston, 1842

The Body varies in form from thickly incrusting and more or less massive to elongated, tabular, funnel-shaped or ramified dactylate. In dependence with the form of the body, the skeleton may be diffuse, irregularly fibrous or in the form of a regular meshwork with radially arranged primary fibers and short transverse secondary fibers. Spongin occurs in varying quantities in different forms. Megascleres: diactinal spicules (oxi, less often tyloti or strongyli). Microscleres: apically symmetrical palmate or arcuate chelae; rhaphidii may also be present.

Genus Homoeodictya has been classified by a number of authors with the family Dendoricellidae. This genus is, however, undoubtedly very closely related to the genus Esperiopsis and differs from it in that its megascleres are diactinal, whereas those of Esperiopsis are monactinal, a circumstance that cannot be regarded as sufficient ground for assigning these genera to different families. It is therefore more natural to classify the genus Homoeodictya with the family Esperiopsidae alongside the genus Esperiopsis and others.

1 (4). Megascleres are represented by oxi.

2 (3). Chelae are arcuate; the body is funnel-shaped or clavate......
1. H. flabelliformis (Hansen).

3 (2). Chelae are palmate; the body is dactylate.......
2. H. palmata (Johnston).

4 (1). Megascleres are represented by tyloti, tornoti or strongyli.

5 (6). Microscleres include rhaphidii; chelae are arcuate, of two types. Megascleres are in the form of tyloti..........

4. H. ciocalyptoides (Burton).

6 (5). Rhaphidii are lacking; chelae are arcuate, of one type. Megascleres are in the form of strongyli (up to tornoti)....

3. H. pulviliformis Koltun.

1. Homoeodictya flabelliformis (Hansen, 1885) (Fig.45; Plate VIII, 1).

Hanson, 1885: 12, pl. II, fig. 14, pl. VI (Myxilla); Arnesen, 1903: 13, pl. II, Fig. 2, Pl. IV, Fig. 4 (Desmacidon clavellata); Lundbeck, 1905: 118, pl. IV, figs. 2-3, pl. XIII, fig. 5a-4; Rezvoi 1928: 88; Hentschel, 1929: 967; Burton, 1935: 68 (Isodictya).

The Body is upright, stemmed, funnel-shaped or foliate (young specimens are clavate), fairly soft, up to 9 cm in height. The surface is slightly rough. The colour is light grey or greyish-brown. Dermal membrane is in the form of a thin pellicle.

The Skelton. The main skeleton consists of multispicular primary fibers extending from the stem into the sponge body; these fibers are curved in all the directions and are oriented towards the exterior. Primary fibers are interconnected by transverse, mainly singular spicules. Dermal skeleton consists of individual spicules arranged horizontally. Spongin is abundant only in the stem.

Megascleres: oxi are of two sizes, large oxi of the main skeleton are 0.410-0.624 mm in length and 0.011-0.025 mm in thick- p.91
ness, small dermal oxi are 0.268-0.350 mm in length and 0.011-0.018 mm in thickness. Microscleres: chelae are arcuate, markedly curved, 0.027-0.040 mm in length.

Distribution. Southwestern Barents Sea, Okhotsk Sea. Near the shores of Spitzbergen, Iceland, Norway and Faeroe islands. Lives at the depths of 56-287 m (and up to 1097 m). Sea bottoms: ooze, pebble, shell. Temperature: 1.16-4.3°. Salt content: 33.37-34.51%.

Examined: 8 specimens obtained in the Barents Sea. The specimen from the Okhotsk Sea identified by Burton (1935) as Isodictya flabelliformis has not been found in our material; furthermore, no other specimens of this species have been found thus far in the far eastern seas.

2. Homoeodictya palmata (Johnston, 1842) (Fig. 46; plate IX, 1).

Johnston, 1842: 92, pl. II, figs. 1-5 (Halichondria); Bowerbank, 1866:311 (Isodictya); Schmidt, 1870: 37 (Pachychalina compressa); Miklucho Maclay, 1870a: 5, Tab.I, Fig.11 (Veluspa polymorpha var. arctica); Ehlers, 1870: 16 (digitata); Carter, 1882: 109, fig. la, b (Chalina); Lambe, 1896: 190, pl. II, figs. 1, la-f; Lundbeck, 1905: 121, pl. XIII, fig. 6a-c; Hentschel, 1929: 967; ibid: 989 (Pachychalina arctica); Burton,1935: 68 (Isodictya).

The Body is elongated with dactylate, frequently fused branches, up to 34 cm in height, highly elastic. The surface is rough. The colour is light grey, yellow or yellowish grey. Oscula are present in large numbers and are up to 1-6 mm in diameter. Dermal membrane is in the form of a thin pellicle resting upon the main skeleton and is penetrated by the ends of the fibers.

Skeleton. The main skeleton consists of a regular meshwork of multispicular, primary and transverse secondary fibers forming square or tetragonal meshes. The fibers are coated by a distinctly visible spongin membrane.

Distribution. White and Barents Seas, Okhotsk Sea. Near Iceland and Faeroe islands, north Atlantic. Lives at the depth of 9 to 104 m on sandy, oozy-sandy and rocky bottoms at a temperature of -1.3 to 12.5° and salt content of 29.05 to 34.78%.

The species is represented by 32 specimens in the ZIN AN SSSR collections; many of these specimens contain in the skeleton individual styli alongside the oxi, which constitute the main mass of the skeleton. Homoedictya palmata resembles closely Experiopsis digitata in both the external appearance and the skeletal structure (compare the descriptions). It is entirely possible that H. palmata and E. digitata are much more closely related forms than is assumed at the present time. The collection processed by Miklukho-Maklai p.92 includes a typical specimen described by this researcher as Veluspa polymorpha var. arctica. Examination of this specimen has shown that it is identical with H. palmata.

3. Homoeodictya pulviliformis Koltun, 1955 (Fig. 47; Plate XI, 4).

Koltun, 1955a: 13, fig. 1, plate 1.

The Body is cushion-shaped, soft, slightly elastic, up to 1.5 cm in height at a width of 4 cm. The surface is even. The colour is greenish-grey. No oscula have been found.

Skeleton. The main skeleton consists of tufts of spicules and of individual disorderly scattered spicules. Distinctly defined dermal skeleton is lacking.

Megascleres: strongyli (to tornoti) are often gently curved, 0.320-0.400 mm in length and 0.007-0.009 mm in thickness. Microscleres: chelae are arcuate, 0.028-0.034 mm in length.

Distribution: Okhotsk Sea (near the northern Kuril islands).

One single specimen has been found at the depth of 110 m, on a rocky bottom.

4. Homoeodictya ciocalyptoides (Burton, 1935) (Fig.48; plate XI, 3).

Burton, 1935: 72, fig. 4 (Cornulum) p. 93

The Body is lumpy, irregularly subspheroidal, soft, elastic, up to 9 cm in height. The surface bears papillae. The colour is grey or dark on the exterior, light grey on the interior.

The Skeleton is in the form of an entangled meshwork and consists of tufts of tyloti with individual spicules scattered in the interstices between these tufts.

Megascleres: tyloti, commonly have finely acanthaceous, often apically asymmetrical ends, and are 0.185-0.343 mm in length and 0.003-0.008 mm in thickness. Microscleres: chelae are arcuate, large chelae are 0.046-0.063 mm in length, small chelae are 0.023-0.035 mm in length; rhaphidii are 0.065-0.088 mm in length.

Distribution. Sea of Japan (Pos'eta Bay, Peter the Great Bay, near the Cape Shelyakhov). Lives at the depth of 1-16 m.

Examined: 16 specimens. In describing this species, Burton (1935) divides the chelae into 3 types. Only 2 types are distinctly visible, however, and even these two differ only in size. It must be noted with regard to the megascleres, that the longer tyloti are commonly somewhat curved, whereas the shorter ones are straight and more markedly symmetrical apically.

3. Genus Guitarra Carter, 1874

Carter, 1874: 210

Genotype: G. fimbriata Carter, 1874.

The Body is lumpy, spherical, dactylate or cushion-shaped. The main skeleton is reticulate in character, dermal skeleton is lacking. Megascleres: diactinal spicules are commonly asymmetrical and usually change to styli. Microscleres: placochelae and bipocilli (possibly also sigmas).

1. Guitarra fimbriata Carter, 1874 (fig. 49; plate VIII, 2,3).

Carter, 1874: 210, pl. XIII, figs. 2-5, pl. XV, fig. 34; Topsent, 1904: 209, pl. V, figs. 13, 14, pl. XVI, fig. 9 (voluta); Hentschel, 1914: 75, pl. VI, fig. 4 (antarctica); Dendy, 1916: 124, pl. I, fig. 5, pl. III, fig. 21 (indica); Topsent, 1917: 71, pl. I, fig. 6, pl. VI, fig. 16 (sigmatifera); Dendy, 1924: 336 (antarctica var. novae-zealandicae); Brondsted, 1924: 458, fig. 16 (bipocillifera); Burton, 1929: 426 (synonymy).

The Body is cushion-shaped, spherical, lumpy or dactylate, up to 5 cm in height, soft, elastic. The colour is from light grey to brown. p.94

Skeleton. The main skeleton is in the form of a more or less regular meshwork consisting of diactinal spicules.

Megascleres: tornoti (or styli) varying in shape, 0.266-0.735 mm in length and 0.006-0.017 mm in thickness. Microscleres: placochelae, which tend to be of two sizes: 0.030-0.140 mm in length; bipocilli of a peculiar shape, 0.006-0.015 (up to 0.028) mm in length.

Distribution. Near the Pacific coast of the southern Kuril islands. North Atlantic, Indian Ocean, Antarctic. Lives at the depth of 28-188 m on rocky bottoms at a temperature of 1.8° to 16.2°.

Examined: 4 specimens, two of which are lumpy, while the two others are dactylate. Guitarra fimbriata was noted for the first time among our far eastern fauna.

IV. Family BIEMNIDAE

The Body is commonly of irregular shape, lumpy, spherical, tabular, foliate or funnel-shaped. The Skeleton is fibrous, ramified fibrous or reticulate. Megascleres are most often in the form of smooth monactinal spicules. No special dermal spicules are present. Microscleres are of the sigmoid type. No cheloids are present.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY BLEMNIDAE

1 (2). Microscleres include diancisters......

3. Hamacantha Gray.

2 (1). Diancisters are lacking.

3 (4). Microscleres include rhaphidii. Sigmas are of several types. The main skeleton is in the form of long ramified fibers.

2. Biemna Gray.

4 (3). Rhaphidii are lacking. Sigmas, when present, are of one type; apart from sigmas, there may be toxi. The main skeleton is reticulate of, less often, ramifibrous.

1. Tylodesma Thiele.

1. Genus Tylodesma Thiele, 1903

Schmidt, 1870: 53 (Desmacella); Vosmaer, 1880: 104 (Desmacodes); Vosmaer, 1885: 28 (Gellius); Ridley and Dendy, 1887: 58 (Desmacella); Topsent, 1892: 80 (Biemna); Lundbeck, 1902: 82 (Biemna); Thiele, 1903: 944.

Genotype: Halichondria inornatus Bowerbank, 1864

The Body is of an irregular shape, most often compressed; tabular, cushion-shaped or lumpy. The main skeleton is reticulate or ramifibrous. Megascleres: styli, tylostyli or subtylostyli. Microscleres: sigmas, sigmas and toxi or toxi alone. p.95

1 (2). Microscleres are represented by sigmas........

1. T. rosea (Fristedt).

2 (1). Microscleres are represented by toxi........

2. T. pennata (Lambe).

1. Tylodesma rosea (Fristedt, 1887) (Fig. 50; plate XI, 2)

Fristedt, 1887: 439, pl. 24, figs. 32-35, pl. 28, fig. 13 (Desmacella); Topsent, 1892: 83, pl. III, fig. 5, pl. IX, fig. 16 (Biemna dautzenbergi); Lundbeck, 1902: 82, pl. VI, figs 1-2, pl. XV, figs. 6-9 (Biemna); Rezvoi, 1928: 85 (Biemna); Hentschel, 1929:939; Koltun, 1958: 54 (Biemna).

The Body is more or less foliate, tabular, up to 12 cm in height, soft, elastic. The surface is slightly rough. The colour ranges from yellow to brown. The oscula and pores are arranged on their respective surfaces of the tabular sponge body.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of spicules and short fibers. The thin dermal membrane may have its own skeleton formed of multispicular fibers arranged in a meshwork.

Megascleres: tylostyli and subtylostyli are commonly gently curved, 0.203-0.894 mm in length and 0.004-0.021 mm in thickness. Microscleres: sigmas are 0.016-0.075 mm in length.

Distribution. Barents Sea (near the Murmansk coast and Franz Josef Land), north of Spitzbergen, Okhotsk Sea, near the Pacific coast of the southern Kuril islands. Greenland and Norwegian seas, Denmark strait, near Iceland and Azores. p. 96

Lives at the depth of 85-342 m (and up to 1442 m). Bottoms: sand, pebble, sandy ooze. Temperature :1.1-3.2°.

Represented by 35 specimens in the ZIN AN SSSR collections.

2. *Tylodesma pennata* (Lambe, 1894) (Fig. 51).

The Body is incrusting, cushion-shaped or lumpy, fragile, only slightly elastic. The surface is spicular, uneven, occasionally bears a characteristic corrugation. The dermal membrane adheres firmly to the underlying sections of the body. The colour is light brown or dark greyish brown.

Skeleton. The main skeleton consists of fibers extending from the base of the sponge body to its exterior, and contains a considerable amount of spongin. Near the surface the fibers tend to branch out and to anastomose. Spicules of the outer ends of the fibers protrude considerably above the sponge exterior. No special dermal skeleton is present, but a number of slender styli occur without any special order in the dermal membrane.

Megascleres: styli that are fusiform, gently curved, smooth, somewhat expanded at the top, 0.170-0.410 mm in length and 0.016-0.025 mm in thickness; styli that are thin, finely acanthaceous in the basal portion, 0.176-0.488 mm in length and 0.004-0.008 mm in thickness. Microscleres: toxi are 0.050-0.255mm in length and 0.002-0.006mm in thickness.

Distribution. Sea of Japan, near the southern Kuril islands (Kunashir island). Near the Vancouver Island (Pacific coast of North America). Depth: 1-2 m.

Examined 5 specimens.

2. Genus Biemna Gray, 1867

Lundbeck, 1902:88 (Desmacella)

Genotype: Desmacidon peachii Bowerbank, 1866

The Body is lumpy, spherical or elongated, tabular, foliate or goblet-shaped. The main skeleton consists of long ramified fibers. Megascleres: styli (occasionally tylostyli). Microscleres: sigmas of two or three types, rhaphidii and often small distorted spicules (commates)

1. Biemna Variantia (Bowerbank, 1861) (Figs.52,53; plate XI, 5).

Bowerbank, 1861: 69 (Halichondria); Burton, 1930a:522 (synonyms).

The Body is lumpy, spherical, foliate or funnel-shaped, up to 12 cm in height. The surface may bear papilla-like or cone-shaped excrescences. Dermal membrane is thin. The colour is light grey, greyish-yellow or brown.

Skeleton. The main skeleton consists of thick fibers extending from the base of the sponge body and forming ramifications throughout the body. Dermal skeleton consists of microscleres exclusively.

Megascleres: styli are 0.3-1.8 mm in length and 0.018-0.035 mm in thickness. Microscleres: sigmas are of two types, large sigmas are 0.40-0.226 mm in length and small sigmas are 0.008-0.042 mm in length; rhaphidii are 0.074-0.268 mm in length; commates are commonly present and are 0.008-0.020 mm in length. p. 97

Distribution. North Arctic Ocean, north Atlantic and north Pacific. Lives at the depth of 62-1000 m on different types of bottom.

The species examined is polymorphous and forms 4 subspecies in our waters.

1 (6). Sigmas do not exceed 0.120 mm in length.

2 (3). Rhaphidii do not exceed 0.160 mm in length.....
1c. B. variantia hamifera Lundbeck.

3 (2). Rhaphidii attain a considerably greater length than 0.160 mm.

4 (5). Styli attain a length of more than 1.4 mm......
1a. B. variantia capillifera (Levinson).

5 (4). Styli do not exceed 1.4 mm in length.....
1b. B. variantia groenlandica Fristedt.

6 (1). Sigmas attain a length considerably greater than 0.120 mm......
1d. B. variantia papillifera Koltun.

1a. Biemna variantia capillifera (Levinson, 1886) (Fig.52)

Levinsen, 1886: 357, Tab. XXX, Figs. 7-10 (Gellius capilliferus); Lundbeck, 1902: 88, pl. XVI, fig. 1a-g (Desmacella capillifra); Rezvoi, 1928: 85 (D. capillifera); Hentschel, 1929: 939 (capillifera).

The Body is lumpy. The colour ranges from greyish-yellow to brown. Dermal membrane is thin.

Skeleton. The main skeleton consists of thick fibers with small quantities of spongin. Dermal skeleton consists exclusively of microscleres.

Megascleres: styli are 0.3-1.8 mm in length and 0.023-0.030 mm in thickness. Microscleres: large sigmas are 0.04-0.114 mm in length and 0.002-0.0047 mm in thickness, small sigmas are 0.019-0.031 mm in length and 0.001 mm in thickness; rhaphidii are 0.150-0.220 mm in length and 0.001 mm in thickness (commonly occur in tufts); commates are 0.02 mm in length.

Distribution. Barents and Kara Seas, Laptev Sea, Shokal'skii strait. North of Spitzbergen, east of Greenland. Depth: 143-395m(up to 1000 m.) Bottoms: ooze, sand, gravel, rocks. Temperature: from -1.16 to 4.95°. Salt content: 34.51 - 34.85%.

Examined 11 specimens.

1b. Biemna variantia groenlandica Fristedt, 1887 (Fig. 53).

Fristedt, 1887: 441, pl. 24, figs. 38-45, pl. 28, fig. 14 (Desmacella peachii var. groenlandica); Lundbeck, 1902: 95, pl. VI, fig. 14, pl. VII, fig. 7, pl. XVII, fig. 2a-h (Desmacella groenlandica); Hentschel, 1929: 940 (groenlandica).

The Body is vaselike, up to 6 cm in height. The surface p.98 bears short cone-shaped excrescences formed by the ends of the fibers. The colour is light yellow. Dermal membrane is thin. The small oscula are located on papilla-like projections.

Skeleton. The main skeleton is in the form of fibers markedly ramified and anostomosing and extending from the base throughout the entire sponge body. Dermal skeleton consists of microscleres alone.

Megascleres: styli are 0.94-1.37 mm in length and 0.025-0.035 mm in thickness. Microscleres: sigmas are of two kinds, large peculiarly shaped sigmas (usually found in small quantities) are 0.09-0.100 mm in length and 0.0028 mm in thickness; small sigmas are 0.008-0.010 mm in length and 0.0007 mm in thickness; rhaphidii are of two kinds; long rhaphidii are 0.210-0.268 mm in length and 0.002 mm in thickness and short rhaphidii are 0.08-0.100 mm in length and 0.028 mm in thickness; commates are 0.008 mm in length.

Distribution. Barents Sea (near the Murmansk coast), East of Greenland, Denmark strait. Depth: 148-238 m. Bottoms: rock. Temperature: 2°. Salt content: 34.61%.

Examined 2 specimens.

1c. Biemna variantia hamifera Lundbeck, 1902.

Lundbeck, 1902:93, pl.VII, figs. 4-6, pl. XVII, figs.1a-l (Desmacella hamifera); Hentschel, 1929:940 (hamifera).

The Body is funnel-shaped or foliate, up to 12 cm in height. The surface is furnished with small cone-shaped excrescences formed by the ends of the fibers. The colour ranges from light yellow to light grey. Dermal membrane is thin. p.99

Skelton. The main skeleton consists of thick multispicular fibers extending from the base of the sponge and ramified throughout the body. Dermal skeleton consists exclusively of microscleres.

Megascleres: styli are 0.75-1.56 mm in length and 0.024-0.036 mm in thickness. Microscleres: sigmas are of two types; large peculiarly shaped sigmas are 0.055-0.118 mm in length and 0.002-0.003 mm in thickness, small sigmas are 0.014-0.021 mm in length and 0.001 mm in thickness; rhaphidii are large, filiform, 0.15-0.16 mm in length or small, 0.043-0.060 mm in length and 0.001 mm in in thickness; commates are 0.011-0.014 mm in length.

Distribution. Barents and Kara Seas. Denmark strait, near Iceland and Faeroe islands, north Atlantic. Depth: 104-823m. Bottoms: sandy ooze, pebble, sand. Temperature: from -1.35 to 3.6°. Salt content: 3.81%.

Examined: 13 specimens. Two preparations of the sponge described by Breitfuss (1912:64) as Gellius gemmuliferus, have been preserved in the collections of the Zoological Institute. Examinations of these preparations has shown that they contain spicules of at least two different sponges: styli and sigmas of Biemna variantia and large oxi and astrae of a sponge from the genus Geodia. Breitfuss, however, erroneously classifies this mixture of spicules under one single species, a circumstance reflected in his description of the "new" species Gellius gemmuliferus; this "species" must therefore be invalidated as nonexistent in nature. It would appear that Breitfuss dealt with a fragment of B. variantia hamifera* with some spicules of a sponge of the genus Geodia accidentally attached to it.

1d. Biemna variantia papillifera Koltun, 1958 (Plate XI,5)

Burton, 1935:70 (variantia); Koltun, 1958: 54 (Desmacella).

The Body is spherical, occasionally somewhat irregular, lumpy, soft, up to 5 cm in height. The surface bears papillaform projections formed by the ends of fibers. The colour ranges from light-grey to brown.

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*In describing G. gemmuliferus, Breitfuss quotes exaggerated figures for the size of the sigmas; in reality the sigmas measure up up to 0.120 mm, not 0.160-0.190 mm in length.

The Skeleton consists of ramified fibers.

Megascleres: styli are 0.644-1.350 mm in length and 0.018-0.032 mm in thickness. Microscleres: sigmas are of two types; large sigmas are 0.046-0.226 mm in length and 0.0025-0.010 mm in thickness and small sigmas are 0.020-0.042 mm in length and 0.001-0.0015 mm in thickness; rhaphidii are 0.074-0.262 mm in length and 0.001-0.002 mm in thickness.

Distribution. Okhotsk Sea, near the Pacific coast of the southern Kuril islands, Sea of Japan (Tartar strait). Depth: 62-218 m. Temperature: from -0.6 to 8.4°. Salt content: 33.10%.

Examined: 7 specimens. Different specimens vary in the length of their rhaphidii: in most instances the rhaphidii measure 0.190-0.262 mm in length, in some specimens they are 0.074 or 0.090-0.140 mm in length.

3. Genus Hamacantha Gray, 1867

Lundbeck, 1902:96. p.100

Genotype: Hymedesmia johnsoni Bowerbank, 1864

The Body varies in shape from incrusting to lumpy, spherical or somewhat elongated. The surface may bear papillae. The Skeleton is in the form of an irregular meshwork consisting of multispicular fibers and disorderly scattered sclerites and tufts of spicules. Spongin is present in small or trace quantities. Megascleres: styli or oxi. Microscleres: diancisters characteristic for the genus are of 1-3 types; toxi, trichodragmae and sigmas may also be present.

1. Hamacantha implicans Lundbeck, 1902 (Fig.54; plate XIII, 2).

Lundbeck, 1902:104, pl.V, figs. 6-9, pl.XIX, figs. la-c,2-6; Rezvoi, 1928:86; Hentschel, 1929:941.

The Body is incrusting or cushion-shaped, up to 4.7 cm in height, and bears cone-shaped papillae; sponge tissues contain a multitude of foreign inclusions. The surface is rough. Dermal membrane is in the form of a compact epidermis. The colour is light grey. The oscula are located on the papillae.

Skeleton. The main skeleton is in the form of disorderly scattered multispicular fibers (without spongin) and individual spicules; dermal skeleton consists of horizontally arranged spicules.

Megascleres: styli are 0.270-0.760 mm in length and 0.005-0.017 mm in thickness. Microscleres: diancisters are 0.170-0.220 mm in length; rhaphidii (in tufts) are 0.110-0.126 mm in length.

Distribution. Southwestern Barents Sea. Between Norway and Medveshii Island, Denmark strait, Davis strait, southwest of Iceland. Depth: 144-719 m (and up to 1442m). Temperature: 2.9-3.9°. Salt content: 34.58-34.69%.

Examined: 5 specimens.

V. Family Coelosphaeridae.

The Body is lumpy, spherical or somewhat compressed, occasionally fairly regular in shape. The Skeleton is reticulate, diffuse or fibrous. The sponge is commonly furnished with a cortical layer or with a thickened dermal membrane; occasionally the dermal membrane is thin, but coriaceous and strong and is easily detachable from the rest of the sponge body. Megascleres are in the form of diactinal, occasionally apically asymmetrical spicules of one or two types. Microscleres are represented by cheloids and sigmoids or are lacking.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY COELOSPHAERIDAE p.101

1 (2). Microscleres are lacking........ 3. Inflatella O. Schmidt.

2 (1). Microscleres are present.

3 (4). Dermal membrane is in the form of a strong cuticle. The main skeleton is ramifibrous or reticulate. Spongin is present.................. 2. Cornulum Carter.

4 (3). Dermal membrane is thin, pelliculate or coriaceous. The main skeleton consists of thin fibers, which do not form a lattice, or of disorderly scattered spicules. Sponging is lacking........ 1. Coelosphaera W. Thomson.

Genus Coelosphaera W. Thomson, 1873

Lundbeck, 1910: 7 (Histoderma); Wilson, 1925:433; Laubenfels, 1936:71

Genotype: C. tubifex W. Thomson, 1873

The Body is lumpy, spherical or somewhat compressed, is furnished with tubular papillae.

The main skeleton consists of fairly regularly distributed thin fibers which do not form a meshwork, or of disorderly scattered spicules. As a rule, spongin is lacking. Dermal membrane contains closely spaced spicules, forming the dermal skeleton. Megascleres: diactinal spicules are of one type: tyloti, strongyli or tornoti; occasionally the ends of the diactinal spicules are asymmetrical, in which event the spicules are represented by tylostrongyli or tylotornoti. Microscleres: arcuate chelae; sigmas and trichodragmae may be present alongside the chelae.

1 (2). Microscleres include sigmas; rhaphidii are lacking.....
1. *C. appendiculata* Carter.

2 (1). Microscleres include no sigmas, but rhaphidii are present...
2. *C. physa* (O.Schmidt).

1. *Coelosphaera appendiculata* Carter, 1874 (Fig. 55, plate XII, 1).

Carter,1874:220,pl.XIV,figs.23-25,pl.XI,figs.39a-b;Lundbeck,1910:7 pl.I,figs.6-11,pl.VI,fig.2 (*Histoderma*);Hentschel,1929:967.

The Body is spherical or tuberose and is furnished with tubular papillae, or is lumpy and bears no papillae, and it measured up to 7 cm in height. The sponge is soft, elastic, is coated with a transparent strong dermal membrane, which is readily detachable from the body proper. The surface is even. The colour is light yellow or greyish yellow.

Skeleton. The main skeleton consists of thin fibers arranged for the most part disorderly. Dermal skeleton is in the form of closely spaced spicules arranged horizontally in several tiers.

Megascleres: tyloti (to strongyli) are 0.270-0.950 mm in length and 0.002-0.005 mm in thickness. Microscleres: chelae are arcuate, 0.040-0.046 mm in length; sigmas are 0.047-0.093 mm in length.

Distribution. Barents Sea, northern Kara Sea. Denmark strait, near Iceland, near the Faeroe islands and near Ireland. Depth: 129-325 m (up to 1478 m).

Examined: 3 specimens.

2. Coelosphaera physa (O. Schmidt, 1875) (Fig. 56). P.102

Schmidt, 1875: 118, Tab.1, Figs. 8,9 (Desmacidon); Fristedt, 1887: 497, pl. 25, figs. 1-2, pl. 29, fig. 21 (Cornulum ascidioides); Arnesen, 1903: 16, Tab.11, Fig.5, Tab.III, Fig.9 (Histoderma); Lundbeck, 1910: II, pl. I, figs. 12-13, pl. IV, fig. 3 (Histoderma); Breitfuss, 1912: 70, plate II, figs 1-10; Hentschel, 1929: 968 (Histoderma); Burton, 1935: 72 (Histoderma).

The Body is spherical or lumpy, occasionally slightly elongated, up to 3 cm in height. Dermal membrane is coriaceous, bears cone-shaped excrescences and is readily detachable from the soft, fairly loose and fragile body of the sponge. The surface is smooth. The colour is light grey. The Oscula are located on [redacted] cone-shaped excrescences.

Skeleton. The main skeleton is in the form of thin, for the most part disorderly scattered fibers and tufts of spicules. Dermal skeleton consists of closely spaced horizontally oriented spicules.

Megascleres: strongyli (to tyloti) are gently curved, 0.500 -0.890 mm in length and 0.008-0.020 mm in thickness. Microscleres: chelae are arcuate, 0.035-0.058 mm in length; rhaphidii (in trichodragmae) are 0.11-0.12 mm in length.

Distribution. Western Barents Sea, north and east of p.103
Spitzbergen, Sea of Japan (Olga bay). Denmark strait, west of Greenland, near Iceland, Faeroe islands and Norway, Baffin Bay. Lives at the depth of 141-280 m (and up to 1000 m). Bottoms: rock, gravel ooze, detritus. Temperature: from -1.2 to 1.55°. Salt content: 34.63-35.78%. Examined 6 specimens.

2. Genus Cornulum Carter, 1876.

Genotype: C. textile Carter, 1876.

The Body form varies from elongated, cone-shaped to sub-spherical with a broad base, or is more markedly spherical. The body is commonly coated with a compact cuticular dermal membrane occasionally bearing papillae. The main skeleton is fairly compact and consists of thick fibers; the skeleton is ramified or reticulate. Spongin is present. Dermal skeleton is represented by closely spaced spicules. Megascleres: diactinal spicules are oxi or strongyli; the latter often terminate in fine spines. Megascleres are usually of one type and are identical throughout the sponge body, or of two shapes, but identical in origin: oxi in the main skeleton and strongyli in the dermal skeleton. Microscleres: chelae are palmate or arcuate; toxi and rhaphidii may be present alongside the chelae.

1 (2). Microscleres are represented by chelae (palmate) and toxi. Diactinal spicules are in the form of strongyli......

1. C. textile Carter.

2 (1). Microscleres are represented by chelae (arcuate) only; toxi are lacking. Diactinal spicules are commonly in the form of tornoti.....

2. C. tubiformis Burton.

1. Cornulum textile Carter, 1876 (Fig.57; plate XII, 3).

Carter, 1876: 309, pl.XII, fig. 9, pl. XV, fig. 28a-b; Fristedt,1887: 446; Lundbeck, 1909: 443; Lundbeck, 1910: 22, pl. II, figs. 13-14, pl. V, fig. 1; Hentschel, 1929: 968.

The Body is inversely cone-shaped with a flat upper surface bearing oscula and pores. The sponge, measuring up to 4.5 cm in height, is coated on the exterior by a compact cuticular dermal membrane. The surface is smooth. The colour is light yellow or yellowish brown.

Skeleton. The main skeleton is in the form of ascending ramified fibers interconnected by transverse fibers. Dermal skeleton consists of fairly closely spaced horizontal spicules.

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Megascleres: strongyli are often apically asymmetrical and have acanthaceous ends; they are 0.320-0.600 mm in length and 0.008-0.022 mm in thickness. Microscleres: chelae are palmate, 0.014-0.017 mm in length; toxi are 0.210-0.300 mm in length and 0.0016 in thickness.

Distribution. Western Barents Sea, southeastern Okhotsk Sea, Greenland and Norwegian Seas, northern Atlantic. Depth: 113-668 m.

Examined: 2 specimens. Recorded for the first time in the far eastern seas.

2. Cornulum tubiformis Burton, 1935 (Fig.58; plate XLIII,2).

Burton, 1935: 73, fig.5.

The Body is elongated, tubular, irregularly corrugated, tapering downwards, measures up to 8 cm in height. The surface is smooth, is coated with a compact cuticle. The sponge bears a small osculum at the top. The colour is yellowish brown.

Skeleton. The main skeleton is in the form of an irregular meshwork formed of fibers and tufts of spicules. Dermal skeleton consists of closely spaced spicules.

Megascleres: tornoti are curved, apically asymmetrical, fusiform (occasionally changing completely to styli or even strongyli), 0.208-0.312 mm in length and 0.008-0.015 mm in thickness; tornoti are straight, fusiform, 0.208-0.312 mm in length and 0.006-0.009 mm in thickness. Microscleres: chelae are arcuate, 0.021-0.031 mm in length.

Distribution. Sea of Japan, near the Pacific shores of the southern Kuril islands. Lives at the depth of 28-600 m. Bottoms: pebble, reef, sand, oozy sand. Temperature: 1.46-16.2°. p.105

Examined: 13 specimens. In describing this species, Burton (1935) mentions only one type of megascleres. At a closer examination of the preparations made of Cornulum tubiformis it becomes obvious, however, that the megascleres (tornoti) differentiate into two types: thick curved fusiform spicules changing occasionally to styli, and straight thinner spicules.

3. Genus Inflatella O. Schmidt, 1875

Schmidt, 1875:117; Topsent, 1892:93 (Joyeuxia).

Genotype: I. pellicula O. Schmidt, 1875

The Body is spherical, lumpy or clavate. The surface is commonly sheathed with a compact dermal membrane and is furnished with papillae. The main skeleton is in the form of thin fibers which do not form a meshwork. Dermal skeleton consists of closely spaced spicules. Megascleres: diactinal spicules are of one type: strongyli or tyloti. Microscleres are lacking.

1 (2). Dermal membrane is in the form of a cortical layer (measuring approximately 1 mm in thickness). Spicules are in the form of tyloti or tylostrongyli.......

1. I. globosa Burton.

2 (1). Dermal membrane is in the form of a thin pellicle easily detachable from the rest of the body. Spicules are in the form of strongyli or subtylostrongyli............

2, I. Rhodus (Hentschel).

1. Inflatella globosa Burton, 1955 (Fig.59; plate XII,2).

Koltun, 1955b:49; plate IV, fig. 5; Koltun, 1958:66,fig.21.

The Body is lumpy, occasionally clavate, soft, elastic, up to 6.5 cm in height. The surface bears closely spaced short sucker-like papillae. The body is coated with a compact, fairly thick dermal cover. The colour is light yellow.

Skeleton. The main skeleton is in the form of fibers, which do not form a true meshwork. Dermal skeleton is typical for the genus.

Megascleres: tyloti or tylostrongyli are often gently curved and measure 0.239-0.384 mm in length and 0.006-0.012 mm in thickness.

Distribution. Bering Sea (near the Mednyi island), western Okhotsk Sea, Sea of Japan. Lives at the depth of 6-299 m. Bottoms: rock, sand, gravel. Temperature: 2°.

Examined: 10 specimens.

2. Inflatella rhodus (Hentschel, 1929) (Fig.60).

Hentschel, 1929:887,963, plate XII, figs. 7, 10 (Hymedesmia).

The Body is encrusting or lumpy (with compressed digitate projections) up to 4 cm in height, soft, tears easily. The surface bears a multitude of low crateriform ostial papillae and cone-shaped oscular papillae. Dermal membrane is thin, transparent p.106

and is easily detachable from the sponge body. The colour ranges from light grey to greyish brown.

Skeleton. The main skeleton is in the form of ascending fibers and tufts of spicules. Dermal skeleton consists of closely spaced horizontal spicules. Megascleres: strongyli or subtylostrongyli are apically asymmetrical, occasionally resemble slightly polytyloti, are 0.322-0.436 mm in length and 0.006-0.010 mm in thickness.

Distribution. Barents Sea (east of Spitzbergen), Kara Sea, Laptev Sea. Found at the depth of 51-95 m.

Examined: 3 specimens.

VI. Family MYXILLIDAE.

The Body varies in shape, is commonly irregularly lumpy. The Skeleton is reticulate, reticulate-fibrous or of a different type, but never pinnate; no spiking spicules in the main skeleton. The commonly complex assortment of megascleres consists of no less than two kinds of spicules. Special dermal diactinal (in rare instances monactinal) spicules are present alongside the monactinal spicules of the main skeleton. Microscleres commonly include cheloids or their derivatives.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY MYXILLIDAE

1 (12). Microscleres include ancorae and birotules.

2 (3). Microscleres invariably include birotules.......
6. Iotrochota Ridley.

3 (2). Birotuli are lacking among the microscleres, but ancorae and their derivatives are always present.

4 (5). Spherancorae are present among the microscleres........
3. *Melonanchora* Carter.

5 (4). Spherancorae are lacking.

6 (11). Dermal spicules are diactinal.

7 (10). Ancorae are with appendages or dents, normal in length.

8 (9). Tridented ancorae........
1. *Myxilla* O. Schmidt.

9 (8). Multidentate ancorae.....
2. *Stelodoryx* Topsent.

10 (7). Ancorae with abbreviated dents, tri-or tetradentate.......
4. *Pseudomyxilla* Koltun.

11 (6). Dermal spicules are monactinal. Ancorae are tridentate or multidentate.........
5. *Monanchora* Carter.

12 (1). Microscleres include chelae; ancorae and birotules are lacking.

13 (14). Chelae are apically asymmetrical, palmate, have a characteristic appearance; bipocilli are also commonly present......
11. *Iophon* Gray.

14.(13). Chelae are apically symmetrical.

15 (16). Microscleres include forceps.........
10. *Forcepia* Carter.

16 (15). Forceps are lacking.

17 (20). Dermal skeleton consists of diactinal, less often diactinal and monactinal spicules.

18 (19). Microscleres are in the form of palmate chelae and toxi....
8. *Myxichela* Laubenfels. p. 107

19 (18). Microscleres are in the form of arcuate chelae and frequently, in the form of sigmas.......
7. *Lissodendory* Topsent.

20 (17). Dermal skeleton consists of monactinal spicules. Microscleres are in the form of palmate chelae, toxi, occasionally of sigmas or chelae alone.........
9. *Artemisina* Vosmaer.

1. Genus Myxilla O. Schmidt, 1862.

Schmidt, 1862:71; Ridley and Dendy, 1887:128; Svarchevskii, 1906:29; Lundbeck, 1905:130.

Genotype: Halichondria rosacea Lieberkuhn, 1895.

The Body is encrusting, cushion-shaped, lumpy or forms a more or less spherical mass; occasionally it is partly lobate; in certain instances the sponge is irregularly tabular or clavate. The main skeleton is commonly in the form of a meshwork, which may be regular or irregular, even diffuse. Long fibers are found in elongated forms. Dermal skeleton is present; it consists of tufts of spicules arranged at an angle to the exterior and of horizontally oriented spicules. Spongin is almost invariably present in very small quantities. Megascleres: monactinal spicules of the main skeleton (styli) are commonly acanthaceous (acanthostyli); dermal spicules are diactinal (strongyli, tornoti or tyloti) with either smooth or acanthaceous ends. Microscleres: tridentate ancorae (of one or two types), occasionally sigmas.

1 (4). Microscleres include sigmas.

2 (3). Monactinal spicules of the main skeleton include special small styli measuring up to 0.065 mm in length. Diactinal spicules are in the form of tornoti resembling oxi (with long points). The sponge commonly lives on the shells of bivalved mollusks of the genus Chlamis.....

2. M. parasitica Lambe

3 (2). The special small styli (up to 0.065 mm in length) are lacking. Diactinal spicules are in the form of blunt tornoti, which frequently have acanthaceous ends.......

1. M. incrustans (Johnston).

a (b). Megascleres of the main skeleton are commonly smooth (occasionally slightly acanthaceous) and exceed 0.420 mm in length............. 1e. M. incrustians gigantea Koltun, ssp.n.

b (a). Megascleres of the main skeleton are acanthaceous (acanthostyli) and do not exceed 0.420 mm in length.

c (f). The ends of the diactinal dermal spicules (tornoti) are commonly slightly acanthaceous.

d (e). Ancorae are differentiated into large and small (the former exceed 0.060 mm in length). Sigmas are 0.016-0.075 mm in length. Monactinal spicules are 0.140-0.416 mm in length.......

1a. M. incrustans incrustans (Johnston).

e (d). Ancorae are of one type (do not exceed 0.060 mm in length). Sigmas are 0.016-0.031 mm in length. Monactinal spicules are 0.140-0.290 mm in length...........

1b. M. incrustans var. perspinosa (Lundbeck).

f (c). Dermal diactinal spicules (tornoti) have smooth ends.

g (h). Diactinal spicules are cylindrical, irregularly curved, thin (0.005-0.006 mm in thickness). Ancorae are of two different sizes..............

1d. M. incrustans flexitornota Rezvoj - p.108

h (g). Diactinal spicules are more or less straight, fairly thick (up to 0.010 mm in thickness). Ancorae are of one size........

1c. M. incrustans behringensis Lambe.

4 (1). Sigmas are lacking.

5 (10). Dermal diactinal spicules are in the form of tornoti.

6 (7). Megascleres of the main skeleton include acanthostrongyli.......

5. M. brunnea Hansen.

7 (6). Acanthostrongyli are lacking.

8 (9). The sponge body is furnished with a stem. Ancorae are of one type......

4. M. penduncalate Lundbeck.

9 (8). The sponge body is unstemmed. Ancorae are of two types. The sponge commonly lives on brachiopod shells........

3. M. fimbriata (Bowerbank).

10 (5). Dermal diactinal spicules are in the form of strongyli. Ancorae are of two types......

6. M. Elastica Koltun.

1. Myxilla incrustans (Johnston, 1842) (Figs. 61-65; plate XIII, 3,4; plate XIV, 1)

Johnston, 1842: 122, pl. XII, fig. 5 (Halichondria); Lambe, 1894: 121 pl. III, figs. 3, 3a-f (behringensis); Lundbeck, 1905: 132, pl. IV, figs. 6, 7, pl. XIV, fig. 3a-h; ibid: 147, pl. V, fig. 1, pl. XIV, fig. 7a-e (perspinosa); Rezvoi 1925: 197, fig. 3 (flexitornota).

The Body is irregularly shaped, commonly lumpy or cushion-shaped, up to 12 cm in height. The surface is uneven. Dermal membrane is thin. The colour ranges from light grey to yellow and brown.

Skeleton. The main skeleton is commonly in the form of a more or less regular meshwork with three-sided meshes, occasionally of a less regular diffuse meshwork. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are commonly acanthoceous (acanthostyli), sometimes smooth, 0.140-0.500 mm in length and 0.004-0.023 mm in thickness; dermal spicules are tornoti with acanthaceous or (less often) smooth ends, 0.130-0.332 mm in length and 0.003-0.010 mm in thickness. Microscleres: ancorae are tridentate, often of two sizes, i.e. large and small, and are 0.013-0.100 mm in length; sigmas are 0.012-0.075 mm in length.

Distribution. The species is widely distributed in the northern hemisphere. It lives mainly at the depth of 4 to 274 m on sandy, pebbly and rocky bottoms. It can withstand fairly low salt contents (up to 27.68%.)

1a *Myxilla incrustans incrustans* (Johnston, 1842)
(Fig. 61; plate XIII,4; plate XIV, 1)

Johnston, 1842: 122, pl. XII, fig. 3, pl. XIII, fig. 5 (*Halichondria incrustans*); ibid:120, pl. XI, fig. 3 (*H. saburrata*); Bowerbank, 1866:249, 14 (*H. incrustans*); Schmidt, 1870: 56 (*isodictya fimbriata*); Vosmaer, 1885: 27, pl. IV, figs. 15, 16, pl.V, figs. 56-59 (*barentsi*); Marenzeller, 1886: 10, Tab.I, Fig. 2 (*Desmacidon incrustans*); Topsent, 1888: 118, pl. VI, fig. 16a (*Dendoryx incrustans* var. *typica*); Topsent, 1890: 201 (*D. incrustans*); Lundbeck, 1905: 132,pl.IV, figs. 6, 7, pl. XIV, fig. 3a-h (*incrustans*); Svarchevskii 1906: 337, pl. 11, fig. 5, pl. 15, fig. 25 (*gigas*); Hentschel, 1929: 942 (*incrustans*); Rezvoi, 1935: 70 (*incrustans*).

The Body is encrusting, cushion-shaped or (most frequently) lumpy, commonly fairly stiff and brittle, up to 11.5 cm in height. In most specimens the surface is uneven, bears convolutions and small mucros, is often cavernous. Dermal membrane is in the form of a thin pellicle. Oscula are scattered over the entire surface and (p.109.)
are located occasionally at the summits of the low cones or mucros. The colour ranges from greyish white to yellow and light brown.

Skeleton. The main skeleton is in the form of multispicular fibers forming a meshwork with three-sided meshes; occasionally the meshwork is less regular. Dermal skeleton is typical for the genus.

1b. Myxilla incrustans var. perspinosa Lundbeck, 1905 (Fig. 62).

Lundbeck, 1905: 147, pl. V, Fig.1, pl.XIV, fig.7a-4 (Perspinosa); Svarchevskii 1906: 320, pl. XI, fig.7, pl. XV, fig.27 (iophonoides); Hentschel, 1929: 944 (perspinosa); Burton 1935: 71 (perspinosa).

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The Body is lumpy, slightly lobate or spherical, up to 4 cm in height. The surface is corrugated, occasionally nearly even and smooth. Dermal membrane is thin. The colour ranges from light grey and yellow to brown.

Skeleton. The main skeleton is in the form of a diffuse meshwork of spicules and tufts of spicules: long fibers may also be present. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are markedly acanthoceous, 0.140-0.288 mm in length and 0.004-0.012 mm in thickness; dermal spicules are tornoti with slightly acanthoceous, occasionally smooth ends and measure 0.130-0.218 mm in length and 0.003-0.006 mm in thickness. Microscleres: ancorae are tridentate, 0.015-0.053 mm in length; sigmas are 0.016-0.031 mm in length.

Distribution. White and Barents Seas, Sea of Japan and Okhotsk Sea, Bering Sea (Avachinskii bay), southern Kuril islands (near the Shikotan island), Norwegian Sea (near the Jan-Mayen island). Depth: 4-118 m. Bottoms: sand, gravel, shell, ooze. Temperature: from -1.02 to 12°. Salt content: 31.89-35.05‰.

Until recently Myxilla incrustans had been regarded as an independent species. Our material includes 53 specimens, 21 of which are from the White Sea, 4 from the Barents Sea and 28 from various places in our far eastern seas. Specimens from the far eastern waters have somewhat larger ancorae and thicker acanthostyli. This variety is commonly found at small depths, often in gulfs and bays.

M. iophonoides, described by Svarchevskii (1906) from the White Sea, is probably an aberrant form of M. incrustans var. perspinosa.

1c. Myxilla incrustans behringensis Lambe, 1894 (Fig.63).

Lambe, 1894:221, pl.111, figs.3,3a-f (behringensis); Hentschel, 1929:945 (behringensis); Burton, 1935: 71 (flexitornota). p.111

The Body is irregular, lumpy, up to 12 cm in height, often bears cone-shaped excrescences with oscula at the top. The surface is uneven, is coated with a thin dermal pellicle. The colour ranges from light grey and yellow to greyish brown. The oscula are large, up to 1 cm in diameter. The pores are located in small depressions. The sponge is fairly stiff, not very elastic, fragile.

Skeleton. The main skeleton is in the form of multi-spicular fibers forming a meshwork with three-sides meshes; occasionally it is less regular. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.209-0.294 mm in length and 0.010-0.015 mm in thickness; dermal spicules are tornoti with smooth ends, 0.160-0.220 mm in length and 0.004-0.010 mm in thickness. Microscleres: ncorae are tridentate, 0.013-0.052 mm in length; sigmas are 0.012-0.054 mm in length.

Distribution. Bering and Okhotsk Seas, near the Pacific shores of the southern Kuril islands, Sea of Japan. Near the Vancouver Island (Pacific coast of North America). Depth: 32-104 m. Bottoms: sand, pebble, rock. Temperature: -1.3 to 12.8°. Salt content: 33.95%.

This subspecies, represented in the ZIN AN SSSR collections by 70 specimens, had been regarded until recently as an independent species. Having studied, however, the extent to which the features of Myxilla incrustans and of the genus Myxilla as a whole vary and the manner in which they vary we are compelled to classify this form as no more than a subspecies of M. incrustans. M.I.behringensis differs from the typical subspecies mainly in its tornoti (the ends of which are smooth instead of being acanthoceous) and in that its ancorae and sigmas are relatively smaller and are not of two types, but form a series of gradual transition from the smallest to the largest.

1d. Myxilla incrustans flexitornota Rezvoi, 1925 (Fig.64)

The Body is lumpy, elastic, up to 8 cm in height. The surface is slightly uneven, is coated with a dermal membrane. The colour ranges from light greyish yellow to yellow and brown. Here and there oscula are ranged in a row.

Skeleton. The main skeleton is in the form of an irregular meshwork often formed by long parallel multispicular fibers and transversely arranged spicules. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.214-0.285 mm in length and 0.006-0.010 mm in thickness; dermal spicules - tornoti are cylindrical, irregularly curved, 0.200-0.260 mm in length and 0.005-0.006 mm in thickness. Microscleres: ancorae are tridentate, of two sizes: small ancorae are 0.015-0.028 mm in length, large ones are 0.030-0.070 mm in length; sigmas are 0.069-0.063 mm in length.

Distribution. Southern and southwestern Barents Sea. Depth: 22-183 m. Bottom: sand, shell, rock, ooze. Temperature: 2-6.8°. Salt content: 33.22-34.56%.

Rezvoi (1925) describes this form as an independent species under the name of Myxilla flexitornota. The description was made from one single small fragment and naturally could not have been comprehensive. Our materials include 25 specimens from the southern Barents Sea, which are identical to the sponge described by Rezvoi. The original description should be supplemented with a few small, but important observations, which help clarify the systematic position of this form. The irregularly curved tornoti, which are highly characteristic for M. flexitornota, have smooth ends; a more thorough analysis of spicule preparations reveals, however, small tubercles at the ends of some of the tornoti; in certain instances individual tornoti have even acanthoceous ends, as is the case of M. incrustans incrustans. Even ancorae, which, according to Rezvoi, are of one type, can in reality be subdivided into two types (large and small).

Moreover, the shape of the large ancorae, which bear chisel-like appendages, is not specific and is found in a number of different specimens of M.i.incrustans. while, on the other hand, M. flexitornota has large ancorae with appendages pointed at the end. If we add that in M.i.incrustans the spines at the ends of tornoti often tend to be reduced and that specimens representing a transition between M. incrustans and the form examined have been found in the southern Barents Sea, as well as in the strait of the White Sea, it becomes obvious that we are dealing with a subspecies of M. incrustans and not with an independent species.

After Rezvoi published the description of M. flexitornota, different authors treated the systematic and taxonomic position of this form in a different manner. Hentschel (1929:943) regards this form as M. fimbriata var. flexitornota, Burton (1935:71) compares it with M. rosacea var. Lambe and later (1950:890) even identifies it with M. behringensis Lambe. It is impossible to agree with Hentschel, and to recognize M. flexitornota as a variety of M. fimbriata Bow. The absence of sigmas is a characteristic feature of the latter and is, as Burton observed correctly, a sufficient reason for regarding these two forms as different species. Burton's identification of M. flexitornota with M. rosacea var. and with M.behringensis described from the Pacific Ocean, is justifiable only in the sense that all the three forms are subspecies of one and the same species M. incrustans.

1e. Myxilla incrustans gigantea Koltun, ssp.n.
(Fig.65; plate XIII,3)

The Body is lumpy or irregularly compressed, up to 9 cm in height, fragile and rather inelastic. The colour ranges from light grey to greyish brown.

Skeleton. The main skeleton is in the form of a more or less regular meshwork consisting of three-sided meshes, less often is of an indefinite structure. Dermal skeleton is typical for the genus.

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Megascleres: styli of the main skeleton are smooth or slightly acanthaceous, 0.350-0.500 mm in length and 0.018-0.023 mm in thickness; dermal spicules are tornoti with acanthaceous ends, 0.266-0.332 mm in length and 0.008-0.010 mm in thickness. Microscleres: ancorae are tridentate, of two types: the small ones are 0.018-0.023 mm in length, and the large ones are 0.050-0.100 mm in length; sigmas are 0.021-0.075 mm in length.

Distribution. Bering Sea, Sea of Japan (near the Hokkaido island). Depth: 60-114m (up to 512m). Bottoms: oozy sand, pebble. Temperature: 0.9[illegible]-1.8°.

The subspecies is represented in our material by 6 specimens. It differs from the typical Myxilla incrustans in having larger spicules and, in particular, because of its smooth or **sparsely** acanthaceous styli. The reticulate structure of the skeleton may be seen by the naked eye.

2. Myxilla parasitica Lambe, 1893 (Fig.66; plate XV, 1,2).

Lambe, 1893:31,pl.II,figs.8,8a-f; Hentschel,1929:948 (Ectyomyxilla).

The Body is cushion-shaped, elastic, up to 1.3 cm in height. The surface is uneven and rough. The colour is dark grey, greyish yellow or yellowish brown. Dermal membrane is thin, semi-transparent.

Skeleton. The main skeleton consists of disorderly scattered spicules, which do not form a distinct meshwork, but tend to form hexahedral meshes. The parenchyme of the sponge also encloses small stocky styli arranged in tufts. Dermal skeleton is typical for the genus. p.114

Megascleres: acanthostyli (to smooth styli) of the main skeleton are 0.196-0.314 mm in length and 0.006-0.019 mm in thickness; small acanthaceous (to smooth) styli are 0.032-0.065 mm in length and 0.009-0.013 mm in thickness; dermal spicules are in the form of tornoti measuring 0.150-0.209 mm in length and 0.005-0.008 mm in thickness. Microscleres: ancorae are tridentate, large ancorae are 0.045-0.062 mm in length, small ancorae are 0.013-0.026 mm in length; sigmas are 0.014-0.026 mm in length.

Distribution. Bering and Okhotsk Seas, near the Kuril islands. Near the Vancouver Island (Pacific coast of North America). Depth: 15-126 m. Bottoms: sand, pebble, rock.

The species is represented by 4 specimens; most of them incrust shells of the bivalved mollusk of the genus Chlamis forming a sort of a low cushion around it. This species differs from other species of Myxilla in having tornoti which resemble oxi or are fusiform, in having in the main skeleton small, characteristic, smooth or acanthaceous styli alongside the acanthostyli, and in the structure of the skeleton as a whole.

3. Myxilla fimbriata (Bowerbank,1964)(Fig.67;plate XVII,3).

Bowerbank, 1864: 337 (Isodictya); Bowerbank, 1866: 253 (Halichondria dickiei); Vosmaer, 1880:116 (Amphilectus fimbriatus); Lundbeck, 1905: 141, pl. IV, figs. 9-10, pl. XVI, fig. 5a-l; Rezvoi 1928:86; Hentschel, 1929: 943; Burton, 1950: 891-892.

The Body is cushion-shaped, lumpy or lobate, elastic, up to 8 cm in height. The surface is even, nearly smooth. Dermal membrane is relatively thick and is easily detachable from the rest of the body. The colour: various shades of brown.

Skeleton. The main skeleton consists of multispicular fibers and forms an irregular meshwork with three and four-sided meshes and with a small quantity of spongin at the nodes.

Megascleres: acanthostyli of the main skeleton are 0.249-0.430 mm in length and 0.010-0.024 mm in thickness; dermal spicules are in the form of tornoti with pointed ends which measure 0.208-0.390 mm in length and 0.005-0.012 mm in thickness. Microscleres: ancorae are tridentate and of two types: large ones are 0.060-0.090 mm in length and small ones are 0.022-0.036 mm in length.

Distribution. Southwestern Barents Sea, Norwegian Sea, Denmark and Davis straits, Baffin Bay, southwestern Ireland. Depth: 37-582 m. Bottoms: sand, rock; ooze. Temperature: from -0.94 to 3.38°. Salt content: 34.25-34.78%.

Myxilla fimbriata belongs to the species which vary but little and can be easily identified. It is interesting to note that most specimens in our collections (i.e. 15 out of 24) are in the form of cushion-like incrustations on the shells of brachiopods. p.115

4. *Myxilla pedunculata* Lundbeck, 1905 (Fig.68).

Lundbeck, 1905:148,pl.V,fig.2,pl.XV,figs.1a-d; Hentschel, 1929:944.

The Body is spherical, often lobate, is furnished with a stem, soft and elastic. The sponge attains 4.5 cm in height. The surface is slightly hispid and uneven. Dermal membrane is thin. The colour is light brown.

Skeleton. The main skeleton consists of a multitude of longitudinal fibers interconnected by irregularly arranged transverse tufts of spicules and single spicules.

Megascleres: styli of the main skeleton are smooth or slightly acanthaceous and measure 0.270-0.551 mm in length and 0.010-0.021 mm in thickness; dermal spicules are in the form of tornoti measuring 0.229-0.369 mm in length and 0.005-0.010 mm in thickness. Microscleres: ancorae are tridentate, 0.046-0.077 mm in length.

Distribution. Kara Sea, Vil'kitskii strait, Laptev Sea (near the Bol'shevik island). Norwegian Sea (between Iceland and Faeroe islands, south of the Jan.-Mayer island). Depth: 28-325 m (up to 1073m in the Japtev Sea). Bottoms: ooze, sand, rock. Temperature: from -0.82 to 5.3°. Salt content: 34.85%.

This fairly rare species is represented in the ZIN AN SSSR collections by 8 specimens. Styli of the main skeleton may be either smooth, or acanthaceous and are not invariably smooth, as is stated in the original description by Lundbeck (1905). The species has been recorded for the first time in our northern seas.

5. Myxilla brunnea Hansen, 1885 (Fig.69;plate XVII,2).

Hansen, 1885; 12, pl. III, fig. 1d, pl. VI, fig. Lundbeck, 1905:144, tab.4, fig.11,tab.14,fig.6a-h;Svarchevskii 1906:338,pl.11,fig.6,pl.15,fig.26 (hastatispiculata); Rezvoi 1928: 86; Hentschel, 1929: 943.

The Body is tabular, irregularly compressed, occasionally lumpy and markedly lobate, up to 16 cm in height. The surface is uneven, corrugated. Dermal membrane is in the form of a thin pellicle. The colour is light brown to dark brown.

Skeleton. The main skeleton consists of a meshwork of fibers with four-sided or irregularly shaped meshes; furthermore, longitudinal fibers extend throughout the entire body of the sponge. Dermal skeleton is typical for the genus. p.116

Megascleres: acanthostyli and acanthostrongyli of the main skeleton are 0.210-0.380 mm in length and 0.010-0.021 mm in thickness; dermal spicules are in the form of tornoti with 2-4 pointed dents at the end and measure 0.150-0.290 mm in length and 0.004-0.007 mm in thickness. Microscleres: ancorae are tridentate, large ancorae are 0.044-0.084 mm in length, small ancorae are 0.023-0.037 mm in length.

Distribution. White, Barents and Kara Seas, Norwegian Sea, Denmark and Davis straits, northern Atlantic (near the Faeroe islands). Depth: 20-300m (occasionally up to 1442 m). Bottoms: sand, ooze, rock, shell. Temperature: from -1.5 to 4.95°. Salt content: 27.68 - 35.01%.

The species is represented by 42 specimens in the ZIN AN SSSR collections. Myxilla brunnea is frequently found in the Barents and White Seas, but is probably very rare in the Kara Sea; our collections include one single small fragment from the south-eastern Kara Sea. M. hastatispiculata, described by Svarchevskii in 1906, is the White Sea form of M. brunnea. The White Sea form differs from the typical M. brunnea in having somewhat distorted ancorae and tornoti (the latter frequently have one rounded end or two pointed and expanded ends lacking the characteristic dents) and in having smaller spicules than is usual.

6. Myxilla elastica Koltun, 1958 (Fig.70;plate XV,4).

Koltun, 1958: 55, fig. 11

p.117

The Body is tabular,(possibly funnel-shaped) furnished with a short stem, strong, elastic, up to 15 cm in height. The colour is brown.

Skeleton. The main skeleton is in the form of a meshwork consisting of long mulstispicular fibers and transverse tufts of spicules. Large quantities of spongin are present. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are 0.332-0.457 mm in length and 0.018-0.029 mm in thickness; dermal spicules - strongyli - commonly have truncated, finely dentate ends and measure 0.208-0.260 mm in length and 0.006-0.010 mm in thickness. Microscleres: ancorae are tridentate, typical for the genus, 0.079-0.115 mm in length; the ancorae with short pointed dents are 0.025-0.029 mm in length.

Distribution. Near the Pacific coast of the southern Kuril islands. Depth: 188m. Temperature: 2.2-2.7°.

Described from the analysis of two specimens.

2. Genus Stelodoryx Topsent, 1904

Topsent, 1904:174; Burton, 1932a:316.

Genotype: S. procera Topsent, 1904

The Body is cushion-shaped, lumpy or elongated, tabular, lobate or dactylate, often stemmed, elastic, with a considerable amount of spongin in the skeleton. The main skeleton is either in the form of an irregular meshwork, or (more often) consists of longitudinal ramified fibers interconnected by individual transverse spicules or short fibers. Dermal skeleton consists as a rule, of diactinal spicules. Megascleres: styli of the main skeleton are smooth or acanthaceous; dermal spicules are strongyli, tyloti or tornoti (rarely styli), occasionally with acantaceous ends. Microscleres: ancorae are multidentate, of one or two types.

This genus resembles the genus Myxilla, but differs from the latter in having a somewhat more complex skeletal architecture and multidentate (i.e. with 4 and more dents) rather than tridentate ancorae.

1 (6). The Body is dactylate, flabellate, tabular, lobate or funnel-shaped and is furnished with a stem.

2 (3). Megascleres of the main skeleton are markedly acanthaceous and include acanthostrongyli.....

2. S. flabellata Burton.

3 (2). Megascleres of the main skeleton are smooth.

4 (5). Dermal diactinal spicules are in the form of tyloti. Large ancorae are up to 0.157 mm in length.

4. S. toporoki Koltun.

5 (4). Dermal diactinal spicules are in the form of apically asymmetrical strongyli (to styli). Large ancorae are up to 0.018 mm in length......

1. S. alascensis (Lambe).

6 (1). The Body is lumpy and unstemmed........

3. S. pluridentata (Lundbeck).

1. Stelodoryx alascensis (Lambe, 1894) (Dif.71; plate XV,3). p.118

Lambe, 1894:119, pl. II, figs. 7, 7a-e (Chondrocladia) Koltun, 1955b; 49, plate VI, fig. 5.

The Body is flabellate, dactylate or irregularly lobate, measuring up to 22 cm in height and furnished with a short stem. The colour ranges from yellowish brown to dark brown. Oscula occur in large numbers, measure 1 to 3 mm in diameter and are often arranged in a row on the upper or lateral edges of the strong elastic sponge body. Dermal membrane is thin, is detachable with difficulty from the supporting fibers.

Skeleton. The main skeleton consists of fairly thick primary fibers and of shorter transverse secondary fibers. Dermal skeleton consists of the ends of the primary fibers, which terminate in tufts on the surface, projecting slightly above it. Dermal membrane proper encloses spicules arranged horizontally. Spongin is present in considerable quantities. p.119

Megascleres: styli of the main skeleton and of the main bulk of the dermal skeleton are smooth, gently curved, 0.156-0.383 mm in length and 0.016-0.025 mm in thickness; dermal spicules are apically asymmetrical, somewhat curved strongyli (to styli), measuring 0.124-0.228 mm in length and 0.008-0.009 mm in thickness. Microscleres: ancorae with 4-5 dents; large ancorae are 0.065-0.108 mm in length and small ancorae are 0.029-0.044 mm in length.

Distribution. Bering and Okhotsk Seas. Near the Pacific coast of North America. Depth: 32-148 m. Bottoms: pebble, rock, sand. Temperature: from -1.4 to 6.5°.

This species is fairly wide-spread in the northern Pacific Ocean and is represented in our collections by 24 specimens.

It is important to note that the dermal skeleton of Stelodoryx alascensis consists of apically asymmetrical diactinal spicules, some of which have one rounded and one truncated end, bearing dents and styli. In describing this species, Lambe (1894) fails to mention the diactinal spicules and classifies this form with the genus Chondrocladia. This species is, however, a Stelodoryx and not a Chondrocladia in the shape of its body, because of the presence of a special dermal skeleton and due to a number of other features.

2. Stelodoryx flabellata Burton, sp.n. (Fig.72;plate XIX,1).

The holotype is preserved in the Zoological Institute of the Academy of Sciences of the USSR, preparation No 3358.

The Body is finely tabular, funnel-shaped, elastic, up to 15 cm in height. The surface is somewhat uneven, finely brochal. The colour is brown. Dermal membrane is very poorly developed.

Skeleton. The main skeleton is in the form of a closely spaced meshwork formed of a multitude of fibers. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli and acanthostrongyli of the main skeleton are 0.322-0.425 mm in length and 0.012-0.020 mm in thickness; dermal spicules - tyloti and subtyloti - are 0.250-0.312 mm in length and 0.004-0.006 mm in thickness. Microscleres: pentadented ancorae are 0.056-0.072 mm in length.

Distribution. Kara Sea. Greenland Sea. Depth: 2300 m. Bottoms: ooze, gravel, rock. Temperature: 0.9-1°. Salt content 34.97%.

The ZIN AN SSSR collections include 2 specimens of this species. One of them was classified by Burton as Stelodoryx flabellata sp.n. This species is described here for the first time.

The new species differs from other species of this genus in the presence of acanthaceous diactinal spicules (acanthostrongyli) in its main skeleton.

p.120

3. Stelodoryx pluridentata (Lundbeck,1905)(Fig.73;plate XIV,2)

Lundbeck,1905:151; pl.V,fig.4, pl.XV,figs.3a-e (Myxilla)
Hentschel, 1929:944 (Mysilla)

The Body is cushion-shaped, lumpy, up to 3 cm in height, stiff, fragile. The surface is uneven. Dermal membrane is in the form of a thin pellicle. The colour is yellowish orange, brown.

Skeleton. The main skeleton is in the form of an irregular meshwork formed by long multispicular fibers extending towards the surface and interspaced by disorderly scattered short fibers, tufts of spicules and individual spicules. Dermal skeleton consists of tufts of diactinal spicules arranged at an angle to the surface, as well as of individual spicules lying horizontally in the membrane.

Megascleres: styli of the main skeleton are smooth, 0.320-0.520 mm in length and 0.009-0.023 mm in thickness; dermal spicules - strongyli or subtyloti to tornoti - may be apically asymmetrical, are often acanthaceous at the end and measure 0.176-0.320mm in length and 0.005-011 mm in thickness. Microscleres: ancorae bearing 5-6 dents are 0.071-0.115 mm in length.

Distribution. Tartar strait. Sangar strait (Japan); north of Iceland (Denmark Strait). Depth: 37-227m.

Examined: 3 specimens; one of them (found in the Sangar strait) differs from typical specimens in having smaller ancorae which measure 0.035-0.073 mm in length. This species has been recorded in the far eastern seas for the first time.

4. Stelodoryx toporoki Koltun, 1958 (Fig.74; plate XVI, 3.4; plate XVII, 1) p.121

Koltun, 1958: 57, fig.12.

The Body is flabellate, funnel-shaped, stemmed, up to 8 cm in height, elastic. Dermal membrane is in the form of a thin transparent pellicle. The colour is light brown. The foliate body of the sponge is perforated by a multitude of canals. The oscular surface is readily distinguishable from the ostial surface: the former is even, the latter bears ridges.

Skeleton. The main skeleton consists of multispicular primary and short transverse secondary fibers and of individual spicules. Dermal skeleton is typical for the genus. Spongin is present in large quantities.

Megascleres: styli of the main skeleton are smooth, occasionally bear small spines at the top, measure 0.509-1.140 mm in length and 0.021-0.031 mm in thickness; dermal spicules are tyloti, bearing dents at the ends and measuring 0.218-0.300 mm in length and 0.008-0.010 mm in thickness. Microscleres: ancorae with 4-5 dents; large ancorae are 0.119-0.157 mm in length; small ancorae are 0.031-0.040 mm in length.

Distribution. Okhotsk Sea (near the Kuril islands), near the Pacific shores of the southern Kuril islands. Depth: 113-303 m. Bottoms: sand, pebble, reef. Temperature: 1.8-3.1°.

Examined: 4 specimens.

3. Genus Melonanchora Carter, 1874.

Carter, 1874:212; Arnesen, 1903:15; Lundbeck, 1905:211.

Genotype: M. elliptica Carter, 1874.

The Body is thickly incrusting, lumpy, occasionally partly lobate or elongated, tabular or dactylate, is furnished with a stem. p.122 The skeleton commonly consists of multispicular fibers extending mainly towards the surface. Individual spicules or tufts of spicules are scattered in the interstices between the fibers. Elongated forms have a more regularly shaped skeleton, which contains a considerable quantity of spogin. Dermal dkeleton consists of horizontally arranged spicules and of fibers supporting the dermal membrane. Megascleres are either of two types, in which event the spicules of the main skeleton are styli, while the spicules of the dermal skeleton are tyloti or strongyli; or of one type, in which event the spicules are tyloti or strongyli. Microscleres: spherancorae, characteristic for the genus and composed (when fully developed) of 2 elliptic circles inserted into one another at a straight angle; ancorae tridentate are of one or two types.

1 (2). The Body is tabular, funnel-shaped or dactylate, is furnished with a stem............. 1. M. kobjakovae Koltun.

2 (1) The Body is lumpy, unstemmed.......... 2. M. elliptica Carter.

1. Melonanchora kobjakovae Koltun, 1958 (Fig.75; plate XVII, 4; plate XVIII,2).

Koltun, 1958: 58, fig.13.

The Body is tabular, funnel-shaped or dactylate, is furnished with a long strong stem. The surface is smooth, if a dermal membrane is present. The colour ranges from greyish brown to dark brown.

Skeleton. The main skeleton consists of multispicular fibers curved towards the surface, and of short transverse tufts of spicules forming a meshwork with four-sided meshes. Spongin is present in large quantities. Dermal skeleton is typical for the family.

Megascleres: styli of the main skeleton are gently curved, 0.302-0.540 mm in length and 0.016-0.021 mm in thickness; dermal spicules - strongyli and tyloti with slightly dentate ends, 0.187-0.332 mm in length and 0.006-0.0095 mm in thickness. Microscleres: spherancorae 0.027-0.035 mm in length; ancorae tridentate 0.067-0.113 mm in length (and single underdeveloped spherancorae in the form of ancorae of corresponding dimensions).

Distribution. Okhotsk Sea, near the Pacific coast of the southern Kuril islands. Depth: 28-231 m. Bottoms: rock, sand. Temperature: 1.8-16.2°.

Examined: 15 specimens.

2. Melonanchora elliptica Carter, 1874 (Fig.76; plate XVI, 2).

Carter, 1874: 212, pl. XIII, figs. 6-12, pl. XV, fig. 35a-b; Fristedt, 1887: 454, pl. 25, figs. 51-55; Topsent, 1892: 101; Arnesen, 1903: 17, Tab. II. Fig. 4, Tab. V, Fig. 4; Topsent, 1904: 177, pl. IV, fig. 10; Lundbeck, 1905: 211, pl. VII, figs. 4-6, pl. XX, fig. 1g-o; Hentschel, 1929: 966.

The Body is lumpy, occasionally spherical and lobate, up to 10 cm in height, fragile, but has a compact dermal membrane. The smooth surface bears verrucous ostial papillae. The colour is light grey or light yellow. P. 123.

The oscula are tubular and few.

The Skeleton. The main skeleton is in the form of an irregular meshwork consisting of multispicular fibers extending radially, and of individual spicules and tufts of spicules, with spongin in the nodes. Dermal skeleton consists of closely spaced horizontal spicules.

Megascleres: styli of the main skeleton, often have a rounded thin end and are 0.680-0.904 mm in length and 0.014-0.027 mm in thickness; dermal spicules - tyloti and strongyli - are 0.410-0.620 mm in length.

Distribution. Southwestern Barents Sea, Greenland Sea, Davis Strait, northern Atlantic Ocean (up to the Caribbean Sea and Azores). Depth: 106-385m. Bottoms: pebble, sandy ooze. Temperature: 2-3°. Examined: 5 specimens.

4. Genus *Pseudomyxilla* Koltun, 1955 p.124

Koltun, 1955 a:14.

Genotype: *P. vitiazi* Koltun, 1955

The Body is lumpy, thickly tabular. The main skeleton is in the form of an irregular or diffuse meshwork consisting of fibers, tufts of spicules and individual spicules. Dermal skeleton consists of diactinal spicules and is typical for the family. Megascleres: acanthostyli of the main skeleton; dermal spicules are strongyli, tyloti or subtyloti. Microscleres: ancorae are tridentate or tetradentate with abbreviated appendages.

The genus examined resembles closely the genus Myxilla, but differs from the latter mainly in that it has gamo-brevidentate ancorae (often with 4 dents); furthermore, genus Pseudo-myxilla commonly has diactinal spicules (strongyli and tyloti), whereas characteristic spicules of the genus are tornoti.

1 (2). Ancorae are tridentate, of two types......

1. P. lissostyla Koltun, sp.n.

2 (1). Ancorae are tetradentate, of one type......

2. P. vitiazi Koltun.

1. Pseudomyxilla lissostyla Koltun, sp.n. (Fig.77)

The holotype is preserved in the ZIN AN SSSR, preparations NoNo 70,3389.

The Body is lumpy. The colour is light brown (in a dry state).

Skeleton. The main skeleton consists of a diffuse meshwork formed by tufts of spicules or individual spicules. Dermal skeleton is typical for the genus.

Megascleres: styli and subtylostyli of the main skeleton are smooth, occasionally slightly acanthaceous, 0.332-0.421 mm in length and 0.011-0.013 mm in thickness; dermal diactinal spicules-strongyli, tyloti - are 0.260-0.332 mm in length and 0.005-0.006 mm in thickness. Microscleres: ancorae (tridentate) with abbreviated appendaged; large ancorae are 0.026-0.030 mm in length and small ancorae are 0.013-0.017 mm in length.

Distribution - Sea of Japan (near the Petrov island).

The description is based on the examination of one specimen.

In contrast to P. vitiazi Koltun, the new species has two types of ancorae (large and small).

2. Pseudomyxilla vitiazi Koltun, 1955 (Fig. 78).

Koltun, 1955a: 14, fig.2

The Body is lumpy, thickly tabular, rather inelastic, fragile, markedly cavernous, up to 5 cm in height. The colour is grey.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of tufts of spicules and of individual spicules; 3-and 4- spicular fibers also occur here and there. Dermal skeleton consists of horizontally arranged diactinal spicules.

Megascleres: acanthostyli of the main skeleton are curved, 0.436-0.520 mm in length and 0.021-0.029 mm in thickness; dermal spicules are strongyli with truncated or gently rounded, finely acanthaceous ends, 0.190-0.291 mm in length and 0.004-0.007 mm in thickness. Microscleres: ancorae are gamo-brevidentate, with 4 dents, 0.026-0.046 mm in length.

Distribution. Bering Sea (near the Kommandorskii islands), Okhotsk Sea (near the northern Kuril islands). Depth: 115-820 m. Bottoms: sand, pebble, reef. Examined: 3 specimens.

5. Genus Monanchora Carter, 1883. p.125

Carter, 1883a:369.

Genotype: M. clathrata Carter, 1883

The Body is tabular, foliate, occasionally stemmed. The skeleton consists of fibers, which are ramified, producing a dendritic appearance, or form a meshwork. Dermal skeleton consists of monactinal spicules. Megascleres: styli (to tylostyli) are commonly of two types. Microscleres: ancorae are apically symmetrical, tridentate or multidentate; sigmas may be present alongside the ancorae.

1. Monanchora pulchra (Lambe, 1894) (Fig.79; plate XXII, 2; plate XXIII,1,2).

Lambe, 1894:119,pl.II, figs.8, 8a-d (Chondrocladia); Hentschel, 1929:936 (Chondrocladia).

The Body is upright, foliate, up to 15 cm in height, is furnished with a thick rigid stem; it is occasionally ramified in such a manner that lateral branches diverge off the main stalk. p.126
These branches are intergrown in certain places. The sponge body is strong, rigid. The surface is finely spicular. The colour ranges from light grey to grey and light yellowish brown.

Skeleton. The main skeleton is fibrous, ramified in a dendritic manner. Dermal skeleton is formed of disorderly scattered subtylostyli.

Megascleres: styli and subtylostyli of the main skeleton are 0.613-1.424 mm in length (even up to 1.768 mm in length) and 0.029-0.044 mm in thickness; subtylostyli (to tylostyli) of the dermal skeleton are 0.280-0.769 mm in length and 0.008-0.013 mm in thickness. Microscleres: ancorae are apically symmetrical, tridentate, 0.018-0.025 mm in length; sigmas are 0.013-0.021 mm in length.

Distribution. Near the Pacific coast of the southern Kuril islands, near the Aleutian islands. Lives at the depth of 87-232 m on sandy, pebbly and rocky bottoms and at a temperature of 1.8-5.3°.

Examined: 8 specimens. Tabular forms have a characteristic appearance resembling somewhat a cabbage leaf. It is important to note that in certain specimens ancorae may be lacking or are present in small numbers. Ancorae vary from brevidentate to long-dented.

6. Genus Iotrochota Ridley, 1884.

Ridley, 1884:433; Lundbeck, 1905:185.

Genotype: I. bacculifera Ridley, 1884

The Body may be incrusting, cushion-shaped, lumpy or elongated, more or less foliate, is often cylindrical, non-ramified or with a few branches. The skeleton varies with the shape of the growth: In incrusting forms it is completely irregular or diffuse and consists of single spicules and tufts of spicules; the skeleton of massive forms consists of an irregular meshwork, that of elongated forms is more regular and forms primary and secondary fibers. Dermal skeleton is typical for the family. Megascleres: styli of the main skeleton, less often a mixture of styli and oxi, or only oxi, which are commonly smooth, less often acanthaceous, occasionally tend to be rounded at the pointed end; dermal spicules-tyloti or strongyli - are in certain instances so asymmetrical that they change to tornotostrongyli or, less often, to styli. Microscleres: brevidentate ancorae and birotules of one or two types, or birotuli alone.

1 (2). Dermal spicules are in the form of styli.....

1. I. magma Lambe.

2 (1). Dermal spicules are in the form of tyloti.....

2. I. rotulancora Lundbeck.

1. Iotrochota magma Lambe, 1894.

Lambe, 1894:120, pl. III, figs. 2, 2a-d; Hentschel, 1929:950

The Body is lumpy, up to 15 cm in height, strong, elastic. The surface is uneven, corrugated, but smooth. The colour is yellowish brown. The oscula are up to 3.5 mm in diameter, are located on small elevations. The pores are scattered over the entire surface.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of loose fibers. Dermal skeleton consists of horizontally arranged styli.

Megascleres: styli of the main skeleton are often gently curved, brevi-pointed, 0.438 mm in length and 0.0024 mm in thickness; dermal spicules - styli - are 0.242-0.333 mm in length and 0.006-0.009 mm in thickness. Microscleres: birotules with 14-18 dents are 0.023 mm in length.

Distribution. Bering Sea (near the Aleutian islands). p.127
The species is not represented in the ZIN AN SSSR collections.

2. Iotrochota rotulancora Lundbeck, 1905 (Fig.80).

Lundbeck, 1905: 191, pl. XVIII, figs. 6a-g; ibid: 189, pl. XVIII, figs. 4a-f (dubia); Hentschel, 1939: 951 (rotulancora, dubia).

The Body is incrusting or lumpy, up to 2.5 cm in height. The surface is smooth or slightly rough. The colour is light brown.

Skeleton. The main skeleton is in the form of a diffuse meshwork consisting of individual spicules and tufts of spicules with a small amount of spongin. Dermal skeleton is typical for the family.

Megascleres: styli of the main skeleton are gently curved, 0.384-0.550mm in length and 0.010-0.013 mm in thickness; dermal spicules - tyloti - are 0.300-0.410 mm in length and 0.004-0.007 mm in thickness. Microscleres: ancorae are brevidentate, with 7-17 dents at the end, 0.030-0.050 mm in length; birotules have 9-14 dents, are 0.017-0.032 mm in length.

Distribution. West Barents Sea. Greenland Sea, Denmark strait. Depth: 90-342m. Bottoms; oozy sand, gravel, Temperature: 3.5°. Salt content: 35.01‰.

Four specimens have been examined. It would appear from descriptions and drawings of spicules of a number of species of the genus *Iotrochota* described by Lundbeck (1905) that some of these species have been established without sufficient ground. We lack materials necessary to carry out a comprehensive revision of the genus *Iotrochota*, since only one species of this genus (*I. rotulancora*) is represented in our collections. As regards *I. dubia*, however, it can be stated with assurance that it is synonymous with *I. rotulancora*. In certain instances it is possible to observe disappearance of microscleres (ancorae or birotules) from the skeleton of various representatives of the same species.

Thus, 2 large specimens of I. rotulancora totally devoid of ancorae were found in Kola bay.

7. Genus Lissodendoryx Topsent, 1892.

Lundbeck, 1905:153; Hentschel, 1914:101; Burton, 1932a 331.

Genotype: Halichondria isodictyalis Carter, 1882.

The Body varies in shape from incrusting and massive, often more or less lobate, to dactylate and clavate or ramified. The skeletal architecture depends partly on the shape of the growth. It may be in the form of a diffuse or more or less regular meshwork; massive sponges contain longer fibers, ramified sponges have distinctly defined primary longitudinal fibers; lastly, the skeleton may be ramified. A special dermal skeleton is also present. Spongin is more or less abundant. Megascleres: spicules of the main skeleton are smooth or acanthaceous styli, dermal spicules are tornoti, tyloti, strongyli, occasionally with acanthaceous ends. p.128

Microscleres: chelae are arcuate, of one or more types, sigmas are often present.

1 (14). Microscleres include sigmas.

2 (5). Dermal spicules are in the form of strongyli or tyloti.

3 (4). Body of the sponge is bushy, often has anastomosing branches. Styli of the main skeleton exceed 0.400 mm in length......

1. L. complicata (Hansen).

4 (5). The sponge body is lumpy. Styli of the main skeleton do not exceed 0.400 mm in length...

2. L. firma (Lambe).

5 (2). Dermal spicules are in the form of torhoti.

6 (11). Chelae are of one or two types.

7 (8). Monactinal spicules of the main skeleton are smooth or slightly acanthaceous. Chelae are of two types; small chelae have reduced appendages (sigmoid chelae)........

3. L. indistincta (Fristedt).

8 (7). Monactinal spicules of the main skeleton are densely acanthaceous (acanthostyli). Small chelae have normally developed appendages.

9 (10). Chelae are of two types; small chelae are over 0.030 mm in length..............

4. L. Lundbecki Topsent.

10 (9). Chelae are of three types; small chelae are less than 0.020 mm in length.......

5. L. diversichela Lundbeck.

11 (6). Chelae are of one type.

12 (13). Monactinal spicules of the main skeleton are densely acanthaceous (acanthostyli) and measuring less than 0.250 mm in length; chelae are less than 0.030 mm in length.........

6. L. florida Koltun.

13 (12). Monactinal spicules of the main skeleton are smooth or slightly acanthaceous, over 0.250 mm in length; chelae exceed 0.30 mm in length......

7. L. fragilis (Fristedt).

14 (1). Sigmas are lacking.

15 (16). The sponge is furnished with a stem. Styli of the main

skeleton are smooth, dermal spicules are tornoti......

8. L. stipitata Lundbeck.

16 (15). The sponge is unstemmed. The Body is lumpy, cushion-shaped or tabular.

17 (22). Diactinal spicules are in the form of strongyli or tyloti.

18 (19). Diactinal spicules have smooth ends; chelae exceed 0.040 mm in length........

9. L. behringi Koltun.

19 (18). Ends of diactinal spicules are slightly acantaceous or dentate; chelae are less than 0.040 mm in length.

20 (21). Monactinal spicules of the main skeleton are densely acanthaceous. Diactinal spicules are in the form of strongyli and are slightly acanthaceous at the ends.....

10. L. sophia (Fristedt).

21 (20). Monactinal spicules of the main skeleton are smooth (often with several dents at the top). Diactinal spicules are in the form of tyloti with dented ends.

11. L. papillosa Koltun.

22 (17). Diactinal spicules are represented by tornoti or oxi.

23 (24). Monactinal spicules of the main skeleton (acanthostyli) are less than 0.200 mm in length; dermal diactinal spicules (tornoti) are slightly acanthaceous. The main skeleton is in the form of a distinct meshwork with three or four-sided meshes.....

12. L. amaknakensis (Lambe).

24 (23). Monactinal spicules of the main skeleton (acanthostyli) p.129 exceed 0.200 mm in length; dermal diactinal spicules are smooth. The main skeleton is in the form of an irregular meshwork.

25 (26). Chelae have abbreviated appendages. The surface of the sponge bears low verrucous papillae........

13. L. oxeota Koltun.

26 (25). Chelae have appendages of a normal length. The sponge surface bears no verrucous papillae........

14. L. ivanovi Koltun.

1. Lissodendoryx complicata (Hansen, 1885) (Fig. 81; Plate XXI, 3).

Hansen, 1885; 7, pl. I, fig. 8, pl. VI, fig. 8 (Reniera); ibid: 12, pl. I, fig. 3, pl. VI, fig. 2 (Myxilla grosea); Fristedt, 1887: 460, pl. 25, figs. 73, 77, pl. 29, fig. 23 (Clathria corallorhizoides); Henschel, 1929: 947; lundbeck, 1905: 166, pl. V, fig. 11, pl. XVI, fig. 42-g.

The Body is bushy, often with markedly anastomosing branches, up to 8.5 cm in height, strong and elastic. The surface is slightly rough. The colour is light yellow or greyish yellow. The oscula are up to 1 mm in diameter.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of fibers and individual transversely arranged spicules. The fibers are coated by spongin.

Megascleres: styli of the main skeleton are 0.420-0.680 mm in length and 0.016-0.026 mm in thickness; dermal spicules - strongyli (to tyloti) are 0.220-0.400mm in length and 0.0035-0.007 mm in thickness. Microscleres: chelae are arcuate, 0.031-0.058 mm in length; small sigmas are 0.015-0.023 mm in length, large sigmas are 0.042-0.055 mm in length.

Distribution. North of Spitzbergen, Laptev Sea, Vil'kitskii strait. Norwegian and Greenland Seas, Baffin Bay. Lives at the depth of 100-446m (and up to 1242m). Bottoms: pebble, sand, ooze, Temperature: from -1.61 to 2.3°. Salt content: 34.3 - 34.87%.

Examined: 8 specimens.

2. Lissodendoryx firma (Lambe, 1894).

Lambe, 1894: 122, pl. III, figs. 4,42-f (Myxilla); Hentschel, 1929: 945.

The Body is irregularly massive, lumpy, up to 6 cm in height. The surface is rough, uneven. The sponge is compact, inelastic and fragile. The colour is yellowish-brown. The oscula are up to 3.5 mm in diameter.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of short, thick and loose fibers. Spongin is present in large quantities. Dermal skeleton consists of horizontally arranged diactinal spicules.

Megascleres: styli of the main skeleton are smooth or acanthaceous, 0.281-0.366 mm in length and 0.016-0.019 mm in thickness; dermal spicules - strongyli (to subtyloti) - are 0.222-0.262 mm in length and 0.008 mm in thickness. Microscleres: p.130.
chelae are arcuate, with abbreviated appendages, 0.052 mm in length; sigmas are 0.045 mm in length.

Distribution. Bering Sea (near the Aleutian islands). Near the Vancouver Island (Pacific coast of North America).

Not represented in the ZIN AN SSSR collections.

3. Lissodendoryx indistincta (Fristedt, 1887) (Fig.82, Plate XXIV, 1)

Fristedt, 1887:444, pl. 25, figs. 13-19 (Hastatus); Lundbeck, 1905: 162, pl. V, fig. 10; pl. XVI, figs. 3a-h, Hentschel, 1929:947.

The Body is lumpy or tabular, more or less lobate, fairly fragile, rather inelastic. The surface is slightly cavernous or even, nearly smooth. Dermal membrane is fairly thick, adheres closely to the body of the sponge. The colour is light yellow, reddish grey, purplish grey or light grey. Oscula are present in small numbers.

Skeleton. The main skeleton is in the form of an irregular meshwork formed of tufts of spicules; long fibers, extending along the sponge body and recurving towards the exterior, are observed in certain specimens; the meshwork may be rather diffuse and consists then of monospicular fibers. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth or slightly acanthaceous, 0.312-0.500 mm in length and 0.008-0.015 mm in thickness; dermal spicules (tornoti and tornotostrongyli) are 0.170-0.290 mm in length and 0.0035-0.006 mm in thickness. Microscleres: chelae are arcuate, of two types; large chelae are 0.018-0.044 mm in length, small chelae (having a specific shape) are 0.008-0.015 mm in length; sigmas are 0.026-0.055 mm in length.

Distribution. Barents Sea, northern Kara Sea, western Vil'kitskii strait. Norwegian and Greenland Seas, Davis strait. Depth: 9-512 m. Bottoms: rock, sand, ooze, Temperature: from 1.65 to 5°. Salt content: 33.91-35.01‰.

Among the 63 specimens of this sponge preserved in the ZIN AN SSSR collections, there is a specimen having a tabular body which measures 13 cm in height, 9 cm in width and 2 cm in thickness. This is the largest specimen known at this time. The presence of small peculiarly shaped chelae is the characteristic feature of this species. At a superficial glance these chelae may be mistaken for sigmas, since their appendages are markedly reduced; at a strong magnification, however, it becomes evident that some of them bear small dents at the ends, while others (and this occurs more frequently) are covered over a greater or p.131
smaller portion of their length with dents, which are responsible for the characteristic appearance of the chelae.

4. Lissodendoryx lundbecki Topsent, 1913 (Fig.83)

Topsent, 1913:41, pl. IV, fig.7; pl. V, fig. 16; Hentschel, 1929: 880, 947.

The Body is irregularly compressed or in the form of a thick meshwork consisting of anastomosing branches; it is up to 7 cm in height and very fragile. The colour is greyish yellow or brown. A multitude of oscula and ostia are located on their respective surfaces of the compressed sponge body.

Skeleton. The main skeleton is in the form of a meshwork composed for the most part of three-sided meshes with 1-4 spicules on each side; thicker radial fibers are located closer to the surface. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are fairly acanthaceous, 0.244-0.330 mm in length and 0.010-0.016 mm in thickness; dermal spicules (tornoti) are 0.182-0.210 mm in length and 0.0045-0.005 mm in thickness; microscleres: chelae are arcuate, large chelae are 0.056-0.070 mm in length, small chelae are 0.022-0.025 mm in length; sigmas are 0.023 mm in length.

Distribution. Barents Sea (between the Murmansk coast and Medvezhii island), northeast of Spitzbergen, Between Norway and Medvezhii island. Lives at the depth of 95-384m. Bottoms:ooze. Examined: 2 specimens. p.132

5. Lissodendoryx diversichela Lundbeck, 1905 (Fig.84).

Lundbeck,1905:160, pl.V. fig. 9, pl. XVO, figs.2a-h; Topsent, 1913:41, Hentschel, 1929: 946.

The Body is thickly tabular, up to 4.5 cm in height, fairly stiff,but brittle. The surface is nearly smooth. The colour is light yellow. Dermal membrane is thin.

Skeleton. The main skeleton consists of an irregular meshwork formed by three-sided, four-sided or irregularly shaped meshes, the sides of which are composed of a multitude of spicules; longitudinal fibers may be observed here and there.

Megascleres: acanthostyli of the main skeleton are densely acanthaceous and measure 0.340 - 0.429 mm in length and 0.012-0.021 mm in thickness; dermal spicules-tornoti-are 0.238-0.280 mm in length and 0.004-0.006 mm in thickness. Microscleres: arcuate chelae; large chelae measure 0.047-0.071 mm in length, medium-size chelae are 0.018-0.028 mm in length and small, peculiarly shaped and markedly curved chelae are 0.010-0.015 mm in length; sigmas are 0.023-0.085 mm in length.

Distribution. Barents sea (near the Murmansk coast). Near the shores of Norway, southwest of Iceland, Denmark strait. Lives at the depth of 49-363m (1441m in the Denmark strait) on oozy bottoms. Temperature: 2°.

Since Lissodendoryx diversichela is quite brittle, no one succeeded so far in obtaining a whole specimen of this sponge, and we have an incomplete idea of its body shape. Our materials include only one Barents Sea specimen of the typical form of this species.

6. Lissodendoryx florida Koltun, 1955 (Fig.85; plate XXVIII, 2)

The Body is cushion-shaped, brittle, up to 0.5 cm in height. The surface is smooth. Dermal membrane is not detachable from the remaining sponge body. The colour is purplish pink.

Skeleton. The main skeleton is in the form of a more or less irregular meshwork consisting of three-sided meshes, the sides of which are composed of one or two spicules. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.189-0.205 mm in length and 0.014-0.017 mm in thickness; dermal spicules - fusiform tornoti - are 0.134-0.170 mm in length and 0.006-0.007 mm in thickness. Microscleres: arcuate chelae are 0.025-0.027 mm in length; sigmas measure 0.023-0.029 mm in length.

Distribution. Found in the 4th Kuril strait, at the depth of 80-100m, on a rocky bottom. Two specimens have been examined.

7. Lissodendoryx fragilis (Fristedt, 1885) (Fig.86)

Fristedt, 1885: 36, pl. III, figs. 6a-h (Hastatus); Lundbeck, 1905: 158, pl. V, figs. 7-8, pl. XVI, figs. la-g; Hentschel, 1929: 946

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The Body is incrusting, lumpy or compressed, foliate, up to 4.8 cm in height, fairly stiff, but brittle. The surface is slightly uneven and somewhat rough. The colour is greyish yellow or brown.

Skeleton. The main skeleton consists of an irregular meshwork composed of three-,four-or five-sided meshes, the sides of which are formed of a number of spicules; foliate forms also have long fibers. Small quantities of spongin are present at the corners of the meshes. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth or finely acanthaceous and measure 0.270-0.400 mm in length and 0.010-0.017 mm in thickness; dermal spicules - tornoti - are 0.070-0.268 mm in length and 0.003-0.005 mm in thickness. Microscleres: arcuate chelae are 0.032-0.060 mm in length; sigmas are 0.018-0.025 mm in length.

Distribution. Southwestern Barents Sea up to Kanin Nos and Kara Sea (near the Ushakov island). Norwegian Sea, Denmark strait. Depth: 63-183 m. Bottoms: rock, pebble, sand mixed with ooze. Temperature: from -0.2 to 2°. Salt content: 34.16-34.72%.

Seven specimens have been examined.

8. Lissodendoryx stipitata Lundbeck, 1905 (Fig.87).

Lundbeck, 1905: 170, pl. V, fig. 3, pl. XVIII, figs. 2a-4;
Hentschel, 1929: 947.

The Body is small, slightly compressed from the sides, elastic, up to 4.5 cm in height and is furnished with a stem. The colour is brownish grey. p.134

Skeleton. The main skeleton is formed of ramified and anastomosing multispicular fibers. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are 0.390-0.620 mm in length and 0.012-0.016 mm in thickness; dermal spicules - tornotiare 0.310-0.488 mm in length and 0.006-0.010 mm in thickness. Microscleres: arcuate chelae are 0.032-0.045 mm in length.

Distribution. Western Laptev Sea. Denmark strait, near the Faeroe islands. Depth: 1073-1783 m (503m near the Faeroe islands). Bottoms: brown ooze. Temperature: from 1.1 to 0.38°. Salt content: 34.88%.

Examined: one specimen.

9. Lissodendoryx behringi Koltun, 1958 Fig.88, plate XX,3).

The Body is lumpy, spherical, up to 5cm in height. The surface is uneven, smooth; in certain places there are small verrucous papillae bearing oscula. The sponge is brittle, inelastic. The colour is grey; light brown. Dermal membrane is easily detachable.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of long multispicular fibers and disorderly arranged spicules and bundles of spicules. Dermal skeleton is typical for the family.

Megascleres: acanthostyli of the main skeleton are 0.405-0.665 mm in length and 0.025-0.038 mm in thickness; dermal spicules - strongyli - may be somewhat fusiform and are 0.374-0.720 mm in length and 0.010-0.017 mm in thickness. Microscleres: chelae are arcuate, 0.042-0.057 mm in length.

Distribution. Bering Sea (near the Bering Island), Okhotsk Sea (near the Kuril islands), Aniv Bay. Lives at the depth of 32-198m.

Examined: 4 specimens.

10. *Lissodendoryx sophia* (Fristedt, 1887).

Fristedt, 1887: 451, pl. 25, figs. 30-32 (*Esperia*); Lundbeck, 1905: 156, pl. V, fig. 6, pl. XV, fig.5; Hentschel, 1929:946.

The Body is vertically erect, foliate, up to 5 cm in height, only slightly elastic. The surface is smooth. The colour is dark brown. The pores and oscula are located on the respective ostial and oscular sides of the tabular sponge body.

Skeleton. The main skeleton consists of loose bundles of spicules and individual spicules forming a diffuse meshwork. Dermal skeleton is typical for the genus. p.135

Megascleres: acanthostyli of the main skeleton are 0.440-0.518 mm in length and 0.010-0.013 mm in thickness; dermal spicules - strongyli with slightly acanthaceous ends - are 0.270-0.340 mm in length and 0.007-0.010 mm in thickness. Microscleres: chelae are arcuate, 0.028-0.034 mm in length.

Distribution. Barents Sea (near the Murmansk coast). East of Greenland, south of Iceland. Depth: 165-238m (2089m near Iceland).

The species is not represented in our materials. A specimen of the sponge (from the Barents Sea) listed by Breitfuss as Lissodendoryx sophia, proved upon re-examination to be Iophon piceus (Vosmaer).

11. Lissodendoryx papillosa Koltun, 1958 (Fig.89; plate XX, 1).

Koltun, 1958:63, fig.19

The Body is spherical-lumpy, only slightly elastic, brittle, up to 6 cm in height. The surface bears closely spaced cone-shaped papillae. Dermal membrane is easily detachable from the remaining sponge body. The colour is light grey.

Skeleton. The main skeleton is in the form of an irregular, even diffuse meshwork. The dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth, commonly slightly dentate at the very top, curved, and measure 0.561-0.969 mm in length and 0.018-0.021 mm in thickness; dermal spicules-tyloti-are dentate at the ends and measure 0.301-0.384 mm in length and 0.007-0.008 mm in thickness. Microscleres: chelae are arcuate, 0.027-0.036 mm in length.

Distribution1 The Okhotsk Sea (near the southern Sakhaline shores and southern Kuril islands).

Examined: 2 specimens.

12. Lissodendoryx amaknakensis (Lambe, 1894) (Fig.90 plate XX, 2).

Lambe, 1894: 122, pl. II, fig.10 (Myxilla); Hentschel, 1929: 945; Burton, 1935:71.

The Body is cushion-shaped, more often irregularly lumpy, occasionally lobate, relatively compact, brittle, up to 10 cm in height. The colour ranges from light grey to yellowish brown. The surface is uneven, slightly spicular; the oscula are small, but distinctly observable, 1-2.5 mm in diameter. A thin delicate dermal membrane is present.

Skeleton. The main skeleton is in the form of a distinct meshwork with three-, and four-sided meshes having 1-5 spicules on the sides.

Megascleres: acanthostyli of the main skeleton are densely acanthaceous and measure 0.126-0.189 mm in length and p.136
0.0052-0.013 mm in thickness; dermal spicules - tornoti - are slightly acanthaceous and measure 0.115-0.182 mm in length and 0.0035-0.008 mm in thickness. Microscleres: chelae are arcuate, 0.018-0.025 mm in length.

Distribution. The Bering, Okhotsk Seas and the Sea of Japan. Near the Pacific coast of North America (up to the Vancouver Island). Most common at the depth of 2-63m (up to 896m). Bottoms: sand, pebble, rock. Temperature: 0.87-0.37°.

The species is represented by 54 specimens in the ZIN AN SSSR collections.

13. Lissodendoryx oxeota Koltun, 1958 (Fig.91; plate XXI, 2).

Koltun, 1958: 61, fig. 17.

The Body is lumpy, elastic, up to 5 cm in height. The surface bears low verrucous papillae. Dermal membrane is thick and is firmly attached to the underlying layers of the sponge body. The colour is grey.

Skeleton. The main skeleton is in the form of an irregular or even diffuse meshwork consisting of radially arranged fibers and of disorderly strewn bundles of spicules and individual spicules. Dermal skeleton is fairly well developed and is typical for the genus.

Megascleres: acanthostyli of the main skeleton measuring 0.231-0.426 mm in length and 0.012-0.018 mm in thickness; dermal spicules - oxi and tornoti - are 0.239-0.322 mm in length and 0.009-0.012mm in thickness. Microscleres: chelae are arcuate, with abbreviated appendages, 0.016-0.021 mm in length.

Distribution. The Okhotsk Sea (east of the Sakhaline island), the 4th Kuril strait. Found at the depth of 100-110m.

Examined: 2 specimens.

14. Lissodendoryx ivanovi Koltun, 1958 Fig. 92; plate XXIV, 2). p.137

Koltun, 1958: 62, fig.18

The Body is lumpy, often somewhat compressed, up to 8 cm in height, only slightly elastic, brittle. The colour is grey on the surface, light grey on the interior.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of bundles of spicules. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.228-0.384 mm in length and 0.012-0.020 mm in thickness; dermal spicules - tornoti - are fusiform and measure 0.187-0.228 mm in length and 0.006-0.008 mm in thickness. Microscleres: chelae are arcuate, 0.023-0.032 mm in length.

Distribution. Near the Pacific coast of the southern Kuril islands, eastern Tartar strait. Lives at the depth of 138-188m. Bottoms: reef, pebble. Temperature: 2.2-11.5°.

Examined: 4 specimens.

8. Genus Myxichela Laubenfels, 1936

Laubenfels, 1936:85.

Genotype: Lissodendoryx tawiensis Wilson, 1925.

The Body is lumpy, thickly tabular or elongated, dactylate. The main skeleton is in the form of a more or less regular or diffuse meshwork consisting of fibers, bundles of spicules and individual spicules. The dermal skeleton consists of single spicules and small bundles of spicules arranged at an angle to the surface; individual diactinal spicules arranged horizontally are found in the dermal membrane proper. Megascleres: styli of the main skeleton are smooth or acanthaceous; dermal spicules - strongyli, tyloti or tornoti (changing occasionally to styli) are often acanthaceous at the end. Microscleres: palmate or arcuate chelae (apically symmetrical) and toxi.

1 (2). Monactinal spicules of the main skeleton are in the form of smooth styli. Chelae are palmate. Taxi are of two kinds.......... 1. M. fragilis Koltun.

2 (1). Monactinal spicules of the main skeleton are in the form of acanthaceous styli (acanthostyli).

3 (6). Toxi are of one kind. Chelae are arcuate. Dermal spicules are diactinal.

4 (5). Dermal spicules - strongyli or tyloti have slightly acanthaceous ends...... 2. M. spirinae Koltun.

5 (4). Dermal spicules are tornoti with smooth ends...... 3. M. ochotensis Koltun.

6 (3). Toxi are of two types. Chelae are palmate. Dermal spicules are diactinal and monactinal....... 4. M. zenkevitchi Koltun.

1. Myxichela fragilis Koltun, 1955 (Fig.93; plate XXIX,3)

Koltun, 1955a: 15, fig.4

The Body is elongated, dactylate or lumpy, up to 5 cm in height. The surface is slightly uneven, is covered with a thin dermal membrane. The colour is light yellow.

Skeleton. The main skeleton consists of an irregular meshwork, formed by multispicular fibers. Dermal skeleton consists p.138 of bundles of diactinal spicules arranged at an angle to the surface, and of individual spicules arranged tangentially in the dermal membrane.

Megascleres: styli of the main skeleton are smooth, gently curved in the middle, 0.291-0.364 mm in length and 0.012-0.018 mm in thickness; dermal spicules - strongyli-are dentate at the ends, 0.176-0.228 mm in length and 0.006-0.008 mm in thickness. Microscleres: chelae are palmate, 0.014-0.017 mm in length; large toxi are 0.124-0.218 mm in length and 0.002 mm in thickness, small toxi are 0.021-0.035 mm in length and 0.001 mm in thickness.

Distribution. Northern Okhotsk Sea, the 4th Kuril strait. Depth: 54-113m. Bottoms: rock, sand,ooze.

Examined: 6 specimens.

2. Myxichela spirinae Koltun, 1958 (Fig.94).

Koltun, 1958: 60, fig.15 .

The Body is irregularly lumpy. The surface is uneven, markedly corrugated. The sponge is elastic, but easily torn and measures up to 6.5 cm in height. The colour is grey.

Skeleton. The main skeleton is in the form of a more or less regular network formed of three-sided meshes (having one, less often two spicules on each side). Dermal skeleton is typical for the family.

Megascleres: acanthostyli of the main skeleton are - 0.166-0.213mm in length and 0.010-0.013 mm in thickness; dermal spicules - strongyli, tyloti or tornoti - are often apically asymmetrical, have slightly acanthaceous ends and measure 0.166-0.208 mm in length and 0.003-0.004mm in thickness. Microscleres: chelae are arcuate, 0.023-0.035 mm in length; toxi (gently curved) are 0.136-0.200 mm in length and 0.009 mm in thickness.

Distribution. Eastern Tartar strait, near the Pacific coast of the southern Kuril islands. Depth: 71-414m. Bottoms: sand, pebble. Temperature: 2.3-6.6°.

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The species is represented by 2 specimens in our materials. The description should be supplemented with a few observations concerning the spiculation. The basal portion of acanthostyli bears short clavate projections instead of the usual more or less sharp spines. The ends of diactinal spicules vary markedly in shape even within one and the same specimen, and the spicules form a series of transitions from strongyli to tornoti. Cheloids of *Myxichela spirinae* are very similar to palmate chelae, even though they have been classified by us as arcuate chelae.

3. *Myxichela ochotensis* Koltun, sp. n. (Fig.95)

The holotype is preserved in the Zoological Institute of the Acamedy of Sciences of the USSR, preparations NoNo 1476, 2536, 2537.

The Body is lumpy, irregularly lobate or is furnished with dactylate projections. The surface is uneven. The sponge is stiff, but brittle, up to 6 cm in height. The colour is grey, greyish brown.

Skeleton. The main skeleton is in the form of a fairly irregular network consisting of multispicular fibers. Dermal skeleton is typical for the family.

Megascleres: acanthostyli of the main skeleton are 0.168-0.252 mm in length and 0.011-0.014 mm in thickness; dermal spicules - tornoti - are apically asymmetrical, fusiform, 0.151-0.220 mm in length and 0.005-0.009 mm in thickness. Microscleres: chelae are arcuate, 0.025-0.032 mm in length; toxi (gently curved) are 0.084-0.134 mm in length and 0.008 mm in thickness.

Distribution. Western Bering Sea, northern Okhotsk Sea. Depth: 83-280m. Bottoms: pebble, sand, rock. Temperature: from -0.5 to 12.4°.

Examined: 6 specimens. The species described is very similar to Myxichela spirinae in the composition of spicules in the skeleton, but differs from it in that its main skeleton consists of an irregular meshwork, whereas the main skeleton of M. spirinae is formed of a regular network of three-sided meshes. Furthermore, toxi of M. ochotensis are somewhat shorter than those of M. spirinae, while its chelae are typically arcuate and are not transitional to palmate chelae, as is the case in M. spirinae.

4. Myxichela zenkevitchi Koltun, 1958 (Fig.96).

Koltun, 1958: 59, Fig.14.

The Body is lumpy, stiff, but brittle, up to 5 cm in height. The colour is grey. p.140

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of multispicular fibers. Dermal skeleton consists of strongyli and styli arranged tangentially in the dermal membrane.

Megascleres: acanthostyli of the main skeleton are 0.405-0.478 mm in length and 0.033-0.042 mm in thickness; dermal spicules - tyloti (or strongyli)-are acanthaceous at the ends and measure 0.208-0.343 mm in length and 0.007-0.010 mm in thickness; styli are acanthaceous at the very top and measure 0.364-0.475 mm in length and 0.010-0.010-0.012 mm in thickness. Microscleres: chelae are palmate, 0.021-0.025 mm in length; large toxi are 0.178-0.364 mm in length and 0.0015 mm in thickness, small toxi are 0.075-0.092 mm in length and 0.004 mm in thickness.

Distribution. Near the Pacific shores of the southern Kuril islands. Depth: 100-150 m. Bottoms: sand, shell, pebble. Temperature: 5.3°.

Examined: 3 specimens. Dermal strongyli and styli of this species are apparently of the same origin, since spicules intermediate in shape between these two types are present (these are styli with blunt ends) and because the small spines on the caps of the styli are identical to those of strongyli.

9. Genus Artemisina Vosmaer, 1885

Vosmaer, 1885: 25; Lundbeck, 1905:110.

Genotype: Suberites arciger O. Schmidt, 1870.

The Body is cushion-shaped, more or less massive, spherical or, lastly, vertically erect, stemmed, cylindrical, ramified or funnel-shaped.

The Skelton is in the form of a loose diffuse meshwork consisting mainly of individual spicules interspaced by disorderly strewn multispicular fibers. The skeleton is often regular, reticulate, and consists of multispicular fibers. Dermal skelton consists either of radial bundles of spicules or of a meshwork consisting of horizontally arranged spicules. Megascleres: styli or subtylostyli are commonly of two types: some form the main skeleton, others compose the dermal skeleton. Styli are quite smooth or slightly acanthaceous in their basal portion.

Microscleres: apically asymmetrical palmate chelae, toxi and occasionally sigmas or only chelae (palmate).

1 (6). Microscleres include toxi.

2 (3). The body is cushion-shaped and strong (suberous)....

2. *A. arcigera* (O. Schmidt),

3 (2). The body is funnel-shaped or more elongated, flabelliform, coarsely porous.

4 (5). Toxi are of two kinds; the body is funnel-shaped, fragile...

1. *A. apollinis* (Ridley et dendy)

5 (4). The toxi are of one kind, filiform; the body is elongated, flabelliform....

3. *A. foliata* (Bowerbank).

6 (1). Toxi are lacking; the body is massive (spherical), furnished with a stem.......

4 *A. stipitata* Koltun),

1. *Artemisina apollinis* (Ridley et Dendy, 1887)(Fig.97)

Ridley and Dendy, 1887: 124, pl. XIX, figs. 3, 3a-c (*Amphilectus*); Lundbeck, 1910: 114, pl. XIII, figs. 4a-g; Hentschel, 1929: 939.

<u>The Body</u> is funnel-shaped, thickly tabular or massive, soft and elastic, but fragile and markedly porous, up to 8 cm in height. Dermal membrane is in the form of a thin pellicle. The colour is light grey, yellowish grey or light brown.

<u>Skeleton</u>. The main skeleton is formed of an irregular meshwork consisting of multispicular fibers, bundles of spicules and individual spicules. Dermal skeleton is in the form of a network consisting of spicules.

Megascleres: styli of the main skeleton are often finely acanthaceous at the basal end and measure 0.500-0.842 mm in length and 0.013-0.021 mm in thickness; styli of the dermal skeleton have a very finely acanthaceous basal portion and measure 0.290-0.457 mm in length and 0.005-0.009 mm in thickness. Microscleres: chelae are apically symmetrical, palmate, 0.014-0.018 mm in length; large toxi with acanthaceous ends are 0.291-0.468 mm in length and 0.004 mm in thickness, small toxi are smooth, 0.085-0.280 mm in length and 0.0007-0.002 mm in thickness.

<u>Distribution.</u> Barents and Kara Seas, Laptev Sea, Greenland Sea, Antarctic and Subantarctic. Lives at the depth of 18.5-380m, mainly on oozy bottoms.

Examined: 16 specimens.

2 <u>Artemisina</u> <u>arcigera</u> (O. Schmidt, 1870)(Fig.98; plate XX, 4).

Schmidt, 1870; 47, Tab.V, Fig.6 (<u>Suberites</u>); Vosmaer,1885; 25, pl. I. Fig.16, pl. V, figs. 51-55 (<u>suberitoides</u>); Fristedt,1187: 430, pl. 24, figs. 15-17 (<u>suberitoides</u>); Ridley and Dendy, 1887: 112 (<u>suberitoides</u>); Lundbeck, 1905: 110, pl. I, figs. 9-11,pl.XIII,fig.3a-f; Rezvoi, 1925: 197 (<u>arcigera</u> var.<u>spiceps</u>); Rezvoi, 1928:85;Hentschel, 1929:938.

The Body is cushion-shaped, spherical or somewhat elongated, up to 5.5 cm in height. This species resembles closely the sponge Suberites in consistency. The colour ranges from light yellow to grey. Dermal membrane is in the form of a thin pellicle supported by closely spaced, partly raceme-like bundles of dermal spicules. The oscula are arranged mainly in the upper part of the sponge body.

Skeleton. Internal skeleton appears in the form of a loose meshwork; towards the periphery it forms multispicular fibers extending to the surface and terminating in raceme-like bundles of dermal spicules penetrating slightly the membrane.

Megascleres: large subtylostyli, occasionally with finely acanthaceous caps, forming the main skeleton; and measuring 0.450-0.676 mm in length and 0.006-0.009 mm in thickness; small fusiform subtylostyli in dermal bundles are 0.280-0.428 mm in length and 0.009-0.018 mm in thickness.

Microscleres: chelae are palmate, apically symmetrical, 0.006-0.015 mm in length; toxi with acanthaceous ends are 0.060-0.360 mm in length and 0.001-0.006 mm in thickness.

Distribution. Barents and White Seas, Kara Sea, Vil'kitskii strait, north and east of Spitzbergen. Greenland and Norwegian Seas, Denmark and Davis straits, near the northeastern coast of North America. Lives at the depth of 14 to 625 m (occasionally up to 1000 m) on various bottoms at a temperature of 1.4 to 5°.

Examined: 102 specimens.

3. Artemisina foliata (Bowerbank, 1874) (Fig.99; plate XVIII,1). p.142

Bowerbank, 1874:198, pl. LXXIII, figs. 1-5 (Halichondria); ibid: 209, pl. LXXIV, figs. 4-8 (H.mutula); Carter, 1876:310, pl. XII, fig.10, pl. XXIX, fig.29 (Halichondria): Vosmaer, 1880: 118 (Amphilectus); ibid: 118 (Amphilectus mutulus); Bowerbank, 1882: 96 (Halichondria mutulus), 106 (Halichondria); Topsent, 1894: 12 (Homoeodictya); Topsent, 1913: 38 (Echinoclathria); Stephens, 1921: 57 (Echinoclathria); Hentschel, 1929: 971, 894 (Echinoclathria); Burton, 1930a: 501, 529.

The Body is flabelliform or elongated, irregularly ramified, up to 23 cm in height; the surface is vesicular, finely spicular. The colour ranges from light yellow to yellowish brown.

Skeleton. The main skeleton is in the form of a meshwork consisting of multispicular fibers formed by smooth styli; the dermal skeleton consists of bundles of spicules arranged at a strait angle to the surface.

Megascleres: styli of the main skeleton are gently curved and measure 0.320-0.570 mm in length and 0.014-0.020 mm in thickness; dermal styli (to subtylostyli) often bear fine dents on their caps and measure 0.196-0.365 mm in length and 0.003-0.0045 mm in thickness. Microscleres: chelae are apically symmetrical, palmate, measuring 0.016-0.020 mm in length; toxi are 0.266-0.770 mm in length.

Distribution. Barents Sea (near the Murmansk coast). Near the shores of Norway, northwestern coast of Europe (from France to Norway). Lives at the depth of 72-440m on various bottoms at a temperature of 1-4.2°.

Examined: 15 specimens.

4. Artemisina stipitata Koltun, 1959 (Fig.100; plate XXI,1)

Koltun, 1958:52; Fig.10.

The Body is spherical, often slightly lobate, tapers gradually downwards changing to a stem which is approximately equal in length to the length of the body proper. The surface p.143 is even and smooth. The colour is grey, yellowish grey. The sponge is strong, grows on rocks and is up to 10 cm in height.

Skeleton. The main skeleton is reticulate and is formed of thick fibers. Dermal skeleton consists of spicules arranged tangentially.

Megascleres: styli of the main skeleton are fusiform, curved, 0.374-0.488 mm in length and 0.010-0.027 mm in thickness; dermal styli are straight, slightly acanthaceous at the very top, 0.312-0.384 mm in length and 0.008-0.010 mm in thickness. Microscleres: apically symmetrical, palmate chelae measuring 0.010-0.017 mm in length.

Distribution. Southern Kuril strait. Found at the depth of 232m on a pebbly bottom. The description is based on the examination of 2 specimens.

10. Genus Forcepia Carter, 1874.

Lundbeck, 1905: 198; Topsent, 1904:177; ibid, 181 (Trachyforcepia).

Genotype: Halichondria forcipis Bowerbank, 1866.

The Body is thickly incrusting, lumpy or elongated, forming a massive irregularly shaped plate. The main skeleton varies in p.144 dependence with the shape of the body. It may be in the form of a more or less irregular or diffuse meshwork formed by bundles of spicules or by longitudinal primary fibers interconnected by disorderly arranged transverse spicules and bundles of spicules. Dermal skeleton consists of bundles of spicules arranged at an angle to the surface of the sponge; occasionally the dermal membrane proper also includes individual spicules arranged tangentially. Varying quantities of spongin are present. Megascleres: styli of the main skeleton are acanthaceous or smooth; dermal spicules are tyloti or strongyli. Microscleres: apically symmetrical arcuate chelae, sigmas, forceps (in certain instances only forceps).

Topsent (1904) and certain other authors (Laubenfels, 1936:85,94) mention two closely related genera; Forcepia and Trachyforcepia, which differ only in that the former has smooth, the latter acenthaceous styli. Topsent was the first researcher to make this distinction and probably felt himself that this subdivision is artificial, since he justifies it by saying that it is taxonomically convenient. More or less acanthaceous or smooth styli are such a variable characteristic even in different specimens of the same species that in reality it is of a very slight taxonomic significance and obviously cannot be used as a criterion for differentiating between two closely related genera. It is therefore evident that Trachyforcepis is a synonym of the genus Forcepia Carter.

1 (4). Sigmas commonly exceed 0.100 mm in length.

2 (3) Large forceps are gently curved, arcuate.......

1. _F._ _topsenti_ Lundbeck.

3 (2). Large forceps are markedly curved in such a way that their ends are parallel......

2. _F._ _fabricans_ (O. Schmidt).

4 (1). Sigmas are considerably less than 0.100 mm in length.

5 (8). Chelae are of two types, large and small (the former are more than 0.030mm in length); forceps are also of two kinds.

6 (7). Large forceps exceed 0.030 mm in length. Monactinal spicules of the main skeleton are markedly acanthaceous (acanthostyli).....

3. _F._ _usahakowi_ (Burton).

7 (6). Large forceps are less than 0.30 mm in length. Monactinal spicules of the main skeleton are smooth, less often acanthaceous..........

4. _F._ _bilabifera_ (Burton).

8 (5). Chelae and forceps are of one kind (the former are less than 0.030 mm in length. Styli are smooth.........

5. F. _japonica_ Koltun.

1. _Foreepia_ _Topsenti_ Lundbeck, 1905 (Fig.101).

Lundbeck, 1905: 204, pl. VI, fig.3, pl. XIX, figs. 4a-g; Hentschel, 1929: 966.

The Body is cushion-shaped or lumpy, fairly stiff, but brittle, up to 6 cm in height. The surface is somewhat rough and is furnished with cone-shaped papillae bearing oseula at their summits. The colour is brown or yellow (the papillae are light coloured).

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of bundles of spicules and individual spicules. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are 0.620-0.800 mm in length and 0.021-0.028 mm in thickness; dermal spicules - strongyli and tyloti - are 0.357-0.450 mm in length and 0.010-0.015 mm in thickness. Microscleres: chelae are arcuate, 0.034-0.047 mm in length; forceps are acanthaceous, large forceps measure 0.075-0.104 mm in length, small forceps are 0.022-0.035 mm in length; sigmas are 0.120-0.140 mm in length. p.145

Distribution. Kara Sea, Laptev Sea. Norwegian Sea. Depth: 1847-2500 m. Temperature: -0.4°. Salt content: 34.27‰.

Our collections include only two fragments of this species: one from the Kara Sea, the other one from the Laptev Sea. Forcepia topsenti is a typical abyssal Arctic form.

2. Forcepia fabricans (O. Schmidt, 1874) Fig.102; plate XIX, 2).

Lundbeck, 1905: 204, pl. VI, fig. 3, pl. XIX, fig. 4a-g; Hentschel, 1929: 966.

The Body is lumpy, in some instances partly elongated, fairly fragile, but elastic, up to 10 cm in height. The surface is slightly spicular. The colour varies from light grey to grey and yellowish. The upper surface of the sponge is furnished with papillae bearing oscula at the top.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of loose multispicular primary fibers and of transverse spicules. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are 0.530-0.715 mm in length and 0.012-0.021 mm in thickness; dermal spicules - tyloti - are 0.310-0.450 mm in length and 0.007-0.012 mm in thickness. Microscleres: chelae are arcuate, 0.042-0.057 mm in length; forceps are acathaceous and smooth, large forceps are 0.054-0.077 mm in length, small forceps are 0.025-0.034 mm in length; sigmas are 0.120-0.190 mm in length.

Distribution. Western Barents Sea, north of Spitzbergen, Bering Sea, Norwegian and Greenland Sea, Depth: 91-684 m (up to 1740 m). Bottoms: gravel, ooze, pebble, sand. Temperature: from -1.1 to 3°.

16 specimens have been examined. This species was found in the Bering Sea for the first time. The small fragment of the Bering Sea sponge obtained at the depth of 1740 m. differs somewhat from the typical form in the size of its spicules: styli are here 0.832-0.956 mm in length and 0.016-0.031 mm in thickness; tyloti are 0.456-0.561 mm in length and 0.009-0.011 mm in thickness; chelae are 0.033-0.37 mm in length; sigmas are 0.058-0.070 mm in length; forceps are 0.031-0.052 mm in length (small forceps have not been found).

3. Forcepia uschakowi (Burton, 1935)(Fig.103; Plate XXII,1).

Burton, 1935:71, fig. 2(Leptolabis).

The Body of the sponge is irregularly lumpy, discoidal, often cavernous, elastic, but fragile, up to 8 cm in height. The surface is uneven. The colour is light grey to yellow and light brown. The oscula, when present, are large, up to 0.5 cm in diameter and are found occasionally on cone-shaped projections.

Skeleton. The main skeleton is in the form of a network with three-sided meshes formed by bundles of spicules. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.187-0.300 mm in length and 0.008-0.016 mm in thickness; dermal spicules - tyleti or strongyli - are 0.187-0.290 mm in length and 0.006-0.007 mm in thickness. Microscleres: chelae are arcuate, large chelae are 0.031-0.046 mm in length, small chelae are 0.014-0.023 mm in length; sigmas are 0.029-0.060 mm in length; large forceps are 0.035-0.094 mm in length, small forceps are 0.010-0.020 mm in length.

Distribution. The Sea of Japan and the Okhotsk Sea south-east of the Kommandorskii islands, south of the Shikotan island. Depth: 20-185 m (up to 900M). Bottoms: pebble, shell, sand. Temperature: 0.87-16,2°.

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This species is fairly wide-spread in our far eastern seas and is represented in the ZIN AN SSSR collections by 41 specimens. Burton, who was the first researcher to describe this species, listed it with the genus Leptolabis Topsent. Genus Leptolabis includes, however, incrusting forms, having an entirely different architecture of the skeleton than that of the genus Forcepia (see below). Even if Burton believes that the incrusting forms are developmental or ecological modifications of the massive forms, the species examined should nevertheless be classified with the genus Forcepia, since, in accordance with the rules of priority, the genus Leptolabis becomes a synonym of the genus Forcepia. Certain specimens of F. uschakowi reveal reduced microscleres, particularly small and large forceps.

4. Forcepia bilabifera (Burton, 1935) (Fig.104; plate XXVIII,3).

Burton, 1935: 72, fig. 3(Leptolabis).

The Body is lumpy, elastic, but fragile, up to 5 cm in height. The surface is uneven. The colour is ash grey to greyish yellow. p.148

Skelton. The main skeleton is in the form of a somewhat irregular meshwork formed by bundles of spicules. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth or,
(0.249-0.300 mm),
less often, slightly acanthaceous, 0.248-0.300 mm in length and 0.008-0.012 mm in thickness; dermal spicules - tyleti - are 0.197-0.240 mm in length and 0.004-0.006 mm in thickness. Microscleres: chelae are arcuate, large chelae are 0.039-0.045 mm in length, small chelae are 0.023-0.024 mm in length; sigmas are 0.037-0.056 mm in length; forceps are thick, distinctly acanthaceous, measuring 0.014-0.018 mm in length, and thin, smooth, 0.008-0.010 mm in length.

Distribution. Western Okhotsk Sea, Sea of Japan, near the Pacific coast of the southern Kuril islands. Depth: 51-80m (? 465m). Bottoms: pebble, gravel, shell. Temperature: 0.43-12.8°.

Salt content: 34.22%.

Examined: 7 specimens.

5. *Forcepia japonica* Koltun, sp. n. (Fig.105).

The genotype is preserved in the Zoological Institute of the AN SSSR, preparations NoNo 1956, 2506.

The Body is lumpy, fragile, only slightly elastic, markedly cavernous. The colour is light yellow.

Skeleton. The main skeleton is in the form of a meshwork consisting of three-and four-sided meshes formed by bundles of spicules. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth, gently curved, 0.270-0.353 mm in length and 0.014-0.019 mm in thickness; dermal spicules-tyloti-are 0.249-0312 mm in length and 0.008-0.010 mm in thickness. Microscleres: chelae are arcuate, 0.021-0.025 mm in length; sigmas are 0.033-0.054 mm in length; forceps (present in small numbers) are 0.007-0.010 mm in length.

Distribution. Sea of Japan(near the shores of Japan). Depth: 120-170m.

One specimen has been examined. The new species resembles *Forcepia bilabifera*, but differs from it mainly in that its skeleton includes chelae and forceps of one kind and not of two kinds, as is the case of *F. bilabifera*.

11. Genus *Iophon* Gray, 1867.

Gray, 1867: 534; Topsent, 1891: 539 (*Pocillon*), Lundbeck, 1905: 173; Dendy, 1924: 348 (*Iophonopsis*); Laubenfels, 1928: 361 (*Burtonella*); Burton, 1932a: 295.

Genotype: *Halichondria scandens* Bowerbank, 1866.

The Body is incrusting, massive, cylindrical, ramified or foliate. The main skeleton is commonly in the form of an irregular meshwork consisting of bundles of spicules; longer fibers are present occasionally. Dermal skeleton is well developed and consists of bundles of spicules arranged tangentially or vertically in a flabelliform fashion in the dermal membrane. Spongin is present in small quantities. Megascleres: styli of the main skeleton are acanthaceous, sometimes smooth; dermal spicules are tyloti or strongyli (commonly with slightly acanthaceous ends), less often monactinal spicules. Microscleres: apically asymmetrical palmate chelae of a characteristic shape, and (nearly always) bipocilli. p.149

1 (2). Dermal spicules are monactinal. The body is cylindrical, hollow (tubular).........2. I. dogieli Koltun

2 (1). Dermal spicules are diactinal (strongyli and tyloti). The body is commonly lumpy or tabular......
1. I. piceus (Vosmaer).

a (d). Dermal diactinal spicules are in the form of tyloti (to strongyli) with acanthaceous ends.

b (c). Appendages of bipocilli are approximately equal in length to the microsclere proper. The body is commonly more or less tabular, brittle and only slightly elastic....
1a. I. piceus (Vosmaer).

c (b). Appendages of bipocilli are ½ or 1/3 the length of the microsclere proper. The body is commonly lumpy or incrusting, elastic......... 1b. I. piceus (Hansen).

d (a). Dermal diactinal spicules are in the form of strongyli with truncated ends bearing dents.

f (f). Bipocilli are lacking. Monactinal spicules are smooth.....
1c. I. piceus abipocillus Koltun, ssp.n.

f (e). Bipocilli are present. Monactinal spicules are commonly acanthaceous, less often smooth.

g (h). The body is commonly tabular or dactylate. Monactinal spicules are acanthaceous. Bipocilli are up to 0.016 mm in length.............
1e. I. piceus orientalis Koltun.

h (g). The body is commonly lumpy, cushion-shaped or incrusting. Monactinal spicules are smooth or slightly acanthaceous. Bipocilli are up to 0.010 mm in length......
1d. I. piceus pacificus Koltun.

1. Iophon piceus (Vosmaern 1881) (Figs. 106-110; plate XXVI, 1-2).

Vosmaer, 1882: 42, pl. I, fig. 19, pl. III, figs. 75-78, 81-82 (Alebion); Hansen, 1885: 6, pl. I. fig. 1, pl. VI, fig. 7 (Reniera dubia); Lundbeck, 1905: 175, pl. VI, figs. 1-2, pl. XVII, fig. 3a-b; ibid: 180, pl. VI, figs. 3-5, pl. XVII, fig. 4a-e (dubius); ibid:183, pl. XVII, fig. 5a-f (frigidus).

The Body is incrusting, lumpy, tabular, dactylate, ramified or irregularly lobate. Dermal membrane is thin, pellicular. The colour is commonly light brown to dark brown, less often grey to black.

Skeleton. The main skeleton is reticulate, dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth or acanthaceous (acanthostyli) and are 0.187-0.450 mm in length and 0.006-0.021 mm in thickness; dermal diactinal spicules - strongyli or tyloti - have acanthaceous or dentate ends and measure 0.135-0.320mm in length and 0.004-0.012 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate, 0.015-0.044 mm in length; bipocilli (which may be lacking) are 0.007-0.019 mm in length.

Distribution. The White and Barents Seas, Kara Sea, Vil'kitskii strait, Okhotsk Sea and Sea of Japan, Norwegian and Greenland Seas, Davis and Denmark straits. Lives at the depth of 9- 280 m (and up to 1785m).

In his excellent work on the sponges of the Norwegian Sea and adjacent regions, Lundbeck (1905:175) provides a detailed description of three species of the genus Iophon: I. piceus, I. dubius, I. frigidus. Peculiarities of the spiculation and of the shape of diactinal spicules, as well as the size of the spicules and the presence or absence of bipocilli, the micro- p.150
scleres characteristic for the genus, are the features which were used to differentiate between these species. The species in question have been subsequently mentioned by other authors (Hentschel, Breitfuss, Rezvoi) as forms characteristic for the waters of the Arctic basin. Having studied a number of species of the genus Iophon, Burton (1932a:348) expressed the hypothesis that I. piceus, I. dubius and I. frigidus may be conspecific (representing the species I. piceus). Indeed, the features on the basis of which these forms were differentiated, cannot be used as a basis for their classification as independent species. Detailed study of 152 specimens of sponges from our northern seas, which, in conformity with the previously existing theories, should have been classified with three different species of the genus Iophon, has shown that we are dealing in reality with one single species, i.e.

with I. piceus, and with different forms of this species. Two subspecies revealing certain morphological and ecological peculiarities, may be established for the northern seas: these are I. p. piceus identical to what had been formerly known as I. piceus (Vosmaer), and I. p. dubius, the synonyms for which are I. dubius (Hansen) and I. frigidus (Lundbeck). These two subspecies have a distinct body shape (see their descriptions) and a peculiar structure of bipocilli. The typical form has generally somewhat fewer bipocilli than I. p. dubius and has appendages approximately equal to the length of the microscleres, whereas bipocilli of I. p. dubius are furnished with appendages equal to half the length of the bipocilli proper.

Judging from the distribution and certain ecological data, it may be concluded that I. p. dubius generally lives in colder and shallower waters than I. p. piceus. Apart from the two Arctic subspecies of I. piceus examined above, three others have been found in the far eastern seas. These are I. p. orientalis, I. p. pacificus, I. p. abipocillus.

1a. Iophon piceus piceus (Vosmaer, 1881) (Fig.106).

Vosmaer, 1882: 42, pl. I, fig. 19, pl. III, figs. 75-78, 81-82 (Alebion piceus); Fristedt, 1887: 448 (Esperia nigricans); Lundbeck, 1905: 175, pl. VI, figs. 1-2, pl. XVII, figs 32-b (piceus); Hentschel, 1929: 949 (piceus).

The Body of the sponge is tabular or irregularly lobate, up to 16.5 cm in height, is commonly brittle and only slightly elastic. The colour varies from light brown to dark brown and black. The oscula and pores are located in depressions; moreover, oscula are located on one side of (tabular) the body, ostia on the other.

<u>Skeleton</u>. The main skeleton is in the form of a fairly closely spaced irregular meshwork consisting of fibers and bundles of spicules with small quantities of spongin at the nodes of the meshes. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.239-0.450 mm in length and 0.010-0.017 mm in thickness; dermal spicules - tyloti with acanthaceous ends - are 0.218-0.311 mm in length and 0.005-0.010 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate, measuring 0.015-0.036 mm in length; bipocilli measure 0.015-0.036 mm in length; bipocilli measure 0.008-0.014 mm in length.

<u>Distribution</u>. The strait of the White Sea, Barents and Kara Seas. Norwegian Sea, Denmark and Davis straits, Lives at the depth of 51-329m (up to 1785m). Bottoms: ooze, sandy ooze, sand, less often gravel. Temperature: 0.94-7.8°. Salt content: 29.05 - 34.95%.

Examined: 73 specimens. p.151.

1b. <u>Iephon piceus dubius</u> (Hansen, 1885) (Fig.107; plate XXVI,2).

Hansen, 1885: 6, pl. I, fig. 1, pl. VI, fig.7 (<u>Reniera dubia</u>); Fristedt, 1887: 448 (<u>Esperia pettersoni</u>); Lundbeck, 1905: 180, pl. VI, figs. 3-5, pl. XVII, figs. 4a-4 (<u>dubius</u>); ibid: 183, pl. XVII, figs 5a-f (<u>frigidus</u>); Svarchevskgy 1906: 344 (<u>Esperella picea</u>); Hentschel, 1929: 949 (<u>dubius</u>); ibid: 950 (<u>frigidus</u>, <u>frigidus</u> var. <u>gracilis</u>).

<u>The Body</u> is up to 7.5 cm in height and varies in appearance from incrusting to lumpy and from branching to irregularly

lobate. The sponge is soft, elastic, but easily torn. The colour varies from light brown to black.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of bundles of spicules or individual spicules; longitudinal fibers are occasionally present, particularly in branching forms. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.208-0.387 mm in length and 0.006-0.013 mm in thickness; dermal spicules are tyleti (to strongyli) with acanthaceous ends and measure 0.190-0.320 mm in length and 0.004-0.009 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate, measuring 0.017-0.044 mm in length; bipocilli are 0.007-0.019 mm in length.

Distribution. The White, Barents and Kara Seas, Vil'kitskii strait, Greenland and Norwegian Seas. Lives at the depth of 9-280 m (up to 468 m). Bottoms: rock, sand, shell, sandy ooze. Temperature: from -1.7 to 4.2°. Salt content: 34.31 - 34.90‰.

Examined: 79 specimens.

1c. Iophon piceus abipocillus Koltun, ssp.n. (Fig.108). p.152

The Body is lumpy, up to 3 cm in height, soft and fragile. The colour is light greyish brown.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of bundles of spicules and of fibers. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth, 0.260-0.420 mm in length and 0.010-0.014 mm in thickness; dermal spicules - strongyli with indented ends - are 0.228-0.291 mm in length and 0.006-0.008 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate, 0.018-0.038 mm in length.

Distribution. Okhotsk Sea. Found at the depth of 1240m. One specimen has been examined. The new subspecies differs from the other subspecies of I. piceus in that it lacks bipecilli in its skeleton.

1d. Iophon piceus pacificus Koltun, 1958 (Fig. 109; plate XXVI, 1)

Koltun, 1958:63.

The Body is incrusting, lumpy or in the form of irregularly shaped growths on the branches of hydroids and pearlworts. The sponge is only slightly elastic, brittle. The colour varies from grey to dark brown.

Skeleton. The main skeleton is represented by an irregular meshwork formed of bundles of spicules. Dermal skeleton is typical for the genus.

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Megascleres: styli of the main skeleton are smooth or slightly acanthaceous, 0.187-0.322 mm in length and 0.010-0.015 mm in thickness; dermal spicules are strongyli with very finely dentate truncated ends, are 0.135-0.208 mm in length and 0.004-0.006 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate, 0.016-0.023 mm in length; bipecilli measure 0.007-0.010 mm in length.

Distribution. Southern Okhotsk Sea, Sea of Japan (Tartar strait). Lives at the depth of 50-194m. Bottoms: rock. Temperature: 6.6°. Salt content: 33.54%.

Examined: 10 specimens.

1e. Iophon piceus orientalis Koltun, ssp.n. (Fig.110)

Burton, 1935: 70.

The Body is 10 cm in height, tabular, dactylate or irregularly compressed and slightly lobate. The sponge is stiff, only slightly elastic and fragile. The colour varies from brown to dark grey and dark brown. The oscula are up to 0.5 cm in diameter. Dermal membrane has the appearance of a pellicle.

Skeleton. The main skeleton is represented by a meshwork consisting of three-sided, four-sided or irregularly shaped meshes, commonly having one or two spicules on each side. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.197-0.353 mm in length and 0.012-0.021 mm in thickness; dermal spicules - fusiform strongyli with finely dentate truncated ends- p.154 are 0.176-0.228 mm in length and 0.008-0.010 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate and measure 0.016-0.023 mm in length; bipocilli measure 0.008-0.016 mm in length.

Distribution. Okhotsk Sea. Lives at the depth of 20-162m. Bottoms: sandy ooze, pebble. Temperature: 1.2°.

Examined: 7 specimens. This subspecies resembles very closely Iophon piceus dubius and differs from it only in the shape of its strongyli.

2. Iophen dogieli Koltun, 1955 (Fig.111;plate XXX,1).

The Body is cylindrical, with a hollow internal cavity terminating at the distal end in a broad opening. The height of the sponge is up to 8 cm at a thickness of 4 cm; diameter of the canal is up to 2.5 cm. The surface is uneven, cavernous. The colour varies from light grey to dark grey.

Skeleton. The main skeleton is in the form of a more or less regular meshwork consisting of large and small styli; the skeleton of the dermal membrane, which covers the sponge on the exterior and lines the internal canal, consists of small styli arranged tangentially.

Megascleres: large styli are smooth, 0.249-0.364 mm in length and 0.012-0.016 mm in thickness; small styli have a truncated denatate basal end and measure 0.150-0.240 mm in length and 0.010-0.018 mm in thickness. Microscleres: chelae are apically asymmetrical, palmate, typical for the genus, measure 0.016-0.029 mm in length; bipocilli are 0.016-0.020 mm in length.

Distribution. Northwestern Okhotsk Sea. Lives at the depth of 83-100 m. Bottoms: reef, rock.

Examined: 5 specimens.

VII. Family Tedaniidae.

The Body varies in shape, is commonly irregularly shaped. The skeleton is reticulate or ramified fibrous. Special diactinal spicules are present alongside the monactinal spicules of the main skeleton. Microscleres are represented by sigmoids (commonly by rhaphidii).

1. Genus Tedania Gray, 1867

Gray, 1867: 520; Lundbeck, 1910:1, Laubenfels, 1936: 89

Genotype: Reniera digitata O. Schmidt, 1862

The Body varies in shape and may be incrusting, lumpy, foliate, vaselike, cylindrical or, lastly, more or less dactylate and branching. Oscula are scattered over the sponge surface and are often found at the top of the tracts or at the papillae. The main skeleton is in the form of a diffuse meshwork consisting of bundles of spicules and individual spicules or of individual spicules only. Dermal skeleton consists, as a rule, of vertical bundles of spicules; tangentially arranged spicules may also be present in the dermal membrane proper. Megascleres: styli of the main skeleton are commonly smooth; dermal spicules - tyloti, tornoti or strongyli- have occasionally slightly acanthaceous ends. Microscleres: rhaphidii are apically asymmetrical, commonly finely acanthaceous.

1 (6). The ends of the diactinal spicules are smooth.

2 (3). Diactinal spicules are in the form of tyloti......
1. T. suctoria O. Schmidt.

3 (2). Diactinal spicules are in the form of tornoti.

4 (5). Rhapidii are of two kinds, large and small; the latter have one blunt and one pointed end.Tornoti resemble oxi.... p.155
2. T. gurjanovae Koltun.

5 (4). Rhaphidii are of one kind, are often curved in the middle. Tornoti are apically asymmetrical, nearly styli; some of them change to apically asymmetrical strongyli...
3. T. microrhaphidiophora Burton.

6 (1). The ends of the diactinal spicules (strongyli) are finely acanthaceous.

7 (8). Diactinal spicules are curved. Styli of the main skeleton measure up to 1 mm in length....

4. _T. flexistrongyla_ Koltun, sp.n.

8 (7). Diactinal spicules are straight. Styli of the main skeleton do not exceed 0.700 mm in length.

9 (10). Rhaphidii are of two kinds, small and large; the former are up to 0.400 mm in length......

5. _T. dirhaphis_ Hentschel

10 (9). Rhaphidii are of one kind, do not exceed 0.300 mm in length.

11 (12). Styli of the main skeleton are 0.190-0.290 mm in length. The surface is smooth, verrucous or bears papillae......

6. _T. digitata_ (O. Schmidt).

12 (11). Styli of the main skeleton are 0.314-0.406 mm in length. The surface is spicular, even......

7. _T. fragilis_ Lambe.

1. _Tedania suctoria_ O. Schmidt, 1870 (Fig. 112; plate XXVII, 2).

Schmidt, 1870: 43, Tab. V, Fig.11; Schmidt, 1875: 115 (_increscens_); Topsent, 1892: 79, pl. I, fig. 16 (_conuligera_); Thiele, 1903: 380, Tab. XXI, Fig. 9 (_increscens_); Lundbeck, 1910: 1, pl. I, figs. 1-5, pl. IV, fig. 1; Rezvoi, 1928: 88; Hentschel, 1929: 965.

The Body is incrusting, cushion-shaped, lumpy or elongated, occasionally partly ramified. The body measures up to 9 cm in height. The surface is furnished with papillae. The sponge is fairly strong and elastic. The colour varies from light grey to greyish yellow. Oscula and pores are located on the summits of the papillae. Dermal membrane is relatively compact.

Skeleton. The main skeleton is represented by an irregular meshwork consisting of bundles of spicules. Dermal skeleton is weakly developed and consists of tufts of spicules and of individual spicules arranged at various angles to the surface.

Megascleres: styli of the main skeleton are smooth, 0.300-0.680 mm in length and 0.007-0.015 mm in thickness; dermal spicules - tyloti - are 0.250-0.470 mm in length and 0.003-0.006 mm in thickness. Microscleres: rhaphidii are finely acanthaceous, with asymmetrical ends, are 0.053-0.500 mm in length.

Distribution. White and Barents Seas, Kara Sea. Norwegian and Greenland Seas, Denmark and Davis straits, near Scotland and Azores. Depth: 14-265 m (up to 1461 m in the northern Atlantic). Bottoms: sand, ooze, rock. Temperature: from -1.1 to 5°. Salt content: 34.51 - 34.85%.

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This species is represented in the ZIN AN SSSR collections by 103 specimens; we wish to point out that only a small sponge fragment was found in the Kara Sea.

2. Tedania gurjanovae Koltun, 1958 (Fig. 113; plate XXV,2).

Koltun, 1958:65; Fig.20.

The Body is cushion-shaped, lumpy, up to 2 cm in height, is often in the form of a crust attached to shells of the bivalved mollusk Chlamis. The sponge is soft, elastic. The colour is light grey, yellow or light brown.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of bundles of spicules. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth or slightly acanthaceous and measure 0.260-0.343 mm in length and 0.008-0.014 mm in thickness; dermal spicules - tornoti (nearly oxi)- are 0.202-0.280 mm in length and 0.004-0.008 mm in thickness. Microscleres: rhaphidii are of two kinds, large, slightly rough, apically asymmetrical rhaphidii measuring 0.197-0.312 mm in length and 0.002 mm in thickness, and small rhaphidii having one blunt, and one pointed end and measuring 0.077-0.157 mm in length and 0.003-0.004 mm in thickness.

Distribution. Eastern Tartar strait. Depth: 60-100m.

Examined: 5 specimens.

3. Tedania microrhaphidiophora Burton, 1935 (Fig.114; plate XXVIII, 1)

Burton, 1935: 70, fig. 1.

The Body is semispherical, discoidal, up to 8 cm in height. The surface is uneven, bears very low papillae measuring 1-3 mm in width. The sponge is strong and elastic. The colour is light yellow, reddish brown. The pores are located in the centre of the papillae.

Skeleton. The main skeleton is in the form of a loose meshwork consisting of bundles of spicules and of individual spicules. Dermal skeleton consists of diactinal spicules arranged at an angle to the surface.

Megascleres: styli of the main skeleton are smooth or slightly acanthaceous in their basal part and measure 0.228-0.390 mm in length and 0.007-0.012 mm in thickness; dermal spicules - apically asymmetrical tornoti (nearly styli, changing to apically asymmetrical strongyli)- are 0.249-0.340 mm in length and 0.004-0.007 mm in thickness. Microscleres: rhaphidii are very finely acanthaceous, often curved in the middle, occasionally bear a spherical expansion at the end and measure 0.050-0.081 mm in length.

Distribution. Northern Okhotsk Sea; near the Pacific coast of the southern Kuril islands, Sea of Japan. Depth: 28-194. Bottoms: rock, pebble, sand. Temperature: 16.2°.

Examined: 8 specimens.

4. Tedania flexistrongyla Koltun, sp. n. (Fig.115)

The holotype is preserved in the ZIN AN SSSR collections, preparation No2123.

The Body is lumpy. The colour is yellowish grey (when dry).

Skeleton. The main skeleton is in the form of a fibrous, irregular meshwork, where primary fibers attaining occasionally 1mm in thickness, and thinner short transverse secondary fibers may be distinguished. Furthermore, individual disorderly strewn spicules are also present. Dermal skeleton is typical for the genus. Large quantities of spongin are present. p.157

Megascleres: styli of the main skeleton are smooth and measure 0.551-1.009 mm in length and 0.015-0.027 mm in thickness;

dermal spicules - strongyli or tyloti - are commonly curved, have acanthaceous or dentate ends and measure 0.343-0.530 mm in length and 0.007-0.009 mm in thickness. Microscleres: rhaphidii are finely acanthaceous, curved, measure 0.170-0.520 mm in length and 0.001-0.003 mm in thickness.

Distribution. Okhotsk Sea.

The description is based on the analyses of two small specimens preserved in a dry state. The new species differs from other species of this genus in having in its skeleton markedly curved diactinal spicules (strongyli or tyloti). It resembles Tedania digitata (O.Schmidt) and T. fragilis Lambe, but differs from p.158
these two forms in having considerably larger styli and a markedly fibrous skeleton.

6. Tedania dirhaphis Hentschel, 1912 (Fig.116; plate XXV,3,4).

Hentschel, 1912: 349, plate XIX, fig. 20.

The Body is irregularly lumpy, often bears dactylate processes, and is up to 3 cm in height. The surface is smooth, even. The colour is grey, yellowish grey or greyish brown. Oscula are located at the ends of the processes.

Skeleton. The main skeleton is partly in the form of a simple meshwork consisting of bundles of spicules, or consists in part of thicker fibers composed of rhaphidii. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are 0.248-0.570 mm in length and 0.009-0.016 mm in thickness; dermal spicules - strongyli and tyloti with finely acanthaceous ends - are 0.224-0.520 mm in length and 0.005-0.008 mm in thickness. Microscleres: large rhaphidii measuring 0.200-0.405 mm in length and 0.002-0.003 mm in thickness, and small rhaphidii which are 0.040-0.210 mm in length and 0.003-0.004 mm in thickness.

Distribution. Southern Okhotsk Sea, Pacific coast of the southern Kuril islands. In the region of the Malayan archipelago, South China Sea. Depth: 4-18 and 145-550m. Bottoms; rock, pebble with ooze. Temperature: 1-1.8°.

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Three specimens have been examined. We wish to add to the description of this species that in certain specimens a great number of styli are rough at the end of their basal portion or bear a small dent. Rhaphidii which are characteristically acanthaceous and have therefore been given a special name, i.e. onychaetae, are of two kinds: large and small. Moreover, small rhaphidii are somewhat thicker than the large ones, but are considerably shorter than the latter and bear more distinctly defined small spines. Some of the small rhaphidii have one rounded end and thus become microstyli. The size of the spicules may vary considerably in different specimens. While the holotype has styli measuring 0.248-0.312 mm in length, and strongyli (tyloti) measuring 0.224-0.248 mm in length, the specimens found in the Okhotsk Sea have styli which are 0.416-0.0570 mm in length and strongyli (tyloti) measuring 0.395-0.520 mm in length. Similarly to the preceding species, this species was found in our fauna for the first time.

6. Tedania digitata (O. Schmidt, 1862) (Fig.117; plate XXV, 1).

Schmidt, 1862: 75, plate VII, fig. 11 (Reniera); Wilson, 1902: 395, Hentschel, 1912: 348.

The Body is commonly massive, sometimes with dactylate or lobate processes, cavernous, up to 5 cm in height (at a width of 10cm). The surface is smooth, verrucous or furnished with papillae. The colour is light grey changing to yellow and red.

Skeleton. The main skeleton is in the form of a simple meshwork consisting of bundles with a few spicules each; thicker fibers are found alongside these bundles. Dermal skeleton is typical for the genus.

Megascleres: styli of the main skeleton are smooth, 0.190-0.290 mm in length and 0.006-0.008 mm in thickness; dermal spicules - strongyli or tyloti - are finely acanthaceous at the ends and measure 0.152-0.265 mm in length and 0.002-0.004 mm in thickness. Microscleres: finely acanthaceous rhaphidii (onychaetae) are 0.040-0.239 mm in length and 0.001-0.002 mm in thickness.

Distribution. Sea of Japan. Eastern China Sea, the region of the Malayan archipelago, Indian Ocean, Mediterranean Sea, Atlantic Ocean. Depth: 23 m.

Examined: 3 specimens.

7. Tedania fragilis Lambe, 1894 (Fig.118).

Lambe, 1894: 116, pl. II, figs. 3, 3a-c.

The Body is irregularly tabular, lumpy, very brittle and inelastic, up to 7 cm in height. The surface is spiculated, uneven. The colour is light brown or yellowish brown. Dermal membrane is very thin. The sponge body is perforated by broad canals extending in different directions.

Skeleton. The main skeleton is in the form of an indefinite meshwork consisting of three-and four-sided meshes formed by individual spicules; loose bundles of spicules are also present. Dermal skeleton consists of tangentially oriented diactinal spicules. p.160

Megascleres: styli of the main skeleton are smooth, curved, 0.314-0.406 mm in length and 0.011-0.016 mm in thickness; dermal spicules - tyloti with gently expanded and finely acanthaceous ends - are 0.229-0.262 mm in length and 0.005-0.006 mm in thickness. Microscleres: rhaphidii are finely acanthaceous at the ends, curved or distorted and measure 0.230-0.275 mm in length and 0.002-0.003 mm in thickness.

Distribution. Near the southern Kuril islands (Kunashir island). Near the Vancouver Island (Pacific coast of North America). Lives in shallow waters.

One specimen has been examined.

VIII. Family Crellidae.

The Body is irregular, varies in shape. The skeleton is fibrous. Megascleres of the main skeleton invariably include diactinal spicules. Dermal skeleton consists of completely acanthaceous monactinal or diactinal spicules. Microscleres are in the form of cheloids and sigmoids, or are lacking.

1. Genus *Grayella* Carter, 1869

Topsent, 1892:102 (*Yvesia*); Lundbeck, 1910:30.

Genotype: *G. cyathophora* Carter, 1869

The external appearance of the sponge varies from incrusting and cushion-shaped to massive or somewhat elongated, clavate, sometimes is branching. The main skeleton consists of fairly thick, though loose fibers formed by smooth spicules. Incrusting and massive forms have fibers extending radially from the base to the surface of the sponge; elongated forms have a central axis with radial fibers diverging from it. Dermal skeleton consists of tangentially arranged acanthaceous spicules. Megascleres: smooth diactinal spicules (in some instances monactinal spicules in the main skeleton); dermal spicules-acanthaceous monactinal or diactinal spicules. Microscleres: arcuate chelae, occasionally sigmas; in some specimens there may be only sigmas, or microscleres may be lacking altogether.

1 (2). Dermal spicules are in the form of acanthostyli. The sponge body is suberous......... 1. *G. pyrula* (Carter)

2 (1). Dermal spicules are in the form of acanthoxi. The sponge body is elongated, often clavate....... 2. *G. pertusa* (Topsent).

1. *Grayella pyrula* (Carter,1876) (Fig.119).

Carter, 1876: 338, pl. XIV, fig. 20, pl. XV, fig. 38 (*Cometella*); Hansen, 1885: 12, pl. II, fig. 4, pl. IV, fig. 15 (*Sclerilla artica*); ibid 13, pl. II, fig. 5 (*Sclerilla dura*); Topsent, 1892: 105, pl.V, fig. 6, pl. X, fig. 17 (*Yvesia pedunculata*); Arnesen, 1903: 18, Tab. II, Fig. 7, Tab, V, Fig. 1, Tab. V, Fig. 1, Tab. VI, Fig. 2 (*Yvesia lobata*); Lundbeck, 1910: 30, pl II, figs. 15-19, pl. V, fig. 2; Breitfuss, 1912: 66, pl. 1, figs. 1-6 (*Myxilla artica*); Rezvoi, 1928: 88.

The Body is elongated, often clavate, sits on a stem of a varying length, is occasionally divided into branches and lobes, measures up to 7 cm in height. The surface is smooth and bears closely spaced pores. The colour is white, yellowish green or brown. Oscula are tubular, are commonly located at the top of the sponge. p.161

Skeleton. The main skeleton consists of a central axis from which fibers diverge more or less regularly in all the directions. Dermal skeleton is represented by tangentially arranged spicules.

Megascleres: tornoti of the main skeleton are smooth (similar to oxi) and measure 0.300-0.665 mm in length and 0.005-0.011 mm in thickness; dermal spicules - acanthostyli - are 0.093-0.196 mm in length and 0.005-0.014 mm in thickness. Microscleres: chelae are arcuate, measure 0.021-0.027 mm in thickness.

Distribution. Barents Sea (near the Franz Josef Land), Kara Sea, Shokal'skii and Vil'kitskii straits, Laptev Sea, North of Spitzbergen, Denmark and Davis straits, North Atlantic up to the Azores. Depth: 36-350 m (up to 1376m). Bottoms: sandy ooze, sand, rock, ooze. Temperature: from -1.21 to 3.18°. Salt content: 33.12 - 34.88%.

Examined: 33 specimens.

2. Grayella portusa (Topsent, 1892) (Fig.120).

Topsent, 1892:107, pl. IX, fig. 10, pl. X, fig. 18 (Yvesia).

The Body is incrusting. The surface is smooth and bears tubercular papillae. The colour is light grey or light yellow.

Skeleton. The main skeleton consists of bundles of smooth diactinal spicules extending radially from the base to the surface of the sponge. Dermal skeleton consists of tangentially arranged acanthaceous spicules.

Megascleres: tornoti (resembling oxi) of the main skeleton are smooth, straight, 0.300-0.0.509 mm in length and 0.008-0.010 mm in thickness; dermal spicules - acanthoxi - are gently curved and measure 0.135-0.218 mm in length and 0.005-0.008 mm in thickness. Microscleres: chelae are arcuate, measure 0.023-0.029 mm in length.

Distribution. Kara Sea, Laptev Sea. Northern Atlantic. Depth: 116-454M. Bottoms: sandy ooze with gravel, less often ooze. Temperature: from -1.2 to 1°. Salt content: 34.42-34.90%.

Examined: 3 specimens.

IX. Family Hymedesmidae p.162

The Body is incrusting. The main skeleton is commonly formed of vertically arranged monactinal spicules, the pointed ends of which are oriented towards the surface. A special dermal skeleton consisting of smooth or acanthaceous spicules, is present. Bundles of smooth spicules identical to or different from those of the dermal membrane, are found occasionally above the monactinal spicules of the main skeleton, which are often of two types. Microscleres are commonly represented by arcuate chelae or ancorae, sometimes by sigmas and forceps. Microsclere may be lacking altogether.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY HYMEDESMIDAE

1 (8). Dermal skeleton consists of smooth spicules.

2 (3). Microscleres include forceps..........
2. Leptolabis Topsent.

3 (2). Forceps are lacking.

4 (5). Monactinal spicules of the main skeleton (tylostyli) are smooth (microscleres are lacking)......
5. Hymeraphia Bowerbank.

5 (4). Monactinal spicules of the main skeleton are acanthaceous (acanthostyli, acanthotylostyli).

6 (7) Microscleres include ancorae (multidentate).....
4. Herceus Koltun, gen.n.

7 (6). Ancorae are lacking. Microscleres include chelae (commonly arcuate). Occasionally microscleres are lacking altogether ....
1. Hymedesmia Bowerbank.

8 (1). Dermal skeleton consists of acanthaceous spicules......
3. Crellomima Rezvoj,

1. Genus Hymedesmia Bowerbank, 1864.

Topsent, 1892:23(Leptosia); Lundbeck, 1910:39; Burton, 1930b:496.

Genotype: H. zetlandica Bowerbank, 1864.

The sponge body is a very thin crust or pellicle which does not exceed, as a rule, 2 mm in thickness and incrusts various objects at the sea bottom (shells, tubes of polychaetes, rocks etc). The surface is occasionally furnished with papillae bearing oscula and ostia. The main skeleton consists of vertically arranged monactinal spiculas, the caps of which lie on the substratum. Dermal skeleton consists of bundles of dermal spicules or of fibers composed of dermal spicules, which commonly arise from the main skeleton (or even from the basal portion of the sponge) and extend towards the dermal membrane. In most species the dermal skeleton is the best developed part of the skeleton. The dermal membrane proper may be furnished with tangentially arranged spicules and commonly includes chelae; in some instances chelae are present in very large numbers. Spongin
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is present at the base of the sponge and surrounds the caps of monactinal spicules. Megascleres: acanthotylostyli (less often acanthostyli) of the main skeleton are often of two kinds, large and small; dermal spicules are, as a rule, diactinal and are commonly strongyli, occasionally tyloti, tornoti or oxi, but in some instances are monactinal (styli). Microscleres: chelae are arcuate, occasionally there are sigmas; less often only sigmas or rhaphidii; or microscleres may be lacking altogether.

1 (8). Dermal skeleton consists of tyloti or subtyloti.

2 (3). Microscleres include sigmas.....

1. H. trichoma Lundbeck.

3 (2). Sigmas are lacking.

4 (5). Monactinal spicules of the main skeleton (acanthostyli) are short (0.055-0.080 mm in length), blunt, characteristic for the species........

2. *H. truncata* Lundbeck.

5 (4). Monactinal spicules of the main skeleton (acanthotylostyli) have a long sharp pointed end.

6 (7). Dermal spicules are slender, up to 0.005 mm in thickness; large acanthostyli are up to 0.572 mm in length....

3. *H. paupertas* (Bowerbank)

7 (6). Dermal spicules are thicker, up to 0.010 mm in thickness; large acanthotylostyli are up to 0.360 mm in length......

4. H. *bractea* Lundbeck.

8 (1). Dermal skeleton consists of strongyli, tornoti or styli.

9 (18). Dermal spicules are in the form of strongyli.

10 (13). Microscleres (chelae) are lacking.

11 (12). Strongyli are up to 0.450 mm in length.....

5. *H. dermata* Lundbeck.

12 (11). Strongyli are up to 0.298 mm in length.....

7. *H. longurius* Lundbeck .

13 (10). Microscleres (chelae) are present.

14 (17). Acanthaceous styli are large and small, are in the form of acanthotylostyli. Chelae are gently curved.

15 (16). Acanthotylostyli are up to 0.300 mm in length, strongyli are up to 0.370 mm in length, chelae are up to 0.038 mm in length.......

8. *H. storea* Lundbeck .

16 (15). Acanthotylostyli are up to 0.850 mm in length, strongyli are up to 0.460 mm in length, chelae are up to 0.054 mm in length........

9. H. nummulus Lundbeck.

17 (14). Acanthaceous styli are large and small; the former are in the form of acanthotylostyli, the latter in the form of acanthostyli. Chelae are markedly curved......

10. H. similis Lundbeck.

18 (9). Dermal skeleton consists of tornoti and styli.

19 (20). Dermal skeleton consists of styli.....

6. H. irregularis Lundbeck.

20 (19). Dermal skeleton consists of tornoti.

21 (22). Tornoti are fusiform; markedly fusiform oxi are present in small numbers........

11. H. occulta Bowerbank.

22 (21). Tornoti are more or less cylindrical; oxi are lacking.

23 (24). Tornoti are thin, up to 0.003 mm in thickness, and are up to 0.195 mm in length.....

12. H. peachii Bowerbank.

24 (23). Tornoti are thicker, up to 0.007 mm in thickness, at a length of up to 0.350 mm and more.

25 (26). Microscleres (chelae) up to 0.050 mm in length.....

13. H. platychela Lundbeck.

26 (25). Microscleres (chelae) up to 0.038 mm in length....

14. H. procumbens Lundbeck.

1. Hymedesmia trichoma Lundbeck, 1910 (Fig.121).

Lundbeck, 1910: 91, pl. III, fig. 16, pl. IX, fig.5.

The Body is incrusting but may assume a somewhat massive appearance on certain types of substratum. The surface is smooth and bears thin papillae (up to 0.5 cm in length). The colour is grey.

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Skeleton. The main skeleton consists of upright acantho-tylostyli with the caps grounded in the substratum. Dermal skeleton consists of bundles of diactinal spicules located above the main skeleton; the dermal membrane itself contains horizontally arranged spicules.

Megascleres: acanthotylostyli of the main skeleton bear caps and are of two types - large, measuring 0.395-0.510 mm in length (with the diameter of the cap equal to 0.016-0.024 mm) and small, mesuring 0.135-0.176 mm in length (with caps 0.012-0.014 mm in diameter); dermal spicules-tyloti-are gently curved and measure 0.353-0.520 mm in length and 0.006-0.008 mm in thickness.

Microscleres: chelae are arcuate, measure 0.035-0.044 mm in length; sigmas, are 0.063-0.098 mm in length.

Distribution. Barents Sea (near the Murmansk coast). Denmark strait. Depth: 265m.

Examined: one specimen.

2. Hymedesmia truncata Lundbeck, 1910 (Fig.122).

Lundbeck, 1910: 77, pl. III, fig. 9, pl. VIII, fig. 6; Hentschel, 1929:958.

The Body is incrusting, up to 0.2 mm in thickness. The surface is smooth and is furnished with papillae bearing oscula. The colour is light brown, milky or light blue.

Skeleton. The main skeleton consists of vertically arranged acanthostyli; spongin is lacking; fairly thick bundles of upright diactinal spicules are found above the acanthostyli.

Megascleres: acanthostyli of the main skeleton are short, blunt, 0.055-0.080 mm in length and 0.010-0.015 mm in thickness; dermal spicules - tyloti - are 0.280-0.369 mm in length and 0.008-0.011 mm in thickness. Microscleres: chelae are arcuate, measure 0.016-0.023 mm in length.

Distribution. Northern Barents Sea, Laptev Sea. Greenland Sea, Denmark strait, near the Faeroe islands, southwest of Iceland. Depth: 91-567 m. Bottoms: ooze with sand. Temperature: -1.43°. Salt content: 34.42%.

Examined: 3 specimens.

3. *Hymedesmia paupertas* (Bowerbank, 1866).

Bowerbank, 1866: 223 (*Hymeniacidon*); 1874: 93, pl. XXXVII, figs. 4-8; Vosmaer, 1880: 127 (*Myxilla*); Bowerbank, 1882: 92 (*Hymeniacidon*); Ridley and Dendy, 1887: 143 (*Myxilla*); Hanitsch, 1894: 177 (*Hymeraphia*); Stephens, 1912: 28: Stephens, 1921: 31, pl. IV, fig. 1; Burton, 1930b: 497.

The Body is incrusting. The surface is spiculated. The colour is dark yellow. p.165

Skeleton. The main skeleton consists of acanthotylostyli arranged in such a way that their caps lie directly on the substratum, while their pointed ends are oriented towards the surface of the sponge; moreover, the longest ones of these spicules penetrate the dermal membrane. Dermal skeleton is typical for the genus.

Megascleres: acanthotylostyli of the main skeleton are large, acanthaceous near the base, measuring 0.395-0.572 mm in length and 0.010-0.012 mm in thickness in the basal part; acanthotylostyli are small, completely acanthaceous, commonly curved and measure 0.135-0.200 mm in length and 0.006-0.008 mm in thickness; dermal spicules - tyloti or subtyloti - are 0.260-0.320 mm in length and 0.003-0.0047 mm in thickness. Microscleres: arcuate chelae measuring 0.021-0.040 mm in length.

Distribution. Barents Sea (Kola Bay). Greenland Sea, near the western and southwestern shores of Ireland, near the Shetland islands. Depth: 56 m.

The ZIN AN SSSR collections contain only one specimen from the Barents Sea; the spicules in its skeleton are somewhat smaller than those of typical specimens.

4. Hymedesmia bractea Lundbeck, 1910 (Fig.123).

Lundbeck, 1910: 74, pl. VIII, fig. 3; Hentschel, 1929: 957.

The Body is incrusting. The surface is rough. Low cylindrical papillae are present. The colour is grey.

Skeleton. The main skeleton consists of vertical, fairly closely spaced acanthotylostyli. Dermal skeleton consists of bundles of diactinal spicules arranged directly above the main skeleton, as well as in the dermal membrane.

Megascleres: acanthotylostyli of the main skeleton are large, acanthaceous only in the basal portion, are 0.28-0.36 mm in length (the cap is 0.014-0.020 mm in diameter); acanthotylostyli are small, fully acanthaceous, measure 0.12-0.15 mm in length and 0.010-0.014 mm in thickness; dermal spicules - tyloti - are 0.270-0.500 mm in length and 0.004-0.010 mm in thickness.

Microscleres: chelae are arcuate, measure 0.028-0.034 mm in length.

Distribution. Eastern Tartar strait. Denmark strait. Depth: 67-567 m.

One single specimen from the Tartar strait is available.

5. *Hymedesmia dermata* Lundbeck, 1910 (Fig.124).

Lundbeck, 1910: 107, pl. III, fig. 17, pl. XI, fig. 1; Hentschel, 1929: 886.

The Body is incrusting and measures up to 1.5 mm in thickness. The surface is smooth. The colour is light grey, yellowish white or brown. Oscula and ostia are located on the papillae. p.166

Skeleton. The main skeleton consists of individual upright acanthostyli and a very small quantity of spongin. Dermal skeleton is markedly developed and consists of a multitude of fibers extending at an angle towards the surface. The dermal membrane proper has no skeleton, but lies directly upon horizontally arranged fibers.

Megascleres: acanthotylostyli of the main skeleton are large, acanthaceous in their basal portion and measure 0.300-0.417 mm in length (the caps are 0.018-0.022 mm in diameter); small acanthotylostyli are fully acanthaceous and measure 0.107-0.130 mm in length (with the caps measuring 0.013-0.014 mm in diameter); dermal spicules - strongyli - are straight or similar to polytyloti and measure 0.266-0.450 mm in length and 0.006-0.010 mm in thickness. Microscleres are lacking.

Distribution. Northern Barents Sea (between Spitzbergen and Franz Josef Land), Laptev Sea, Vil'kitski strait. Greenland Sea. Depth: 91-410m. Bottoms: sandy ooze, rock, pebble. Temperature: from -1.47 to -1.17°. Salt content: 34.42-34.65%.

Examined: 4 specimens.

6. Hymedesmia irregularis Lundbeck, 1910 (Fig.125).

Lundbeck, 1910: 80, pl. VIII, fig. 8; Hentschel, 1929: 959.

The Body is incrusting. The surface is smooth or partially spiculated. The colour is light grey or greyish yellow. The oscula are located at the top of broad papillae.

Skeleton. The main skeleton consists of upright acanthotylostyli and a small quantity of spongin; vertically erect bundles and fibers forming the dermal skeleton, are located directly above the acanthotylostyli.

Megascleres: acanthotylostyli of the main skeleton are furnished with caps and measure 0.120-0.500 mm in length (with the caps measuring 0.018-0.030 mm in diameter); dermal spicules - styli similar to polytyloti - are 0.298-0.390 mm in length and 0.006-0.010 mm in thickness.

Microscleres: chelae are arcuate, measure 0.032-0.050 mm in length.

Distribution. White Sea. Davis and Denmark straits, southwest of Iceland, near the Faeroe islands. Depth: 293-1441m (3-16.5m in the White Sea). Bottoms: ooze with rock, pebble.

The 3 specimens from the White Sea included in our materials, have smaller chelae and blunt styli, whereas typical forms have sharp pointed styli.

7. Hymedesmia longurius Lundbeck, 1910 (Fig.126).

Lundbeck, 1910:105, pl. X, fig.7.

The Body is incrusting and measures less than 0.5 mm in thickness. The surface is smooth. The colour is greyish yellow or dark brown.

Skeleton. The main skeleton consists of upright acanthotylostyli and a small quantity of spongin; ascending bundles and fibers composed of diactinal spicules and forming the dermal skeleton, are located directly above the acanthotylostyli.

Megascleres: acanthotylostyli of the main skeleton measure 0.100-0.500 mm in length (the diameter of the cap is 0.014-0.025 mm); dermal spicules - strongyli, which often resemble polytyloti - are 0.180-0.298 mm in length and 0.003-0.007 mm in thickness. Microscleres are lacking.

Distribution. White Sea. Davis strait, north and south of Iceland. Depth: 33-582 m.

The ZIN AN SSSR collections include only one specimen identified by P. D. Rezvoi.

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8. Hymedesmia storea Lundbeck, 1910

Lundbeck, 1910: 45, pl. V, figs 7a-c; Hentschel, 1929: 953; Rezvoi, 1928: 87, fig. 8

The Body is incrusting, less than 0.5 mm in thickness. The surface is smooth. The colour is light grey.

Skeleton. The main skeleton consists of upright acanthetylostyli. Dermal skeleton is typical for the genus.

Megascleres: acanthotylostyli of the main skeleton (the largest ones of which have smooth points) measure 0.100-0.300 mm in length (the caps are 0.014-0.028 mm in diameter); dermal spicules - strongyli resembling polytyloti - are 0.214-0.370 mm in length and 0.005-0.007 mm in thickness. Microscleres: chelae are arcuate (similar to palmate chelae), 0.026-0.038 mm in length.

Distribution. Western Barents Sea. North and northeast of Iceland. Depth: 293-1398 m.

One specimen has been examined.

9. Hymedesmia nummulus Lundbeck, 1910. p.168

Lundbeck, 1910:55, pl. III, fig. 11, pl. VI, fig.7; Hentschel, 1929: 955; Gorbunov, 1946:116.

The Body is incrusting, up to 2 mm in thickness. The surface is smooth or spiculated. The colour is light grey or yellowish. The oscula are located on the papillae.

Skeleton. The main skeleton consists of upright acanthotylostyli, the largest ones of which penetrate the dermal membrane.

Dermal skeleton is typical for the genus and consists of diactinal spicules.

Megascleres: acanthotylostyli of the main skeleton are large, are acanthaceous only in the basal portion, and measure 0.350-0.850 mm in length (with caps measuring 0.020-0.040 mm in diameter); dermal spicules - strongyli - are occasionally curved and resemble slightly polytyloti, are 0.330-0.520 mm in length and 0.004-0.010 mm in thickness. Microscleres: chelae are arcuate, 0.028-0.054 mm in length.

Distribution. Southwestern Barents Sea, Kara Sea (between the Franz Josef Land and Ushakov island), Laptev Sea, Shokal'ski strait. Denmark and Davis straits, Norwegian Sea, southwest of Iceland. Depth: 35-779m (it was found at the depth of 1263m near Iceland and at the depth of 2500m in the Laptev Sea).

Examined: 5 specimens.

10. Hymedesmia similis Lundbeck, 1910 (Fig.127).

Lundbeck, 1910: 53, pl. VI, fig. 6; Hentschel, 1929:954.

The Body is incrusting, up to 1.6cm in thickness. The surface is smooth. The colour is light grey, light yellow or yellowish brown.

Skeleton. The main skeleton consists of vertical monactinal spicules underlying bundles of dermal diactinal spicules extending at various angles towards the surface of the sponge.

Megascleres: monactinal spicules of the main skeleton are of two types, large acanthotylostyli that are 0.249-0.457 mm in length (with caps measuring 0.010-0.017 mm in diameter) and small acanthostyli that are curved and measure 0.124-0.176 mm in length and 0.005-0.008 mm in thickness; dermal spicules - strongyli resembling occasionally polytyloti-measure 0.405-0.468 mm in length and 0.006-0.009 mm in thickness. Microscleres: chelae are arcuate and measure 0.033-0.037 mm in length.

Distribution. Southern and southwestern Barents Sea. Denmark strait, near Iceland and Faeroe islands. Depth: 105-385m (1441m in Denmark strait). Bottoms: pebble. Temperature: from -0.87 to 3°. Salt content: 34.87%.

Examined: 3 specimens.

11. Hymedesmia occulta Bowerbank, 1874 (Fig. 128). p. 169

Bowerbank, 1874: 250, pl. LXXIX, figs. 9-11; Topsent, 1892: 12, 21 (Hymeraphia); Topsent, 1904: 186, pl. XV, fig. 1 (Leptosia); Lundbeck, 1905: 67, pl. III, fig. 6, pl. VII, fig.3.

The Body is incrusting, up to 1 mm in thickness. The surface is smooth, is commonly furnished with papillae bearing oscula and ostia. The colour is light grey or brown.

Skeleton. The main skeleton consists of upright acanthotylostyli, the caps of which lie on the substratum. The longest among them extend throughout the sponge body up to the dermal membrane. Dermal spicules form bundles occupying the entire space between the base and the surface of the sponge are located between the styli and are oriented in various directions. In the dermal membrane proper the spicules are arranged horizontally and are fairly closely spaced though quite disorderly distributed.

Megascleres: acanthotylostyli of the main skeleton bear small, but distinctly outlined caps and are of two types - large acanthotylostyli, measuring 0.47-1.19 mm in length (with caps measuring 0.025-0.037 mm in diameter), and small acanthotylostyli, measuring 0.119-0.260 mm in length (with the diameter of the caps equal to 0.020-0.025 mm); dermal spicules are fusiform tornoti or strongyli changing to oxi and measuring 0.340-0.500 mm in length and 0.008-0.013 mm in thickness; markedly fusiform oxi, characteristic for the species and measuring 0.320-0.500 mm in length and 0.017-0.028 mm in thickness, are found alongside the dermal spicules listed above. Microscleres: chelae are arcuate, 0.030-0.042 mm in length.

Distribution. White Sea, northern Barents Sea, Kara Sea, Laptev Sea. Denmark strait, northern Atlantic up to the Azores. Depth: 10.5-550m (2187m near the Azores). Bottoms: ooze with sand, pebble, shell. Temperature: from -1.76 to 1.14°. Salt content 34.12 - 34.92‰.

The ZIN AN SSSR collections include 35 specimens of Hymedesmia occulta; many of them have diactinal spicules revealing a clearly defined tendency towards rounded ends, i.e. fusiform tornotostrongyli and strongyli are commonly found here instead of fusiform tornoti. The presence of markedly fusiform oxi which are often found in small numbers, is highly characteristic for this species. H. mammilaris (Fristedt) is apparently a synonym of H. occulta.

12. Hymedesmia peachii Bowerbank, 1882

Bowerbank, 1882: 64, pl. XIII, figs. 5-12; Burton, 1930a:499, fig. 6; Gorbunov, 1946: 116.

The Body is lumpy. The surface is smooth or very finely spiculated. Dermal membrane is thin and transparent. The colour is light brown. p.170

The main skeleton consists of vertical acanthotylostyli. Dermal skeleton is typical for the genus.

Megascleres: acanthotylostyli of the main skeleton are 0.105-0.390 mm in length and 0.012-0.022mm in thickness; dermal spicules - tornoti, are straight, with blunt ends and measure 0.195 mm in length and 0.003 mm in thickness. Microscleres: chelae are arcuate, 0.030 mm in length.

Distribution. Northern Kara Sea. North of England. Depth: 520-570 m. Our material includes only one Kara Sea specimen, which has been identified by Burton.

13. Hymedesmia platychela Lundbeck, 1910 (Fig.129).

Lundbeck, 1910: 63, pl. VII, fig.5.

The Body is incrusting, but may assume a somewhat massive appearance when growing upon uneven surfaces. Dermal membrane is in the form of a thin pellicle. The colour is grey.

Skeleton. The main skeleton consists of upright acanthotylostyli, the caps of which lie on the substratum; the main skeleton underlies a fairly well developed dermal skeleton consisting of bundles of diactinal spicules arranged at an angle to the surface.

Megascleres: acanthotylostyli of the main skeleton are markedly acanthaceous and measure 0.144-0.384 mm in length and 0.009-0.011 mm in thickness; dermal spicules - tornoti - are slightly fusiform and measure 0.374-0.447 mm in length and 0.006-0.007 mm in thickness. Microscleres: chelae are arcuate, 0.033-0.050 mm in length.

Distribution. Kara Sea. Denmark strait. Depth: 192-567 m. Examined: one specimen.

14. Hymedesmia procumbens Lundbeck, 1910 (Fig.130).

Lundbeck, 1910: 60, pl. VII, fig. 2; Hentschel, 1929: 955; Burton, 1935: 71 (Achinoe).

The Body is incrusting, the surface is slightly rough. The colour is light grey.

Skeleton. The main skeleton consists of individual upright acanthotylostyli underlying ascending bundles of dermal spicules. The skeleton of the dermal membrane consists of closely spaced chelae. p.171

Megascleres: acanthotylostyli of the main skeleton are 0.089-0.416 mm in length (with caps measuring 0.011-0.027 mm in diameter); dermal spicules - tornoti - are straight or unevenly curved, are apically asymmetrical, slightly fusiform and measure 0.230-0.343 mm in length and 0.004-0.007 mm in thickness. Microscleres: chelae are arcuate, 0.024-0.038 mm in length.

Distribution. Barents Sea (Vaida bay), Sea of Japan. Davis straight, south of Iceland. Depth: 91-252m (1263m south of Iceland).

One specimen has been examined.

2. Genus Leptolabis Topsent, 1904.

Topsent, 1904: 181; Lundbeck, 1910:122.

Genotype: L. forcipula Topsent, 1904.

The sponge body is in the form of a thin crust (pellicle) covering small objects at the bottom (pebbles, tubes of worms,etc.). The main skeleton consists of monactinal spicules, the caps of which lie on the substratum, while their pointed ends extend towards the thin dermal membrane.

Monactinal spicules underlie the diactinal dermal spicules, which may be also observed in the dermal membrane proper. These spicules often occur in bundles and are arranged at various angles in relation to the surface.

Megascleres: monactinal spicules of the main skeleton are commonly acanthaceous and are often of two kinds - large and small; dermal spicules are commonly represented by strongyli and tyloti. Microscleres: chelae are arcuate; sigmas and forceps, characteristic for the species, are present.

Leptolabis resembles closely the genus Forcepia Carter with regard to its skeletal elements. The two genera differ in body shape and in the general skeletal architecture. The former genus includes incrusting sponges, whose main skeleton consists of isolated upright acanthotylostyli; the latter genus includes mainly lumpy, massive sponges, having a reticulate skeleton. The relationship between these two genera is the same as between Hymedesmia and Lissodendoryx.

1. Leptolabis assimilis Lundbeck, 1910 (Fig. 131).

Lundbeck, 1910: 122, pl. XI, fig. 8.

The Body is in the form of a thin crust; the surface is smooth. The colour is grey.

Skeleton. The main skeleton is represented by individual upright acanthotylostyli. Dermal skeleton is typical for the genus. p.172

Megascleres: acanthotylostyli of the main skeleton are of two kinds - large ones, measuring 0.420-0.570 mm in length and small ones, measuring 0.089-0.210 mm in length and 0.006-0.014 mm in thickness; dermal spicules - tyloti - are 0.380-0.500 mm in length and 0.0046-0.007 mm in thickness. Microscleres: chelae are arcuate, 0.014-0.038 mm in length; sigmas measure 0.077-0.160 mm in length; forceps (acanthaceous) are of two types - large forceps are 0.024-0.034 mm in length, small forceps measure 0.012-0.018 mm in length.

Distribution. Between Spitzbergen and Franz Josef Land. West of the Faeroe islands. Depth: 280-1400 and up to 2800 m (northern Kara Sea). Bottom: ooze. Temperature: 1.53°. Salt content: 34.78‰.

The species examined is a very rare form; it has not been recorded since the time when Lundbeck (1910) described it for the first time from the study of a specimen obtained in the northern Atlantic. Our collection includes one single specimen found between Spitzbergen and Franz Josef Land at the depth of 2800m. Lundbeck mentions in his description of the species that Leptolabis assimilis grows on rocks together with other sponges which belong to the genera Tedania, Hymedesmia and Grayella. Our specimen is also closely intergrown with sponges belonging to the genera Artemisina and Grayella.

3. Genus Crellomima Resvoi, 1925.

Rezvoi, 1925: 98.

Genotype: C. imparidens Rezvoi, 1925

The Body is incrusting. The skeleton consists of the main spongin layer, on which vertical monactinal spicules are arranged; diactinal spicules gathered into bundles and oriented at various angles towards the surface of the sponge body, are also present. Dermal membrane encloses a dense layer of acanthaceous spicules. Microscleres are in the form of ancorae bearing 3 to 9 dents at the ends.

1 (2). Dermal spicules are represented exclusively by acanthostyli. Microscleres are in the form of tridentate or tetradentate ancorae............... 1. C. imparident Rezvoi.

2 (1). Dermal spicules are acanthostrongyli and acanthostyli. Microscleres are in the form of ancorae bearing seven to nine dents............ 2. C. incrustans Hentschel.

1. Crellomima imparidens Rezvoi, 1925 (Fig.132; plate XXVI, 4,5)

Rezvoi, 1925: 198, fig. 4; Hentschel, 1929: 889,970, plate XIII, fig. 4 (derma).

The Body forms a thin crust on barnacle (Balanus) shells and incrusts tubes of worms and other objects at the sea bottom. The surface is smooth, is partly covered with low papillae bearing osculár openings at the ends. The colour is white, light yellow or brown.

Skeleton. The main skeleton consists of acanthotylostyli and bundles of diactinal spicules which are sitting on the substratum in an upright position and are oriented at various angles to the surface. Dermal skeleton consists of acanthostyli arranged tangentially in the membrane.

Megascleres: acanthotylostyli of the main skeleton are 0.092-0.260 mm in length and 0.006-0.015 mm in thickness; tornoti commonly resemble polytyloti and measure 0.200-0.416 mm in length p.173 and 0.004-0.008 mm in thickness; dermal spicules - acanthostyli - are unevenly curved and measure 0.093-0.190 mm in length and 0.004-0.007mm in thickness. Mircroscleres: tridentate and tetradentate ancorae measuring 0.016-0.025 mm in length.

Distribution. White Sea, southwestern Barents Sea, Kara Sea, Laptev Sea, Okhotsk Sea (near the Shantar islands). Depth: 8-320m. Bottoms: sand, rock, less often ooze. Temperature: 10.5-02.5°.

Salt content: 25.99%.

Most of the 20 specimens preserved in the ZIN AN SSSR collections were found in the White Sea, whereas findings from the other seas are represented by single specimens. The White Sea forms differ somewhat from the others in having shorter fusiform diactinal spicules and, partly, in the shape of their ancorae. Crellomima derma described by Hentschel, is, judging from the description and drawings, conspecific and synonymous with C. imparidens.

2. Crellomima incrustans Hentschel, 1929 (Fig.133).

Hentschel, 1929: 890, 970, plate 13, fig. 3.

The Body is incrusting. The surface is furnished with small volcano-shaped elevations bearing oscular openings. The colour is light grey.

Skeleton. The main skeleton is in the form of vertically arranged acanthotylostyli and bundles of diactinal spicules. Dermal skeleton consists of tangentially arranged acanthaceous spicules.

Megascleres: acanthotylostyli of the main skeleton are 0.145-0.224 mm in length and 0.006-0.011 mm in thickness; torneti (nearly oxi) are 0.210-0.280 mm in length and 0.004-0.007 mm in thickness; dermal spicules - acanthostrongyli and acanthostyli - are 0.113-0.156 mm in length and 0.006-0.007 mm in thickness.

Microscleres: ancorae bearing seven to nine dents and measuring 0.016-0.021 mm in length.

Distribution. Barents and Kara Seas. Depth: 325m. Bottoms: sandy ooze, rock. Temperature: -1.11°. Salt content: 34.85%.

Examined: 3 specimens.

4. Genus Herceus Koltun, gen.n.

Genotype: H. orientalis Koltun, sp.n.

The Body is lumpy. The surface may be furnished with small papillae. The main skeleton consists of acanthostyli, the points p.174 of which are oriented towards the dermal membrane. The main skeleton underlies smooth monactinal spicules gathered into fibers of tufts; the skeleton of the dermal membrane is also composed of these spicules. Megascleres: acanthostyli of the main skeleton are often of two types, i.e. large and small; dermal spicules are smooth styli. Microscleres: Multidentate ancorae (possibly also sigmas).

The new genus resembles the well-known genus Hymedesmia in the general skeletal architecture, but differs from it in that it has monactinal spicules instead of the dermal diactinal spicules, and multidentate ancorae instead of arcuate chelae.

1. Herceus orientalis Koltun, sp. n. (Fig.134).

The holotype is preserved in the Zoological Institute of the AN SSSR, preparations NoNo 1354, 3302.

The Body is incrusting and soft. The surface is smooth and bears small papillae measuring up to 1 mm in height. The colour is yellowish grey.

Skeleton. The main skeleton consists of vertical acanthostyli underlying dermal monactinal spicules in the form of tufts or fibers.

Megascleres: acanthostyli of the main skeleton bear spines, have caps bent to one side, and measure 0.176-0.416 mm in length and 0.012-0.021 mm in thickness; dermal spicules - smooth, straight styli - are 0.291-0.416 mm in length and 0.008-0.010 mm in thickness. Microscleres: pentadented ancorae measuring 0.023-0.028 mm in length.

Distribution. Northern Bering Sea, northern Okhotsk Sea. Depth: 28-63m.

Examined: 2 specimens.

5. Genus Hymeraphia Bowerbank, 1864.

Bowerbank, 1864: 189; Gray, 1867: 543 (Mesapos); Burton, 1930a:531.

Genotype: H. stellifera Bowerbank, 1864.

The Body is incrusting. The main skeleton consists of a basal layer of short tylostyli with markedly expanded caps, and of long smooth styli. Both categories of spicules are arranged at a right angle to the substratum. Dermal skeleton is in the form of thin styli. Microscleres are lacking.

1 (2). Monactinal spicules of the main skeleton include peculiar tylostyli bearing spherical caps and a wreath of 7-12 dents at the opposite end from the cap......
1. H. stellifera Bowerbank.

2 (1). Monactinal spicules include no tylostyli bearing a wreath of dents at the end.......
2. H. spitzbergensis Fristedt.

1. Hymeraphia stellifera Bowerbank, 1866 (Fig.135).

Bowerbank, 1866: 146; Gray, 1867: 543 (Mesapos); Topsent, 1900: 253, pl. VII, fig. 8 (Hymedesmia); Breitfuss, 1912: 71, plate II, figs. 1-7 (Mesapos); Hentschel, 1929: 972 (Acarnus).

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The Body is lumpy, less than 1 mm in thickness and soft. The surface is lispid. The colour is orange, red or brown (in vivo), orange-yellow (in a dry state) and greyish brown in alcohol.

Skeleton. The main skeleton consists of spicules arranged vertically. Dermal skeleton consists of thin monactinal spicules. Megascleres: tylostyli are gently curved, have spherical caps and a long pointed end, and measure 0.500-2.000 mm in length and 0.0021 mm in thickness; tylostyli have spherical caps and a wreath of 7-12 dents at the opposite end and measure 0.050-0.126 mm in length and 0.010 mm in thickness.

Distribution. White Sea, Barents Sea (near the Murmansk coast). North of Norway, northern Atlantic Ocean. Depth: 8-167 m (up to 486m). Bottoms: gravel with ooze. Temperature: 3°.

2. Hymeraphia spitzbergensis Fristedt, 1887 (Fig. 136).

Fristedt, 1887: 432, plate 24, figs. 18-20, plate 27, fig. 12; Hentschel, 1929: 972 (Eurypon).

The Body is incrusting, up to 5 mm in thickness. The surface is markedly lispid. The colour is grey (in a dry state).

Skeleton. The main skeleton consists of tylostyli arising from the basal membrane and underlying bundles of styli. Megascleres: tylostyli that are gently curved and measure up to 2.5 mm in length; styli (to subtylostyli) measuring 0.300 mm in length.

Distribution. Barents Sea (near Spitzbergen).

The species is not represented in the ZIN AN SSSR collections.

X. Family Plecamiidae.

The Body is incrusting, cushion-shaped, lumpy or tabular. The skeleton is plumose or reticulate and reticulate-fibrous, "spiked" with monactinal spicules; in a number of incrusting forms the skeleton consists of a basal layer of acanthostrongyli, long styli and short acanthostyli arranged vertically in relation to the surface. The main skeleton consists of acanthaceous diactinal spicules (acanthostrongyli) and of smooth or acanthaceous monactinal spicules, which are commonly of two kinds. A special dermal skeleton consisting of monactinal and diactinal spicules is present. Microscleres are in the form of chelae or ancorae, occasionally toxi. In rare instances microscleres may be lacking.

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1. Genus Plocamia O. Schmidt, 1870

Burton, 1935: 401.

Genotype: P. gymnazusa O, Schmidt, 1870.

The Body is incrusting, cushion-shaped or lumpy. The skeleton consists of a basal layer of acanthostrongyli, long styli and short acanthostyli arranged vertically in relation to the surface of the sponge. The skeleton is either reticulate or reticulate-fibrous and consists of monactinal and diactinal (acanthaceous) spicules. Megascleres: spicules of the main skeleton are acanthostrongyli and styli that are more or less acanthaceous and are of one or two kinds; dermal spicules are diactinal (tornoti, strongyli, tyloti). Microscleres: chelae are palmate and arcuate.

1 (2). The skeleton consists of a basal layer of acanthostrongyli and of acanthostyli ascending from this layer towards the surface. Megascleres exceed 1 mm in length. The body is a thin crust measuring up to 2.5 mm in thickness....

1. P. ambigua (Bowerbank).

2 (1). The skeleton is different, reticulate or reticulate-fibrous.

3 (4). The skeleton is reticulate, more or less regular. Acanthostrongyli are less than 0.200 mm in length. The sponge body is cushion-shaped, lumpy or thickly incrusting, brittle and inelastic......

2. P. fragilis Koltun, sp.n.

4 (3). The skeleton is reticulate-fibrous, irregular. Acanthostrongyli exceed 0.200 mm in length. The sponge body is lumpy, soft and elastic.......

3. P. arctica Koltun, sp.n.

1. Plocamia ambigua (Bowerbank, 1866). (Fig.137)

Bowerbank, 1866: 136 (Microciona); Bowerbank, 1874: 65, pl. XXV (Microciona); Fristedt, 1887: 443 (Hastatus); Marenzeller, 1878: 370, Tab. 1, Fig. 3, Tab. 2, Fig. 3; Breitfuss, 1912: 67, 77, pl. 2, figs. 1-28 (Myxilla lundbecki); Rezvoi, 1928: 89, figs. 9,10 (Stylostichon lundbecki); Hentschel, 1929: 895, 973.

The Body is incrusting, up to 2.5 mm in thickness, soft. The surface is spiculated. The colour is greyish-brown. The oscula are few and small.

Skeleton. The main skeleton consists of a basal layer of acanthostrongyli and of acanthostyli arising from this layer towards the surface. Dermal skeleton consists of diactinal spicules.

Megascleres: large acanthostyli are 0.500-2.000 mm in length and 0.011-0.025 mm in thickness, small acanthostyli are 0.154-0.400 mm in length and 0.008-0.014 mm in thickness; acanthostrongyli are curved and measure 0.070-0.180 mm in length and 0.0035-0.007 mm in thickness; dermal spicules - tornoti or strongyli - are 0.203-0.420 mm in length and 0.004-0.010 mm in thickness. Microscleres: palmate chelae, measuring 0.019-0.037 mm in length.

Distribution. White and Barents Seas, north of Spitzbergen, Laptev Sea (Vil'kitski strait). Norwegian Sea, northern Atlantic Ocean up to the Azores. Depth: 14-266m. Bottoms: rock, gravel, ooze. Temperature: from 0.82° to 3°.

Examined: 7 specimens.

2. Plocamia fragilis Koltun, sp. n. (Fig.138; plate XXVI,3)

The holotype is preserved in the Zoological Institute of the AN SSSR, preparation No. 2013. p.177

The Body is lumpy or, more often, thickly incrusting and cushion-shaped. The surface is rough, commonly uneven. The sponge is stiff and brittle. The colour is greyish yellow.

Skeleton. The main skeleton is in the form of a more or less regular meshwork consisting of monactinal and diactinal spicules; "spiking" acanthostyli are also present. Dermal skeleton consists of diactinal spicules.

Megascleres: acanthostyli measuring 0.159-0.500 mm in length and 0.09-0.017 mm in thickness; acanthostrongyli measuring 0.147-0.178 mm in length and 0.07-0.013 mm in thickness; dermal spicules - strongyli (to tornotostrongyli and tyloti) - are 0.151-0.184 mm in length and 0.004-0.006 mm in thickness. Microscleres: palmate chelae changing to arcuate chelae and measuring 0.016-0.033 mm in length. p.178

Distribution. Chukchi Sea, Okhotsk Sea (Terpenie Bay), near Shikotan island (southern Kuril islands). Lives at the depth of 27-55m. Bottoms: sand, pebble, ooze.

Examined: 6 specimens. Placamia fragilis resembles in appearance P. ambigua. Apart from the size of the spicules, the basic difference between these two species resides in the skeletal architecture. The skeleton of P. fragilis is reticulate, whereas that of P. ambigua consists of vertically arranged spicules that do not form a meshwork.

3. Plocamia arctica Koltun, sp. n. (Plate XXVII, 1).

The holotype is preserved in the Zoological Institute of the AN SSSR, preparation No 758.

The Body is lumpy, elastic, up to 6 cm in height. The surface is uneven and bears a multitude of tubercular projections formed by the ends of fibers. The colour ranges from light brown to greyish brown (is occasionally orange on the interior).

Skeleton. The main skeleton consists of multispicular fibers and bundles of spicules interspaced by a diffuse meshwork composed of acanthostrongyli and acanthostyli. Dermal skeleton consists of smooth diactinal spicules scattered disorderly in the dermal membrane.

Megascleres: styli are acanthaceous in the basal area, measure 0.300-0.740 mm in length and 0.010-0.017 mm in thickness; acanthostyli measure 0.180-0.260 mm in length and 0.007-0.010 mm in thickness; acanthostrongyli measure 0.170-0.240 mm in length and 0.007-0.008 mm in thickness; dermal spicules - tornoti - are 0.240-0.400 mm in length and 0.006-0.010 mm in thickness. Microscleres: chelae are palmate, 0.23-0.32 mm in length.

Distribution. White, Barents and Kara Seas. Depth: 43-360m. Bottoms: rock, shell, sand. Temperature: from -0.4 to 1.64°. Salt content: 34.11-34.27%.

Examined: 10 specimens. The new species is similar in the spiculation of the skeleton to Plocamia ambigua, but differs from the latter in shape and in the skeletal architecture, as well as in the size of spicules. P. ambigua includes incrusting forms containing in their skeleton acanthostyli, which measure up to 2 mm in length, and acanthostrongyli measuring up to 0.180 mm in length, whereas the new species includes forms that are massive, lumpy and have slightly acanthaceous styli measuring up to 0.740 mm in length, and acanthostrongyli that are up to 0.240 mm in length.

XI. Family Phorbasidae.

The body is lumpy, cushion-shaped, occasionally somewhat elongated. The skeleton is plumose or fibrous and is "spiked" by monactinal spicules. A dermal skeleton consisting of smooth diactinal spicules, is present. The main skeleton commonly consists of smooth diactinal spicules and acanthaceous monactinal spicules. Microscleres of the cheloid type (chelae); microscleres may be lacking.

1. Genus Phorbas Duchassaing et Michelotti, 1864

Duchassaing and Michelotti, 1864: 92.

Genotype: Ph. amarantus Duchassaing et Michelotti, 1864.

The Body is lumpy or semispherical, sometimes somewhat elongated. The main skeleton consists of fibers "spiked" by monactinal spicules. Dermal skeleton consists of smooth p.179 diactinal spicules. Megascleres: tornoti or strongyli (to subtyloti) and acanthostyli, "spiking" the main skeleton; dermal diactinal spicules are often of the same type as those of the main skeleton. Microscleres: when present, microscleres are represented by arcuate chelae.

1 (2). The sponge surface bears a multitude of sucker-like papillae. Diactinal spicules of the main skeleton are in the form of strongyli.....

1. Ph. paucistyliferus Burton.

2 (1). The surface of the sponge bears no sucker-like papillae. Diactinal spicules of the main skeleton are in the form of tornoti........

2. Ph. salebrosus Koltun.

1. Phorbas paucistyliferus Burton, 1958 (Fig.139; plate XII,4)

Koltun, 1958: 67, fig.23.

The Body is semispherical, lumpy or somewhat elongated, is expanded towards the top, measures up to 6.5 cm in height, is soft and elastic. The surface bears a multitude of closely spaced sucker-shaped papillae. Dermal membrane is compact, thick, adheres firmly to the body proper. Oscula, when present, are at the very top of the sponge. The colour is light grey, yellowish-brown or yellow.

Skeleton. The main skeleton is in the form of ascending fibers and bundles of spicules "spiked" by acanthostyli. Dermal skeleton consists of tangentially arranged diactinal spicules.

Megascleres: strongyli (to styli) measuring 0.384-0.509 mm in length and 0.008-0.012 mm in thickness; acanthostyli with more or less distinctly outlined caps (found in small numbers) are 0.156-0.364 mm in length and 0.010-0.015 mm in thickness. Microscleres: arcuate chelae measuring 0.031-0.046 mm in length. p.180

Distribution. Okhotsk Sea and Sea of Japan, near the Pacific coast of the southern Kuril islands. Lives at the depth of 3-92m (up to 414m). Bottoms: rock, sand, ooze. Observed at a temperature of 2.3°.

The species is represented by 10 specimens in the ZIN AN SSSR collections.

2. Phorbas salebrosus Koltun, 1958 (Fig.140; plate XVI,1).
Koltun, 1958: 68; fig.29.

The Body is up to 5 cm in height, lumpy, is commonly somewhat compressed from the sides, slightly lobate, strong. The surface is uneven, tuberculate. Dermal membrane is unobservable. The colour is grey.

Skeleton. The main skeleton is represented by fibers composed of diactinal spicules "spiked", by acanthostyli. Dermal skeleton consists of diactinal spicules similar to those of the main skeleton.

Megascleres: tornoti (oxi) are fusiform, 0.343-0.468 mm in length and 0.008-0.012 mm in thickness; acanthostyli tending to differentiate into two types - i.e. large acenthostyli measuring

0.145-0.499 mm in length, and small acanthostyli measuring 0.010-0.013 mm in thickness. Microscleres: arcuate chelae measuring 0.024-0.032 mm in length.

Distribution. Bering Sea, Sea of Japan (Tartar strait), near the southern Kuril islands. Found at the depth of 90-110m. Bottoms: gravel, pebble. Temperature: 1.45-6.6°.

Examined: 3 specimens.

XII. Family Microcionidae.

The Body varies in shape and may be incrusting, cushion-shaped, clavate, flabelliform, stalk-shaped etc. The skeleton is plumose or reticulate and reticulate-fibrous, but in the latter event complementary (Monactinal) spicules or monactinal spicules "spiking" the main skeleton are present. The assortment of megascleres is complex and consists, as a rule, of three types of spicules. A special dermal skeleton consisting of diactinal or monactinal spicules, is also present. Spicules of the main skeleton are diactinal. Microscleres include cheloids. In certain (rare) instances microscleres may be lacking. Cheloids of incrusting forms are in the form of palmate chelae.

KEY FOR THE IDENTIFICATION OF THE GENERA OF THE FAMILY MICROCIONIDAE

1 (2). Microscleres include sperical chelae. The body is branching or in the form of a reticulate plate.......
4. Melonchela Koltun.

2 (1). Spherical chelae are lacking.

3 (4). The body is incrusting; occasionally fairly thick processes diverge from the incrusting base. The skeleton is plumose.........
1. Microciona Bowerbank.

4 (3). The body has a different shape, is not incrusting.

5 (8). Dermal skeleton consists of monactinal spicules.
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6 (7). Microscleres are represented by chelae and toxi.....

2. Clathria O. Schmidt.

7 (6). Microscleres are represented by microxi or are lacking...........

3. Clathriella Burton.

8 (5). Dermal skeleton consists of diactinal spicules. Toxi are lacking among the microscleres.

9 (10). The skeleton is plumose.........

6. Anchinoe Gray.

10 (9). The skeleton is reticulate or reticulate-fibrous.......

5. Ectyodoryx Lundbeck.

1 Genus Microciona Bowerbank, 1864.

Bowerbank, 1864: 188; Bowerbank, 1866: 124-126; Topsent, 1889:112.

Genotype: M. astrasanguinea Bowerbank, 1864.

The Body is more or less incrusting; in certain forms fairly long simple or ramified projections arise from the incrusting base which grows on the substratum. The main skeleton consists of short, plumose, ascending fibers isolated from one another. Dermal skeleton is in the form of bundles of spicules and individual spicules arranged tangentially or at an angle to the surface. Megascleres: Monactinal spicules of the main skeleton, the main fibers, which are commonly acanthaceous in their basal portion, and supplementary "spiking" fibers, which are fully acanthaceous themselves; dermal spicules are commonly smooth and monactinal. Microscleres: palmate chelae; apart from the chelae, there may be toxi. In rare instances microscleres are lacking.

1 (4). The incrusting body of the sponge has long projections which may be simple or branching. These projections often form the major bulk of the body, in which event the sponge acquires the appearance of a small bush or resembles a series of ramified branches. Microscleres are represented by palmate chelae or are lacking.

2 (3). Microscleres are present (palmate chelae)........

3. M. lambei Burton.

3 (2). Microscleres are lacking.......

4. M. primitiva Koltun.

4 (1). The incrusting body of the sponge has no long projections. Microscleres are represented by chelae and toxi.

5 (6). Toxi are of two kinds: small and large.....

2. M. heterotoxa Hentschel.

6 (5). Toxi are of one kind......

1. M. armata Bowerbank.

1. Microciona armata Bowerbank, 1886 (Fig.141).

Bowerbank, 1866: 129; Bowerbank, 1874:60; plate XXIII, figs. 17-21.

The Body is incrusting. The surface is slightly spiculated. Dermal membrane is thin and transparant. The colour is light brown. The oscula are small.

Skeleton. The main skeleton consists of upright plumose fibers. Dermal skeleton is typical for the genus.

Megascleres: large acanthostyli are gently curved, are acanthaceous only in the basal area, measure 0.230-0.772 mm in length and 0.012-0.018 mm in thickness; small acanthostyli are fully acanthaceous, 0.124-0.156 mm in length and 0.009-0.010 mm in thickness; dermal spicules-styli (to subtylostyli)-often bear a few dents at the top and measure 0.228-0.333mm in length and 0.003-0.008 mm in thickness. Microscleres: chelae are palmate, measure 0.007-0.018 mm in length; toxi measure 0.155-0.241 mm in length. p.182

Distribution: White Sea (found at the depth of 78m at the temperature of 8° and salt content of 28.93%). Near the shores of England.

The species has been observed in our waters for the first time.

2. Microciona heteroxtoxa Hentschel, 1929 (Fig.142).

Hentschel, 1929: 891, 970; plate 14, fig. 5.

The Body is lumpy, up to 2 mm in thickness, fairly strong. The surface bears papillae. The colour is light yellow. The oscula are located on the papillae.

Skeleton. The main skeleton commonly consists of a basal layer formed of small acanthostyli and of pinnate fibers arising from this layer. Dermal skeleton is typical for the genus. p.183

Megascleres: markedly acanthaceous acanthostyli measuring 0.140-1.154 mm in length and 0.009-0.012 mm in thickness; acanthostyli that are acanthaceous only near the base and are 0.336 mm in in length; dermal spicules - styli (to tylostyli)- are finely acanthaceous at the ends and measure 0.392-0.602 mm in length and 0.007 mm in thickness. Microscleres: palmate chelae measuring 0.016-0.020 mm in length; toxi of two types, i.e. large toxi measuring 0.112-0.196 mm in length, and small toxi measuring 0.017-0.019 mm in length.

Distribution. White and Barents Seas. Lives at the depth of 11-105m. Bottoms: ooze, sand, rock. Found at the temperature of -0.47° and at the salt content of 34.87%.

Examined: 4 specimens.

3. Microciona lambei Burton, 1955 (Fig.143; plate XXIX, 2). Koltun, 1955b: 49, plate IV, fig.5.

The Body is up to 9 cm in height and appears in the form of a small bush; the simple or (more often) ramified compressed branches forming diverse patterns arise from the common incrusting or cushion-shaped base. The surface is spiculated. The colour is grey or greyish yellow .

Skeleton. The main skeleton has a plumose appearance; in the branches it is represented by a thick main axis composed of large styli "spiked" with acanthostyli. Dermal skeleton is typical for the genus.

Megascleres: styli are smooth or slightly acanthaceous, 0.364-2.184 mm in length and 0.023-0.032 mm in thickness; acanthostyli are 0.166-0.384 mm in length and 0.010-0.019 mm in thickness; dermal spicules - subtylostyli and tylostyli - are finely acanthaceous at the very top and measure 0.488-1.450 mm in length and 0.006-0.015 mm in thickness. Microscleres: chelae are palmate, 0.016-0.020 mm in length.

Distribution. Southern Okhotsk Sea, Sea of Japan, near the Pacific shores of the southern Kuril islands. Lives at the depth of 91-550m. Bottoms: sand, pebble, oozy sand. Temperature: 1-1.3°. Salt content: 34.18%.

Examined: 9 specimens.

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4. Microciona primitiva Költun, 1955 (Fig.144).

Koltun, 1955a; 16, 17; Fig.6.

The Body is elongated, branching. The sponge is up to 2-8cm in height and commonly lives on rocks, covering them in the form of a thin crust from which branching parts of the body, resembling deer antlers, arise here and there. The surface bears long spicules. The colour is yellowish.

Skeleton. The main skeleton has a plumose character; the fibers are "spiked" by long styli. Dermal skeleton consists of styli.

Megascleres: acanthotylostyli (to smooth tylostyli) with a characteristic cap are 0.150-0.420 mm in length and 0.020-0.025 mm in thickness (the caps are 0.020-0.030 mm in diameter); smooth, large tyli are 3 mm in length and 0.030-0.040 mm in thickness; thin, curved styli are up to 0.700 mm in length and 0.006 mm in thickness. Microscleres are lacking.

Distribution. Found in the Bering Sea (near the Mednyi island) at the depth of 110m.

Examined: 2 specimens.

2. Genus Clathria O. Schmidt, 1862.

Schmidt, 1862: 57; Hallmann, 1912: 205.

Genotype: C. compressa O. Schmidt, 1862.

The Body is vertically upright, commonly flabelliform or stalk-shaped, occasionally ramified, is often stemmed. The main skeleton consists of a meshwork of markedly branching fibers or of an axial rod extending along the stalk-shaped body of the sponge; "spiking" spicules are present. Dermal skeleton consists of monactinal spicules. Megascleres: monactinal spicules of the main skeleton are smooth or acanthaceous styli and "spiking" acanthostyli (to styli); dermal spicules are smooth; occasionally finely acanthaceous (at the very top) styli. Microscleres: palmate chelae and toxi.

Genus Clathria differs from the genus Microciona mainly in the shape of its body and in the architecture of its skeleton.

1 (2). The body is branching in a dendritic manner. Megascleres (styli) exceed 1 mm in length.....

1. C. dichotoma (Esper).

2 (1). The body shape is different. Megascleres (styli) are considerably less than 1 mm in length.

3 (4). Styli of the main skeleton are 0.400-0.630 mm in length; chelae are 0.020-0.023 mm in length....

2. C. laevigata Lambe.

4 (3). Styli of the main skeleton are 0.144-0.280 mm in length; chelae are 0.011-0.014 mm in length....

3. C. robusta Koltun.

1. Clathria dichotoma (Esper, 1794)(Fig.145; Plate XXIX,1).

Esper, 1794: 202, pl. X (Spongia); Ehlers, 1870: 8 (Raspailia); Schmidt, 1875: 120 (Raspailia moebii); Carter, 1876: 232, pl.XII, fig. 3, pl. XV, fig. 25 (Dictyocylindrus abyssorum); Vosmaer, 1880: 154 (abyssorum); Fristedt, 1885: 48, pl. IV, fig. 1 (Raspailia abyssorum); Thiele, 1903: 394 (R. moebii); Arnesen, 1903: 21, pl. III, fig. 4, pl. VI, fig. 8; Arndt, 1913: 119 (abyssorum); Stephens, 1921: 55; Burton, 1930a: 501 (Dictyoclathria).

The Body is dendritic, is repeatedly ramified dichotomously, strong, up to 10 cm in height. The branches are cylindrical, rather slender, partly compressed from the sides. A short stem is p.185 located below the ramified portion of the body. The surface is spiculated. The colour ranges from light yellow to dark brown.

Skeleton. The main skeleton is in the form of an axial rod "spiked" by long spicules. Dermal skeleton consists of styli.

Megascleres: large styli are 0.63-1.5 mm in length and 0.018-0.021 mm in thickness; styli are sparsely acanthaceous (to smooth), curved, are 0.13-0.40 mm in length and 0.014-0.017 mm in thickness; dermal styli (to subtylostyli) are thin, often finely acanthaceous at the very top, are 0.225-0.665 mm in length and 0.005-0.007 mm in thickness. Microscleres: chelae are palmate, 0.018-0.027 mm in length; toxi are 0.073-0.367 mm in length.

Distribution. Barents Sea (Kola peninsula). Near the western shores of Norway, between Scotland and Faeroe islands, northern Atlantic Ocean. Lives at the depth of 60-800m.

Examined: 2 specimens.

2. Clathria laevigata Lambe, 1893 (Fig. 146).

Lambe, 1893: 31-32, pl. II, figs. 9, 9a-f.

The Body is upright, compressed from the sides, cavernous, elastic, fragile, up to 4.5 cm in height. Dermal membrane is thin. The colour is light yellow or light brown.

Skeleton. The skeleton is in the form of an irregular network consisting of loose primary fibers and shorter secondary fibers intersecting the former, as well as of individual spicules. The fibers bear small acanthaceous tylostyli. Dermal skeleton consists of smooth styli.

Megascleres: styli are smooth, curved, measuring 0.400-0.630 mm in length and 0.017-0.021 mm in thickness (occasionally they have slightly acanthaceous tops); acanthaceous tylostyli (acanthotylostyli) measuring 0.068-0.288 mm in length and 0.008-0.013 mm in thickness; dermal styli (often blunt with spines at both ends) measuring 0.232-0.356 mm in length and 0.005-0.008 mm in thickness. p.186

Microscleres: chelae are palmate, 0.020-0.023 mm in length; toxi measure 0.183-0.641 mm in length and 0.002-0.006 mm in thickness.

Distribution. The 4th Kuril strait. Near the Vancouver Island (Pacific coast of North America). Lives at the depth of 72-138m.

Examined: 2 specimens.

3. Clathria robusta Koltun, sp. n. (Fig.147; plate XXV,5).

The genotype is preserved in the Zoological Institute of the AN SSSR, preparations NoNo 3543, 3639.

The Body is elongated, stalk-shaped, stiff, up to 9.5 cm in height. The surface is very uneven and bears a multitude of low, cone-shaped tubercles. The colour is brown.

Skeleton. The main skeleton consists of fibers and bundles of spicules, as well as of individual spicules. "Spiking" acanthostyli are present.

Megascleres: styli are gently curved, measure 0.144-0.280 mm in ~~thickness~~ length and 0.008-0.013 mm in thickness; acanthostyli (with smooth middle areas) measure 0.056-0.070 mm in length and 0.006-0.008 mm in thickness; dermal styli are straight (slightly acanthaceous at the top) and measure 0.150-0.270 mm in length and 0.005-0.008 mm in thickness. Microscleres: chelae are palmate, 0.011-0.014 mm in length; toxi are filiform and measure 0.120-0.210 mm in length.

Distribution. Found in the Barents Sea (near Spitzbergen).

The description is based on the study of one specimen. The new species resembles C. laevigata in the type and character of spicules, but differs from it in having smaller spicules of the main skeleton and in the shape of its body.

3. Genus Clathriella Burton, 1935.

Burton, 1935: 73.

Genotype: C. primitiva Burton.

The Body is lumpy. The main skeleton is in the form of a meshwork consisting of monactinal spicules. "Spiking" acanthostyli are present. Dermal skeleton consists of monactinal spicules. Microscleres are lacking or are represented by microxi or arcuate oxi.

1. <u>Clathriella primitiva</u> Burton, 1935 (Fig.148).

Burton, 1935: 73, fig.6

<u>The Body</u> is lumpy, up to 4.5 cm in height. The surface is uneven; dermal membrane is thin and transparent. The sponge is elastic, fragile. The colour is ash-grey, light yellow or greyish brown.

<u>Skeleton</u>. The main skeleton is in the form of a regular meshwork consisting of three-sided meshes formed by styli and acanthostyli (the latter may be "spiking"). Dermal skeleton p.187
consists of subtylostyli or styli arranged radially in relation to the surface.

Megascleres: styli are curved, 0.200-0.435 mm in length and 0.012-0.018 mm in thickness; acanthostyli are 0.160-0.228 mm in length and 0.008-0.012 mm in thickness; dermal subtylostyli or styli have caps bearing scarcely discernible spines at the top, and measure 0.160-0.395 mm in length and 0.003-0.006 mm in thickness; occasionally the main skeleton includes arcuate oxi or microxi measuring up to 0.200 mm in length and 0.007 mm in thickness.

<u>Distribution</u>. Northern Okhotsk Sea, Sea of Japan (Tartar strait, Peter the Great strait). Lives at the depth of 38-80m. Bottoms: pebble, sand, oozy sand. Temperature: 5.7-12°.

Examined: 6 specimens.

4. Genus Melonchela Koltun, 1955.

Koltun, 1955a: 17.

Genotype: M. clathriata Koltun, 1955.

The Body is bushy, branching or in the form of a reticulate plate. The main skeleton consists of pinnate fibers "spiked" markedly by styli. Dermal skeleton is typical for the family. Megascleres: styli of the main skeleton are smooth or acanthaceous; dermal spicules are diactinal, usually strongyli or tyloti. Microscleres: the spherical chelae (spherochelae) characteristic for the genus, are probably derivatives of apically asymmetrical palmate chelae; toxi are of one or two types.

1. Melonchela clathriata Koltun, 1955 (Fig.149; plate XLIII, 3).

Koltun, 1955a: 17-18, fig.7.

The Body is in the form of a small bush or stemmed reticulate plate and measures up to 8 cm in height. The surface is spiculated. The colour is light yellow.

Skeleton. The main skeleton consists of pinnate fibers; dermal skeleton is typical for the family.

Megascleres: styli of the main skeleton are slightly acanthaceous at the very top and are curved; the smaller ones among them may be blunt; the styli measure 0.215-2.000 mm in length and 0.018-0.033 mm in thickness; dermal spicules - strongyli (to tyloti)- are finely acanthaceous at the ends and measure 0.280-0.420 mm in length and 0.006-0.008 mm in thickness. Microscleres: characteristic spherical chelae measuring 0.017-0.025 mm in length; toxi are of two types; large toxi measure 0.055-0.220 mm in length and 0.010-0.012 mm in thickness, small toxi are 0.012-0.020 mm in length and 0.001 mm in thickness.

Distribution. Bering Sea (near the Kommandorski islands). Found at the depth of 2440m.

Examined: 2 specimens. p.188

5. Genus Ectyordoryx Lundbeck, 1909.

Lundbeck, 1909: 444.

Genotype: Hastatus foliatus Fristedt, 1887.

The Body is incrusting, cushion-shaped, lumpy or stem-shaped. The main skeleton is reticulate or reticulate-fibrous, is "spiked" by acanthostyli. Dermal skeleton consists of diactinal spicules occurring singly or in tufts. Megascleres: acanthostyli of the main skeleton are of two types, large and small; dermal spicules are tornoti or strongyli. Microscleres: arcuate chelae and sigmas or chelae only. Microscleres may be lacking. p.189

1 (10). Microscleres are present.

2 (7). Microscleres include sigmas.

3 (4). Arcuate chelae of one type, measuring 0.028-0.038 mm in length.....
7. E. oligacantha Hentschel.

4 (3). Arcuate chelae of two types.

5 (6). Dermal spicules are in the form of strongyli or subtyloti. The main skeleton is reticulate-fibrous......
3. E. olgae Hentschel.

6 (5). Dermal spicules are in the form of tornoti. The main skeleton is reticulate........

2. E. loyningi Burton.

7 (2). Microscleres include no sigmas; chelae alone are present.

8 (9). The main skeleton is in the form of a fairly irregular meshwork. Dermal diactinal spicules are tornoti (resembling oxi) which measure 0.280-0.340 mm in length.....

1. E. clavigera (Levinsen).

9 (8). The main skeleton is in the form of an irregular meshwork consisting of three-sided meshes. Dermal diactinal spicules are strongyli (to tornoti) measuring 0.126-0.168 mm in length........

6. E. balanoides Koltun. sp.n.

10 (1). Microscleres are lacking.

11 (12). Dermal spicules are tornoti 0.004-0.005 mm in thickness....

4. E. kovdaicum (Rezvoj).

12 (11). Dermal spicules are strongyli (apically asymmetrical) 0.002 mm in thickness.....

5. E. derjugini (Breitfuss).

1. Ectyodoryx clavigera (Levinsen, 1886).

Levinsen, 1886: 360, plate 31, figs. 3-6 (Esperella); Hentschel, 1929: 948.

The Body is lumpy or cushion-shaped (to incrusting). The surface is more or less even.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of acanthostyli; "spiking" spicules are present. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are large, furnished with caps, 0.260-0.310 mm in length, and small, measuring 0.120-0.200 mm in length; dermal spicules are straight tornoti (resembling oxi), measuring 0.280-0.340 mm in length. Microscleres: arcuate chelae are 0.028 mm in length.

Distribution. Found in the Kara Sea at the depth of 146m. The species is not represented in our collections.

2. Ectyodoryx loyningi Burton, 1934 (Fig. 150).

Burton, 1934a:11, fig. 1-2.

The Body is lumpy or irregularly compressed, up to 7.5 cm in height. The surface is uneven, corrugated or finely cavernous; it is slightly spiculated. A thin dermal membrane is present. The sponge is commonly only slightly elastic and fairly fragile. The colour ranges from light yellow to brown and dark brick red.

Skeleton. The main skeleton is in the form of a meshwork consisting of three-sided, four-sided or irregularly shaped meshes formed by bundles of spicules; here and there there are long fibers "spiked" by small acanthostyli. Dermal skeleton is typical for the genus. p. 190

Megascleres: acanthostyli of the main skeleton are of two types - large (measuring 0.249-0.450 mm in length and 0.008-0.018 mm in thickness) and small (measuring 0.104-0.197 mm in length and 0.006-0.010 mm in thickness); dermal spicules - tornoti-are 0.176-0.249 mm in length and 0.004-0.007 mm in thickness. Microscleres: chelae are arcuate, large chelae are 0.027-0.070 mm in length and small chelae (having a peculiar shape) are 0.010-0.021 mm in length; sigmas measure 0.023-0.088 mm in length.

Distribution. Southwestern Barents Sea. Greenland Sea. Lives at the depth of 39-298m. Bottoms: sand, gravel, rock, ooze. Temperature: from -0.87° to 5°. Salt content: 32.87 - 34.87%.

Examined: 25 specimens.

3. Ectyodoryx olgae Hentschel, 1929.

Hentschel, 1929: 881, 948, plate XII, fig. 5, plate XIV, fig. 2.

The Body forms a mass of closely intergrown branches, is up to 3.8 cm in height and very fragile. The surface is somewhat rough. The colour is light yellow. Oscula are up to 2.5 mm in diameter and are located at the bottom of small depressions.

Skeleton. The main skeleton is reticulate - fibrous and consists of thick anastomosing fibers; "spiking" acanthostyli are present. Dermal skeleton consists of tangentially arranged spicules.

Megascleres: acanthostyli of the main skeleton; large acanthostyli (in the fibers) are 0.224-0.308 mm in length and 0.007 mm in thickness (not counting the spikes); small "spiking" acanthostyli are 0.112-0.154 mm in length and 0.006 mm in thickness (without the spikes); dermal spicules - strongyli or subtyloti - are 0.196-0.238 mm in length and 0.003-0.004 mm in thickness. Microscleres: chelae are arcuate, large chelae are 0.047-0.057 mm in length, small chelae are 0.016-0.030 mm in length; sigmas are 0.041-0.060 mm in length.

Distribution. Western Barents Sea. Found at the depth of 130-210m.

The species is not represented in the ZIN AN SSSR collections.

4. Ectyodoryx kovdaicum (Rezvoj, 1925).

Rezvoi, 1925: 200, Fig. 5 (Stylostichon).

The Body is incrusting, fairly thick or cushion-shaped. The colour is light grey. p.191.

Skeleton. The main skeleton is in the form of a meshwork consisting of acanthostyli; "spiking" spicules are present. Dermal skeleton consists of bundles of smooth diactinal spicules and of individual spicules of this type.

Megascleres: acanthostyli of the main skeleton are of two kinds, the large ones are curved, the small ones are straight and are 0.120-0.280 mm in length and 0.007-0.011 mm in thickness; dermal spicules-tornoti-are straight, apically asymmetrical, 0.155-0.180 mm in length and 0.004-0.005 mm in thickness. Microscleres are lacking.

Distribution. Recorded only from the White Sea.

The ZIN AN SSSR collections include only one specimen (the genotype).

5. Ectyodoryx derjugini (Breitfuss, 1912).

Breitfuss, 1912: 78, plate 1, Figs. 1-5 (Hymeraphia); Hentschel, 1929: 963 (Hymedesmia).

The Body is incrusting, up to 102 mm in thickness. The surface is smooth. The colour is rusty brown.

Skeleton. The main skeleton consists of a diffuse meshwork formed of acanthostyli. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton tend to differentiate into two types, i.e. large acanthostyli with smooth points and small ones that are fully acanthaceous, and are 0.080-0.200 mm in length and 0.003-0.004 mm in thickness; dermal spicules- apically asymmetrical strongyli are 0.150-0.200 mm in length and 0.002 mm in thickness. Microscleres are lacking.

Distribution. Barents Sea (near the Murmansk coast).

The species is not represented in the ZIN AN SSSR collections. However, Breitfuss's preparations of the sponge representing the holotype of this species, have been preserved. Analysis of these preparations allowed us to define more precisely the size of the spicules characteristic for this species. The species resembles closely Ectyodoryx kovdaicum (Rezvoj).

6. Ectyodoryx balanoides Koltun, sp. n. (Fig.151).

The holotype is preserved in the Zoological Institute of the AN SSSR, preparations NoNo 2029, 2523, 2577.

The Body is cushion-shaped, up to 1 mm in thickness. The surface is even. The colour is yellow.

Skeleton. The main skeleton is in the form of a meshwork consisting of vertical fibers (1-3 spicules in thickness) and transverse spicules. In tangential cross-sections it appears in the form of a fairly regular closely spaced meshwork of three-sided meshes; the ascending fibers extend through the nodes of these meshes;"spiking"spicules are present. Dermal skeleton is typical for the genus.

Megascleres: large acanthostyli of the main skeleton form fibers and measure 0.172-0.241 mm in length and 0.010-0.013 mm in thickness; small acanthostyli are 0.098-0.155 mm in length and 0.006-0.008 mm in thickness; dermal spicules - strongyli (to tornoti)-are 0.126-0.168 mm in length and 0.0015-0.0025 mm in thickness. Microscleres: chelae are arcuate, 0.014-0.023 mm in length.

Distribution. Found in the northwestern Okhotsk Sea at the depth of 45m. Bottoms: shell, sand. p.192

Examined: 2 specimens. The new species resembles Ectyodoryx clavigera, but differs from it in the architecture of its skeleton, which consists of a regular meshwork of three-sided meshes, whereas that of E. clavigera is in the form of an irregular meshwork. Furthermore, dermal diactinal spicules of the new species are strongyli measuring up to 0.168 mm in length, whereas those of E. clavigera are tornoti measuring up to 0.340 mm in length.

7. <u>Ectyodoryx oligocantha</u> Hentschel, 1929.

Hentschel, 1929: 882, 949, plate XII, fig. 14, plate XIV, fig. 4.

<u>The Body</u> is up to 8.5 cm in height, brittle, varies in shape from thickly tabular to lumpy. The surface is uneven, tuberculate. The colour is greyish-yellow, greyish brown or light grey. The oscula are 3-7 mm in diameter.

<u>Skeleton</u>. The main skeleton is in the form of an irregular meshwork consisting of bundles of spicules and of fibers having 3-5 spicules in diameter. Dermal skeleton consists of tangentially arranged spicules.

Megascleres: acanthostyli of the main skeleton are large (0.252-0.308 mm in length and 0.009-0.013 mm in thickness) and small "spiking" (0.126-0.143 mm in length and 0.006 mm in thickness); dermal spicules - tornoti - are apically asymmetrical and measure 0.168-0.210 mm in length and 0.003-0.004 mm in thickness. Microscleres: chelae are arcuate, 0.028-0.038 mm in length; sigmas measure 0.009-0.024 mm in length.

<u>Distribution</u>. Barents Sea (near Spitzbergen). Lives at the depth of 96-165m.

The species it not represented in the ZIN AN SSSR collections.

Genus <u>Achinoe</u> Gray, 1867.

Gray, 1867: 536; Topsent, 1913:33.

<u>Genotype</u>: <u>Hymeniaeidon</u> <u>perarmatus</u> Bowerbank, 1866.

<u>The Body</u> is elongated, clavate, flabelliform, lumpy with pro-

jections, or incrusting. The main skeleton consists of plumose fibers composed of acanthostyli. Dermal skeleton is in the form of tangentially arranged diactinal spicules. Megascleres: acanthostyli of the main skeleton are often of two kinds, large and small; dermal spicules are strongyli, tornoti. Microscleres: chelae are arcuate, of one or two kinds; sigmas and ancorae may also be present. Microscleres may be lacking, though this is rare.

1 (4). Dermal diactinal spicules are in the form of tornoti. Microscleres are represented by chelae and ancorae or by chelae and sigmas.

2 (3). Monactinal spicules of the main skeleton are short, do not exceed 0.5 mm in length. Microscleres are represented by arcuate chelae and sigmas......

1. *A. roemeri* Hentschel.

3 (2). Monactinal spicules of the main skeleton attain a length of more than 1 mm. Microscleres are represented by arcuate chelae and ancorae.......

2. *A. arneseni* Topsent.

4 (1). Dermal diactinal spicules are in the form of strongyli. Microscleres are represented by arcuate chelae alone....

3. *A. dendyi* Topsent.

1. *Anchinoe roemeri* Hentschel, 1929 (Fig. 152).

Hentschel, 1929: 893, 971, plate XIV, fig. 5

<u>The Body</u> is lumpy or incrusting. The surface is uneven. The sponge is fairly soft. The colour is reddish-yellowish-grey, light grey or greyish yellow. p.193.

<u>Skeleton</u>. The main skeleton is in the form of branching plumose fibers in the interstices between which there are individual disorderly scattered spicules. Dermal skeleton is represented by tornoti and closely spaced chelae.

Megascleres: acanthostyli of the main skeleton are large (0.266-0.364 mm in length and 0.012-0.013 mm in thickness) and small (0.126-0.182 mm in length and 0.009-0.010 mm in thickness); dermal spicules are apically asymmetrical, straight or gently curved tornoti measuring 0.196-0.238 mm in length and 0.003-0.006 mm in thickness. Microscleres: chelae are arcuate, large (0.032-0.056 mm in length) and small (0.015-0.020 mm in length); sigmas measure 0.040-0.054 mm in length.

<u>Distribution</u>. Barents Sea (east of [redacted] Spitzbergen), Shokol'ski strait and Central Arctic (north of Spitzbergen). Lives at the depth of 66-300m on sandy bottoms. Recorded at the temperature of -1.42° and at the salt content of 34.42-34.58‰.

Examined: 4 specimens. p.194

2. <u>Achinoe arnesen</u>i Topsent, 1913 (Fig.153; plate XXIII,4).

Topsent, 1913: 33, pl. III, fig. 8; pl. V, fig. 10.

<u>The Body</u> is slightly spheroid, markedly compressed from the sides, vertically erect, up to 5 cm in height; longitudinal folds

in the sponge body give it a somewhat wrinkled corrugated appearance. The surface is smooth and bears low cone-shaped papillae. The colour is light grey.

Skeleton. The main skeleton consists of plumose ascending fibers formed of acanthostyli of two kinds. Dermal skeleton consists of tornoti arranged horizontally in the membrane, and of bundles of tornoti arranged at an angle to the surface.

Megascleres: acanthostyli of the main skeleton are large (0.530-1.144 mm in length and 0.020-0.030 mm in thickness) and small (0.170-0.330 mm in length and 0.010-0.014 mm in thickness); dermal spicules are tornoti (resembling oxi) measuring 0.416-0.592 mm in length and 0.009-0.013 mm in thickness. Microscleres: chelae are arcuate, 0.037-0.057 mm in length; ancorae (tridentate) measure 0.079-0.150 mm in length.

Distribution. Barents and Norwegian Seas. Lives at the depth of 270-440m. Recorded at the temperature of -1.81° and salt content of 34.52%.

Examined: 2 specimens.

3. Anchynoe dendyi Topsent, 1892.

Fristedt, 1887: 453, plate 25, fig. 47; plate 29, fig. 20 (Cribrella hospitalis); Topsent, 1913: 35.

The Body is vertically erect, clavate, branching or flabelliform, up to 7 cm in height. The surface is smooth. The colour is light yellow to voilet and grey. Pore fields are present.

Osculа are approximately 1 mm in diameter.

Skeleton. The main skeleton consists of ascending ramified and anastomosing plumose fibers composed of acanthostyli. Dermal skeleton is typical for the genus.

Megascleres: acanthostyli of the main skeleton are 0.200-0.333 mm in length and 0.011-0.015 mm in thickness; dermal spicules-strongyli - are 0.213-0.290 mm in length and 0.006-0.007 mm in thickness. Microscleres: chelae are arcuate, 0.023-0.056 mm in length.

Distribution. Western Barents Sea. Greenland Sea, northern Atlantic Ocean (up to the Azores). Lives at the depth of 229-1156m.

The species is not represented in the ZIN AN SSSR collections.

XIII. Family Axinellidae*

The Body is commonly upright, flabelliform, funnel-shaped, tabular, irregularly lobate, stem-shaped, occasionally incrusting and foliate. The skeleton is plumose, reticulate-fibrous or con- p.195
sists of closely spaced bundles of spicules and individual spicules. Special dermal skeleton is lacking. Megascleres are in the form of smooth monactinal and diactinal spicules, or of monactinal spicules

*The family Raspailiidae, whose representatives have so far not been found in our waters, is very similar to the family examined. It must be mentioned that Breitfuss (1912:69) recorded in the Barents Sea a new species, which he named Raspailia longispicula. As Hentschel (1929:998) points out, however, this sponge cannot be classified with the genus Raspailia, if one is to judge from its description. Furthermore, examination of the preparations which are preserved in the ZIN AN SSSR and on the basis of which R. longispicula was described, shows that Breitfull erroneously described a mixture of at least two different sponges as one independent species. The long straight spicules belong to Geodia, the styli probably belong to the skeleton of Tedania suctoria (whereas tyloti, found here in considerable numbers, have not been mentioned by Breitfuss at all). R. longispicula thus does not exist in nature.

only. When diactinal spicules are present, they are enclosed as a rule, inside the fibers. Microscleres are commonly lacking; in exceptional cases they may be represented by sigmoids (rhaphidii).

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY AXINELLIDAE

1 (2). The body is stalk-shaped, commonly ramified. The skeleton is fibrous. Megascleres are monactinal........

3. Homaxinella Topsent.

2 (1). The body shape is different; but even though there are somewhat elongated and stalk-shaped forms, megascleres are represented by both monactinal and diactinal spicules.

3 (4). The skeleton is reticulate-fibrous. The sponge is commonly funnel-shaped, clavate or flabelliform. Megascleres are in the form of monactinal spicules or, less often, of monactinal and diactinal spicules, which may be curved, but are not distorted.....

2. Phakettia Laubenfels.

4 (3). The skeleton is plumose, ramified-fibrous or consists of closely spaced spicules and bundles of spicules. The sponge is incrusting or (more often) tabular, irregularly lobate, stalk-shaped, occasionally flabelliform and funnel-shaped. Megascleres are monactinal and diactinal, commonly distorted........

1. Axinella O. Schmidt

1. Genus Axinella O. Schmidt, 1862.

Schmidt, 1962: 60.

Genotype: A. polypoides O. Schmidt, 1862.

The Body is incrusting, more often it is elongated, branching, stalk-shaped, tabular, lobate to irregularly flabelliform and funnel-shaped. The skeleton is fibrous, plumose or consists of closely spaced spicules and bundles of spicules. Megascleres: smooth, monactinal and diactinal spicules that are commonly distorted; the latter often concentrate in the parts of the skeleton located farther on the interior. Microscleres are lacking.

1 (6). Irregularly curved or distorted strongyli are present.

2 (3). Small strongyli measuring 0.208-0.588 mm in length. The body is incrusting or foliate.......

5. A. vermiculata (Bowerbank).

3 (2). Strongyli are large, 1.100 mm and more in length. The body shape is different.

4 (5). The body is funnel-shaped, the surface is even. Small styli are 0.364-0.560 mm in length.....

4. A. ventilabrum (Johnston).

5 (4). The body is elongate, branching, to irregularly flabelliform and funnel-shaped. The surface is uneven. Styli are large, up to 1.750 mm in length......

1. A. rugosa (Bowerbank).

6 ((1). Strongyli are commonly lacking; when present, strongyli occur singly and are derivatives of oxi.

7 (8). Styli are short (0.470-0.610 mm in length). Oxi are thick (0.012-0.052 mm in thickness).......

2. A. blanca Koltun, sp.n.

8 (7). Styli are long (0.600-2.400 mm in length). Oxi are thin (0.010-0.014 mm in ~~length~~ thickness)......

3. A. hispida Koltun, sp.n. p.196

1. Axinella rugosa (Bowerbank, 1866) (Fig.154). p.197

Bowerbank, 1866: 119 (Dictyocylindrus rugosus); Bowerbank, 1874: 51, pl. XX, figs. 1-4 (D. rugosus); Fristedt, 1887: 461; Lundbeck, 1909: 449 (Phakellia); Lambe, 1894: 126, pl. IV, figs. 2, 2a-b; Hentschel, 1929: 897, 975 (Phakellia); Burton, 1935: 75 (Phakellia lambei).

The Body is elongated, branching, flabelliform or funnel-shaped, up to 10 cm in height, strong and elastic. The surface is uneven, somewhat hispid. The colour is grey, light yellow, brownish-red. Oscula are large.

Skeleton consists of axial fibers and of bundles of spicules diverging off these fibers.

Megascleres: strongyli and oxi are distorted, are found in axial fibers; styli (to oxi) are more or less curved. The spicules attain a length of 1.750 mm.

Distribution. Southwestern Barents Sea, Bering Sea (near the Aleutian islands), Sea of Japan (near the shores of Japan, Vladimir Bay). Greenland and Norwegian Seas, near the Shetland islands. Lives at the depth of 90-320 m. Bottoms: pebble, gravel, ooze. Temperature: 2-5°. Salt content: 34.2-35.01%.

This species is represented in our collections by 17 specimens. Judging from the body shape and spiculation, Acanthella multiformis Vosmaer is a synonym of Axinella rugosa. The difference between these two forms resides only in that the skeleton of the former does not include the distorted strongyli and oxi characteristic of the species examined. Since, however, these spicules form the central portion of the fibers, they can be easily overlooked by a researcher, particularly if the researcher is not familiar with the distribution of spicules in the skeleton of the genus Axinella. This circumstance may explain the apparent difference between Acanthella multiformis and Axinella rugosa.

2. Axinella blanca Koltun, sp.n. (Fig.155; plate XXXV, 1).

The holotype is preserved in the Zoological Institute of the AN SSSR, preparation No4849.

The Body is elongated, stalk-shaped, irregularly branching, up to 15 cm in height, strong and elastic. The surface is spiculated. The colour is light grey.

The skeleton is plumose and consists of thick fibers.

Megascleres: curved, often slightly distorted oxi measuring 0.500-1.500 mm in length and 0.012-0.052 mm in thickness; styli measuring 0.470-0.610 mm in length and 0.015-0.020 mm in thickness.

Distribution. Bering Sea (near the Mednyi island). Depth: 110-160m.

Examined: 2 specimens. Single fusiform strongyli and styli, derivatives of oxi, may be found in the skeleton of Axinella blanca among ordinary spicules. The new species closely resembles in appearance A. hispida Koltun, sp.n., but differs from it in the character of its spicules (see below).

3. Axinella hispida Koltun, sp.n. (Fig.156; plate XXXVI,1).

The holotype is preserved in the Zoological Institute of the AN SSSR, preparation No1338.

The Body is elongated, branching, slightly lobate, up to 12 cm in height, strong, elastic. The surface is uneven, markedly spiculated. The colour is brownish-red.

The skeleton is plumose, consists of thick fibers. p.198

Megascleres: thick styli are 0.600-1.700 mm in length and 0.030-0.050 mm in thickness, long styli are 1.800-2.400 mm in length and 0.020-0.032 mm in thickness; distorted oxi are 0.350-0.700 mm in length and 0.010-0.014 mm in thickness.

Distribution. Bering Sea (near the Komandorskii islands).

Examined: 2 specimens. The species described resembles closely Axinella rugosa (Bowerbank) and A. blanca Koltun, sp. n. It differs from the former in that it lacks distorted strongyli in its skeleton and in the general appearance of the spicules. Megascleres of A. hispida are considerably thicker than in A. rugosa. p.199

In contrast to A. blanca, A. hispida has very long styli, measuring up to 2.400 mm in length, while those of A. blanca are on an average up to 0.610 mm in length. Furthermore, A. blanca includes individual strongyli, which are lacking in A. hispida.

4. Axinella ventilabrum (Johnston, 1842) (Fig.157).

Johnston, 1842: 107, pl. VII (Halichondria); Bowerbank, 1866: 122; Bowerbank, 1874: 57, pl. XXII, figs. 1-7; Hentschel, 1929: 897, 974.

The Body is flabelliform or funnel-shaped, up to 45 cm in height. The surface is smooth or slightly rough. The colour is light yellow, Oscula are small.

The skeleton consists of thick primary fibers, from which small lateral branches arise. Ramification of the fibers is clearly observable on the thin-walled body of the sponge.

Megascleres: distorted strongyli(enclosed in the main fibers) are 0.588-1.100 mm in length and 0.010 mm in thickness; distorted styli are 0.364-0.560 mm in length and 0.010 mm in thickness.

Distribution. Southwestern Barents Sea. Norwegian and Greenland Seas, Denmark strait, Hudson Bay, Gulf of Saint Lawrence. Lives at the depth of 192-374m.

Examined: 3 specimens.

5. Axinella vermiculata (Bowerbank, 1866) (Fig.158) p.200

Bowerbank, 1866: 141 (Hymeraphia); Bowerbank, 1874: 67, pl. XXVI, figs. 1-3; Carter, 1876: 307, pl. XII, fig. 4, pl. XV, fig. 26a, b (Hymeraphia vermiculata var. erecta); Hentschel, 1929: 973 (Bubaris).

The Body is incrusting or elongated, foliate and is often lobate; it is up to 10 cm in height, soft. The surface is spiculated. The colour is bright red (in vivo), yellowish white or grey (in alcohol).

The skeleton of elongated, foliate forms consists of an axis and of short ramified fibers; that of incrusting forms consists of closely spaced individual spicules and bundles of spicules.

Megascleres: styli are 0.426-4.496 mm in length and 0.010-0.038 mm in thickness; strongyli and oxi are irregularly curved (or distarted) and measure 0.208-0.588 mm in length and 0.006-0.015 mm in thickness.

Distribution. Barents Sea (near Novaya Zemlya), between Spitzbergen and Medvezhii island,north of Norway, west and east of Greenland, northern Atlantic Ocean up to the Azores, Mediterranean Sea. Lives at the depth of 9-290 m (up to 1360m).

Examined: 3 specimens.

2. Genus Phakettia Laubenfels, 1936.

Laubenfels, 1936: 130.

Genotype: Phakettia cactoides Burton, 1928.

The Body is funnel-shaped or flabelliform, is furnished with a stem. The skeleton is reticulate-fibrous; longitudinal primary fibers and short transverse secondary fibers and bundles of spicules are distinctly discernible. Megascleres: styli, less often styli and oxi. Microscleres, when present, are represented by rhaphidii.

1 (2). Megascleres are represented by both monactinal and diactinal spicules; the latter are considerably larger than 0.400 mm....

1. Ph. arctica (Vosmaer).

a (b). Styli exceed 1 mm in size. Rhaphidii are lacking.....

1 b. Ph. arctica setosa (Hentschel).

b (a). Styli do not exceed 0.800 mm in length. Rhaphidii are present.........

1 a. Ph. arctica arctica. (Vosmaer).

2 (1). Megascleres are represented by monactinal spicules. Even when individual diactinal spicules are present, they do not exceed 0,400 mm in length.

3 (4). The length of monactinal spicules fluctuates negligibly (0.218-0.374mm) within a specimen; individual diactinal spicules are invariably present among the monactinal spicules......

2 Ph. bowerbanki (Vosmaer).

4 (3). The length of monactinal spicules fluctuates considerably (0.060-0.600mm) within a specimen; no individual diactinal spicules have been observed among the monactinal spicules.....

3. Ph. cribrosa (Miklucho-Maclay).

1. Phakettia arctica (Vosmaer, 1885)(Fig.159).

Vosmaer, 1885: 25, pl. V, figs. 25-27 (Phakellia).

The Body is flabelliform or funnel-shaped. The surface is spiculated, occasinnally costate. The colour ranges from light grey to yellow and brown. The oscula, when present, are inside the funnel, the pores are on the external surface. p.201

The skeleton consists of branching and anastomosing fibers. Megascleres: oxi are curved, 0.266-0.800 mm in length and 0.008-0.017 mm in thickness; styli are curved, 0.294-1.400 mm in length and 0.008-0.022 in thickness. Microscleres, when present, are in the form of rhaphidii and measure 0.019-0.022 mm in length.

Distribution. Barents Sea. Norwegian Sea. Lives at the depth of 143-440m.

The species examined forms two closely related subspecies.

1a. Phakettia arctica arctica (Vosmaer, 1885) (Fig.159).

Vosmaer, 1885: 25, pl. V, figs. 25-27 (Phakellia arctica); Topsent, 1913: 28, pl. III, figs. 4, 5, pl. IV, fig. 4, pl. V, fig. 8 (Axinella arctica); Hentschel, 1929: 896, 973 (A. arctica, A. a. var. trichophora).

The Body is flabelliform or funnel-shaped, up to 13 cm in height. The surface is spiculated. The colour ranges from light-grey to yellow and brown. Oscula are located inside the funnel, ostia are on the exterior.

The Skeleton consists of branching and anastomosing fibers.

Megascleres: oxi are curved, 0.266-0.550 mm in length and 0.008-0.017 mm in thickness; styli are curved, 0.294-0.760 mm in length and 0.008-0.020 mm in thickness. Microscleres: bundles of rhaphidii measuring 0.019-0.022 mm in length.

Distribution. Southwestern Barents Sea, Norwegian Sea. Lives at the depth of 143-440 m. Bottoms: pebble, sand, ooze. Temperature: 3.0°.

Examined: 3 specimens. Vosmaer's description (1885) fails to mention that Phakettia arctica arctica has rhaphidii, as a result of which Hentschel established the var. trichopora. p.202

Vosmaer probably just did not notice rhaphidii, when he examined the species established by him. It would be therefore superfluous to isolate Hentschel's variety, particularly since the typical form and var. trichopora have spicules of the same size and coincide in all the other features. Small numbers of individual strongyli are found in Ph. a. arctica.

1b. Phakettia arctica setosa (Hentschel, 1929).

Hentschel, 1929: 896, 974 (Phakettia arctica var. setosa).

The Body is in the shape of an inverted funnel, up to 3 cm in height. The surface is costate and spiculated. The colour is light grey, light yellowish grey.

The skeleton consists of branching and anastomosing fibers; it is fortified on the surface with sand grains.

Megascleres: oxi are curved, 0.328-0.800 mm in length and 0.010-0.014 mm in thickness; styli are curved, 0.440-1.400 mm in length and 0.015-0.022 mm in thickness. Microscleres are lacking.

Distribution. Southwestern Barents Sea. Norwegian Sea. Lives at the depth of 192-351m.

The subspecies is not represented in the ZIN AN SSSR collections.

2. Phakettia bowerbanki (Vosmaer, 1885)(Fig.160; plate XXX, 3).

Vosmaer, 1885: 24, pl. I, fig.18, pl. IV, figs. 7, 8, pl.V, figs.45-47 (Phakellia); Marenzeller, 1886 (Cribrochalina ambigua); Fristedt, 1887: 427, pl. 24, fig. 14 (Isodictya dicksonii); Lundbeck, 1909: 448 (Phakellia); Breitfuss, 1911: 218 (Phakellia dicksonii); Rezvoi, 1928: 90 (Phakellia); Hentschel, 1929: 897, 974 (Phakellia).

The Body is funnel-shaped or flabelliform, thin-walled, up to 60 cm in height, elastic. The surface is slightly uneven, spiculated. The colour ranges from yellow and light brown to brown and brownish red.

The skeleton consists of thick fibers extending along the body and parallel to it, and of transverse bundles of spicules, as well as of individual spicules.

Megascleres: styli are curved in their basal portion, 0.218-0.374 mm in length and 0.008-0.016 mm in thickness.

Distribution. White Sea strait, southwestern Barents Sea. West and north of Spitzbergen, near the shores of northern Norway, east of Greenland, Baffin Bay. Depth: 73-320m. Bottoms: sand, pebble, less often ooze. Temperature: 0.5-5°. Salt content: 34.25-35.01%.

Examined: 73 specimens. Most spicules of Phakettia bowerbanki are styli; individual oxi and strongyli are found occasionally alongside the styli. In contrast to Ph. cribrosa, which has similar styli and a similar body shape, Ph. bowerbanki contains spicules varying slightly in size within the same specimen.

3. Phakettia cribrosa (Miklucho-Maclay, 1870) (Fig.161; plate XXX, 2; plate XXXI, 1-2)

Miklucho-Maclay, 1870a: 6, Tab. I, Figs. 12,13,15,16 (Veluspa polymorpha var. cribrosa, var. flabelliformis, var. infundibuliformis); Carter, 1877: 39, pl. I, figs. 1a-c (Semisuberites arctica); Vosmaer, 1882: 36, pl. I, figs. 16, 17, pl. III, figs. 67-69, pl. IV, figs.146-147 (Cribrochalina variabilis et var. crassa, var. salpingoides); Levinsen, 1886: 14, pl. XXIX, figs. 6-9, pl. XXX, fig. 6 (Cribrochalina sluiteri); Svarchevseii, 1906: 335, pl. XI, figs. 4, pl. XV, fig.23 (C. sluiteri); Fristedt, 1887: 418, pl. XXVI, fig.4 (C. variabilis); Topsent, 1913: 53 (Stylaxia variabilis); Rezwoi, 1931: 513 (S. variabilis); Burton, 1932b: 196-198 (Semisuberites arctica).

The Body is stemmed, commonly funnel-shaped or clavate, up to 15 cm in height. The surface is smooth or slightly rough. The oscula are inside the funnel or on the body surface. The sponge varies in consistency from soft and fairly easily torn to highly elastic, with a large content of spongin. The colour ranges from light grey and grey to yellowish grey and brown.

The skeleton consists of multispicular fibers extending vertically towards the surface and terminating in tufts of spicules; isolated spicules are scattered between the primary fibers; some of them are arranged transversely to these fibers.

Megascleres: styli (to subtylostyli) are 0.060-0.640 mm in length and 0.003-0.015 mm in thickness. Microscleres are lacking.

Distribution. All the northern and far eastern seas of the Soviet Union. Norwegian and Greenland Seas. Depth: 14-325 m. Bottoms: ooze, sand, gravel, rock. Temperature: from -1.9 to 7°. Salt content: 29.81-35.23‰.

Phakettia cribrosa, represented in the ZIN AN SSSR collections by 310 specimens, is a highly variable sponge. The size of spicules (their length and thickness), the appearance and consistency of the body fluctuate considerably in different forms. On the whole, it may be stated that the specimens found in the far eastern seas have a high content of spongin and thicker spicules. Phakellia papyraeca Ridley et Dendy (Ph. behringensis, according to Hentschel) and Phakellia dalli Lambe, recorded by Lambe, are probably different varieties. Examinations of the typical specimens of Veluspa polymorpha, var. cribrosa, var. flabelliformis and var. infundibuliformis, described by Miklukho-Maklai in 1870, showed that these forms are identical to the species described, in view of which the priority in the discovery of this species belongs to Miklukho-Maklai. p.204

3. Genus Nomaxinella Topsent, 1917.

Topsent, 1917: 37; Burton, 1930b: 503 (Pachaxinella); Burton, 1934a:42.

Genotype: Axinella supratumescens Topsent, 1907.

The Body is stalk-shaped, commonly ramified. The main skeleton is in the form of an axial rod consisting of spicules with extra-axial, more or less radial bundles of styli. Dermal skeleton consists of smaller styli gathered into tufts and arranged at a right angle to the sponge surface or strewn loosely in the dermis; smaller spicules are also found in the main skeleton. Megascleres: styli, often modified to subtylostyli or even tylostyli, varying in size. Microscleres are lacking.

1. Homaxinella subdola (Bowerbank, 1866)(Fig.162; Plate XXXV,2).

Bowerbank, 1866: 247 (Halichondria); Bowerbank, 1874: 106, pl. XLIII, figs. 14-16 (Halichondria); Bowerbank, 1882: 106 (Halichondria); Burton, 1930b: 504, figs. 8, 9 (Pachaxinella); Burton 1935: 75.

The Body is upright, branching in a dendritic manner, up to 20 cm in height with branches up to 2-6 mm in thickness. The surface is even, smooth (very occasionally it is finely spiculated). The sponge is strong, elastic. The colour ranges from light grey and grey to yellow.

<u>The skeleton</u> consists either of loose bundles of spicules extending along the branches, and of an extra-axial skeleton in the form of a compact layer of spicules arranged tangentially or at an angle to the surface; or it consists of a compact central axis, radial bundles of long styli diverging off this axis and panicle-like tufts of small subtylostyli in the dermis; in certain specimens the skeleton represents a transition from the former to the latter type.

Megascleres: styli (to subtylostyli) are large, 0.332-0.863 mm in length and 0.008-0.015 mm in thickness; subtylostyli (to tylostyli and styli) are 0.195-0.291 mm in length and 0.004-0.006 mm in thickness.

<u>Distribution</u>. Bering and Okhotsk Seas, The Sea of Japan, near the Pacific shores of the southern Kuril islands. Northern Atlantic (near the shores of England). Depth: 22-245 m. Bottoms: sand, pebble, oozy sand. Temperature: 1-12°.

The species is represented by 75 specimens in our material.

<u>XIV. Family Halichondriidae.</u>

<u>The Body</u> is lumpy, cushion-shaped, occasionally somewhat elongated, dactylate etc.; the sponge is never stemmed. The skeleton is irregular, reticulate, diffuse or somewhat fibrous. p.205
Dermal membrane is commonly well developed. Megascleres are in the form of smooth monactinal spicules (styli) or diactinal spicules (oxi). Microscleres are invariably lacking. Spongin is present in small quantities or is completely unnoticeable.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY HALICHONDRIIDAE

1 (2). Megascleres are represented by styli......

2. Hymeniacidon Bowerbank.

2 (1). Megascleres are represented by oxi......

1. Halichondria Fleming.

1. Genus Halichondria Fleming, 1828.

Schmidt, 1870: 42 (Eumastia); Lundbeck, 1902:16.

Genotype: Spongia panicea Pallas, 1766.

The Body is lumpy, occasionally somewhat elongate, dactylate. The main skeleton is in the form of an irregular or diffuse meshwork, partly fibrous. Dermal skeleton consists of radial bundles of spicules and of spicules arranged tangentially in the dermal membrane and forming a characteristic meshwork known as halichondroid; radial bundles of spicules may be lacking. Megascleres: oxi, which are commonly gently curved and are occasionally of two sizes.

1 (2). The sponge surface bears papillae........

2. H. sitiens (O. Schmidt).

2 (1). The sponge surface lacks papillae.

3 (4). The spicules differentiate distinctly into small and large...

3. H. disparilis Lambe.

4 (3). The spicules do not differentiate into small and large....

1. H. panicea (Pallas).

1. Halichondria panicea (Pallas) X, 1766)(Fig.163; plate XXXVI, 2; plate XXXVII, 3).

Bowerbank, 1866: 229; Bowerbank, 1874: 97, pl. XXXIX, XL; Schmidt, 1870: 42 (Pellina Bibula); ibid:77 (Amorphina); Carter, 1884: 368 (A.megalorrhaphis); Fristedt, 1887: 425, pl. 27, fig. 10 (A. Grisea); Lundbeck, 1902: 17, pl. 9, fig. 1; Rezvoi, 1928: 91; Hentschel, 1929: 990; Burton, 1932b: 199; Burton,1935: 75; ibid: 76 (Topsentia fibrosa).

The Body is incrusting, lumpy, tubular, lobate etc. up to 20 cm in height, commonly fairly strong. The colour is ash grey, orange, green (in vivo); yellowish grey to light coloured (in alcohol or in a dry state). Oscia are large, partly cribriform; oscula may be located on elevations or in small cones. Dermal membrane is easily detachable from the sponge body.

Skeleton. The main skeleton consists of an irregular and indistinct meshwork formed of loose bundles of spicules and of individual spicules; longer fibers are present occasionally. Dermal skeleton consists of tangential spicules, which often form a halichondroid meshwork.

Megascleres: oxi are fusiform, gently curved, 0.350-0.202 mm in thickness.

Distribution. All the northern and far eastern seas of the USSR. Norwegian and Greenland seas, northern Atlantic and Pacific Oceans. Depth: 0-101 m.

This is one of the most polymorphous and wide-spread species of the northern hemisphere; it is represented in our materials by p.206 580 specimens. Apart from the synonym of Halichondria panicea mentioned above, the following species described by various authors from our seas, may also be regarded as conspecific with it: H. fibrosa (Fristedt), Pellina flava Merejkowskii, H. axinelloides Swartschewskyi, H. aspera Swartschewskyi, H. arenosa Hentschel, H1 velamentosa (Hansen).

2. Halichondria sitiens (O. Schmidt, 1870) (Fig.164; plate XXXVIII,4).

Schmidt, 1870: 42, pl. V, fig. 12 (Eumastia), Miklucho-Maclay, 1870a; 13, Tab. II, Figs. 23, 24 (Spuma borealis var. papillosa); Fristedt, 1887: 126, pl. XXIV, fig. 3, pl. XXVII, fig.3, pl. XXVII, fig. 13 (Eumastia); Lambe, 1894:115; Lambe, 1896:182, pl. I, fig.1 (Eumastia); Lundbeck: 1902: 31, pl. IV, figs. 1-6, pl. X, figs. 9-12 (Eumastia); Arneseen; 1903: 6, pl. I, fig. 1, pl. VII, fig. 1 (Eumastia); Svarchevskii, 1906: 333, pl. XV, fig. 21 (Eumastia); Hentschel, 1929: 999 (Eumastia: Burton, 1932b: 200 (Eumastia); Burton 1935: 76 (Eumastia).

The Body is cushion-shaped, lumpy, up to 18.5 cm in height; the upper surface commonly bears a multitude of elongated; closely spaced pipillae. The surface is smooth. Dermal membrane is thin, transparent and easily detachable from the sponge body. The colour is light yellow, grey. Oscula are located at the ends of the papillae.

Skeleton. The main skeleton consists of loose fibers and (p.207.) of a multitude of individual spicules. The skeleton of the dermal membrane (particularly in the papillae) is in the form of a meshwork.

Megascleres: oxi are 0.360-1.200 mm in length and 0.005-0.020 mm in thickness.

Distribution. All the northern and far eastern seas of the Soviet Union; northern Atlantic and Pacific Oceans. Depth: 6-220m.

Examined: 120 specimens. Typical specimens of Spuma borealis var. papillosa, var. convoluta, var. tuberosa and var. velamentosa described by Miklukho-Maklai, have not been found in our collections. It is, therefore, difficult to make definite statements with regard to these forms, except that Spuma borealis undoubtedly belongs to the genus Halichondria. Spuma borealis var. papillosa is apparently identical to Halichondria sitiens. Genus Eumastia is treated here as a synonym of the genus Halichondria.

3. Halichondria disparilis Lambe, 1893.

Lambe, 1893: 25, pl. II, figs. 1, 1a: Burton, 1935: 77 (Topsentia).

The Body is lumpy or thinly tabular, up to 7 cm in height, only slightly elastic. The colour is light brown. The tabular body of the sponge bears a dermal membrane on one side only; oscula measuring up to 1.5 cm in diameter, are also found here; dermal membrane is thin and transparent, smooth. The reverse side of the sponge is slightly hispid because of the protruding ends of the fibers.

Skeleton. The main skeleton consists of disorderly strewn spicules, bundles and fibers. On the side free of the dermal membrane, the spicules form fibers extending radially towards the surface. Dermal skeleton consists of spicules arranged horizontally in the membrane.

Megascleres: Large oxi (found in both the body interior and dermal membrane), are 0.438-1.400 mm in length and 0.013-0.021 mm in thickness, small oxi (found mainly in the dermal membrane) are 0.050-0.150 mm in length and 0.004-0.006 mm in thickness.

Distribution. Bering Sea (near the Mednyi island). Near the Vancouver Island (Pacific coast of North America). Depth: 80-110m.

Examined: 1 specimen.

2. Genus Hymeniacidon Bowerbank, 1864.

Bowerbank, 1864: 191; Burton, 1923b: 198 (Uritaia).

Genotype: H. caruncula Bowerbank, 1864.

The Body is cushion-shaped, lumpy, occasionally dactylate. The main skeleton is in the form of an irregular or diffuse meshwork and is partly fibrous. Dermal skeleton commonly consists of radial bundles of spicules and of spicules arranged tangentially in the dermal membrane; radial bundles of spicules may be lacking. Megascleres: styli are commonly gently curved, occasionally of two sizes.

1 (2). Dermal skeleton is reticulate (a halichondroid meshwork). Megascleres differentiate into small and large......

1. H. assimilis (Levinsen).

2 (1). Dermal skeleton is commonly diffuse; halichondoid meshwork is lacking. Megascleres do not differentiate into small and large.

3 (4). The main skeleton is in the form of disorderly scattered loose fibers......

3. H. gorbunovi (Rezvoj).

4 (3). The main skeleton consists of bundles of spicules and of fibers forming curved lines.....

2. H. caruncula Bowerbank. p.208

1. Hymeniacidon assimilis (Levinsen, 1886) (Fig.165).

Levinsen, 1886: 352, pl. XXX, fig. 5 (Halichondria); Burton, 1935:74.

The Body is lumpy, massively cylindrical, ramified in a dactylate manner or semispherical, up to 15 cm in height, commonly stiff, often brittle. The surface is smooth or slightly rough. Dermal membrane is thin, easily detachable from the sponge body. The colour ranges from light grey to yellow and yellowish brown. Oscula are small, occasionally bear marginal projections of the membrane.

Skeleton. The architecture of the main skeleton depends on the shape of the body. The skeleton of lumpy sponges is in the form of an irregular or even diffuse meshwork consisting of individual spicules and bundles of spicules; longer fibers are also found here. Elongated and cylindrical forms have a skeleton consisting of long fibers and of individual spicules arranged in a fairly disorderly manner. Dermal skeleton consists of bundles of radially arranged spicules supporting the dermal membrane, and of spicules arranged tangentially in the membrane and forming a characteristic meshwork known as halichondroid.

Megascleres: styli are gently curved, are most frequently fusiform and measure 0.120-0.600 mm in length and 0.004-0.025 mm in thickness. Styli may be divided into large and small; small styli are considerably thinner than the large ones and are found mainly in the dermal skeleton.

Distribution. Barents and Kara Seas, north of Spitzbergen, Laptev Sea, East Siberian and Chukchi Seas, Bering, Okhotsk Seas and Sea of Japan. Depth: 15-110m.

This is a highly variable species represented by 250 specimens in the ZIN AN SSSR collections. It must be noted that the halichondroid meshwork of spicules is not always present in the dermal membrane. The spicules are occasionally scattered in a disorderly fashinn throughout the dermal membrane and are fairly closely spaced, but without any hint at a meshwork. This is probably related to the habitat in which the sponge grows and develops.

Nearly all the specimens of Hymeniacidon assimilis contain in their skeletons individual oxi (derivatives of styli). A very interesting circumstance observed in 3 specimens found in the far eastern seas, sheds new light on the relationship of the genera Halichondria and Hymeniacidon: In these specimens small styli have been completely replaced by oxi. It is difficult not to conclude that the genera Hymeniacidon and Halichondria are much more closely related than it had been assumed. It is even quite probable that the features, on the basis of which these genera were established, will have to be re-examined.

Hymeniacidon fasciculata (Fristedt), H. halichondroides (Thiele), as well as Uritaia halichondroides (Burton) are synonymous with H. assimilis.

2. Hymeniacidon caruncula Bowerbank, 1866.

Bowerbank, 1866: 166; Bowerbank, 1874: 81, pl. XXXII, figs. 1-4; Hentschel, 1929: 994; Rezvoi, 1941: 517.

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The Body is cushion-shaped, lumpy, up to 5 cm in height, fairly strong. The surface is slightly uneven, but smooth. The colour ranges from light orange to orange-red, as well as orange or light green (in vivo); light grey (in alcohol). Oscula are small, up to 2 mm in diameter.

Skeleton. The main skeleton consists of disorderly strewn loose fibers. Dermal skeleton consists of individual spicules and bundles of spicules arranged in a diffused fashion.

Megascleres: styli are gently bent, 0.190-0.415 mm in length and 0.004-0.010 mm in thickness.

Distribution. Barents Sea (east of Spitzbergen, Karskie Vorota strait); northern Atlantic, Australia, Depth: 35-81 m.

Examined: 3 specimens. Stylotella thimonovi Rezvoj, 1934, and Ciocalypta minuta Rezvoj, 1934, are conspecific and synonymous with Hymeniacidon caruncula.

3. Hymeniacidon gorbunovi (Rezvoj, 1931).

Rezvoi, 1931: 510, figs. 3,4,5.

The Body is cushion-shaped, spherical, up to 3.5 cm in height, compact, elastic (suberous). The surface is smooth. The colour is light grey, rusty or dark grey. The oscula are small.

Skeleton. The main skeleton consists of bundles of spicules and fibers forming undulate lines; inside the sponge there are also large numbers of individual disorderly scattered spicules. Dermal membrane lacks tangential spicules and is supported by radially arranged bundles of spicules.

Megascleres: subtylostyli are thin, straight or gently and evenly curved, 0.209-0.305 mm in length and 0.003-0.007 mm in thickness.

Distribution. White and Barents Sea, Karskie Vorota strait, west and east of Spitzbergen. Depth: 7-171m.

Examined: 4 specimens.

XV. Family Haliclonidae.

The Body is lumpy, cushion-shaped, dactylate, cylindrical, tabular, flabelliform, is occasionally stemmed. The skeleton is regular, reticulate or reticulate-fibrous, Dermal membrane is commonly poorly developed. Megascleres are in the form of diactinal, commonly smooth spicules (short oxi or strongyli). Microscleres, when present, are sigmoid (toxi, sigmas). Spongin is well developed.

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY HALICLONIDAE

1 (2). Microscleres are present.......

1. Gellius Gray.

2 (1). Microscleres are lacking.

3 (4). Diactinal spicules are smooth.

2. Haliclona Grant.

4 (3). Diactinal spicules are acanthaceous....

3. Metschnikowia Grimm. p.210

1. Genus Gellius Gray, 1867.

Lundbeck, 1902:62; ibid:75 (Gelliodes).

Genotype: Isodictya jugosa Bowerbank, 1866.

<u>The Body</u> is cushion-shaped, lumpy, tabular, less often elongated, dactylate. The skeleton is reticulate, reticulate-fibrous. Dermal skeleton is commonly lacking. Megascleres: diactinal spicules are oxi, less often strongyli. Microscleres: sigmas and toxi, or either sigmas, or toxi alone.

1 (12). Microscleres are represented by sigmas or toxi.

2 (9). Microscleres are represented by sigmas only.

3 (6). The skeleton is in the form of an irregular meshwork consisting of individual spicules.

4 (5). Large sigmas are 0.065-0.104 mm in length (there may also be small sigmas measuring 0.026-0.033 mm in length). The skeleton is in the form of an irregular meshwork consisting of three- and four-sided meshes......

6. <u>G. porosus</u> (Fristedt).

5 (4). Sigmas are small, 0.025-0.036 mm in length. The skeleton is in the form of a diffuse meshwork......

8. <u>G. varius</u> Lundbeck.

6 (3). The skeleton is in the form of an irregular meshwork consisting of thick fibers, bundles of spicules and individual spicules.

7 (8). Sigmas are large, 0.020-0.100 mm in length; oxi are 0.417-0.553 mm in length. The body is cushion-shaped, lumpy....

5. <u>G. flagellifer</u> Ridley et Dendy.

8 (7). Sigmas are small, 0.018-0.023 mm in length; oxi are 0.320-0.370 mm in length. The body is thinly tabular,

rolled into a tube.......

4. G. digitatus Koltun.

9 (2). Microscleres are represented only by toxi.

10 (11). The main skeleton is in the form of an irregular meshwork..........

5. G. borealis (Lambe).

11 (10). The main skeleton is in the form of an irregular meshwork consisting of three-and four-sided meshes......

7. G. primitivus Lundbeck.

12 (1). Microscleres are represented by both sigmas and toxi.

13 (14). Sigmas are of two kinds: 0.015-0.028 mm in length and 0.060-0.078 mm in length. Oxi are 0.320-0.400 mm in length........

1. G. angulatus Lundbeck.

14 (13). Sigmas are of one kind and measure 0.008-0.032 mm in length. Oxi are 0.320-0.680 mm in length ....

2. G. jugosus (Bowerbank).

1. Gellius angulatus Lundbeck, 1902 (Fig.166).

The Body is cushion-shaped, lumpy, up to 5 cm in height, brittle. The colour is light grey, grey or yellowish grey.

The skeleton is in the form of a loose meshwork consisting of fibers and isolated spicules.

Megascleres: oxi are curved, brevipointed, 0.320-0.400 mm in length and 0.009-0.018 mm in thickness. Microscleres: sigmas are of two types, small sigmas are 0.015-0.028 mm in length and

0.001-0.002 mm in thickness, large sigmas (found in small numbers) are 0.060-0.078 mm in length and 0.005-0.006 mm in thickness; toxi are 0.064-0.150 mm in length and 0.001-0.003 mm in thickness.

Distribution. White Sea, Barents Sea (near the Murmansk coast), Bering Sea, Sea of Japan (Olga bay). Depth: 9-100m. Sea bottoms: sand, pebble. Temperature: 1.45°.

Examined: 6 specimens. p.211

2. Gellius jugosus (Bowerbank, 1866)(Fig.167; plate XXXIV,3).

Vosmaer, 1885: 29, pl. V, figs. 87-90 (arcoferus); Fristedt, 1887: 438, pl. XXIV, figs. 29-31, pl. XXVIII, fig. 16 (arcoferus); Lambe, 1896: 184, pl. I, fig. 3 (arcoferus); Lendenfeld, 1897: 87, fig. 4 (stylifera); Lundbeck, 1902: 62, pl. XII, fig. 11; ibid: 75, pl.V, figs. 3-4, pl. XIV, figs. 3-5 (Gelliodes plexa); ibid: 77, pl. XV, fig. 6 (G. consimilis); Arnesen, 1903: 7, pl. I, fig. 2 (esperi); Arnesen, 1903:7, pl. I, fig. 3 (massa); Topsent, 1904: 231 (angulatus); Arndt, 1927: 19 (arnesenae); Burton, 1930a: 498; ibid: 499 (arnesenae); Burton, 1934a: 7; Burton, 1935: 68 (Haliclona); Burton, 1948: 282 (Haliclona).

The Body is flabelliform, vaselike or tabular, up to 18 cm in height, fairly strong. The surface is even, finely spiculated. The colour ranges from grey to yellowish grey and brown.

The skeleton is in the form of an irregular meshwork consisting of fibers varying in thickness, and of individual spicules. The ends of the ascending fibers protrude slightly above the surface.

Megascleres: oxi are straight or gently curved, 0.320-0.680 mm in length and 0.014-0.028 mm in thickness. Microscleres: sigmas are 0.008-0.032 mm in length; toxi are 0.057-0.190 mm in length.

Distribution. Barents and Kara Seas, central Arctic Ocean, Sea of Japan. Norwegian and Greenland Seas, Gulf of Saint Lawrence, near the Azores. Depth: 91-413m (up to 2450m). Sea bottoms: ooze, sandy ooze. Temperature: from -1.64 to 2.9°. Salt content: 34.58-34.87%.

Examined: 32 specimens.

3. Gellius borealis (Lambe, 1894)(Fig.168).

Lambe, 1894: 115, pl. II, figs. 2a-c (Texochalina); Hentschel,1929: 979 (Texochalina).

The Body is irregularly cushion-shaped, fairly soft, elastic, up to 10.5 cm in height. A thin, brittle dermal membrane easily p.212
detachable from the body is present. The colour is greyish yellow or dark yellowish brown. Oscula are approximately 3 mm in diameter.

Skeleton. The main skeleton consists of an irregular meshwork formed of multispicular fibers measuring 0.100-0.150 mm in thickness. Small quantities of spongin are present. Dermal skeleton consists of a delicate meshwork of three-and four-sided meshes.

Megascleres: oxi that are curved, brevipointed (to strongyli) and measure 0.144-0.225 mm in length and 0.001-0.002 mm in thickness.

Distribution. Near the Pacific shores of the southern Kuril islands and near North America. Depth: 126m. Sea bottoms: sand. Temperature: 3.5°.

Examined: 1 specimen.

4. Gellius digitatus Koltun, 1958 (Fig.169; plate XXXII, 3).

Koltun, 1958: 71, fig. 25.

The Body is elongated, thinly tabular (foliate), is rolled up and intergrown in such a manner that it acquires an irregular shape, is hollow on the interior and tapers downwards; hollow dactylate projections, representing extensions of the lower portion of the body, extend upwards. The sponge is up to 7 cm in height, soft and strong. The colour is light yellow.

The skeleton consists of thick ramified fibers and individual transverse spicules.

Megascleres: oxi are gently curved, brevipointed, 0.320-0.370 mm in length and 0.015-0.018 mm in thickness. Microscleres: sigmas measure 0.018-0.023 mm in length and 0.001-0.002 mm in thickness.

Distribution. Northern Okhotsk Sea, near the Pacific coast of the southern Kuril islands. Depth: 285-287m. Sea bottoms: sand, gravel. Temperature: 1.7°.

Examined: 2 specimens.

5. Gellius flagellifer Ridley et Dendy, 1886(Fig.170).

Ridley and Dendy, 1886: 333; Ridley and Dendy, 1887: 42, pl.XIII, figs, 5,10; Lundbeck, 1902: 71, pl.II, fig. 9; pl. XIV, figs. la-d; Rezvoi, 1928:91.

The Body is cushion-shaped, lumpy, up to 5 cm in height, brittle. The surface is somewhat spiculated. The colour is grey, greyish-yellow, light yellow. A thin dermal membrane is present.

The Skeleton is in the form of an irregular meshwork consisting of multispicular fibers, bundles of spicules and isolated spicules.

Megascleres: oxi are curved, brevipointed, 0.417-0.553 mm in length and 0.012-0.021 mm in thickness. Microscleres: sigmas are 0.020-0.100 mm in length. p.213

Distribution. Southwestern Barents Sea, Sea of Japan. Norwegian Sea, southwest of Iceland. Depth: 91-137 (and up to 769) m. Temperature: 0.9°. Salt content: 34.78%.

Examined: 3 specimens.

6. Gellius porosus (Fristedt, 1887) (Fig.171; plate XXXVIII, 3).

Fristedt, 1887: 440, pl. XXIV, figs. 36-37, pl. XXVIII, fig. 15 (Desmacella); Lambe, 1896: 185, pl. I, figs. 4-4d, (flagellifer) Lundbeek, 1902: 73, pl. XIV, figs. 2a-c; Rezvoi, 1928: 91; Hentschel,1929:978.

The Body is spherical or lumpy, up to 6 cm in height, cavernous and very brittle (crumbles easily). The surface is spiculated. The colour is grey.

The Skeleton is in the form of an irregular meshwork with three-and four-sided meshes and a small quantity of spongin at the nodes.

Megascleres: oxi are curved, cylindrical, brevipointed, 0.250-0.320 mm in length and 0.010-0.013 mm in thickness. Microscleres: sigmas are flagellate, 0.065-0.104 mm in length and 0.003-0.004 mm in thickness; ordinary sigmas measuring 0.026-0.033 mm in length, may also be present.

Distribution. Barents and Kara Seas, Laptev and Okhotsk Seas, Sea of Japan. West of Spitzbergen, east of Greenland, Denmark and Davis straits, Gulf of Saint Lawrence, between Iceland and Faeroe islands. Depth: 51-300 m. Sea bottoms: rock, ooze, sand. Temperature: from -1.14 to 4.95°. Salt content: 34.30-34.92‰.

Examined: 37 specimens.

7. Gellius primitivus Lundbeck, 1902 (Fig.172).

Lundbeck, 1902: 69, pl. XIII, fig. 11, ibid: 70, pl. XIII, fig.12 (proximus); Svarchevskii, 1906: 326, pl. 14, fig. 13 (Reniera bowerbanki); ibid: 336, pl. 15, fig. 24 (angulatus); Hentschel, 1929: 982 (Reniera solowetzkaja); Burton, 1935: 67 (Haliclona); ibid: 67 (Haliclona solowetzkaja).

The Body is lumpy, cushion-shaped, up to 10.5 cm in height, often forms dactylate, lobate or some other type of projections. The body is commonly soft, slightly elastic, strong. Dermal membrane is distinctly outlined and is commonly easily detachable from the remaining sponge body. The colour ranges from light grey to yellow and brown. The oscula, when present, are 1-3 mm in diameter.

Skeleton. The main skeleton consists of a meshwork with three-and four-sided meshes formed by individual spicules; multispicular bundles and fibers may also be present. Dermal skeleton also consists of three-and four-sided meshes. p.214.

Megascleres: oxi that are curved, brevipointed (occasionally to strongyli) and measure 0.140-0.184 mm in length and 0.006-0.013 mm in thickness. Microscleres: toxi are 0.028-0.170 mm in length and 0.001-0.004 mm in thickness.

Distribution. White Sea, Bering and Okhotsk Seas, Sea of Japan, near the Pacific coast of the southern Kuril islands. West of Greenland. Depth: 27-40m. Sea bottoms: sand, rock, ooze. Temperature: 0.1-3.4°. Salt content: 27.00-33.88%.

Examined: Over 40 specimens. Reduction of the dermal membrane and microscleres (toxi) to the point of their total disappearance has been observed in certain representatives of this species (Haliclona solowetzkaja).

8. Gellius varius Lundbeck, 1909 (Fig.173; plate XXXIX,1).

Lundbeck, 1909: 433, pl. XIV, figs. 3a-b; Hentschel, 1929: 976 (arcticus).

The Body is lumpy, up to 12 cm in height, soft and fragile. The colour ranges from light grey to yellow and brown. Dermal membrane is lacking.

The Skeleton is in the form of an irregular (diffuse) meshwork consisting of individual spicules; multispicular fibers are present occasionally.

Megascleres: oxi are commonly curved, brevipointed, 0.200-0.450 mm in length and 0.008-0.015 mm in thickness. Microscleres:

sigmas are 0.025-0.036 mm in length and 0.001 mm in thickness.

Distribution. Southwestern Barents Sea near the Franz Josef Land, near the Kuril islands. Greenland Sea. Depth: 57-325 m. Sea bottoms: sand, ooze, rock. Temperature: 1.3-2.05°. Salt content: 34.68%.

Examined 10 specimens.

2. Genus Haliclona Grant, 1841.

Grant, 1841: 5; Schmidt, 1870: 37 (Pachychalina); Lundbeck, 1902: 34 (Reniera).

Genotype: Spongia oculata Pallas, 1766.

The Body is lumpy, cushion-shaped, occasionally of a more regular shape, cylindrical, ramified dactylate, flabelliform or tabular. The main skeleton is in the form of a more or less regular meshwork consisting of individual spicules, bundles of spicules and of fibers. Dermal skeleton, when present, differs little from the main skeleton. Dermal membrane is often lacking. p.215 Megasclerees: oxi (or strongyli) are small and cylindrical (brevi-pointed).

1 (8). The body is clavate, dactylate, foliate or flabelliform, oviform or pear-shaped, and is commonly furnished with a stem.

2 (3). Spongin forms fibers enclosing spicules.....

5. H. schmidti (Lundbeck).

3 (2). Spongin is present in considerable quantities, but forms no fibers.

4 (5). The sponge body is foliate or flabelliform.....

9. H. ventilabrum (Fristedt).

5 (4). The body shape is different.

6 (7). Spicules are oxi 0.178-0.280 mm in length. The body is oviform or pear-shaped and is stemmed......

8. H. urecolus (Rathke et Vahl).

7 (6). Spicules are oxi 0.088-0.200 mm in length. The body is dactylate, clavate, often branching.......

2. H. glaeilis (Miklocho-Maclay).

8 (1). The body is incrusting, thickly tabular, discoid, lumpy, cushion-shaped, unstemmed.

9 (10). The sponge is stiff, brittle. The body is commonly dis-coidal, thickly tabular or lumpy. The skeleton is in the form of an irregular meshwork. Spicules are 0.300-0.520 mm in length........

3. H. oblonga (Hansen).

10 (9). The sponge is soft, more or less elastic.

11 (14). The skeleton is in the form of a fairly regular meshwork. The spicules do not exceed 0.250 mm in length.

12 (13). The meshwork is of the stair-stepped scalariform type....

1. H. aqueductus (O. Schmidt).

13 (12). The meshwork consists of three-and four-sided meshes.....

6. H. cinerea (Grant).

14 (11). The skeleton is in the form of an irregular meshwork. The spicules are up to 0.400 mm in length.

15 (16). The skeleton is reticulate-fibrous with well-developed compact fibers having up to 10 spicules in the cross-section. Dermal skeleton is present.....

4. H. rossica (Hentschel).

16 (15). The skeleton is in the form of an irregular meshwork consisting of three- and six-spicular fibers and of individual transverse spicules. Dermal skeleton is lacking...... 7. H. tenuiderma (Lundbeck).

1. Haliclona aqueductus (O. Schmidt, 1862) Fig. 174; plate XXXVIII,2).

Schmidt, 1862: 73, pl. VII, fig. 6 (Reniera); Lundbeck, 1902: 44, pl. II, figs. 5, 6, 8, pl. IX, figs. 11a-c, 12, 13, 14 (R. tubulosa, R. laxa, R. heterofibrosa); Svarchevskii, 1906: 26 (Reniera sp. 3); Hentschel, 1816: 15, fig. 3 (Reniera); Burton, 1930a: 511; Burton, 1935: 66.

The Body is incrusting, cushion-shaped, lumpy with oscula in the form of craters, or is cone-shaped with a large osculum at the summit. The sponge is soft, fragile, up to 6 cm in height. The surface is slightly rough. The colour ranges from light grey to grayish yellow, brown and purple.

The skeleton is in the form of a stair-stepped meshwork consisting of primary (ascending) fibers having 1-6 spicules in the cross-section, and of individual transverse spicules.

Megascleres: oxi are gently curved, rather brevipointed, 0.120-0.225 mm in length and 0.003-0.012 mm in thickness. p.216

Distribution. White and Barents Seas, north of Spitzbergen, Bering Sea and Sea of Japan. Greenland and Norwegian Seas, Davis strait, northern Atlantic Ocean, Mediterranean and Black Seas, near Australia and near the Vancouver Island (Pacific coast of North America). Lives at the depth of 14-183m.

This polymorphous species is represented by 192 specimens in the ZIN AN SSSR collections. Apart from the synonyms of this species mentioned above, the following forms are also conspecific with it: Reniera hirsuta Swartschewskyi, R. mollis Lambe, Halichondria heterrhaphis Breitfuss. The latter would have probably remained a mystery for a long time, but for the preparations of spicules made by Breitfuss from the holotype of H. heterorrhapis. Examination of these preparations allowed us to determine that Breitfull erroneously ascribes two types of spicules to this species since the large styli present in the sponge and into the preparations have been introduced into them by accident; and are characteristic for the genus Mycale. Judging from the type of the diactinal spicules (oxi) present and from the general character of the sponge, named H. hetererrhapis by Breitfuss, it should be classified as Haliclona aqueductus.

2. Haliclona gracilis (Miklucho-Maclay, 1870) (Fig.175; plate XXXII, 1).

Miklucho-Maclay, 1870a: 5, Tab.I, Figs. 1, 2 (Veluspa polymorpha var. gracilis); Vosmaer, 1882: 15, Tab. I, Fig.14, Tab. III, Figs. 64-66 (Pachychalina caulifera); Levinsen, 1886: 350, Tab. XXIX, Fig. 4, Tab. XXX, Fig.1 (P. caulifera); Lambe, 1892: 75, pl. IV, fig. 6, pl. V, figs. 12, 12a (Reniera rufescens); Lundbeck, 1902: 7, pl. II, figs. 1, 2, pl. VIII, figs. 4-6 (Pachychalina caulifera); Hentschel, 1929: 988 (Pachychalina caulifera).

The Body is clavate, dactylate, often more or less branching, is furnished with a stem, measures up to 49 cm in height, is elastic, but easily torn; the branches are cylindrical or are slightly compressed from the sides. The surface is nearly smooth. The colour is yellow, greyish yellow, grey or light brown. The oscula are strewn over the surface of the sponge and are frequently arranged in a row along the edges of the compressed branches.

The skeleton is in the form of a meshwork consisting of rectangular meshes formed of longitudinal primary fibers and individual transverse spicules; the longitudinal fibers may be multispicular or unispicular and bispicular (the latter are characteristic for the peripheral portions of the sponge body).

Megascleres: oxi are brevipointed, 0.088-0.200 mm in length and 0.008-0.015 mm in thickness.

Distribution. White and Barents Seas, Kara Sea, Laptev Sea, west and east of Spitzbergen, Bering and Okhotsk Seas, near the southern Kuril islands. Pacific coast of North America. Lives at the depth of 10-110m.

Examined: 65 specimens. The species is characterized by the presence of a strong stem and of longitudinal fibers (inside the tube) which are ramified and anastomosing and consist of short oxi and yellowish spongin. Apart from the synonyms mentioned above, the following forms may be regarded as conspecific with p.217
Haliclona gracilis: Reniera bulbifera Swartschewskyi, Chalina oculata Pallas, Ch. arbuscula Fristedt, Ch. vega Fristedt, Siphonochalina pulcherrima Fristedt. Due to the fact that the holotype of Veluspa polymorpha var. gracilis has been preserved, we succeeded in establishing the priority of Miklukho-Maklai in the

discovery of this species. The genus *Pachychalina* is regarded here as a synonym of the genus *Haliclona*.

3. *Haliclona oblonga* (Hansen, 1885)(Fig.176; plate XXXIV,1; plate XXXVI, 2).

Hansen, 1885: 4, plate II, fig. 5A, plate VI, fig.2 (*Reniera*); Lundbeek, 1902: 24, pl. II, fig. 4,pl. IX, fig. 10 (*Halichondria*); Hentschel, 1929: 991 (*Halichondria*). p.218

The Body is elongated, more or less cylindrical, discoidal or thickly tabular, up to 9 cm in height, stiff, inelastic, brittle. The surface is uneven, cavernous; the surface is uneven due to the protruding ends of the fibers. Dermal membrane is very thin, pellicular, has no skeleton. The colour is light grey, greyish brown. The oscula are numerous and measure approximately 1 mm in diameter.

Skeleton. The skeleton consists of loose fibers forming an irregular meshwork; bundles of spicules and individual spicules are present alongside the fibers. The fibers and the bundles enclose three to five spicules. Spongin is present in very small quantities.

Megascleres: oxi are fairly thick, gently curved, brevi-pointed, 0.300-0.520 mm in length and 0.012-0.023 mm in thickness.

Distribution. Barents and Kara Seas, East of Greenland, near the Faeroe islands. Lives at the depth of 18-457m (up to 823m).

Examined: approximately 20 specimens.

4. *Haliclona rossica* (Hentschel, 1929) (Fig.177).

Svarchevskii, 1906: 327, plate 14, fig. 14 (*Reniera indistincta*); Hentschel, 1929: 984 (*Reniera*); Burton, 1931: 137, fig. 2; Burton,1932b: 200 (*Halichondriella corticata*).

The Body is cushion-shaped, irregularly lumpy, soft, up to 5.5 cm in height. The surface is uneven, slightly rough. The colour is light grey, greyish brown. Oscula are few and measure 2-3 mm in diameter. Dermal membrane is present.

Skeleton. The main skeleton is in the form of very compact fibers with as many as 10 spicules in the cross-section, and of individual rather widely spaced and disorderly arranged spicules. The fibers expand slightly near the surface and form tufts of spicules supporting the dermal membrane. The latter has a skeleton of tangentially arranged spicules.

Megascleres: oxi are gently curved in the middle and measure 0.202-0.400 mm in length and 0.002-0.008 mm in thickness.

Distribution. White Sea, Okhotsk Sea (Anivskii Bay), Sea of Japan (near Nagasaka), Norwegian Sea. Lives at the depth of 8-18 m.

Examined: 4 specimens.

5. Haliclona schmidti (Lundbeck, 1902)(Fig.178).

Lundbeck, 1902:5, pl. I, figs. 1-2, pl. VIII, figs. 1-3 (Pachychalina); Hentschel, 1929: 988, (Pachychalina).

The Body is clavate or dactylate, up to 10 cm in height, strong, elastic. The surface is even, slightly rough. The colour is greyish yellow. The oscula (1-3 mm in diameter) are scattered over the surface, but tend to have a marginal position. p.219

Skeleton. The skeleton is in the form of a meshwork composed of more or less rectangular meshes. The meshes are formed of the main and transverse fibers measuring 0.090-0.160 mm in diameter. The fibers enclose a large number of spicules; the spongine pellicle is clearly outlined.

Megascleres: oxi are gently curved, fusiform, brevipointed, 0.150-0.208 mm in length and 0.010-0.014 mm in thickness.

Distribution. White Sea. Near Iceland and Faeroe islands. Lives at the depth of 18-40m.

Examined: 3 specimens.

6. Haliclona cinerea (Grant, 1827)(Fig..179).

Grant, 1827: 204 (Spongia); Johnston, 1842: 110, pl. IV, fig. 4 (Halichondria); Bowerbank, 1866: 274; Bowerbank, 1874: 121, pl. XLVIII, figs. 1-5 (Isodictya); Lundbeck, 1902: 43, pl. XI, fig. 10 (Reniera); Hentschel, 1929: 979 (Reniera); Burton, 1935: 67 (Adocia).

The Body is incrusting or cushion-shaped, occasionally slightly lobate with tubular projections. The sponge is up to 2.5 cm in height, very soft and easily torn. The surface is fairly smooth. The colour is ash-grey, light yellow, greyish red or brown. Oscula are located on tubular projections.

The skeleton is in the form of a meshwork consisting of three-and four-sided meshes with a very small quantity of spongin.

Megascleres: oxi are cylindrical, brevipointed, 0.130-0.182 mm in length and 0.003-0.006 mm (up to 0.010 mm) in thickness.

Distribution. White Sea, Barents Sea (near the Murmansk coast), north and east of Spitzbergen, Okhotsk Sea (near the Shantar islands, Nogav Bay), Sea of Japan (Pos'et Bay), northern Atlantic Ocean (as far as France). Depth: 5-85m.

The species is represented in our materials by 70 specimens. Apart from the synonyms of *Haliclona cinerea* mentioned above, the list of synonyms of this species should also include the following forms established by Svarchevskii (1906): *Reniera* sp. 1, *R. merejkowskii*, *R. pulchra*, *R. papillifera* and *R. arctica*.

7. *Haliclona tenuiderma* (Lundbeck, 1902).

Lundbeck, 1902: 26, pl. X, figs. 1-2 (*Halichondria*); Breitfuss, 1912: 63 (*Halichondria*); Hentschel, 1929: 992 (*Halichondria*); Burton, 1935:66. p.220

The Body is cushion-shaped, up to 2 cm in height, fairly strong. The surface is finely spiculated. The colour is light grey, whitish yellow. The oscula are up to 1 mm in diameter.

Skeleton. The main skeleton is in the form of an irregular meshwork consisting of three-and six-spicular main fibers and of individual transverse spicules. Dermal skeleton is lacking. Megascleres: oxi are gently curved, 0.330-0.430 mm in length and 0.013-0.015 mm in thickness.

Distribution. Barents Sea (near the Murmansk coast), Okhotsk Sea and Sea of Japan. Greenland Sea, southwest of Iceland. Depth: 0-15m.

Examined: 22 specimens.

9. *Haliclona ventilabrum* (Fristedt, 1887)(Fig.181; plate XXXIII, 1).

Fristedt, 1887: 420, pl. XXIV, fig. 3, pl. XXVII, fig. 8 (*Reniera*); ibid: 417, pl. XXIII, fig. 29 (*Chalina groenlandica*); Lundbeck, 1902: 11, pl. II, fig. 3, pl. VIII, figs. 8-9 (*Ch. spatula*): ibid: 40, pl. XI, figs. 6-7 (*Reniera*); Breitfuss, 1912: 63 (*Chalina groenlandica*); Hentschel, 1929: 982 (*Reniera*); ibid: 988 (*Chalina spatula*); Burton, 1936: 67 (*Cladocroce*).

The Body is upright, foliate or flabelliform, up to 18cm in height at a thickness of 4 mm, elastic, but rather fragile. The surface is finely spiculated. The sponge is stemmed. The colour ranges from light yellow to brown. Oscula are few, are located on one side of the tabular body, are crater-shaped, up to 3 mm in diameter.

The skeleton is in the form of a regular meshwork consisting of square meshes formed by primary unispicular fibers and transverse individual spicules; furthermore, special multispicular fibers extending from the base (i.e. from the stem) upwards along the sponge body, are present.

Megascleres: oxi are gently curved, brevipointed, 0.140-0.250 mm in length and 0.012-0.021 mm in thickness.

Distribution. Western Barents Sea, Sea of Japan. Greenland Sea, Davis strait, west of Greenland. Lives at the depth of 40-101 and 457-718 m.

Examined: 12 specimens.

3. Genus *Metschnikowia* Grimm, 1877.

Grimm, 1877: 33-36.

Genotype: *M. tuberculata* Grimm, 1877.

The sponge body varies from incrusting to elongate, more or less cylindrical or irregularly lobate. The skeleton is reticulate. The ends of the spicules are interconnected by a small quantity of spongin. Megascleres: oxi or strongyli are completely or partly acanthaceous. Microscleres are lacking.

1. Metschnikowia spinispiculum (Carter, 1876).

Carter, 1876: 310, pl. XV, fig. 42 (Isodictya); Lundbeck, 1902: 52, pl. XII, figs. 4a-b; Hentschel, 1929: 987.

The Body is irregularly spherical, lobate or elongated, cylindrical, up to 2.3 cm in height, fairly hard, but brittle. The surface is uneven, nodose. The colour is light grey or light yellow. The oscula are approximately 1 mm in diameter.

The skeleton is in the form of a meshwork with three-and four-sided meshes consisting mainly of individual spicules; very little spongin. Dermal skeleton is lacking.

Megascleres: strongyli have somewhat curved acanthaceous ends and measure 0.208-0.238 mm in length and 0.010-0.012 mm in thickness.

Distribution. Barents Sea (near Spitzbergen). Near the shores of northern Norway, southwest of Portugal, near the Azores. Depth: 192-567m (and up to 1250m near the Azores Islands).

The species is not represented in our material.

XVI. Family Dysideidae.

The skeleton is in the form of a meshwork consisting of fibers formed of foreign mineral particles (sand, spicules of other sponges, shells of protozoans) and spongin. The mineral skeleton proper is lacking. Flagellated chambers are sacculate.

1. Genus Dysidea Johnston, 1942 p.222

Johnston, 1842: 185 (Dyseideia); ibid: 251; Nardo, 1847:3 (Spongelia); Lieberkuhn, 1859: 363 (Dyseideia); Burton,1934:582.

Genotype: Spongia fragilis Monrague, 1818.

The Body is cushion-shaped, lumpy. The skeleton consists of a meshwork of primary and secondary fibers, which are commonly filled with foreign inclusions (sand grains, shells of protozoans, spicules of other sponges etc). Spongin is light coloured and is found in varying quantities (spongin may even be lacking).

1. Dysidea fragilis (Montague, 1818) (Fig.182: plate XXXIX, 2; plate XL, 4).

Montague, 1818: 114, pl. XVI, figs. 1, 2 (Spongia); Rezvoi, 1928: 92 (Spongelia fragilis var. irregularis); Burton, 1934b: 583 (synonymy)

The Body is incrusting, cushion-shaped, tabular, lumpy, lobate, often bears dactylate or tubular projections; the body measures up to 20 cm in height, is commonly stiff and brittle. The colour ranges from grey to yellow and orange-grey. The surface bears conules measuring up to 6 mm in height.

The skeleton consists of primary (0.2-1 mm in thickness) and secondary (0.100-0.250 mm in thickness) transverse fibers; the meshes of the network formed by these fibers, are 0.4-2 mm in diameter. The quantity of spongin varies. Spongin may even be lacking.

Distribution. White and Barents Seas, Kara Sea, Laptev Sea, Sea of Japan. Northern Atlantic,Mediterranean. Lives at the depth of 25-432m. Sea bottoms: sand, rock. Temperature: from -1.61 to 2.65°. Salt content: 34.42-34.99%.

Examined: 83 specimens.

XVII. Family Spongidae.

The skeleton is in the form of a meshwork consisting of horny fibers. There is no mineral skeleton proper, but foreign inclusions are occasionally present (such are sand, spicules of other sponges etc). The fibers are solid or enclose a medulla. Flagellated chambers are spherical or pear-shaped. p.223

KEY FOR IDENTIFICATION OF THE GENERA OF THE FAMILY SPONGIDAE.

1 (4). The sponge surface bears conules. The skeleton contains foreign mineral inclusions.

2 (3). Special filiform fibers (filaments) are found amidst the common horny fibers........
4. Hircinia Nardo.

3 (2). Filaments are lacking......
3. Aplysinopsis Lendenfeld.

4 (1). The sponge surface is free of conules. Foreign mineral inclusions are lacking.

5 (6). The fibers have a medullae......
2. Cryptospongia Burton.

6 (5). The fibers are solid, have no medullae.....
1. Spongionella Bowerbank.

1. Genus Spongionella Bowerbank, 1864.

Bowerbank, 1864: 206.

Genotype: S. pulchella Bowerbank, 1864.

The Body is cushion-shaped, spherical, tabular or elongated, dactylate, branching. The skeleton is in the form of a meshwork consisting of horny fibers. Mineral inclusions are lacking. The fibers are solid, have no medullae.

1 (2). The distance between the primary fibers is approximately 0.180 mm; the fibers are 0.024 mm in thickness. The sponge body is cushion-shaped, spherical or (less often) dactylate........ 1. S. carteri (Burton).

2 (1). The distance between the primary fibers is 0.200-0.800 mm; the fibers are 0.020-0.100 mm in thickness. The sponge body is discoidal or flabelliform, less often vaselike or funnel-shaped, occasionally stalk-like and branching, stemmed or tapering towards the basal part of the body.... 2. S. pulchella (Bowerbank).

1. Spongionella carteri (Burton, 1930)(Fig.183; plate X,2-3).

Carter, 1876: 321, pl. XII, fig. 1d (Spongia officinalis); Burton, 1930a: 510 (Spongia); Burton, 1934a: 16 (Spongia).

The Body is up to 4 cm in height; it varies in shape from cushion-shaped, spherical and vaselike to elongated, dactylate. The surface is even, is often rough due to the protruding ends of the primary fibers. The sponge is soft, very elastic. The colour is yellow, brown or light brown. The oscula are 1-2 mm in diameter and are few (1-2); the oscula are located at the top of

p.224

the sponge body.

Skeleton. The skeleton is in the form of a nearly regular meshwork consisting of horny fibers, which enclose no foreign mineral particles. The meshes of the network are more or less square and measure approximately 0.180 mm in diameter; primary fibers are 0.024 mm in thickness, secondary fibers measure 0.012 mm in thickness.

Distribution. Barents and Kara Seas, Laptev Sea, East Siberian Sea, central Arctic Ocean, Bering Sea, Norwegian and Greenland Seas. Lives at the depth of 31-360 m. Sea Bottoms: sand, pebble, rock. Temperature: from -1.82° to 2°. Salt content: 34.40-34.90%.

Examined: 62 specimens.

2. Spongionella pulchella (Bowerbank, 1861)(Fig.184; plate XL, 1; plate XL1,2).

Bowerbank, 1861: 235 (Spongia); Bowerbank, 1862: pl. XXXVII, fig. 380; Bowerbank, 1866: 359; Miklucho-Maclay, 1870a: 15, Tab.2, Fig.32 (1-15) (Euspongia brandtii); Bowerbank, 1874, pl.LXI, figs. 5-8; Bowerbank, 1882: 183; Hentschel, 1929: 995 (Leiosella); Burton, 1935: 78.

The Body is vertically upright, commonly discoidal or flabelliform, less often vaselike or funnel-shaped, occasionally stalk-like and branching, up to 13 cm in height, and is highly elastic. The surface is commonly smooth, and has a dermal membrane in the form of a thin pellicle; dermal skeleton is lacking. The colour, various shades of brown. Oscula are up to 2 mm in diameter.

The skeleton consists of horny fibers extending throughout the entire sponge body; furthermore, primary fibers extend radially towards the surface, whereas the secondary fibers are arranged more or less at a right angle to the primary ones. The distance between the primary radial fibers is 0.200-0.800 mm; the fibers are 0.020-0.100 mm in thickness. Secondary fibers are somewhat thinner than the primary ones.

Distribution. Okhotsk Sea, near the Pacific coast of the southern Kuril islands. Norwegian Sea, near the shores of England. Lives at the depth of 8-120m. Sea bottoms: sand, pebble, rock. Temperature: 1.8-16.2°. Salt content: 33.54-34.7%.

The ZIN AN SSSR collections include 42 specimens of Spongionella pulchella. The specimens collected by E. G. Voznesenskii in the 1840's and identified by Miklukho-Maklai as Euspongia brandtii, sp.n., have been preserved in a dry state. Examinations of these specimens show that Eu. brandtii is identical to S. pulchella. The dessicated sponges devoid of soft tissues reveal in translucent light a fine reticulate architecture with clearly defined darker arcuate contours (the growth line). p.225.

2. Genus Cryptospongia Burton, 1928.

Burton, 1928: 133.

Genotype: C. enigmatica Burton, 1928.

The sponge body is discoidal or cushion-shaped, commonly incrusts the tubes of worms or branches of hydroids in such a manner that a slender stalk representing the tube of a worm or a hydroid branch coated with a compact layer of the horny sponge fibers, arises from the central part of the compressed sponge body. The skeleton forms an irregular anastomosing meshwork. The fibers have a medullla. Mineral foreign inclusions are lacking.

1. Cryptospongia enigmatica Burton, 1928 (Fig.185).

Burton, 1928: 133.

The Body is soft, inelastic, discoidal, up to 2.5 cm in height and 7 cm in diameter; it commonly incrusts tubes of worms or hydroid branches in such a manner that the latter penetrate the compressed body of the sponge in the middle. The sponge fibers incrust the ascending worm tube or hydroid branch forming a compact sheath on it. At the first glance the sponge appears therefore to consist of a discoidal body and a slender stalk arising from its centre and bearing on its surface a multitude of small rigid tubercles. The external layer of the stalk, consisting of the sponge, is formed of closely spaced fibers measuring 0.100 mm in thickness; here and there these fibers are interconnected by short transverse fibers.

The skeleton of the sponge body proper consists of an irregular, fairly loose meshwork formed by fibers which measure 0.040-0.080 mm in thickness.

Distribution. Okhotsk Sea, near the Pacific coast of the southern Kuril islands. Indian Ocean. Lives at the depth of 414-1771m. Sea bottoms: sand, ooze, gravel. Temperature: 2-2.4°. Salt content: 34.20%.

Our collections include 18 specimens of this species. Examinations of these specimens have shown that the description of the genus Cryptospongia provided by Burton (1928), as well as that of the species C. enigmatica must be formulated somewhat more precisely. Burton appears to have mistaken the stalk described above, for a stem, and has oriented it in his drawing in the manner opposite to the actual position of the sponge in space, i.e. with the stalk extending downwards.* None of the specimens at our disposal has a solid stem composed entirely of the sponge (as Burton assumes to be the case). In every instance the stalk represents a worm tube or a hydroid branch incrusted by the sponge body. p.226

3. Genus Aplysinopsis Lendenfeld, 1889.

Lendenfeld, 1889: 374.

Genotype: A. elegans Lendenfeld, 1889é

The Body is cushion-shaped, lumpy. The skeleton is in the form of a meshwork formed of horny fibers. The fibers enclose foreign mineral particles. The sponge surface bears conules.

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*Prof. P. V. Ushakov, who has established the new species of chaetopods Potamilla symbiotica, which is invariably found in symbiosis with the sponge C. enigmatica, drew our attention to this phenomenon.

1 (2). The sponge surface bears distinctly outlined conules measuring up to 3 mm in length. Primary fibers are up to 0.300 mm in thickness....

1. A. lobosa Burton.

2 (1). The conules are indistinctly defined and appear in the form of low tubercles up to 0.5 mm in height. Primary fibers measure up to 0.500 mm in thickness.....

2. A. schmidti (Marenzeller).

1. Aplysinopsis lobosa Burton, 1932 (Fig.186; plate XXXIV, 2; plate XL, 5,6).

Burton, 1932b: 203, pl. VIII, fig. 15, text. figs. 5,6.

The Body is cushion-shaped or massive, up to 5 cm in height. The surface bears conules (measuring up to 3 mm in height) which are located at a distance of 2-4 mm from one another. Dermal membrane is in the form of a thin pellicle. The colour is grey or brownish grey. The sponge is very elastic.

The skeleton is in the form of horny fibers forming a meshwork of rectangular meshes. Primary fibers often enclose mineral particles (grains of sand) and extend on the whole from the base of the sponge body towards its surface. Secondary fibers tend to anastomose and ramify in all the directions, but commonly contain no foreign inclusions. Primary fibers are up to 0.300 mm in thickness, secondary fibers are up to 0.200 mm in thickness.

Distribution. Okhotsk Sea (Anivskii Bay), near the Pacific coast of the southern Kuril islands, Sea of Japan. Lives at the depth of 50-104m. Sea bottoms: oozy sand, sand, rock. Temperature: 8.9°.

Examined: 6 specimens.

2. *Aplysinopsis schmidti* (Marenzeller, 1877) (Plate XLI,1).

Burton, 1935:79.

The Body is lumpy, lobate, up to 20 cm in height. The surface is uneven because of the ends of fibers, which lift the dermis and thus form low tuberculate elevations (measuring up to 0.5 mm in height). Dermal membrane is in the form of a thin pellicle which adheres firmly to the sponge body, but is easily detachable. The colour is dark brown on the exterior, light on the interior.

The skeleton consists of horny fibers forming an irregular meshwork. Primary fibers are on an average 0.200-0.500 mm in thickness and often enclose foreign particles, such as grains of sand, spicules etc; secondary fibers enclose no foreign particles p. 227
and are 0.100-0.150 mm in thickness. Furthermore, a multitude of sand grains, spicules of other sponges, shells of protozoans etc. occur outside the horny skeleton, i.e. in the dermal layer and inside the sponge body.

Distribution. Near Franz Josef Land, southern Okhotsk Sea, near the southern Kuril islands, Sea of Japan. Lives at the depth of 6-40 m. Sea bottoms: sand, pebble, rock. Temperature: 0.5-4.4°.

Examined: 22 specimens.

4. Genus Hircinia Nardo, 1833.

Ledenfeld, 1889: 526.

Genotype: H. variabilis Schulze, 1879.

The Body is incrusting, cushion-shaped. The skeleton is in the form of a meshwork consisting of horny fibers; moreover, special filiform fibers (filaments) are present. The sponge surface bears conules.

1. Hircinia variabilis Schulze, 1873 (Fig.187; plate XXXVIII, 1).

Schulze, 1873: 13, pl. I, figs. 1-5, pl. III, fig.1, pl. IV, figs. 1-15; Lendenfeld, 1889: 557, pl. XXXVI, figs. 11-14.

The Body may be incrusting, cushion-shaped, lumpy, dactylate, branching, tabular or foliate; it is up to 5 cm in height. The surface bears conules 1-2 mm in height; the conules are arranged at a distance of 1-3 mm from one another. The colour ranges from light grey to dark brown. The oscula (measuring 1-5 mm in diameter) are located in small depressions on the surface.

The skeleton consists of primary and secondary fibers forming a meshwork. The former are approximately 2 mm in thickness and extend radially from the basal part of the sponge body at a distance of 1-2 mm from one another. Secondary fibers are slightly ramified and are connected to the primary fibers by two or more radiciform processes. Secondary fibers are on an average 0.05 mm in thickness. The width of meshes in the network is approximately

1 mm. Grains of sand and other foreign inclusions are found in the main fibers, less often in the secondary fibers. Apart from these two types of fibers, the sponge includes large quantities of filaments which measure 4-8 mm in length and 0.001-0.003 mm in thickness; the terminal expansions of the filaments are 0.006-0.010 mm in diameter.

Distribution. Barents Sea (near Spitzbergen). Mediterranean Sea, Caribbean Sea, north and south of Australia, near the southern shores of New Guinea, Indian Ocean. Lives at the depth of 20-75m.

This species is represented in our material by one single specimen found near the shores of Spitzbergen.

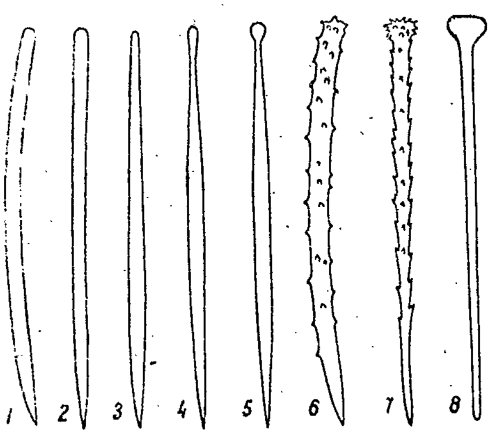


Рис. 1. Макросклеры. Типы разноконечных игл (монактины).

1—3 — стили; 4 — субтилостиль; 5 — тилостиль; 6 — акантостиль; 7 — акантотилостиль; 8 — экзотиль.

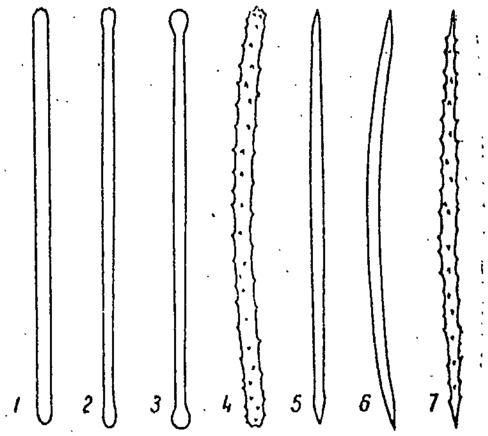


Рис. 2. Макросклеры. Типы равноконечных игл (диактины).

1 — стронгила; 2 — субтилота; 3 — тилота; 4 — акантостронгила; 5 — торнота; 6 — окс; 7 — акантокс.

Fig.1. **Megascleres.** Different types of apically asymmetrical spicules(monactinal spicules). 1-3-styli; 4-subtylostylus; 5-tylostylus; 6-acanthostylus; 7@acanthotylostylus; 8-exotylus.

Fig.2. Megascleres.Different types of apically symmetrical (diactinal)spicule 1-strongylus;2-subtylotus;3-tylotus; 4-acanthostrongylus;5-tornotus;6-oxus; 7-acanthoxus.

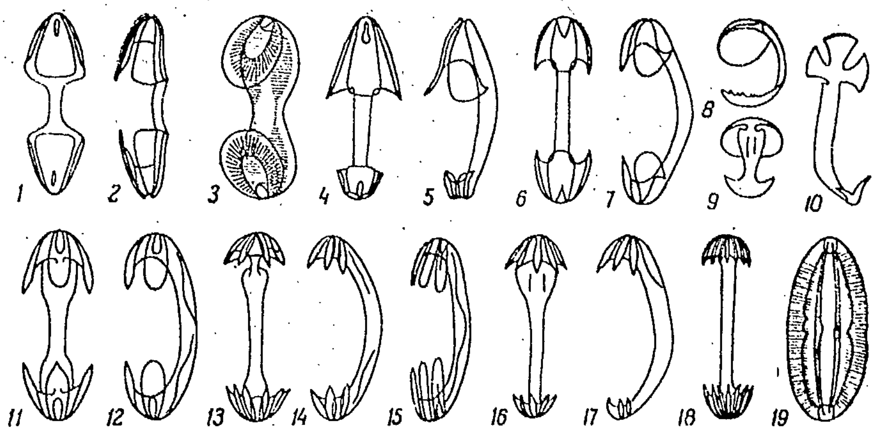


Рис. 3. Микросклеры. Типы хелоидных игл.

1, 2 — равноконечные пальматовидные хелы; 3 — плакохела; 4, 5 — хелы разноконечные, пальматовидные; 6, 7 — хелы равноконечные, дуговидные; 8—10 — бипоциллы; 11, 12 — якорьки равноконечные, простые; 13—15 — якорьки равноконечные, многозубчатые; 16,17 — якорьки разноконечные, многозубчатые; 18 — биротуль; 19 — сферанкора.

Fig.3. Microscleres.Different types of cheloid spicules.

1,2-apically symmetrical palmate chelae; 3-placochela; 4,5-apically asymmetrical palmate chelae; 6,7-apically symmetrical arcuate chelae; 8-10bipocilli;11,12-apically symmetrical simple ancorae;13-15-apically symmetrical multidentate ancorae;16,17-apically asymmetrical multidentate ancorae; 18-birotule; 19-sphaerancora.

Рис. 4. Микросклеры. Типы сигмоидных игл.
1, 2 — шпильки; 3—5 — сигмы; 6 — триходрагма; 7 — рафиды; 8, 9 — дианцистры; 10, 11 — дужки.

Fig.4. Microscleres. Different types of sigmoid spicules.
1,2-forceps; 3-5- sigmae; 6-trichodragma; 7-rhaphidii; 8,9-diancisters; 10,11-toxi.

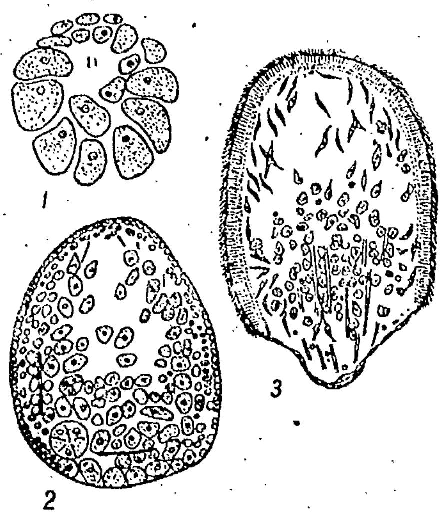


Рис. 5. Развитие кремнероговых губок (по Маасу).
1 — дробление яйца; 2 — образование личинки; 3 — личинка.

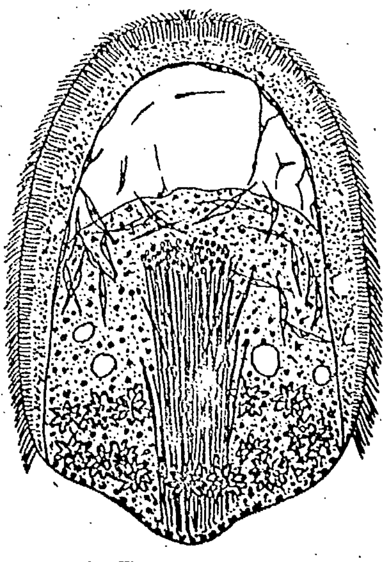


Рис. 6. Паренхимула кремнероговой губки (род *Mycale*; по Маасу).

Fig.5. Development of corneosiliceous sponges(after Maas).1-division of the egg; 2-formation of the larva; 3-larva;

Fig.6. Parenchymula of a corneosiliceous sponge(genus Mycale; after Maas).

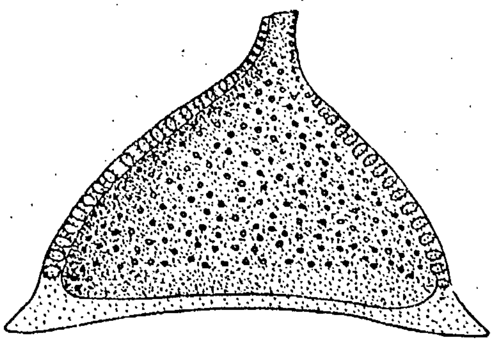


Рис. 7. Схема рагона (по Деляжу и Эруару).

Fig.7. Scheme of a rhagon (after Delage* and Eruar**).

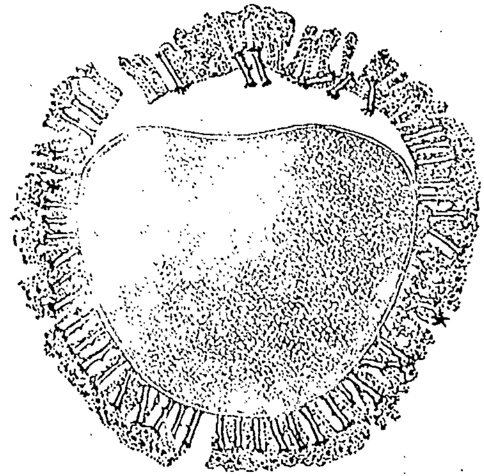
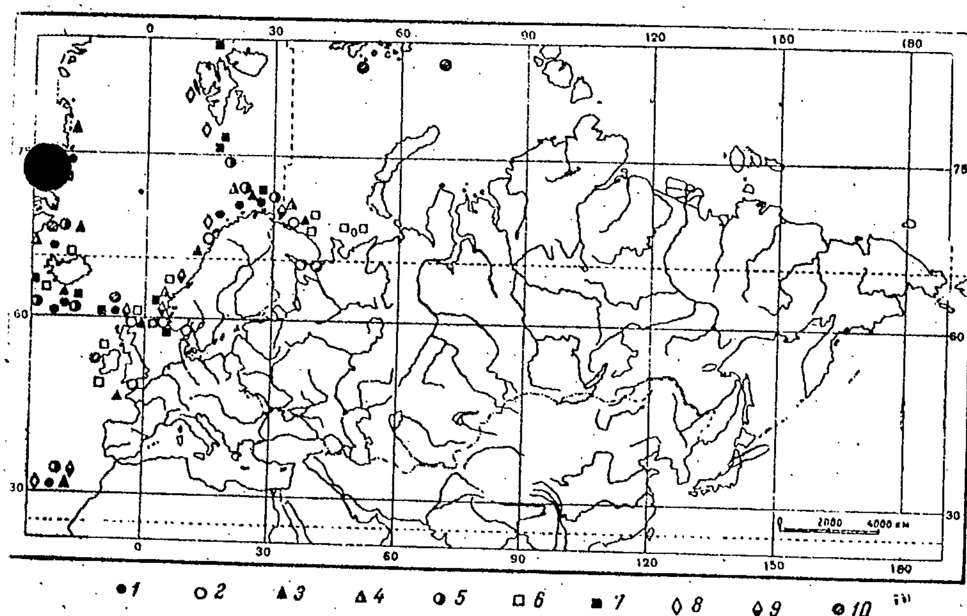


Рис. 8. Геммула с амфидисками (род *Spongilla*; из Гентшеля).

Fig.8. A gemmule with amphidiscs(genus Spongilla; from Hentschel).



Penetration of north Atlantic boreal species into the Arctic.

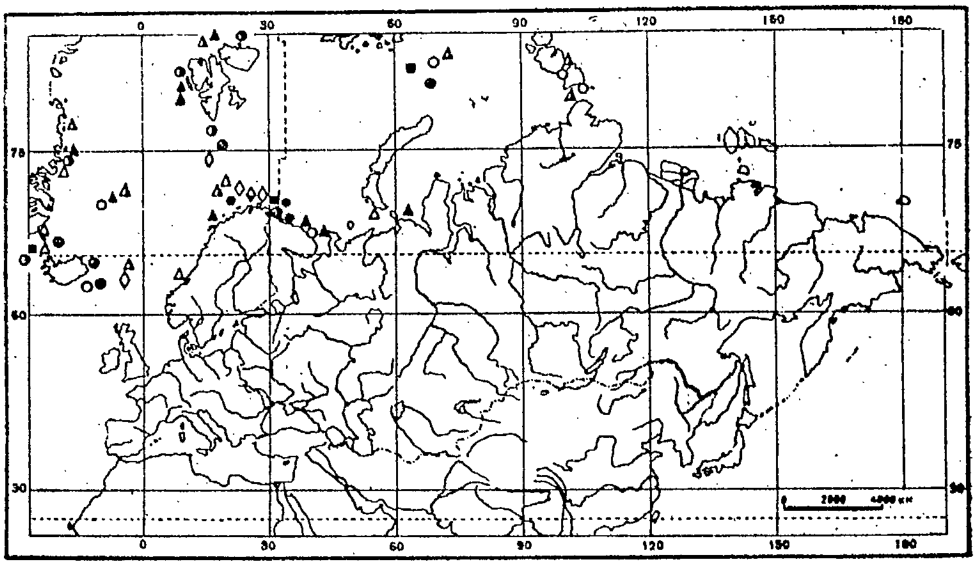
Карта 1. Проникновение североатлантических бореальных видов в Арктику.

Melonanchora elliptica; 2 — *Hymeraphia stellifera*; 3 — *Artemisina foliata*; 4 — *Esperiopsis villosa*; 5 — *Hamacantha implicans*; 6 — *Myxilla fimbriata*; 7 — *Asbestopluma pennatula*; 8 — *Metschnikowia spinispiculum*; 9 — *Clathria dichotoma*; 10 — *Coelosphaera appendiculata*.

Map 1.

*A guess. Delyazh in the text.(Translator).

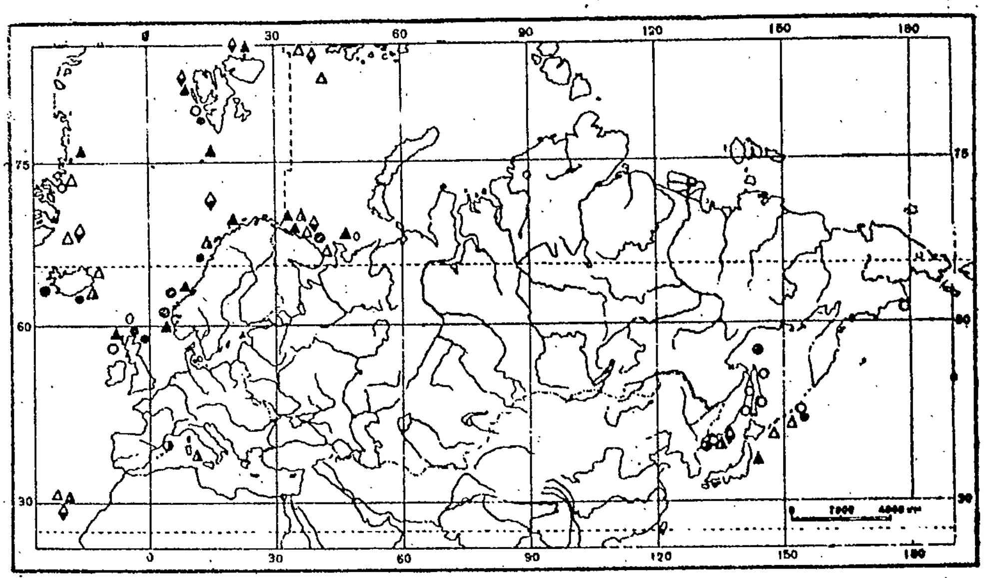
**Transliteration(translator).



Map 2. Distribution of Greenland-Scandinavian boreal species.

Карта 2. Распространение гренландско-скандинавских бореальных видов.

1 — Myxilla pedunculata; 2 — Phakellia arctica; 3 — Phakellia bowerbanki; 4 — Hymedesmia similis; 5 — Iotrochota rotulancora; 6 — Asbestopluma bihamatifera; 7 — Lissodendoryx complicata; 8 — Esperiopsis forcipula; 9 — Haliclona urceolus; 10 — Lissodendoryx fragilis.



Map 3. Distribution of Atlantic-Pacific amphiboreal species.

Карта 3. Распространение атлантическо-тихоокеанских амфибореальных видов.

1 — Homaxinella subdola; 2 — Cornulum textile; 3 — Axinella rugosa; 4 — Mycale relifera; 5 — Tylodesma rosea; 6 — Gellius flagellifer; 7 — Homoeodictya flabelliformis; 8 — Coelosphaera physa.

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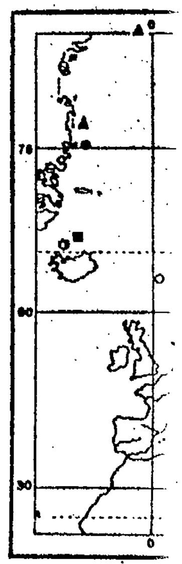

Карта 4. Ра

1 — Crellomim
5 — Haliclona

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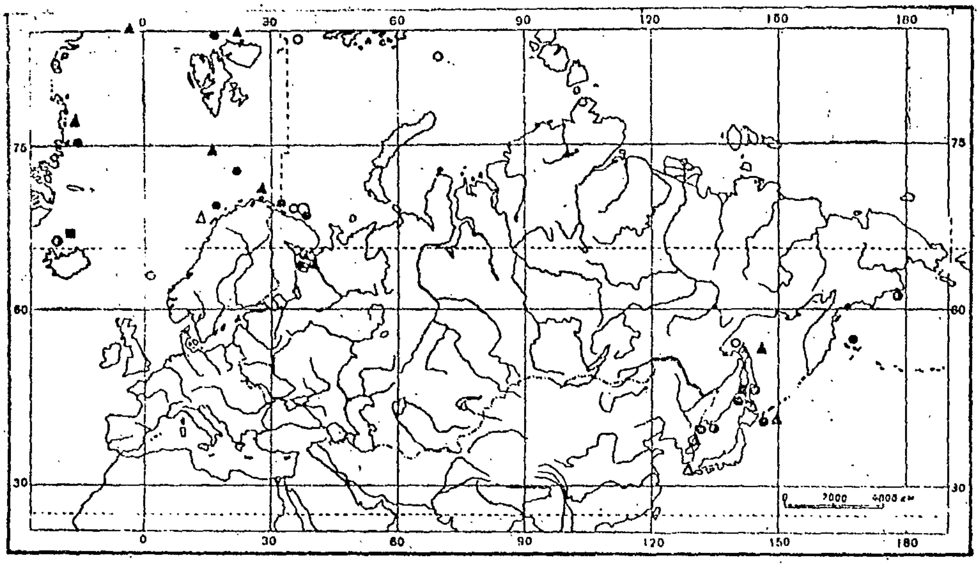
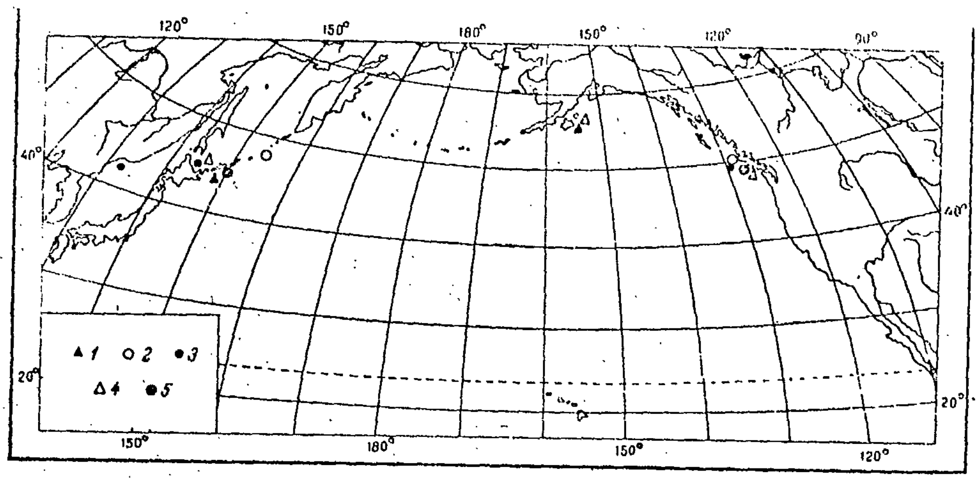


Map 4. Distribution of Pacific-Greenland-Scandinavian amphiboreal species.

Карта 4. Распространение тихоокеанско-гренландско-скандинавских амфибореальных видов.

1 — Crellomima imparidens; 2 — Forcepia fabricans; 3 — Gellius angulatus; 4 — Aplysinopsis schmidti; 5 — Haliclona rossica; 6 — Haliclona ventilabrum; 7 — Gellius primitivus; 8 — Stelodoryx pluridentata.



Map 5. Distribution of amphi-Pacific species. Карта 10. Распространение амфипацифических видов.

1 — Gellius borealis; 2 — Clathria laevigata; 3 — Tylodesma pennata; 4 — Tedania fragilis; 5 — Mycale hispida.

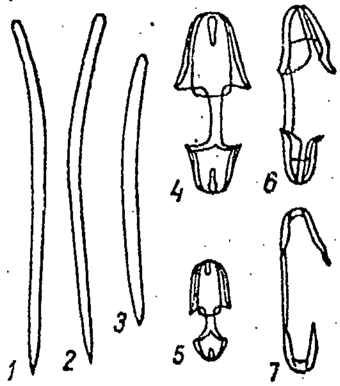


Рис. 9. *Mycale lobata* (Bowerbank).

1—3 — стили (×125); 4—7 — хелы разноконечные, пальматовидные (×400).

Fig.9. Mycale lobata (Bowerbank).
1-3-styli(X 125); 4-7-chelae
(apically asymmetrical,palmate)(X 400).

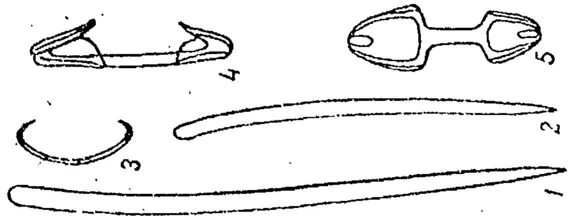


Рис. 10. *Mycale papillosa papillosa*, sp. et ssp. n.

1, 2 — стили (×150); 3 — сигма (×500); 4, 5 — хелы разноконечные, пальматовидные (×500).

Fig.10. Mycale papillosa papillosa sp. et ssp.n.
1,2-styli(X 150); 3-sigma(X 500); 4,5-apically asymmetrical palmate chelae (X 500).

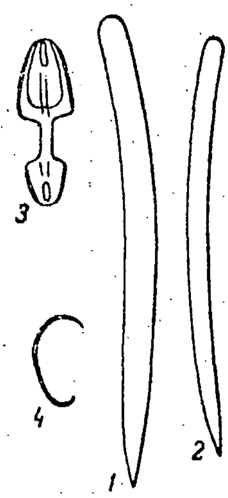


Рис. 11. *Mycale ochotensis*, sp. n.

1, 2 — стили (×250); 3 — хела разноконечная, пальматовидная (×340); 4 — сигма (×340).

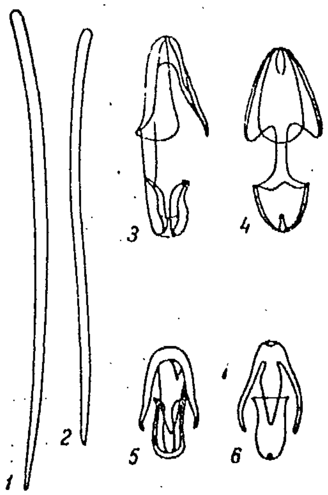


Рис. 12. *Mycale thaumatochela* Lundbeck.

1, 2 — стили (×120); 3, 4 — хелы разноконечные, пальматовидные, большие (×400); 5, 6 — хелы разноконечные, пальматовидные, малые (×350).

Fig.11. Mycale ochotensis,sp.n.
1,2- styli(X 250);3- apically asymmetrical palmate chela(X 340); 4- sigma(X 340).

Fig.12. Mycale thaumatochela Lundbeck.
1,2- styli(X 120); 3,4-apically asymmetrical,large,palmate chelae(X 400); 5,6-apically asymmetrical,small,palmate chelae (X 350).

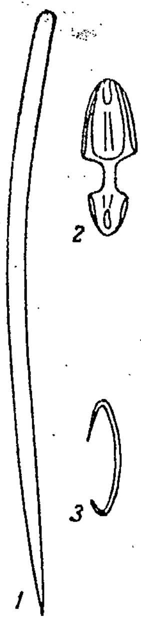


Рис. 13. *Mycale hispida* (Lambe).

1 — стиль (×200); *2* — хела равноконечная, пальматовидная (×320); *3* — сигма (×320).

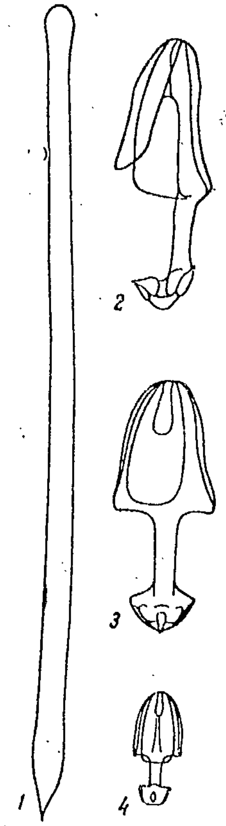


Рис. 14. *Mycale loveni* (Fristedt).

1 — субтилостиль (×200); *2, 3* — хелы разноконечные, пальматовидные, большие (×300); *4* — хела разноконечная, пальматовидная, малая (×300).

Fig.13. Mycale hispida (Lambe). 1- stylus(X200); 2-apically asymmetrical palmate chela(X320); 3- sigma(X320).

Fig.14. Mycale loveni (Fristedt). 1-subtylostyle(X200); 2,3-apically asymmetrical,large,palmate chelae (X300); 4-apically asymmetrical, small,palmate chela(X300).

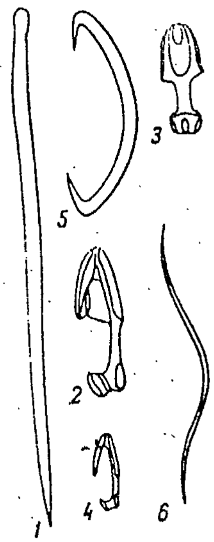


Рис. 15. *Mycale retifera* Topsent.

1 — субтилостиль (×200); *2, 3* — хелы разноконечные, пальматовидные (×1000); *4* — хела разноконечная, пальматовидная (×480); *5* — сигма (×400); *6* — дужка (×480).

Fig.15. Mycale retifera Topsent. 1-subtylostylus(X200); 2,3-apically asymmetrical palmate chelae(X1000); 4-apically asymmetrical palmate chel (X 480); 5-sigma(X400); 4-toxus(X 480).

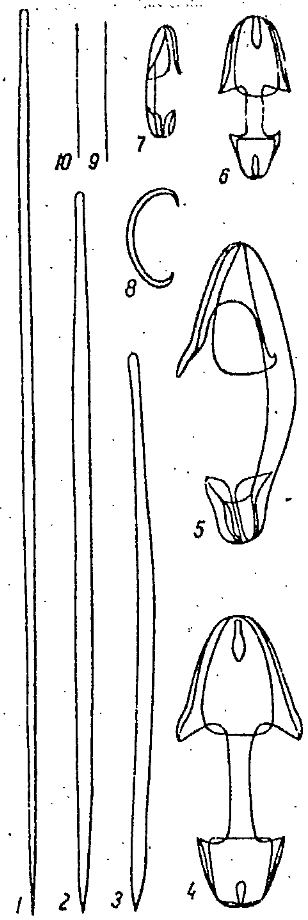


Рис. 16. *Mycale lingua lingua* (Bowerbank).

1—3 — стили (×100); *4—7* — хелы разноконечные, пальматовидные (×120); *8* — сигма (×375); *9*, *10* — рафиды (×375).

Fig.16. Mycale lingua lingua (Bowerbank).

1-3-styli(X100); 4-7-apically asymmetrical palmate chelae (X120); 8-sigma(X375); 9,10-rhaphidii(X375).

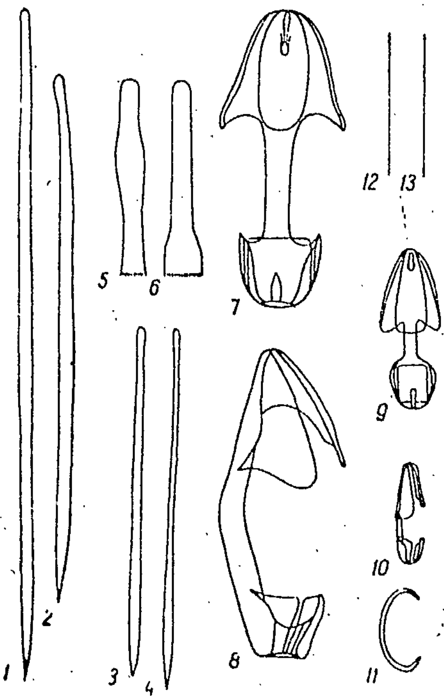


Рис. 17. *Mycale lingua placoides* (Carter).

1, *2* — стили основного скелета (×100); *3*, *4* — стили дермального скелета (×100); *5*, *6* — базальные концы стилей (×940); *7—10* — хелы разноконечные, пальматовидные (×400); *11* — сигма (×400); *12*, *13* — рафиды (×400).

Fig.17. Mycale lingua placoides(Carter)

1,2-styli of the main skeleton(X100);

3,4-styli of the dermal skeleton(X100);

5,6-basal ends of the styli(X940);

7-10-apically asymmetrical palmate chela (X400); 11-sigma(X400); 12,13-rhaphidii (X400).

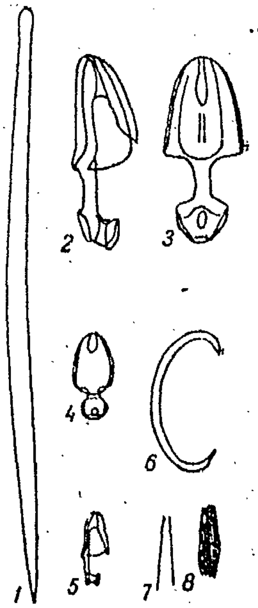


Рис. 18. *Mycale adhaerens adhaerens* (Lambe).

1 — стиль (×200); *2*, *3* — хелы разноконечные, пальматовидные, большие (×320); *4*, *5* — хелы разноконечные, пальматовидные, малые (×320); *6* — сигма (×320); *7*, *8* — рафиды и трихо-драгма (×200).

<u>Fig.18. Mycale adhaerens adhaerens</u> (Lambe). 1-stylus(X200); 2,3-apically asymmetrical large palmate chelae(X 320); 4,5-apically asymmetrical small palmate chelae(X 320); 7,8-rhaphidii and trichodragmae(X200).

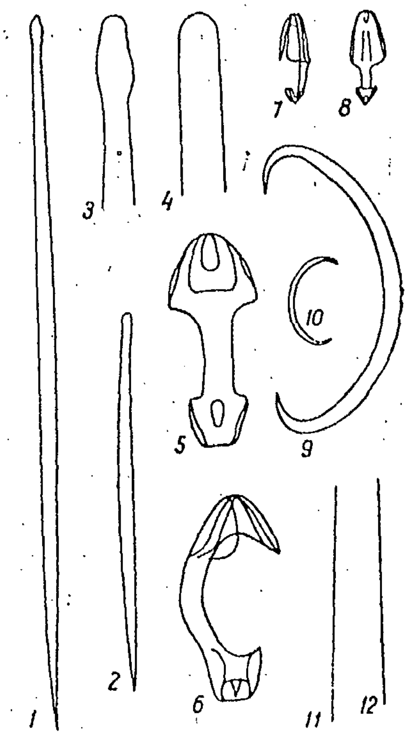


Рис. 19. *Mycale toporoki* Koltun.

1 — стиль основного скелета (×95); *2* — стиль дермального скелета (×100); *3*, *4* — базальные концы стилей (×375); *5*, *6* — хелы разноконечные, пальматовидные, большие (×350); *7*, *8* — хелы разноконечные, пальматовидные, малые (×375); *9*, *10* — сигмы (×300); *11*, *12* — рафиды (×300).

<u>Fig.19. Mycale toporoki</u> Koltun. 1-stylus of the main skeleton(X95); 2-stylus of the dermal skeleton(X100); 3,4-basal ends of styli(X375); 5,6-apically asymmetrical large palmate chelae(X350); 7,8-apically asymmetrical small palmate chelae(X375); 9,10-sigmas(X300); 11,12-rhaphidii(X300).

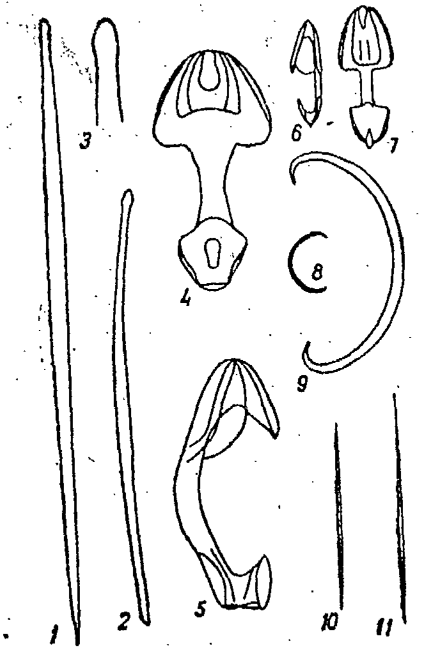


Рис. 20. *Mycale tylota* Koltun.

1 — стиль основного скелета (×95); *2* — дермальная тилота (×100); *3* — конец тилоты (×190); *4*, *5* — хелы равноконечные, пальматовидные, большие (×350); *6*, *7* — хелы разноконечные, пальматовидные, малые (×750); *8*, *9* — сигмы (×350); *10*, *11* — рафиды (×350).

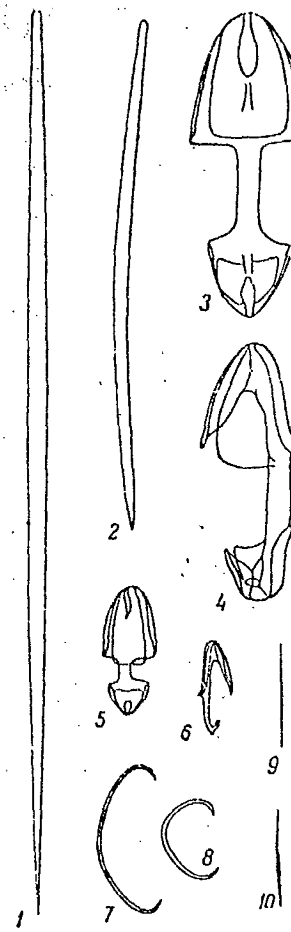


Рис. 21. *Mycale cucumis* Koltun.

1 — стиль основного скелета (×95); *2* — стиль дермального скелета (×75); *3*, *4* — хелы равноконечные, пальматовидные, большие (×300); *5* — хела разноконечная, пальматовидная, средняя (×300); *6* — хела разноконечная, пальматовидная, малая (×400); *7*, *8* — сигмы (×400); *9*, *10* — рафиды (×300).

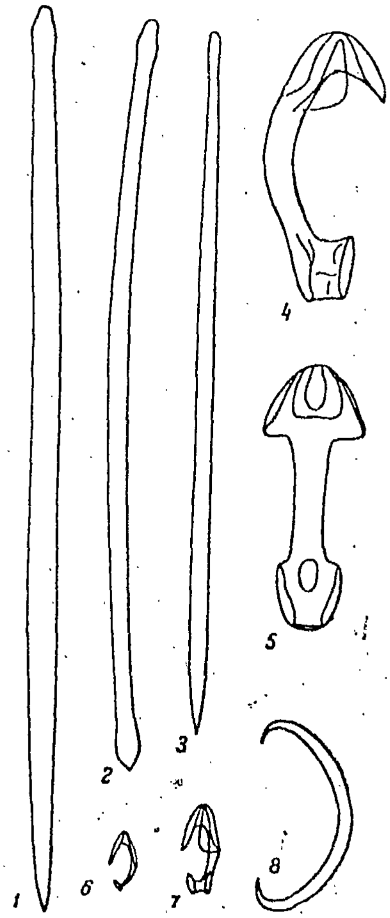


Рис. 22. *Mycale lindbergi* Koltun.

1 — стиль основного скелета (×150); *2* — дермальная тилота (×170); *3* — дермальный стиль (×170); *4*, *5* — хелы равноконечные, пальматовидные, большие (×375); *6* — хела равноконечная, пальматовидная, средняя (×260); *7* — хела разноконечная, пальматовидная, малая (×260); *8* — сигма (×260).

Fig.20. Mycale tylota Koltun. 1-stylus of the main skeleton (X95); 2-dermal tylotus(X100); 3-the point of a tylotus(X190); 4,5-apically asymmetrical large palmate chelae(X350); 6,7-apically asymmetrical small palmate chelae(X750); 8,9-sigmas(X350); 10,11-rhaphidii(X350).

Fig.21. Mycale cucumis Koltun. 1-stylus of the main skeleton(X95);2-stylus of the dermal skeleton(X75); 3,4-apically asymmetrical large palmate chelae(X300); 5-apically asymmetrical medium-size palmate chela(X300); 6-apically asymmetrical small palmate chela(X400);7,8-sigmas(X400);9,10-rhaphidii(X300).

Fig.22. Mycale lindbergi Koltun. 1-stylus of the main skeleton(X150); 2-dermal tylotus(X170); 3-dermal stylus (X170); 4,5-apically asymmetrical large palmate chelae (X375); 6-apically asymmetrical medium-size palmate chela (X260); 7-apically asymmetrical small palmate chela(X260) 8-sigma(X260).

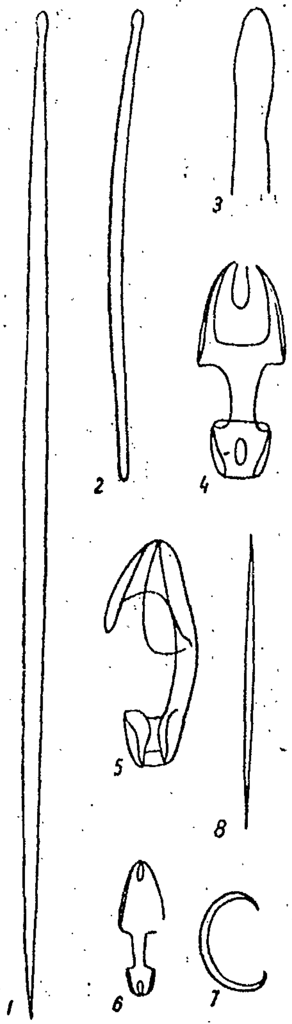


Рис. 23. *Mycale longistyla* Koltun.

1 — стиль большая (×75); *2* — стронгила (×95); *3* — конец стронгилы (×190); *4*, *5* — хелы разноконечные, пальматовидные, большие (×300); *6* — хела разноконечная, пальматовидная, малая (×350); *7* — сигма (×300); *8* — микрооксы (×300).

Fig.23. Mycale longistyla Koltun.

1-large stylus(X75); 2-strongylus(X95); 3-the point of a strongylus(X190); 4,5-apically asymmetrical large palmate chelae (X300); 6-apically asymmetrical small palmate chela(X350); 7-sigma(XX300); 8-microxus ((X300).

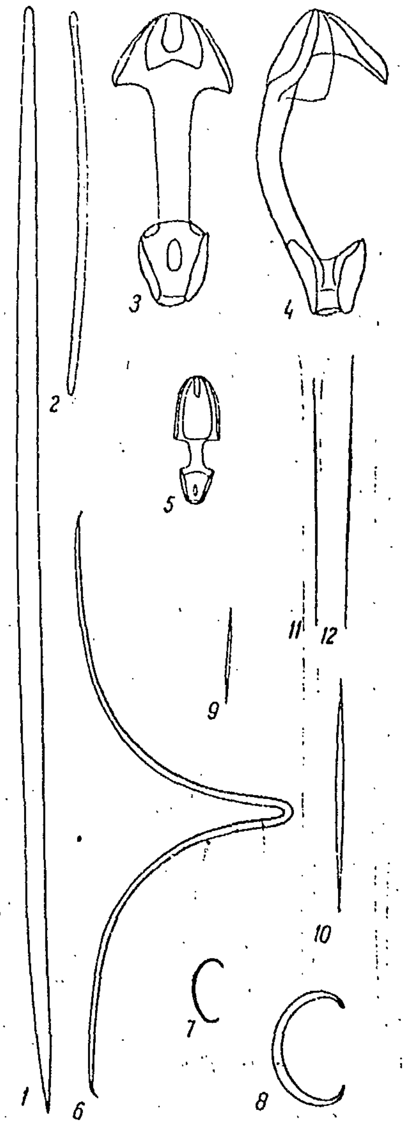


Рис. 24. *Mycale japonica*; sp. n.

1 — стиль основного скелета (×75); *2* — стронгила дермального скелета (×75); *3*, *4* — хелы разноконечные, пальматовидные, большие (×260); *5* — хела разноконечная, пальматовидная, малая (×260); *6* — дужка (×190); *7*,*8* — сигмы (×260); *9*—*12* — рафиды и микрооксы (×75).

Fig.24. Mycale japonica, sp.n.

1-stylus of the main skeleton(X75); 2-strongylus of the dermal skeleton (X75); 3,4- large apically asymmetrical palmate chelae(X260); 5-small apically asymmetrical palmate chela(X260); 6-toxus(X190); 7,8-sigma(X260); 9-12- rhaphidii and microxi(X75).

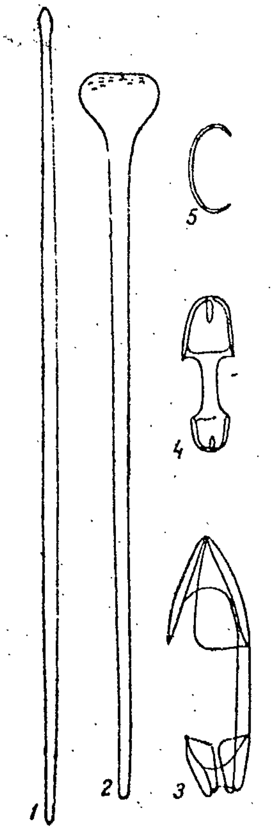


Рис. 25. *Rhaphidotheca arctica* Hentschel.

1 — субтилостиль основного скелета (×135); *2* — дермальный экзотилот (×135); *3,4* — хелы разноконечные, пальматовидные (×350); *5* — сигма (×350).

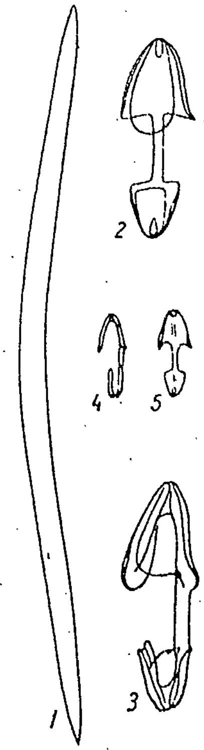


Рис. 26. *Oxymycale intermedia* (O. Schmidt).

1 — окс (×150); *2, 3* — хелы разноконечные, пальматовидные, большие (×350); *4, 5* — хелы разноконечные, пальматовидные, малые (×350).

Fig.25. Rhaphidotheca arctica Hentschel. 1-subtylostylus of the main skeleton(X135); 2-dermal exotylotus(X135); 3,4-apically asymmetrical palmate chelae(X350); 5-sigma (X350).

Fig.26. Oxymycale intermedia O.Schm 1-oxus(X150);2,3-apically asymmetri cal large palmate chelae(X350); 4,5 apically asymmetrical small palmat chelae(X350).

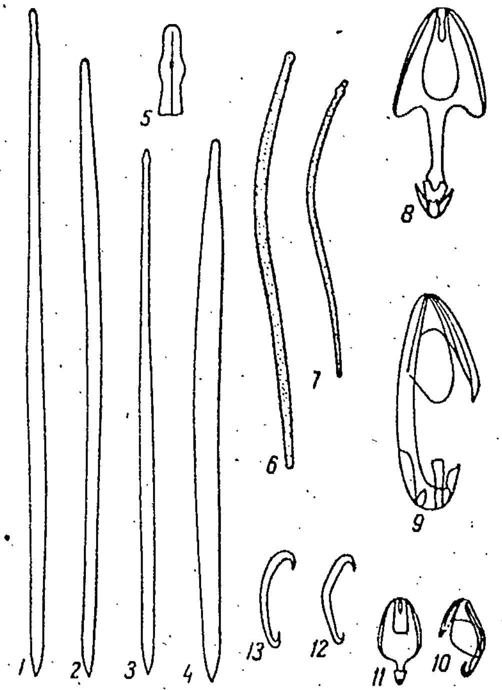


Рис. 27. *Asbestopluma pennatula* (O. Schmidt).

1—4 — стили и субтилостили (×80); *5* — базальный конец субтилостиля (×160); *6, 7* — тилостронгилы (×400); *8, 9* — хелы разноконечные, пальматовидные, большие (×400); *10, 11* — хелы разноконечные, пальматовидные, малые (×750); *12, 13* — сигмы (×480).

Fig.27. Asbestopluma pennatula (O.Schmidt).

1-4-styli and subtylostyli(X80); 5- basal end of a subtylostylus (X160); 6,7-tylostrongyli(X400); 8,9-large apically asymmetrical palmate chelae(X400); 10,11-small apically asymmetrical palmate chelae(X750); 12,13- sigmas(X480).

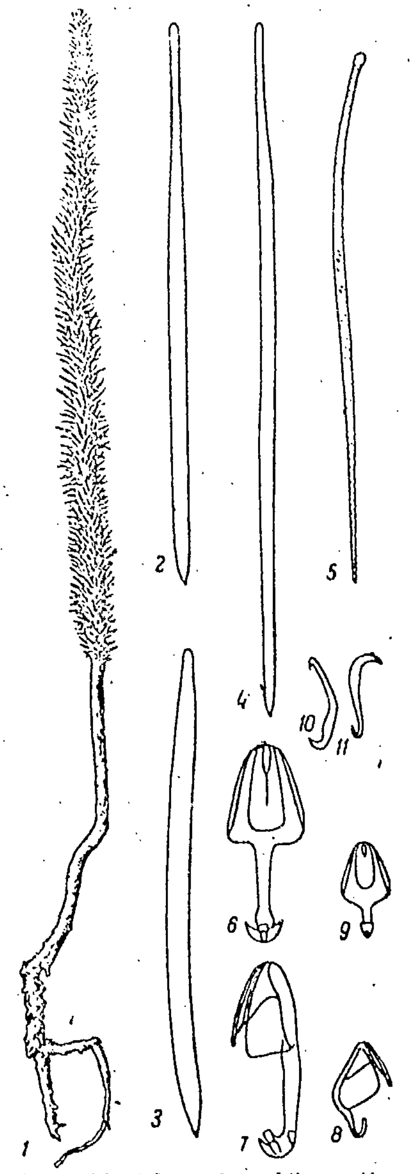


Рис. 28. *Asbestopluma bihamatifera* (Cartor).

1 — внешний вид губки (×1); *2—4* — стили и субтилостили (×80); *5* — тилостиль (×320); *6, 7* — хелы разноконечные, пальматовидные, большие (×400); *8, 9* — хелы разноконечные, пальматовидные, малые (×950); *10, 11* — сигмы (×480).

Fig.28. Asbestopluma bihamatifera (Carter).

1-external appearance of the sponge (X 1); 2-4- styli and subtylostyli(X80) 5-tylostylus(XX320); 6,7-large apicall asymmetrical palmate chelae(X400); 8,9 small apically asymmetrical palmate chelae(X950); 10,11-sigmas (X480).

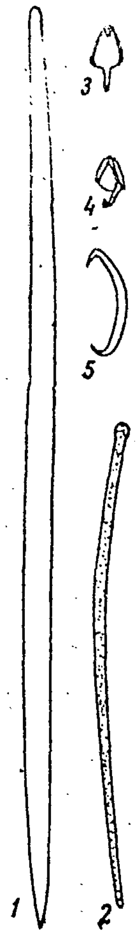


Рис. 29. *Asbestopluma ramosa* Koltun.

1 — стиль (×120) 2 — тилостиль (×400); 3, 4 — хелы разноконечные, пальматовидные (×400) 5 — сигма (×400)

Fig.29. Asbestopluma ramosa Koltun.

1-stylus(X120);2-tylostylus (X400); 3,4-apically asymmetrical palmate chelae(X400); 5-sigma(X400).

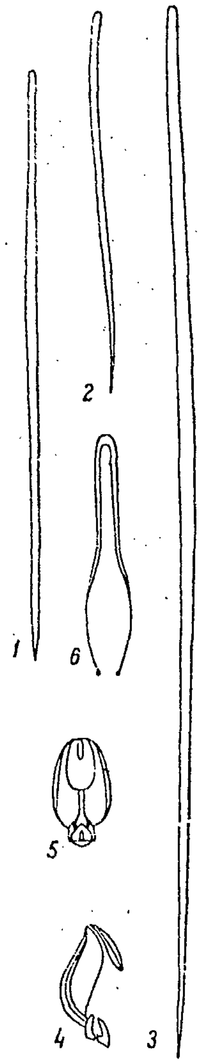


Рис. 30. *Asbestopluma lycopodium* (Levinsen).

1—3 — стили (×80); 4, 5 — хелы разноконечные, пальматовидные (×800); 6 — шпилька (×480).

Fig.30. Asbestopluma lycopodium (Levinsen).

1-3-styli(X80); 4,5-apically asymmetrical palmate chelae(X800); 6-forceps(X480).

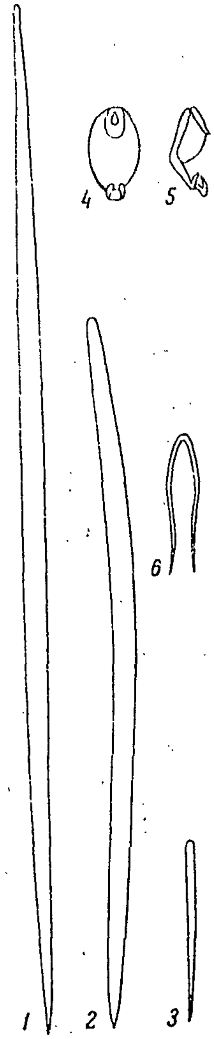


Рис. 31. *Asbestopluma gracilis* Koltun.

1, 2 — стили большие (×75); 3 — стиль малая (×75); 4, 5 — хелы разноконечные, пальматовидные (×750); 6 — шпилька (×750).

Fig.31. Asbestopluma gracilis Koltun.

1,2-large styli(X75); 3-small stylus(X75); 4,5-apically asymmetrical palmate chelae (X750); 6-forceps(X750).

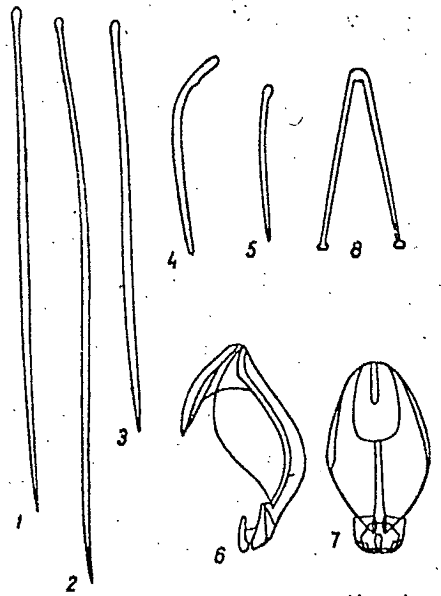


Рис. 32. *Asbestopluma cupressiformis* (Carter).

1—3 — субтилостили и стили (×80); 4, 5 — субтилостили (×480); 6—7 — хелы разноконечные, пальматовидные (×1000); 8 — шпилька (×480).

Fig.32. Asbestopluma cupressiformis (Carter).

1-3-subtylostyli and styli(X80); 4,5-subtylostyli(X480); 6-7-apically asymmetrical palmate chelae (X1000); 8-forceps.

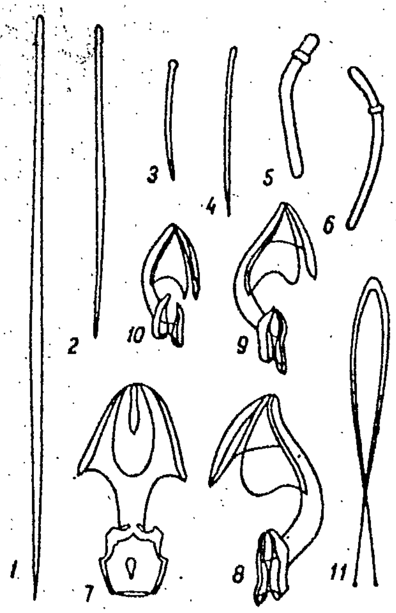


Рис. 33. *Asbestopluma infundibulum* (Levinsen).

1—6 — стили и субтилостили (×80); 7—10 — хелы разноконечные, пальматовидные (×1000); 11 — шпилька (×480).

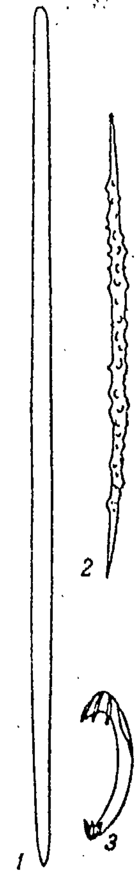


Рис. 34. *Cladorhiza arctica* Burton.

1 — стиль (×80); 2 — акантокс (×320); 3 — разноконечный якорек (×400).

Fig.34. Cladorhiza arctica Burto

1-stylus(X80);2-acanthoxus(X320); 3-apically asymmetrical small ancora((X400).

Fig.33. Asbestopluma infundibulu (Levinsen).

1-6-styli and subtylostyli(X80); 7-10-apically asymmetrical palma chelae(X 1000); 11-forceps(X 480)

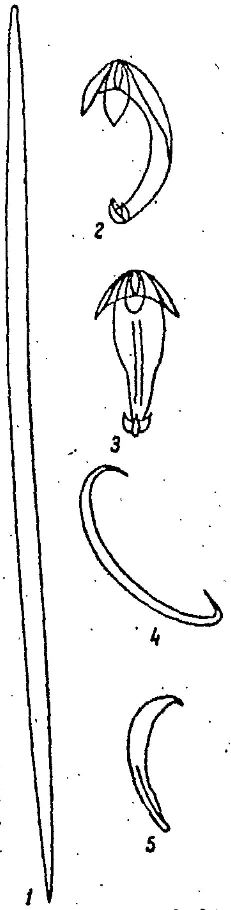


Рис. 35. *Cladorhiza bathycrinoides* Koltun.

1 — стиль (×75); *2, 3* — якорьки разноконечные, трехзубчатые (×400); *4* — сигма большая (×350); *5* — сигма серповидная (×350).

<u>Fig.35.</u> <u>Cladorhiza</u> <u>bathycrinoides</u> Koltun.

1-stylus(X75);2,3-apically asymmetrical tridentate ancorae(X400); 4-large sigma(X350); 5- crescent-shaped sigma (X350).

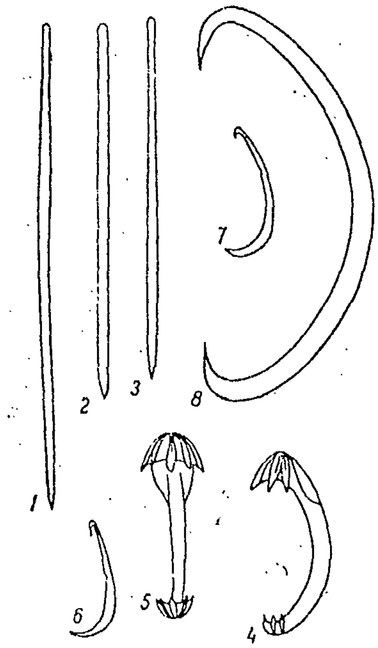


Рис. 36. *Cladorhiza gelida* Lundbeck.

1—3 — стили (×80); *4, 5* — якорьки разноконечные (×600); *6, 7* — сигмы серповидные (×300); *8* — сигма большая (×300).

<u>Fig.36.</u> <u>Cladorhiza</u> <u>gelida</u> Lundbeck.

1-3-styli(X80); 4,5- apically asymmetrical ancorae(X600); 6,7- crescent-shaped sigma (X300); 8-large sigma(X300).

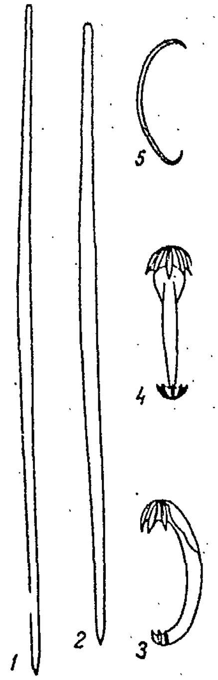


Рис. 37. *Cladorhiza tenuisigma* Lundbeck.

1, 2 — стили (×80); *3, 4* — якорьки разноконечные (×600); *5* — сигма (×300).

Fig.37.Cladorhiza tenuisigma Lundbeck.

1,2-styli(X80); 3,4-apically asymmetrical ancorae(X600); 5-sigma(X300).

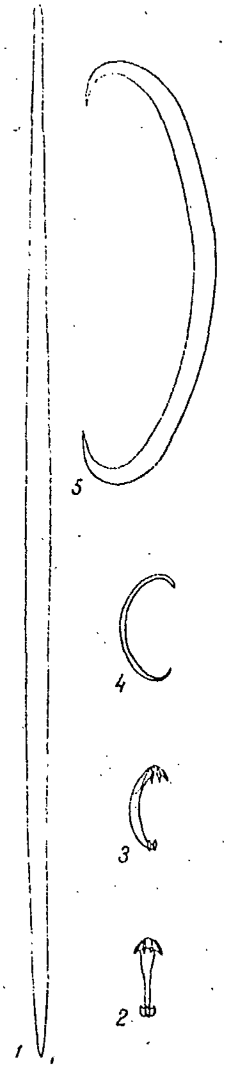


Рис. 38. *Cladorhiza rectangularis* Ridley et Dendy.

1 — стиль (×75); *2, 3* — якорьки равноконечные (×450); *4* — сигма малая (×300); *5* — сигма большая (×300).

Fig.38. Cladorhiza rectangularis Ridley et Dendy.

1-stylus(X75); 2,3-apically asymmetrical ancorae(X450); 4- small sigma (X300); 5-large sigma(X300).

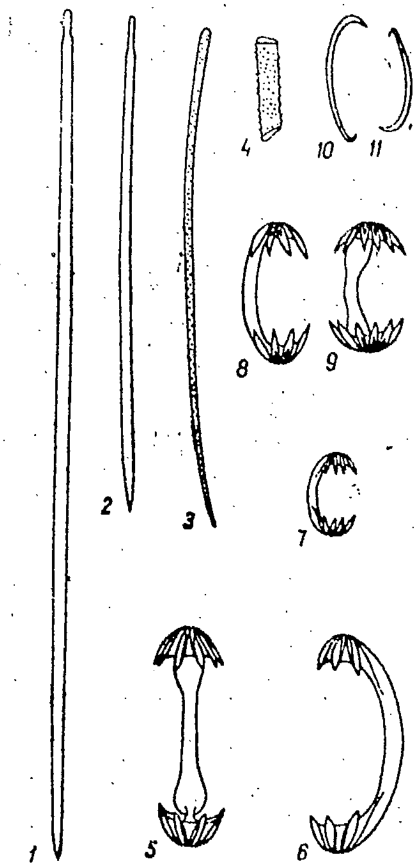


Рис. 39. *Chondrocladia gigantea* (Hansen).

1, 2 — стили (×80); *3* — стиль мелкошиповатая (×160); *4* — часть мелкошиноватой стили (×400); *5, 6* — якорьки равноконечные, шестизубчатые, большие (×280); *7—9* — якорьки равноконечные, шестизубчатые, малые (×480); *10, 11* — сигмы (×480).

Fig.39. Chondrocladia gigantea (Hansen).

1,2-styli(X80); 3-finely acanthaceous stylus(X160); 4-a fragment of a finely acanthaceous stylus(X400); 5,6-apically [redacted] metrical large six-dented ancorae (X280); 7-9- apically symmetrical six-dented small ancorae(X480); 10,11--sigmas(X480).

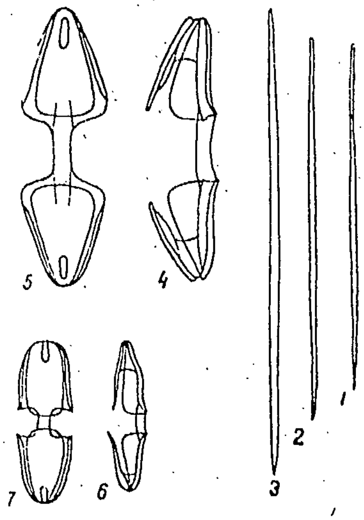


Рис. 40. *Esperiopsis typichela* Lundbeck.

1—3 — стили (×110); *4, 5* — хелы равноконечные, , пальматовидные, большие (×350); *6, 7* — хелы равноконечные, пальматовидные, малые (×525).

Fig.40. Esperiopsis typichela Lundbeck.

1-3-styli(X110); 4,5-large apically symmetrical palmate chelae(X 350); 6,7--small apically symmetrical palmate chelae (X 525).

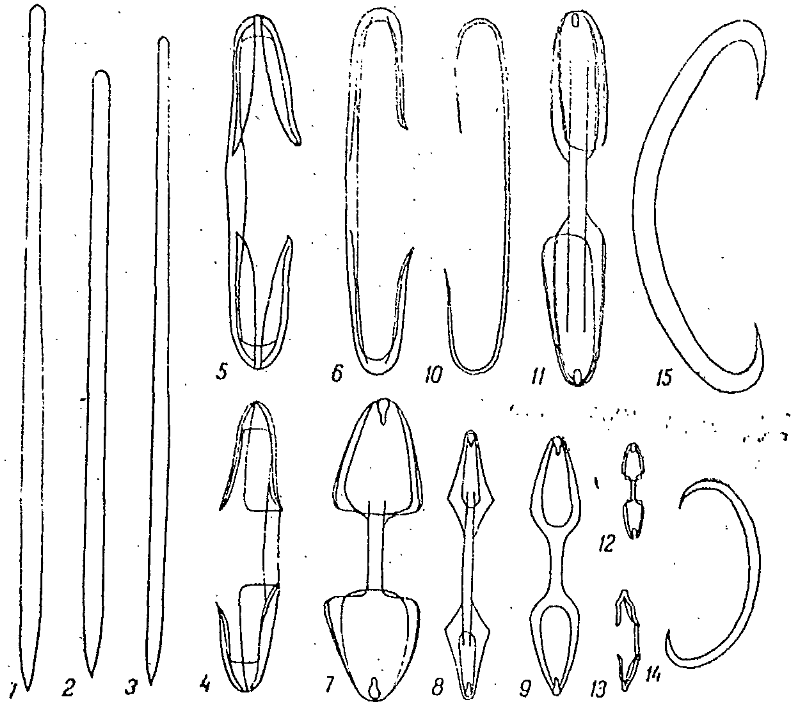


Рис. 41. *Esperiopsis villosa* (Carter).

1—3 — стили (×120); *4—11* — хелы равноконечные, пальматовидные, большие и средние (×400); *12,13* — хелы равноконечные, пальматовидные, малые (×400); *14, 15* — сигмы (×400).

Fig.41. Esperiopsis villosa (Carter).

1-3-styli(X120); 4-11- large and medium-sized apically symmetrical palmate chelae(X400); 12,13- small apically symmetrical palmate chelae(X 400); 14,15- sigmas(X 400).

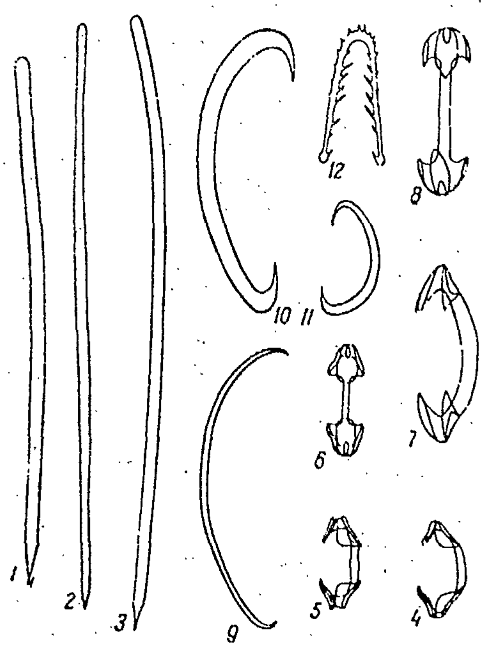


Рис. 42. *Esperiopsis forcipula* Lindbeck.

1—3 — стили (×100); *4—6* — хелы равноконечные, пальматовидные (×800); *7, 8* — хелы дуговидные (×480); *9—11* — сигмы (×480); *12* — шпилька (×800).

Fig.42. Esperiopsis forcipula Lindbeck.

1-3-styli (X100); 4-6- apically symmetrical palmate chelae(X800); 7,8-arcuate chelae (X480); 9-11-sigmas(X480); 12-forceps(X800).

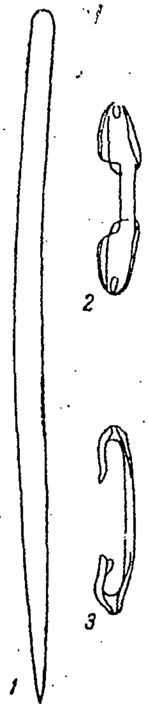


Рис. 43. *Esperiopsis stipula* Koltun.

1 — стиль (×95); *2*, *3* — хелы равноконечные, пальматовидные (×600).

Fig.43.Esperiopsis stipula Koltun.

1-stylus(X95); 2,3-apically symmetrical palmate chela(X600).

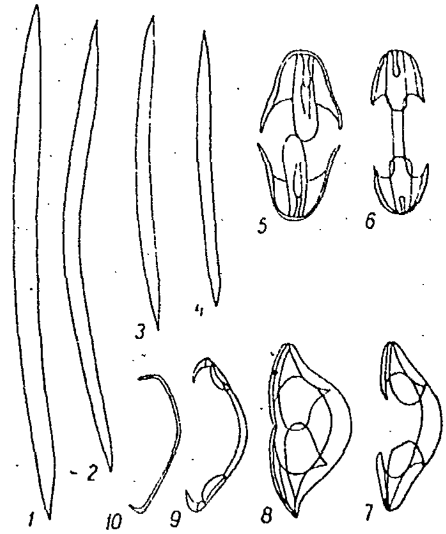


Рис. 45. *Homoeodictya flabelliformis* (Hansen).

1, *2* — оксы большие (×100); *3*, *4* — оксы дермальные, малые (×100); *5*—*10* — хелы дуговидные (×480).

Fig.45. Homoeodictya flabelliformis(Hansen). 1,2-large oxi(X100); 3,4- small dermal oxi (X 100); 5-10-arcuate chelae(X 480).

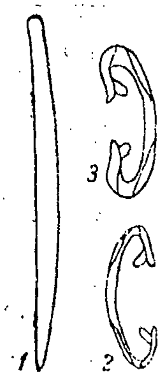


Рис. 44. *Esperiopsis digitata* (Miklucho-Maclay).

1 — стиль (×130); *2*, *3* — хелы равноконечные, пальматовидные (×525).

Fig.44. Esperiopsis digitata (Miklucho-Maclay). 1-stylus (X130); 2,3-apically symmetrical palmate chelae(X525).

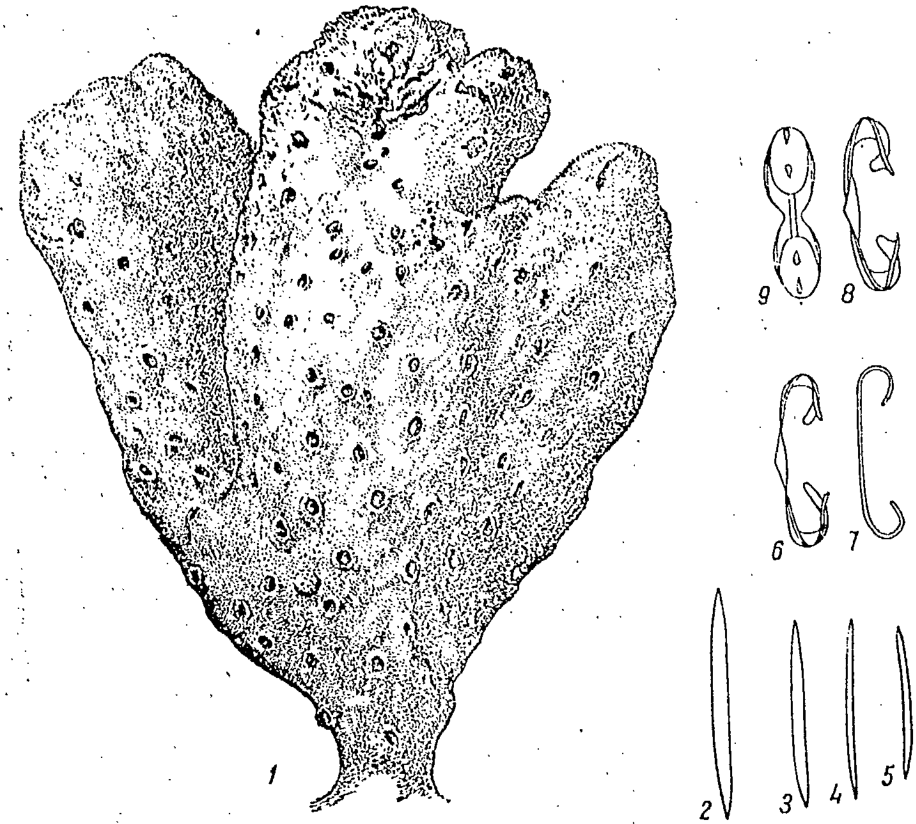


Рис. 46. *Homoeodictya palmata* (Johnston).
1 — внешний вид губки (×35); 2—5 — оксы (×95); 6—9 — хелы равноконечные, пальматовидные (×600).

Fig.46. Homoeodictya palmata (Johnston).

1-exterhal appearance of the sponge(X 35); 2-5- oxi (X 95); 6-9- apically symmetrical palmate chelae (X 600).

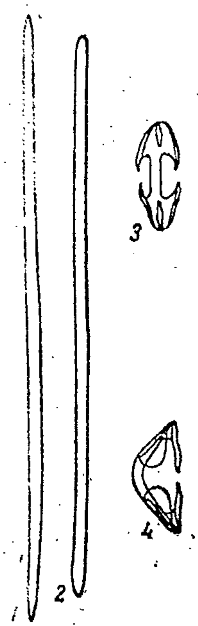


Рис. 47. *Homoeodictya pulviliformis* Koltun.
1 — торнота (×160);
2 — стронгила (×160);

Fig.47. Homoeodictya pulviliformis Koltun.

1-tornotus (X 160); 2-strongylus (X 160)

3,4- arcuate chelae (X 400).

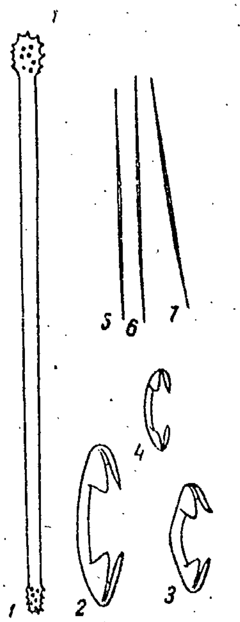


Рис. 48. *Homoeodictya ciocalyptoides* (Burton).

1 — тилота (×280); 2—4 — хелы дуговидные (×400); 5—7 — микрооксы (×320).

Fig.48. Homoeodictya ciocalyptoides (Burton). 1-tylotus (X 280); 2-4-arcuate chelae (X 400); 5-7-microxi (X 320).

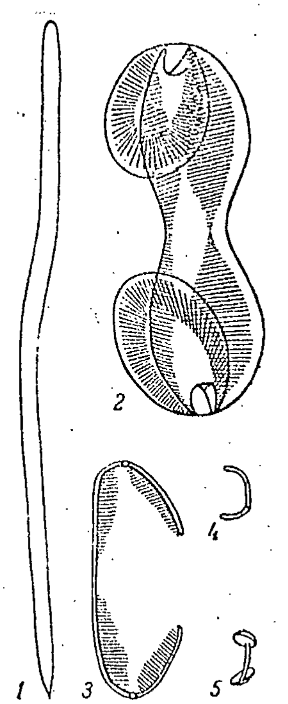


Рис. 49. *Guitarra fimbriata* Carter.

1 — торнотостиль (×120); 2, 3 — плакохелы (×400); 4, 5 — бипоциллы (×400).

Fig.49. Guitarra fimbriata Carter. 1-tornotostylus (X 120); 2,3- placochelae (X 400); 4,5- bipocilli (X 400).

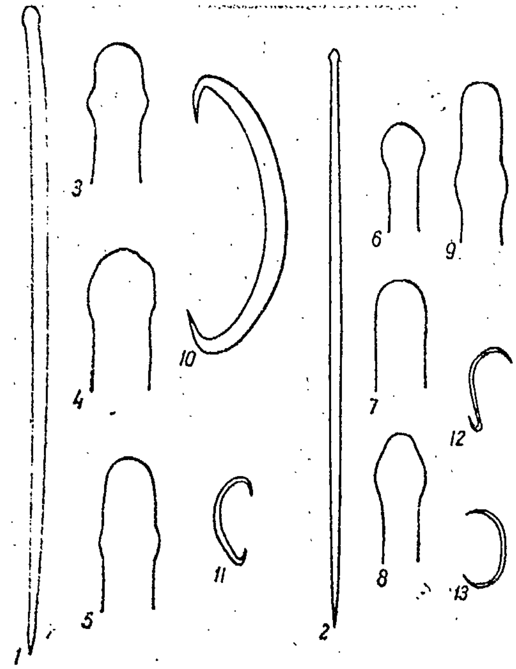


Рис. 50. *Tylodesma rosea* (Fristedt).
1, 2 — тилостили (×120); 3—9 — базальные концы тилостилей (×480); 10—13 — сигмы (×480).

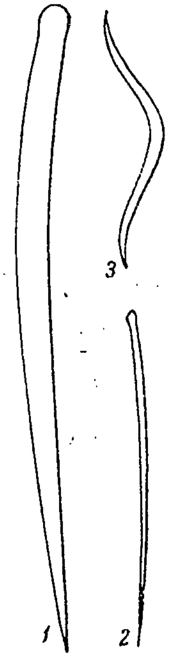


Рис. 51. *Tylodesma pennata* (Lambe).
1 — стиль (×200); 2 — стиль малая (×200); 3 — дужка (×300).

Fig.50. Tylodesma rosea (Fristedt).
1,2-tylostyli (X120); 3-9-basal ends of tylostyli (X480); 10-13-sigmas (X 480).

Fig.51. Tylodesma pennata (Lambe).
1-stylus (X 200); 2-small stylus(X 200); 3-toxus(X300).

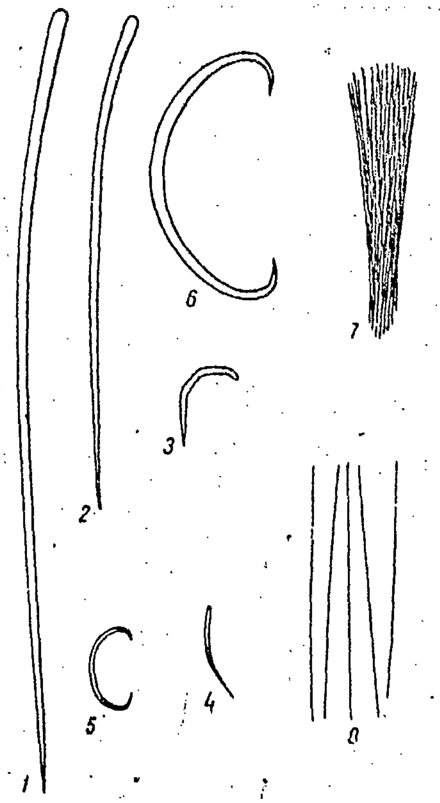


Рис. 52. *Biemna variantia capillifera* (Levinsen).

1, 2 — стили (×95); *3, 4* — комматы (×450); *5* — сигма малая (×450); *6* — сигма большая (×460); *7, 8* — рафиды и триходрагмы (×150).

Fig.52. Biemna variantia capillifera (Levinsen).

1,2-styli (X95); 3,4-commatas (X450); 5- small sigma(X450); 6-large sigma(X460); 7,8-rhaphidii and trichodragmae(X150).

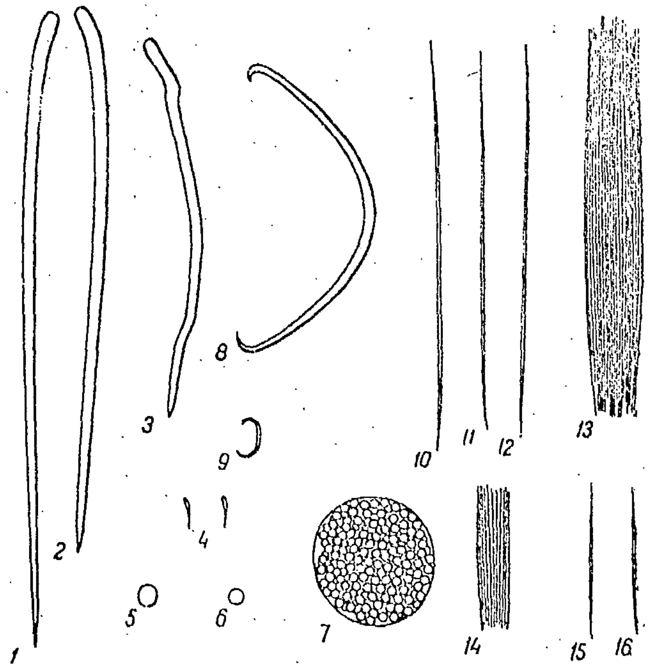


Рис. 53. *Biemna variantia groenlandica* Fristedt.

1—3 — стили (×120); *4* — комматы (×400); *5, 6* — шарики (×950); *7* — шарики (×480); *8* — сигма большая (×320); *9* — сигма малая (×480); *10—13* — рафиды и триходрагма (×200); *14—16* — триходрагма и рафиды (×160).

Fig.53. Biemna variantia groenlandica Fristedt.

1-3-styli(X120); 4-commatas(X400); 5,6- granules (X950); 7-granules(X480); 8-large sigma(X320); 9-small sigma(X480); 10-13-rhaphidii and trichodragma(X200); 14-16-trichodragma and rhaphidii(X160).

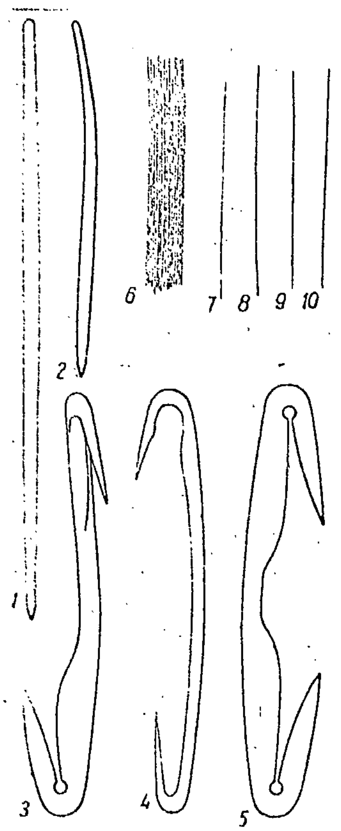


Рис. 54. *Hamacantha implicans* Lundbeck.

1, 2 — стили (×95); 3—5 — дианцистры (×400); 6 — триходрагма (×190); 7—10 — рафиды (×190).

Fig.54. Hamacantha implicans Lundbeck.

1,2-styli(X95); 3-5-diancisters (X400); 6-trichodragma(X190); 7-10-rhaphidii(X190).

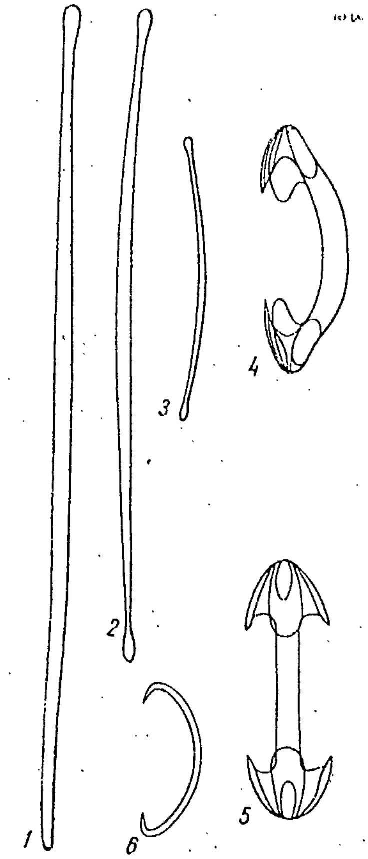


Рис. 55. *Coelosphaera appendiculata* Carter.

1—3 — тилоты (×95); 4, 5 — хелы дуговидные (×600); 6 — сигма (×225).

Fig.55. Coelosphaera appendiculata Carter.

1-3-tyloti(X95); 4,5-arcuate chelae(X600); 6-sigma(X225).

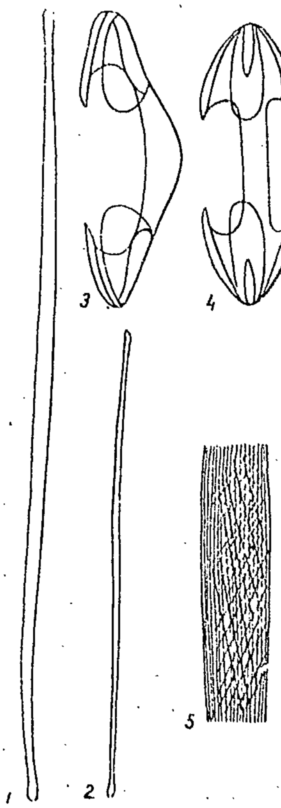


Рис. 56. *Coelosphaera physa* (O. Schmidt).

1, 2 — стронгилы (×95); *3, 4* — хелы дуговидные (×600); *5* — триходрагма (×260).

Fig.56. **Coelosphaera physa** (O.Schmidt).

1,2-strongyli(X95); 3,4-arcuate chelae(X600); 5-trichodragma(X260).

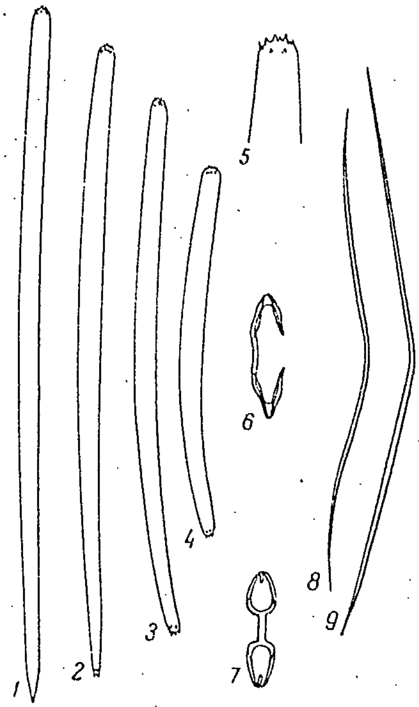


Рис. 57. *Cornulum textile* Carter.

1 — стиль (×160); *2—4* — стронгилы (×120); *5* — конец стронгилы (×400); *6, 7* — хелы пальматовидные (×800); *8, 9* — дужки (×240).

Fig.57. Cornulum textile Carter.

1-stylus(X160); 2-4-strongyli(X120); 5-point of a strongylus(X400);6,7-palmate chelae(X800); 8,9-toxi(X240).

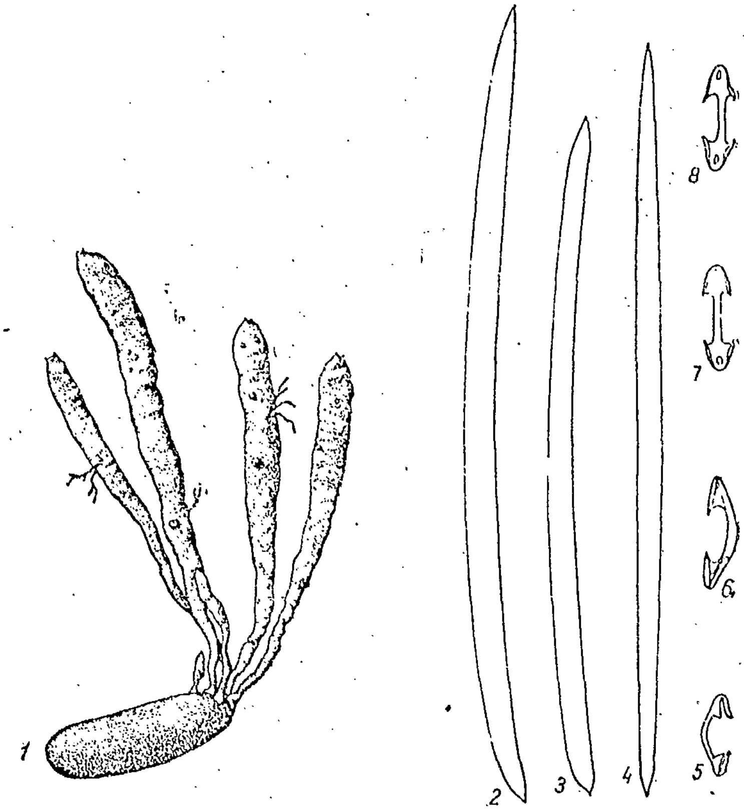


Рис. 58. *Cornulum tubiformis* Burton.
1 — внешний вид губки (×1); 2—4 — торноты (×280); 5—8 — хелы дугообразные (×400).

<u>Fig.58.</u> <u>Cornulum</u> <u>tubiformis</u> Burton.

1-external sppearance of the sponge(X 1); 2-4-tornoti(X280); 5-8-arcuate chelae(X400).

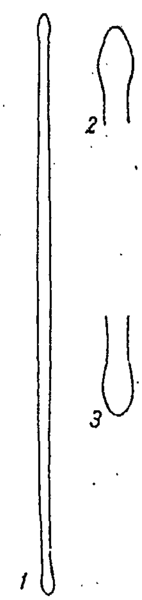


Рис. 59. *Inflatella globosa* Burton.
1 — тилота (×200); 2, 3 — концы тилот (×505).

<u>Fig.59.</u> <u>Inflatella</u> <u>globosa</u> Burton.

1-tylotus(X200); 2,3-ends of tyloti (X505).

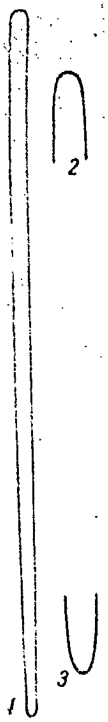


Рис. 60. *Inflatella rhodus* (Hentschel).
1 — стронгила (×190);
2, 3 — концы стронгилы (×375).

<u>Fig.60.</u> <u>Inflatella</u> <u>rhodus</u> (Hentschel).

1-strongylus(X190); 2,3-points of a strongylus(X 375).

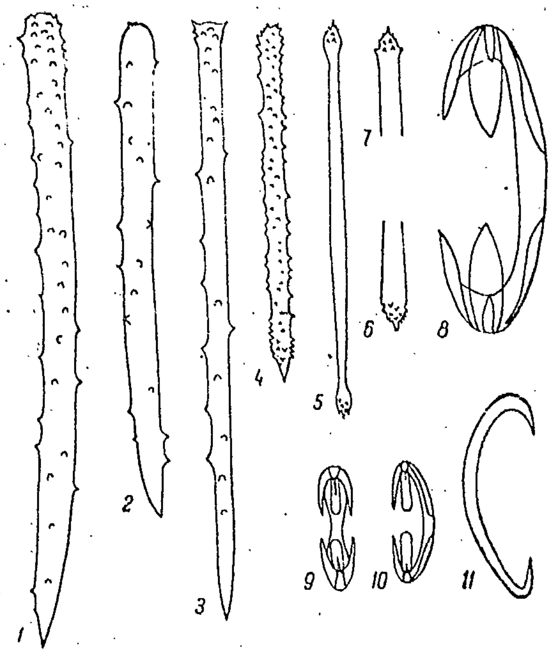


Рис. 61. *Myxilla incrustans incrustans* (Johnston).
1—4 — акантостили (×200); 5 — торнота (×200); 6, 7 — концы торноты (×400); 8 — якорек большой (×400); 9, 10 — якорьки малые (×400); 11 — сигма (×400).

<u>Fig.61.</u> <u>Myxilla</u> <u>incrustans</u> <u>incrustans</u> (Johnston).

1-4-acanthostyli(X200); 5-tornotus(X200); 6,7-ends of a tornotus(X400); 8-large ancora(X400); 9,10-small ancorae(X400); 11-sigma(X400).

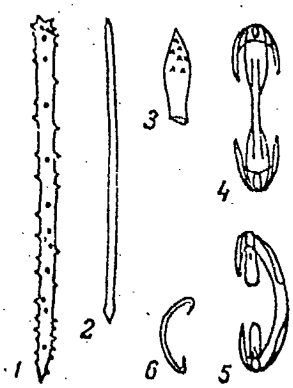


Рис. 62. *Myxilla incrustans* var. *perspinosa* Lundbeck.
1 — акантостиль (×250); 2 — торнота (×250); 3 — конец торноты (×750); 4, 5 — якорьки (×500); 6 — сигма (×500).

<u>Fig.62.</u> <u>Myxilla</u> <u>incrustans</u> <u>var.</u> <u>perspinosa</u> Lundbeck.

1-acanthostylus(X250); 2-tornotus(X250); 3-point of a tornotus(X750); 4,5-ancorae (X500); 6-sigma(X500).

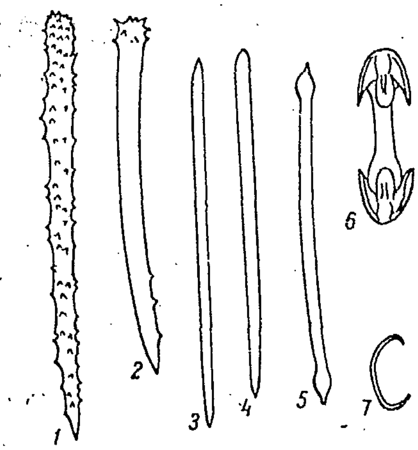


Рис. 63. *Myxilla incrustans behringensis* Lambe.

1, 2 — акантостили (×200); 3—5 — торноты (×200); 6 — якорек (×400); 7 — сигма (×400).

Fig.63. Myxilla incrustans behringensis Lambe.

1,2-acanthostyli(X200); 3-5-tornoti(X200); 6-ancora(X400); 7-sigma(X400).

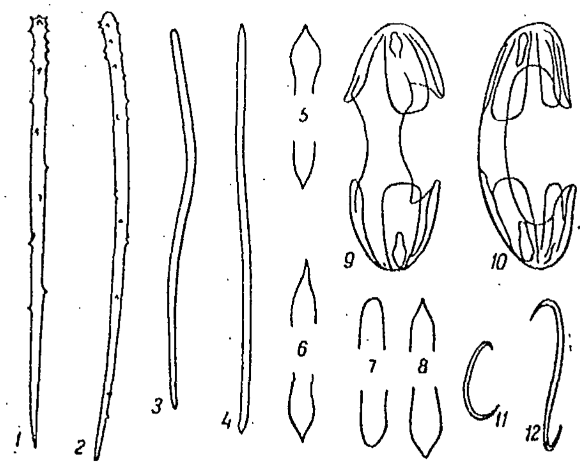


Рис. 64. *Myxilla incrustans flexitornota* Rezvoj.

1, 2 — акантостили (×200); 3, 4 — торноты (×200); 5—8 — концы торнот (×400); 9, 10 — якорьки большие (×400); 11, 12 — сигмы (×400).

Fig.64. Myxilla incrustans flexitornota Rezvoj.

1,2-acanthostyli(X200); 3,4-tornoti(X200); 5-8-the ends of tornoti(X400); 9,10-large ancorae(X400); 11,12-sigmas(X400).

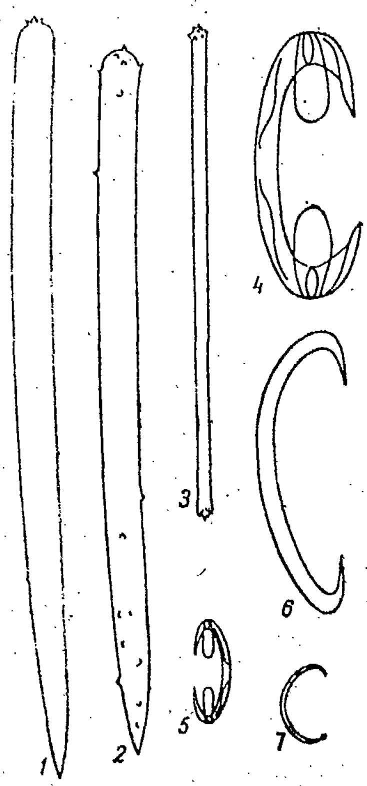


Рис. 65. *Myxilla incrustans gigantea*, ssp. n.

1, 2 — стили шиповатые (×200); 3 — торноты (×200); 4 — якорек большой (×400); 5 — якорек малый (×400); 6, 7 — сигмы (×400).

Fig.65. Myxilla incrustans gigantea, ssp.n.

1,2-acanthaceous styli(X200); 3-tornoti(X 200); 4-large ancora(X400); 5-small ancora (X400); 6,7-sigmas(X400).

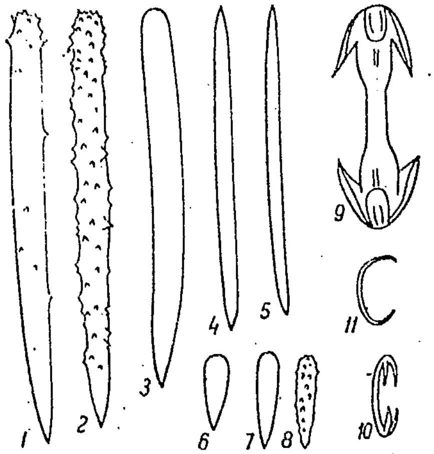


Рис. 66. *Myxilla parasitica* Lambe.

1—3 — акантостили и стили (×200); *4, 5* — торноты (×200); *6—8* — стили маленькие (×200); *9* — якорек большой (×400); *10* — якорек малый (×400); *11* — сигма (×400).

Fig.66. Myxilla parasitica Lambe.

1-3-acanthostyli and styli (X200); 4,5-tornoti(X200); 6-8-small styli(X200); 9- large ancora(X400); 10-small ancora (X400); 11-sigma(X400).

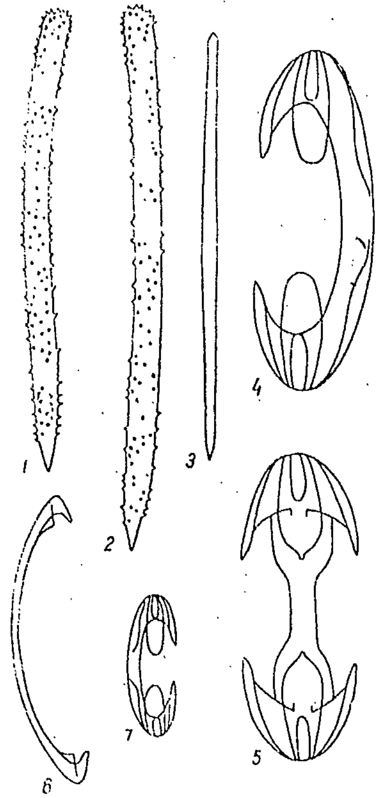


Рис. 67. *Myxilla fimbriata* (Bowerbank).

1, 2 — акантостили (×190); *3* — торнота (×190); *4, 5* — якорьки большие (×375); *6* — недоразвитый якорек (×375); *7* — якорек малый (×375).

Fig.67. Myxilla fimbriata (Bowerbank)

1,2-acanthostyli(X190); 3-tornotus (X190); 4,5-large ancorae(X375); 6-an underdeveloped ancora(X375); 7-small ancora(X375).

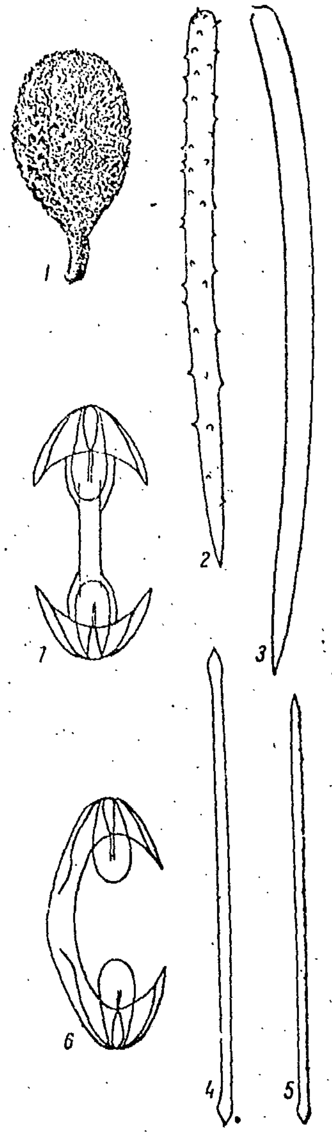


Рис. 68. *Myxilla pedunculata* Lundbeck.

1 — внешний вид губки (×1); 2, 3 — акантостиль и стиль (×190); 4, 5 — торноты (×190); 6, 7 — якорьки (×375).

Fig.68. Myxilla pedunculata Lundbeck. 1-external appearance of the sponge (X 1); 2,3-acanthostylus and stylus (X190); 4,5-tornoti(X190); 6,7-ancorae (X375).

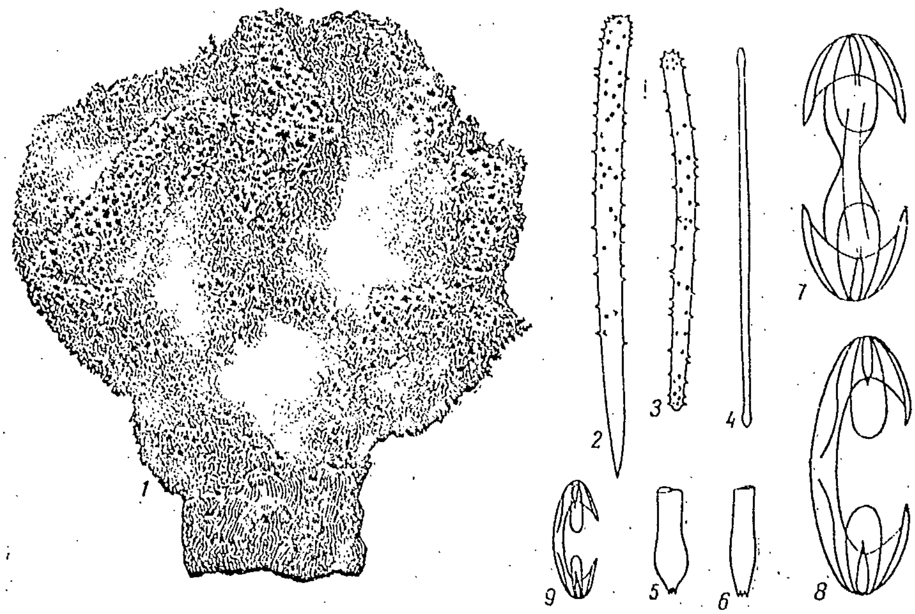


Рис. 69. *Myxilla brunnea* Hansen.

1 — внешний вид губки (×½); 2 — акантостиль (×190); 3 — акантострогила (×190); 4 — торнота (×190); 5, 6 — концы торноты (×560); 7, 8 — якорьки трехзубчатые, большие (×375); 9 — якорек малый (×375).

Fig.69. Myxilla brunnea Hansen .

1-external appearance of the sponge(X ½); 2-acanthostylus(X190); 3-acanthostrongylus(X190) 4-tornotus(X190); 5,6-the ends of a tornotus(X560); 7,8-large tridentate ancorae(X375); 9-small ancora(X375).

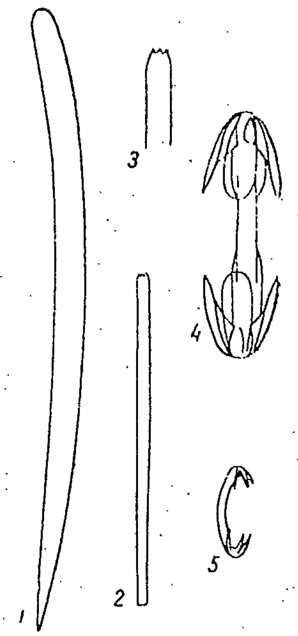


Рис. 70. *Myxilla elastica* Koltun.

1 — стиль (×190); 2 — стронгила (×190); 3 — конец стронгилы (×300); 4 — якорьки трехзубчатые (×300); 5 — якорьки ко-ротко[зубчатые] (×300).

Fig.70. Myxilla elastica Koltun.

1-stylus(X190); 2-strongylus(X 190); 3-point of a strongylus (X300); 4-tridentate ancorae(X 300); 5- brevidentate ancorae(X 300).

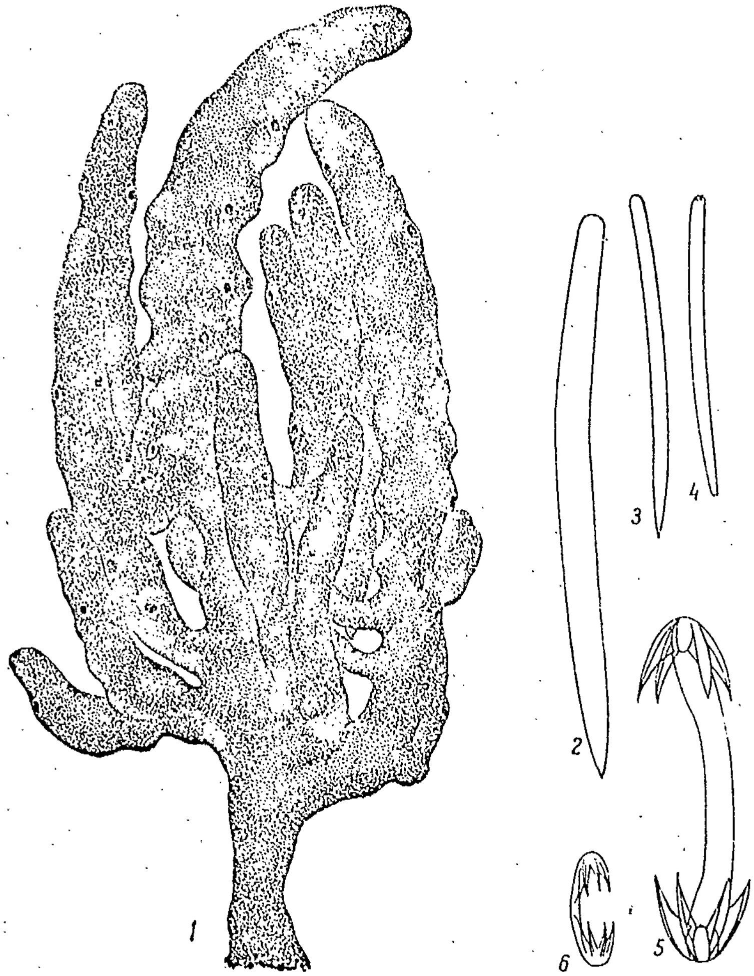


Рис. 71. *Stelodoryx alascensis* (Lambe).

1 — внешний вид губки (×1/2); 2 — стиль основного скелета (×150); 3, 4 — стиль и стронгила дермального скелета (×150); 5 — якорек многозубчатый, большой (×375); 6 — якорек малый (×375).

Fig.71. Stelodoryx alascensis (Lambe).

1-external appearance of the sponge (X $\frac{1}{2}$); 2-stylus of the main skeleton(X150); 3,4-stylus and strongylus of the dermal skeleton(X150); 5-multidentate large ancora(X375); 6-small ancora(X375).

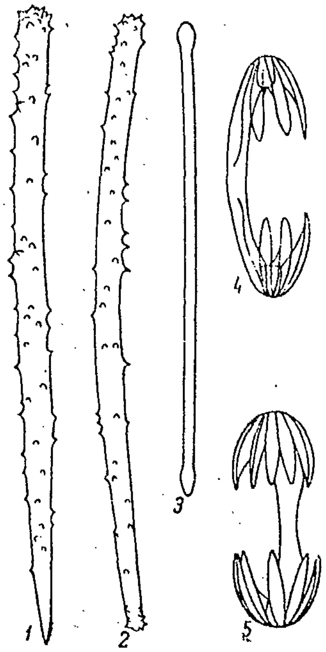


Рис 72. *Stelodoryx flabellata* Burton, sp. n.
1 — акантостиль (×190); 2 — акантостронгила (×190); 3 — тилота (×190); 4, 5 — якорьки многозубчатые (×375).

Fig.72. Stelodoryx flabellata Burton, sp.n.
1-acanthostylus(X190); 2-acanthostrongylus(X190); 3-tylotus(X190); 4,5-multidentate ancorae(X375).

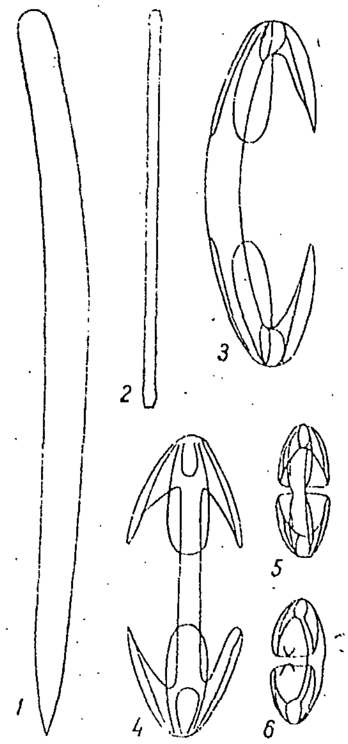


Рис. 75. *Melonanchora kobjakovae* Koltun.
1 — стиль (×190); 2 — стронгила (×190); 3, 4 — якорьки трехзубчатые (×450); 5, 6 — сферанкоры (×450).

Fig.75. Melonanchora kobjakovae Koltun.
1-stylus(X190); 2-strongylus(X190); 3,4-tridentate ancorae(X450); 5,6-spherancorae(X450).

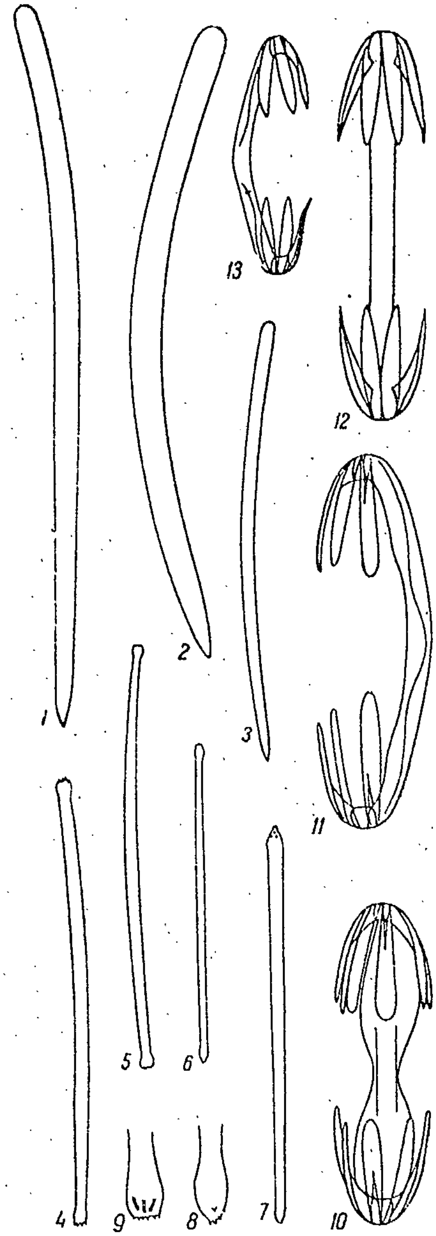


Fig. 73 Рис. 73. *Stelodoryx pluridentata* (Lundbeck).

1—3 — стили (×190); *4—7* — субтилоты (×190); *8, 9* — концы субтилот; *10—13* — якорьки многозубчатые (×375).

1-3-styli(X190); 4-7-subtyloti (X190); 8,9-points of subtyloti; 10-13-multidentate ancorae(X375).

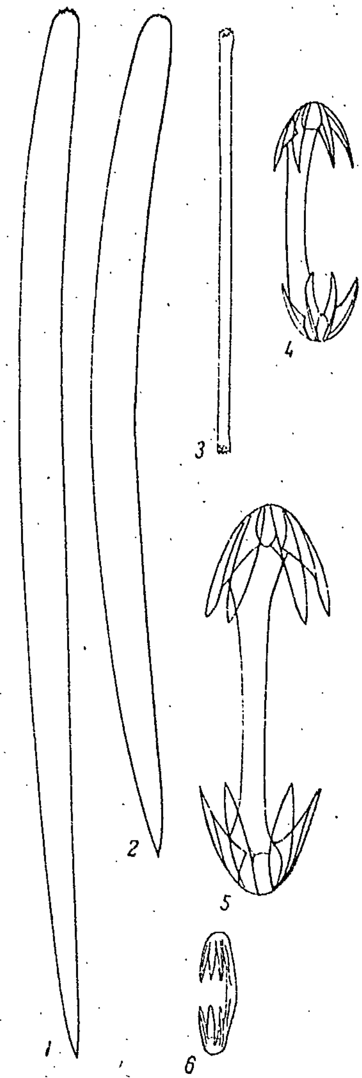


Рис. 74. *Stelodoryx toporoki* Koltun.

Fig. 74 *1, 2* — стили (×95); *3* — тилота (×190); *4* — якорек большой (×260); *5* — якорек большой (×190); *6* — якорек малый (×350).

1,2-styli(X95); 3-tylotus(X190); 4-large ancora(X260); 5-large ancora(X190); 6-small ancora(X350).

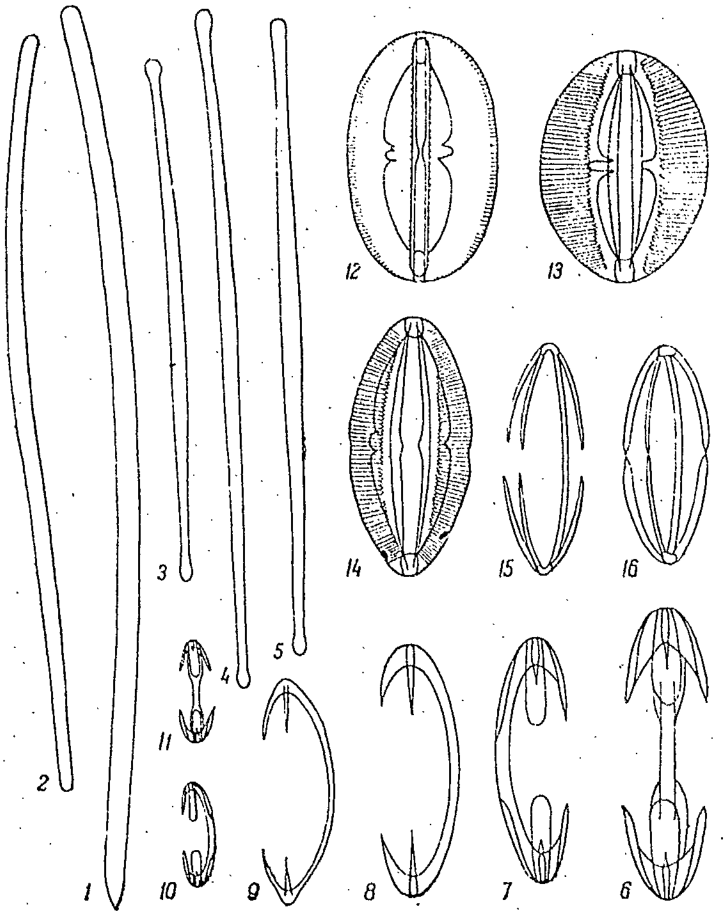


Рис. 76. *Melonanchora elliptica* Carter.

1 — стиль (×95); 2 — стронгила (×95); 3—5 — тилоты (×95); 6—9 — якорьки трехзубчатые, большие (×450); 10, 11 — якорьки малые (×450); 12—16 — сфераикоры (×450).

Fig.76. Melonanchora elliptica Carter.

1-stylus(X95); 2-strongylus(X95); 3-5-tyloti(X95); 6-9-large tridentate ancorae(X450); 10,11-small ancorae(X450); 12-16-spherancorae(X450).

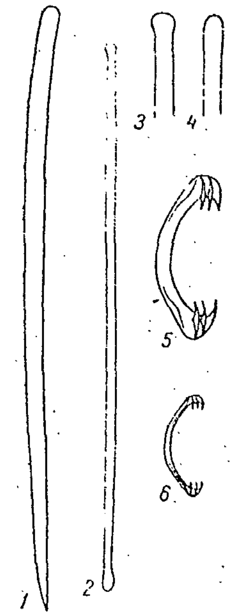


Рис. 77. *Pseudomyxilla lissostyla*, sp. n.

1 — стиль (×200); 2 — тилота (×200); 3, 4 — концы тилот (×400); 5 — якорек большой (×560); 6 — якорек малый (×640).

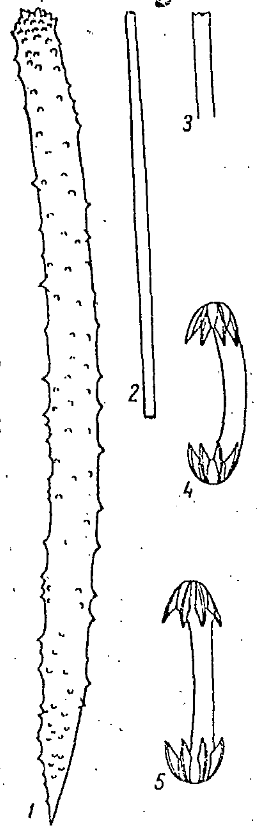


Рис. 78. *Pseudomyxilla vitiazi* Koltun.

1 — акантостиль (×150); 2 — стронгила (×150); 3 — конец стронгилы (×300); 4, 5 — якорьки (×450).

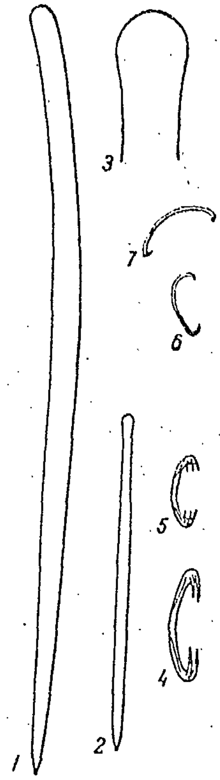


Рис. 79. *Monanchora pulchra* (Lambe).

1 — стиль (×75); 2 — субтилостиль дермального скелета (×75); 3 — базальный конец стиля (×200); 4, 5 — якорьки (×480); 6, 7 — сигмы (×480).

Fig. 77. Pseudomyxilla lissostyla, sp. n. 1-stylus(X200); 2-tylotus(X200); 3,4-ends of tyloti(X400); 5-large ancora(X560); 6-small ancorae(X640).

Fig. 78. Pseudomyxilla vitiazi Koltun. 1-acanthostylus(X150); 2-strongylus(X150); 3-point of a strongylus (X300); 4,5-ancorae(X450).

Fig. 79. Monanchora pulchra (Lambe). 1-stylus(X75); 2-subtylostylus of the dermal skeleton(X75); 3-basal end of a stylus(X200); 4,5-ancorae (X480); 6,7-sigmas(X480).

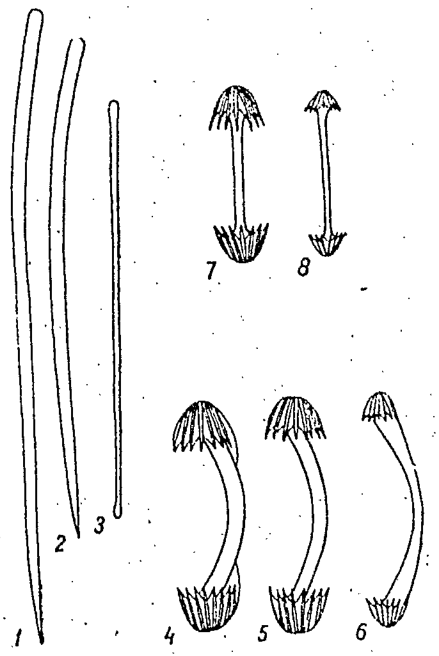


Рис. 80. *Iotrochota rotulancora* Lundbeck.

1, 2 — стили (×150); 3 — тилота (×150); 4—6 — якорьки короткозубчатые (×480); 7, 8 — биротули (×800).

Fig.80. Iotrochota rotulancora Lundbeck.

1,2-styli(X150);3-tylotus(X150); 4-6-brevidentate ancorae(X480); 7,8-birotules(X800).

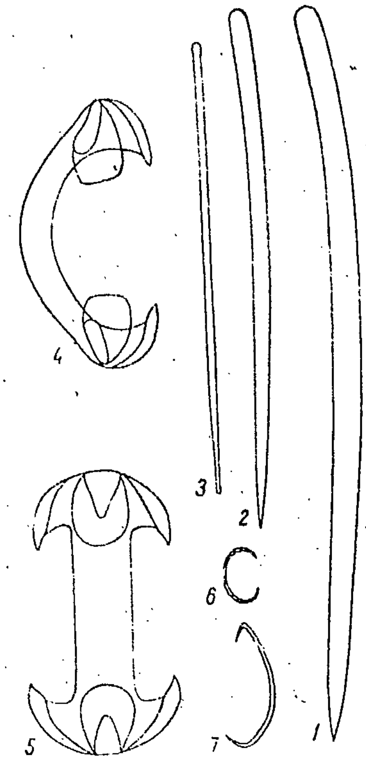


Рис. 81. *Lissodendoryx complicata* (Hansen).

1, 2 стили (×150); 3 — стронгила (×150); 4, 5 — хелы дуговидные (×640); 6, 7 — сигмы (×300).

Fig.81. Lissodendoryx complicata (Hansen).

1,2-styli(X150); 3-strongylus(X150) 4,5-arcuate chelae(X640); 6,7-sigma (X300).

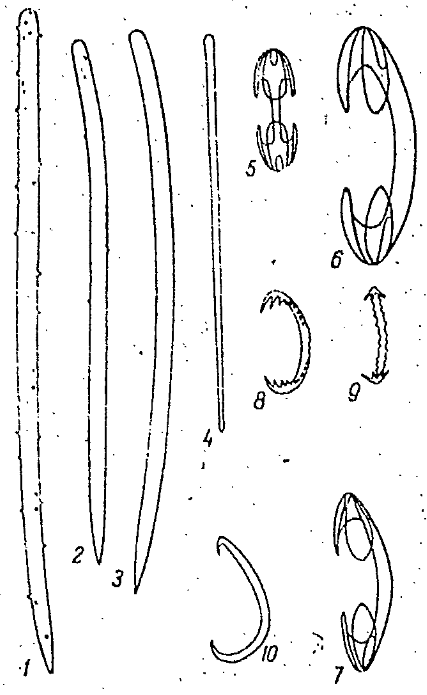


Рис. 82. *Lissodendoryx indistincta* (Fristedt).

1—3 — стили (×150); *4* — стронгила (×150); *5—7* — хелы дуговидные (×600); *8*, *9* — хелы дуговидные, редуцированные (×80); *10* — сигма (×300).

Fig.82. Lissodendoryx indistincta (Fristedt).

1-3-styli(X150);4-strongylus(X150); 5-7-arcuate chelae(X600);8,9-reduced arcuate chelae(X80);10-sigma(X30).

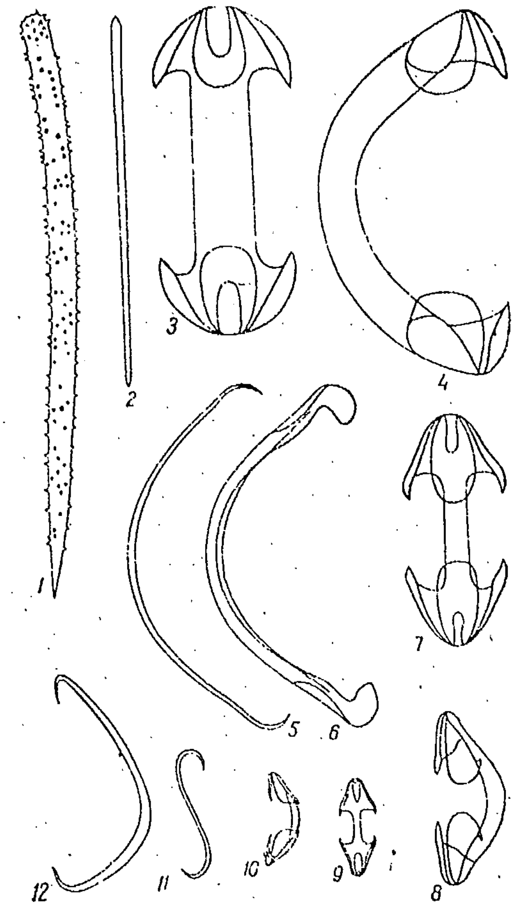


Рис. 84. *Lissodendoryx diversichela* Lundbeck.

1 — акантостиль (×150); *2* — торнота (×150); *3*, *4* — хелы дуговидные, большие (×600); *5*, *6* — хелы дуговидные, недоразвитые (×600); *7*, *8* — хелы дуговидные, средние (×900); *9*, *10* — хелы дуговидные, малые (×900); *11*, *12* — сигмы (×300).

Fig.84. Lissodendoryx diversichela Lundbeck.

1-acanthostylus(X150);2-tornotus(X150); 3,4-large arcuate chelae(X600);5,6-underdeveloped arcuate chelae(X600);7,8-medium-sized arcuate chelae(X900);9,10-small arcuate chelae(X900);11,12-sigmas (X300).

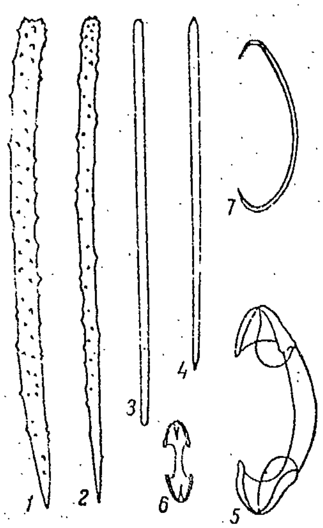


Рис. 83. *Lissodendoryx lundbecki* Topsent.

1, *2* — акантостили (×160); *3*, *4* — торноты (до стронгил; ×160); *5* — хела дуговидная, большая (×360); *6* — хела дуговидная, малая (×360); *7* — сигма (×800).

Fig.83. Lissodendoryx lundbecki Topsent.

1,2-acanthostyli(X160); 3,4-tornoti(to strongyli)(X 160); 5-large arcuate chela(X360);6-small arcuate chela(X360); 7-sigma(X800).

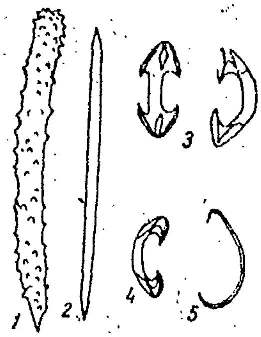


Рис. 85. *Lissodendoryx florida* Koltun.

1 — акантостиль (×160); 2 — торнота (×160); 3, 4 — хелы дуговидные (×320); 5 — сигма (×400).

Fig.85. Lissodendoryx florida Koltun.

1-acanthostylus(X160);2-tornotus(X160); 3,4-arcuate chelae (X320); 5-sigma(X400).

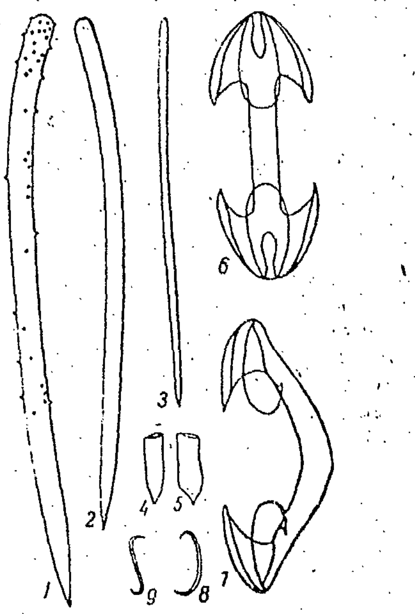


Рис. 86. *Lissodendoryx fragilis* (Fristedt).

1, 2 — стили (×160); 3 — торнота (×160); 4, 5 — концы торнот (×480); 6, 7 — хелы дуговидные (×560); 8, 9 — сигмы (×360).

Fig.86. Lissodendoryx fragilis (Fristedt).

1,2-styli(X160); 3-tornotus(X160); 4,5-ends of tornoti(X480); 6,7-arcuate chelae(X560); 8,9-sigmas(X360).

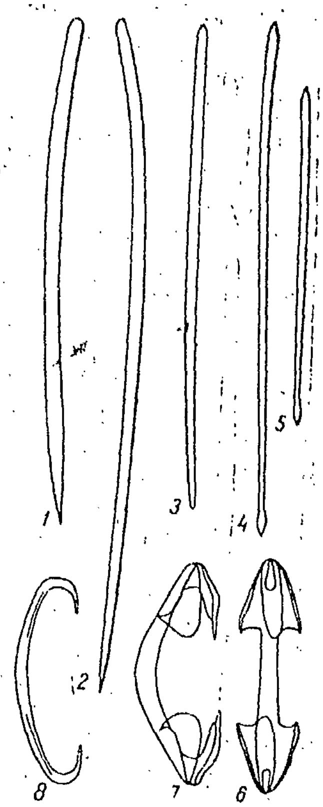


Рис. 87. *Lissodendoryx stipitata* Lundbeck.

1, 2 — стили (×150); 3—5 — торноты (×150); 6—8 — хелы дуговидные (×600).

Fig.87. Lissodendoryx stipitata Lundb

1,2-styli(X150); 3-5-tornoti(X150); 6-8-arcuate chelae(X600).

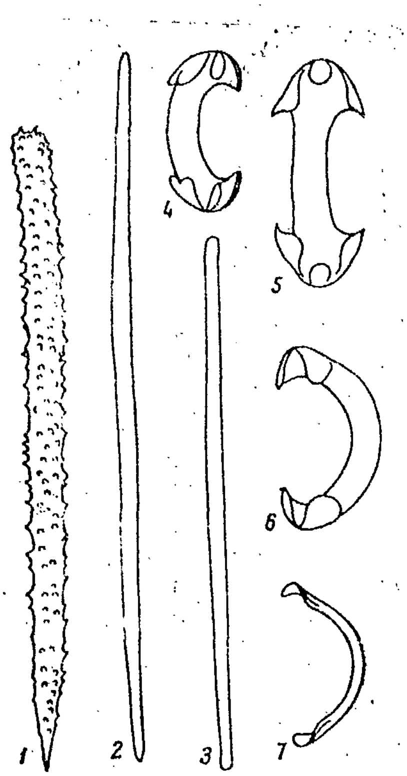


Рис. 88. *Lissodendoryx behringi* Koltun.

1 — акантостиль (×120); 2 — стронгила (×120); 3 — тилота (×120); 4—7 — хелы дуговидные (×450).

Fig. 88. Lissodendoryx behringi Koltun.

1-acanthostylus(X120); 2-strongylus (X120); 3-tylotus(X120); 4-7-arcuate chelae(X450).

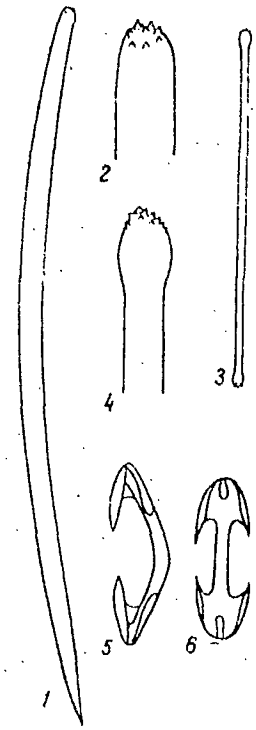


Рис. 89. *Lissodendoryx papillosa* Koltun.

1 — стиль (×150); 2 — базальный конец стиля (×450); 3 — тилота (×150); 4 — конец тилоты (×450); 5, 6 — хелы дуговидные (×640).

Fig. 89. Lissodendoryx papillosa Koltun.

1-stylus(X150); 2-basal end of a stylus(X450); 3-tylotus(X150); 4-point of a tylotus(X450); 5,6-arcuate chelae(X640).

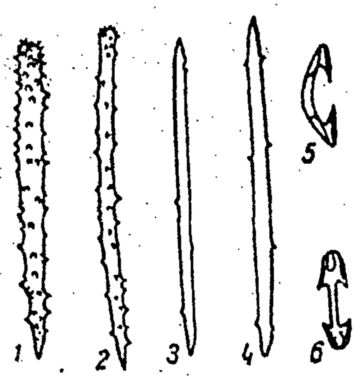


Рис. 90. *Lissodendoryx amaknakensis* (Lambe).

1, 2 — акантостили (×200); 3, 4 — торноты (×200); 5, 6 — хелы дуговидные (×500).

Fig. 90. Lissodendoryx amaknakensis (Lambe).

1,2-acanthostyli(X200);3,4-tornoti (X200); 5,6-arcuate chelae(X500).

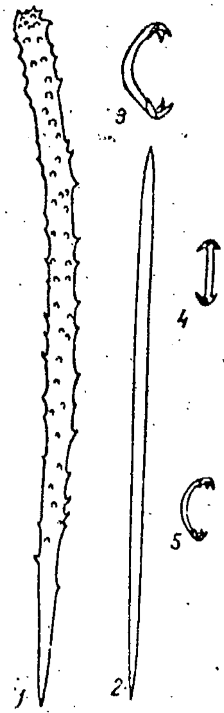


Рис. 91. *Lissodendoryx oxeota* Koltun.

1 — акантостиль (×200); 2 — торнота (×200); 3 — хела дуговидная (×560); 4, 5 — хелы дуговидные (×320).

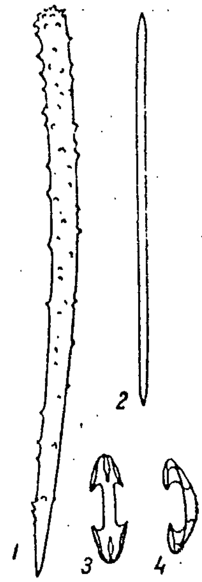


Рис. 92. *Lissodendoryx ivanovi* Koltun.

1 — акантостиль (×240); 2 — торнота (×240); 3, 4 — хелы дуговидные (×480).

Fig.91. Lissodendoryx oxeota Koltun.

1-acanthostylus(X200);2-tornotus (X200); 3-arcuate chelae(X560); 4,5-arcuate chelae(X320).

Fig.92. Lissodendoryx ivanovi Koltun.

1-acanthostylus(X240); 2-tornotus(X 240); 3,4-arcuate chelae(X480).

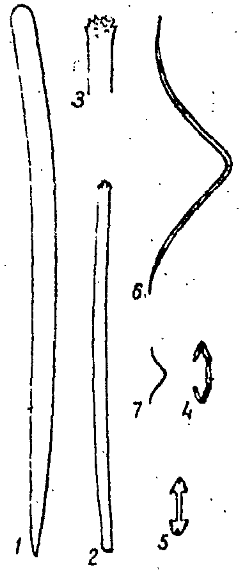


Рис. 93. *Myxichela fragilis* Koltun.

1 — стиль (×150); 2 — стронгила (×150); 3 — конец стронгилы (×400); 4, 5 — хелы пальматовидные (×400); 6, 7 — дужки (×150).

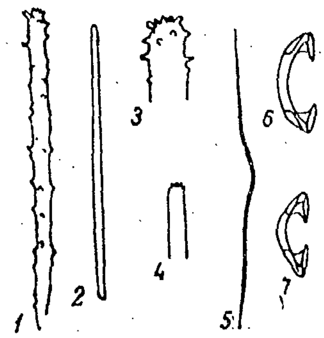


Рис. 94. *Myxichela spirinae* Koltun.

1 — акантостиль (×220); 2 — стронгила (×220); 3 — базальная часть акантостили (×480); 4 — конец стронгилы (×480); 5 — дужка (×220); 6, 7 — хелы дуговидные (×600).

Fig.93. Myxichela fragilis Koltun.

1-stylus(X150); 2-strongylus (X150); 3-point of a strongylus(X400); 4,5-palmate chelae (X400); 6,7-toxi(X150).

Fig.94. Myxichela spirinae Koltun.

1-acanthostylus(X220);2-strongylus(X220);3-basal portion of [redacted] an acanthostylus(X480); 4-point of a strongylus (X480); 5-toxus(X220); 6,7-arcuate chelae(X600).

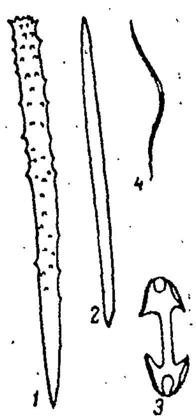


Рис. 95. *Myxichela ochotensis*, sp. n.

1 — акантостиль (×150); 2 — торнота (×150); 3 — хела дуговидная (×400); 4 — дужка (×150).

Fig.95. Myxichela ochotensis,sp.n.

1-acanthostylus(X150); 2-tornotus(X150 3-arcuate chela(X400); 4-toxus(X150).

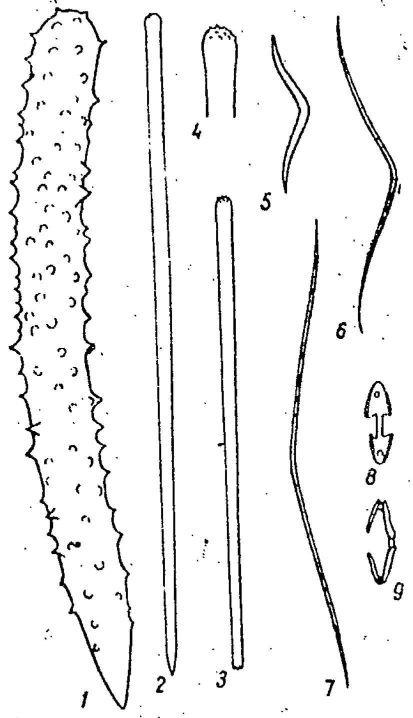


Рис. 96. *Myxichela zenkevitchi* Koltun.

1 — акантостиль (×150); 2 — стиль (×150); 3 — стронгила (×150); 4 — конец стронгилы (×300); 5 — дужка малая (×190); 6, 7 — дужки большие (×150); 8, 9 — хелы пальматоидные (×350)

Fig.96. Myxichela zenkevitchi Koltun.

1-acanthostylus(X150);2-stylus(X150); 3-strongylus(X150);4-point of a strongylus(X300);5-small toxus(X 190);6,7-large toxi(X150); 8,9-palmate chelae(X350).

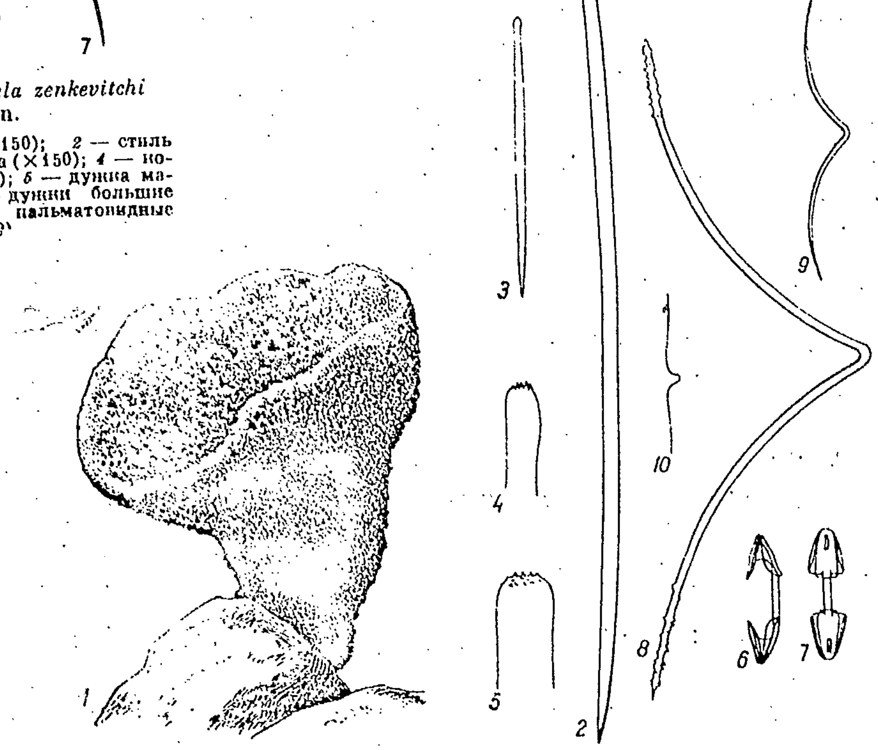


Рис. 97. *Artemisina apollinis* (Ridloy et Dendy).

1 — [illegible]ешний вид губки (×½); 2 — стиль основного скелета (×100); 3 — стиль дерм[illegible]ного скелета (×100); 4, 5 — базальные концы стилей (×400); 6, 7 — хе[illegible] пальматоидные (×800); 8—10 — дужки (большая и малые) (×150).

Fig.97. Artemisina apollinis (Ridley et Dendy). 1-external appearance of the sponge(x½), 2-stylus of the main skeleton(X100); 3-stylus of the dermal skeleton(X100);4,5-basal ends of styli(X400); 6,7-palmate chelae(X800); 8-10-toxi(small and large)(X150).

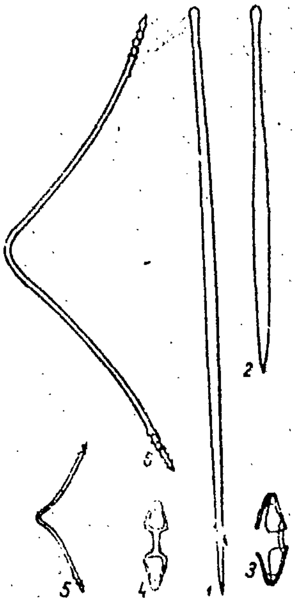


Рис. 98. *Artemisina arcigera* (O. Schmidt).

1 — субтилостиль основного скелета (×125); 2 — субтилостиль дермального скелета (×95); 3, 4 — хелы пальматовидные (×800); 5, 6 — дужки (×150).

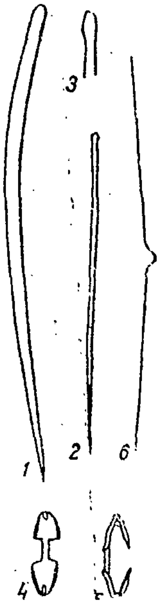


Рис. 99. *Artemisina foliata* (Bowerbank).

1 — стиль основного скелета (×95); 2—стиль дермального скелета; 3 — базальный конец дермального стиля (×190); 4, 5 — хелы пальматовидные (×450); 6 — дужка (×95).

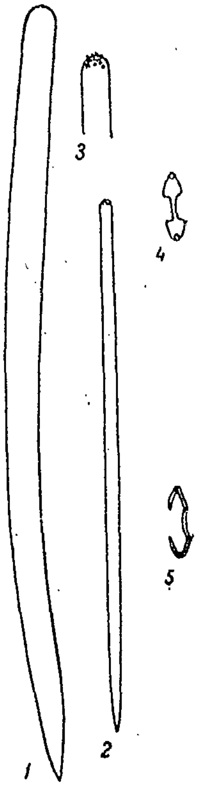


Рис. 100. *Artemisina stipitata* Koltun.

1 — стиль основного скелета (×190); 2 — стиль дермального скелета (×190); 3 — базальный конец стиля (×375); 4, 5 — хелы пальматовидные (×500).

Fig.98. Artemisina arcigera (O.Schmidt).
1-subtylostylus of the main skeleton(X125); 2-subtylostylus of the dermal skeleton (X95); 3,4-palmate chelae(X 800); 5,6-toxi(X150).

Fig.99. Artemisina foliata (Bowerbank).
1-stylus of the main skeleton(X95); 2-stylus of the dermal skeleton; 3- basal end of the dermal stylus(X 190); 4,5-palmate chelae(X450); 6-toxus(X95).

Fig.100. Artemisina stipitata Koltun.
1-stylus of the main skeleton(X190);2-stylus of the dermal skeleton(X190); 3-basal end of a stylus(X 375); 4,5-palmate chelae(X500).

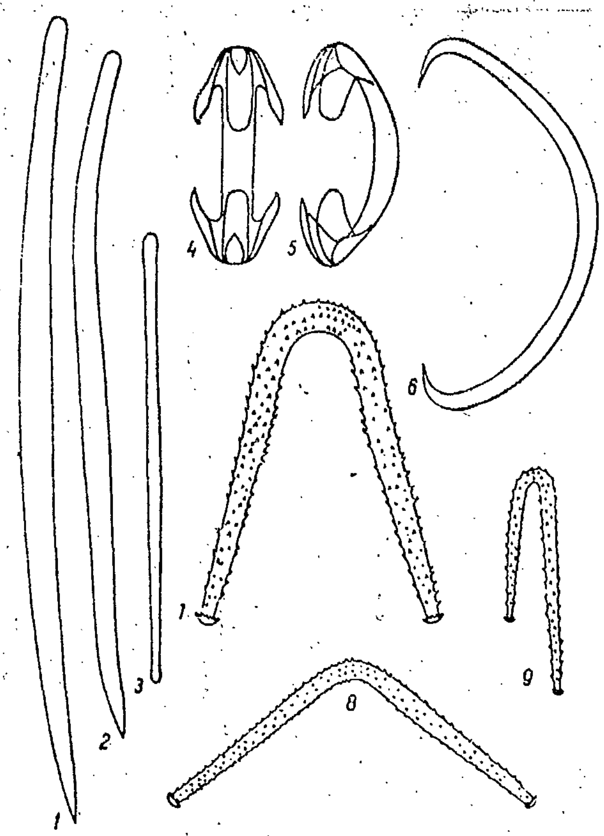


Рис. 101. *Forcepia topsenti* Lundbeck.

1, 2 — стили (×95); *3* — стронгила (×95); *4, 5* — хелы дуговидные (×600); *6* — сигма (×300); *7, 8* — шпильки большие (×375); *9* — шпилька малая (×750).

Fig.101. Forcepia topsenti Lundbeck.

1,2-styli(X95); 3-strongylus(X95); 4,5-arcuate chelae(X600); 6-sigma(X 300); 7,8-forceps(large)(X375); 9-small forceps(X750).

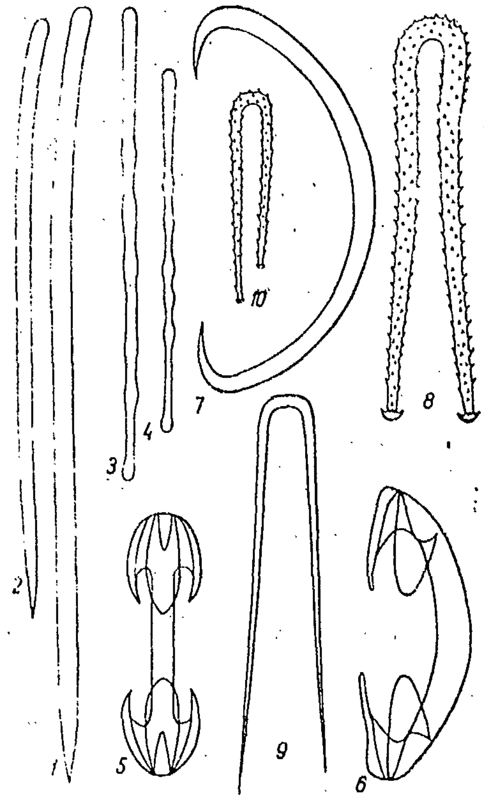


Рис. 102. *Forcepia fabricans* (O. Schmidt).

1, 2 — стили (×95); *3, 4* — тилоты (×95); *5, 6* — хелы дуговидные (×600); *7* — сигма (×225); *8, 9* — шпильки большие (×600); *10* — шпилька малая (×750).

Fig.102. Forcepia fabricans (O.Schmidt).

1,2-styli(X95); 3,4-tyloti(X95); 5,6-arcuate chelae(X600); 7-sigma(X225); 8,9-large forceps(X600); 10-small forceps(X750).

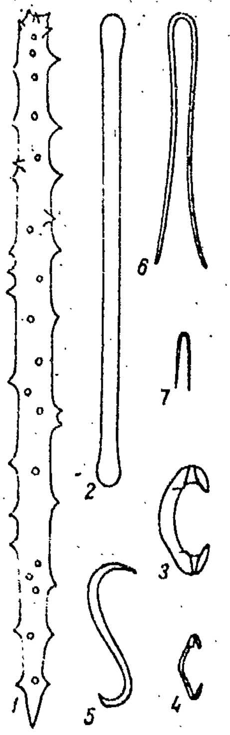


Рис. 103. *Forcepia uschakowi* (Burton).

1 — акантостиль (×320); 2 — тилота (×320); 3 — хела дуговидная, большая (×320); 4 — хела дуговидная, малая (×320); 5 — сигма (×320); 6 — шпилька большая (×320); 7 — шпилька малая (×320).

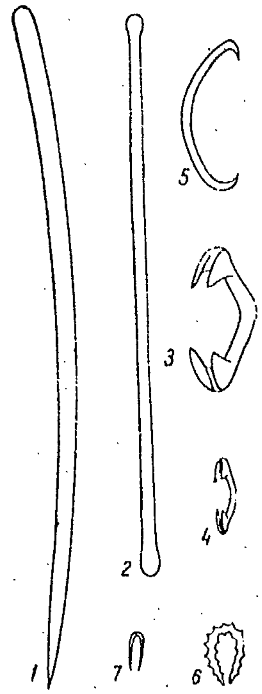


Рис. 104. *Forcepia bilabifera* (Burton).

1 — стиль (×240); 2 — тилота (×240); 3 — хела дуговидная, большая (×360); 4 — хела дуговидная, малая (×360); 5 — сигма (×360); 6, 7 — шпильки (×360).

Fig.103. Forcepia uschakowi (Burton). 1-acanthostylus(X320); 2-tylotus(X320); 3-large arcuate chela(X320);4-small arcuate chela(X320); 5-sigma(X320); 6-large forceps(X320); 7-small forceps(X320).

Fig.104. Forcepia bilabifera (Burton). 1-stylus(X240); 2-tylotus(X240); 3-large arcuate chela(X360); 4-small arcuate chela(X360); 5-sigma(X360); 6,7-forceps (X360).

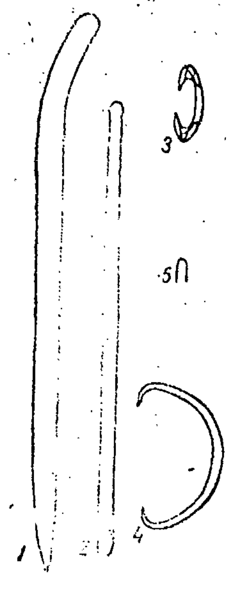


Рис. 105. [illegible] *japonica*, sp. [illegible]

1 — [illegible] (×200); 2 — [illegible] (×200); 3 — [illegible] дугообразная (×400); 4 — сигма (×400); 5 — шпилька (×400).

<u>Fig.105.</u> <u>Forcepia</u> <u>japonica</u>,sp.n.

1-stylus(X200); 2-tylotus(X200); 3-arcuate chela(X400); 4-sigma (X400); 5-forceps(X400).

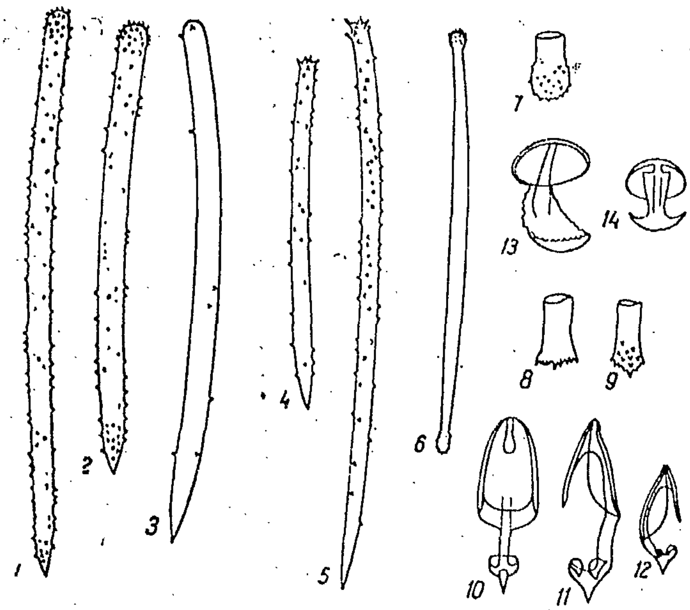


Рис. 106. *Iophon piceus piceus* (Vosmaer).

1—5 — акантостили (×160); 6 — тилота (×160); 7—9 — концы тилот (×400); 10—12 — хелы разноконечные, пальматовидные (×750); 13, 14 — бипоциллы (×750).

<u>Fig.106.</u> <u>Iophon</u> <u>piceus</u> <u>piceus</u> (Vosmaer).

1-5-acanthostyli(X160); 6-tylotus(X160); 7-9-points of tyloti(X400); 10-12-apically asymmetrical palmate chelae(X750); 13,14-bipocilli(X750).

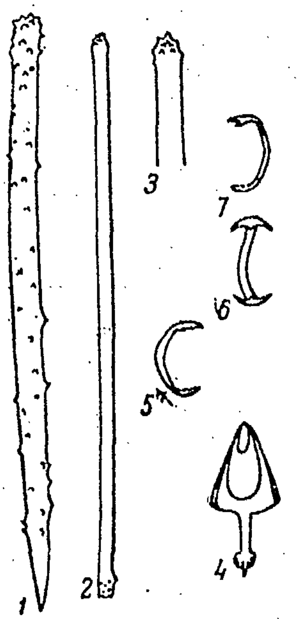


Рис. 107. *Iophon piceus dubius* (Hansen).

1 — акантостиль (×200); 2 — тилота (×200); 3 — конец тилоты (×500); 4 — хела равноконечная, пальматовидная (×500); 5—7 — бипоциллы (×500).

<u>Fig.107.</u> <u>Iophon</u> <u>piceus</u> <u>dubius</u> (Hansen).

1-acanthostylus(X200); 2-tylotus(X200); 3-point of a tylotus(X500); 4-apically asymmetrical palmate chela (X500); 5-7-bipocilli(X500).

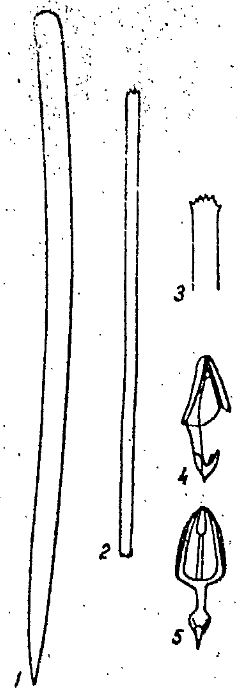


Рис. 108. *Iophon piceus abipocillus*, ssp. n.

1 — стиль (×190); 2 — стронгила (×190); 3 — конец стронгилы (×560); 4, 5 — хелы разноконечные, пальматовидные (×560).

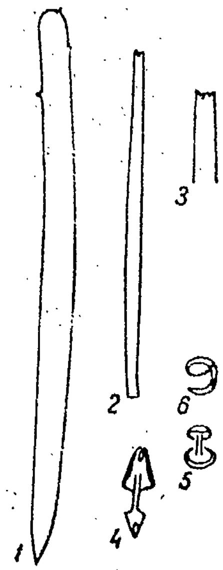


Рис. 109. *Iophon piceus pacificus* Koltun.

1 — стиль (×200); 2 — стронгила (×200); 3 — конец стронгилы (×500); 4 — хела разноконечная, пальматовидная (×500); 5, 6 — бипоциллы (×500).

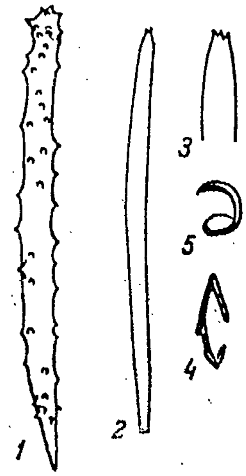


Рис. 110. *Iophon piceus orientalis*, ssp. n.

1 — акантостиль (×200); 2 — стронгила (×200); 3 — конец стронгилы (×500); 4 — хела разноконечная, пальматовидная (×500); 5 — бипоцилла (×500).

<u>Fig.108.</u> <u>Iophon</u> <u>piceus</u> <u>abipocillus</u>, ssp.n. 1-stylus(X190); 2-strongylus(X190); 3-point of a strongylus (X560); 4,5-apically asymmetrical palmate chelae(X560).

<u>Fig.109.</u> <u>Iophon</u> <u>piceus</u> <u>pacificus</u> Koltun. 1-stylus(X200); 2-strongylus(X200); 3-point of a strongylus(X500); 4-apically asymmetrical palmate chela(X500); 5,6-bipocilli(X500).

<u>Fig.110.</u> <u>Iophon</u> <u>piceus</u> <u>orientalis</u>, ssp.n. 1-acanthostylus(X200); 2-strongylus(X200); 3-point of a strongylus(X500); 4-apically asymmetrical palmate chela (X500); 5-bipocillus(X500).

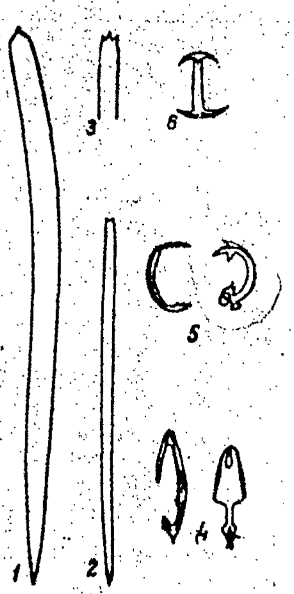


Рис. 111. *Iophon dogieli* Koltun.

1 — стиль большая (×160); 2 — стиль малая (×160); 3 — базальный конец малой стили (×400); 4 — хела разноконечная, пальматовидная (×400); 5, 6 — биподиллы (×400).

<u>Fig.111.</u> <u>Iophon</u> <u>dogieli</u> Koltun.

1-large stylus(X160); 2-small stylus(X160); 3-basal end of a small stylus(X400); 4-apically asymmetrical palmate chela(X 400); 5,6-bipocilli(X400).

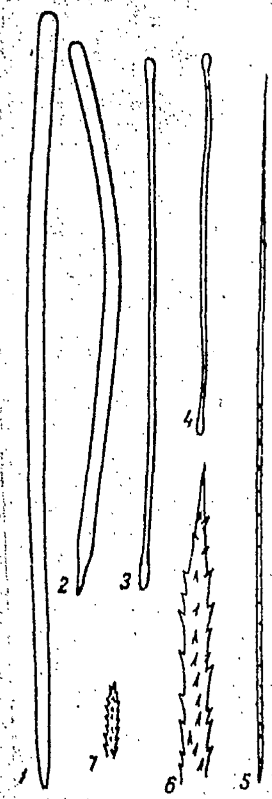


Рис. 112. *Tedania suctoria* O. Schmidt.

1, 2 — стили (×160); 3, 4 — тилоты (×160); 5 — рафида (×160); 6 — конец рафиды (×1200); 7 — конец рафиды (×400).

<u>Fig.112.</u> <u>Tedania</u> <u>suctoria</u> O.Schmidt.

1,2-styli(X160); 3,4-tyloti (X160); 5-rhaphidius(X160); 6-point of a rhaphidius(X 1200); 7-point of a rhaphidius (X400).

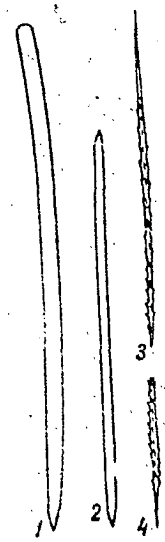


Рис. 113. *Tedania gurjanovae* Koltun.

1 — стиль (×200); 2 — торнота (×200); 3 — рафида большая (×200); 4 — рафида малая (×200).

<u>Fig.113.</u> <u>Tedania</u> <u>gurjanovae</u> Koltun.

1-stylus(X200);2-tornotus (X200);3-large rhaphidius (X200);4-small rhaphidius (X200).

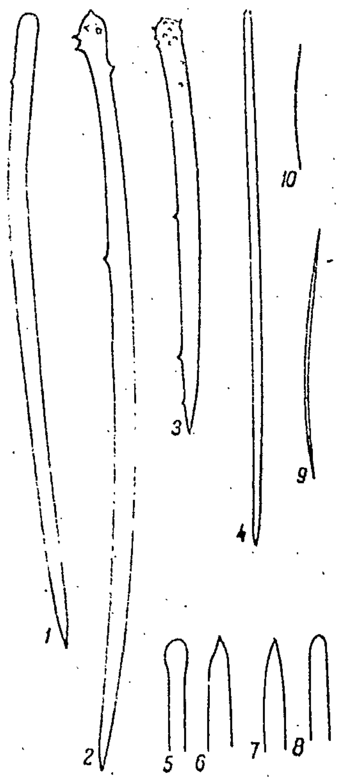


Рис. 114. *Tedania microrhaphidiophora* Burton.

1—3 — стили (×200); 4 — торнота (×200); 5—8 — концы торнот (×600); 9, 10 — рафиды (×320).

Fig. 114. Tedania microrhaphidiaphora Burton.

1-3-styli(X200); 4-tornotus (X200); 5-8-ends of tornoti (X600); 9,10-rhaphidii(X320).

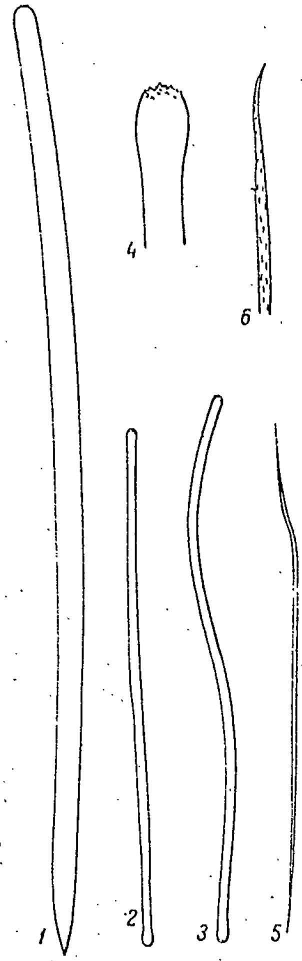


Рис. 115. *Tedania flexistrongyla*, sp. n.

1 — стиль (×150); 2, 3 — стронгилы (×150); 4 — конец стронгилы (×560); 5 — рафида (×150); 6 — конец рафиды (×560).

Fig. 115. Tedania flexistrongyla, sp. n.

1-stylus(X150); 2,3-strongyli (X150); 4-point of a strongylus(X560); 5-rhaphidius(X 150); 6-point of a rhaphidius(X560).

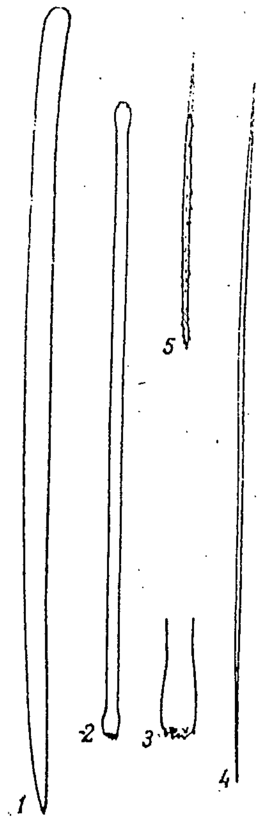


Рис. 116. *Tedania dirhaphis* Hentschel.

1 — стиль (×150); 2 — тилота (×150); 3 — конец тилоты (×400); 4 — рафида большая (×150); 5 — рафида малая (×400).

Fig. 116. Tedania dirhaphis Hentschel.

1-stylus(X150); 2-tylotus (X150); 3-point of a tylotus(X400); 4-rhaphidius (large)(X150); 5- small rhaphidius(X400).

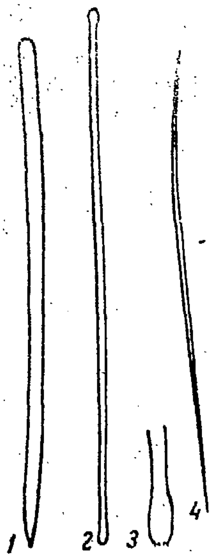


Рис. 117. *Tedania digitata* O. Schmidt.
1 — стиль (×200); 2 — тилота (×200); 3 — конец тилоты (×500); 4 — рафида (×500).

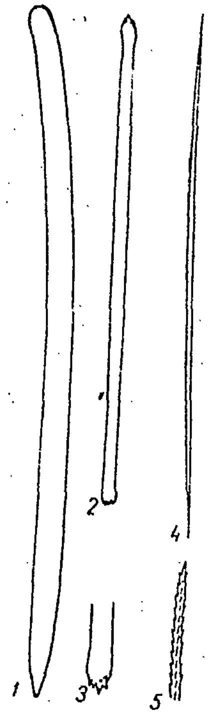


Рис. 118. *Tedania fragilis* Lambe.
1 — стиль (×220); 2 — тилота (×220); 3 — конец тилоты (×440); 4 — рафида (×175); 5 — конец рафиды (×440).

Fig.117.Tedania digitata O.Schmidt.
1-stylus(X200); 2-tylotus(X200); 3-point of a tylotus(X500); 4-rhaphidius(X500).

Fig.118.Tedania fragilis Lambe.
1-stylus(X220); 2-tylotus(220); 3-point of a tylotus(X440); 4-rhaphidius(X175); 5-point of a rhaphidius(X440).

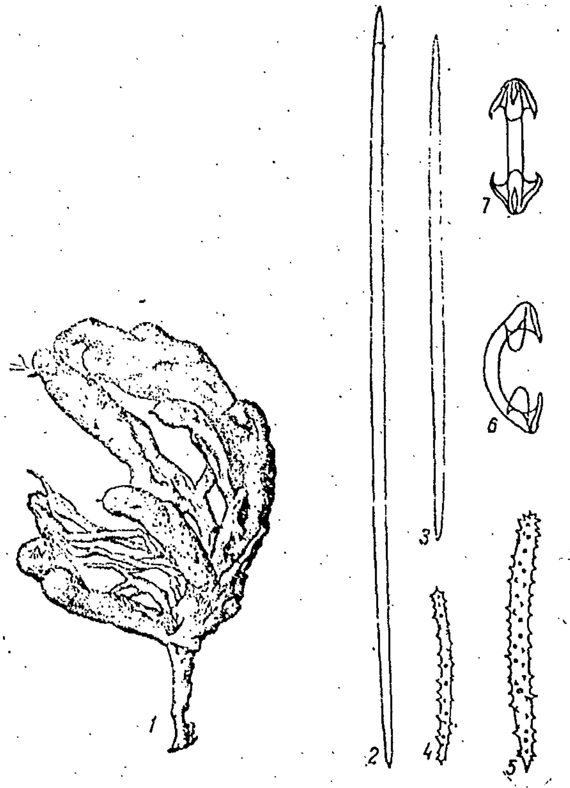


Рис. 119. *Grayella pyrula* (Carter).

1 — внешний вид губки (×1); *2, 3* — торноты (×190); *4, 5* — акантостили (×190); *6, 7* — хелы дуговидные (×600).

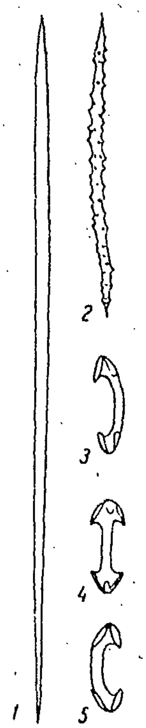


Рис. 120. *Grayella pertusa* (Topsent).

1 — торнота (×200); *2* — акантокс (×200); *3—5* — хелы дуговидные (×400).

Fig.119. Grayella pyrula (Carter).

1-external appearance of the sponge(X1);

2,3-tornoti(X190); 4,5-acanthostyli(X190);

6,7-arcuate chelae(X600).

Fig.120. Grayella pertusa(Topsent).

1-tornotus(X200);2-acanthoxus(X200);

3-5-arcuate chelae(X400).

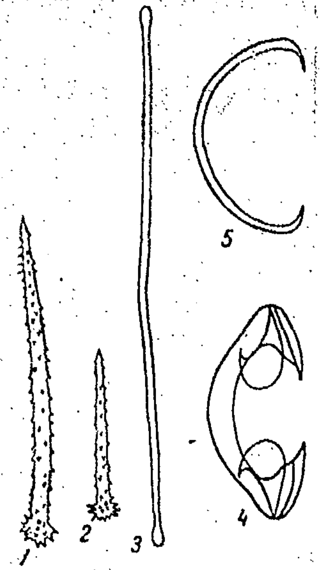


Рис. 121. *Hymedesmia trichoma* Lundbeck.

1 — акантотилостиль большая (×80); *2* — акантотилостиль малая (×80); *3* — тилота (×120); *4* — хела дуговидная (×640); *5* — сигма (×240).

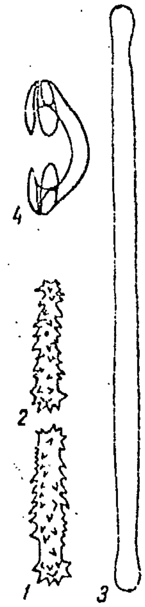


Рис. 122. *Hymedesmia truncata* Lundbeck.

1, 2 — акантостили (×200); *3* — тилота (×200); *4* — хела дуговидная (×640).

<u>Fig.121.</u> <u>Hymedesmia</u> <u>trichoma</u> Lundbeck.
1-large acanthostylus(X80); 2-small acanthostylus(X80); 3-tylotus(X120); 4-arcuate chela(X640); 5-sigma(X240).

<u>Fig. 122.</u> <u>Hymedesmia</u> <u>truncata</u> Lundbeck.
1,2-acantho styli(X200); 3-tylotus(X200); 4-arcuate chela(X640).

<u>Fig.123.</u> <u>Hymedesmia</u> <u>bractea</u> Lundbeck.
1-acanthostylus(large)(X160);2-small acanthostylus(X160);3,4-tyloti(X160); 5-arcuate chela(X640); 5-arcuate chela (X400).

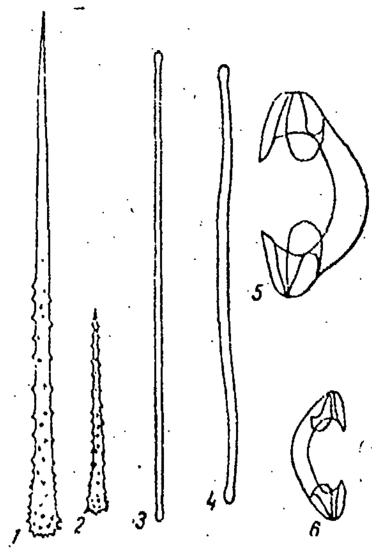


Рис. 123. *Hymedesmia bractea* Lundbeck.

1 — акантотилостиль большая (×160); *2* — акантотилостиль малая (×160); *3, 4* — тилоты (×160); *5* — хела дуговидная (×640); *6* — хела дуговидная (×400).

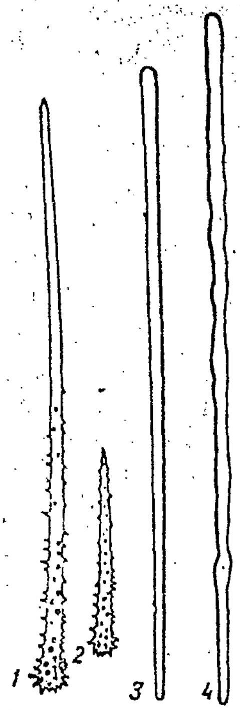


Рис. 124. *Hymedesmia dermata* Lundbeck.

1 — акантотилостиль большая (×160); 2 — акантотилостиль малая (×160); 3, 4 — стронгилы (×160).

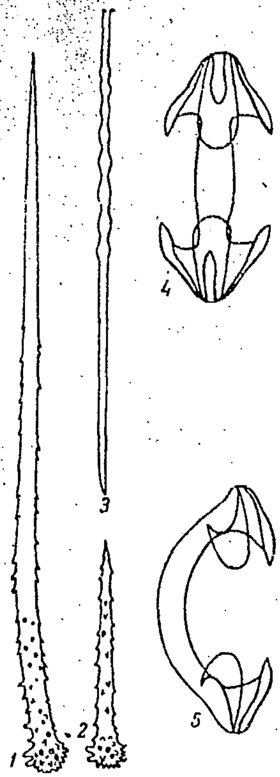


Рис. 125. *Hymedesmia irregularis* Lundbeck.

1 — акантотилостиль большая (×150); 2 — акантотилостиль малая (×150); 3 — стиль (×150); 4, 5 — хелы дуговидные (×600).

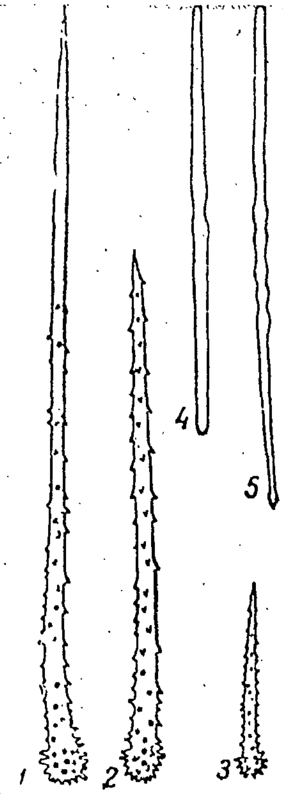


Рис. 126. *Hymedesmia longurius* Lundbeck.

1 — акантотилостиль большая (×200); 2, 3 — акантотилостили малые (×200); 4, 5 — стронгилы (×200).

Fig.124. Hymedesmia dermata Lundbeck.

1-large acanthostylus(X160); 2-small acanthostylus(X160); 3,4-strongyli(X160).

Fig.125. Hymedesmia irregularis Lundbeck.

1-large acanthostylus(X150); 2-small acanthostylus(X150); 3-stylus(X150); 4-5-arcuate chelae(X600).

Fig.126.Hymedesmia longurius Lundbeck.

1-large acanthostylus (X200); 2,3- small acanthostyli(X200); 4,5-strongyli(X200).

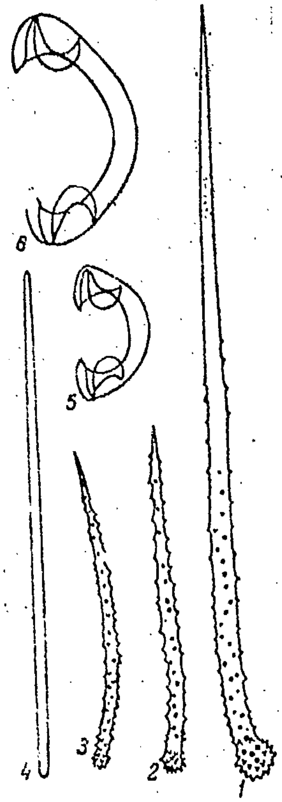


Рис. 127. *Hymedesmia similis* Lundbeck.

1 — акантотилостиль большая (×200); 2, 3 — акантотилостили малые (×200); 4 — стронгила (×100); 5 — хела дуговидная (×400); 6 — хела дуговидная (×640).

Fig.127. Hymedesmia similis Lundbeck.

1-large acanthostylus (X200); 2,3-small acanthostyli(X200); 4-strongylus(X100);5-arcuate chela (X400);6-arcuate chela(X640).

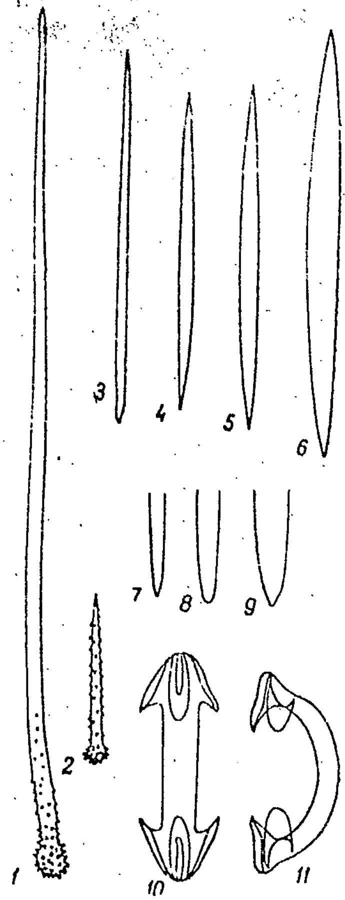


Рис. 128. *Hymedesmia occulta* Bowerbank.

1 — акантотилостиль большая (×160); 2 — акантотилостиль малая (×160); 3—6 — торноты (×120); 7—9 — концы торнот (×240); 10, 11 — хелы дуговидные (×640).

Fig.128.Hymedesmia occulta Bowerbank.

1-large acanthostylus (X160);2-small acanthostylus(X160); 3-6-tornoti(X120); 7-9- the ends of tornoti(X240); 10,11-arcuate chelae (X640).

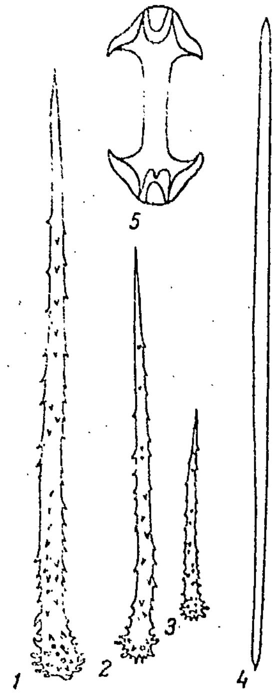


Рис. 129. *Hymedesmia platychela* Lundbeck.

1 — акантотилостиль большая (×160); 2, 3 — акантотилостили малые (×160) 4 — торнота (×160); 5 — хела дуговидная (×480)

Fig.129. Hymedesmia platychela Lundbeck.

1-large acanthostylus(X160); 2,3-small acanthostyli(X160); 4-tornotus(X160);5-arcuate chela(X480).

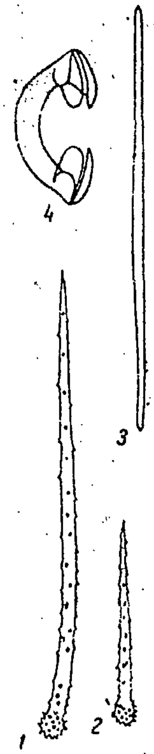


Рис. 130. *Hymedesmia procumbens* Lundbeck.

1 — акантотилостиль большая (×200); 2 — акантотилостиль малая (×160); 3 — торнота (×200); 4 — хела дуговидная (×480).

Fig.130. Hymedesmia procumbens Lundbeck.

1-large acanthostylus(X200);

2-small acanthostylus(X160);

3-tornotus(X200);

4-arcuate chela(X480).

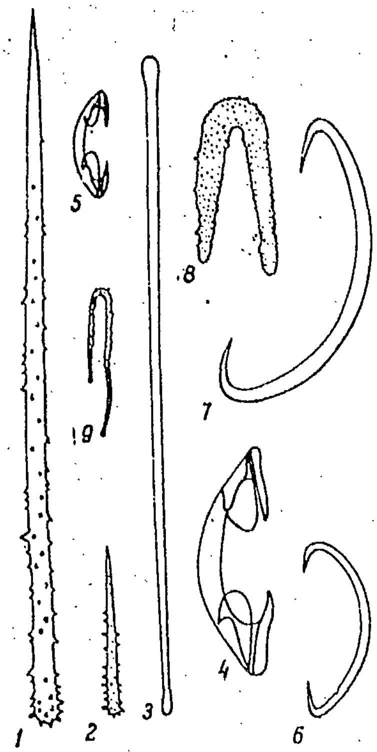


Рис. 131. *Leptolabis assimilis* Lundbeck.

1 — акантотилостиль большая (×160); 2 — акантотилостиль малая (×160); 3 — тилота (×160); 4, 6 — хелы дуговидные (×640); 6, 7 — сигмы (×320); 8 — шпилька (×640); 9 — шпилька (×1000).

Fig.131. Leptolabis assimilis Lundbeck.

1-large acanthostylus(X160);

2-small acanthostylus(X160);

3-tylotus(X160); 4,5-arcuate chelae(X640); 6,7-sigmas(X320); 8-forceps(X640); 9-forceps(X 1000).

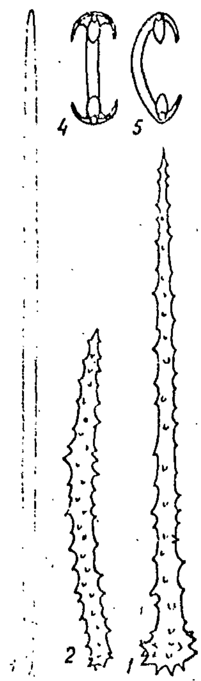


Рис. 132. *Crellomima imparidens* Rezvoj.

1 — акантостиль основного скелета (×360); 2 — акантостиль дермального скелета (×360); 3 — торнота (×360); 4, 5 — якорьки (×520).

Fig.132.Crellomima imparidens Rezvoj.

1-acanthostylus of thc main skeleton(X360);

2-acanthostylus of the dermal skeleton(X360);

3-tornotus(X360); 4,5- ancorae(X520).

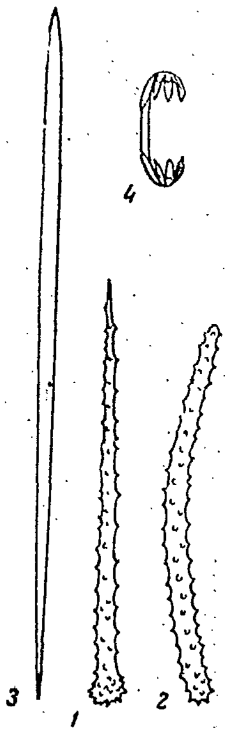


Рис. 133. *Crellomima incrustans* Hentschel.

1 — акантостиль (×280); *2* — акантостронгила (×280); *3* — торнота (×280); *4* — якорек многозубчатый (×500).

Fig.133. Crellomima incrustans Hentschel.

1-acanthostylus(X280); 2-acanthostrongylus(X 280);3-tornotus(X280); 4-multidentate ancora (X500).

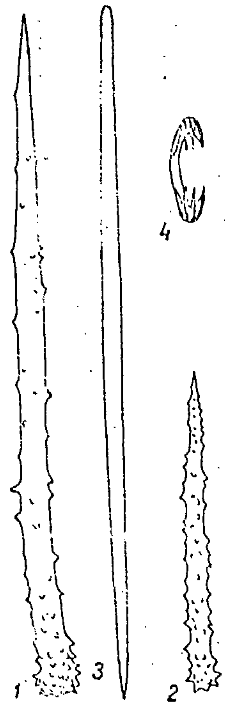


Рис. 134. *Herceus orientalis*, sp. n.

1, *2* — акантостили (×200); *3* — стиль (×200); *4* — якорек (×480).

Fig.134. Herceus orientalis, sp.n.

1,2-acanthostyli(X200);3-stylus(X200);4-ancora(X 480).

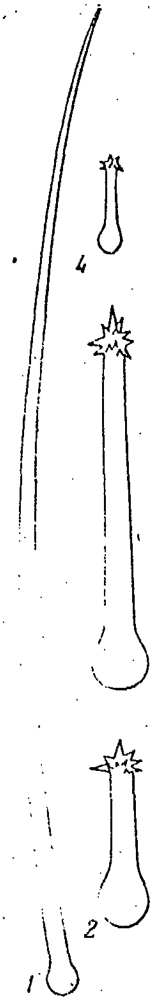


Рис. 135. *Hymeraphia stellifera* Bowerbank.

1 — тилостиль большая (×75); *2*, *3* — тилостили малые (×375); *4* — тилостиль малая (×75).

Fig.135. Hymeraphia stellifera Bowerbank.

1-large tylostylus(X75); 2,3-small tylostyli(X375); 4-small tylostylus(X75).

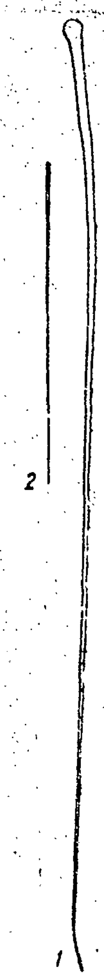


Рис. 136. *Hymeraphia spitzbergensis* Fristedt. 1 — тилостиль (×75); 2 — стиль (×75).

Fig.136. Hymeraphia spitzbergensis Fristedt. 1-tylostylus(X75); 2-stylus(X75).

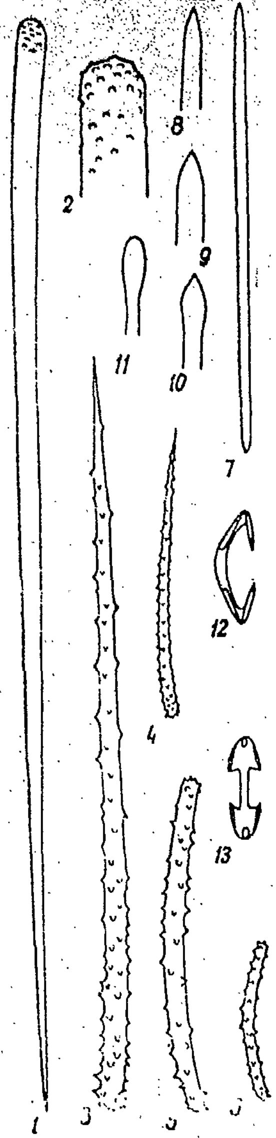


Рис. 137. *Plocamia ambigua* (Bowerbank). 1 — акантостиль (стиль) большая (×80); 2 — базальный конец акантостиля (×200); 3, 4 — акантостили малые (×200); 5, 6 — акантостронгилы (×200); 7 — торнота (×200); 8—11 — концы торнот (×500); 12, 13 — хелы пальматовидные (×400).

Fig.137. Plocamia ambigua (Bowerbank). 1-large acanthostylus (stylus)(X80); 2-basal end of an acanthostylus(X200); 3,4-small acanthostyli(X200); 5,6-acanthostrongyli(X200); 7-tornotus(X200); 8-11-points of tornoti(X500); 12,13-palmate chelae(X400).

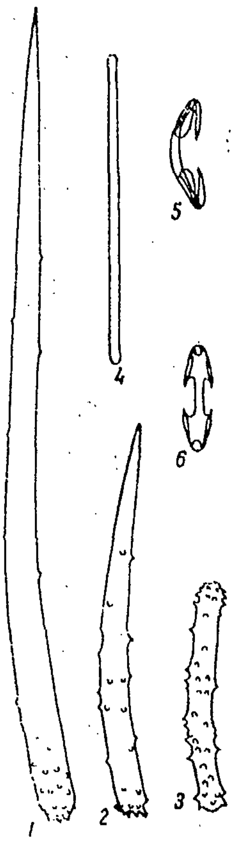


Рис. 138. *Plocamia fragilis*, sp. n. 1, 2 — акантостили (×200); 3 — акантостронгила (×160); 4 — субтилота (×200); 5, 6 — хелы дуговидные (×400).

Fig.138. Plocamia fragilis, sp.n. 1,2-acanthostyli(X200); 3-acanthostrongylus(X160); 4-subtylotus (X200); 5,6-arcuate chelae(X400).

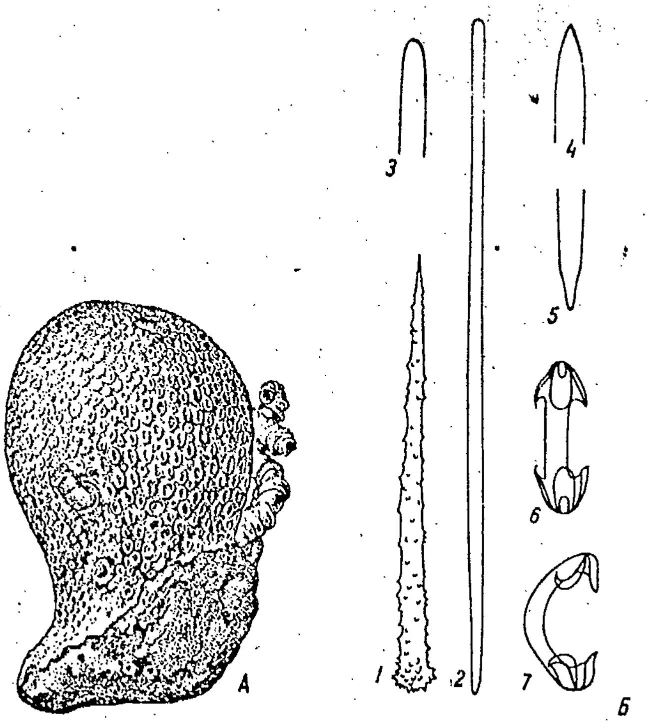


Рис. 139. *Phorbas paucistyliferus* Burton. *А* — внешний вид губки (× 1/2); *Б* — иглы.

1 — акантостиль (×190); *2* — стронгила (×190); *3—5* — концы стронгил (×600); *6, 7* — хелы дуговидные (×300).

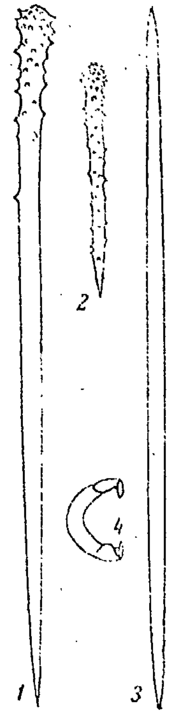


Рис. 140. *Phorbas salebrosus* Koltun.

1 — акантостили большие (×190); *2* — акантостили малые (×150); *3* — окс (×150); *4* — хела дуговидная (×300).

Fig.139. **Phorbas paucistyliferus** Burton.

A- external appearance of the sponge (X½);

B- spicules.

1-acanthostylus(X190); 2-strongylus(X190);

3-5-ends of strongyli(X600); 6,7-arcuate chelae(X300).

Fig.140. **Phòrbas salebrosus** Koltun.

1-large acanthostyli(X190); 2-small acanthostyli(X150); 3-oxus(X150); 4-arcuate cheda(X300).

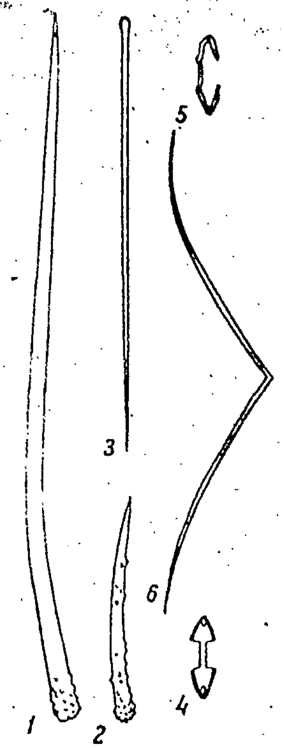


Рис. 141. *Microciona armata* Bowerbank.

1 — акантостиль большая (×160); *2* — акантостиль малая (×160); *3* — субтилостиль (×160); *4*, *5* — хелы пальматовидные (×560); *6* — дужка (×380).

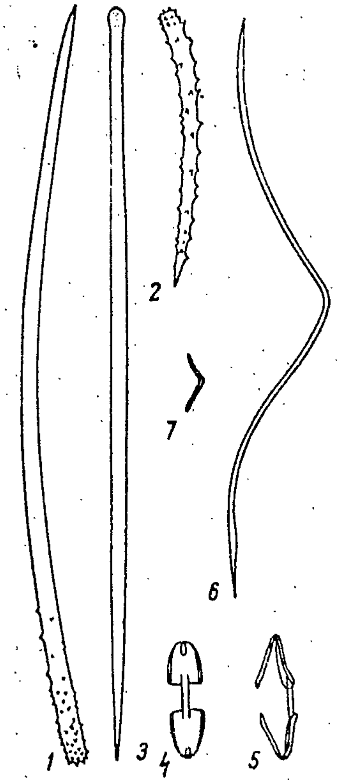


Рис. 142. *Microciona heterotoxa* Hentschel.

1 — акантостиль большая (×240); *2* — акантостиль малая (×240); *3* — субтилостиль (×160); *4*, *5* — хелы пальматовидные (×640); *6* — дужка большая (×400); *7* — дужка малая (×240).

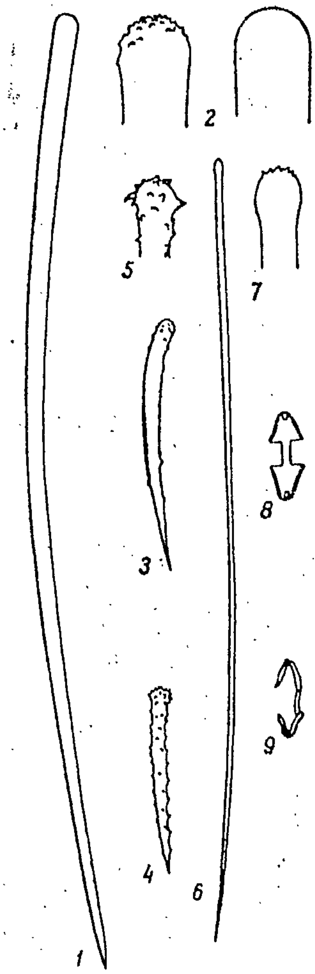


Рис. 143. *Microciona lambei* Burton.

1 — стиль (×190); *2* — базальный конец стиля (×400); *3*, *4* — акантостили (×95); *5* — базальный конец акантостиля (×350); *6* — субтилостиль (×95); *7* — базальный конец субтилостиля (×450); *8*, *9* — пальматовидные хелы (×450).

Fig.141. Microciona armata Bowerbank. 1-large acanthostylus (X160); 2-small acanthostylus(X160); 3-subtylostylus(X160); 4,5-palmate chelae(X560); 6-toxus (X 380).

Fig.142. Microciona heterotoxa Hentschel. 1-large acanthostylus (X240); 2-small acanthostylus(X240); 3-subtylostylus(X160); 4,5-palmate chelae(X640); 6-large toxus(X400); 7-small toxus (X240).

Fig.143. Microciona lambei Burton. 1-stylus(X190);2- basal end of a stylus(X 400); 3,4-acanthostyli (X95); 5-basal end of an acanthostylus(X350) 6-subtylostylus(X95); 7-basal end of a subtylostylus(X450);8,9-palmate chelae(X450).

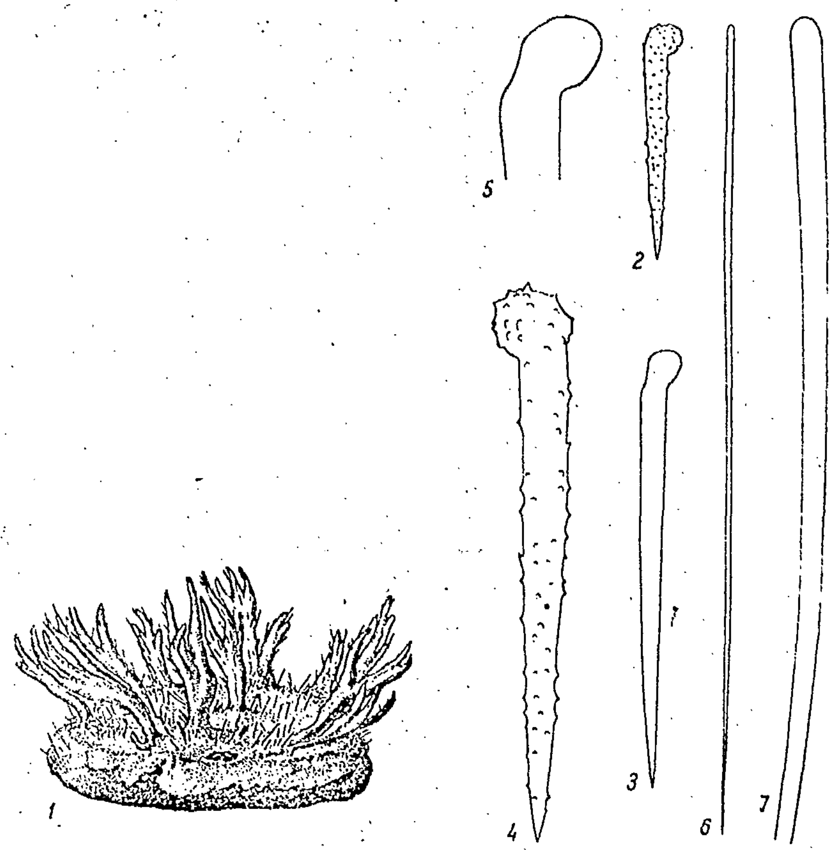


Рис. 144. *Microciona primitiva* Koltun.

1 — внешний вид губки (×1); 2, 3 — тилостиль и акантостиль (×75); 4 — акантотилостиль (×150); 5 — базальный конец тилостиля (×150); 6 — стиль тонкая (×150); 7 — часть большого стиля (×75).

<u>Fig.144.</u> <u>Microciona</u> <u>primitiva</u> Koltun.

1-external appearance of the sponge(X1); 2,3-tylostylus and acanthostylus(X75); 4-acanthostylus(X150); 5-basal end of a tylostylus(X150); 6-a slender stylus(X150); 7- a portion of a large stylus(X75).

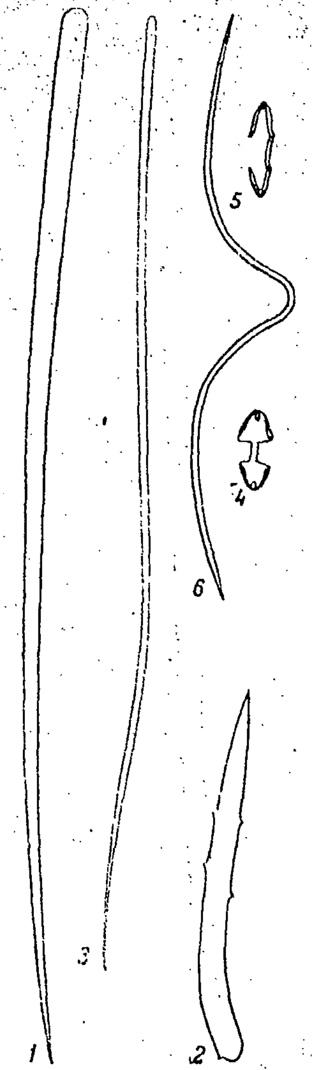


Рис. 145. *Clathria dichotoma* (Esper).

1 — стиль (×95); *2* — стиль шиповатая (×190); *3* — стиль тонкая (×190); *4, 5* — хелы пальматовидные (×450); *6* — дужка (×450).

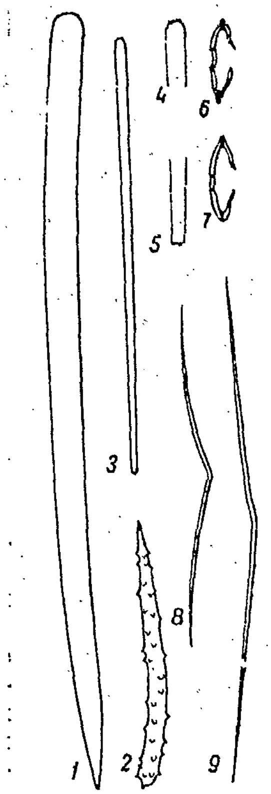


Рис. 146. *Clathria laevigata* Lambe.

1 — стиль (×150); *2* — акантостиль (×150); *3* — стиль с шиповатыми концами (стронгила; ×200); *4, 5* — концы стиля (×400); *6, 7* — хелы пальматовидные (×400); *8, 9* — дужки (×150).

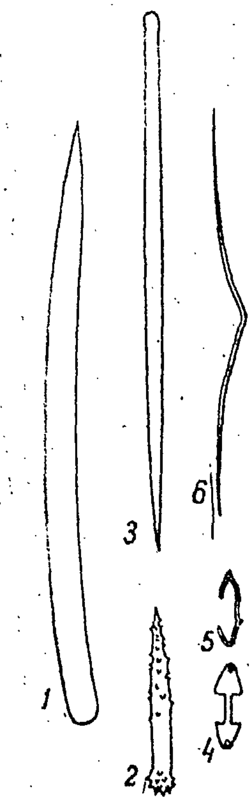


Рис. 147. *Clathria robusta*, sp. n.

1 — стиль (×300); *2* — акантостиль (×300); *3* — дермальная стиль (×300); *4, 5* — хелы пальматовидные (×600); *6* — дужка (×300).

Fig.145. Clathria dichotoma (Esper).

1-stylus(X95); 2-acanthaceous stylus(X190); 3-a slender stylus(X190); 4,5-palmate chelae (X450); 6-toxus(x450).

Fig.146. Clathria laevigata Lambe.

1-stylus(X150);2-acanthostylus(X150); 3-a stylus with acanthaceous ends(X200;strongylus); 4,5-points of a stylus(X400); 6,7-palmate chelae (X400); 8,9-toxi(X150).

Fig.147. Clathria robust

sp.n.

1-stylus(X300); 2-acanth stylus(X300); 3-dermal stylus(x300); 4,5-palmat chelae(X600); 6-toxus (X300).

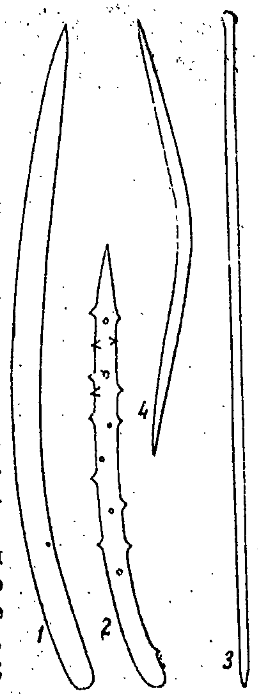


Рис. 148. *Clathriella primitiva* Burton.

1 — стиль (×260); 2 — акантостиль (×260); 3 — субтилостиль (×260); 4 — окс дуговидный (×260).

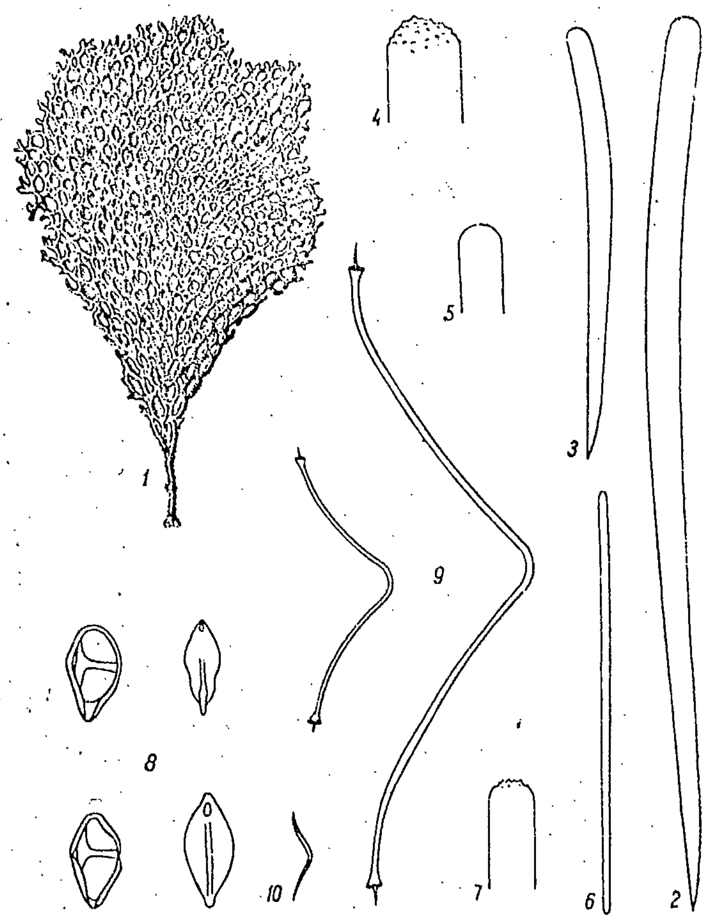


Рис. 149. *Melonchela clathriata* Koltun.

1 — внешний вид губки (×1); 2, 3 — стили (×75); 4, 5 — базальные концы стилей (×190); 6 — стронгила (×190); 7 — конец стронгилы (×750); 8 — хела сферическая (×600); 9 — дужка большая (×375); 10 — дужка малая (×375).

Fig.148. Clathriella primitiva Burton.

1-stylus(X260);2-acanthostylus(X260); 3-subtylostylus(X260); 4-oxus arcuate(X260).

Fig.149. Melonchela clathriata Koltun.

1-external appearance of the sponge(X1); 2-3-styli(X75); 4,5-basal ends of styli(X190); 6-strongylus(X190); 7-the end of a strongylus(X750); 8- spherical chela(X600); 9-large toxus(X375); 10-small toxus(X375).

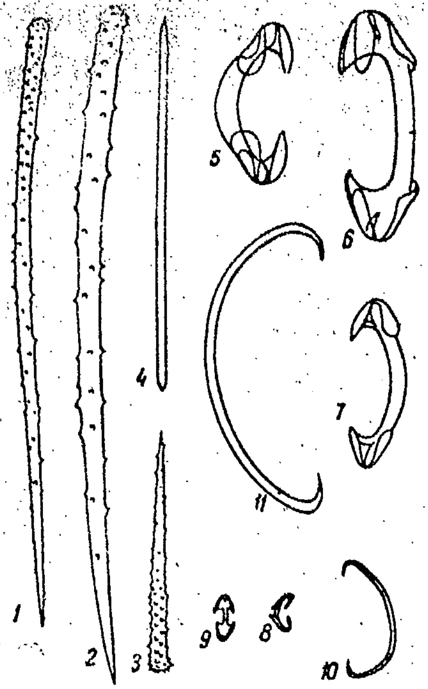


Рис. 150. *Ectyodoryx loyningi* Burton.
1, 2 — акантостили большие (×160); 3 — акантостиль малая (×160); 4 — торнота (×160); 5—7 — хелы дуговидные, большие (×400); 8, 9 — хелы дуговидные, малые (×400); 10, 11 — сигмы (×400).

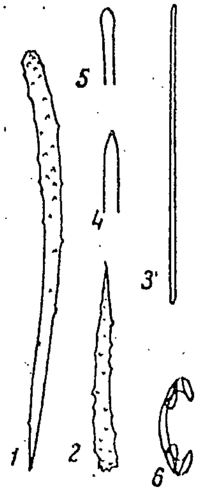


Рис. 151. *Ectyodoryx balanoides*, sp. n.
1 — акантостиль большая (×220); 2 — акантостиль малая (×220); 3 — стронгила (×220); 4, 5 — концы стронгил (×660); 6 — хела дуговидная (×660).

Fig.150. Ectyodoryx loyningi Burton.
1-2-large acanthostyli(X160); 3-small acanthostylus(X160);4-tornotus(X160); 5-7-large arcuate chelae(X400); 8,9-small arcuate chelae(X400); 10,11-sigmas(X400).

Fig.151. Ectyodoryx balanoides,sp.n.
1-large acanthostylus(X220); 2- small acanthostylus(X220); 3-strongylus (X 220); 4,5-the ends of strongyli(X660); 6-arcuate chela(X660).

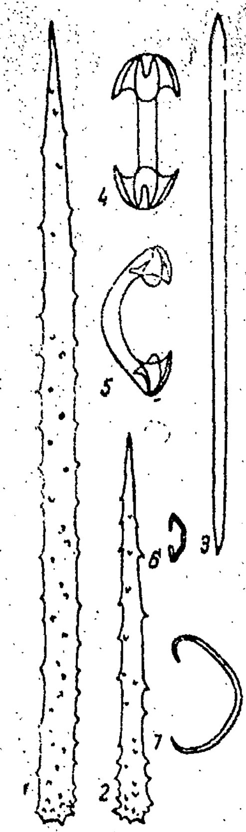


Рис. 152. *Anchinoë roemeri* Hentschel.

1 — акантостиль большая (×280); 2 — акантостиль малая (×280); 3 — торнота (×280); 4, 5 — хелы дуговидные, большие (×280); 6 — хела дуговидная, малая (×280); 7 — сигма (×280).

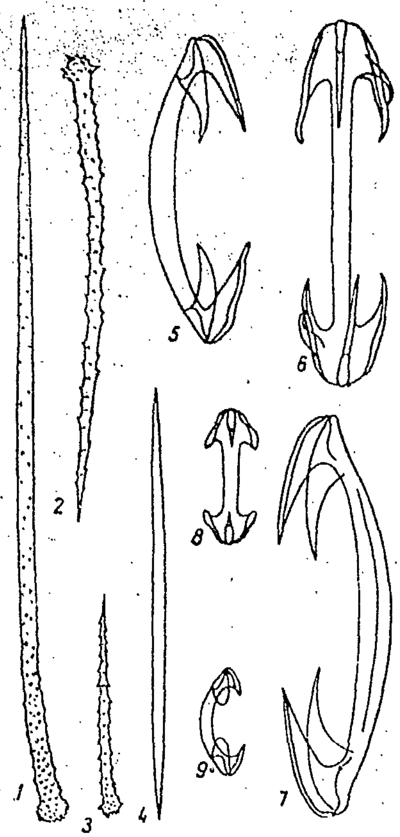


Рис. 153. *Anchinoë arneseni* Topsent.

1, 2 — акантостили большие (×75); 3 — акантостиль малая (×75); 4 — торнота (×75); 5—7 — якорьки трехзубчатые (×300); 8, 9 — хелы дуговидные (×300).

Fig.152. Anchinoë roemeri Hentschel.

1-large acanthostylus(X280); 2-small acanthostylus(X280); 3-tornotus(X280); 4,5-large arcuate chelae(X280); 6-small arcuate chela(X280); 7-sigma (X280).

Fig.153. Archinoë arneseni Topsent.

1,2-large acanthostyli(X75); 3-small acanthostylus(X75); 4-tornotus(X75); 5-7- tridentate ancorae(X300); 8,9-arcuate chelae(X300).

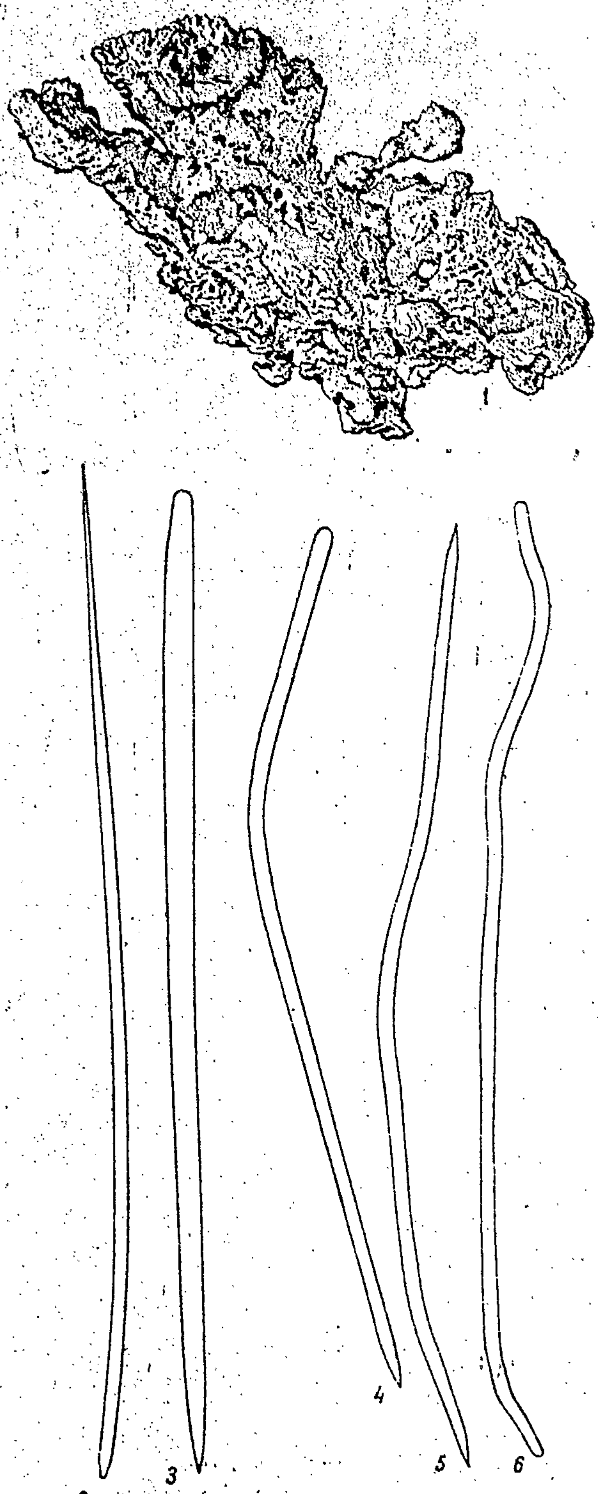


Fig.154. Рис. 154. *Axinella rugosa* (Bowerbank).

1 — внешний вид губки (× ½); 2—4 — стили (×75); 5 — окс (×75); 6 — стронгила (×75).

1-external appearance of the sponge(X½); 2-4-styli(X75);

5-oxus(X75); 6-strongylus(X75).

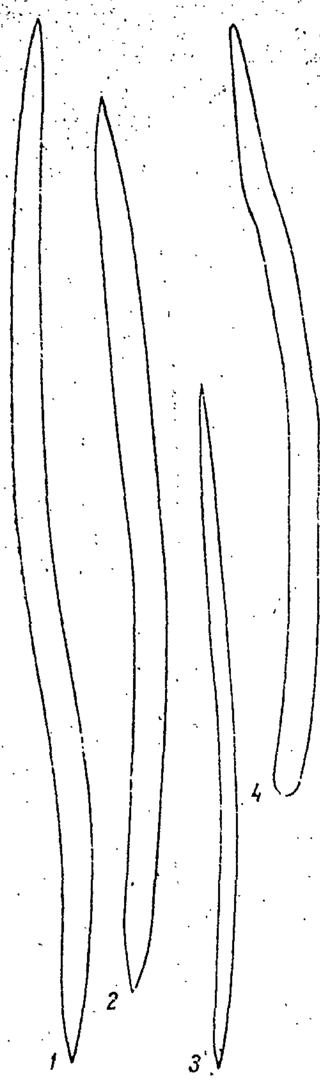


Рис. 155. *Axinella blanka*, sp. n.

1—3 — оксы (×150); 4 — стиль (×150).

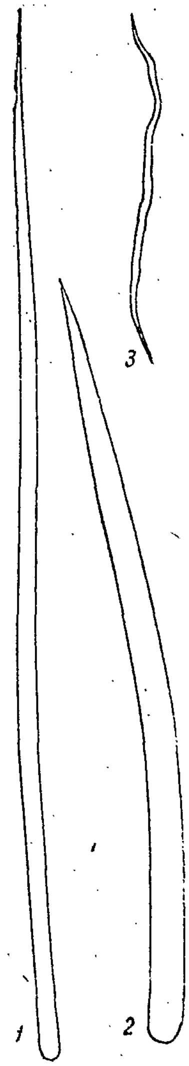


Рис. 156. *Axinella hispida*, sp. n.

1 — стиль длинная (×40); 2 — стиль толстая (×75); 3 — окс (искривленный) (×75).

Fig.155. Axinella blanca, sp.n.

1-3-oxi(X150); 4-stylus(X150).

Fig.156. Axinella hispida, sp.n.

1-long stylus(X40); 2-thick stylus(X75); 3-oxus(distorted)(X75).

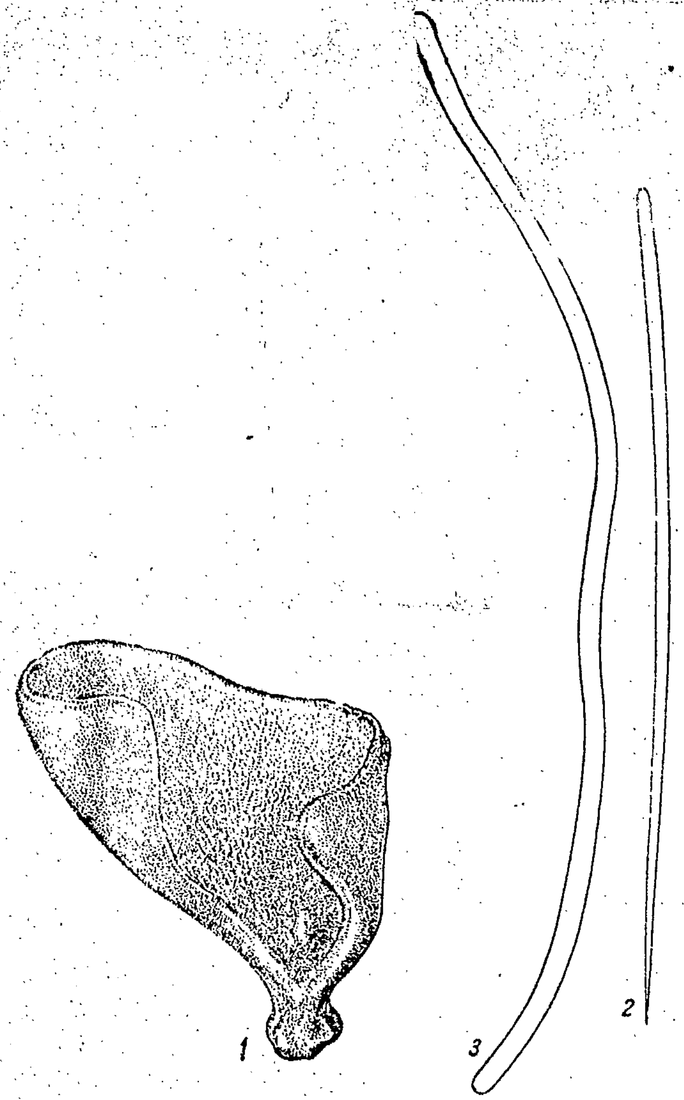


Рис. 157. *Axinella ventilabrum* (Johnston).
1 — внешний вид губки (×1/2); 2 — стиль (×150); 3 — стронгила (×150).

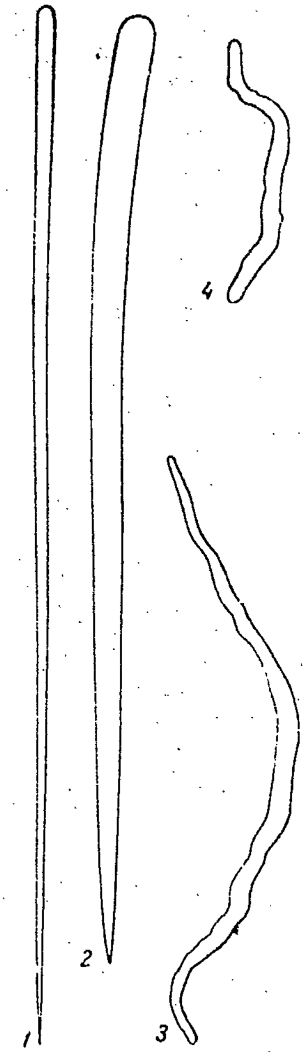


Рис. 158. *Axinella vermiculata* (Bowerbank).
1, 2 — стили (×280); 3, 4 — стронгилы (×280).

Fig.157. Axinella ventilabrum (Johnston).

1-external appearance of the sponge(X½);

2-stylus(X150); 3-strongylus(X150).

Fig.158. Axinella vermiculata

(Bowerbank).

1,2-styli(X280); 3,4-strongyli(X280)

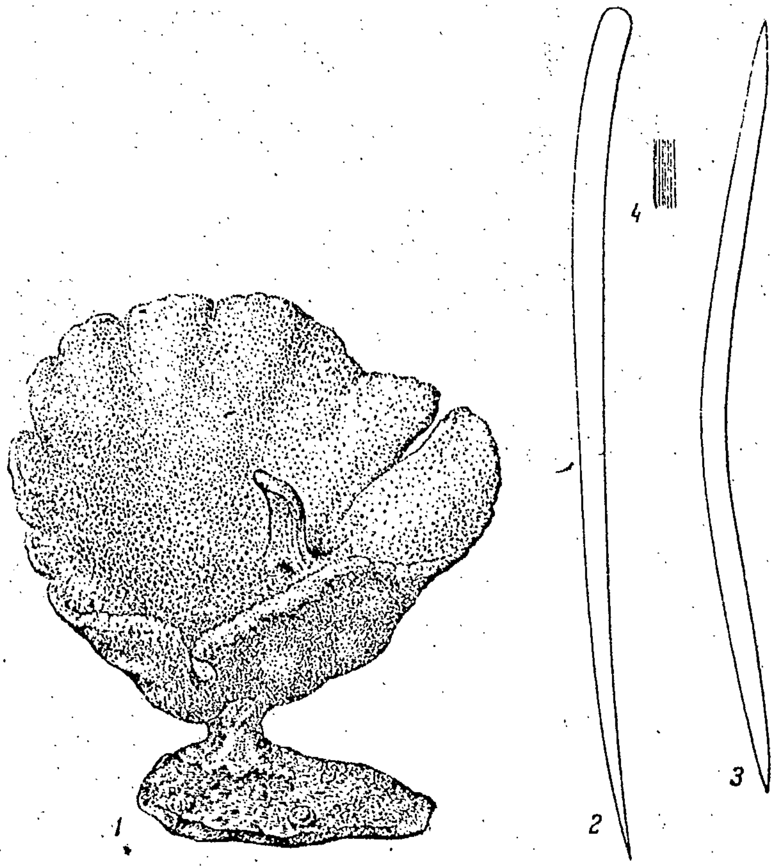


Рис. 159. *Phakettia arctica arctica* (Vosmaer).
1 — внешний вид губки (×1/2); 2 — стиль (×75); 3 — окс (×160); 4 — рафиды (триходрагма) (×375).

Fig. 159. Phakettia arctica arctica (Vosmaer). 1-external appearance of the sponge(X½); 2-stylus(X75); 3-oxus(X160); 4-rhaphidii(trichodragma)(X375).

Fig. 160. Phakettia bowerbanki (Vosmaer), a stylus(X225).

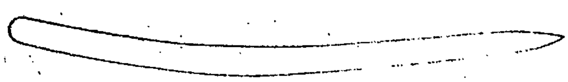


Рис. 160. *Phakettia bowerbanki* (Vosmaer) стиль (×225).

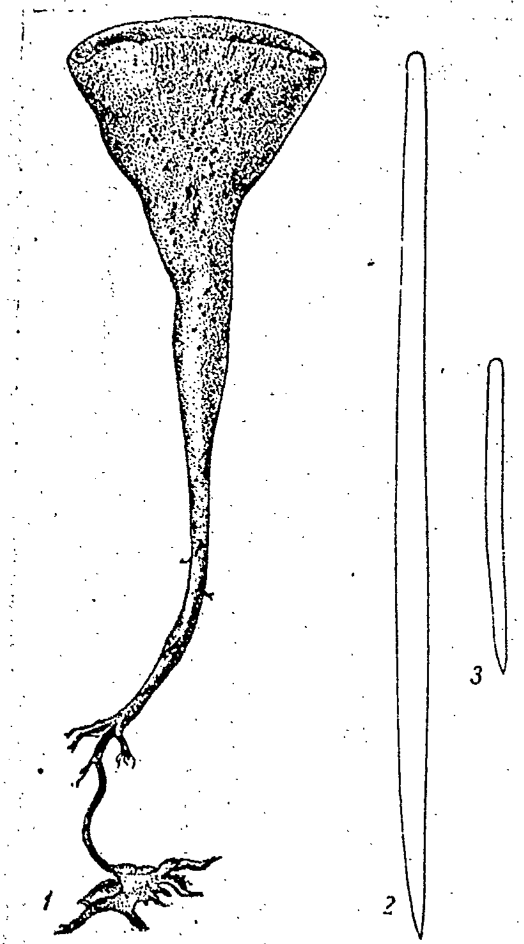


Рис. 161. *Phakettia cribrosa* (Miklucho-Maclay).

1 — внешний вид губки (×1/2); 2, 3 — стили (×160).

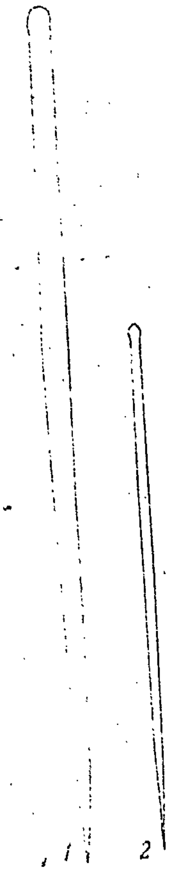


Рис. 162. *Homaxinella subdola* (Bowerbank).

1 — стиль (×95); 2 — субтилостиль (×225).

Fig.161. Phakettia cribrosa

(Miklucho-Maclay).

1-external appearance of the sponge(X½); 2,3-styli(X160).

Fig.162. Homaxinella subdola

(Bowerbank).

1-stylus(X95); 2-subtylostylus (X225).

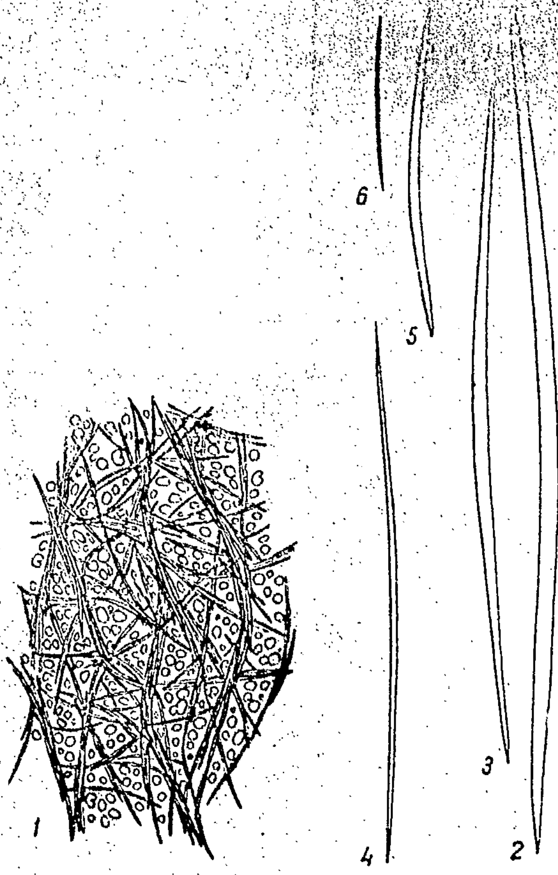


Рис. 163. *Halichondria panicea* (Pallas).
1 — расположение игл в дермальном скелете (×25); 2—6 — оксы (×95).

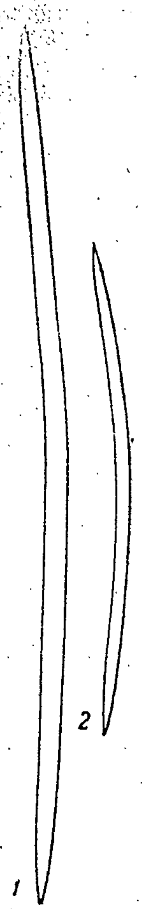


Рис. 164. *Halichondria sitiens* (O.Schmidt).
1, 2 — оксы (×95).

Fig.163. **Halichondria panicea** (Pallas).
1-arrangement of spicules in the dermal skeleton(X25); 2-6- oxi(X 95).

Fig.164. **Halichondria sitiens** (O.Schmidt).
1,2-oxi(95).

Рис. 165. *Hymeniacidon assimilis* (Levinsen).
1, 2 — стили (×190).

Рис. 166. *Gellius angulatus* Lundbeck.
1 — оке (×95); 2 — сигма большая (×225); 3 — сигма малая (×375); 4, 5 — дужки (×375).

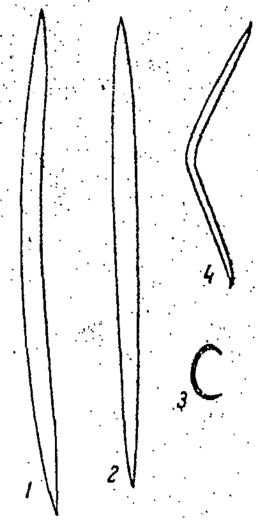


Рис. 167. *Gellius jugosus* (Bowerbank).
1, 2 — оксы (×150); 3 — сигма (×300); 4 — дужка (×300).

Fig.165. Hymeniacidon assimilis (Levinsen).
1,2-styli(X190).

Fig.166. Gellius angulatus Lundbeck.
1-oxus(X95); 2-large sigma (X225); 3-small sigma(X375); 4,5-toxi (X375).

Fig.167. Gellius jugosus (Bowerbank).
1,2-oxi(X150); 3-sigma (X300); 4-toxus(X300).

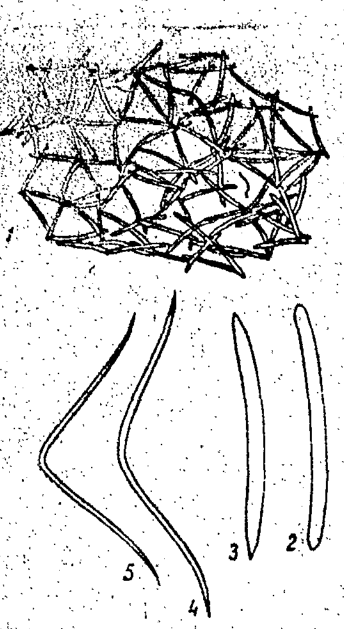


Рис. 168. *Gellius borealis* (Lambe).
1 — скелет дермальной мембраны (×30); 2, 3 — стронгила и окс (×120); 4, 5 — дужки (×320).

Fig.168. Gellius borealis (Lambe).
1-skeleton of the dermal membrane(X30); 2,3-strongylus and oxis(X120); 4,5-toxi(X320).

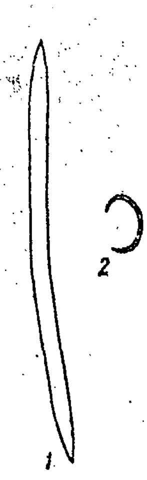


Рис. 169. *Gellius digitatus* Koltun.
1 — окс (×160); 2 — сигма (×400).

Fig.169. Gellius digitatus Koltun.
1-oxus(X160); 2-sigma(X400).

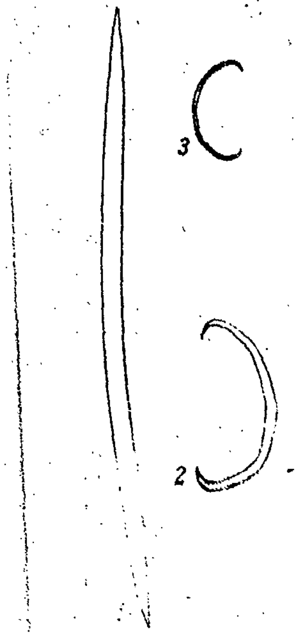


Рис. 170. *Gellius flagellifer* Ridley et Dendy.

1 — окс (×150); 2, 3 — сигмы (×225).

Fig.170. Gellius flagellifer Ridley et Dendy.

1-oxus(150); 2,3-sigmas(X225).

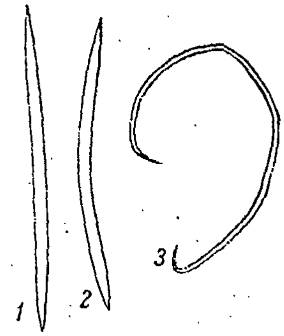


Рис. 171. *Gellius porosus* (Fristedt).

1, 2 — оксы (×120); 3 — сигма (×200).

Fig.171. Gellius porosus(Fristedt).

1,2-oxi(X120); 3-sigma(X200).

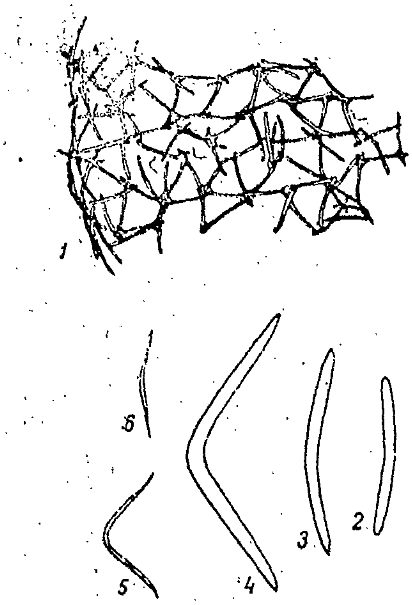


Рис. 172. *Gellius primitivus* Lundbeck.

1 — расположение игл в основном скелете (×20); 2, 3 — оксы (до стронгил; ×95); 4—6 — дужки (×300).

Fig.172. Gellius primitivus Lundbeck.

1-distribution of spicules in the main skeleton(X20); 2,3-oxi(to strongyli;X95); 4-6-toxi(X300).

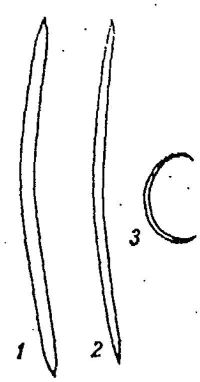


Рис. 173. *Gellius varius* Lundbeck.

1, 2 — оксы (×160); 3 — сигма (×320).

Fig.173. Gellius varius Lundbeck.

1,2-oxi(X160); 3-sigma(X320).

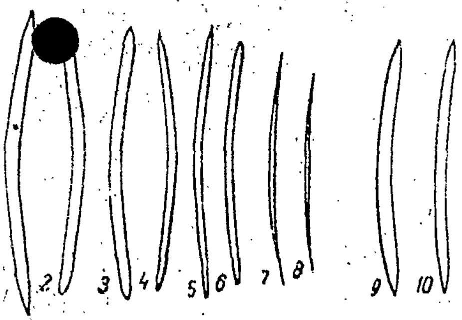


Рис. 174. *Haliclona aqueductus* (O. Schmidt).
1—10 — оксы (×160).

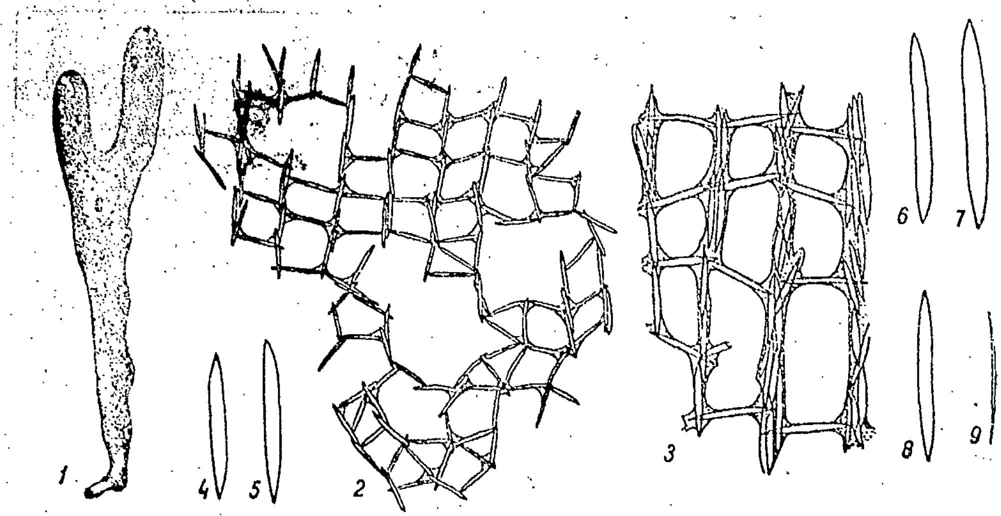


Рис. 175. *Haliclona gracilis* (Miklucho-Maclay).
1 — внешний вид губки (×1/2); 2, 3 — расположение игл в основном скелете (×25); 4—9 — оксы (×160).

Fig.174. Haliclona aqueductus (O.Schmidt).
1-10-oxi(X160).

Fig.175.Haliclona gracilis (Miklucho-Maclay).
1-external appearance of the sponge(X½); 2,3-distribution of spicules in the main skeleton (X25); 4-9-oxi(X160).

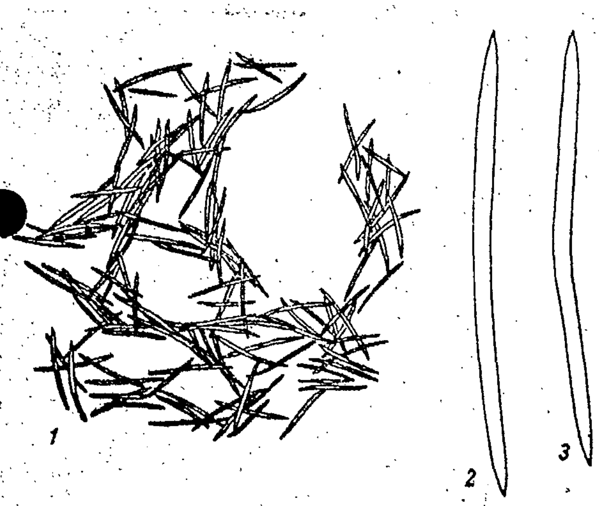


Рис. 176. *Haliclona oblonga* (Hansen).
1 — расположение игл в основном скелете (×20); 2, 3 — оксы (×150).

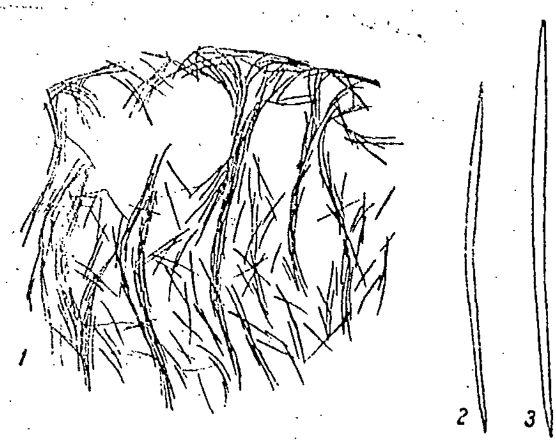


Рис. 177. *Haliclona rossica* (Hentschel).
1 — расположение игл в основном скелете (радиальный разрез; × 25); 2, 3 — оксы (×160).

Fig.176. Haliclona oblonga (Hansen).
1-distribution of spicules in the main skeleton(X20); 2,3-oxi(X150).

Fig.177. Haliclona rossica (Hentschel).
1-distribution of spicules in the main skeleton (radial section)(X25); 2,3-oxi(X160).

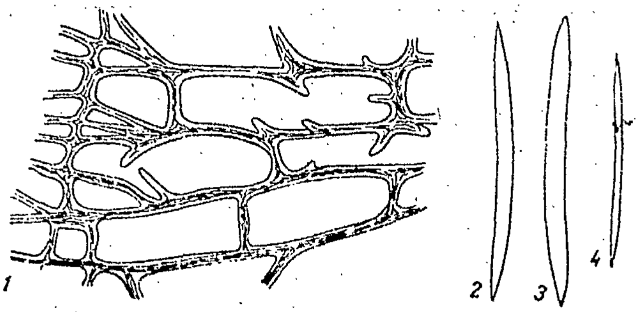


Рис. 178. *Haliclona schmidti* (Lundbeck).
1 — строение скелета губки (×12); 2—4 — оксы (×150).

Fig.178. Haliclona schmidti (Lundbeck).
1-structure of the skeleton(X12);
2-4-oxi(X150).

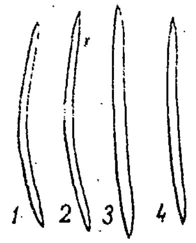


Рис. 179. *Haliclona cinerea* Grant.
1—4 — оксы (×150).

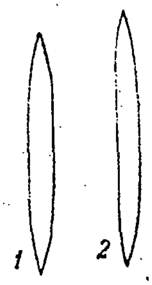


Рис. 180. *Haliclona urceolus* (Rathke et Vahl).
1, 2 — оксы (×95).

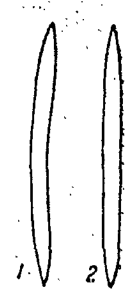


Рис. 181. *Haliclona ventilabrum* (Fristedt).
1, 2 — оксы (×150).

Fig.179. Haliclona cinerea Grant.
1-4-oxi(X150).

Fig.180. Haliclona urceolus (Rathke et Val).
1,2-oxi(X95).

Fig.181. Haliclona ventilabrum(Fristedt).
1,2-oxi(X150).

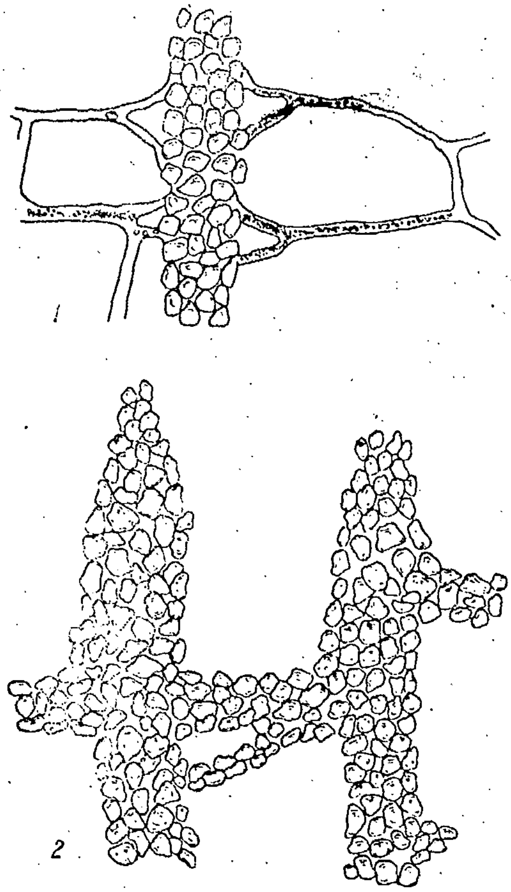


Рис. 182. *Dysidea fragilis* (Montagu).
1, 2 — строение скелета губки (×375).

Fig.182. Dysidea fragilis

(Montagu).

1,2-skeletal architecture of the sponge(X375).

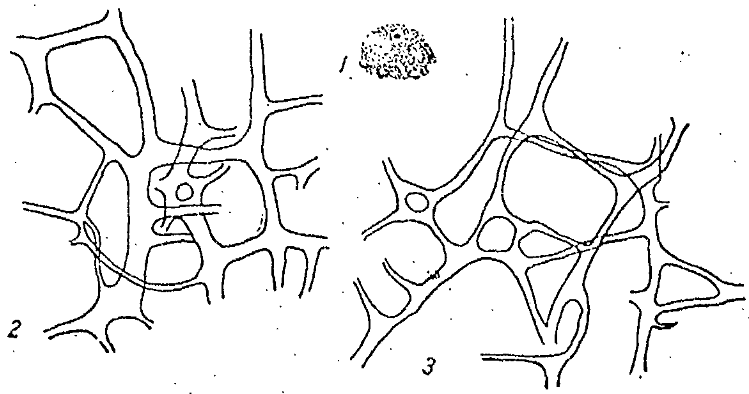


Рис. 183. *Spongionella carteri* (Burton).
1 — внешний вид губки (×2/5); 2, 3 — строение скелета (сеть из роговых волокон; ×160).

Fig.183. Spongionella carteri (Burton).

1-external appearance of the sponge(X 2/5);

2,3-skeletal architecture (meshwork of horny fibers; X160).

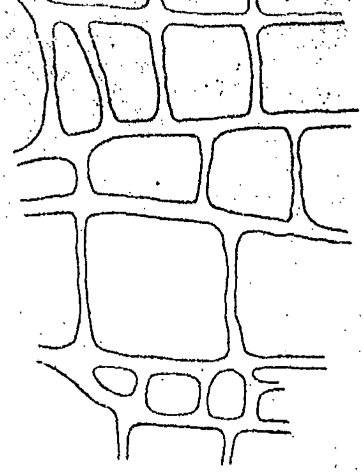


Рис. 184. *Spongionella pulchella* (Bowerbank), строение скелета (сеть из роговых волокон; ×40).

Fig.184. Spongionella pulchella (Bowerbank); skeletal architecture (meshwork of horny fibers; X40).

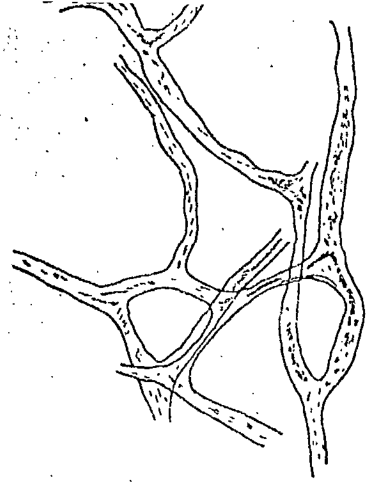


Рис. 185. *Cryptospongia enigmatica* Burton, строение скелета (сеть из роговых волокон; ×40).

Fig.185. Cryptospongia enigmatica Burton; skeletal architecture(meshwork of horny fibers;X40)

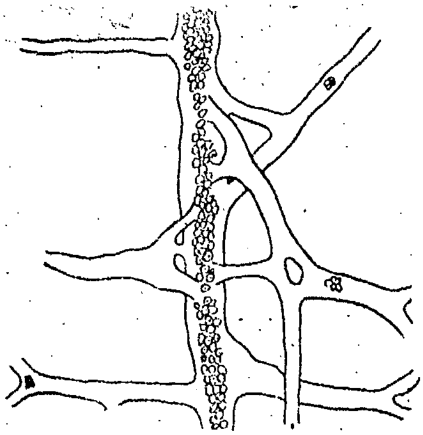


Рис. 186. *Aplysinopsis lobosa* Burton, строение скелета (сеть из роговых волокон, местами содержатся песчинки; ×18).

Fig.186. Aplysinopsis lobosa Burton; skeletal structure(meshwork of horny fibers with occasional inclusions of sand grains; X18).

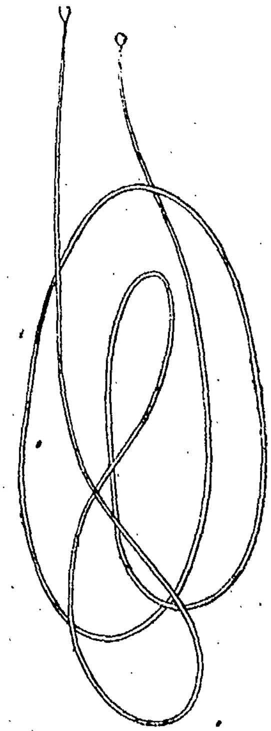


Рис. 187. *Hircinia variabilis* Schulze, филамент (×100).

Fig.187. Hircinia variabilis Schulze, a filament(X100).

ALPHABETICAL INDEX OF LATIN NAMES.[1]

АЛФАВИТНЫЙ УКАЗАТЕЛЬ ЛАТИНСКИХ НАЗВАНИЙ[1]

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[1] Названия таксономических единиц выше рода выделены жирным шрифтом, синонимы — курсивом; жирные цифры обозначают страницы с диагностическими данными, курсивные — страницы введения; звездочка при цифре указывает страницу с рисунком, а римские цифры — номер таблицы, где помещены фотографии внешнего вида названной формы. В указателе содержатся только названия губок.

(1) **Names of the taxonomic units above the genus are given in bold type; synonyms are in italics; figures in bold type indicate the pages with descriptions, figures in italics show the pages of the introductory part; asterisks placed next to the figures indicate pages with relevant illustrations, Roman figures give the numbers of plates with photographs of the external appearance of the given form. The index includes only the names of sponges.**

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Vladimir Mikhailovich Koltun

Corneosiliceous sponges of northern and far eastern seas of the USSR

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