

A  
SYNOPSIS  
OF THE  
ARCTIC AND SCANDINAVIAN  
RECENT MARINE  
FORAMINIFERA

HITHERTO DISCOVERED

BY

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WITH TWENTY-FIVE PLATES.

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STOCKHOLM 1894.  
KUNGL. BOKTRYCKERIET. P. A. NORSTEDT & SÖNER.

This Synopsis is founded on materials extant in the Swedish State Museum and for the most part brought together by the various arctic expeditions which during the two decennaries 1858—1878 were fitted out from Sweden, as also by the dredgings of numerous naturalists which for many years have investigated its shores.

A brief review of the cruises and dredging-excursions thus carried out, will give the reader some notice about the stations searched.

In the year 1858 OTTO TORELL, accompanied by ADOLF NORDENSKIÖLD and AUG. QVENERSTEDT, undertook a private cruise of two months on the western parts of Spitzbergen, and brought home extensive marine and geological collections, particularly from Icesound, Bellsound and Hornsound, where they reached the greatest depth at 900 meters.

The arctic expedition of 1861, with O. TORELL as leader, resulted also in rich collections, made by ANDREW MALMGREN, ADAM FREDERIC SMITT, and myself. Extensive dredgings were undertaken in the bays and surrounding seas of the western, northern, and eastern parts of Spitzbergen, and the late Dr. KARL CHYDENIUS from Helsingfors made deep sea soundings in  $75^{\circ}$  n. lat. and  $12^{\circ}$  east long., where the bottom was caught in 1,869 meters, and in  $76^{\circ} 17'$  n. lat.,  $13^{\circ} 53'$  east. long., where the Bulldog machine struck bottom at a depth of 2,490 meters.

In 1864 a reconnoitering expedition under the command of NORDENSKIÖLD, accompanied by MALMGREN as zoologist, visited the southern bays of Spitzbergen and brought home valuable collections.

In 1868 the steamer "Sophia", commander now Admiral Baron F. W. VON OTTER, was sent to the seas of Spitzbergen on an expedition the scientific chief of which was NORDENSKIÖLD, while SMITT and MALMGREN were attached as zoologists. Numerous dredgings were executed and deep sea soundings made, so in  $81^{\circ} 32'$  n. lat. northwest from Spitzbergen, where the sounding machine brought up bottom clay from 2,314 meters, and in  $78^{\circ} 26'$  n. lat.,  $2^{\circ} 17'$  west. long., from 4,700 meters, besides at other stations west and northwest of Spitzbergen from depths of 1,000—2,000 meters.

During a reconnoitering tour to Greenland in 1870 NORDENSKIÖLD was accompanied, amongst other men of science, by Dr. P. ÖBERG who at several places in Baffins Bay brought up quantities of typical arctic Foraminifera of high development, from a depth of 100 to 650 meters. The principal stations were Jacobshavn, Claushavn, Tossukatek, Disco.

Dr. JOSUA LINDAHL, who previously had assisted at the scientific cruise of the "Porcupine", had the fortune in 1871 to join H. M. gunboats "Ingegerd" and "Gladan", on their visit to Greenland. He made deep-dredgings with the best result in the north-western Atlantic, and in Baffins Bay up to 72° n. lat. In 53° 34' n. lat. and 52° west. long. he got some hauls from 1,780 meters.

In the year 1875, when NORDENSKIÖLD set out for the Kara Sea, Nova Zembla and the Yenisej river, he was joined by HJALMAR THÉEL and ANTON STUXBERG. In 1876 and 1878 about the same parts of the Arctic Sea were again visited, the last year by the renowned Expedition of the "Vega". The greatest depth in these seas seems to be about 270 meters.

As for the Scandinavian seas they have been perseveringly searched by several of our ablest zoologists. SVEN LOVÉN who was the first who undertook systematically to explore our western shores already in the year 1831, has largely contributed to our knowledge of the fauna of Evertebrates from these parts of the North-Atlantic.

In 1865 Dr. AXEL LJUNGMAN made a successful dredging tour to the Koster Islands in the Skagerack, and in 1889 I visited these islands myself, both voyages resulting in a good harvest of Foraminifera. The greatest depth in this part of the Skagerack amounts to about 220 meters.

On a surveying cruise of H. M. gunboat "Gunhild" in 1877 HJ. THÉEL and CARL BOVALLIUS made dredgings with the best result in the Skagerack to the depth of 900 meters. In the two following years the same work was continued by THÉEL, FILIP TRYBOM and C. FORSTRAND, along the coasts of the southern and western provinces of Sweden.

During the past decennium important contributions to the collections have been made by CARL AURIVILLIUS and AXEL WIRÉN, which on their stays at the biological station of the Swedish Academy of Sciences on our western coast, have made interesting finds particularly in the bay of Gullmaren, where a well developed Rhizopodal fauna is met with in 150 meters.

In the deep bays of Norway, as in the fjords of Qvænangen and Hardanger, CARL AURIVILLIUS with his usual sedulity and success performed extensive dredgings in 1884 and 1888. But for our acquaintance with the Rhizopod fauna of these places we are mainly indebted to the eminent English naturalist Reverend Dr. M. NORMAN, who in 1883 with the greatest liberality presented to our State Museum an exquisite collection from various Norwegian localities, which he had visited several times. From the surroundings of Bergen in Norway WILH. LILLIEBORG and GUSTAF LINDSTRÖM carried home some materials which have yielded many interesting forms.

It is due also here to recall the work done by RUPERT JONES and W. KITCHEN PARKER which, as early as in 1857 and 1865, had largely contributed to our information regarding the North-Atlantic Rhizopodal fauna; as also that of Mr. HENRY BRADY in several papers on the finds of the last English and Austrian arctic expeditions, reproduced in his great work on the Foraminifera in the Challengers Report 1884.

For the sake of a completing comparison some extraneous forms have also been introduced in this synopsis, as from SMITTS and LJUNGMANs fine collections from the Atlantic off the Azores, and from my own finds in the Caribbean Sea.

Although, in this way, many and various localities have been searched, it is still not to be expected, that our collections at present should afford materials enough for a somewhat complete synopsis and study of the fauna in question. Many a time the whole material from a locality consisted of a small quantity of sand or mud accidentally adhering to the more conspicuous contents of the dredge, and only occasionally I have been enabled to examine somewhat larger quantities of bottom samples. Particularly amongst the *Astrorhizidæ* and *Trochamminidæ*, as also in the family of *Lagenæ*, we may expect to find in our latitudes numerous forms not here recorded.

In arranging the members of this fauna I have adhered to the Linnean method of distinguishing the species by the least fickle features which in every case present themselves. Any other method of systematizing, aiming at an unnatural differentiation of allied forms on the basis of smaller differences, results only in confused crowds of nominations of no distinctive or specific value and of no benefit whatever for our study. Intermediate forms, presenting unimportant differences from the typical species, I therefore range as "varieties" or "allied forms" with or without distinctive denominations.

Any one who for some length of time has been engaged in the study of this class, is familiar with the common occurrence of even great diversity between individuals apparently issued from the same stock. Whenever this is the case we should not be too prone to dissociate such forms under different denominations, the more so as it may be expected that the employed 'characters' are not available for a satisfactory limitation of more validity than what concerns local and individual minor discrepancies. Thus, in systematizing this class, it is not at all needed to rank "varieties" as "species", as has been insisted upon by BRADY. Although it would be consistent with nature to speak of "variety of variety", we are not compelled to carry out such a scheme, when we *coordinate* all varieties under their type species. It is neither easier nor more difficult to characterise distinct species amongst an assemblage of forms of this class than is the case within other classes of organisms, particularly when we have to deal with allied forms extending over several geological horizons or areas of the sea. Intermediate forms and varieties are met with at every instance, and this course of things will always bring about a more or less deficient limitation of species and genus, but by giving the notion of species its due compass, and expanding the spheres of genera, always selecting the more constant differential features, we may overcome a good deal embarrassing inconsistencies in the system, the chief purpose of which should be to unfold the affinity and origin of the forms.

A discrepancy in the features of forms issued from the same stock, is not seldom met with in this class, and this kind of variation has brought about and still causes a great deal of confusion in systematizing. It evidently arises from the various degree of development of the initial segment or primordial embryochamber which is subject to some variation in the same species or even in the same individual or "colony". This variableness seems to concern not only the size but also the power of growth of the embryo-chamber, and results in modifications of the arrangement of the subsequent segments.



If we examine, for instance, a "Flabelline" Frondicularia, Fig. I, *A*, we will readily distinguish a small embryonal or primordial segment (*e*) that brings forth a larval stage with five segments (*l*), disposed in a manner which constitutes the Vaginulina shape or the nearly allied Crepidula form amongst the Nodosarinae. Subsequent to this stage we find the segments arranged in the peculiar Frondicularia manner, representing the mature or fully developed stadium (*m*), and commencing when the larval stage has completed its fifth segment.

Another modification of the same form is represented in Fig. *B*. The initial segment is here about twice as big as in *A*, or somewhat more, and the larval stage shows but three segments, whereupon the mature Frondicularia stage ensues.

Lastly we meet with the form *C*, generally provided with a larger initial segment, which regarding its power of growth or maturity seems to equalize the whole embryonal and larval condition of the animal, assuming at once the mature Frondicularia segments. In all other respects these three forms resemble each other and ought not be ranked as different species. They have all originated from somewhat differentiated primordial embryo-

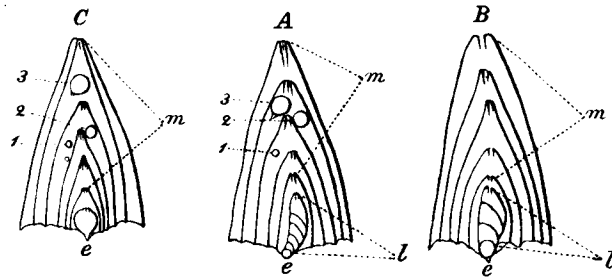


Fig. I. *Frondicularia alata* D'ORB. with 3 different forms of its larval stage.<sup>1</sup>

segments, and the arrangement of the subsequent segments apparently bears a certain physiological relation to the development of the initial stage.

The least developed primordial segment (*1*) is apparently tending to bring forth a larval stage that inherits the form of the original type (here Vaginulina) and it has to go through a more retarded evolution before it reaches maturity (fig. I *A*). A more powerful initial segment (*2*) gives rise to a more readily performed larval development, its segments being stronger but reduced in number, and more apt to grow into the mature stage (fig. I *B*). The highest developed embryo-segment (*3*) gives rise to a true "Frondicularia" (Fig. *C*) without any intervenient larval stage. Thus it will be obvious that the number and form of the larval segments must become subject to great variation, and stages with two and several segments will therefore be met with in the same species of Frondicularia.

Thus, in this instance, we have before us the plainest proceeding of evolution from one type to another, in which an earlier type becomes larva for another type. At last the larval condition is reduced to a single segment and a new form has originated, seemingly standing without much morphological connection with its origin.

<sup>1</sup> The different embryo segments are represented as occupants of the mature segments, but in reality the larger ones are probably generated outside of the chambers.

It must, however, be borne in mind, that the smallest embryo segments not always give rise to a dimorphous colony, but at once assume the mature arrangement of the segments. Such forms are often apt to a pygmean growth. The same mode of evolution in other genera, particularly in *Miliolina*, has been made the object of most painstaking researches by the experienced Rhizopodologist M. SCHLUMBERGER, who with the utmost skill and sedulity, in numerous papers<sup>1</sup> — mostly during the last seven years published in the *Mémoires* and *Bulletins de la Société Zoologique de France* and in *Mémoires de la Société géologique de France* — has produced masses of examples of this evolutionary process in some *Miliolina*. In these excellent expositions it is stated, that the smallest primordial segments give rise to a larval stage generally of *quinqueloculine* arrangement of the segments, often succeeded by a *triloculine* development, whereupon follows the mature *biloculine* condition.

Instances of a total *triloculine* larval stage will also be met with, being a shorter step to the fully developed *biloculine* stage. The initial segment in such forms is generally somewhat larger than in the last mentioned forms.

As in the instances of polymorphism in *Fronicularia* the differences in the arrangement and number of segments in the larval stage are subject to great variation, so may also the polymorphism in the *Miliolina* be looked upon as vacillating gradations of evolution, which cannot afford satisfactory distinctions for establishing species; and that so much the less, when we consider, that initial segments with different power of growth are, as stated above, produced by one and the same individual segment. An arrangement of the larval segments may in several instances appear as being directed by a clear mathematical rule, but which at another time will be eclipsed by irregularities and exceptions.<sup>2</sup>

To show how little attention has been paid to these facts even by reputed Rhizopodologists I will reproduce some of v. REUSS' designations amongst an assemblage of *Nodosarina communis* D'ORB, with varieties, depicted by v. SCHLICHT in his valuable memoir, the *Foraminiferen des Septarienthones von Pietzpuhl 1870* (Wien Ak. S. Ber. 62, p. 455).

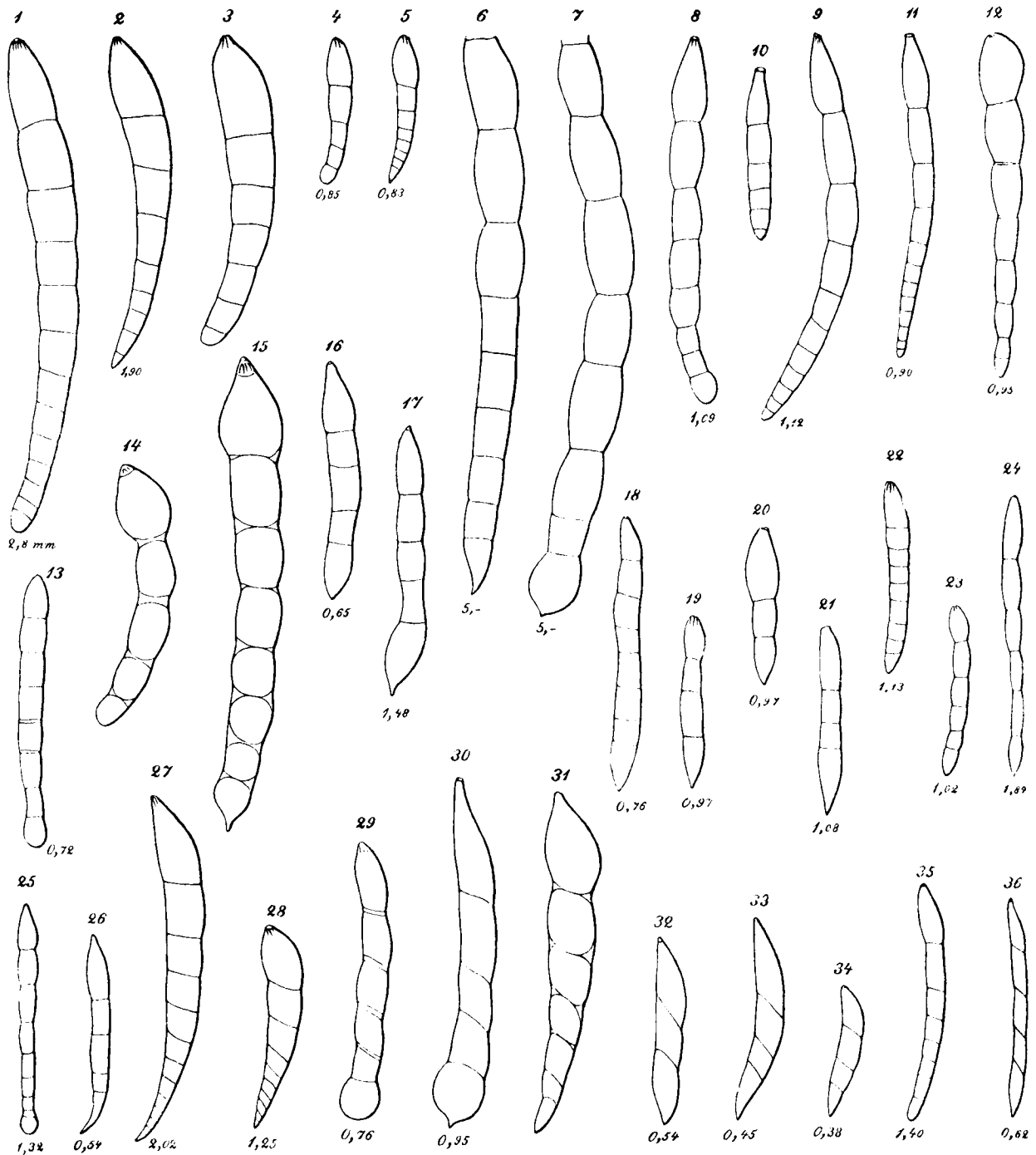
To any one experienced in dealing with this category of organic forms it will be obvious, that all the forms here (Fig. II) represented from fig. 1 to fig. 22 must be grouped under *Nodos. communis* D'ORB. var. *consobrina* D'ORB. (a denomination, which will be better substituted by "*pauperata*" D'ORB. the nomen triviale "*consobrina*" being superfluous). As usually the segments of the more developed stages become more or less inflated and present constricted sutures.

Fig. 23—26 represent forms approaching *Nod. Bouéana, ovicula* D'ORB. and perhaps the allied *farvimen* SOLD. but may also be considered as a feeble form of the preceding.

Fig. 27—34 are forms of *N. communis* D'ORB. and not distinct from *Nod. Roemeri* and *mauronata* NEUGEB.

<sup>1</sup> For the courteous communication of his memoirs I have to acknowledge my great obligations to the author. Valuable informations and suggestions on this subject have also been advanced by VAN DEN BROECK in *Bull. R. Soc. Malac. Belge* (1893), 28; and in *Bull. Soc. Belge Geol.* (1893), 7. For transmission of his able papers I stand under great obligation to this author.

<sup>2</sup> For a fuller account of the "dimorphism" see my paper "Om den så kallade verkliga diamorfismen hos *Rhizopoda reticulata*" 1889, *Bih. till K. Sv. Vet. Ak. Handl.* 15. 4, No. 2.

Fig. II. *Nodosarina communis* D'ORB. with 3 allied forms.

1, 6, 7, 8, 9, 15, 23, 24. *N. consobrina* (D'ORB.) Rss. — 2. *N. Verneuli* (D'ORB.) Rss. — 3, 4, 10. *N. vermiculum* Rss. — 5. *N. Bötcheri* Rss. — 11. *N. acuticauda* Rss. — 12. *N. laxa* Rss. — 13. *N. subaequalis* Rss. — 14. *N. inflexa* Rss. — 16, 18, 20, 21, 26. *N. bicuspidata* Rss. — 17. *N. Benningeni* Rss. — 19. *N. approximata* Rss. — 22. *N. plebeja* Rss. — 25, 29. *N. indifferens* Rss. — 27, 31. *N. inornata* Rss. — 28. *N. mucronata* (NEUGE) Rss. — 30, 35. *N. obliquata* Rss. — 32. *N. abnormis* Rss. — 36. *N. communis* (D'ORB.) Rss. — 33, 34. *N. pygmaea* Rss.

Fig. 35—36 *Nod. communis* D'ORB. approaching the slender form called *badensis* D'ORB.

Thus, amongst the whole assemblage of figured forms which v. REUSS has distinguished as 19 species, we are unable to discern more than one type species with its 2 or 3 varieties. Many more instances of a thoroughly arbitrary differentiation of forms could be produced, and the chosen one is not to be considered as being of a more extravagant character than that displayed in works of several other writers.

Amongst features and morphological structures which cannot reasonably be considered as of any but relative value for distinctive purposes are to be pointed out the following:

the *absence* or *presence* of a *marginal wing* or *keel*, of *marginal spines*, of *pseudopodal tubes*, of “*beads*” scattered over or covering the surface, and of *limbation of the sutures*.

*Striation* of the shell-surface is also a rather unsteady feature, one part of the shell often being striated, another part smooth.

The *number of ridges* is subject to great variation, for instance among the *Lagenæ*, *Nodosarinæ*, and *Miliolinæ*.

The shape of the aperture of some genera exhibits a remarkable degree of variation, with great diversity between the young and older stages in one and the same “colony”, particularly amongst *Miliolinæ*.

The limitation of the genera in this class has been subject to just as many incongruities as the ranging of the species. Several families, particularly *Nodosarinæ*, *Buliminæ*, *Miliolinæ*, offer ample illustrations of the shortcoming of an uncalled for endeavour to dissociate allied types. When the boundary-lines of distinction drawn up between the genera at every instance not hold good, we must fall in with a spurious differentiation encumbering the system with distinctions totally in want of reasonable qualifications. The usual result of such a device is that the student soon will be confronted with forms which reasonably would be ranked under *one* species, but still, according to the artificial differentiation, are disjoined under two—three spurious genera. Such instances are not seldom met with in D'ORBIGNY'S and other distinguished authors' arrangement of genera. In the agglutinating groups the institution of genera seems founded on a singularly arbitrary basis. Nay, the whole order “*arenaceous*” is scarcely based on sound discrimination.

The inconsistency in instituting the “*arenaceous*” Foraminifera as a separate group is shown among such genera as *Textularia*, *Miliolina* and *Bulimina*, which often exhibit forms with agglutinating test, and still must be ranged with their calcareous congeners. Certain facts seem also to support the view advanced by MELCH. NEUMAYR<sup>1</sup> and others, that a great deal of the homogeneous calcareous Foraminifera have taken their origin from arenaceous forms. It would, therefore, not be surprising to meet with *Polystomellæ*, *Nonioninæ*, and other calcareous forms, in the same agglutinating condition. Further in-

<sup>1</sup> M. NEUMAYR: Die natürlichen Verwandtschaftsverhältnisse der schalentragenden Foraminiferen; Wien. Ak. Sitz. Ber. (1887), 95, 1.

quiries may bring forth several instances of this category, and it would consequently be found that a great deal of arenaceous forms are too nearly allied to the calcareous ones to be grouped so far asunder from one another as usually they have been. NEUMAYR'S disposition of the Foraminifera in 5 families, some containing arenaceous genera coordinated with the homogen-calcareous ones, is very acceptable as being more consistent with our notion of the close alliance between the agglutinating and not agglutinating forms of *Textulariæ* and *Miliolinæ*. Whether the different genera in NEUMAYR'S system in every instance have been ranged under their proper tribus or place of affinity, is a question that may be subject to a variance of opinions, but his device is worthy of the Rhizopodologists great attention. For deciding in these matters we are in demand of far more extensive assemblages of forms both recent and extinct than as yet have come to notice.

As to the "arenaceous" group, in its present usually adopted arrangement, there would be some reasonable ground for objections even concerning the disposal of its sub-families and their genera. Some of these sub-families are apparently in want of true natural distinctions, for we are not able to consider the nature of the cementing and the smoothness of the surface as of sufficient distinctive value for instituting families and genera (Cf. BRADY, *Challeng. Rep.* 9, 1884, p. 63—67). On such fickle ground the tribus *Rhabdammineæ* has been splitted up in 9 genera. The *Lituolinæ* have been subject to the same treatment. The limits between the *Nodosarina*-like *Lituolæ* and the *Nautiloid* ones are as faint as between the true *Nodosarinaæ* and their allied *Cristellariæ*.

Under the subfamily *Trochammineæ* the most heterogenous forms have been ranged on account of their tests being more finely agglutinated and compacter than in *Lituolinæ*; and far apart from both these subfamilies have been placed the closely allied *Cyclammineæ* on no other ground than the cellular or cancellated condition of the shell-wall in the larger forms of the family, while these features are sometimes wanting in the smaller ones.

With these few remarks on the usually adopted plan of systematizing this class I have intended only to convey to the interested student an idea of the several blanks in our information regarding the real affinities between the genera and forms in question.

For much valuable assistance in preparing this synopsis I have to acknowledge my great obligation to Professor S. LOVÉN who has put at my disposal for examination the whole collection of Rhizopodes belonging to the Swedish State-Museum.

Professor G. LINDSTRÖM, of the Palæozoic Departement of the same Museum, has with unremitting interest kindly communicated to me papers of later dates on the subject which, without such an able assistance probably would have escaped my notice. To Mr. CHARLES DAVID SHERBOM in London I am greatly indebted for communicating to me his most valuable Bibliography of the Foraminifera which publication is indispensable to the study of this class.

Sincere thanks are also due to the well-known Rhizopodologists MM. JOSEPH WRIGHT of Belfast and FORTESCUE MILLETT in Cornwall which gentlemen with the greatest liberality have furnished me with type-samples from their own and other english writers' descriptive papers.

To the Geheimrath CARL MÖBIUS in Berlin I am under obligation for lending me for examination good many examples belonging to the German State Museum; as also to Professor W. DAMES, curator of the Geological-palæozoic Departement of the Museum, for his kind assistance in enabling me to examine the tertiary and chalk Foraminifera under his care.

To my friend Cav. LUIGI DI ROVASENDA at Sciolze it is a pleasant duty to express my hearty thanks for his efficient assistance and kind hospitality while on a stay in Piemonte last spring in search of tertiary Foraminifera. I have also to acknowledge the communicating of valuable papers and advices in connection with this essay from Prof. FED. SACCO, Rev. ERM. DERVIEUX, Dr. G. DE AMICIS in Turin and from Dr. C. FORNASINI in Bologna.

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**ASTRORHIZA SANDAHL.****A. limicola SANDAHL.**

Tab. I, figg. 1—3.

Depressa, lenticularis, brachiis 7—15 radiantibus, marginalibus, apice in brachiola irregulariter plerumque divisis; testa minus crassa, nunc maxima e parte e limo nunc e sabulo et glarea constructa; nigrogrisea aut brunnea.

Brachiola flexilia, membranacea, limo et arena sparse intexta, fragilia, caduca.

Interdum tumidiuscula.

Fig. 1: forma luxurians e limo et glarea constructa; ad insulas Koster Bahusiæ, profund. metr. 130 (Dr. A. WIRÉN).

Figg. 2—3: formæ solitæ, e fretis insularum Koster; profund. metr. 15—30. (Fig. 3: *A. arenaria* auctorum).

**Astrorh. limicola** SANDAHL, 1857: Nya former af Rhizopoder; Sv. Vet. Ak. Öfvers. 14, p. 301, t. 3, ff. 5—6.

**Astrodiscus arenaceus** E. SCHULZE, 1874, 2te Jahresber. Commiss. Wissensch. Untersuch. deutschen Meere 1872—73, 5, p. 113, t. 2, f. 10.

**Hæckelina gigantea** BESSELS, 1874: Hæckelina gigantea, ein Protist d. Monothalamien, Jenaische Zeitschr. 9, p. 265, t. 14.

**Arenistella elegans**, FISCHER et FOLIN, 1875, Les fonds de la mer 2, pp. 26 & 52; FISCHER, 1875, Note sur un type particulier des Rhizopodes (*Astrorhiza*), Journ. Zool. 4, 1875, p. 510, t. 1, ff. 1—4.

**Astrorh. limicola** BRADY, 1884, Chall. Rep. 9, p. 231, t. 19, ff. 1—4.

Hab. ad oras Scandinaviæ occidentales, metr. 8—60 passim.

**A. arenaria NORMAN.**

Tab. II, figg. 4—10.

Depressa aut ventricosa, irregulariter radiata aut ramosa, sæpe alicorniformis, brachiis apice nunc obtuso nunc extenuato, aperturis singulis.

Testa ex sabulo et arena constructa, brachiis interdum compressis. A præcedente non sat limitanda; notæ a BRADY (Challeng. Rep. p. 232) exhibitæ vagæ, non specificæ, nec materia structuræ notas veras reddit.

Longit. mm. 6—18.

Figg. 4—5: e mari Spetsbergensi; profund. metr. 500—950.

Fig. 6: e fretis insularum Koster Bahusiæ, profund. metr. 15—25.

Figg. 7—8: e sinu Skagerack; profund. metr. 250; Fig. 8: facies marginalis.

Fig. 9: e sinu Söderfjord Norvegiæ; profund. metr. 444 (Dr. C. AURIVILLIUS).

Fig. 10: e sinu Österfjord Norvegiæ; profund. metr. 530 (Rev. NORMAN).

**Astrorh. arenaria** NORMAN, 1876, "Valorous" Cruise in Davis strait 1875, Proc. Roy. Soc. 25, p. 213.

> > BRADY, 1879, Retic Rhizop. Chall. Exped., Qv. Journ. Micr. Sc. (n. s.) 19, p. 43.

> > CARPENTER, 1876. On genus *Astrorh.* described as *Hæckelina* by Dr. BESSELS; Quart. Journ. Microsc. Sc. (n. s.) 16, p. 221, t. 19, ff. 1—13 (ex parte?).

> > BRADY, 1884, Challeng. Rep. 9, p. 232, t. 19, ff. 5—10.

Hab. mare germanicum, sinus norvegicos, mare arcticum; metr. 250—4,200 passim.

**A. crassatina** BRADY.

Tab. II, figg. 11--15.

Ovalis aut irregulariter clavata, interdum fusiformis aut cylindrica; canali interna plerumque utrinque aperta, sæpe inæquali, passim dilatata; apertura sæpe coarctata, subcirculari; testa crassa ex sabulo fragmentisque testarum et spiculis spongiarum constructa; grisea, rudis; extremum alterum apertura interdum destitutum.

Figg. 11—12: lageniformis, e mari Spetsbergensi; profund. metr. 4,630; fig. 12: apertura unica.

Figg. 13—15: magis cylindrica, ex eodem loco, profund. metr. 2,670; fig. 14: apertura superna; fig. 15: apertura bulbi initialis.

**Astrorh. crassatina**, BRADY, 1881, Ret. Rhizop. Chall. Exped., Qu. Journ. micr. Sc. (n. s.) 21, p. 47.  
BRADY, 1884, Chall. Rep. 9, p. 233, t. 20, ff. 1—9.

Hab. mare arcticum Spetsbergense metr. 2,670 (CHYDENIUS); metr. 4,630 (v. OTTER); long. mm. 8—10.

**STORTHOSPHERA** E. SCHULZE.**S. albida** E. SCHULZE.

Globosa aut subglobosa, rugosa spinisque crassis, brevibus, obtusis, sæpe irregulariter compressis, curvatis et subdigitatis oblecta; aperturis obsoletis.

Plerumque albidogrisea aut fusco-brunnea.

Diam. mm. 2—3.

**S. albida** SCHULZE, 1875, 2te. Jahresber. Commiss. wissenschaft. Untersuch. der deutsch. Meere 5, p. 113,  
t. 2, f. 9.  
BRADY, 1884, Challeng. Rep. 9, p. 241, t. 25, ff. 15—17.

Hab. in sinibus norvegicis, profund. metr. 320—640 passim (Rev. NORMAN, Dr. APPELLÖF).

**SACCAMMINA** M. SARS.**S. sphærica** M. SARS.

Tab. III, figg. 16—18.

Globosa aut subpyriformis, interdum fusiformis; apertura circularis sæpe in tubulo brevi patens.

Nunc ex arena tenui nunc sabulo structa, plerumque grisea aut ferruginea; magnitudine valde varians, mm. 0.5—3.0.

Interdum bi-triloculata.

Figg. 16—17: exemplum mediocre e fretis insularum Koster Bahusia, profund. metr. 50—100.

Fig. 18: pygmæa e sinu Skagerack profund. metr. 580.



- Saccammina sphaerica** M. SARS, 1868, Vidensk. Selsk. Forh. 1868, p. 248.  
 » » BRADY, 1884, Challeng. Rep. 9, p. 253, t. 18, ff. 11—17.

Hab. ad oras occidentales Scandinaviæ profund. metr. 2—1,000 sæpe frequentissima: mare Groenlandicum metr. 500 (Prof. Dr. LINDAHL, Dr. ÖBERG),

## PSAMMOSPHÆRA E. SCHULZE.

### **P. fusca** E. SCHULZE.

Tab. III, fig. 19.

Sphærica aut subsphærica, apertura communis nulla; ex sabulo plerumque crasso constructa; nunc libera nunc affixa.

Forsan a præcedente immerito disjuncta.

Fig. 19: e mari Norvegico profund. metr. 530.

- Psammosp hæra fusca** F. E. SCHULZE, 1874, 2te. Jahresber. Commiss. Untersuch. deutsch. Meere 1872—73, 5, p. 113, t. 2, f. 8.  
 » » BRADY, 1879, Ret. Rhizop. Chall. Exped., Qu. Journ. micr. sc. (n. s.) 19, p. 27, t. 4, ff. 1—2.  
 » » HÆUSSLER, 1883, Astrorh. u. Lituol. Binammat. zone (Jura); Leonh. u. Bronns Jhb. 1883, p. 57, t. 3, f. 1.  
 » » BRADY, 1884, Chall. Rep. 9, p. 249, t. 18, ff. 1—8.

Hab. ad oras Scandinaviæ occidentales metr. 40—200 cum præcedente minus frequens; Diam. mm. 0.30—3.

## TECHNITELLA NORMAN.

### **T. legumen** NORMAN.

(Tab. III, figg. 20—27).

Teres aut subcompressa, elongata plerumque paullum curvata; parte primordiali obtusa, rotundata aut apiculata; parte orali plerumque attenuata, apertura irregulariter rotundata interdum valvulata aut cruciata, subproboscidea; albida aut cinerea sæpissime ex spiculis spongiarum contexta, sublævis, flexilis; interdum ex sabulo constructa.

Figg. 20—22: exempla magnitudine varia;

Figg. 23—25: aperturæ diversæ.

Fig. 26: longitudinaliter, fig. 27 transverse secta.

- Technit. legumen** NORMAN, 1878, Genus Haliphysema, A. M. N. H. (5) 1, p. 279, t. 16, ff. 3—4.  
 » » BRADY, 1884, Chall. Rep. 9, p. 246, t. 25, ff. 8—12.

Hab. ad Koster insulas profund. metr. 100—178 passim. Long. mm. 2.25—4.

## CRITHIONINA GOËS.

Labyrinthica sive cavernosa aut cavo indiviso centrali pariete subcavernoso prædita; aperturis sparsis aut indistinctis.

**C. granum** n. s.

Tab. III, figg. 28—33.

Sublenticularis aut subglobosa aut oblonga, plerumque obsolete polygonata, sublævis; aperturis minutis sparsis, interdum nonnullis paullo majoribus unum in locum congregatis; toto interno quam maxime irregulariter cavernoso; e detrito tenuissimo spiculisque spongiarum plerumque structa, friabilis, argillaceo-cinerea.

Fig. 28: exempli lenticularis faciem lateralem exhibens; diam. mm. 2.00.

Fig. 29: facies marginalis ejusdem.

Fig. 30: oblonga, irregulariter obtuse trigona; longit. mm. 4.00.

Fig. 31: exemplum idem de extremo visum.

Fig. 32: facies alius apicalis aperturas aut scrobiculos nonnullos præbens.

Fig. 33: sectio longitudinalis ejusdem, cavernosam structuram exhibens.

Hab. in sinu Skagerack profund. metr. 300 haud frequens (Doct. J. LINDAHL).

**C. mamilla** n. s.

Tab. III, figg. 34—36.

Plerumque affixa, subglobosa aut semiglobosa, sublævis; pariete crasso, subspongioso; camera centrali subsphærica diametro crassitudinem parietis æquante, indivisa; aperturis minimis sparsis; e detrito tenui structa; argillacea.

Fig. 34: facies superna.

Fig. 35: sectio transversa, canaliculum divisum exhibens.

Fig. 36: facies lateralis.

Hab. in fretis insularum Koster, Bahusiæ, profund. metr. 106, in *Zostera* mortua affixa, haud frequens (GOËS)  
Diam. mm. 1.50.

**HALIPHYSEMA** BOWERBANK.**H. Tumanoviczii** BOWERB. var **abyssicola** n.

Tab. III, figg. 37—38.

Tubi tenues simplices orificium apicale versus sensim dilatati, e lamina basali, irregulari, nodosa et lobata quasi stolones exeuntes; apertura elliptica, corona spiculorum spongiarum circumdata; ex spinulis spongiarum longitudinaliter dispositis maxime contexta; cinerea; mm. 4.0—5.0 alta.

A forma typica BOWERBANKI statura magis elata et trunco extenuato diversa; typicam etiam nostris in maribus occurrere probabile est.

Fig. 37: truncus.

Fig. 38: apex cum apertura.

Hab. mare Germanicum Lophoheliæ adhærens, profund. metr. 540, haud frequens.

**BATHYSIPHON** M. SARS.**B. filiformis** M. SARS.

Tab. III, figg. 39—41.

Tabus æqualis aut subæqualis, plerumque paullum arcuatus, utrinque apertus, sublevis, segmentatione spuria, internodiis cylindricis, subfusiformibus aut subclavatis; intus indivisus.

Albidus aut griseus ex spiculis spongiarum magna ex parte constructus; subflexilis, tenax.

Fig. 39: forma tenuis.

Fig. 40: " elata.

Fig. 41: longitudinaliter sectus.

**Bathysiphon filiformis** (M. Sars) G. O. Sars, 1871, Vidensk. Selsk. Forh. 1871, p. 251.

" " BRADY, 1884, Chall. Rep. 9, p. 248, t. 26, ff. 15—20.

Hab. in sinu Hardanger profund. metr. 350 (Doct. C. AURIVILLIUS); Korsfjord profund. metr. 300 (NORMAN) haud infrequens; long. mm. 15—25—50; diameter tubi valde varians.

**HYPERAMMINA** BRADY.**H. subnodosa** BRADY.

Tab. III, figg. 42—54.

Cylindrica, elongata, interdum subclavata, suturis constrictis passim instructa; parte primordiali ovali aut inflata subpyriformi, cujus cavum internum globosum aut ovatum; septis spuriis incompletis aut nullis; apertura lumen tubi totum occupante, aut paullum coarctata. Plerumque grisea-argillacea aut albida, e sabulo rudis.

Emaciatae, magis attenuatae, septis subcompletis, interdum occurrunt, Reophaci noduloso approximantes.

Suturis interdum obsoletis, testa magis aequali a Hyperammina friabili difficile distincta.

Fig. 42: exemplum camera primordiali valde inflata.

Fig. 43: apex cum apertura coarctata; Fig. 44: camera primordialis exempli alius; e Atlantico boreali profund. metr. 1,750.

Fig. 45: exempl. e sinu Groenlandico Claushavn profund. metr. 500.

Figg. 46—47, 50—53: emaciatae in Reophacem vergens, e Groenlandico mari profund. metr. 500.

Figg. 48—49: ex Atlantico boreali profund. metr. 1,750; septis subcompletis.

Fig. 54: in Hyperam. friabilem BRADY vergens, e sinu Baffini profund. metr. 1,200.

**Hyperammina subnodosa** BRADY, 1884, Challeng. Rep. 9, p. 259, t. 23, ff. 11—14.

Hab. in sinibus Groenlandiae, Spetsbergensibus, marique Atlantico boreali profund. metr. 30—2,000; mm. 10—20 longae; emaciatae mm. 5—10.

**H. elongata** BRADY.

Tab. IV, figg. 55—58.

Cylindrica aut subcylindrica, recta aut paullum curvata, nunc laevis polita, nunc sabulo rudis, parte primordiali ovali aut subsphaerica, plus minusve inflata; apertura nunc coarctata, nunc lumen tubi totum occupante. Fulva, grisea aut albida.

Forma sabulosa, angustata, curvata, bulbo primordiali saepe obsoleto a *Jaculella* difficiliter distinguenda.

Fig. 55: laevis, fulva aut fulvobrunnea, e fretis insularum Koster profund. metr. 80—120.

Fig. 56: sublævis e mari Spetsbergensi, profund. metr. 950.

Fig. 57—58: var. magis sabulosa, curvata, albogrisea, e mari Groenlandico profund. metr. 500, et e fretis Koster profund. metr. 70—180.

**Hyper. elongata** BRADY, 1878, Ret. & Rad. Rhizop. Arct. Exped. 1875—76; A. M. N. H. (5) 1, p. 433 (ex parte).  
 1884, Chall. Rep. 9, p. 257, t. 23, ff. 4, 7—10.  
 v. **laevigata** WRIGHT, 1891, For. S. West. off Ireland, Proceed. Roy. Irish. Acad. (3) 1, p. 466, t. 20, f. 1.

Hab. ad oras Scandinaviae occidental. metr. 50—170 passim nec non mare Atlant. boreale metr. 1,700; maria Spetsbergensia & Groenlandica metr. 350—890; long. mm. 5—10.

**H. friabilis** BRADY.

Tab. IV, fig. 59.

Clavata, elongata, aut subcylindrica, testa crassa ex sabulo haud firme coherente et aliquando ex spiculis spongiarum constructa.

A precedentibus non sat distincta.

Fig. 59: exemplum non sat typicum in *H. elongata* vergens, e mari Bahusiae prope insulam Hällö.

**Hyperammina friabilis** BRADY, 1884, Chall. Rep. 9, p. 258, t. 23, ff. 1—3, 5—6.  
**Hyper. elongata** BRADY, 1878, Ret. & Rad. Rhizop. Arct. Exp. 1875—76, A. M. N. H. (5) 1, p. 433, t. 20, f. 2.  
 GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, t. 12, ff. 426—428.

Hab. mare Atlant. boreale metr. 500 rara; ad insulam Hällö Bahusiae, profund. metr. 60.

**H. vagans** BRADY.

Tab. IV, fig. 60.

Affixa; tubus aequalis, tortuosus et flexuosus, repens, e bulbo primordiali exiens; plerumque laevis aut sublævis. Rufobrunnea aut fulva; *Hyp. elongata* propinqua.

Fig. 60: exemplum incompletum, ex Atlantico boreali.

- Hyperammina vagans** BRADY, 1879, Ret. Rhizop. Chall. Exped., Qu. Journ. micr. Sc. (n. s.) 19, p. 33, t. 5, f. 3.  
 » » BRADY, 1884, Chall. Rep. 9, p. 260, t. 24, ff. 1—9.

Hab. Mare Atlant. boreale metr. 1,750 (LINDAHL).

### **H. ramosa** BRADY.

Tab. IV, figg. 61—62.

Tubus irregulariter curvatus et ramosus e bulbo primordiali exiens; truncus primus crassus, rami secundarii saepe angustiores; testa tenuis sabulo et spiculis spongiarum saepe rudis; albida aut flavida.

Fig. 61: stadium incipiens.

Fig. 62: pars ramosa trunci, e mari Atlantico boreali.

- Hyperammina ramosa** BRADY, 1879, Rhizop. Chall. Exped., Qu. Journ. micr. Sc. (n. s.) 19, p. 33, t. 3, ff. 14—15.  
 » » BRADY, 1884, Chall. Report. 9, p. 261, t. 23, ff. 15—19.

Hab. mare Atlanticum boreale metr. 1,700 (LINDAHL) rara; in sinu Hardanger fjord Norvegiæ metr. 350 (REV. NORMAN).

### **H. arborescens** NORMAN.

Tab. IV, figg. 63—64.

Tubus sublævis tenuissimus, setaceus, dichotomus, erectus, parte primordiali bulbosa affixa, apertura ramorum apicali irregulariter coarctata; nigrobrunnea, purpurescens; bulbo primordiali interdum caret. A Rhizammina algaiformi BRADY vix generice distincta. Algæ pusillæ similis; e chitino et sabulo tenui constructa.

Fig. 63: ex Atlantico extra Irlandiam profund. metr. 100; a Cel. Dom. JOS. WRIGHT benigne missa.

Fig. 64: trunci pars magis amplificata.

- Hyperammina (Psammatodendrum) arborescens** (NORMAN) BRADY, 1881, For. Austr. Hungar. Northpol. Exp. 1872—74, A. M. N. Hist. (5) 8, p. 404.  
 » » » » BRADY, 1884, Chall. Rep. 9, p. 262, t. 28, ff. 12—13, et xylographia, p. 263.  
 » » » » WRIGHT, 1885, For. Down & Antrim; Proceed Belf. nat. Field Club. 1884—85, Append. t. 26, f. 1.

Hab. ad oras Groenlandiæ metr. 36 (NORMAN), altitudine mm. 3—6.

## **RIIABDAMMINA** BRADY.

### **R. linearis** BRADY.

Tab. IV, figg. 65—66.

Tubus subcylindricus medio in cameram ovalem aut globosam dilatatus, rectus aut arcuatus, saepe irregulariter subnodosus; aperturae terminales plerumque haud coarctatae;

paries tubi crassus, parte inflata magis tenuis; pallida aut fusca; Rhabdamminæ abyssorum SARS forsan forma pygmæa.

Nostra typo BRADYI validior.

**Rhabd. linearis** BRADY, 1879, Ret. Rhiz. Chall. Exp., Qu. Journ. Micr. Sc. (n. s.) 19, p. 37, t. 3, ff. 10—11.  
» » BRADY, 1884, Chall. Rep. 9, p. 269, t. 22, ff. 1—6.

Hab. mare Atlant. boreale metr. 1670 rara; ad Groenlandiam metr. 100, long. mm. 7—10.

### **R. abyssorum** SARS.

Tab. IV, figg. 67, 68.

Tubi 3—5 radiatim dispositi, nunc tenues, nunc incrassati, plerumque ex camera irregulari centrali exeuntes, cylindrici aut apicem versus attenuati, singuli apertura apicali paullum coarctata præditi; rufobrunnea, scabra.

Fig. 67: brachiis tenuibus, e mari Lofotensi Norvegiæ, profund. metr. 530 (M. SARS).

Fig. 68: magis robusta e sinu Baffini, Groenlandia, profund. metr. 400.

**Rhabdammina abyssorum** M. SARS, 1868, Vidensk. Selsk. Forh. 1868, p. 248 (sine descriptione).  
» » BRADY, 1884, Chall. Rep. 9, p. 266, t. 21, ff. 1—13.

Hab. Mare Atlanticum boreale, sinus norvegicos et groenlandicos metr. 350—1,000 passim, locis quibusdam frequentissima; long. mm. usque ad 23.

forma affinis:

Tubo unico subrecto suturis subconstrictis, colore magis fusco.

**R. discreta** BRADY, 1884, Chall. Rep. 9, p. 268, t. 22, ff. 7—10.

**Rhabdopleura** DAWSON, 1870, Gulf. St. Lawrence; Canadian Natur. (n. s.) 5, p. 176, f. 7.

Hab. e. præcedente minus frequens.

## **BOTELLINA** CARPENTER.

### **B. labyrinthica** BRADY.

Tab. IV, figg. 69—86.

Tubiformis, apertura foramine irregulari simplici aut poris nonnullis exhibita irregularibus; interne costis et granis sabulosis irregulariter cancellata; parte primordiali plerumque paullum inflata, interne sublevi, pariete tenui, interdum perforata; ex sabulo crasso constructa, sæpe inaequalis, squalida, nido vermis similis.

Forma nostra a typica statura minori, cancellis internis minus evolutis, incompletis differt; grisea aut ferruginea.

Fig. 69, 73: exempla ordinaria.

Fig. 70: tubus longitudinaliter apertus, cancellas exhibens.

Fig. 71: sectio transversa tubi.

Fig. 72: sectio transversa bulbi.

Fig. 74: facies oralis aperturas poriformes præbens.

Figg. 75—80: exempla emaciata cum aperturis apicalibus cujusque diversis.

Figg. 81—86: exempla bulbo reducto perforato.

Figg. 82, 85: aperturæ apicales.

Figg. 83, 86: aperturæ bulbi.

**Botellina labyrinthica** BRADY, 1881, Retie. Rhizop. Chall. Exp., Qu. Journ. Microsc. Sc. (n. s.) 21, p. 48.  
 » » BRADY, 1884, Chall. Rep. 9, p. 279, t. 29, ff. 8—18.

Hab. ad Koster insulas Sveciæ metr. 35 passim. (LJUNGMAN, GOËS); long. mm. 10—15.

## JACULELLA BRADY.

### **J. obtusa** BRADY.

Tab. IV, figg. 87—89; Tab. V, figg. 90—91.

Tubus subulatus angustus, elongatus, rectus aut leniter curvatus, haud segmentatus, parte primordiali (sapissime abrupta) bulbum minutum irregularem exhibente; apertura tubi plerumque haud constricta;

testa tenuis, firma, plus minusve sabulo rudis, interdum bifurcata; nunc brunnea nunc griseo-albida, verme nematodea saepe occupata.

Fig. 87: exemplum ordinarium.

Fig. 88: apertura ejusdem.

Fig. 89: exemplum bifurcatum; ambo e freto insularum Koster.

Fig. 90: pygmæa cum facie sua aperturali, e Atlantico boreali profund. metr. 750, (dubia).

Fig. 91: cum facie apertura, arena rudissima, e fretis insularum Koster, profund. metr. 100.

**Jaculella obtusa** BRADY, 1884, Challeng. Rep. 9, p. 256, t. 22, ff. 19—22.

Hab. ad Insulas Koster Sveciæ, metr. 60—180, haud infrequens; long. mm. 10—15.

## HAPLOPHRAGMIUM v. REUSS.

### **H. canariense** D'ORB.

Tab. V, figg. 92—101.

Discoideum, nautiloideum aut subnautiloideum, subcompressum, utrinque plerumque umbilicatum, anfractu ultimo precedentes fere toto amplectente, segmentis paulum inflatis numero 7—10—11; suturis impressis, interdum paulum undatis; apertura rima arcuata, marginalis suturalis, interdum labiata; ferrugineum aut albidum, nunc scaberrimum nunc sublave; interdum pygmæum testa tenui; aliquando valde incrassatum sequenti formæ approximans.

Genus *Haplophragmium* a *Lituola* immerito a REUSS disjunctum, illud *simplicibus* hae *subdivisis* cameris.

Figg. 92—94: crassum, e sinu Skagerack, profund. metr. 300.

Figg. 95—96: e mari Carico Sibiriae, profund. metr. 75.

Figg. 97—98: medium, tenue, e Gullmaren sinu Bahusiae profund. metr. 130.

Figg. 99—101: pygmæum, e mari Spetsbergensi, profund. metr. 400.

**Nonionina canariensis** D'ORB., 1839, Foram. Canaries, p. 128, t. 2, ff. 33—34.

**Placopsilina canariensis** PARK & JONES, 1857, For. Coast. Norway, An. M. Nat. Hist. (2), 19, p. 301, t. 10, ff. 13—14.

**Non. Jeffreyssii** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 34, ff. 72—73 (minor, levior).

**Lituola nautiloides** var. **canariensis** PARK & JONES, 1865, North. Atl. & Arct. Oc., Phil. Transact. 155, p. 406, t. 15, f. 45.

**Haplophragm. rotundidorsatum** v. HANTK., 1875, Clav. Szab. Sch., p. 12, t. 1, f. 2.

**canariense** BRADY, 1884, Chall. Rep. 9, p. 310, t. 35, ff. 1—3, 5.

forma affinis: valde incrassatum.

**H. crassimargo** NORMAN, 1892, Mus. Normannum, p. 17.

BRADY, Chall. Rep. 9, t. 35, f. 4.

Hab. ad oras Scandinaviae occidentalis, Groenlandiae, Spetsbergiae metr. 10—500 ubique frequens; diam. mm. 2—25. Var. *crassimargo* praesertim in maribus arcticis.

## H. latidorsatum BORNEM.

Tab. V, figg. 102—123.

Nautiloideum, crassum aut subglobosum, plerumque sine umbilico, anfractu ultimo praecedentes amplectente, segmentis numero 4, rare usque ad 8, suturis saepe minus incis; fuscum aut ferrugineum; anfractus interdum irregulariter dispositi.

Figg. 102—104: e mari Spetsbergensi, lat. bor. 81° 19', profund. metr. 2,240.

Figg. 105—107: structura magis irregulari, e mari Spetsbergensi, profund. metr. 3,900.

Figg. 108—110: magis compressum, e mari Spetsbergensi.

Fig. 111: faciem marginalem praebens, valde irregulare, in *H. turbinatum* Br. vergens; ex eodem loco ac praecedens.

Figg. 112—114: minus irregulare, e mari Spetsbergensi profund. metr. 1,030.

Figg. 115—117: fere globosum, e sinu Skagerack, profund. metr. 240.

Figg. 118—120: pygmæum, e mari Spetsbergensi, lat. bor. 72°, profund. metr. 400.

Figg. 121—123: varietas levior e freto insular. Koster, profund. metr. 180.

**Nonionina latidorsata** BORNEM., 1855, Septar. Thon. Hermsdorf; Zeitschr. deut. geol. Gesellsch. 7, p. 339, t. 16, f. 4.

**Haplophragm. crassum** REUSS, 1867, Steinsaltz. Ablag. Wieliczka; Wien Ak. Sitz. Ber. 55, p. 62, t. 1, ff. 1—2. GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Ak. Handl. 19, 4, t. 12, ff. 419—420.

**Lituola subglobosa** M. SARS, 1868, Videnskabs-Selskab Forhandl., p. 250.

**Haplophragm. latidorsatum** BRADY, 1884, Chall. Rep. 9, p. 307, t. 34, ff. 7—10, 14.

Var. minus, saepe umbilicatum, nitidum, suturis impressis, segmentis turgidis visibilibus numero 4.



Obs. *Haplophr. scitulum* BRADY, 1884, Chall. Rep., p. 308, t. 34, ff. 11—13, subnautiloideum, minus inflatum, cameris anfractus ultimi 8—11, statura minori forsitan in plagis nostris occurrit.

Hab. mare Groenlandicum & Spetsbergense metr. 530—4,600 frequentissimum, diam. mm. 1—2; nec non ad oras Scandinaviae passim metr. 120—350, diam. mm. 0.30—1.5. Var. *laevis* ad insulas Koster metr. 181.

### **H. nanum** BRADY.

Tab. V, figg. 124—127.

Helicoideum, depressum, anfractibus 2—2 $\frac{1}{2}$ , segmentis anfractus ultimi 5—6—7, suturis paullum incisus, facie spirali subconvexa, facie umbilicali vix-aut subumbilicata, umbilico quasi valvula interdum oblecto; apertura suturalis, marginalis, extra umbilicalis; ferrugineum aut griseo-albidum.

Fig. 124: faciem spiralem,

Fig. 125: faciem oralem,

Fig. 126: faciem marginalem praebens; e mari arctico, profund. metr. 960.

Fig. 127: faciem marginalem, oralem, exempli tumidioris praebens, ex Atlantico boreali, profund. metr. 1,750.

**Haplophr. nanum** BRADY, 1881, Arct. For. Austr. Hungar. Exped. 1872—74, A. N. Hist. (5) 8, p. 406, t. 21, f. 1; Wien. Ak. Dkschr. 43, p. 99, t. 2, f. 1.

» » 1884, Challeng. Rep. 9, p. 311, t. 35, ff. 6—8.

Hab. mare Atlant. boreale et arcticum metr. 170—1,750 passim; diam. mm. 0.28.

### **H. globigeriniforme** PARK. & JONES.

Tab. V, figg. 128—133.

Helicoideum, inflatum, anfractibus 2—3; segmentis ultimi anfractus 4—5, globosis; apertura semilunari umbilicali; rufoferrugineum aut albidum, saepe subpolitum.

Fig. 128: facies spiralis,

Fig. 129: facies oralis,

Fig. 130: facies marginalis exempli e mari Atlant. bor., profund. metr. 1,750.

Fig. 131: facies spiralis,

Fig. 132: facies oralis,

Fig. 133: facies marginalis exempli pygmaei e mari Spetsbergico, lat. boreal. 72°, profund. metr. 390.

**Lituola nautiloidea** var. **globigeriniformis** PARK. & JONES, 1865, N. Atl. & Arct. Oc.; Phil. Trans. 155, p. 407, t. 15, ff. 46, 47; t. 17, ff. 96, 98.

» » WALLICH, 1862; Northatl. Seabed., t. 6, f. 22.

**Lit. globigeriniformis** WRIGHT, 1877, Proc. Belf. nat. Field Club. Append. 1876, 1877, t. 4, f. 6.

? **Lituolina irregularis** var. **globigerinaeformis** GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, p. 141, t. 12, ff. 424—425.

**Haplophragm. globigeriniforme** BRADY, 1884, Chall. Rep. 9, p. 312, t. 35, ff. 10—11.

» » BALKWILL & MILLET, 1884, For. Galway; Journ. microsc. & nat. Sc. 3, t. 1, f. 5.

Hab. mare Atlanticum boreale et arcticum, profund. metr. 300—1,750, passim.

**H. glomeratum** BRADY.

Tab. V, figg. 134—139.

Nautiloideum, ovale aut subglobosum, plerumque rude, segmentis tumidis 3—4, indistinctis, irregularibus; nunc vix umbilicatum, nunc biconcavum.

Plerumque asymmetricum interdum crassius quam latius; apertura lateralis, suturalis, extra-umbilicalis; ferrugineum.

Fig. 134: facies aboralis,

Fig. 135: facies oralis,

Fig. 136: facies marginalis, e Gullmaren sinu Bahusiæ, profund. metr. 140.

Fig. 137: facies aboralis,

Fig. 138: facies oralis,

Fig. 139: facies marginalis, e mari Groenlandico, profund. metr. 675.

**Lituola glomerata** BRADY, 1878, Retic. & Radiol. Rhizop. Arct. Exped. 1875—76, A. M. N. H. (5) 1, p. 433, t. 20, f. 1.

**Haplophr. glomeratum** WRIGHT, 1881, For. S. Donegal, Proc. Belf. Nat. Field. Cl. 1880—81, App., t. 8, f. 1.

“ “ BRADY, 1882, Österr. Ung. Nordpol. Exped., Wien. Ak. Dkschr. 43, p. 100.

“ “ BRADY, Challng. Rep. 9, p. 309, t. 34, ff. 15—18.

“ “ BALKWILL & MILLET, 1884, For. Galway; Journ. Micr. & nat. Sc. 3, t. 1, f. 6.

Hab. in Gullmaren sinu Bahusiæ metr. 140 (WIRÉN, CARL AURIVILLIUS); mare arcticum, ad Groenlandiam, metr. 500—600 sat frequens; diam. mm. 0.30—0.40.

**H. agglutinans** D'ORB.

Tab. V, figg. 140—141.

Lituiforme, stadium juvenile spirale, anfractibus 1—1½, paullum compressum, umbilicatum, margine rotundato; stadium maturum cylindricum; apertura apicali, circulari aut ovali.

Fig. 140: facies lateralis.

Fig. 141: facies marginalis.

**Spirolina agglutinans** D'ORB, 1846, Bass. tert. Vienne, p. 137, t. 7, ff. 10—12.

**Haplophragm. rectum** BRADY, 1876, Carbonif. & Perm. Foram., Pal. Soc. 30, p. 66, t. 8, ff. 8—9.

**Spirol. simplex** Rss, 1855, Tert. Sch. nördl. & mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 232, t. 2, f. 30.

**Haplophr. agglutinans** BRADY, 1884, Chall. Rep. 9, p. 301, t. 32, ff. 19—26.

Hab. mare Atlant. boreale metr. 1,704, rarum, (LINDAHL), long. mm. 1.20.

**H. pseudospirale** WILLIAMS.

Tab. V, figg. 142—151.

Plus minusve distincte lituiforme, complanatum, sæpe late expansum tenuissimum; stadio juvenili sæpe umbilicato, indistincte plano-spirali, septis plus minusve distinctis, apertura angusta elongata apicali; sabulo scabrum.

Ab Haplophragm. foliaceo BRADY vix limitandum.

Figg. 142—147: exempla varia cum faciebus marginalibus cujusque, suturis obsoletis.

Figg. 148—149: suturis magis distinctis.

Figg. 150—151: tenuissima, Fig. 150 expansum (*H. foliaceum* BRADY).

**Protonina pseudospiralis** WILL., 1858, Rec. For. Gr. Brit., p. 2, t. 1, ff. 2—3.

**Haplophragm. pseudospirale** BRADY, 1884, Chall. Rep. 9, p. 302, t. 33, ff. 1—4.

**Haplophr. foliaceum** BRADY, ibid. p. 304, t. 33, ff. 20—25.

» » BALKW. & WRIGHT, 1885, Rec. Dubl. For., Trans. R. Ir. Ac. Sc. 28, p. 330, t. 13, ff. 6—8.  
Cnf. **Haplophr. calcareum** TERQU., 1886, For. et Ostracod. d'Islande; Bull. Soc. Zool. France, 1886, p. 332,  
t. 11, f. 11.

Nomen. triviale WILLIAMSONI valde ineptum, cum foliaceo BRADYI potius mutandum.

Hab. ad oras Bahusie metr 20—170 frequens, long. usque ad 2.90 mm.

### **H. cassis** PARKER.

Tab. V, figg. 152—157.

Marginulinaforme, arcuatum, compressum aut subcompressum, margine externo attenuato; stadio juvenili segmentis semispiralibus paucis; stadio maturo segmentis obliquis, margine interno sive spirali subventricoso; apertura apicali, circulari.

Plerumque griseum, interdum ferrugineum.

Figg. 152, 154, 156: facies lateralis.

Fig. 153: margo spiralis.

Figg. 155, 157: pars summa cum apertura.

**Lituola cassis** PARK., 1870, For. Gulf. & River St. Lawrence, Canad. Nat. (n. s.) 5, p. 177, 180, f. 3.

**Haplophr. cassis** BRADY, 1884, Chall. Rep. 9, p. 304, t. 33, ff. 17—19.

Hab. mare arcticum, Groenlandicum & Spetsbergense, metr. 180—250 minus frequens; long. mm. 2.50.

## REOPHAX MONTFORT.

### **R. scorpiurus** MONTFORT.

Tab. V, figg. 158—163; Tab. VI figg. 164—169.

Anguste conicus aut fusiformis, rectus aut curvatus, segmentis subcylindricis plerumque numero 5—6; apertura circulari, interdum reniformi.

Plerumque valde inæqualis et asper, ex sabulo crasso et frustulis testaceis constructus.

Interdum in *Haplophragm. cassidem* vergens.

Forma *Protonina fusiformis* WILLIAMS (Rec. For. Gr. Brit. p. 1 f. 1) est uni-biloculata segmento ultimo magno fusiformi.

Figg. 158—159: ex Atlantico boreali profund. metr. 320.

Figg. 160—161: in formam fusiformem vergens; e mari Groenlandico, profund. metr. 35—215.

Figg. 162—163: »fusiformis» e sinu Skagerack, profund. metr. 250.

Figg. 164—166: in *H. cassidem* vergens, e mari Groenlandico, profund. metr. 35—215.

Fig. 167: subfusiformis e sinu Gullmaren Bahusiæ, profund. metr. 140.

Figg. 168—169: magis regulariter structus, var. dentaliniformi BR. approximans, e Skagerack, profund. metr. 107.

Figg. 170—171: e mari Atlantico boreali, profund. metr. 330.

**Reoph. scorpiurus** MUFFET, 1808, Conchyliol. systém. 1, p. 330.

**Nodosaria scorpionus** D'ORB., 1826, Tab. méthod, Ann. Sc. nat. 7, p. 255, No. 40.

**Lituola scorpiurus** BRADY, 1864, Rhizop. Shetland, Trans. Lin. Soc. 24, p. 467, t. 48, f. 5.

» **nautiloidea**, var. **scorpiurus**, PARK & JONES, 1865, North. Atl. & Arct. Oc., Phil. Transact, p. 407, t. 15, f. 48.

» » DAWSON, 1871, For. Lawrence, A. M. N. H. (4) 7, p. 86, f. 4.

**Reoph. scorpiurus, helvetica**, HÄUSLER, 1883, Jurassic. Astorhizoid. & Lituolidae, Qu. journ. geol. Soc. 39, p. 27, t. 2, ff. 7—10.

» » BRADY, 1884, CHALL. Rep. 9, p. 291, t. 30, ff. 12—17.

**Lituolina scorpiurus** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, p. 136, t. 11, f. 406—409.

**Reoph. fusiformis** BRADY, 1884, Chall. Rep. 9, p. 290, t. 30, ff. 7—11.

» » BR. PARK. JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, p. 217, t. 41, f. 18.

Hab. ad oras occidentales Scandinaviæ mtr 50—350 passim; mare Atlant. boreale et arcticum mtr 90—350 sat frequens; long mm. 2.50.

formæ affines:

1. magis regularis, levior, segmentis 6—8; a typica vix nec a *R. bacillari* BRADY, longiori, segmentis brevioribus, numerosis, sat distincta; sæpe tenuis et fragilis.

Figg. 172—173: exemplum e sinu Skagerack profund. metr. 590.

Figg. 174—175: e mari Baltico, extra Gotlandiam insulam profund. metr. 107.

**R. dentaliniformis** BRADY, Tab. VI, figg. 172—175.

**Reoph. dentaliniformis** BRADY, 1884, Challeng. Rep. 9, p. 293, t. 30, ff. 21—22.

**Lituolina scorpiura** GOËS, 1881, Sv. Vet. Akad. Öfversigt 1881, 8, p. 33, fig. xylographica.

Hab. in sinu Skagerack metr. 180—590 rara: Mare Balticum passim (Dr. L. KOLMODIN), long. mm. 1.0—2.5.

2. paullum compressus, præterea ut præcedens.

**R. arcticus** BRADY, 1881, Arct. For. Austro-Hung. Exped 1872—74, A. M. N. H. (5) 8, p. 405, t. 21, f. 2; Wien. Ak. Dkschr. 43, p. 99, t. 2, f. 2.

Hab. mare arcticum rare, long. mm. 0.40.

3. suturis valde constrictis, segmentis inflatis, globosis aut ovatis.

Fig. 176: fragmentum e mari Spetsbergensi fundo metr. 1,700.

Fig. 177: facies aperturalis ejusdem.

Fig. 178—179: exemplum cum facie aperturali e freto Koster insularum, profund. metr. 150.

Fig. 180: exemplum integrum ex eodem loco.

**R. pilulifer** BRADY, Tab. VI, figg. 176—180.

**Reoph. pilulifera** BRADY, 1884, Challeng. Rep. 9, p. 292, t. 30, ff. 18—20.

Hab. ad Koster insulas Svecicas metr. 100, rara (Goës) long. mm. 2.10.

4. tubiformis segmentis inflatis, distantibus, Tab. VI, figg. 181—186; fragmentis solum inventis non sat describendus, forsitan idem ac *Reoph. distans* BRADY, Chall. Rep., p. 296, t. 31, ff. 18—22.

Figg. 181, 184: camerae ruptae.

Figg. 182, 185: aperturae supernae.

Figg. 183, 186: aperturae inferae cujusque.

Hab. cum praecedente rarus (GOËS); long. mm. 3.50.

### **R. nodulosus** BRADY.

Tab. VI, figg. 187—191.

Nodosariaformis, elongatus, suturis plus minusve constrictis, segmentis ovatis aut ellipticis saepe inflatis aut pyriformibus. Nunc rectus nunc curvatus (*R. adunca* BRADY), interdum valde angustatus; nunc rudis nunc laevis.

A *R. scorpiuro* var. pilulifer non sat limitandus.

Fig. 187: exemplum e mari Atlantico boreali profund. metr. 1,750.

Figg. 188—189: pygmaeus.

Fig. 190: apertura; ambo e fretis Koster insularum, profund. metr. 106.

Fig. 191: forma *adunca* Br. e mari Atlant. boreali, profund. metr. 1,750.

**R. nodulosa** BRADY, 1879, Retie. Rhizop. Chall. Exp., Qu. Journ. Micr. Sc. (n. s.) 19, p. 52, t. 4, ff. 7—8.

» » BRADY, 1884, Chall. Rep. 9, p. 294, t. 31, ff. 1—9.

» **adunca** BRADY ibid. t. 31, ff. 23—26.

Hab. mare Atlanticum boreale mtr 1,750 (LINDAHL), long. mm. 5—20; ad Koster insulas (pygmaeus et *aduncus*), profund. metr. 90—180 (GOËS).

### **R. guttifer** BRADY.

Tab. VI, figg. 192—195.

Tenuissimus, moniliformis, segmentis globosis, pyriformibus aut semiglobosis, nunc juxtapositis coherentibus nunc distantibus; ferrugineus.

Figg. 192—193: e mari Spetsbergensi.

Fig. 194: unilocularis.

Fig. 195: facies oralis.

**Reophax guttifer** BRADY, 1881, Ret. Rhizop. Chall. Exp., Qu. Journ. micr. Sc. (n. s.) 21, p. 49.

» » BRADY, 1884, Chall. Rep. 9, p. 295, t. 31, ff. 10—15.

Hab. mare Spetsbergense metr. 1,250 haud raris, long. mm. 0.60—1.

### **R. difflugiformis** BRADY.

Tab. VI, figg. 196—198.

Globosus aut ovatus, lagenaeformis, unilocularis, collo cylindrico brevi; plerumque rufobrunneus.

Fig. 196: e mari Atlantico boreali, profund. metr. 500.

Fig. 197: e mari Groenlandico, profund. metr. 450.

Fig. 198: facies oralis.

**Reophax diffugiformis** BRADY, 1879, Ret. Rhizop. Chall. Exp., Qu. Journ. micr. Sc. (n. s.) 19, p. 51, t. 4, f. 3.  
 › › BRADY, 1884, Chall. Rep. 9, p. 289, t. 30, ff. 1—5.

Hab. mare Atlanticum boreale et Groenlandicum, metr. 340—500 passim, long. mm. 0.30—0.80.

### **R. sabulosus** BRADY.

Tab. VI, figg. 199—202.

Fusiformis aut conicus, parietibus crassis, ex arena haud firme constructis, segmentis subcylindricis, collo brevi instructis, suturis paullum aut vix incis; griseo-albidus, interne praesertim collis segmentorum ferrugineo-brunneus; suturae saepe indistinctae.

A *R. cylindrico* BRADY, segmentis non productis, firmiter constructo, non sat distinctus.

Figg. 199, 201: exempla duo e mari Atlantico boreali, profund. metr. 1,750.

Figg. 200, 202: facies oralis cujusque.

**Lituolina scorpiurus** var. **ammophila** GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, p. 137, t. 410—414.

**Reophax sabulosa** BRADY, 1882, For. Farøe Chanu., Proc. Roy Soc. Edinb. 11, p. 715.

› **rudis** BRADY, 1881, Ret. Rhizop. Chall. Exp.; Qu. Journ. micr. Sc. (n. s.) 21, p. 49.

› › CARP., 1881, The Microscope, p. 563, fig. a, b.

› **sabulosa** BRADY, 1884, Chall. Rep. 9, p. 298, t. 32, ff. 5—6.

Hab. mare boreale metr. 1,750 rarus (LINDAHL) long. 7—10 mm.

## APPENDIX.

### **R. compressus** n.

Tab. VI, figg. 203—210.

Plus minusve rudis, complanatus, apertura plerumque lanceolata.

E frustulis granisque testaceis plerumque constructus, Haplophragm. tenuimargini BRADY se approximans.

Figg. 203, 207: facies lateralis.

Figg. 204, 208: facies marginalis.

Figg. 205, 206, 209: facies oralis.

Fig. 210: longitudinaliter sectus, cameris duabus subdivisis.

Hab. mare Caraibicum profund. metr. 530 rarus (GOËS) long. mm. 3—4.

### **R. procerus** n.

Tab. VIII, figg. 413—417.

Fusiformis aut anguste conicus, productus, suturis plus minusve impressis, apertura semilunari valvulata; ex granulis tenuibus calcareis constructus tamen scaber et rugosus.

- Fig. 413: exemplum validum.  
 Fig. 414: facies oralis, apertura valvulata.  
 Fig. 415: sectio segmenti embryonalis.  
 Figg. 416—417: pygmæus cum facie orali.  
 Dentalinæ fædissimæ REUSS similis

**Lituolina foedissima** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 138, ff. 415—418.  
**Clav. procera** GOËS, 1889, Om Dimorfismen Rhizop. reticul., Sv. Vet. Akad. Handl. Bihang 15, 4, No. 2, p. 9, t. 2, f. 17.

Hab. mare Caraibicum metr. 500 rarus (Goës), long. mm. 3—9.

## PLACOPSILINA D'ORB.

### **P. bulla** BRADY.

Tab. VI, figg. 211—215.

Affixa hemisphærica, ovoidea aut circularis, depressa, interne sæpe septis paucis ex parte divisa, aut parietibus costis irregularibus rudibus institutis, apertura sæpe obsoleta; albida.

Ad genus Placopsilinam a BRADY sine ratione justa relatam huc tamen ad interim etiam locavi. Generi Crithioninæ magis propinqua.

Fig. 211: facies superna.

Fig. 212: a margine secta costas internas præbens, e fretis insularum Koster profund. metr. 140.

Fig. 213: facies lateralis exempli Rhabdamminæ in hærentis.

Fig. 214: sectio transversa.

Fig. 215: sectio longitudinalis, septa spuria pauca præbens; e sinu Skagerack profund. metr. 160.

**Plac. bulla** BRADY, (1881) 1884, Chall. Rep. 9, p. 315, t. 35, ff. 16—17.

Hab. sinum Skagerack, profund. metr. 160—530 sæpe ad Rhabdamminam affixa (Prof. Hj. Theél, Dr. BOWALLIUS); ad Koster insulas profund. metr. 18—140, ad Fucum sæpe affixa.

## HIPPOCREPINA PARKER.

### **H. indivisa** PARKER.

Tab. VI, figg. 216—217.

Conica aut fusiformis, teres, tenuis, sublævis, unilocularis; apertura apicalis, semilunaris, irregulariter circularis aut rima curvata, plerumque limbata. Testa sæpe obsolete quasi segmentata, brunneo-ferruginea.

Fig. 216: facies lateralis.

Fig. 217: facies oralis, apertura irregulari.

- Hippocrepina indivisa** PARK., 1870, Dawson Canad. Naturalist (n. s.) 5, p. 176, fig. 2.  
 » » PARK., For. Gulf. St. Lawrence, A. M. N. Hist. (4) 7, p. 86, f. 2.  
 » » BRADY, 1881, For. Austro-hungar. Exped. 1872—74, A. M. N. H. (5) 8, p. 407,  
 t. 21, ff. 3—4.  
 » » BRADY, Wien. Ak. Dkschr. 43, p. 100, t. 2, ff. 3—4.  
 » » BRADY, 1884, Chall. Rep. 9, p. 325, t. 26, ff. 10—14.

Hab. in sinu Olittenbay, Groenlandiæ metr. 25 rara (ÖBERG), long. mm. 0.80—1.10.

## HORMOSINA BRADY.

### H. globulifera BRADY.

Tab. VI, figg. 218—219.

Nodosariaformis, laevis, segmentis globosis magnitudine raptim increscentibus, suturis profunde incisiss; apertura apicali, limbata aut in collo tubulari patescente, circulari, angusta; flavo-ferruginea.

Collum saepe abbreviatum; segmenta embryonalia uniloculata saepe occurrunt. Genus Hormosina a genere Reophax non sat limitatum.

Confer: Reoph. nodulosam BRADY cum Hormos. ovicula BRADY et monili BRADY, Chall. Rep. t. 31, ff. 1—9; t. 39, ff. 7—13.

Figg. 218—219: exempla duo ex Atlantico boreali, profund. metr. 1,750.

- Hormosina globulifera** BRADY, 1879, Ret. Rhizop. Chall. Exped., Qu. Journ. micr. Sc. (n. s.) 19, p. 60, t. 4, ff. 4—5.  
 » » BRADY, 1884, Chall. Rep. 9, p. 326, t. 39, ff. 1—6.

Hab. mare Atlanticum boreale metr. 1,750 passim (LINDAHL), long. mm. 3.

forma affinis: tenuis, segmentis pyriformibus aut ovatis, suturis valde constrictis.

**H. ovicula** BRADY, Tab. VI, figg. 220—221.

**Hormos. ovicula** BRADY, 1879, Ret. Rhizop. Chall. Exp., Qu. Journ. Micr. Sc. (n. s.) 19, p. 61, t. 4, f. 6.  
 BRADY, 1884, Chall. Rep. 9, p. 327, t. 39, ff. 7—9.

Fig. 220: facies lateralis.

Fig. 221: facies oralis.

Hab. cum typica (LINDAHL), long. mm. 1.50.

## TROCHAMMINA PARK. & JONES.

### T. inflata MONTAG.

Tab. VI, figg. 222—224.

Helicoidea, spira saepe subdepressa, anfractibus  $2\frac{1}{2}$ —3, segmentis anfract. ultimi 5—6, plus minusve subinflatis, suturis incisiss; facies oralis umbilicata, paullum concava, apertura lateralis, suturalis, brevis, extra-umbilicalis; dilute ferruginea, centro brunnea.



Differentia inter *Trochamminam* & *Haplophragmium*, sive inter subfamilias Trochammineas et Lituolineas est vilis nec juste fundata.

Fig. 222: facies oralis.

Fig. 223: facies aboralis.

Fig. 224: facies marginalis.

**Nautilus inflatus** MONTAG, 1808, Test. Brit. Suppl., p. 81, t. 18, f. 3.

**Rotalina inflata** WILL., 1858, Rec. For. Gr. Brit., p. 50, t. 4, ff. 93—94.

**Trochammina inflata** CARPENT, Introd. 1862, p. 141, t. 11, f. 5.

» » BRADY, 1884, Chall. Rep. 9, p. 338, t. 41, f. 4.

» » BALKW. & WRIGHT, 1885, Rec. Dublin For.; Roy. Ir. Ac. Sc. Trans. 28, p. 331, t. 13, f. 12 (trochoidea).

Hab. mare Balticum metr. 2 passim (LILLIEBORG), diam. mm. 0.50.

### **T. nitida** BRADY.

Tab. VI, figg. 225—230.

Helicoidea, sublaevis, depressa, spira plerumque applanata, anfractibus  $2\frac{1}{2}$ —3, segmentis anfr. ultimi 6—9, suturis subimpressis, margine rotundato; facies oralis umbilicata, apertura ut in praecedente; ferruginea, albida aut subrosea.

A forma emaciata Troch. inflatae nisi spira applanata segmentisque plerumque pluribus distincta.

Figg. 225, 228: facies aboralis.

Figg. 226, 230: facies marginalis.

Figg. 227, 229: facies oralis.

**Trochammina nitida** BRADY, 1881, Ret. Rhizop. Chall. Exped., Qu. Journ. Microsc. Sc. (n. s.) 21, p. 52.

» » BRADY, 1884, Chall. Rep. 9, p. 339, t. 41, ff. 5—6.

Hab. in Österfjord Norveg. metr. 180 passim (NORMAN), diam. mm. 0,50; mare Spetsbergense metr. 1,200, diam. 0,30 mm.

### **T. Robertsoni** BRADY.

Tab. VI, figg. 231—234.

Nautiloidea, laevis, subdiscoidea, subsymmetrica, utrinque umbilicata, umbilico faciei aboralis interdum obtecto, segmentis 4—6 subinflatis; apertura angusta suturalis marginalis; fulvo-ferruginea.

Fig. 231: facies aboralis, umbilico fere obtecto.

Fig. 232: facies marginalis cum apertura.

Fig. 233: facies oralis.

Fig. 234: sectio submediana.

**Troch. Robertsoni** BRADY, 1887, Synopsis Brit. Rec. For., Journ. Roy. Micr. Soc. (2) 7, p. 893.

» » WRIGHT, 1891, For. S. West off Ireland; Proceed. Roy. Irish Acad. (3) 1, No. 4, p. 469, t. 20, f. 4

Hab. in sinu Gullmaren metr. 140, passim (AX. WIRÉN & C. AURIVILLIUS), in sinu Bukken Norwegiae (NORMAN) metr. 350, diam. mm. 0.25—0.30.

**T. vesicularis** n.

Tab. VI, figg. 235—237.

Trochoidea subglobosa, tenuissima, anfractibus 5—7, segmentis anfr. ultimi circiter 5, subamplectentibus, inflatis; facies oralis haud umbilicata.

Dilute ferruginea aut subflava, subpellucida.

Fig. 235: facies aboralis.

Fig. 236: facies oralis.

Fig. 237: facies marginalis.

Hab. mare Spetsbergense metr. 350 rarissima; diam. mm. 0.40.

**AMMODISCUS** v. REUSS.**A. incertus** D'ORB.

Tab. VI, figg. 238—239.

Plano-spiralis, complanatus margine rotundato, anfractibus tenuissimis numerosis usque ad 20; apertura tubus spiralis patens; ferrugineus.

Fig. 238: facies lateralis.

Fig. 239: facies marginalis.

**Operculina incerta** D'ORB., 1839, For. Cuba, p. 49, t. 6, ff. 16—17.

**Trochammina incerta** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, p. 136, t. 11, ff. 404—405, ubi vide synonymiam.

**Ammod. incertus** BRADY, 1884, Chall. Rep. 9, p. 330, t. 38, ff. 1—3.

Hab. ad oras Scandinaviæ occidentales metr. 140—200 passim; diam mm. 0.40—1.

**A. tenuis** BRADY.

Tab. VI, figg. 240—241.

Plano-spiralis, anfractibus amplioribus, adultorum 5—7, pars primordialis magna, inflata; flavo-ferrugineus.

Forsan stadium maturum præcedentis potius habendus.

Fig. 240: facies lateralis.

Fig. 241: facies marginalis.

**Ammodisc. tenuis** BRADY, 1881, Ret. Rhizop. Chall. Exp., Qu. Journ. micr. Sc. (n. s.) 21, p. 51.

» » BRADY, 1884, Chall. Rep. 9, p. 332, t. 38, ff. 4—6.

Hab. ad Koster insulas Sueciæ metr. 90 rarus (LJUNGMAN), diam. mm. 1.70.

**CYCLAMMINA** NORMAN.**C. pusilla** BRADY.

Tab. VI, figg. 242—244.

Nautiloidea, laevis aut sublaevis, biconvexa, umbilicata, segmentis 11—16, suturis saepe subundulatis, margine attenuato, pariete testae vix cancellato; apertura marginalis, suturalis; brunnea aut ferruginea.

A *Cycl. cancellata* NORMAN non nisi statura minore cancellisque testae obsoletis distincta.

Fig. 242: facies lateralis.

Fig. 243: facies marginalis cum apertura.

Fig. 244: sectio mediana.

**Cyclammina pusilla** BRADY, (1881) 1884, Chall. Rep. 9, p. 353, t. 37, ff. 20—23.

Hab. mare Atlanticum boreale metr. 1,750 (LINDAHL), diam. mm. 1,20.

**WEBBINA** D'ORB.**W. clavata** PARK. & JONES.

Tab. VI, figg. 245—246.

Laevis, affixa, ovata aut rotundata convexa semitubo reptante continuans; fulvo-brunnea; pars postica apertura interdum praedita.

Fig. 245: exemplum apertura postica instructum, e sinibus Norvegicis profund. metr. 300.

Fig. 246: alia, minor.

**Trochammina irregularis clavata** PARK. & JONES, 1860, For. Chellaston; Qu. Journ. Geol. Soc. 16, p. 304.

» » CARP., Introd. 1862, t. 11, f. 6.

**Webbina clavata** BRADY, 1884, Chall. Rep. 9, p. 349, t. 41, ff. 12—16.

» » WRIGHT, 1891, For. S. West off Ireland; Proceed Roy. Irish. Acad. (3) 1, p. 470, t. 20, ff. 2—3.

Hab. ad oras Scandinaviae occidentales metr. 90—450 passim; ad Groenlandiam metr. 200; long. mm. 1.20 et ultra.

**TEXTULARIA** D'ORB.

\* *Verneuilina* D'ORB.

**V. polystropha** v. REUSS.

Tab. VII, figg. 247—255.

Arenacea, buliminaformis, ovalis aut fusiformis 3—4 serialis; apertura rima obliqua suturalis aut commaformis extra-suturalis;

Interdum segmentis parietibus irregulariter subdivisis ( labyrinthica).

Magnitudine valde varians; mm. 0.90—1.15; color plerumque ferrugineus aut albidus.

Figg. 247, 249, 250: exempla formis variis.

Figg. 248, 251: faciei orales.

Fig. 252: sectio stadii juvenilis transversa, trilocularis, septis paullum undulatis.

Figg. 253—255: sectiones transversae, tri-quadriloculares, septis undatis, cameris sublabyrinthicis.

? **Bulimina polystropha** REUSS, 1845, Böhm. Kreide 2, p. 109, t. 24, f. 53.

**Bulim. scabra** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 65, t. 5, ff. 136—137.

**Polymorph. silicea** SCHULTZE, 1854, Org. Polythal., p. 61, t. 6, ff. 10—11.

**Text. agglutinans** var. **polystropha** PARK & JONES, 1865, N. Atl. & arct. Oc., Phil. Transact. 155, p. 371, t. 15, f. 26.

**Vern. polystropha** BRADY, 1878, Retic. & Rad. Rhizop. Arct. Exped. 1875—76, A. M. Nat. Hist. (5) 1, p. 436, t. 20, f. 9; 1884, Chall. Rep. 9, p. 386, t. 47, ff. 15—17.

Hab. ad oras Sveciæ (etiam in freto et in mari baltico australi) et Norvegiæ, metr. 40—500 sat frequens; nec non ad Spetsbergiam minus frequens.

Clavulinæformis segmentis ultimis stichostegicis, apertura rima brevi recta aut arcuata, apicali, Bigenerinæ digitatæ d'ORB. se approximans, Tab. VII, figg. 256—261. Cf. WRIGHT, Foram. Belfast, Proc. Belfast. Nat. Field Club, Append. 1885—86, p. 320, t. 26, f. 2.

Figg. 256, 258, 260: exempla formis variis.

Figg. 257, 259, 261: facies aperturalis cujusque.

Hab. in sinu Gullmaren profund. metr. 10 rara (Dr. WIRÉN).

### V. *pygmæa* (EGGER?) BRADY.

Tab. VII, figg. 262—263.

Subtrigona, ovalis aut angusta subæqualis, segmentis magis regulariter in series dispositis, subinflatis globosis; apertura angustissima, suturali aut juxtasuturali, sæpe obsolete limbata; albida aut flavida, forma nostra minus levigata.

Fig. 262: exemplum ordinarium.

Fig. 263: facies oralis, apertura indistincta.

? **Bulimina pygmæa** EGGER, 1857, Mioc. Ortenburg; LEONH. & BRONNS, Jhb. 1857, p. 284, t. 12, ff. 10—11.

? **Text. agglutinans** var. **Vern. polystropha** PARK & JONES, 1865, North. Atlant. and Arct. Oc.; Philos. Transact. 155, p. 371, t. 15, f. 26.

**Verneuil. pygmæa** BRADY, 1884, Challeng. Rep. 9, p. 385, t. 4, 7, ff. 4—7.

Hab: in sinibus Groenlandiæ metr. 35—50 passim; longit. mm. 0.45.

### V. *propinqua* BRADY.

Tab. VII, figg. 264—266.

Conica, segmentis inflatis plus minusve regulariter in ordinem ternatum dispositis, interdum affixa; apertura basali, umbilicali, suturali sicuti in Textularia; sæpe vestibulum

umbilicale exhibente; segmenta ultima interdum ut in *Textularia* disposita; nostra ferruginea, sublævis aut scabra.

Fig. 264: facies lateralis.

Fig. 265: facies oralis, segmentis binis ultimis textularioideis.

Fig. 266: facies oralis alius cum vestibulo, triserialis.

BRADY, 1884, Challenger Rep. 9, p. 387, t. 47, ff. 8—14.

Hab. mare Atlant. boreale profund. metr. 1,750, sparsa (Dr. LINDAHL), altitudo mm. 2.

\*\* *Gaudryina* D'ORB.

### *G. pupoides* D'ORB.

Tab. VII, figg. 267—277.

Teres aut subcompressa, cylindrica aut conica, scabra aut sublævis; apertura marginali, suturali, semilunari angusta, aut vestibulo umbilicali, aut poris interdum paucis exhibita; interdum subbigenoidea. Nostra argillacea aut nigrocinerea.

Valde variat forma: nunc cylindrica elongata, nunc conica multo dilatata, ut altitudo ad latitudinem ac 3 ad 1.40 sit.

A *Gaudryina* subrotundata BRADY non distincta.

*Gaudr. pupoides* auctoris ejusdem, Chall. Rep., p. 378, t. 46, ff. 1—4, a typo D'ORBIGNYI valde differens, ad sequentem melius referatur.

Fig. 267: exemplum e mari Atlantico extra Azores insulas; sæpe suturis jugosis.

Fig. 268: facies oralis.

Fig. 269: sectio stadii immaturi transversa ejusdem.

Fig. 270: pygmæa eodem ex loco.

Figg. 271—272: exemplum e Gullmaren, sinu Bahusiæ.

Figg. 273—276: facies oralis, aperturis forma variis.

Fig. 277: facies oralis, apertura poris nonnullis apicalibus substituta exempli magni conici, subbigenoideis; eodem ex loco.

*G. pupoides* D'ORB., 1840, For. Craie blanche Paris, Mém. Soc. géol. Franc. 4, p. 44, t. 4, ff. 22—24; 1846.

For. Bass. tert. Vienne, p. 197, t. 21, ff. 34—36.

GOËS, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, p. 81, t. 6, ff. 177—178.

Obs. *Gaudr. rugosa* D'ORB. hic cum *G. pupoide* collata, quia figura hujus d'Orbiguyi non sat perspicua est. *Text. pupoides* var. *conica* GOËS, l. c., t. 6, ff. 181, 182 forsitan ad *Gaudr. rugosam* D'ORB. est referenda.

Hab. in sinibus Sueciæ occidentalis profund. metr. 10—60 sat frequens, long. 3 mm.: nec non in Norvegiis; scabra: tropicæ læviores.

### *G. chilostoma* Rss.

Tab. VII, figg. 278—280.

Compressa aut subteres, sublævis, segmentis sæpe plus minusve inflatis; apertura, rima brevi, sæpe juxtasuturali, limbata; albida.

Forma nostra a Gaudr. baccata SCHWAG., 1866, For. Kar. Nikob; Novara Reise, geol. Th. 2, p. 200, t. 4, f. 12 vix distincta.

**Gaudr. chilostoma** Rss, 1865, deutsch. Sept. Thon; Wien. Ak. Dksehr. 25, p. 120. t. 1, ff. 5—7.

**Text. labiata** Rss, 1860, Crag. v. Antwerp.; Wien. Ak. Sitz. Ber. 42, p. 362, t. 2, f. 17.

**Gaudr. pupoides** var. **chilostoma** BRADY, 1884, Chall. Rep. 9, p. 379, t. 46, ff. 5—6.

**Gaudr. pupoides** BR., PARK, JONES, 1887, Abrohlos Bank., Trans. Zool. Soc. Lond. 12, 7, p. 219, t. 42, ff. 7, 8, 9.

Hab. Atlanticum boreale profund. metr. 1,750 rara (Dr. JOS. LINDAHL); mm. 1 et ultra.

\*\*\* *Textularia* D'ORB.

### **T. agglutinans** D'ORB.

Tab. VII, figg. 281—284, 294—303.

Subcompressa aut subteres, stadio primo saepe compresso, marginato, stadio maturo ovali aut subtereti; segmentis adutorum numero variantibus (7—17 utraque in serie), nunc angustis nunc altioribus.

Nostrates ex sabulo crassiore, tropicae ex arena calcarea tenui constructae, quare discrepantiae nonnihil exstat, suturis interdum jugosis. Color ferrugineus, ater aut albido-griseus. Neque a *T. sagittula* DEFR. neque a *T. conica* D'ORB. sat limitanda. Ab auctoribus nominibus multis praedita.

Fig. 281: facies marginalis.

Fig. 282: facies lateralis.

Figg. 283—284: faciei orales exemplorum e mari Bahusiae.

Figg. 294—296: exemplum e mari Atlantio extra Azores insulas; facies oralis poris impressis praeter aperturam instructa.

Figg. 297—299: forma jugosa (conf. *Text. sagittula* D'ORB., 1844, For. Iles Canaries, p. 138, t. 1, figg. 19—21).

Figg. 300—301: exemplum e mari Norvegico.

Figg. 302—303: forma angusta e Skagerack profund. metr. 250.

**Text. agglutinans** D'ORB., 1839, For. Cuba, p. 144, t. 1, ff. 17—18; 32—34.

» » PARK & JONES, 1865, N. Atl. & aet. Oc., Phil. Transact. 155, p. 369, t. 15, f. 21, *T. gramini* D'ORB. propior.

» » GOES, 1882, Retie. Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, t. 5, ff. 140—143.

» » MÖBIUS, 1880, For. Maurit., p. 93, t. 9, ff. 1—8.

» » BRADY, 1884, Chall. Rep. 9, p. 363, t. 43, ff. 1—3.

Hab. in Skagerack profund. metr. 250; in sinibus Norvegicis metr. 90—180 sat frequens (C. AURIVILLIUS, NORMAN), long. mm. 2.

forma affinis:

1. Nunc libera nunc affixa, nunc sublaevis nunc magis aspera, apertura nunc textularioidea, nunc poris indistinctis substituta; stadio immaturo primo saepe triseriali; ferruginea.

Inter typicam et *T. asperam* BRADY medium tenens.

**T. intermedia** n. Tab. VII, figg. 304—307.

Fig. 304: exemplum affixum.

Fig. 305: facies oralis ejusdem, poris minutis prædita.

Fig. 306: facies oralis alius exempli liberi.

Fig. 307: stadium immaturum transsectum, triseriale.

Hab. in sinibus Norvegicis profund. metr. 500 rara (HJ. THÉEL & C. BOVALLIUS).

**T. sagittula** DEFR. var. **cuneiformis** D'ORB.

Tab. VII, figg. 288—290.

Lingulata aut lanceolata nunc dilatata nunc angustior, plus minusve complanata, marginata, segmentis plerumque paullum angustatis; apertura textulariæ communi; nostra sublævis grisea.

**T. cuneiformis** D'ORB., 1839, For. Cuba, p. 147, t. 1, ff. 37—39.

**T. sagittula** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 5, ff. 144—146 (in sequentem transiens); ubi etiam synonymiam vide, p. 75; a qua abstrahenda: Text. corrugata COSTA (forsan Bigenerina Capreolus D'ORB.), Text. folium PARK & JONES; *T. variabilis* var. *spathulata* et *difformis* WILL. (sec. BALKWILL & WRIGHT Bolivianæ).

» » BRADY, 1884, Chall. Rep. 9, p. 361, t. 42, ff. 17, 18.

» » BALKWILL & WRIGHT, 1885, Rec. Dublin For., Trans. R. Irish Ac. Sc. 28, p. 332, t. 13, ff. 16, 17, in sequentem transiens.

Hab. ad oras Bahusiæ profund. metr. 50—90 sat frequens, formis *sagittula* et *Williamsoni* interse commixtis, long. 1—1,90 mm.

formæ affines:

Magis dilatata, plus minusve cuneata, nunc marginata nunc margine obtuso, nunc scabriuscula nunc sublævis, segmentis plerumque paucioribus, altioribus; grisea; a typica non sat distincta.

**T. Williamsoni** GOËS, Tab. VII, figg. 285—287.

**T. cuneiformis** WILLIAMS, 1858, Rec. For. Great Brit., p. 75, t. 6, ff. 158—159.

?**T. anceps** RSS, 1859, Westph. Kreidef., Wien. Ac. S. Ber. 40, p. 234, t. 13, f. 2.

**T. gramen** BRADY, 1884, Chall. Rep. 9, p. 365, t. 43, ff. 9—10.

» » BALKW. & WRIGHT, 1885, Rec. Dublin For., Transact. R. Irish Ac. Sc. 28, p. 332, t. 13, ff. 13—14.

Hab. ad oras Bahusiæ profund. metr. 40—90 passim, alta mm. 1,25.

## APPENDIX

Compressa, margine segmentorum in angulum plus minusve producto, segmentis angustis.

**T. pectinata** v. REUSS, Tab. VII, figg. 291--293.

1849, Neue For. Österreichs; Wien. Ak. Dkschr. 1, p. 381, t. 49, ff. 2--3; 1867, Steinsalz Ablag. Wieliczka; Wien. Akad. Sitz. Ber. 55, p. 98, t. 3, f. 11.

Obs. T. Maria: D'ORB., 1846, Bass. tert. Vienne, p. 246, t. 14, ff. 29--31 et Plecanium spinulosum v. REUSS, 1867, Steinsalz. Ablag. Wieliczka; Wien. Ak. Sitz. Ber. 55, p. 65, t. 1, f. 3 segmentis altioribus et paucioribus ad T. Williamsoni potius correspondentes.

Hab. tropicis in maribus profund. metr. 300--500. Long. mm. 1.

## \*\*\*\* Bigenerina D'ORB.

**B. nodosaria** D'ORB.

Tab. VII, figg. 313--323.

Arenacea aut calcarea agglutinans, scabra, stadio larvali sive immaturo compresso plane textularioideo, stadio maturo nodosarino; apertura foramen minutum, saepe excentrice locatum; grisea aut albida.

Fig. 313: e mari Germanico.

Fig. 314: facies oralis c. apertura minuta.

Fig. 315: longitudine secta.

Figg. 316, 320, 322: exempla robusta e mari Caraibico; facies laterales.

Figg. 317, 321: facies marginales.

Figg. 318, 319, 323: facies orales.

**Bigen. nodosaria** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 261, No. 1, t. 11, ff. 9--12, Mod. 57.

> **pusilla** ROEM., 1838, Tert. Meeres. Norddeutshl., LEONH. & BRONNS JHB., 1838, p. 384, t. 3, f. 20.

> **agglutinans** D'ORB., 1846, Bass. tert. Vienne, p. 238, t. 14, ff. 8--10.

> **T. agglutinans** var. **nodosaria** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Philos. transact. 155, p. 371, t. 15, f. 25; t. 17, f. 80.

> Fiës Modell. 12.

> GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Ak. Handl. 19, 4, t. 5, ff. 133--139.

Obs. Text. sagittula forma bigenerina Goës ibid. p. 78, t. 5, ff. 159--160 inter Textulariam et Clavulinam medium tenet, quare est a Bigener. nodosaria D'ORB. separanda.

> TERRIGI, 1880, Foram. Vatican; Atti Accad. Pontif. 33, p. 192, t. 2, f. 28.

> BRADY, 1884, Chall. Rep. 9, p. 369, t. 44, ff. 14--18.

Hab. mare Germanicum profund. metr. 180; Stoksund sinum norvegicum metr. 150--180 rara (NORMAN), long. 1.6; ex mari caraibico mm. 2.60.



**B. digitata** D'ORB.

Tab. VII, figg. 324—343.

Arenacea, stadio larvali teretiusculo aut subcompresso, irregulariter bi-triseriali; apertura semilunari, valvulari, aut fissura recta, interdum poro rotundato; cameris interdum imperfecte subdivisis; ferruginea aut albida.

Vern. polystrophæ, ex qua verosimiliter originata, magis quam Bigen. nodosaria et Text. aliis affinis. Nomen triviale in "*digitus*" rectius commutandum. Clavulina communi saepe valde similis.

Fig. 324: exemplum typicum e Gullnaren sinu Bahusia.

Figg. 325—331: officia formis variis.

Fig. 332: sectio transversa, cameram subdivisam præbens.

Fig. 333: exemplum stadii primi.

Fig. 334: apertura ejusdem.

Figg. 335—336: sectiones transversæ ejusdem IV-serialibus segmentis.

Fig. 337: exemplum tenue, stadio immaturo magis reducto.

Fig. 338: sectio longitudinalis stadii immaturi.

Fig. 339: sectio longitudinalis stadii maturi, segmentorum trabeculis rudimentariis.

Figg. 340—341: sectiones transversæ, stadiorum juvenalium structuram subdivisam exhibentes.

**Bigenerina (Gemmulina) digitata** D'ORB., 1826. Tab. Méth. An. Sc. nat. 7, p. 262, No. 4, Mod. 58. (cum forma auctorum non sat congruus).

▷ BRADY, 1864, Rhiz. Shetland., Trans. Lin. Soc. 24, p. 468, t. 48, f. 8.

▷ PARK & JONES, 1865, For. N. Atl. & Arct. Oc., Phil. Transact. 155, p. 371, t. 17, f. 81.

▷ PARKER, JONES, BRADY, 1865, Nomenclat. Foramin., A. M. Nat. Hist. (3) 16, p. 28, t. 2, f. 61.

▷ BRADY, 1883, Chall. Rep. 9, p. 370, t. 44, ff. 19—24.

Hab. ad et extra oras Bahusiæ Succiæ metr. 40—350 sat frequens; nec non in sinibus Norvegiæ usque ad profund. metr. 350; long. 2—2.5 mm.

**SPIROPLECTA** EHRENB.**S. biformis** PARK. & JONES.

Tab. VII, figg. 308—312.

Arenacea, compressa, linearis, linguiformis aut subulata, margine obtuso; interdum valde attenuata, angusta, spira 3—4 loculari, saepe abrupta, etiam obsoleta, Gaudryina filiformi BERTHELIN similis; ferruginea. Spiroplecta prælonga WRIGHT, 1885, Cretac. For. Keady Hill; Proc. Belfast Nat. Field Club, Append. 1885—86, p. 329, t. 27, f. 3, nostræ formæ valde propinqua.

Figg. 308—309: forma tenuis, e Gullnaren sinu Bahusia, profund. metr. 124.

Fig. 310: forma latior, eodem e loco.

Fig. 311: e Jacobshavn, Groenlandia, profund. metr. 52.

Fig. 312: e Storfjord Spetsbergiæ, profund. metr. 180.

**T. agglutinans** var. **biformis** PARK & JONES, 1865, North. Atl. & Arct. Oc., Philos. Transact. 155, p. 370, t. 15, ff. 23—24.

**T. biformis** BRADY, 1878, Retic. & Radiol. Rhizop. North. Pol. Exped. 1875—1876; A. M. Nat. Hist. (5) 1, p. 436, t. 20, f. 8; 1884; Challeng. Rep. 9, p. 376, t. 45, ff. 25—27.

Hab. In Gullmarch sinu Bahusiae metr. 150 (C. AURIVILLIUS, A. WIRÉN); extra Helsingborg metr. 30; ad Groenlandiam (ÖBERG), Spetsbergiam, metr. 50—270 (SMITT & GOËS). Long. mm. 0.40—0.70.

## VALVULINA D'ORB.

### **V. conica** PARK & JONES.

Tab. VIII, figg. 342—352.

Plus minusve elevate conica, basi orbiculari aut ovali, segmentis amplectentibus, triserialibus; apertura minima, rima suturali aut juxtasuturali, interdum duplicata (rimulis binis plus minusve sepositis); ferruginea, affixa, tapete e granulis arenae minimis constructa circumdata.

Fig. 342: minuta.

Fig. 343: facies oralis cum rimis duabus.

Fig. 344: magis elata.

Fig. 345: facies oralis ejusdem elliptica, apertura minima.

Fig. 346: minus elata.

Fig. 347: angustior.

Fig. 348: sectio transversa.

Fig. 349: longitudine secta.

Fig. 350: facies oralis ejusdem.

Fig. 351: facies oralis alius, orbicularis, pro apertura rimulis duabus sepositis.

Fig. 352: Facies spiralis.

**V. triangularis** PARK & JONES, 1857, For. Coast. of Norw., A. M. Nat. Hist. (2) 19, p. 295, t. 11, ff. 15—16.

var. **conica**, PARK & JONES, 1865, North. Atlant. & Arct. Oc., Philos. Transact. 155, p. 406, t. 15, f. 27.

BRADY, 1884, Chall. Rep. 9, p. 392, t. 49, ff. 15—16.

Hab. extra oras Sueciæ occidentales, profund. metr. 90—500 passim; in sinibus Norvegiæ profundis sat frequens; mm. 1.20 alta.

### **V. fusca** WILLIAMS.

Tab. VIII, figg. 353—355.

Explanato-convexa aut late conica, ceterum ut præcedens, a qua vix specificè distincta.

Fig. 353: facies spiralis.

Fig. 354: facies oralis.

Fig. 355: facies latero-marginalis.

**Rotalina fusca** WILLIAMS, 1858, Rec. Foranf. Gr. Brit., p. 55, t. 5, ff. 114--115.

**V. fusca** BRADY, 1884, Challeng. Rep. 9, p. 392, t. 49, ff. 13--14.

Hab. in Stoksund sinu Norvegico profund. metr. 150--180 passim (NORMAN); diam. mm. 1.30.

## APPENDIX.

### CLAVULINA D'ORB.

#### **C. communis** D'ORB.

Stadio immaturo teretiuseculo aut subcompresso, segmentis plus minusve regulariter triserialibus; segmentis stadii nodosarini aliquando in collum breve productis; apertura plerumque semilunari, valvata; cinerea, aut albida, structura saepe magis calcarea quam silicea.

Genus Clavulinae retineo, quia origo ejus a Valvulina incerta.

**Clavulina communis** D'ORB., 1826, Tab. method., An. Sc. nat. 7, p. 268, No. 4.

» » 1846, Bass. tert. Vienne, p. 196, t. 12, ff. 1--2.

» » Friès mod. 10.

**Verneuilina communis** PARK & JONES, BRADY, 1866, Crag. For., Palaeogr. Soc. 19, t. 3, f. 19.

» » VAN DEN BROECK, 1876, For. Barbadoes, Ann. Soc. Belg. microsc. 2, p. 136, t. 3, f. 14.

**Clavulina communis** BRADY, 1884, Challeng. Rep. 9, p. 394, t. 48, ff. 1--8.

Hab. mare Atlanticum extra Hispaniam profund. metr. 1,500 (J. LINDAHL).

formae affines:

1. Attenuata, sublaevis, stadio immaturo teretiuseculo aut paululum compresso, interdum valde reducto saepe biseriali, apertura porata rare valvulata; albida. Interdum a Big. digitata D'ORB. vix distinguenda.

**C. laevigata** GOËS, Tab. VIII, figg. 356--367.

Figg. 356--357: exempla duo e mari Caraibico.

Fig. 358: longitudine secta.

Figg. 359--367: faciei orales.

BRADY, Challeng. Rep. 9, t. 48, ff. 9--12.

GOËS, Retic. Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 1882, 19, No. 4, t. 5, f. 162-164.

Hab. mare Caraibicum profund. metr. 800 rara. Longitudo mm. 1.50-2.50.

2. Siliceo-arenacea, cylindrica, interdum subconica aut fusiformis brevis, stadio immaturo brevissimo indistincto, apertura valvata aut foramine minuto aut poris sparsis minutissimis instituta, aliquando obsoleta; cameris interdum rudimentis trabecularum obsolete subdivisis; plerumque ferruginea, aspera; suturis interdum obsolete scrobiculatis.

**C. eocæna** GÜMB., Tab. VIII, figg. 368—377.

Fig. 368: exemplum cylindricum angustum.

Fig. 369—371: aperturae formis variis.

Fig. 372: sectio transversa stadii nodosarini dissepimentorum rudimentis.

Fig. 373: apertura obsoleta.

Fig. 374: sectio transversa stadii immaturi.

Fig. 375: sectio longitudinalis.

Fig. 376: forma obconica.

Fig. 377: facies oralis ejusdem.

GÜMB., 1868, For. Nordalp. Eocæn, K. Bay. Wiss. Akad. Abh. 10, 2, p. 601, t. 1, f. 2.

**Valvulina triangularis** v. **eocæna** GOËS, 1881, Sv. Vet. Ak. Handl. 19, 4, p. 88, t. 11, ff. 401—403.

Hab. mare Caraibicum metr. 800 passim (Goës).

**C. parisiensis** D'ORB.

Tab. VIII, figg. 378—386.

Stadio immaturo pyramidali trigono, apertura sæpe protrusa, plerumque valvulata, semilunari aut poris instituta, præterea ut in præcedente; stadio maturo interdum suturis valde constrictis; grisea.

Fig. 378: exemplum ordinarium, e mari Caraibico.

Figg. 379—382: aperturae formis variis.

Fig. 383: sectio transversa stadii immaturi.

Fig. 384: valde attenuata var. humili BRADY se approximans; e mari Caraibico.

Figg. 385—386: facies orales aperturam præbentes.

**Clavulina parisiensis** D'ORB., 1826, Tab. Méth., Ann. Sc. Nat. 7, p. 268, No. 3; Mod. 66.

**Text. triquetra Bigenerina** GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Ak. Handl. 19, 4, p. 85, t. 6, ff. 185—186.

**Cl. parisiensis** BRADY, 1884, Chall. Rep., p. 395, t. 48, ff. 14—18.

Hab. mare Atlant. latitud. bor. 40°, long. occident. 10°, profund. metr. 300—1,500 haud rara (LINDAHL). Mare Caraib. profund. metr. 500 (Goës), spiculis spongiorum interdum immixtis; Long. mm. 3.

forma affinis:

Stadio immaturo biseriali, lanceolato, valde compresso textularioideo; apertura semilunari, valvulata, aut rimula aut poris duplicatis aut foramine subrotundo instituta; stadium larvale interdum valde abbreviatum; calcarea scabra.

**Bigenerinae nodosariae** D'ORB. simillima. Ubi forma nostra recte locetur, incerti sumus.

**C. textularioidea** n., Tab. VIII, figg. 387—399.

Fig. 387: exempli magni facies lateralis.

Fig. 388: sectio longitudinalis ejusdem.

Figg. 389—390: facies marginalis exemplorum 2 minus adutorum.

Figg. 391—396: facies orales, aperturis formis variis.

Figg. 397—398: exempla 2, stadio immaturo valde reducto.

Fig. 399: sectio longitudinalis juvenis. Omnes e mari Caraibico.

**Textularia sagittula** forma **Bigenerina** GOËS, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, p. 78, t. 5, ff. 159—160.

Hab. mare Caraibicum profund. metr. 300 frequens. Long. mm. 3—5; interdum pygmæa.

**C. Soldanii** PARK. & JONES.

Tab. VIII, figg. 400—407.

Conica aut ovalis aut cylindrica, interdum valde angustata, stadio immaturo plus minusve oblitterato rare distincte evoluto, cameris septis radialibus divisis; apertura cribri-formis vel dendritica interdum semilunaris valvata aut rima curvata instituta.

Nunc pulvere tenuissimo nunc granulis crassioribus constructa, plerumque calcarea. Dissecta numero variantia, plerumque 10—16, alternum brevius; interdum pauciora (3—6). Statura et forma valde variantes.

Fig. 400: forma cylindrica, stadio immaturo aperte clavulinæformi insignis.

Fig. 401: sectio longitudinalis ejusdem.

Fig. 402: sectio transversa stadii immaturi.

Fig. 403: sectio transversa stadii maturi.

Fig. 404: facies oralis, apertura insolita.

Fig. 405: forma tenuis rarissima.

Fig. 406: facies oralis apertura simplex valvata.

Fig. 407: sectio transversa segmenti stadii maturi tridivisi.

**Lituola Soldanii** PARK & JONES, 1860, Rhizop. Mediterr., Quart. Journ. geol. Soc. 16, p. 307.

? **Nodos. dubia** D'ORB., 1826, Tabl. Méth., An. Sc. nat. 7, p. 252, No. 10.

**Lituola Soldanii** CARPENTER, 1862, Introduct., t. 6, fig. 43.

" " v. **intermedia** VAN DEN BROECK, 1876, For. Barbade; Ann. Soc. Belg. microsc. 2, p. 74, t. 2, ff. 1, 3, 4, 6.

**Haplostiche Soldanii** BRADY, 1884, Chall. Rep., p. 318, t. 32, ff. 12—18.

**Valvul. triangularis** v. **polyphragma** GOËS, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 87, t. 11, ff. 390—400.

Hab. mare Caraibicum metr. 300—500 vulgaris (GOËS), usque ad mm. 7 alta. Ad Insulas Azores metr. 600 (SMIT & LJUNGMAN).

**C. rudis** COSTA.

Tab. VIII, figg. 408—412.

Cylindrica, ovate-cylindrica aut subglobularis, stadio immaturo obsoleto ad segmenta 1—2 redacto, segmento ultimo in collum breve producto, apertura semilunari valvulata instructo. Nunc sublævis e pulvere tenuissimo agglutinata nunc sabulo scabra; nunc valida mm. 6—8, nunc pygmæa 1 mm. solum longa, lævigata Sagrinæ similis; valvula apertura sæpissime indistincta.

Fig. 408: exemplum ovoideum.

Fig. 409: facies oralis ejusdem.

Figg. 410—412: apertura forma variæ.

**Glandulina rudis** COSTA, 1855, *Marna terz. Messina*, Mem. Nap. 2, p. 142, t. 1, ff. 12—13.**Clavulina cylindrica** v. HANTKEN 1875, *For. Cläval. Szabói Schicht.*, Jahrb. ungar. geol. Anstalt 4, p. 18, t. 1, f. 8.» » KARRER 1877, *Hochquell. Wasserleit.*, Abh. geol. Reichsanst. Österreichs. 9, p. 373, t. 16, f. 4.GOËS 1882, *Retic. Rhizop. Carib Sea*, Sv. Vet. Akad. Handl. 19, 4, t. 4, f. 77—81 (ad *Uvigerinam* dimorpham PARK & JONES lævitatatis causa relata, in fig. 81 est apertura neglecta).**C. cylindrica** BRADY 1884, *Challeng. Rep.* 9, p. 396, t. 48, f. 32—38.**Clav. rudis** FORNASINI, 1893, *For. Messin.*, R. Accad. Sc. Instit. Bologna (5) 3, t. 1, ff. 13—14.

Hab. mare Caraibicum metr. 300 vulgaris (GOËS), ad Azores metr. 350 frequens (SMITT, LJUNGMAN).

**CASSIDULINA** D'ORB.**C. lævigata** D'ORB.

Tab. VIII, figg. 418—420.

Lenticularis, plerumque valde compressa et marginata aut anguste carinata, segmentis utrinque 4—5, centro nunc nudo nunc involuto, poris nunc obscuris nunc distinctis.

**Cassidulina lævigata** D'ORB. 1826, *Ann. S. Nat.* 7, p. 282, No. 1, t. 15, ff. 4, 5, Mod. 41.» » WILLIAMS. 1858, *Rec. For. Gr. Brit.*, p. 68, t. 6, ff. 141—142.» » PARK. & JONES 1857, *For. Coast of Norway.*, *Ann. Mag. Nat. Hist.* (2) 19, t. 11, ff. 17—18; idem 1865, *North. Atl. & Arct. Oc.*; *Phil. Transact.*, 155, p. 377, t. 15, ff. 1—4.» » BRADY 1884, *Chall. Rep.* 9, p. 428, t. 54, ff. 1—3, t. 15, ff. 1—3.**C. punctata** RSS. 1849, *Neue For. Osterr.*; *Wien Ak. DkSchr.* 1, p. 376, t. 48, f. 4.**C. sicula** SEG. 1862, *Rhizop. Catan*; *Accad. Gioenia Atti* (2) 18, p. 27, t. 1, f. 7 (separ.)**C. pulchella** D'ORB. 1839, *For. Amér. mérid.*, p. 57, t. 8, ff. 1—3.**C. lævigata** BRADY, PARK., JONES 1887, *Abroholos Bank Trans. zool. Soc. Lond.* 12, 7, p. 221, t. 43, f. 11.

Hab. extra litora occidentalia Sveciæ et Norvegiæ profund. metr. 70—180; nec non ad Spetsbergiam et Groenlandiam metr. 180—500, haud rara. Diam. mm. 0.65.

**C. crassa** D'ORB.

Tab. VIII, figg. 421—422.

Disciformis, margine obtuso rotundato, segmentis plus minusque inflatis utrinque 4—5, centro sæpe involuto; a præcedente non sat distincta.

Fig. 421: facies lateralis.

Fig. 422: facies marginalis.

- C. crassa** D'ORB. 1839, For. Amér. mérid. 5, p. 56, t. 7, ff. 18—20; 1846, Bass. tert. Vienne, p. 213, t. 21, ff. 42—43.  
**C. obtusa** WILL. 1858, Rec. For. Gr. Brit., p. 69, t. 6, ff. 143—144.  
**C. lævigata v. crassa** PARK. & JONES 1865, North Atl. & Arct. Oc., Phil. Transact. 155, p. 377, t. 15, ff. 5—7, t. 17, f. 64.  
 ? **C. Margareta** KARR. 1877, Hochqu. Wasserleit., Abh. geol. Reichsanst. Österr. 9, p. 386, t. 16, f. 52.  
**C. crassa** BRADY 1884, Chall. Rep. 9, p. 429, t. 54, ff. 4—5.

Hab. mare Germanicum profund. metr. 180 rara; pygmæa mm. 0.28.

### **C. Bradyi** NORMAN.

Tab. VIII, figg. 423—426.

Sublittuiformis aut ovalis, plus minusve compressa, segmentis primis helicostegicis aut semi-helicostegicis sicuti in præcedentibus dispositis, ceteris oblique stichostegicis biserialiter interse alternatis.

Fig. 423: facies lateralis.

Fig. 424: facies marginis convexi.

Fig. 425: facies oralis exempli e mari Germanico.

Fig. 426: latior, ex Österfjord Norvegiæ.

(NORMAN M. S.) BRADY 1884, Chall. Rep., p. 431, t. 54, ff. 6—10.

GOËS, 1882, Retic. Rhizop. Caribb. Sea, Sv. Kgl. Vet. Akad. Handl. 19, 4, t. 4, figg. 111—113 (magis inflata).

Hab. in mari Germanico metr. 180; Österfjord, Norvegiæ metr. 180—360 rara; long. mm. 0,30—0,42 (NORMAN).

forma affinis:

**stenostegica**, numero segmentorum plus quam duplo majore, Tab. VIII, fig. 427.

Hab. cum præcedente rara, long. 0.42 mm.

## APPENDIX.

### EHRENBERGINA v. REUSS.

#### **E. serrata** Rss.

Tab. VIII, figg. 428—430.

Subtriangularis aut late ovalis aut rhomboidea, subcompressa, biconvexa; aut æquilateraliter subtrigono pyramidalis; angulo segmentorum externo in spinam producto; segmentis primis nunc subhelicostegicis vel potius faciem oralem (“ventralem”) versus inclinatis, nunc testa tota stichostegica.

Formas trigonas a compressis disjungere non proprium est. Variat margine interno segmentorum spinis instructo, ut facies oralis (“ventralis”) series spinarum binas exhibeat.

Fig. 428: facies dorsalis s. lateralis convexa.

Fig. 429: facies "ventralis" aperturam præbens.

Fig. 430: apex cum apertura.

**Ehrenbergina serrata** Rss., 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 377, t. 48, f. 7.

» » BRADY, 1884, Chall. Rep. 9, p. 434, t. 55, ff. 2—7 (trigona, spinosa).

GOËS, 1882, Retic. Rhizop. Car. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 6, ff. 183—184 (trigona, pro Verneulina spinosa Rss tunc habita).

Hab. extra Azores insulas profund. metr. 400 passim (SMITT, LJUNGMAN). Long. mm. 0.50—0.55.

## BULIMINA D'ORB.

### **B. pyrula** D'ORB.

Ovoidea aut ellipsoidea plus minusve inflata, anfractu ultimo præcedentes fere obvelante, ut anfractus 1—2 solum appareant; vitrea, tenuissima; a sequente non specificè limitanda.

**Bulimina pyrula** D'ORB, 1846, Bass. tert. Vienne, p. 184, t. 11, ff. 9—10 (minuta, inflata).

? **B. caudigera** D'ORB., 1826, Tab. méthod., Ann. Sc. nat. 7, p. 270, No. 16, Mod. No. 68 (magis angustata).

**B. auriculata, turgida** BALL., 1850, Microsc. exam. of soundings, Smitsonian contributions 2, 3, p. 12, figg. 25—31.

**B. pyrula** BRADY, 1884, Chall. Rep. 9, p. 399, t. 50, ff. 7—10.

Hab. cum sequente præsertim in maribus arcticis profund. metr. 300—530 minus frequens.

forma affinis: Statura et forma præcedentis nunc lata nunc angustata, segmentis nunc lente nunc raptim incrementibus, quo formæ variæ sint natæ, anfractibus apparentibus 3—4—5.

### **B. ellipsoides** COSTA, Tab. VIII, figg. 431—436.

Figg. 431—434: exempla duo cum facie orali utriusque, e mari Bahusiæ.

Fig. 435: major, subcylindrica, e mari Groenlandico, profund. metr. 340.

Fig. 436: angusta e sinibus Norvegicis, profund. metr. 100—150.

COSTA, 1854: Palæont. Nap. 2, p. 265, t. 15, f. 9.

**Bul. pupoides** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 4, ff. 86—87.

**Bul. Presli** var. **pyrula** PARK. & JONES, 1865, N. Atl. a. Arc. Oc., Philos. Trans. 155, p. 372, t. 15, ff. 8—9 (in præcedentem vergens).

**Bul. tenera** Rss., 1867, Steinsalz Ablag. Wieliczka, Wien. Ak. Sitz. Ber., 55, p. 94, t. 4, ff. 11—12.

**Bul. ovata** BRADY, 1884, Chall. Rep. 9, p. 400, t. 50, f. 13.

**Bul. doliolum, ovoides** TERQU., 1886, For. & Ostrac. d'Islande; Bull. Soc. zool. France, 1886, pp. 333, 334, t. 11, ff. 17—18, 20.

**B. socialis** BORNEM., 1855, Septar. Thon Hermsdorf, Zeitschr. deut. geol. Gesellsch. 7, p. 342, t. 16, f. 10.

Ab his non sat distincta:

**B. ovata** D'ORB, 1846, Bass tert. Vienne, p. 185, t. 11, ff. 13—14.

**B. ovata, propinqua** STACHE, 1865, Novara Reise, geol. Th. 1, pp. 266, 267, t. 24, ff. 14, 16.

**B. affinis** D'ORB., 1839, For. Cuba, p. 105, t. 2, ff. 25—26.

**B. pupoides** var. GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl., 19, 4, t. 4, ff. 84—85.

**B. affinis** BRADY, 1884, Chall. Rep. 9, p. 400, t. 50, f. 14.

? **B. ovulum** ALTH., 1850, Umgeb. Lemberg., Haid. nat. hist. Abh. 3, p. 264, t. 13, f. 18.

Hab. in sinibus Sveciæ occidentalis, Norvegiæ, Groenlandiæ, profund. metr. 130—300 sat frequens. Long. mm. 1—1.80.



**B. marginata** D'ORB.

Tab. IX, figg. 439--444.

Ovata margine segmentorum infero serrato aut spinoso, anfractibus visibilibus 5—7.

Bul. pupoides v. spinulosa WILL., 1858, Rec. For. Gr. Brit., p. 62, t. 5, f. 128, et *B. aculeata* BRADY, 1884, Chall. Rep., p. 406, t. 51, ff. 7—9 non sat distingvenda; formæ intermediæ sæpe occurrunt.

Figg. 439—444: exempla tria cum facie orali ejusque.

**Bul. marginata** D'ORB., 1826, Tab. méth. Ann. Sc. nat. 7, p. 269, No. 4, t. 12, ff. 10—12.

    "    "    BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. zool. Soc. Lond. 12, 7, p. 220, t. 43, ff. 7, 10.

**Bul. pupoides** v. **marginata** WILL., 1858, Rec. For. Gr. Brit., p. 62, t. 5, ff. 126—127.

**Bul. marginata** BRADY, 1884, Chall. Rep. 9, p. 405, t. 51, ff. 3—5.

**Bul. acanthia** COSTA, 1854, Pal. Nap. 2, p. 335, t. 13, ff. 35—36.

Hab. ad oras Sveciæ occidentales (etiam in freto), Norvegiæ et ad Spetsbergiam profund. metr. 50—270 sat frequens. Long. mm. 0.60—0.80.

**B. subteres** BRADY.

Tab. IX, figg. 445--453.

Elongate aut abbreviate ovalis, anfractibus 2—3 in spiram plus minusve regulariter retortam dispositis, apertura rima umbilicali aut juxta-umbilicali in margine segmenti infero, rare summo segmento propinqua, instituta; levissima, interdum paullum compressa.

A *Robertina arctica* D'ORB., 1846, Bass. tert. Vienne, p. 203, t. 21, ff. 37—38 non distingvenda, quare nomen *Bul. arctica* *Bul. "subtereti"* sit preferendum.

A *Bul. elegantissima* D'ORB., 1839, For. Amér. mérid., p. 51, t. 7, ff. 13—14; WILLIAMS, 1858, Rec. For. Gr. Brit., p. 64, t. 5, ff. 134—135; BRADY, 1884, Chall. Rep., p. 402, t. 50, ff. 20—22, nisi anfractu hujus ultimo multo longiore segmentisque angustioribus et situ aperturae medio segmento ultimo distincta. Inter formam utramque medium tenet *B. elegantissima* GOËS, 1882, Ret. Rhiz. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 66, t. 4, ff. 88, 89, 95—98.

*Bulimina imperatrix* KARR., 1868, Mioc. Kostej., Wien. Ak. S.Ber. 58, p. 176, t. 4, f. 11, est inter *B. pupoidem* et *B. subteretem* notis ambarum prædita.

Figg. 445, 447: exemplum paullum compressum e mari Spetsbergico.

Fig. 446: summum segmentum ultimum ejusdem.

Figg. 448—449: e mari Norvegico.

Figg. 450—452: c. apertura subapicali e mari Groenlandico.

Fig. 453: subcompressa (= *Robertina arctica* D'ORB.) e mari Spetsbergico.

- Bul. subteres** BRADY, 1881, Österr. Ung. Nordpol. Exped., Wien. Ak. DkSchr. 43, p. 101; Qv. Journ. Microsc. Sc. 21 (n. s.), p. 55; WRIGHT, 1880, Rec. For. South. Donegal, Proc. Belf. Nat. field Club, Append. 1880—81, t. 8, ff. 2, 2 a.
- » » BRADY, 1884, Chall. Rep. 9, p. 403, t. 50, ff. 17—18.
- B. elegantissima** BRADY, 1878, Retic. & Rad. Rhiz. Northpol. Exp., A. M. N. (5) 1, p. 436, t. 21, f. 12.
- B. Presli v. elegantissima** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Philos. Transact. 155, p. 374, t. 15, ff. 12—17.
- B. Parkeri** TERQU., 1886, For. & Ost. d'Islande, Bull. Soc. Zool. France 1886, p. 334, t. 11, f. 19.

Hab. mare Spetsbergiæ, Groenlandiæ, Norvegiæ metr. 60—350 passim, nec non ad Bahusiam rara. Long. mm. 0.50—0.80.

forma affinis:

late ovoidea, abbreviata, subinflata, anfractibus 2—3, apertura ut in typica, sæpe altera extraumbilicali suturali; forsan megasphærica typi.

Forma a Robertina austriaca v. REUSS (1849, Neue For. Österr. Wien. Ak. DkSchr. 1, p. 375, t. 47, f. 15), paullum discrepans, structura tamen huic propinqua.

**B. brevis** D'ORB. (1839, For. Craie bl. Paris; Mém. Soc. géol. France 4, p. 41, t. 4, ff. 13—14) etiam affinis.

**B. Normani** n. Tab. IX, figg. 437—438.

Hab. in sinibus Norvegiis profund. metr. 100—150 rara (NORMAN). Long. mm. 0.50—0.65.

### **B. convoluta** WILLIAMS.

Ovate auricularis, compressa aut subcompressa, segmentis primis subhelicoideis, ceteris irregulariter bi-triserialibus, suturis sæpe limbatis.

Cassidulinis, præsertim C. Bradyi NORMAN quam Buliminis magis propinqua.

**B. pupoides** var. **convoluta** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 63, t. 5, ff. 132—133 (fig. vix correctæ).

**B. convoluta** BRADY, 1884, Chall. Rep. 9, p. 409, t. 113, f. 6.

Hab. in sinibus Norvegiis ut Stoksund et extra Sartoroc metr. 70—200 paucas collegit Rev. NORMAN; pygmæa, long. 0.50—0.60 mm.

\*\* Virgulina.

### **V. squamosa** D'ORB.

Tab. IX, figg. 454—456, 460.

Producta, anguste lanceolata, compressa aut subcompressa, segmentis in series binas regulariter dispositis, nunc productis angustis, septisque obliqvatis, nunc paullo brevioribus, septisque magis transversis, sæpissime non inflatis.

In luce transeunte sæpe quasi sabulosa, nebulosa.

Figg. 454—455: exempla e mari Caraibico, var. Schreibersianæ approximantia; *a*: facies apicalis segmenti ultimi.

Figg. 456, 460: e sinibus Norvegiæ; *a*: summum segmentum utrumque ultimum.

**Virgulina squamosa** D'ORB., 1826, Ann. Sc. nat. 7, p. 267, No. 1, Mod. 64; ROEMER, 1838, Nordd. Meeres-sand., LEONH. & BRONNS, Jhb. 1838, p. 386, f. 39

**Virg. punctata** D'ORB., 1839, For. Cuba, p. 139, t. 1, ff. 35—36.

**Bul. compressa** BAILEY, 1850, Microscop. exam. of soundings, Smithson. Contribut. 2. art. 3. p. 12, ff. 35—37.

? **Virg. tegulata** v. REUSS., 1846, Böhm. Kreide 1, p. 40, t. 13, f. 81.

**Bul. Presli** var. (**Virg.**) **squamosa** PARK. & JONES, 1865, North. Atl. & Arct. Oc., Phil. Transact. 155, p. 375, t. 15, f. 19.

**Bul. squamosa** GOËS, 1882, Retic. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, p. 67, t. 4, ff. 99—100, 106—107.

**Virg. squamosa** BRADY, 1884, Chall. Rep. 9, p. 415, t. 52, f. 9.

Obs. **Boliv. textilarioides** v. Rss. (1862, Norrd. Hils. & Gault., Wien. Akad. Sitz. Ber. 46, p. 81, t. 10, f. 1) et **Boliv. elongata** v. KARR. (1878, For. Luzon, Bolet. Map. geol. Españ. 7, 2, p. 23, t. F, f. 8) non sat distinctæ, nisi magis complanatæ paulloque latiores.

Hab. in sinibus Norvegicis profund. metr. 180—530 passim. Long. mm. 0.60—1.15.

formæ propinquæ:

1. septis plus minusve transversis, segmentis brevioribus, plus minusve inflatis ut margo paullum quasi lobatus sæpe videatur; poris paucis sparsis majoribus præcipue secundum suturas congregatis.

A **Boliv. (Textularia) lævigata** WILLIAMS, Rec. For. Gr. Brit., p. 77, f. 168, segmentis inflatis distincta. Hæc **Bol. tegulata** Rss. 1850, Kreidemerg. Lemberg, Haid. Abh. 4, 1, p. 45, t. 4, f. 12 valde propinqua.

A **Boliv. textilarioides** Rss. suturis magis transversis discrepans, nec non segmentis inflatis; secundum Cel. Dom. BALKWITT & WRIGHT (Roy. Ir. Ac. Sc. 28, p. 334) eadem ac **Bol. lævigata** WILLIAMS; illa “textilarioides” tamen suturis magis obliquatis, segmentis plus productis ovalibusque **Virg. squamosa** D’ORB. magis propinqua.

**V. obscura** GOËS, Tab. IX, figg. 457—458.

Fig. 457—458 exempla e mari Germanico profund. metr. 180; *a*: summum segmentum ultimum utrumque cum apertura.

**Boliv. textilarioides** BRADY, 1884, Chall. Rep. 9, p. 419, t. 52, ff. 23?, 24—25, ab hoc non vere distincta.

**Virg. texturata** BRADY, ibid., p. 415, t. 52, f. 6.

**B. squamosa** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 4, ff. 105, 108.

Hab. sinus Norvegicos profund. metr. 500 (Revnd. NORMAN), mare Germanicum profund. metr. 180 rara, pygmæa mm. 0.45 longa.

2. segmentis plus minusve irregulariter dispositis, structura Buliminis propriis se proximante; præterea ut in typica. Juvenes Buliminis veris sæpe similes, forsân ut “**Bul. ovata**” D’ORB. interdum relatæ.

**V. Schreibersiana** CZJZEK, Tab. IX, figg. 459, 461—472.

Fig. 459: exemplum minutum e mari Norvegico.

Fig. 461: subteres, e Gullmaren Bahusiæ.

Fig. 462: **Bul. affini** D’ORB. similis, juvenis, *a*: summum segmentum cum apertura, ex eodem loco.

Fig. 463: magis angusta, ex eodem loco.

Fig. 464: *Bulimina verae similis*, e mari Norvegico.

Fig. 465: e Gullmaren sinu; apertura dilatata; *a*: facies apicalis.

Figg. 466—67: exemplum a latere utroque visum; *a*: facies apicalis.

Fig. 468: exemplum minus.

Figg. 469—470: facies lateralis et marginalis alius, omnia e mari Spetsbergico.

Figg. 471—472: facies lateralis et marginalis alius, e Gullmaren Bahusia.

**Virgul. Schreibersiana** CZJZEK, 1847, For. Wien. Beck., Haid. nat. Abh. 2, p. 147, t. 13, ff. 18—21.

**Bul. marginata**  $\beta$  **attenuata** PARK. & JONES, For. Coast Norw., A. M. N. Hist. (2) 19, t. 11, f. 35.

**Bul. Presli** v. (**Virg.**) **Schreibersii** PARK. & JONES, 1865, N. Atl. & Arct. Oc.; Philos. Trans. 155, p. 375, tt. 15, 17, ff. 18, 72—73.

**Bul. pupoides** v. **compressa** WILL., 1858, Rec. For. Gr. Brit., p. 63, t. 5, f. 131.

**Virg. schreibersiana** BRADY, 1884, Chall. Rep. 9, p. 414, t. 52, ff. 1—3.

**Bul. squamosa** var. GOËS, 1882, Ret. Rhiz. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 67, t. 4, ff. 101, 106.

**Virg. affinis Schreibersi** SCHWAG, 1883, Libysche Wüste, Paleontographica 30, p. 112, t. 4, f. 11.

Obs. *Bul. pupoides* var. *fusiformis* WILLIAMS. Rec. For. Gr. Brit., p. 63, t. 5, f. 129 ad var. *Schreibersianam* forsau referenda; specimina a Dom. Jos. WRIGHT e mari Irlandico benigne communicata huic quidem valde propinqua.

Hab. ad oras Sveciæ, Norvegiæ, Spetsbergiæ profund. metr. 40—890 haud infrequens; long. mm. 0.84 et ultra.

3. brevior, crassior, sæpe subovalis, segmentis plus minusve inflatis, primis in seriem quasi semihelicoideam sæpe dispositis, ceteris nunc magis oblique nunc magis transverse dispositis, testa in luce transeunte sæpe nebulosa.

## V. subsquamosa

 EGGER, Tab. IX, figg. 473—474.

Fig. 473: facies marginalis.

Fig. 474: facies lateralis concava.

EGGER, 1857, Mioc. Ortenb., LEONH. & BRONNS Jhb. 1857, p. 295, t. 12, f. 19—21.

**Virg. tenuis** SEG., 1862, Rhizop. Catania., Accad. Gioen. Atti (2) 18, (Sep.) p. 28, t. 2, f. 2.

BRADY, 1884, Chall. Rep. 9, p. 415, tab. 52, ff. 7, 8, 11.

Hab. in sinu Gullmaren profund. metr. 150 rara (AURIVILLIUS & WIRÉN); minuta mm. 0.50 longa.

## \*\*\* Bolivina.

### B. punctata

 D'ORB.

Tab. IX, figg. 475—480.

Lanceolata aut sublinearis, plerumque compressa, regulariter textularioidea. Poris nunc obscuris, nunc distinctis; a *B. squamosa* nisi segmentis angustioribus, crebrioribus et poratione plerumque magis exquisita non distincta; interdum minus compressa.

Fig. 475: angusta *Virgulinæformis* e sinu Codano; *a*: facies apicalis.

Figg. 476—77: latiores, e mari Atlantico extra Azores insulas, profund. metr. 540.

Fig. 478: in *Virg. squamosam* vergens, e mari Bahusiæ; poratione obsoleta; *a*: facies apicalis.

Fig. 480: forma eadem, e mari Spetsbergensi; *a*: facies apicalis.

**Bolivina punctata** D'ORB., 1839, Voy. Am. mér. For., p. 61, t. 8, ff. 10—12.

**Boliv. antiqua** D'ORB., 1846, Bass. tert. Vienne, p. 240, t. 14, ff. 11—13.

» » EGGER (ex parte), 1857, Mioc. Ortenb., LEONH. & BRONNS, Jhb. 1857, p. 294, t. 12, f. 26.

**Boliv. catanensis** SEG., 1862, Rhizop. foss. Catania, Accad Gioenia Atti (2) 18 (Sep.), p. 29, t. 2, f. 3.

**Boliv. punctata** BRADY, 1864, Rhizop. Shetl., Trans. Lin. Soc. 24, p. 468, t. 48, f. 9.

? **Boliv. elongata** v. HANTK., 1875, Clávil. Szaboi Sch., Mittheil. Jhb. K. Ungar. geol. Anstalt 4, p. 65, t. 7, f. 14.

**Boliv. punctata** MÖB., 1880, For. Maurit., p. 94, t. 9, ff. 9--10.

» » BRADY, 1884, Chall. Rep. 9, p. 417, t. 52, ff. 18—19.

Hab. ad oras occidentales Sveciæ, Norvegiæ nec non Spetsbergiæ profund. metr. 150—270 passim; long. 0.30—0.90 mm.

formæ affines:

1. paullum dilatata, costis tenuibus sparsis longitudinalibus paucis:

### **B. ænariensis** COSTA.

**Brizalina ænariensis** COSTA, 1854, Palæont. Nap. 2, p. 297, t. 15, f. 1.

**Bul. punctata** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 4, ff. 114—115.

**Boliv. ænariensis** BRADY, 1884, Chall. Rep. 9, p. 423, t. 53, ff. 10—11.

» » BRADY, PARK., JONES, 1887, Abrohlos Bank, Transact. Zool. Soc. 12, 7, p. 221, t. 43, ff. 2, 4, 5.

2. dilatata, subtriangularis, anceps lanceolata, segmentis plerumque angustioribus.

### **B. dilatata** REUSS, Tab. IX, figg. 482—86.

Fig. 482: exemplum e sinu Bergensium Norvegiæ.

Fig. 483: facies oralis ejusdem.

Fig. 484: e Rasvaag Norvegiæ.

Fig. 485: facies marginalis ejusdem.

Fig. 486: e sinu Skagerack.

v. REUSS, 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 381, t. 48, f. 15.

**Text. variabilis** v. **spathulata** WILL., 1858, Rec. For. Gr. Brit., p. 76, t. 6, ff. 164—165.

GOËS, 1862, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 4, ff. 124—126.

BRADY, 1884, Chall. Rep. 9, p. 418, t. 52, ff. 20—21.

Obs. **Boliv. robusta** BRADY, 1884, Chall. Rep., p. 421, t. 53, ff. 7—9 ab hac notis specificis non sat distincta. Vide descriptionem auctoris, ubi nota characteristicam nulla est relata. Specimina originalia a Rev. NORMAN benigne tradita nullum specificum exhibent.

Hab. cum forma typica passim.

### **B. difformis** WILLIAMS.

Triangularis compressa, dilatata, segmentis paullum inflatis angulo externo in acumen producto, quare margo serratus.

**Textularia variabilis** var. **difformis** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 77, t. 6, ff. 166—167.

**Bolivina pygmæa** BRADY, (1881) 1884, Chall. Rep. 9, p. 421, t. 53, ff. 5, 6.

Hab. in sinu Österfjord Norvegiæ, profund. metr. 178—360 (NORMAN). Long. mm. 0.25—0.30.

**B. plicata** (D'ORB.) BRADY.

Tab. IX, figg. 487—488.

Modice compressa, suturis irregulariter sinuato-impressis, impolita, scabra quasi arenacea, in luce transeunte obsolete areolata aut undato-irregulariter interrupte subcostata; poris non sat distinctis; linea suturali mediana plerumque impressa, apertura lamina perforata aut lingua interdum semioclusa.

Fig. 487: facies lateralis, cum impressionibus suturalibus.

Fig. 488: facies oralis.

D'ORB., 1839, For. Amér. mérid., p. 62, t. 8, ff. 4—7.

BRADY, 1870, For. Brack. Water., An. Mag. Nat. H. (4) 6, p. 302, t. 12, f. 7.

Hab. in Bukkefjord Norvegiæ profund. metr. 180—260 (NORMAN). Long. 0.42.

**UVIGERINA** D'ORB.**U. pygmæa** D'ORB.

Tab. IX, figg. 496—501.

Ovalis aut subcylindrica, teretiuscula, segmentis triserialibus plus minusve inflatis omnibus aut aliquot costatis aut lineatis; interdum fere lævis costis valde obsoletis, a *U. canariensi* D'ORB. haud multum diversa.

Figg. 496—97: cylindrica, *U. tenuistriata* v. REUSS.

Figg. 498—501: typicæ.

**U. pygmæa** D'ORB., 1826, Tab. méthod, An. Sc. nat. 7, p. 269, t. 12, ff. 8, 9, Mod. 67.\* \* GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 59, t. 4, ff. 68—70  
(ubi vide Synonymiam).

\* \* BRADY, 1884, Chall. Rep. 9, p. 575, t. 74, ff. 11—14.

\* \* BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 45, f. 1.

Obs. *U. tenuistriata* Rss., 1870, For. Pietzpuhl, Wien. Ak. Sitz. Ber. 62, p. 485; v. SCHLICHT Foramf. Pietzpuhl, t. 22, ff. 34—36; BRADY, 1884, Chall. Rep., p. 574, t. 74, ff. 4—7; cylindrica, elongata, striata, non sat distincta.

Hab. ad oras occidentales Scandinaviæ profund. metr. 20—90 sat frequens. Long. 1 mm. circiter.

**U. angulosa** WILL.

Tab. IX, figg. 502—509.

Triquetra plus minusve costata aut lævis; a varietate triquetra *U. canariensis* difficile distingvenda.

Figg. 502—507: læves c. faciebus oralibus.

Fig. 508: costulata.

Fig. 509: facies oralis ejusdem.

**U. angulosa** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 67, t. 5, f. 140.

» » BRADY, 1884, Chall. Rep. 9, p. 576, t. 74, ff. 15—18.

Synonymiam vide GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, No. 4, p. 60.

Hab. ad oras occidentales Scandinaviæ præsertim Norvegicis profund. metr. 20—530 sat frequens nec non ad Spetsbergiam et Groenlandiam passim profund. metr. usque ad 1,600; minor, long. 0.50—0.70 mm.

\* *Sagrina*.

### **S. dimorpha** PARK. & JONES.

Tab. IX, figg. 510—511.

Subcompressa, sublinearis, suturis saepe undulate impressis aut foveis instructis, collo apertura brevissimo sublimbato; interdum areolata, quasi arenacea.

Fig. 510: facies lateralis.

Fig. 511: facies oralis.

**Uvig. (Sagr.) dimorpha** PARK. & JONES, 1865, North. Atl. & Arct. Oc., Phil. Transact. 155, p. 420, t. 18, f. 18.

**Sagr. dimorpha** BRADY, 1884, Chall. Rep. 9, p. 582, t. 76, ff. 1—3.

Hab. in sinibus Norvegicis, ut Bukken, Österfjord etc. profund. metr. 260—350 passim (NORMAN), pygmæa, 0.38 mm.

## APPENDIX.

### **U. canariensis** D'ORB.

Tab. IX, figg. 489—493.

Lævis, nitida ovata aut clavate fusiformis, obtuse trigona, segmentis plerumque tri-serialibus plus minusve inflatis.

Fig. 489: minus tumida.

Fig. 490: facies oralis.

Fig. 491: forma tumida.

Fig. 492: facies oralis.

**Uv. Canariensis** D'ORB., 1839, For. Canar., p. 138, t. 1, ff. 25—27.

» » BRADY, 1884, Chall. Rep. 9, p. 573, t. 74, ff. 1—3.

? **U. nodosa** var. *?* D'ORB., 1826, Tab. method., A. Sc. nat. 7, p. 269, N:o 3.

**U. proboscidea** SCHWAG., 1866, For. Kar.-Nikob., Novara Reise geol. Th. 2, p. 250, t. 7, f. 96.

Hab. ad Azores insulas profund. metr. 530 sat frequens (SMITT, LJUNGMAN); 1 mm. longa circiter.

Variat minus inflata, triangularis, præterea ut typica. Tab. IX, fig. 493.

Hab. cum typica passim.

### **U. Auberiana** D'ORB.

Tab. IX, figg. 494—495.

Impolita, scabra aut spinosa, segmentis interdum subbiseriis.

Forma præcedenti similis, saepe nisi superficie scabra et statura minore diversa.

Fig. 494: facies lateralis.

Fig. 495: facies oralis.

- U. Auberiana** D'ORB., 1839, For. Cuba, p. 106, t. 2, ff. 23—24 (pygmæa).  
 » GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, N:o 4, p. 60, t. 4, ff. 71—74  
 (pygmæa, spinis sparsis aut deficientibus).  
**U. asperula** BRADY, 1884, Chall. Rep., p. 578, t. 75, ff. 6—7 (spinosa).  
 » BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 45, ff. 4—5.  
 ? **U. farinosa** v. HËN, 1875, For. Cláv. Száb. Sch. (separ.), p. 62, t. 7, f. 6 (spinis destituta).  
**U. gracilis** REUSS., 1851, Sept. Thon, Berlin, Zeitschr. d. geol. Ges. 3, p. 77, t. 5, f. 39 (spinosa).  
 Obs. *U. asperula* et *Orbignyana* CZIZEK, 1847, For. Wien. Beck., Haid. nat. wiss. Abh. 2, p. 146, t. 13,  
 ff. 14—17, *U. pygmæa* magis propinque videntur.

Hab. cum præcedente ad insulas Azores (SMITT & LJUNGMAN), 0.50—0.70 mm.

## CHILOSTOMELLA v. REUSS.

### **Ch. ovoidea** v. REUSS.

Tab. IX, figg. 512—516.

Hyalina, ovata, ellipsoidea aut subcylindrica, segmento ultimo, tres-quatuor partes penultimi aut plus obvelante, sutura nunc subhorizontali nunc valde obliquata faciem aboralem versus declinante; poris minutis creberrimis, majoribus sparsis intermixtis (his tamen interdum deficientibus); dispositio segmentorum fere "bilocolina".

Figg. 512—513: exemplum sutura facie transversa.

Fig. 514: longitudine secta.

Figg. 515—516: facies orales.

REUSS., 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 380, t. 48, f. 12.

**Ch. Czjzeki** REUSS., ibid., t. 48, f. 13.

**Ch. cylindroides** REUSS., 1851, Septar. Thon Berl. Zeitschr. deut. geol. Gesellsch. 3, p. 80, t. 6, f. 43.

» » **tenuis** BORNEM., 1855, Septar. Th. Hermsdorf, ibid. 7, p. 343, t. 17, f. 1, 2.

1870, v. SCHLICHT, t. 25, ff. 17—22, 25—48.

**Ch. cylindrica** v. HËN, For. Clávul. Száboi Sch. (separ.) p. 63, t. 7, f. 7.

**Ch. ovoidea** BRADY, 1879, Notes on Ret. Rhizop., Qu. Journ. microsc. Sc. (n. ser.) 19, p. 280, t. 8, ff. 11—12.

» » BRADY, 1884, Chall. Rep., p. 436, t. 55, ff. 12—23.

Hab. in Österfjord Norvegiæ profund. metr. 180—350 (NORMAN). Long. mm. 0.50—0.80.

## ALLOMORPHINA v. REUSS.

### **A. trigona** v. REUSS.

Tab. IX, figg. 517—519.

Subtrigona aut trilobata, cordiformis compressa aut subcompressa; dispositio segmentorum "triloculina", ceterum ut in præcedente; apertura rima lateralis, umbilicalis, suturalis inter ultimum et penultimum aut inter ultimum et antepenultimum segmentum instituta. Genus immerito a *Chilostomella* disjunctum.

Fig. 517: facies lateralis, aboralis, anfractu antepenultimo vix obvelato.

Fig. 518: facies lateralis, oralis.

Fig. 519: facies marginalis.



- v. Rss., 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 380, t. 48, f. 14.  
 BRADY, 1879, Notes on Ret. Rhizop., Qu. Journ. micr. Sc. (n. ser.) 19, p. 281, t. 8, ff. 13—14.  
 » 1884, Chall. Rep., p. 438, t. 55, ff. 24—26.  
**All. cretacea** v. Rss, 1850, Kreidem. Lemberg., Haid. naturw. Abh. 4, p. 42, t. 4, f. 6.  
 Fiès' Mod. 74.

Hab. ad Spetsbergiam in Redbay profund. metr. 20 invenit unicum G. NORDENSKIÖLD. Long. 0.50 mm.

## POLYMORPHINA D'ORB.

### **P. lactea** WALK. & JAC.

Late ovalis aut suborbicularis, compressa aut subcompressa, segmentis conspicuis 3—4.

- Serpula lactea** WALK. & JAC., 1798 (KANMACHER), Adams' Essays, Ed. II, t. 24, f. 4.  
**Globulina irregularis, æqualis** D'ORB., 1846, Bass. tert. Vienne, p. 227, t. 13, ff. 9—12.  
 » **inflata** Rss, 1851, Septar. Thon. Berlin, Zeitschr. deutsch. geol. Ges. 3, p. 81, t. 6, f. 45.  
**Guttulina turgida** Rss, 1855, Tert. Schicht. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 246, t. 6, ff. 66 (a var. gibba D'ORB. haud multum diversa).  
**Polym. globosa** (v. Münst.), ROEM., 1838, Nordd. tert. Meerassand, Leonh. u. Bronns Jhb. 1838, p. 386, t. 3, f. 32.  
**Globul. amygdaloides** Rss, 1851, Sept. Thon. Berlin, Zeitschr. deut. geol. Gesellsch. 3, p. 82, t. 6, f. 47.  
 » **subalpina** GÜMB., 1868, Nordalpin. Eocän., K. Bay. Ak. Wissensch. Abh. 10, 2, p. 646, t. 2, f. 80.  
 » **globosa** Rss, 1846, Böhm. Kreide. 1, p. 40, t. 13, f. 82; 1861, Kreidetuff Maestrich., Wien. Ak. Sitz. Ber. 44, p. 318, t. 3, f. 3.  
**Polym. Münsteri** v. HANTKEN, 1875, Clävil. Szabói Sch., Separ., p. 61, t. 7, f. 16.  
**Glob. Römeri** REUSS, 1855, Tert. Sch. u. mittl. Deutschl., Wien. Ak. S.Ber. 18, p. 245, t. 6, f. 63.  
**Guttul. diluta** BORNEM., 1860, For. Magdeburg, Zeitschr. deutsch. geol. Gesellsch. 12, p. 160, t. 6, f. 11.  
**Polym. ovulum** REUSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 250, t. 8, f. 83.  
 » **gravis** KARR., 1870, Kreidef. Leitzendorf., Jhb. K. K. geol. Reichsanst. Österr. 20, p. 181, t. 11, f. 12.  
 » **Münsteri** REUSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. S.Ber. 18, p. 249, t. 8, f. 80 (in *P. compressam* D'ORB. vergens).  
**Guttul. Raibliana** GÜMB., 1869, Cassian. u. Raibl. Sch., K. K. geol. Reichsanst. Österr. 19, p. 182, t. 6, f. 31.  
 » **mutabilis** COSTA, 1854, Pal. Nap. 2, p. 275, t. 18, ff. 1—3 (in var. *acutam* ROEM. vergens).  
 » **deformata** REUSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. S.Ber. 18, p. 245, t. 6, f. 64.  
 ? » **gravida** v. *compressa* TERQ., For. & Ostrac. de l'Islande, Bull. Soc. Zool. Frs. 1886, p. 334, t. 11, f. 21.  
**Glob. inæqualis** Rss, 1849, Neue Foramf. Österreichs, Wien. Ak. DkSchr. 1, p. 377, t. 48, f. 9.  
**Polym. (Guttulina) communis** D'ORB., 1826, Tabl. méth., Ann. Sc. nat. 7, p. 266, t. 12, ff. 1—4, Mod. 62.  
**Guttul. communis** D'ORB., 1846, Bass. tert. Vienne, p. 224, t. 13, ff. 6—8.  
**Polym. communis** BRADY, PARK. & JONES, 1870, Genus Polymorph., Transact. Lin. Soc. 27, p. 224, t. 39, f. 10.  
 » » BRADY, 1884, Chall. Rep. 9, p. 568, t. 72, f. 19.  
**Glob. depauperata** Rss, 1867, Steinsaltz. Wieliczka, Wien. Ak. S.Ber. 55, p. 89, t. 3, f. 9 (inter *compressam* & *communem*).  
**Polym. communis** ROEM., 1838, Leonh. u. Bronns. Jhb. 1838, p. 385, t. 3, f. 29.  
**Guttul. cretacea** ALTH., Umgeb. Lemberg., Haid. naturw. Abh. 3, 2, p. 262, t. 13, f. 14 (in var. *problema* vergens).  
 » » Rss, Kreidemerg. Lemberg., Haid. naturw. Abhandl. 4, 1, p. 44, t. 4, f. 10, t. 13, f. 14 (in var. *problema* D'ORB. vergens).  
 » **semiplana** Rss, 1851, Sept. v. Berlin., Zeitschr. deutsch. geol. Gesellsch. 3, p. 82, t. 6, f. 48.  
 » **fissurata, obliquata** STACHE, 1864, Tert. Merg. d. Whaingaroa Hafens, Novara Reise geol. Theil 1, p. 263, t. 24, ff. 10—11.  
**Polym. lactea** BRADY, PARK. & JONES, 1870, Gen. Polymorph., Transact. Lin. Soc. 27, p. 213, t. 39, f. 1.  
 » » BRADY, 1884, Chall. Rep. 9, p. 559, t. 71, f. 11.  
 » **amygdaloides** BRADY, *ibid.*, p. 560, t. 71, f. 13.  
 » **problema** v. **deltoidea** v. HANTK., For. Cläv. Szab. Sch. (Separ.), p. 591, t. 8, f. 3.  
 » **lactea** WILLIAMS., 1858, Rec. For. gr. Brit., p. 71, t. 6, f. 147.  
 » » var. **communis** WILLIAMS., 1858, *ibid.*, p. 72, t. 6, ff. 153—155.

Obs. *Polym. lactea* var. *oblonga* WILL., est varietas distincta.

Hab. in sinibus Bahusiæ et Norvegiæ profund. metr. 60—120 minus frequens.

## \* forma aulostoma:

**Polym. lactea** var. **tubulosa** PARK. & JONES, 1865, N. Atl. & Arct., Oc., Phil. Transact. 155, p. 362, t. 13, f. 52.

## \*\* rudis:

**Polym. ampla** KARR., 1870, Kreidef. Leitzerdorf., Jhb. K. K. geol. Reichsanst. Österreich. 20, p. 181, t. 11, f. 13.

## formæ affines:

1. *globosa* aut late lacrymæformis, aut inflata lenticularis, segmentis apparentibus 3—6, a typica non distincta:

**P. gibba** D'ORB., Tab. IX, figg. 520—526.

Figg. 520—521: forma *gibba* D'ORB. fere typica.

Fig. 522: forma "avlostoma" ejusdem.

Figg. 523—524: in "communem" D'ORB. vergens.

Figg. 525—526: magis lenticularis.

**Globul. gibba** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 266, No. 20; 1846, Bass. tert. Vienne, p. 227, t. 13, ff. 13—14.

**Polym. lactea** PARK. & JONES, 1864, North. Atl. and Arct. Oc., Phil. Transact. 155, p. 359, t. 13, ff. 45—46.

**Glob. amplectens** RSS, 1851, Septar. Thon. Berl., Zeitschr. deutsch. geol. Gesellsch. 3, p. 81, t. 6, f. 44.

**Polym. gibba** var. **orbicularis** KARR., Mioc. Kostej., Wien. Ak. Sitz. Ber. 58, p. 174, t. 4, f. 8.

**Glob. subgibba** GÜMB., 1868, Nordalp. Eocän, Abh. K. Bayer. Akad. Wissensch. 10, 2, p. 645, t. 2, f. 79.

» **tubulifera, amplectens** BORNEM., 1860, For. Magdeburg, Zeitschr. deutsch. geol. Gesellsch. 12, p. 160, t. 6, ff. 10, 12.

» **lacryma** RSS, 1845, Böhm. Kreidef. 1, p. 40, t. 12, f. 6; t. 13, f. 83.

» » ALTH., 1850, Umgeb. Lemberg, Haid. naturwissensch. Abh. 3, 2, p. 263, t. 13, f. 16.

Hab. in sinibus Bahusiæ et Norvegiæ profund. metr. 60—120 passim; forma subcompressa frequentior.

## \* forma avlostoma:

**Glob. tubulosa** D'ORB., 1846, Bass. tert. Vienne, p. 228, t. 13, ff. 15—16.

**Polym. orbignii** BR., PARK. & JONES, 1870, Genus Polymorphina, Transact. Lin. Soc. 27, p. 244, t. 13, f. 38.

» **gibba** BRADY, 1883, Chall. Rep. 9, p. 562, t. 73, f. 16.

» » WRIGHT, 1885, Proc. Belfast nat. Field Club 1884—85, Append. t. 26, f. 11.

## \*\* rugosa, spinosa aut tuberculata:

**Glob. rugosa** D'ORB., 1846, Bass. tert. Vienne, p. 229, t. 13, ff. 19—20.

**Polym. leprosa** RSS, 1867, Steinsaltz abl. Wieliczka, Wien. Ak. S. Ber. 55, p. 89, t. 4, f. 3.

**Glob. asperula** GÜMB., 1868, Nordalp. Eocän, K. Bay. Ak. Wiss. Abh. 10, p. 646, t. 2, f. 81.

**Polym. horrida** KARR., 1877, Hochqu. Wasserleit, Abh. geol. Reichsanst. Österr. 9, p. 385, t. 16, f. 46.

**Glob. spinosa** D'ORB., 1846, Bass. tert. Vienne, p. 230, t. 13, ff. 23—24.

**Polym.** » BALKW. & WRIGHT, 1885, Rec. Dubl. For., Transact. R. Irish Ac. Sc. 28, p. 347, t. 12, f. 27.

**Glob. punctata** D'ORB., 1846, Bass. tert. Vienne, p. 229, t. 13, ff. 17—18.

? **Polym. foveolata** RSS, 1867, Steinsaltzablag. Wieliczka, Wien. Ak. Sitz. Ber. 55, p. 90, f. 2 (Polym. æquali D'ORB. par).

**Polym. asperula** KARR., 1877, Hochqu. Wasserleit, Abh. geol. Reichsanst. 9, p. 385, t. 16, f. 47 (formæ typicæ proximans).

» **hirsuta** BRADY, PARK., JONES, 1870, Gen. Polymorph., Transact. Lin. Soc. 27, p. 243, t. 42, f. 37.

**Glob. tuberculata** D'ORB., 1846, Bass. tert. Vienne, p. 230, t. 13, ff. 21—22.

**Polym.** » BRADY, PARK., JONES, 1870, Gen. Polymorph., Transact. Lin. Soc. 27, p. 242, t. 41, f. 35.

2. magis producta, ovalis, fusiformis, subcylindrica aut pyriformis, teres aut subcompressa, segmentis apparentibus circiter 3—5.

A *Pyrulina gutta* D'ORB. vix distincta.

**P. acuta** ROEMER. Tab. IX, figg. 527—528, Tab. X, figg. 537—538.

Figg. 527—528: *P. sororia* v. REUSS, e mari Spetsbergico.

Figg. 537—538: producte ovalis subcompressa, e mari Newfoundlandico.

**Globulina acuta** ROEMER, 1838, Tert. Meeress., LEONH. u. BRONNS Jhb. 1838, t. 3, f. 36.

**Polym. clavata** ROEMER, ibid., t. 3, f. 38.

**Glob. acuta** v. REUSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 245, t. 6, f. 62.

**Polym. longicollis** KARR., 1870, Kreidef. Leitzendorf., Jhb. K. geol. Reichsanst. Österr. 20, p. 181, t. 11, f. 11.

**Glob. guttula** RSS, 1851, Sept. Thon. Berl., Zeitschr. deutsch. geol. Gesellsch. 3, p. 82, t. 6, f. 46.

» **minuta** RSS, 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 377, t. 48, f. 8.

**Polym. oblonga, minuta** ROEM., 1838, Nordd. tert. Meeress., LEONH. u. BRONNS Jhb. 1838, p. 386, t. 3, ff. 34—35.

**Guttul. deplanata** RSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 246, t. 6, f. 67.

**Globul. lacryma** RSS, 1850, Kreidem. Lemberg, Haid. nat. Abh. 4, p. 43, t. 4, f. 9.

**Polym. amygdaloides** RSS, 1855, Tert. Schicht. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 250, t. 8, f. 84 (in *P. compressam* verg.)

» **sororia** RSS, 1863, Septar. Thon. Offenb., Wien. Ak. Sitz. Ber. 48, p. 57, t. 7, ff. 72—74.

» » RSS, For. Crag. d'Anvers, Bull. Ac. Belg. (2) 15, p. 151, t. 2, ff. 25—29.

**Globul. minima** BORNEM., 1855, Sept. Thon. Hermsdorf, Zeitschr. deutsch. geol. Gesellsch. 7, p. 344, t. 17, f. 3.

**Guttul. austriaca** D'ORB., 1846, Bass. tert. Vienne, p. 223, t. 12, ff. 23—25 (ad *P. problema* a BRADY relata).

? **Glob. prisca** RSS, 1862, Nordd. Hils u. Gault, Wien. Ak. Sitz. Ber. 46, p. 79, t. 9, f. 8.

**Polym. liassica** STRICKL., 1846, Quart. Journ. geol. Soc. 2, p. 30, f. a.

**Polym. similis** RSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 249, t. 7, f. 79.

? **Polym. amœna** KARR., 1877, Hochqu. Wasserl., Abh. K. geol. Reichsanst. Österr. 9, p. 385, t. 16, f. 45 (in *Pol. lanceolatam* RSS transiens).

**Polym. lactea, sororia, sororia** v. **cuspidata** BRADY, 1884, Chall. Rep. 9, p. 559, 562, 563, t. 71, ff. 14—19, t. 72, f. 4.

a **Polym. fusiformis** ROEM. et **Globul. porrecta** REUSS, Westphal. Kreid., Wien. Ak. Sitz. Ber. 40, p. 230, t. 12, f. 4, non sat. distincta.

Hab. ad oras Newfoundlandiæ, Spetsbergiæ profund. metr. 80—130 passim.

\* avlostoma:

**Globul. horrida** RSS, 1846, Böhm. Kreid. 2, p. 110, t. 43, f. 14; Kreidem. Lemberg, Haid. nat. Abh. 4, p. 43, t. 4, f. 8.

**Avlostomella pediculus** ALTH., 1849, Umgeb. Lemberg, Haid. nat. Abh. 3, p. 264, t. 13, f. 17.

**Polym. sororia** BRADY, 1884, Chall. Rep. 9, p. 562, t. 73, f. 15.

3. subcompressa aut teres, segmentis magis inflatis, extra apparentibus 5—7; a typica non distingvenda.

**P. problema** D'ORB.

**Guttulina problema** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 266, No. 14, Mod. 61; 1846, Bass. tert. Vienne, p. 224, t. 12, ff. 26—28.

**Polymorph. crassatina** (v. MÜNST.), **spicæformis** ROEM., 1838, Nordd. tert. Meeressand, LEONH. u. BRONNS Jhb. 1838, p. 385, t. 3, ff. 30—31.

- Polym. problema** BRADY, PARK., JONES, 1870, Gen. Polymorph., Trans. Lin. Soc. 27, p. 225, t. 39, f. 11; Crag. foramf. Pal. Soc. 19, t. 1, f. 64; BRADY, 1884, Chall. Rep., p. 568, t. 72, f. 20, t. 73, f. 1.
- Polym. problema, uvula** EGG., 1857, Mioc. Ortenburg, LEONH. u. BRONNS Jhb. 1857, p. 285, t. 10, ff. 23—29.
- Gutt. rotundata, problema** RSS, 1864, Oberoligocän, Wien. Ak. Sitz. Ber. 50, p. 469, t. 3, f. 4, p. 470 t. 5, f. 5
- » **pusilla** STACHE, 1865, Whaingaroa Haf., Novara Reise geol. Th. 1, p. 264, t. 24, f. 12.
- Polym. acuminata** v. HANTK., 1875, For. Cláv. Szabói Sch., p. 60, t. 8, f. 4.
- Glob. discreta** RSS, 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 378, t. 48, f. 10.
- ? **Gutt. vitrea** D'ORB., 1839, For. Cuba, p. 133, t. 3, ff. 1—3 (sede incerta).

Hab. c. præcedente rara.

\* rudis:

**Glob. caribæa** D'ORB., 1839, For. Cuba, p. 135, t. 2, ff. 7—8.

### **P. rotundata** BORNEM.

Tab. IX, figg. 529—534.

Ovalis aut pyriformis, teres aut subcompressa, segmentis apparentibus 4—8 irregulariter dispositis.

Variat: subcylindrica, segmento adularum ultimo margine spinis armato, Nodosariæ armatæ REUSS similis.

Figg. 529—530: e Korsfjord, Norvegiæ.

Fig. 531: altera ex eodem loco paullum compressa.

Fig. 532: facies marginalis ejusdem.

Figg. 533—534: var. armata, e fretu Koster insularum.

**Guttul. rotundata** BORNEMANN, 1865, Septar. Thon. Hermsdorf, Zeitschr. deutsch. geol. Gesellsch. 7, p. 346, t. 18, f. 3.

**Guttul. fracta, Globul. dimorpha, incurva, globosa, obtusa** BORNEM., ibid., p. 344—346, t. 17, ff. 4—6, t. 18, ff. 1—2.

**Polym. rotundata** RSS, 1870, v. SCHLICHT, For. Pietzpuhl, t. 26, ff. 13—15, t. 28, ff. 1—5, t. 30, ff. 33—40.

» **turgida** RSS, v. SCHLICHT, ibid., t. 28, ff. 6—10, t. 29, ff. 1—5.

» **tenera** KARR., 1868, Mioc. Koste; Wien. Ak. S.Ber. 58, p. 174, t. 4, f. 9.

» **rotundata** BR., PARK. & JONES, 1870, Genus Polymorph., Transact. Lin. Soc. 27, p. 234, t. 40, f. 19, a—c.

» **gigas** KARR., 1877, Hochquell. Wasserleit., Abh. geol. Reichsanst. Österr. 9, p. 384, t. 16, f. 44.

» **rotundata** BRADY, 1884, Chall. Rep. 9, p. 570, t. 73, ff. 5—8.

Ab hac non sat distincta:

**Polym. oblonga** D'ORB., 1846, Bass. tert. Vienne, p. 332, t. 12, ff. 29—31; BRADY, 1884, Chall. Rep., p. 569, t. 73, ff. 2—4.

**Polym. uvæformis** RSS, 1855, Kreidemerg. Mecklenb., Zeitschr. deutsch. geol. Gesellsch. 7, p. 289, t. 11, f. 5

? **Polym. Soldanii** D'ORB., 1826, Tabl. méth., Ann. Sc. Nat. 7, p. 265, No. 12.

? **Polym. subdepressa** RSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Akad. S.Ber. 18, p. 249, t. 8, f. 81.

**Polym. leopolitanæ** RSS, 1850, Kreidemerg. Lemberg, Haid. naturw. Abh. 4, p. 44, t. 4, f. 11.

? **Polym. rudis** RSS, 1861, Kreidetuff. Maastrich., Wien. Ak. S.Ber. 44, p. 319, t. 3, ff. 5—8.

Hab. in sinibus Bahusiæ et Norvegiæ profund. metr. 90—360 passim.

**P. angusta** EGGER.

Tab. X, figg. 535—536.

Subcylindrica aut elongate ovata, teres aut subteres, segmentis apparentibus 4—6.  
A Polym. lactea var. acuta ROEM., cujus forma pygmaea, non sat distincta.

**Glob. angusta** EGGER, 1857, Mioc. Ortenburg, LEONH. & BRONNS Jhb. 1857, p. 290, t. 13, ff. 13—15.

**Polym. fusiformis** (ex parte) BRADY, PARK., JONES, 1870, Genus Polymorph., Trans. Lin. Soc. 27, p. 219.

» **angusta** BRADY, 1884, Chall. Rep. 9, p. 563, t. 72, ff. 1—3.

Hab. mare Spetsbergicum profund. metr. 30 rara; pygmaea, long. mm. 0.60.

**P. compressa** D'ORB.

Tab. X, figg. 539—553.

Plus minusve compressa, late aut elongate ovalis, segmentis irregulariter biserialibus apparentibus 5—8, plerumque non inflatis, suturis valde obliquis aut magis transversis. Valde varians segmentis interdum inflatis, a Polymorph. ancipite PHIL. et complanata D'ORB. difficulter distincta; in Polym. lacteam saepe mergens.

Figg. 539—544: formæ variæ e mari Norvegico.

Figg. 545—546: e sinu Codano.

Figg. 547—549: e mari Norvegico.

Figg. 550—551: e mari Spetsbergico.

Figg. 552—553: e mari Atlantico extra Azores insulas.

**Polym. compressa** D'ORB., 1846, Bass. tert. Vienne, p. 233, t. 12, ff. 32—34 (valde elongata).

? **Polym. tuberosa** D'ORB., 1826, Tab. méth., Ann. Sc. Nat. 7, p. 265, No. 6.

**Polym. lactea** WILL., 1858, Brit. Rec. For., p. 70, t. 6, ff. 145—146.

? **Polym. racemosa** TERQU., 1886, For. etc. de l'Islande, Bull. Soc. Zool. Fr. 1886, p. 335, t. 11, f. 22.

**Polym. pygmaea** SCHWAG., 1863, Jurass. Sch., Württemberg natwiss. Jahrb. 21, p. 138, t. 7, f. 8.

» **lactea** var. **compressa** PARK. & JONES, 1865, North Atl. & Arct. Oc., Phil. Transact. 155, p. 361, t. 13, ff. 47, 49, 51.

» **compressa** BRADY, PARK., JONES, 1870, Genus Polymorph., Trans. Lin. Soc. 27, p. 227, t. 40, f. 12 a—f

» » BRADY, 1884, Chall. Rep. 9, p. 565, t. 72, ff. 9—11.

» **lingva** ROEM., 1838, Nordd. tert. Meeress., Leonh. & Bronn Jhb., p. 385, t. 3, f. 25.

**Globul. discreta**, **Guttul. robusta** RSS, 1864, Oberoligocän, Wien. Ak. Sitz. Ber. 50, pp. 468, 470, t. 3, ff. 3, 5—7.

**Polym. sacculus, incavata** STACHE, 1865, Novara Reise geol. Th. 1, 2, p. 259, 260, t. 24, ff. 6—7.

? **Guttulina elliptica** REUSS, 1845, Böhm. Kreidef. 2, p. 110, t. 24, f. 55.

**Polym. Schwageri** KARR., 1877, Hochquell. Wasserleit., Abh. geol. Reichsanst. Österr. 9, p. 384, t. 16, f. 43.

**Polym. Zeuschneri** RSS, 1867, Steinsaltzablag. Wieliczka, Wien. Ak. Sitz. Ber. 55, p. 90, t. 4, f. 1.

» **compressa** BRADY, PARK. & JONES, Crag. For. 19, t. 1, ff. 54, 65, 77 (segmentis transversis).

» **subrombica** RSS, 1861, Grünsand Newjersey, Wien. Ak. Sitz. Ber. 44, p. 339, t. 7, f. 3 (latior.)

» **insignis** PHIL., REUSS, 1855, Tert. Sch. nördl. u. mittl. Deutshl., Wien. Ak. Sitz. Ber. 18, p. 248, t. 7, ff. 74—76.

» **dispar** STACHE, 1865, Nov. Reise geol. Th. 1, 2, p. 261, t. 24, f. 8 (lata).

» **Humboldti** BORNEM., 1855, Septar. Thon. Hermsd., Zeitschr. deutsch. geol. Gesellsch. 7, p. 347, t. 18, ff. 7—8 (lata).

Ab his non sat distincta:

- Polym. Burdigalensis** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 265, No. 2, Mod. 29.  
 » » BRADY, PARK. & JONES, 1870, Transact. Lin. Soc. 27, p. 224, t. 39, f. 9.

\* avlostoma:

- Polym. lactea** v. **fistulosa** WILL., 1858, Rec. For. Gr. Brit., p. 72, t. 6, f. 150.  
 » **Orbignii** (ex parte) BRADY, PARK. & JONES, 1870, Gen. Polymorph., Trans. Lin. Soc. 27, p. 244  
 t. 42, f. 38 d.

Hab. in sinibus Bahusiae et Norvegiae, nec non Spetsbergiae profund. metr. 50—180 passim.

### **P. Thouini** D'ORB.

Tab. X, figg. 557—558.

Fusiformis, compressa aut subcompressa, segmentis apparentibus 5—10, irregulariter alternantibus, suturis plus minusve oblique dispositis.

- Polym. Thouini** D'ORB., 1826, Tab. méth. Ann. Sc. nat. 7, p. 265, No. 8, Mod. 23 (anguste subcylindrica segmentis paucis).  
 » » BRADY, PARK. & JONES, 1870, Genus Polymorphina, Trans. Lin. Soc. 27, p. 232, t. 40, f. 17  
 » » BRADY, 1884, Chall. Rep. 9, p. 567, t. 72, f. 18.

Hab. ad oras Nowaja Semjla profund. metr. 25 rara (THEEL et STUXBERG). Long. mm. 2,45.

## APPENDIX.

### **P. irregularis** D'ORB.

Tab. X, figg. 554—556.

Ovalis aut subfusiformis, segmentis irregulariter dispositis, inflatis, externe apparentibus 4—7—8, plus minusve striatis; a *P. lactea* v. *problemate* nisi striis non diversa. Fig. 554: summa deorsum versa.

- Polymorph. irregularis** D'ORB., 1839, For. Cuba, p. 137, t. 2, ff. 12—13.  
**P. regina** BRADY, PARK., JONES, 1870, Genus Polymorph.; Transact. Lin. Soc. 27, p. 241, t. 41, f. 32; BRADY, 1884, Chall. Rep. 9, p. 571, t. 73, ff. 11—13.  
**P. semicostata** MARSS., 1877, Rügen. Schreibkr., Greifswald. Mittheil. nat. Verein d. Vorpommern, 1877—78, p. 150, t. 2, f. 19.  
 ? **P. australis** (D'ORB.) BRADY, PARK., JONES, 1870, Genus Polymorph., Trans. Lin. Soc. 27, p. 239, t. 41, f. 27.

Hab. ad Azores ins. profund. metr. 100 rara (SMITT & LJUNGMAN).

## NODOSARINA (LAMCK.) PARK. & JONES.

\* *Cristellaria* D'ORB.

### **C. rotulata** LMK.

Tab. X, figg. 559—578.

Helicostegica, nautiloidea, lenticularis, marginata, carinata aut carinato-alata, nunc umbonata, nunc umbonibus distinctis destituta. Nomen "cultrata" est ineptum, quia forma fere quaeque suam formam alata sive cultratam habet. Forma compressa plerumque "cultrata" saepeque magis polystegica, in *Crist. reniformem* D'ORB. transiens.

Multitudine nominum gravata.

Figg. 559—562: exempla minuta e mari Azorico; in articulata v. REUSS vergentia.

Figg. 563—564: exemplum magis polystegicum e freto Koster insularum profund. metr. 150.

Figg. 565—566: anguste carinata (inornata, austriaca D'ORB.) e mari Azorico, profund. metr. 230—500.

Figg. 567—568: valida, umbone applanato (Beyrichi BORNEMANN, declivis Rss.) e mari Spetsbergico profund. metr. 400.

Figg. 569—570: e Skagerrack profund. metr. 270, carinato—"cultrata".

Figg. 571—572: e mari Azorico, profund. metr. 500, cultrata (Rob. canariensis D'ORB.)

Figg. 573—574: elatior; cultrata, e mari Caraibico profund. metr. 540.

Figg. 575—576: magis compressa, cultrata, ad C. Josephinae Mariae D'ORB. tendens, e mari Norvegico profund. metr. 350.

Figg. 577—578: compressa, cultrata, magis polystegica; umbone reducto, e mari Azorico profund. metr. 300—500.

**Lenticulites rotulata** LMK., (1804) 1827, Tab. Encycl. Méth. Vers., t. 466, f. 5.

**Nodos. calcar.** GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, t. 3, ff. 55, 57—61 (cultrata et carinata).

**Crist. rotulata** BRADY, 1884, Chall. Rep. 9, p. 547, t. 69, f. 13.

Hab. in fretis Koster insularum non frequens, in sinu Skagerack, in sinibus Norvegicis, in mari Spetsbergico, mari Azorico etc. Diam. usque ad mm. 4,25.

formæ affines:

1. lenticularis lævis, margine dentato-alato aut spinis paucis plus minusve elongatis instructo.

### **C. calcar** LIN.

**Nautilus calcar** LIN. (ex parte), 1758, Syst. Nat. 10, p. 709.

**Naut. calcar** var.  $\alpha$ ,  $\vartheta$ ,  $\alpha$ ,  $\mu$  FICHT. & MOLL, 1803, Test. microscop. pp. 71, 76, 79, t. 11, ff. a, b, c, t. 12, ff. i, k, t. 13, ff. c, d, h, i.

**Robulina radiata, pulchella, lævigata, aculeata** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 288, 289, No. 7, 8, 9, 14.

**Rob. calcar** D'ORB., 1846, Bass. tert. Vienne, p. 99, t. 4, ff. 18—20.

**Crist. calcar** BRADY, 1884, For. Chall. Rep. 9, p. 551, t. 70, ff. 9—15.

» » BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 44, f. 14.

**Nodosarina calcar** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 3, ff. 54—56.

Hab. ad Koster insulas profund. metr. 100, rara atque minuta.

## APPENDIX.

2. margine rotundato vel obtuso interdum obtuso-carinato, segmentis paullum inflatis, umbone sæpe vitreo; forma male distincta.

**C. articulata** BRADY, Tab. X, figg. 579—582, ? 583—584.

Figg. 579—580: e mari Azorico profund. metr. 700.

Figg. 581—582: ex eodem mari profund. metr. 180; in typicam vergens.

Figg. 583—584: e mari boreali Atlantico profund. metr. 1750; minus typica (an Cr. gibbosa D'ORB., Cr. obliqua v. Hagen.).

**Crist. articulata** BRADY, 1884, For. Chall. Rep. 9, p. 547, t. 69, ff. 10—12.

? **Rob. articulata** RSS, 1863, Sept. Thon. v. Offenbach, Wien. Ak. S.Ber. 48, p. 53, t. 5, f. 62; v. SCHLICHT, 1870, tab. 17, ff. 5—12 (carinata).

Hab. ad Azores profund. metr. 180—700 (SMITT & LJUNG.)

3. valde inflata saepe crinata, segmentis paucis, forsitan megaspharica formae typicae.

**C. crassa** D'ORB., Tab. X, figg. 585—586.

**Crist. crassa** D'ORB., 1846, Bass. tert. Vienne, p. 90, t. 4, ff. 1—3.

**Rob. deformis** RSS, 1851, Sept. Thon. Berlin, Zeitschr. deutsch. geol. Gesellsch. 3, p. 70, t. 4, f. 30.

**Crist. crassa** BRADY, 1884, For. Chall. Rep. 9, p. 549, t. 70, f. 1.

Hab. ad Azores profund. metr. 100—400 (SMITT & LJUNGMAN).

4. magis oblonga, interdum compressa et marginato-alata.

**C. gibba** D'ORB., Tab. X, figg. 587—592.

Figg. 587—588: fere typica (= C. nuda, spectabilis v. Rss).

Figg. 589—590: elatior; Rob. latae Rss, Crist. reniformi D'ORB. C. Hantkeni RHZEHAk proxima.

Figg. 591—592: valde alata; C. Josephinae-Mariae D'ORB., C. osnabrügensis v. nitida D'ORB. REUSS propinqua.

**Crist. gibba** D'ORB., 1839, For. Cuba, p. 63, t. 7, ff. 20—21.

**Crist. galeata** v. REUSS, 1851, Septar. Thon. Berlin (ex parte), Zeitschr. deutsch. geol. Gesellsch. 3, p. 66, t. 4, f. 20.

Proximae sunt non sat distinctae:

**Rob. princeps, Kubingii** v. HANTK., 1875, For. Clav. Szab. Sch., p. 56, t. 6, ff. 7—8.

**Crist. subcostata** RSS, 1855, Tert. Schicht. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 237, t. 3, f. 43 (limbata).

? **Nautilina puteolana** COSTA, 1854, Pal. Nap. 2, t. 27, f. 28.

**Crist. Hantkeni** RHZEHAk, 1885, Verh. Brünn. Nat. Forsch. Vereins 24, p. 100, t. 1, f. 8.

» **Russeggeri, rostrata** REUSS et aliae.

» **gibba** BRADY, 1884, Chall. Rep. 9, p. 546, t. 69, ff. 8—9.

Hab. mare Azoricum profund. metr. 1,400 (SMITT & LJUNG.); mare Spetsbergicum profund. metr. 450 (in C. rotulata vergens).



**C. variabilis** v. Rss.

Tab. X, figg. 593—595.

Helico-stichostegica, plerumque compressa, carinata, apertura subtubulari; minuta.

- Crist. variabilis** v. REUSS, 1849, Neue For. Österr., Wien. Ak. Dkschr. 1, p. 369, t. 46, ff. 15—16 (non sat typica).  
 » **peregrina** SCHWAG., 1866, Novara Exped. geol. Th. 2, p. 245, t. 7, f. 89.  
 » **variabilis** BRADY, 1884, For. Chall. Rep. 9, p. 541, t. 68, ff. 11—16.  
 »       » BRADY, PARK., JONES, 1887, Abrohlos Bank. Trans. Zool. Soc. Lond. 12, 7, t. 44, f. 12.

Hab. mare Azoricum metr. 230, SMITT &amp; LJUNGM. Long. 0,70 mm.

**C. crepidula** FICHT. & MOLL.

Tab. XI, figg. 596—613.

Segmentis juvenilibus helicostegicis aut subhelicostegicis, reliquis oblique stegostegicis; nunc obtuse marginata, nunc carinato-alata.

Figg. 596—611: formæ variæ e mari Azorico.

Figg. 612—613: e mari Atlantico boreali.

**Naut. crepidula** FICHT. & MOLL, 1803, Test. microsc., p. 107, t. 19, ff. g—i.**Crist. Schlönbachi, crepidula** BRADY, 1884, For. Chall. Rep. 9, pp. 539, 542, t. 67, ff. 7, 17, 19, 20, t. 68, ff. 1—2.

- » **crepidula** WRIGHT, 1885, Chalk. Foram. Keady Hill, Proc. Belfast Nat. Field Club 1884—85, Append. t. 27, f. 4.  
 »       » BALKW., MILLETT, 1884, For. Galway, Journ. micr. nat. Sc. 3, t. 4, f. 8.  
 »       » BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 44, ff. 8, 9.  
 »       » FORNASINI, 1890, Lagen. pliocen. Catanzarese; Mem. R. Accad. Sc. Instit. Bologna (4) 10, t. 1, ff. 31—33.

Synonymiam ceteram vide GOËS Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 43. Formæ aliquæ inter Nod. legumen var. glabram et lituum, p. 35—36 potius ad Nod. crepidulam sunt adscribendæ.

Valde varians, inter varietates diversas nulli fines delineari possunt.

Hab. mare Atlanticum boreale profund. metr. 1,750 rara; Spetsbergense metr. 180 rara; Azoricum metr. 530 sat frequens (SMITT, LJUNGMAN).

formæ affines:

1. leguminoides, tota fere stichostegica, interdum valde angustata.

A Marg. Webbiana D'ORB. (ex parte) vix distincta.

**C. complanata** v. REUSS, Tab. XI, figg. 616—622.

Figg. 616—620: formæ "leguminis".

Figg. 621—622: in *C. cymboidem* D'ORB., *C. nummuliticam* GÜMB., *C. insolitam* SCHWAG. vergens; omnes e mari Azorico profund. metr. 530.**C. complanata** v. REUSS, 1846, Böhm. Kreideform. 1, p. 33, t. 13, f. 54.? **Crist. compressa** D'ORB., 1846, Bass. tert. Vienne, p. 86, t. 3, ff. 32—33.**Crist. perobliqua, incurvata** v. REUSS et per multa nomina alia.**Vagin. legumen** BRADY, 1884 (partim), Chall. Rep., t. 66, f. 13.Obs. *Crist. compressa* BRADY, Chall. Rep. 9, t. 114, ff. 15—16 non exacte *C. compressam* D'ORB. exhibet, sed potius *C. reniformem* D'ORB.

Hab. mare Atlanticum boreale profund. metr. 1,400 rara; mare Azoricum, sat frequens.

2. *carinata* aut *carinato-alata*, stadio juvenili spinis duabus prædito marginalibus.

**C. spinigera** BRADY, Tab. XI, ff. 614—615.

**Vagin. spinigera** BRADY, 1884, Chall. Rep. 9, p. 531, t. 67, ff. 13—14.

Hab. mare Atlant. boreale profund. metr. 1150 rara (JOS. LINDAHL).

3. *elongata*, nunc *recta* nunc *curvata*, plus minusve *complanata*, interdum *carinato-alata*. A *typica* non sat distincta, aliquando ut *varietas Crist. rotulata* aptius collocanda videtur; sæpe *megasphaerica*.

**C. subarcuatula** MONTAG. Tab. XI, figg. 630—637.

Figg. 630—631: exemplum e sinu Skagerack.

Figg. 632—633: e Söderfjord Norvegia, profund. metr. 450.

Figg. 634—635: e mari Atlantico boreali profund. metr. 530.

Figg. 636—637: e mari extra Azores insulas, profund. metr. 500 (SMITT & LJUNGMAN).

**Nautilus subarcuatulus** MONTAG., 1808, Test. Brit. Supplem., p. 80, t. 19, f. 1 (*limbata*, *minuta*).

**Crist. subarcuatula** var. WILLIAMS, 1858, Rec. For. Gr. Brit., t. 2, f. 62.

» **calcar** var. **marginulinoides** PARK. & JONES, 1857, For. Coast Norway, An. Mag. Nat. Hist. (2) 19, p. 269, t. 10, f. 1.

**Margin. lituus** PARK. & JONES, 1865, North. Atl. & Arct. Oc.; Phil. Transact. 155, p. 343, t. 13, f. 14.

**Crist. obtusata** var. **subalata** BRADY, 1884, Chall. Rep. 9, p. 536, t. 66, ff. 24—25.

» **elongata** BRADY, 1887, Synops. Brit. Rec. For., Journ. Microsc. Soc. 1887, p. 911 (*nomen a D'ORB. pro aliis formis usitatum*).

Obs. *Crist. obtusata* v. REUSS, 1870; v. SCHLICHT, Septar. Thon. Pietzpuhl, t. 11, ff. 16—18 ad seriem *Cristellariarum tumidarum* pertinet, a *Crist. articulata* v. REUSS et *C. Hauerina* D'ORB. descendenti.

Hab. Skagerack profund. metr. 100; sinus Norvegicos profund. metr. 90—450; mare Atlant. boreale profund. metr. 530 passim; procera.

## APPENDIX.

4. *elongata*, plus minusve *angustata*, *tumidiuscula*, interdum *compressa*, nunc *carinata*, nunc *marginè obtuso* aut *rotundato*, *suturis sæpe sublimbatis*; aliquando *obsolete striolata*. Stadium *juvenile complete helichostegicum*, quod a *Crist. rotulata* LMK. vix discerni possit.

**C. Sauleyi** D'ORB., Tab. XI, figg. 623—629.

Figg. 623—627: formæ plus minusve *compressæ*.

Figg. 628—629: stadium *juvenile*, magis *dilatatum*.

**Crist. Sauleyi** D'ORB., 1839, For. Isles Canaries, p. 126, t. 3, ff. 7—9.

Huic maxime affinis:

**Marginulina ensis** v. Rss, 1846, Böhm. Kreideform. 1, p. 29, t. 12, ff. 13, t. 13, ff. 26—27 et aliae.

Hab. mare Azoricum profund. metr. 530 (SMITT & LJUNGMAN).

4. brevis, inflata, plerumque triquetra, oblique helicostegica, carinato-marginata, spira brevissima. Longitudo et amplitudo spirae valde varians; a *Crist. italica* DEFER. difficillime limitanda.

**C. navicula** D'ORB., Tab. XI, figg. 638—640.

Figg. 638: facies lateralis.

Figg. 639: facies marginalis sive dorsalis.

Figg. 640: facies spiralis sive ventralis.

**Crist. navicula** D'ORB., 1839, Craie bl. Paris, Mém. Soc. géol. Fr. 4, p. 27, t. 2, ff. 19—20.

▷ **triangularis** D'ORB., ibid., p. 27, t. 2, ff. 21—22.

? **Naut. acutaauricularis** F. & M., 1803, Test. micr., p. 102, t. 18, ff. g—i (limbata).

**Crist. arcuata** D'ORB., 1846, Bass. tert. Vienne, p. 87, t. 3, ff. 34—36.

▷ **italica** D'ORB. (partim), Mod. 19.

▷ **acutaauricularis, latifrons** BRADY, 1884, For. Chall. Rep. 9, pp. 543, 544, t. 114, f. 17, t. 68, f. 19, t. 113, f. 11.

Hab. mare Azoricum metr. 530 (SMITT & LJUNGMAN).

5. lineolata aut subcostata, saepe seminuda, sublimbata, marginata, compressa aut tumidiuscula, Marginul. rugoso-striatæ GÜMB. et Marg. tonsillari GÜMB. propinqua.

**C. elegantissima** COSTA, Tab. XI, figg. 641—642.

Figg. 641, 641 b: facies lateralis.

Fig. 642: facies spiralis-marginalis.

Fig. 642 a: facies oralis.

**Robulina elegantissima** COSTA, 1854, Pal. Napoli 2, p. 198, t. 19, f. 4 (minus compressa, sublimbata).

? **Crist. bicostata** DEECKE, 1884, Abh. geol. Spec. Kart. Elsass-Lothringen 4, p. 49, t. 2, f. 13 (valde compressa, limbata).

Hab. mare Azoricum profund. metr. 530. Long. m. 1,68.

6. statura præcedentis, stadio maturo tereti aut subtrigono, costata aut striata, interdum carinata, apertura saepe protrusa. Margin. costatæ BATSCH quam maxime propinqua, forsan microsphaerica ejusdem.

**C. Bradyi** GOËS, Tab. XI, figg. 643—645 a.

Figg. 643, 645: facies lateralis.

Fig. 644: facies marginalis spiralis.

Fig. 645 a: facies oralis.

**Marginulina costata** BRADY, 1884, Chall. Rep. 9, t. 65, f. 11.

Hab. mare Caraibicum profund. metr. 830, rara. Long. mm. 1—1,25.

\*\* *Vaginulina*.**V. lævigata** ROEM.

Tab. XI, figg. 646—655.

Tota stichostegica, segmentis saepe minus compressis, subteretibus aut stadio juvenili solum compresso, stadio maturo teretiusculo.

Formæ tenues fere teretes a Nod. communi d'ORB. sive inornata d'ORB. vix limitandæ. Conf. GOËS, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 2, ff. 22, 25 secundum BRADY ad Nod. communem d'ORB. referendæ. Nodos. legumen v. Rss. Böhm. Kreidef. ad hanc formam subcompressam pertinet.

Figg. 646—647: exempla in Marg. glabram vergentia, e mari Caribico, stadio juvenili (a) compressiusculo, stadio maturo (b) subtereti.

Fig. 648: pygmæa, in C. crepidulam vergens.

Figg. 649—650: formæ pygmææ, omnes e mari Caraibico profund. metr. 500.

Figg. 651—652: e mari Spetsbergico profund. metr. 1,600.

Fig. 653: e fretis Koster insularum profund. metr. 100.

Fig. 654: e mari extra Azores insulas profund. metr. 530.

Fig. 655: in sequentem vergens, ex eodem mari profund. metr. 180.

**Vaginulina lævigata** ROEM., 1838, Norddeutsch. tert. Meeress; Leon. & Bronns Jhb. 1838, p. 383, t. 3, f. 11.

**Nautilus legumen** testa recta compressa articulata hinc marginata, siphone laterali. LIN., 1758, Syst. Nat. Ed. X, 1, p. 711 (etiam Vag. elegans d'ORB.).

**Dental. legumen** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 22, t. 2, f. 45.

**Vaginulina legumen** BRADY, 1884, Chall. Rep. 9, p. 530, t. 66, ff. 14—15.

Hab. ad Koster insulas profund. metr. 100, rara, pygmæa; mare Spetsbergicum profund. metr. 1,600; ad Azores insulas profund. metr. 500 (SMIT & LJUNGMAN).

forma affines:

1. tota teres aut subcompressa, angustata aut subinflata, suturis obliquis aut subtransversis. A typica nec a Marg. regulari d'ORB. nec a Nodos. Ræmeri NEUGEBOREN sat distincta:

**V. glabra** d'ORB. Tab. XI, figg. 656—661.

Fig. 656: e mari Atlantico extra Azores insulas; profund. metr. 80—150; a: facies oralis.

Fig. 657: e sinu Bergensium Norvegicorum profund. metr. 100; a: facies oralis.

Fig. 658: e mari Bahusiæ extra Hällö insulam profund. metr. 45. Nod. Ræmeri proxima.

Fig. 659: fere typica (= Margin. Bertheloti d'ORB.; Marg. subbullata v. HKEN; Marg. bullata Rss etc.) e mari Azorico profund. metr. 220; a: facies oralis.

Figg. 660—661: angustior, eodem ex loco.

**Marginulina glabra** D'ORB., 1826, Tabl. Méth., Ann. Sc. Nat. 7, p. 259, No 6; Mod. 55.

**Marg. Berthelotiana** D'ORB., 1839, For. Iles Canaries, p. 125, t. 1, ff. 12--13.

    "    **glabra** BRADY, 1884, Challeng. Rep. 9, p. 527, t. 65, ff. 5--6 (valde incrassata).

    "    "    FORNASINI, 1890, Lagen. plioc. Catanzarese; Mem. R. Accad. Sc. Istit. Bologna (4) 10, t. 1, ff. 26--30.

? **Crist. irregularis** v. HKEN, 1876, For. Cläv. Szab. Schicht. (sep.), p. 50, t. 14, f. 3 (compressa).

Hab. mare Atlant. boreale profund. metr. 1,200; sinus Norvegiæ profund. metr. 100; mare Bahusiæ; mare Azoricum profund. metr. 150--500 (SMITT & LJUNGMAN).

2. magis compressa nunc angustata nunc valde dilatata:

**V. badenensis** D'ORB. Tab. XII, figg. 662--663.

Fig. 662: e mari Atlantico boreali; *a*: facies oralis.

Fig. 663: minor, e sinu Bergensi Norvegiæ; *a*: margo.

**Vaginulina badenensis** D'ORB., 1846, For. Bass. tert. Vienne, p. 65, t. 3, ff. 6--8.

    "    "    NEUGEB., 1856, For. Stichostr. Lapugy, Wien. Akad. Dkschr. 12, 2, p. 98, t. 5, ff. 7--9.

? **Vag. marginata, caudata** D'ORB., 1826, Tabl. méth., Ann. Sc. Nat. 7, p. 258, N:is 7--8.

? **Vag. denudata** v. REUSS, 1862, Nordd. Hils u. Gault; Wien. Akad. S. Ber. 46, p. 45, t. 3, f. 4, et multa nomina alia.

Hab. mare Atlanticum boreale profund. metr. 1,740 haud frequens, long. mm. 4--5; ad Grip Norvegiæ (LILLJEBORG); long. mm. 2--3.

### V. linearis MONTAGU.

Tab. XII, fig. 664.

Subteres vel paullum compressa, segmentis lineatis aut costulatis; sæpe seminuda.

**Nautilus linearis** MONTAG., 1808, Test. Brit. Supplem., p. 87, t. 30, f. 9.

**Dental. legumen** var. **linearis** WILLIAMS., 1858, Rec. For. Gr. Brit., p. 22, t. 2, ff. 46--48.

**Vaginulina linearis** BRADY, 1884, For. Chall. Rep. 9, p. 532, t. 67, ff. 11--12.

Synonym. ceteram vide GOËS, l. c., p. 40.

A Nod. obliqua LIN. interdum difficillime distingvenda.

Hab. Skagerack præsertim ad Koster insulas metr. 50--180 passim. Long. mm. 5.

formæ affines:

1. plus minusve costata, paullum aut vix compressa, suturis sæpe impressis.

Inter Marg. costatam BATSCH et V. linearem MONTAG. medium tenens a neutra certe limitanda, veris notis differentialibus destituta:

**V. striatocostata** v. REUSS, Tab. XII, fig. 665.

Fig. 665: facies lateralis et marginalis; *a*: facies oralis; e mari Caraibico.

**Marginulina striatocostata** v. REUSS, Nordd. Hils u. Gault, Wien. Ak. Sitz. Ber. 46, p. 62, t. 6, f. 2 (pygmæa).

? **Vaginulina sulcata** COSTA, 1855, Marna terz. Messina; Mem. Ac. Sc. Napol. 2, p. 145, t. 2, f. 17 (costis paucis).

**Nodos. legumen** var. **linearis** GOËS, 1882, Retie. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, t. 2, f. 33.

**Marginulina bononiensis** FORNASINI, 1883, For. pliocen. Pontic. Savena; Boll. Soc. geol. Ital. 2, p. 187, t. 2, f. 7.

Hab. mare Caraibicum profund. metr. 500 rara (GOËS).

2. saepe valde incrassata, aliquando angustata, plerumque paullum compressa, costis paucis plus minusve elatis, interdum obliquatis. Forma angustata a typica haud multum diversa.

**V. costata** BATSCH, Tab. XII, fig. 666.

Fig. 666: exemplum angustum, e mari Atlantico boreali; a: facies marginalis.

**Nautilus costatus** BATSCH, 1791, Conchyl. Seesands, t. 1, f. 1.

**Marginulina Raphanus** D'ORB., 1826, Tab. Méth.; Ann. Sc. Nat. 7, p. 258, t. 10, ff. 7—8; Mod. 6.

**Marginulina costata** BRADY, 1884, Chall. Rep. 9, p. 528, t. 65, ff. 10, 12—13.

FORNASINI, 1893, For. Messin.; Mem. R. Accad. Sc. Istit. Bologna (5) 3, t. 2, f. 6.

Hab. mare Atlanticum boreale profund. metr. 1,740 rara (JOS. LINDAHL).

\*\*\* Nodosaria.

**N. communis** D'ORB.

In species male distinctas immerito divisa. Diversitas speciminum maxima fit: 1) magnitudine et constitutione segmenti embryonalis; quo maturius sive magis evolutum sit hoc segmentum, eo potius testa brevis segmentis paucis oritur; 2) segmentorum natura intumescendi maturorum, quorum suturae constrictae fiant; 3) incremento magnitudinis segmentorum plus minusve rapido; 4) septis inclinatis (obliquis) aut horizontaliter dispositis, nota tamen vacillans, septis segmentorum juvenilium obliquis, ceterisque transversis et vice versa interdum occurrentibus.

Ex quo formae creantur maxime discrepantes, specificae tamen non distinctae.

Ut species determinandi modum auctorum vitiosum perspicue videas, quasdam "species" modo eorum (id est notis vagantibus) describamus.

1. Nod. farcimen SOLD. transversim septata, extenuata, sensim crassitudine incre-scens, suturis modice constrictis, segmentis subinflatis; (forma modice incre-scens).
2. Nod. Boueana D'ORB. transversim septata, extenuata fere linearis, suturis vix aut paullum constrictis, segmentis elongatis ovatis; (forma lente incre-scens).
3. N. pauperata D'ORB. transversim septatata, crassior, brevior fere aequalis cy-lindrica, suturis segmentorum juvenilium non incis, segmentorum suturis ma-turorum constrictis; (forma segmento embryonali majore, sensim incre-scens).
4. N. consobrina D'ORB. transversim septata, attenuata, praeterea praecedenti similis.
5. N. consobrina var. emaciata REUSS longior, segmentis brevioribus magis numerosis.
6. N. plebeja REUSS transversim septata, cylindrica, partibus extremis ambabus plus minusve attenuatis, suturis non impressis (notae eadem ac stadii juve-nilis Nod. pauperatae).

Sin vero notis talibus aliisque similibus utuntur auctores, differentia vera limi-tesque specifici extinguuntur; progenies fit species a parentibus disjuncta, delineatio arti-ficialis non naturalis creatur. Varietates N. communis D'ORB. nominibus diversis centies relatas ad formas paucas plus minusve distinctas referre facile possumus.

Forma typica: Tab. XII, figg. 667—671.

Septis obliquis, sensim increscens linearis (Nod. badenensis D'ORB.) aut crassa, plus minusve raptim increscens, camera primordiali majori (N. Rœmeri NEUGEBO., obliquata Rss, obliqua D'ORB. et aliæ, quæ in Marginulinam glabram D'ORB. et VAG. legumen LIN. transeunt.

Figg. 667—668: e mari Azorico profund. metr. 530; *a*: facies oralis.

Fig. 669: e fretis Koster insularum profund. metr. 100.

Fig. 670: e mari Groenlandico profund. metr. 300—500.

Fig. 671: megasphærica, e fretis Koster insularum profund. metr. 100.

**Dentalina communis** D'ORB., 1840, For. Craie bl. de Paris, Mém. Soc. géol. Fr. 4, p. 13, t. 1, f. 4.

**inornata** D'ORB., 1846, Bass. tert. Vienne, p. 44, t. 1, ff. 50—51.

**Nodosaria communis** BRADY, 1884, Challeng. Rep. 9, p. 504, t. 62, ff. 19—22.

GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, t. 1, f. 16, t. 2, ff. 22, 24—25 (paullum compressa).

FORNASINI, 1890, Lagen. plioc. Catanzarese; Mem. R. Accad. Sc. Istit. Bologna (4) 10, t. 1, ff. 14—18.

Hab. maria Groenlandica et Spetsbergica usque ad tropica rara.

formæ affines:

1. nunc brevis, nunc elongata, septis horizontalibus, segmentis immaturis cylindricis, suturis obsolete aut haud incis; segmentis maturis interdum plus minusve inflatis, ex quo accidit, ut formæ occurrant segmento primordiali magno, quæ segmenta omnia inflata habent, a *N. soluta* Rss vix distinctæ; aliæ breves, "Glandulinis" similes:

**N. pauperata** D'ORB., Tab. XII, figg. 672—688.

Fig. 672: Dental. acuminata v. Rss; e mari arctico profund. metr. 380—890.

Fig. 673: e mari Azorico profund. metr. 180.

Figg. 674—676: e mari Groenlandico profund. metr. 380—530.

Figg. 677—683: megasphærica, ex eodem loco.

Fig. 684: procera, e mari Azorico profund. metr. 540.

Fig. 685: angustior (= *N. consobrina* v. *emaciata* BRADY), e mari Caraibico profund. metr. 550.

Fig. 686: forma eadem, e mari Azorico profund. metr. 890.

Fig. 687: mesosphærica in *N. solutam* Rss transiens, *N. farcimini* SOLDANI, propinqua e mari Caraibico profund. metr. 500.

Fig. 688: in *Nod. solutam* Rss transiens, e mari Groenlandico profund. metr. 430.

**Dentalina pauperata** D'ORB., 1846, Bass. tert. Vienne, p. 46, t. 1, ff. 57—58.

**Nod. lævigata** NILSS., 1827, Petrif. Succana, p. 8, t. 9, f. 20.

? **Naut. rectus** MONTAG., 1803, Test. brit., p. 197, Suppl. 1808, p. 82, t. 19, ff. 4—7.

**Dental. annulata** v. Rss, 1851, Kreidemerg Lemberg; Haid. Nat. Abh. 4, p. 26, t. 1, f. 13; v. REUSS, 1872, Geinitz' Elbthalgeb, in Sachsen, 2, p. 85, t. 20, ff. 19—20.

» » VAN DEN BROECK, 1876, For. Barbade; Ann. Soc. Belg. microscop. 2, t. 2, f. 2.

» » FORNASINI, 1889, For. mioc. San Rufillo; Boll. Soc. geol. Ital. 5, t. 1, ff. 10—13.

- Dental. communis** var. **pauperata** PARK., JONES & BRADY, 1866, For. Crag., Palæogr. Soc. 19, p. 58, t. 1, f. 13—18, 20.
- › **communis, pauperata** SHERB. & CHAPM., 1886, For. Lond. clay; Journ. microsc. Soc. 1886, p. 750, t. 15, ff. 5—6, 9.
- Nod. consobrina** Rss, 1870, For. Sept. Thon. v. Pietzpuhl; v. SCHLICHT, t. 9, ff. 2, 8; t. 10, ff. 1, 25—27.
- › **acuticauda, vermiculum, bicuspidata, plebeja, Bötcheri** REUSS, *ibid.* t. 8, f. 17; t. 9, ff. 10—12, 14, 16, 23; t. 10, ff. 5—12.
- Dental. Verneuili** D'ORB., 1846, Bass. tert. Vienne, p. 46, t. 1, ff. 57—58.
- Nod. fustiformis, tauricornis** SCHWAG., 1866, For. Kar.-Nicobar, Novara Reise; geol. Theil 2, p. 228, t. 6, ff. 60—61 (forma procera).
- › **consobrina** var. **emaciata** Rss, (1851), 1870, v. SCHLICHT, t. 8, f. 15.
- › „ „ „ BRADY, 1884, Chall. Rep. 9, p. 502, t. 62, ff. 25—26.
- › „ „ „ BRADY, *ibid.* p. 501, t. 62, ff. 23—24 (in sequentem transiens).
- › „ „ „ FORNASINI, 1890, Lagen. pliocen. Catanzarese; Mem. R. Acc. Sc. Istit. Bologna (4) 10, t. 1, f. 12.

Quia *Dent. consobrina* D'ORB. est forma valde indistincta (fig. 3 D'ORB. Bass. tert. Vienne, t. 2, f. 3, valde attenuata, a *N. Boueana* non distinguenda, et fig. 2 multo crassior a *N. pauperata* vix distincta), nomen “consobrinam” D'ORB. esse relinquendum censeo. Retinere nomen “consobrinam” longioribus et pauperatam brevioribus non est logicum et naturale.

Hab. mare Spetsbergense et Groenlandicum profund. metr. 180—500; mare Caraibicum passim. Long. mm. 5—12.

2. extenuata sensim increscens, septis horizontalibus, cameris elongatis ovalibus, minus inflatis, aut subcylindricis. A *N. ovicula* D'ORB. vix nisi axi curvato distincta; *N. farcimen* SILV. est forma talis recta vel subrecta:

## **N. Boueana** D'ORB., Tab. XII, fig. 689.

- Dent. Boueana, guttifera** D'ORB., 1846, For. Bass. tert. Vienne, pp. 47, 49 t. 2, ff. 4—6, 11—12.
- › **consobrina** (ex parte) D'ORB., 1846, *ibid.* p. 46, t. 2, f. 3 (segmento primordiali majore, quare testa magis æqualis, cylindrica oritur).
- Nod. ovicula** D'ORB., 1826, Tab. méth. An. Sc. Nat. 7, p. 252, No. 6.
- ? **Naut. subarcuatus** MONTAG., 1803, Test. Brit., p. 198, t. 6, f. 5.
- Dent. peregrina** REUSS, 1860, Crag. v. Antwerpen, Wien. Ak. S. Ber. 42, p. 356, t. 1, f. 6 (stadio juvenili suturis vix incisus, ut in præcedente).
- › **Lorneiana** D'ORB., 1839, Craie blanche Paris; Mém. Soc. géol. France 4, p. 14, t. 1, ff. 8—9.
- › **monile** CORN., 1848, Nouv. foss. micr., Mém. Soc. géol. Fr. (2) 3, p. 250, t. 1, f. 18.
- ? **Nod. Costai** SCHWAG., 1866, For. Kar. Nicobar; Novara Reise, geol. Th. 2, p. 229, t. 6, f. 62.
- ? **Dent. elegans** D'ORB., 1846, Bass. tert. Vienne, p. 45, t. 1, ff. 52—56 (segmentis brevioribus).
- › „ „ „ SHERB. & CHAPM., 1886, For. Lond. Clay., Journ. micr. soc. 1886, p. 750, t. 15, f. 7.
- › **nepos, adunca** COSTA, 1855, For. Marna bl. Vaticano, Mem. Accad. Sc. Napol. 2, pp. 1, 17, t. 1, ff. 1—2.
- › **subtilis** v. HKEN, 1875, Cláv. Szab. Sch., p. 33, t. 3, f. 13.
- Nod. gracilis** v. REUSS 1845, Böhm. Kreidef. 1, p. 29, t. 8, f. 6.
- Dent. trichostoma** Rss, 1849, Neue For. Österr., Wien. Ak. Dkschr. 1, p. 367, t. 46, f. 6.
- Nod. consobrina** Rss, 1870, Sept. Th. Pietzpuhl. v. SCHLICHT (partim) tab. 9, ff. 3, 22.
- › **indifferens, Beningseni, approximata** Rss, *ibid.* t. 2, ff. 6, 7, 13.
- › **farcimen** SILV., 1872, Monogr. Nodos., Atti Accad. Gioen. Sc. nat. (3) 7, p. 83, t. 10, ff. 229—242.
- › **communis** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 1, ff. 13—15.
- › **fliformis** BRADY (partim) 1884, For. Chall. Rep. 9, t. 63, ff. 3, 5.
- › „ „ „ FORNASINI 1889, For. mioc. San Rufillo; Boll. Soc. geol. Ital. 5, t. 1, f. 14.
- Dental. communis** D'ORB., 1826 (= *N. farcimen* SOLD.), Tabl. méth., An. Sc. Nat. 7, p. 254, No. 35, segmentis paullo brevioribus paullum inflatis, ab hac varietate merito distinguji vix potest.



Formæ paullo crassiores, suturis paullum constrictis, segmentis plus minusve inflatis, ad Nod. farcimen Rss, N. laxam Rss, Dent. distortam COSTA etc. relatæ, inter hanc et Nod. solutam Rss medium tenent.

Hab. mare Caraibicum profund. metr. 300—500 (Goës).

### **N. soluta** v. REUSS.

Tab. XII, fig. 690.

Septis transversis, segmentis inflatis fere globularibus, suturis plus minusve coarctatis.

Fig. 690: e mari Atlant. boreali profund. metr. 1,400.

**Dental. soluta** v. REUSS, 1851, For. Sept. Thon. Berlin, Zeitschr. deutsche geol. Gesellsch. 3, p. 60, t. 3, f. 4.  
**Nod. grandis** 1865, For. deut. Sept. Thon., Wien. Ak. Dkschr. 25, p. 131, t. 1, ff. 26—28: REUSS 1870 in SCHLICHTS tab. 8, ff. 13—14.

» **capitata** Rss, ibid. t. 8, f. 10.

» **soluta** FORNASINI, 1890, Lag. pliocen. Catanzarese; Mem. R. Acc. Sc. Istit. Bologna (4) 10, f. 8.

» **farcimen** BRADY, 1884, For. Chall. Rep. 9, t. 62, ff. 17—18, ab hac vix distincta.

» **soluta** BRADY, ibid. p. 503, t. 62, ff. 13—16.

Hab. Atlanticum boreale et temperatum profund. metr. 1,400. Long. mm. 5—6.

### **N. obliqua** LIN.

Tab. XII, figg. 691—696, Tab. XIII, figg. 697—699.

Plerumque transversim septata, nunc recta vel subrecta, nunc, sæpissime, curvata; segmentis maturis sæpe inflatis, plus minusve lævibus, reliquis cylindricis, costatis vel lineatis, costis interdum interruptis et confluentibus.

Stadium juvenile costatum, maturum læve facit, ut forma obliqua ut typica et communis ut derivata jure majore sit habenda. Interdum subcompressa; etiam oblique septata.

Fig. 691: exemplum e mari Caraibico profund. metr. 500—600.

Fig. 692: exemplum e mari Atlantico boreali profund. metr. 1740. **Dental. acuta** D'ORB. proxima.

Figg. 693—694: e mari Azorico profund. metr. 178—980; 694 in "vertebralem" vergens.

Fig. 695: e Gullmaren, sinu Bahusia profund. metr. 70.

Fig. 696: e sinu Skagerack profund. metr. 80; in obliquatam BATSCH. vergens.

Fig. 697 (t. XIII): in "vertebralem" transiens, e mari Caraibico profund. metr. 500—600.

Figg. 698—699: vertebralis BATSCH., BRADY; conica SILV.; ex eodem loco.

**Nautilus obliquus** testa recto-subarcuata, articulis oblique striatis LIN., 1758, Syst. Nat. Ed. X, p. 710 (an = *Naut. obliquatus* BATSCH).

**Dental. subarcuata** var. **jugosa** (ex parte) WILLIAMS, 1858, Rec. For. Gr. Brit., p. 20, t. 2, f. 42.

**Nod. obliqua** BRADY, 1884, Chall. Rep. 9, p. 513, t. 64, ff. 20—22.

” ” FORNASINI, 1892, Mem. Acc. Sc. Istit. Bologna (5) 2, ff. 1—7. Vide præterea GOËS, 1882, Rhizop. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, p. 32.

Obs. *N. vertebralis* (BATSCH) BRADY, Chall. Rep., p. 514, t. 64, ff. 11—14; GOËS, Rhizop. Carib. Sea, t. 1, f. 18, a *N. obliqua* non merito nomine speciali distingui potest.

Nota characteristicæ: septis crassis, quasi vitreis, non limbatis est minus stabilis quam quæ nomen distinctum legitimum faciat. Formæ sæpe occurrunt intermediæ inter *obliquam* typicam et illam. Crassitudo, altitudo et numerus costarum valde variantes. Sæpe recta a *Nod. conica* SILV. et *N. Raphanistrum* SILV. non distincta. Hæc est megasphærica illius forma.

Hab. ad oras Sveciæ rara metr. 30—120, Hardanger sinum Norveg. metr. 90—180 (NORMAN); mare Groenlandicum metr. 300—1,250, Spetsbergicum metr. 140, mare Atlant. boreale metr. 1,700 passim. Long. mm. 6—10.

forma affinis: seminuda septis transversis, stadio juvenili costato, aut lineato, ceterum lævis.

**N. seminuda** Rss, Tab. XIII, fig. 700.

**Dental. seminuda** 1849, Neue For. Österreichs; Wien. Ak. Dkschr. 1, p. 367, t. 46, f. 9. GOËS, Rhizop. Ret. Carib. Sea, Sv. Vet. Ak. Handl. 19, 4, p. 33, d) tab. 1, f. 17.

Hab. mare Caraibicum metr. 530. Long. mm. 18—22.

### **N. striolata** GOËS.

Tab. XIII, fig. 701.

Tenue striata, suturis stadii juvenilis vix incisus, segmentis ceteris subglobularibus, inflatis.

Ad *Nod. solutam* Rss correspondens. GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Ak. Handl. 19, 4, t. 1, f. 19.

**Nod. soluta** BRADY, 1884, Challeng. Rep. 9, t. 64, f. 28.

? **Dental. substriata** D'ORB., 1826, Tab. méth., An. Sc. Nat. 7, p. 255, No. 46.

Hab. ad Azores insulas metr. 200—600 (SMITT & LJUNGMAN); mare Caraibicum (GOËS).

### **N. lævigata** D'ORB.

Tab. XIII, figg. 702—703, 706—707, 709.

Ovoidea, ovoideo-globosa, ovoideo-apiculata, aut elipsoidea, haud raro septis primis obliquis, quare forma marginulinoidea exstat (“Psecadium” REUSS).

Fig. 702: exemplum e Skagerack profund. metr. 240—890.

Fig. 703: “psecadi”formis ex eodem loco.

Fig. 706: var. inflata BORNEMANN, v. REUSS, obtusissima v. REUSS; e mari Spetsbergensi profund. metr. 1,300.

Fig. 707: var. elliptica v. REUSS; e freto Koster insularum profund. metr. 180.

Fig. 709: septis obliquatis, e mari spetsbergensi profund. metr. 2,500.

**Nod. (Glandulina) lævigata** D'ORB., 1826, Tab. méth., Ann. Sc. Nat. 7, p. 252, t. 10, ff. 1—3.  
**Glandul. globulus, inflata, lævigata, obtusissima, rotundata** v. REUSS, 1870; v. SCHLICHT, For. Septar. Thon Pietzpuhl, t. 6, ff. 1—3, 10—13, 17.  
**Nodosaria lævigata, rotundata** BRADY, 1884, Challeng. Rep. 9, pp. 490—491, t. 61, ff. 17—18, 20—22.

Hab. ad oras Sveciæ et Norvegiæ occidentales, nec non in mari Arctico profund. metr. 20—2,500 haud rara.

forma affinis:

cylindrica aut obtuse fusiformis, plus minusve elongata, suturis aliquando plus minusve obliquatis, quare forma submarginulinoidea.

**N. æqualis** v. REUSS, Tab. XIII, figg. 704—705, 708, 710—711.

Fig. 704: pygmæa e Morup Sveciæ profund. metr. 18.

Fig. 705: pygmæa e mari Azorico, Marg. glabræ D'ORB. similis.

Fig. 708: subtypica e mari Atlantico boreali profund. metr. 500.

Fig. 710: e mari Spetsbergensi profund. metr. 2,500.

Fig. 711: marginulinæformis, paulum compressa, e mari Atlantico boreali profund. metr. 1,740; *a*: facies marginalis.

**Glandulina lævigata** v. REUSS, 1863, Septar. Thon Offenbach, Wien Akad. S. Ber. 48, t. 3, f. 28.  
 » » var. **æqualis** v. REUSS, 1870, v. SCHLICHT, Septar. Thon Pietzpuhl, t. 6, ff. 21—22, 24.

**Nod. lævigata** var. **æqualis** BRADY, 1884, Challeng. Rep. 9, p. 492, t. 61, f. 32.

**Glandulina æqualis** FORNASINI, 1886; Gland. æqualis, Boll. Soc. geol. Ital. 5, t. 7, ff. 1—12.

Hab. cum præcedente minus frequens.

### **N. calomorpha** v. Rss.

Tab. XIII, figg. 712—713.

Segmentis plus minusve inflatis, ovalibus aut ellipticis magnitudine fere æqualibus, paucis.

Species valde indistincta a *N. radicula* aut potius *N. pauperata* immerito disjuncta, cujus forma megasphærica pygmæa esse videtur.

Rss, 1865, For. deutsch. Septar. Thon; Wien. Ak. Dkschr. 25, p. 129, t. 1, ff. 15—19; 1870, v. SCHLICHT tab. 7, ff. 1—3.

**Nod. consobrina** PARK. & JONES, 1865, N. Atl. and Arct. Oc., Phil. Trans. 155, p. 342, t. 16, f. 3.

» **calomorpha** BRADY, 1884, For. Chall. Rep. 9, p. 497, t. 61, ff. 23—27.

» **pusilla** FORNASINI, 1890, Lagen. pliocen. Catanzarese, Mem. R. Accad. Sc. Istitut. Bologna (4) 10, t. 1, ff. 9—10.

Obs. *Nod. geinitziana* NEUGER. eadem species ac *N. radicula* LIN. a BRADY est facta; illa tamen a *N. calomorpha* Rss differentiam specificam vix nullam exhibet.

Hab. in Bucken sinu Norvegico paucas invenit Cel. NORMAN metr. 260—350, pygmæas, vitreas, long. mm. 0.23—0.33.

**N. scalaris** BATSCH.

Tab. XIII, figg. 716—718.

Differentia inter *N. scalarem* et *N. raphanum* LIN. est multo minus distincta quam auctores vulgo concedant. Notæ characteristicæ *scalaris*: collum ore limbato productum, mucro segmenti embryonalis, segmenta testæ pauca ad summum VIII inflata non sunt sat validæ. Formæ in *raphanum* LIN. transeuntes sæpe occurrunt. Talis est *Nod. raphanus* GOËS, Rhiz. Caribb. Sea; Sv. Vet. Akad. Handl. 19, 4, t. 1, f. 9—10; et aliæ segmentis minus inflatis, fere cylindricis aut prismaticis.

Fig. 716: e mari Germanico profund. metr. 180.

Figg. 717—718: e mari Azorico profund. metr. 200.

*Nod. scalaris* D'ORB. medium inter *N. raphanum* et *N. scalarem* BATSCH tenet; conf. SILVESTRI l. c. t. 4, illa microsphærica hæc mesosphærica.

**Nautilus** BATSCH, 1791, Conchyl. d. Seesand. t. 2, f. 4.? **Nod. Soldanii** D'ORB., 1826, Tabl. méth., Ann. Sc. nat. 7, p. 254, No. 30; **longicauda** ibid. No. 28.**N. longicauda** SILV., 1872, Faun. micr. terr. subappen. Ital.; Atti Accad. Gioen. Sc. nat. (3) 7, p. 58, t. 5, ff. 101—106.**N. scalaris** BRADY, 1884, For. Chall. Rep., p. 510, t. 63, ff. 28—31.

» » BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. zool. Soc. Lond. 12, 7, p. 223, t. 44, f. 6.

Hab. mare Germanicum metr. 100—178; in sinu Hardanger norvegico metr. 90—180 invenit NORMAN. Long. mm. 0.50—1.50.

**APPENDIX.****N. carinata** D'ORB.

Tab. XIII, figg. 714—715.

Plus minusve compressa, stichostegica aut stadio juvenili helicostegico (*Lingulinopsis* Rss). Apertura plerumque rimaformis.

Fig. 714: forma *Lingulinopsis*, e mari Azorico profund. metr. 450; *a*: facies oralis.Fig. 715: *pygmæa* eodem ex loco; *a*: facies oralis.\* *typica lata*:**Lingulina carinata** D'ORB., 1826, Tabl. méth., Ann. Sc. nat. 7, p. 257, No. 1, Mod. 26.**Fronde. major, intumescens** BORNEM., 1854, Liasform. Götting, p. 36, t. 3, ff. 19—21.**Ling. carinata** WILL., 1858, Rec. For. Gr. Brit., p. 14, t. 2, ff. 33—35.**Ling. ampullacea, polymorpha, mediterranea** COSTA, 1861, Microdoride mediterranea 1, p. 45—47, t. 8, ff. 1—8.**Ling. decipiens** STACHE, 1865, Tert. Merg. Whaingaroa Haf; Novara Reise Geol. 1, p. 193, t. 22, f. 17 (valde abbreviata).**Ling. Makowskyiana** RHZEHAČ, 1885, Verhandl. Brünn. Nat. Verein. 24, p. 97, t. 1, f. 7.

Vide præterea GOËS, Ret. Rhizop. Caribb. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 58.

**\*\* angusta:**

**Ling. carinata** BRADY, 1884, Chall. Rep., p. 517, t. 65, ff. 16—17.

» » SHERBORN & BAYLEY, 1890, Red. Chalk Foram., Journ. microsc. Soc. 1890, p. 558, t. 10, f. 3.  
» » BALKW., MILLETT, 1884, For. Galway, Journ. micr. Sc. 3, t. 4, f. 6.

Vide præterea GOËS, Ret. Rhizop. Caribb. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 14.

**\*\*\* stadio juvenili helicostegico:**

**Marginulina carinata** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 259, No. 8.

**Lingulinopsis bohémica** Rss, Fiés' modell; No. 57.

» **carlofortensis** BORNEM., 1884, Atti Soc. nat. Toscana 6, 1, p. 26, t. 6, ff. 1—7.

Hab. mare Azoricum, metr. profund. 500 (SMITT & LJUNGMAN).

**LAGENA WALK. & BOYS.****L. lævis WALK. & BOYS.**

Tab. XIII, figg. 719—722.

Fere globosa, aut ovoidea aut elliptica, collo plus minusve producto, »ectosolenica».

Fig. 719: globosa e mari Azorico profund. metr. 530; a: facies oralis.

Figg. 720—722: in variet. clavatam D'ORB. transiens; e mari Arctico.

**Serpula lævis** WALK. & BOYS., 1784, Test. min., p. 3, t. 1, f. 9.

**Lag. lævis** PARK. & JONES, 1857, For. Coast of Norway; A. M. Nat. Hist. (2) 19, p. 279, t. 11, f. 22.

**Lag. vulgaris** (typ.) WILLIAMS, 1858, Rec. For. Gr. Brit., p. 4, t. 1, fig. 5, 5 a.

**Lag. vulgaris** Rss, 1862, Lagenideen; Wien. Ak. Sitz. Ber. 46, p. 321, t. 1, fig. 15; t. 2, ff. 16—17; 1870, v. SCHLICHT, For. Pietzpuhl, t. 2, ff. 3—8, 11.

**Lag. sulcata** var. **lævis** PARK. & JONES, 1865, For. North Atl. and Arct. Oc., Phil. Transact. 155, p. 349, t. 13, f. 22, t. 16, f. 9 a.

**Lag. antiqua** ALCOCK, 1868, Life Hist. Foramf.; Mem. Manchest. Liter. & Philos. Soc. (3) 3, p. 176, t. 4, f. 3.

**Lag. lævis** BRADY, 1884, Chall. Rep. Zool. 9, p. 455, t. 56, ff. 14, 31.

**Lag. bullæformis** SCHWAG., 1867, Die Zone Ammonit. Sowerbyi; BENECKES Beiträge 1, 1868, p. 655, t. 34, f. 5 (apiculata).

Hab. Skagerack profund. metr. 18—50; mare Groenlandicum et Spetsbergense profund. metr. 50—900 passim.  
Long. mm. 0,60, rare ultra.

**formæ affines:**

1. Scabriuscula, hispido-aculeata, i. e. tubulis pseudopodialibus paullum porrectis plus minusve horrida.

Tab. XIII, fig. 723: exemplum e sinu Bukken Norvegiae.

**Lag. hispida** Rss.

(1858) 1862 Lagenideen; Wien. Ak. Sitz. Ber. 46, p. 335, t. 5, f. 66; t. 6, ff. 77—80.

**Lag. oxystoma, hystrix** Rss ibid.

**Lag. hispida** Rss, 1870, v. SCHLICHT, For. Pietzpuhl, t. 3, ff. 26—27, t. 4, f. 4.

**Lag. vulgaris** var. **oxystoma** SHERBORN & CHAPMAN, 1886, Microz. Lond. Clay; Journ. Microsc. Soc. 1886, p. 744, t. 14, f. 15.

**Lag. hispida** BRADY, 1884, For. Chall. Rep., p. 459, t. 57, ff. 1—4.

**Lag. Jeffreyi** (BRADY) WRIGHT, Proc. Belf. Nat. Field Club 1876—77, Append. t. 4, f. 15.

Hab. in sinu Bukken profund. metr. 270—350 (Rev. NORMAN); e mari Spetsbergensi profund. metr. 2,315; exigua, quasi arenosa.

2. Testa tuberculato-spinosa, aut verrucosa.

**Lag. tuberculata** KARR., Tab. XIII, fig. 724.

1870. Kreideform. Leitzsdorf; Jhb. k. k. geol. Reichsanst. 20, p. 168, t. 10, f. 6, a.

**L. aspera** BRADY, vix diversa; For. Chall. Rep. p. 457, t. 57, ff. 7—12.

? **L. aspera** BALKW. & MILLETT, 1884, Journ. micr. Sc. 13, t. 2, f. 1.

Hab. Azores, profund. metr. 530 (SMITT & LJUNGMAN).

3. Clavata-lanciformis, interdum distoma.

**L. clavata** D'ORB., Tab. XIII, figg. 725—727.

Figg. 725—727: e mari arctico, in **L. gracillimam** SEG. transiens.

**Oolina clavata** D'ORB., 1846, For. Bass. tert. Vienne, p. 21, t. 1, ff. 2—3.

**Amphorina elongata** COSTA, 1854, Pal. Nap. 2, p. 122, t. 11, f. 12.

**L. vulgaris** v. **clavata** WILL., 1858, Rec. For. Gr. Brit., p. 5, t. 1, f. 6.

**L. acicula** Rss, 1860, For. Crag. v. Antwerp.; Wien. Ak. S. Ber. 42, p. 355, t. 1, f. 1.

**L. clavata** Rss, 1862, Lagenideen, Wien. Ak. S. Ber. 46, p. 320, t. 1, ff. 13—14.

Hab. Gullmaren Bahusiæ sinu metr. 70, Skagerak metr. 500, ad oras Groenlandiæ, Spetsbergiæ, metr. 40—200. Long. mm. 0.90.

4. Magis regulariter fusiformis, recta aut curvata, distoma; a præcedente male distincta.

**L. gracillima** SEGU. Tab. XIII, figg. 728—730.

Figg. 728—730: exempla e mari arctico.

**Amphorina** SEGU., 1862, For. monothal. mioc. Mess., p. 51, t. 1, f. 37.

**Amphorina gracilis** COSTA, 1854, Pal. Nap. 2, p. 121, t. 11, f. 11.

**L. sulcata** var. **distoma polita** PARK. & JONES, 1865, N. Atl. and Arct. Oc., Phil. Transact. 155, p. 357, t. 13, f. 21.

**L. gracillima** PARK., JONES, BRADY, 1866, Crag. For., Pal. Soc. 19, p. 45, t. 1, ff. 36—37.

**L. vulgaris** v. **distoma-polita** RYM., JONES, 1872, Java deep Sea Lagen, Lin. Soc. Trans. 30, p. 64, t. 19, f. 55.

**L. gracillima** BRADY, 1884, For. Chall. Rep., p. 456, t. 56, ff. 19—28.

Hab. mare Spetsbergiæ metr. 900. Long. 0.50—1.50.

5. Magis cylindrica, distoma; interdum scabra, quasi arenacea; a præcedente non sat distincta.

**L. elongata** (EHRENB.) BRADY. Tab. XIII, fig. 731.

Fig. 731: e mari Groenlandico profund. metr. 40.

1884, For. Chall. Rep., p. 457, t. 56, f. 29.

Hab. mare Groenland. & Spetsberg. cum præcedente profund. metr. 40—2,300. Long. mm. 0.60—1.

**L. striata** D'ORB.

Tab. XIII, figg. 732—736.

Typi habitu, costis aut lineis longitudinaliter ornata, collum sæpe annulis vel lamina spirali præditum; fundus interdum crenatus aut spinescens; aliquando bicamerata.

Figg. 732, 734—735: exempla e Gullmaren sinu Bahusiæ profund. metr. 35—100.

Fig. 133: forma bicamerata R. JONES, eodem ex loco.

Fig. 736: costata (V. perlucidum MONTAG), e mari Azorico profund. metr. 530.

## \* striata.

*Oolina striata* D'ORB., 1839, Voy. Amér. mér., p. 21, t. 5, f. 12.

*Ool. Haidingeri* CZJZ., 1847, For. Wiener. Beck.; Haid. nat. Wiss. Abh. 2, p. 138, t. 12, ff. 1—2.

*L. vulgaris* v. *substriata* WILL., 1858, Rec. For. Gr. Brit., p. 7, f. 14.

*L. striata, gracilicosta (tubulifera, Haidingeri)* Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 326—327, t. 3, ff. 41—45; t. 4, ff. 46—47; 1863, Crag. d'Anvers; Bull. Ac. Belg. (2) 15, p. 142, t. 1, ff. 10—11 (seminuda).

*L. tenuistriata* STACHE, 1865, Tert. Mergel Whaingarua Haf., Nov. Reise. geol. 1, p. 184, t. 22, f. 4.

? *L. grinzingensis* KARR., 1877, Hochquellen Wasserleit.; K. K. geol. Reichsanst. Abh. 9, p. 378, t. 16, f. 17.

*L. striata* Rss, 1870, Sept. Thon Pietzpuhl, Wien. Ak. S. Ber. 62, p. 467; v. SCHLICHT, t. 8, t. 1, ff. 7—11.

*L. striata* BRADY, 1884, For. Chall. Rep. 9, p. 460, t. 57, ff. 19, 22, 24, 28.

*L. striata* BRADY, PARK. & JONES, 1887, For. Abrohlos Bank, Lond. Zool. Soc. Transact. 12, 7, p. 222, t. 44, f. 28.

## \*\* costata, a precedente non distincta; interdum apiculata aut distoma.

*Vermiculum perlucidum* MONTAG, 1803, Test. Brit., p. 525, t. 14, f. 3.

*L. perlucida, striata, interrupta* (partim) WILL., 1858, Rec. For. Gr. Brit., p. 5, 6, 7, ff. 8, 10, 11.

? *L. bifrons* GUMB. (1868) 1870, For. Nordalp. Eocän, Münch. Akad. Wiss. 10, p. 607, t. 1, f. 9.

*L. filicosta, amphora* Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 328, t. 4, ff. 50—51; 57, Crag d'Anvers; Bull. Ac. Belg. (2) 15, p. 143, t. 1, f. 12.

*L. sulcata* PARK., JONES, 1865, N. Atl. Arct. Oc., Phil. Trans. 155, t. 13, f. 28.

*L. Lyellii* (Segu. 1862) BRADY, 1871, Brackish Water For., A. N. H. (4) 6, p. 292, t. 11, f. 7 (distoma?)

*L. sulcata* WRIGHT, 1877, Belf. nat. Field Club. Proceed., 1876—77, Append., t. 4, f. 10.

*L. sulcata* BRADY (partim), 1883, For. Chall. Rep., t. 57, ff. 23, 26; t. 58, ff. 4, 17.

*L. sulcata* v. *interrupta* ibid., t. 57, ff. 25, 27; t. 58, ff. 5—6.

PARK., JONES, BRADY, 1887, For. Abrohlos Bank, Trans. Lond. Zool. Soc. 12, 7, p. 222, t. 44, ff. 18, 22, 34.

*Lag. Lyellii* BALKW. & MILLETT, 1884, Journ. micr. & nat. Sc. 3, t. 2, f. 2.

Hab. ad oras Scandinaviæ metr. 50—350, passim. Long. mm. 0.40—0.80.

## formæ affines:

1. forma typicæ aut clavæformis, fundo striato aut costato.

**L. semistriata** WILL. Tab. XIII, figg. 737.

*L. striata* v. *semistriata* WILL., 1848, Monagr. Lagenid. Gr. Br.; A. N. H. (2) 1, p. 14, t. 1, ff. 9—10.

## \* fundo striato:

*Oolina striaticollis* D'ORB., 1839, For. Amér. mér., p. 21, t. 5, f. 14.

*Ovulina tenuis* (partim.), *lacryma* BORNEMANN, 1855, Sept. Thon v. Hermsdorf; Zeitschr. deut. geol. Gesellsch. 7, p. 317, t. 12, ff. 2—3.

*Ool. punctata, striatula* EGGER, 1857, Mioc. Ortenburg, Leonh. u. Bronns Jhb. 1856, p. 268, 269, t. 5, ff. 1—8.

*L. vulgaris* v. *perlucida* (partim), WILL., 1858, Rec. For. Gr. Brit., p. 5, 6, t. 1, f. 7.

*L. vulgaris* v. *semistriata, tenuis* Rss, 1862, Lagenideen; Wien. Ak. S. Ber. 46, pp. 322, 325, t. 2, ff. 18—21, t. 3, ff. 33—39; REUSS, 1863, Crag d'Anvers, Bull. Ac. Belg. (2) 15, p. 141, t. 1, ff. 3—9; v. SCHLICHT, For. Pietzpuhl, t. 3, f. 12.

*L. semilineata* WRIGHT, 1885, Proc. Belf. nat. Field Club, Append. 1885—86, p. 320, t. 26, f. 7.

## \*\* fundo costato:

*L. vulgaris* v. *semistriata* WILL., Rec. For. Gr. Brit., p. 6, t. 1, f. 9.

*L. sulcata* v. *semistriata* PARK. & JONES, 1865, N. Atl. und Arct. Oc. Phil. Trans. 155, t. 13, f. 23.

*L. tenuis* REUSS, 1870, v. SCHLICHT, Foram. Pietzpuhl, t. 2, ff. 12—18, 23.

*L. semistriata* BRADY, 1884, For. Chall. Rep., p. 465, t. 57, ff. 14, 16—17.

» » WRIGHT, 1886, Proc. Belf. nat. Field Club, Append. 1885—86, t. 26, f. 6.

Hab. Oceanum boreale rara, pygmæa, profund. metr. 1,700; in Skagerack sinu profund. metr. 700 (JOS. LINDAHL).

2. elliptico-claviformis aut lanciformis, striata vel costata var. *L. clavata* correspondens.

**L. gracilis** WILL., Tab. XIII, fig. 738.

**L. vulgaris** v. **gracilis** WILL., 1858, Rec. For. Gr. Brit., p. 7, t. 1, ff. 12—13.

Rss, 1862 (partim) Lagenid., Wien. Ak. S. Ber. 46, p. 331, t. 4, ff. 58—61; t. 5, f. 62; 1870, For. Sept. Thon. Pietzp. Wien. Ak. S. Ber. 62, p. 467, v. SCHLICHT, tab. 2, ff. 19—20, 24—25.

**L. sulcata** PARK. & JONES (partim), 1865, N. Atl. & Arct. Oc. Phil. Trans. 155, p. 351, t. 16, f. 7.

**L. gracilis** BRADY, 1884, For. Chall. Rep., p. 464, t. 58, ff. 2, 3, 7—10, 22—24 (alato-costata).

Hab. Skagerack metr. 530—890 (Théel, Bowallius); mare glaciale Spetsb. metr. 1,790. Long. mm. 0.25—0.50.

3. fusiformis, distoma, tenuissime, interdum obsolete striata.

**L. distoma** (PARK. & JONES) BRADY. Tab. XIII, figg. 739—740.

1864, Rhiz. Shetland., Trans. Lin. Soc. 24, p. 467, t. 48, f. 6.

? **L. lævis** v. **striata** PARK. & JONES, 1857, For. Coast of Norway, A. N. H. (2) 19, p. 279, t. 11, f. 24.

**L. sulcata** v. **distoma** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 356, t. 13, f. 20.

Hab. Skagerack metr. 60; mare arct. Spetsbergiæ & Groenlandiæ metr. 350—1,700. Long. mm. 0.50—2.00.

### **L. Hertwigiana.**

Plerumque pyriformis, sub-lævis, collo plerumque brevi, testa interne lacunosa, lacunis singulis ostio poriformi exeuntibus; ostia interdum in series disposita.

**Lag. hertwigiana** BRADY, 1884, Chall. Rep. Zool. 9, p. 470, t. 58, f. 36.

Hab. in Bukken sinu Norvegico profund. metr. 156—260, specimina pauca emaciata collegit Rev. NORMAN.

### **L. globosa** WALK. & JAC.

Tab. XIII, fig. 741.

Globosa, ovo-pyriformis aut elliptica, interdum anguste ovalis fere cylindrica; collo retracto (= Entosolenia) aut valde abbreviato, fundo interdum valde spinoso.

Forma ovalis (= Miliola ovum EHRENB. Microgeol. t. 27, f. 1 & c; Lag. ovum BRADY, For. Chall. Rep., t. 56, f. 5) non sat distincta.

**Serpula globosa** WALK. & BOYS, 1784, Test. micr., p. 3, t. 1, f. 8.

**Oolina inornata** D'ORB., 1839, For. Amér. mérid., p. 21, t. 5, f. 13.

**Lag. inornata** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 320, t. 1, f. 12.

**Cenchridium oliva** EHRENB., 1854, Microgeol., t. 24, ff. 3—4 (ovalis).

**Lag. perovalis** GÜMB., 1868, For. Nordalp. Eocän, Münch. Ak. Wiss. Abh. 10, 2, p. 606, t. 1, f. 7 (ovalis).

**L. ovum** MARSS, 1878, Schreibkreide Rügen; Mittheil. Greifswald. Nat. Verein 1878, 10, p. 120, t. 1, f. 1 (ovalis).

**Phialina oviformis** COSTA, 1854, Pal. Nap. 2, p. 123, t. 11, ff. 8—9.

**Entosolenia globosa** WILL., 1858, Rec. For. Gr. Brit., p. 8, t. 1, ff. 15—16.

**Ool. simplex** Rss, 1850, Kreidemerg. Lemberg; Haid. Nat. Wiss. Abh. 4, p. 22, t. 1, f. 2.

**L. globosa** Rss, 1862, Lagenid. Wien. Ak. S. Ber. 46, p. 318, t. 1, ff. 1—3; 1863, Crag d'Anvers, Bull. Ac.

Belge (2) 15, p. 143, t. 1, ff. 13—14.



- L. sulcata** v. **globosa** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 348, t. 13, f. 37; t. 16, f. 10.  
**L. globosa** RSS, 1870, For. Sept. Thon. Pietzpuhl; Wien. Ak. S. Ber. 62, p. 465--66; v. SCHLICHT, tab. 1, ff. 5--10.  
 BRADY, 1884, For. Chall. Rep. 9, p. 452, t. 56, ff. 1--4 (fig. 1 fere ovalis).  
 SHERR. & CHAPMAN, 1886, London Clay; Journ. Micr. Soc. 1886, p. 8, t. 14, f. 11; Red Chalk of Yorkshire etc. ibidem 1890, p. 555, t. 9, ff. 2, 4.

Hab. mare glaciale Spetsbergense metr 1,250--2,400 non frequens. Long. mm. 0.50--1.

## APPENDIX.

var. hispida:

- ? **Lag. hystrix** RSS, (1858) 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 335, t. 6, f. 80.  
 v. SCHLICHT, Septar. Thon. Pietzpuhl, t. 3, f. 28.  
**Ool. salentina** COSTA, 1854, Pal. Nap. 2, p. 118, t. 11, ff. 13--14.  
**Lag. hispida** WRIGHT, 1877, Rec. For. Down & Antrim; Proc. Belfast nat. Field Club 1876--77, Append. t. 4, f. 7.  
**L. aspera** RSS, 1861, Kreidetuff v. Maastrich, Wien. Ak. S. Ber. 44, p. 305, t. 1, f. 5.  
**L. aspera, rudis** RSS, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 335, 336, t. 6, ff. 81, 82.  
 REUSS, Crag d'Anwers, 1863, Bull. Ac. Belge (2) 15, p. 145, t. 1, f. 17.  
**L. Parkeriana** BRADY, 1876, Carb. & Perm. For., Pal. Soc. 30, p. 120, t. 8, ff. 1--5.  
**Entosolenia rudis** MOEB., 1880, Mauritius, p. 90, t. 8, f. 10.  
 ? **L. vulgaris ampulla distoma** RYM., JONES, 1872, Java Deep Sea Lagen., Trans. Lin. Soc. 30, p. 63, t. 19, f. 52.  
 ? **L. ampulla distoma** BRADY, 1884, For. Chall. Rep. 9, t. 57, f. 5.

## **L. sulcata** WALK. & BOYS.

Tab. XIII, figg. 742--744.

Globosa aut oviformis nunc striolata nunc costata, plerumque entosolenica aut collo brevi, fundo aliquando perforato aut area circulari laevi instructo.

Fig. 742: *L. lineata* WILLIAMS, e mari Groenlandico; *a*: facies oralis.

Fig. 743: *sulcata* auctorum, e mari arctico; *a*, *b*: facies orales duæ.

Fig. 744: minor, e Gullmaren sinu Bahusiæ; *a*: facies oralis.

\* striolata:

- Entosolenia globosa** var. **lineata** WILLIAMS, 1858, Rec. For. Gr. Brit. p. 9, t. 1, f. 17.  
**L. lineata** RSS, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 328, t. 4, f. 48.  
 BRADY, 1884, For. Chall. Rep., p. 461, t. 57, f. 13.  
 ? **L. striata** (partim) BRADY, ibid., t. 57, f. 30.  
**Miliol. striata** EHRENB., 1854, Microgeol., t. 24, f. 5.  
**Entosolenia costata** WILL., 1858, Rec. For. Gr. Brit., p. 9, t. 1, f. 18.  
**L. costata** RSS, 1862, Lagen., Wien. Ak. Sitz. Ber. 46, p. 329, t. 4, f. 54.  
**L. Villardeboana** RSS, 1863, Crag d'Anwers, Bull. Ac. Belg. (2) 15, p. 144, t. 1, f. 15.  
**Capitellina multistriata** MARSSON, 1878, Rügen. Schreibkr.; Greifswald. Nat. Verein. Mittheil. 1878, p. 123, t. 1, f. 3.  
**Lag. costata** WRIGHT, 1877, Rec. For. Down & Antrim, Proc. Belfast nat. Field Club 1876--77, Append. t. 4, f. 12.

\*\* *sulcata*:

- Vermiculum sulcatum** WALK. & BOYS, 1784, Test. min., p. 2, t. 1, f. 6.  
**L. costata** BALKW. & WRIGHT, 1885, Rec. Dublin For.; Trans. R. Ir. Ac. Sc. 28, p. 338, t. 14, ff. 3--5.  
**O. Villardeboana, Isabellæ, raricosta** D'ORB., 1839, Voy. Am. mérid., t. 5, ff. 4--5, 7--8, 10--11.

- L. Villardeboana, Isabellæ** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 329, t. 4, ff. 53, 55—56; v. SCHLICHT, t. 3, f. 19.
- L. mucronulata** Rss, ibid., p. 329, t. 4, f. 52; Rss, 1870, v. Schlichts tab. 3, f. 24.
- Ovul. elegantissima** BORNEM., 1855, Sept. Thon. Hermsdorf; Zeitschr. deutsch. geol. Gesellsch. 7, p. 316, t. 12, f. 1.
- L. sulcata** PARK. & JONES, 1865, N. Atl. & Aret. Oc., Phil. Trans. 155, p. 351, t. 13, ff. 28—30.
- BRADY, 1884, For. Chall. Rep., p. 462, t. 57, ff. 33—34.
- SHERBORN & CHAPMAN, 1886, London Clay, Journ. Micr. Soc. 1886, p. 745, t. 14, f. 18.
- L. acuticosta, subalata** Rss, 1861, Kreidetuff Maastrich; Wien. Ak. S. Ber. 44, p. 305, t. 1, f. 4; 1863, Lagenid., Wien. Ak. S. Ber. 46, p. 331, t. 5, f. 63.
- REUSS, 1870, Sept. Thon. Pietzpuhl, Wien. Ak. S. Ber. 62, p. 467, v. SCHLICHTS, tab. 3, f. 23.
- BRADY, 1884, For. Chall. Rep., p. 464, t. 57, ff. 31—32.
- BRADY, PARK., JONES, 1887, For. Abrohlos Bank, Trans. Lond. Zool. Soc. 12, p. 222, t. 44, ff. 26, 31.
- L. costifera** TERQUEM, 1886, For. et Ostrac. de l'Island, Bull. Soc. Zool. France, 1886, p. 330, t. 11, ff. 3, 4.

Hab. Skagerack, mare glaciale metr. 50—1.800 passim. Long. mm. 0.40—0.70.

formæ affines:

1. *sulcata*, basi colli areolata sive reticulata. Forma inter præcedentem et sequentem; a quibus vix discernenda.

**L. Williamsoni** ALCOCK, 1865.

BALKW. & WRIGHT, 1885, Rec. Dubl. For., Proc. R. Irish. Ac. Sc. 28, p. 339, t. 14, ff. 6—8.

WRIGHT, 1877, Rec. For. Down & Antrim; Proceed. Belfast nat. Field Club 1876—77, Append. t. 4, f. 14.

Hab. ad Spetsbergiam metr. 180; in Stoksund metr. 150—180 reperit Rev. Norman; habitus et magnitudo præcedentis.

2. *globosa* aut *pyriformis*, *sulcata*, irregulariter areolata, areolis squamiformibus, aut costis transversis, rectis vel curvatis, magis regulariter areolata; areolis magnitudine valde variantibus.

Aliquando seminuda, aut costis transversis dimidia parte destituta.

**L. squamosa** MONTAG, Tab. XIII, 745.

Fig. 745: c mari Spetsbergico profund. metr. 180; a: facies oralis.

**Vermiculum squamosum** MONTAG, 1803, Test. Brit., p. 526, t. 14, f. 2.

? **Entosolenia squamosa** WILLIAMS, 1858, Rec. Brit. For., p. 12, f. 29 (areolis fere hexagonis, a sequenti male distincta).

**Oolina melo** D'ORB., 1839, Voy. Amér. mérid., p. 20, t. 5, f. 9.

**Lag. globosa** var. **catenulata** PARK. & JONES, 1857, For. Coast of Norway; A. N. H. (2) 19, p. 278, t. 11, f. 26.

**Entosolenia squamosa** v. **catenulata** WILL., 1858, Rec. For. Gr. Brit., p. 13, t. 1, f. 31.

**L. catenulata** Rss, 1862, Lagenid. Wien. Ak. S. Ber. 46, p. 332, t. 6, ff. 75—76.

**L. sulcata** v. **melo** PARK. & JONES, 1865, N. Atl. & Aret. Oc. Phil. Trans. 155, p. 353, t. 13, ff. 33—36.

**L. squamosa** BRADY, 1884, For. Chall. Rep. 9, p. 471, t. 58, ff. 28—31.

**L. melo** BRADY, PARK. & JONES, 1888, For. Abrohlos Bank, Trans. Zool. Soc. London 12, 7, p. 222, t. 44, ff. 21, 24 (25, *sulcata-semiareolata*).

Hab. Gullmaren sinum Bahusiæ metr. 150 (WIRÉN & AURIWILLIUS), mare Spetsbergiæ metr. 180 inter varietatem præcedentem: Bukken Norvegiæ metr. 260—350 (NORMAN).

3. *globosa* aut *ovoidea*, areolis plus minusve distincte hexagonis, interdum in series dispositis, ornata; areolis magnitudine variantibus.

Interdum seminuda.

**L. hexagona** WILL., Tab. XIII, fig. 746.

Fig. 746: e Farsund Norwegiæ profund. metr. 60.

**Entosolenia squamosa** var. **hexagona** WILL., Rec. For. Gr. Brit., p. 13, t. 1, f. 32.**Entosol. scalariformis** WILL., l. cit., p. 13, f. 30.**L. reticulata, scalariformis** (partim), **favosa, geometrica** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, ff. 333, 334, t. 5, ff. 67—70, 72—73.**L. sulcata** v. **squamosa** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 354, t. 13, ff. 40—41, t. 16, f. 11.**L. hexagona** BRADY, 1884, For. Chall. Rep. 9, p. 472, t. 58, f. 33.

» » BALKWILL &amp; MILLETT, 1884, For. Galway; Journ. micr. Sc. 3, t. 1, f. 10.

Hab. ad oras Bahusiæ & Norwegiæ metr. 50—350 passim, inter *L. sulcatam*; inter minimas. Long. mm. 0.30—0.50.**L. apiculata** Rss.

Tab. XIII, fig. 747.

Plus minusve anguste elliptica aut pyriformis sæpe apiculata, interdum subcylindrica. A *L. globosa* WALK. non sat distincta; nomen REUSSI ineptum.

Fig. 747: exemplum e mari Spetsberg.; *a*: facies oralis; *b*, *c*: alia exempla eodem ex loco.

## \* non apiculata:

**Oolina elipsoides** COSTA (ex parte), 1854, Pal. Nap. 2, t. 11, f. 25.**Cenchridium dactylus** EHRENB., 1854, Microgeol., t. 24, ff. 1—2.? **Lag. Bittneri** KARR., 1877, Hochquellen Wasserleit., Abh. K. K. geol. Reichsanst. 9, p. 378, t. 16, f. 18.**L. emaciata** Rss, 1862, Lagen., Wien. Ak. S. Ber. 46, p. 319, t. 1, f. 9.

SHERB. &amp; CHAPM., 1890, Red Chalk of Yorksh., Journ. Micr. Soc. 1890, p. 555, t. 9, ff. 8, 12—13.

## \*\* apiculata:

**Oolina apiculata** Rss, 1850, Kreidemerg. Lemberg; Haid. Nat. Wiss. Abh. 4, p. 22, t. 1, f. 1.**L. apiculata** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 318, t. 1, ff. 4—8, 10—11.var. **elliptica** Rss, 1862, Nordd. Hils und Gault, Wien. Ak. S. Ber. 46, p. 35, t. 2, f. 2.**L. (Entosolenia) sulcata** var. **apiculata** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 358, t. 13, ff. 38—39.

PARK., JONES, BRADY, 1866, Crag. For. Pal. Soc. 19, p. 44, t. 1, f. 27.

Rss, 1870, For. Sept. Thon. Pietzpuhl Wien. Ak. S. Ber. 62, p. 466, v. SCHLICHT, t. 1, ff. 11—12, 14—18, 20, t. 2, f. 1.

v. HANTK., 1875, Cláv. Szaboi Schicht (separ.), p. 22, t. 12, ff. 7—9.

BRADY, 1884, For. Chall. Rep., p. 453, t. 56, ff. 15—18.

SHERBORN, CHAPMAN, 1886, Lond. Clay., Journ. Micr. Soc. 1886, p. 744, t. 14, f. 14; Red. Chalk of Yorksh. ibid., 1890, p. 555, t. 9, ff. 6—7, 9—11.

Hab. mare Spetsbergense metr. 1,780—4,600 sat frequens. Long. mm. 0.30—66

## formæ affines:

1. »apiculata» semistriata.

**L. semiornata** TERQU., 1886, For. Ostrac. de l'Islande; Bull. Soc. Zool. France 1886, p. 330, t. 1, f. 2.

Hab. mare boreale (TERQUEM.)

## APPENDIX.

2. Anguste pyriformis aut ellipsoidea, sæpe apiculata, striata.

**L. caudata** D'ORB.

**Oolina caudata** D'ORB., 1839, For. Voy. amér. mérid., p. 19, t. 5, f. 6.

**Lag. caudata** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 325, t. 3, f. 29.

**L. marginata** WALK. & BOYS.

Tab. XIII, figg. 748—751.

Sublenticularis, pyriformis aut ovalis, plus minusve compressa, sæpe marginata-carinata aut alata, apertura rimæformis; fundo interdum spinoso; aliquando trigona.

Figg. 748—751: facies lateralis.

Figg. a, a: facies oralis formarum ambarum.

Est Lag. globosa compressa, ab illa interdum difficillime distingvenda. Carina marginis nota non sat characteristica nec stabilis; fundo interdum subalato-crenato L. fimbriata BRADY, MILLETT, For. Galway, Journ. microsc. Sc. 3, p. 82, t. 2, f. 5 (ala quasi duplicata) non carinata, haud multum compressa:

**Fissurina lævigata** Rss, 1849, Neue For. Österr. Tert. Beck., Wien. Ak. Denkschr. 1, p. 366, t. 46, f. 1; 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 338, t. 6, f. 84; 1870, Sept. Thon. Pietzpuhl, Wien. Ak. S. Ber. 62, p. 470; v. SCHLICHT, t. 4, ff. 16—24.

**Fiss. globosa** REUSS, v. SCHLICHT, t. 5, ff. 4—6.

**Fiss. globosa** BORNEM., 1855, Sept. Thon. Hermsdorf; Zeitschr. deutsch. geol. Gesellsch. 7, p. 317, t. 12, f. 4 (fere globosa).

**Fiss. obtusa** EGGER, 1857, Mioc. Ortenburg; Leonh. & Bronns Jhb. 1857, p. 270, t. 5, ff. 16—19 (fere globosa).

» » REUSS, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 339—40, t. 5, ff. 4—6; t. 7, ff. 88, 92—93.

**L. lævigata** BRADY, 1884, For. Chali. Rep. Zool. 9, p. 473, t. 114, f. 8.

» » BALKW. & MILL., 1884, For. Galway, Journ. Micr. Sc. 3, t. 2, f. 6 (valde elongata); t. 3, f. 6 (trigona).

**L. faba** BALKW. & MILL., ibid. t. 2, f. 10 (non sat distincta).

\*\* plus minusve carinata:

Interdum plano- aut concavo convexa (= var. inæquilateralis WRIGHT).

**Serpula (Lagena) marginata** WALK. & BOYS, 1784, Test. min., p. 2, t. 1, f. 7.

**Ool. compressa** D'ORB., 1839, For. Amér. mérid., p. 18, t. 5, ff. 1—2.

? **Amygdalina calabra** COSTA, 1854, Pal. Nap. 2, p. 120, t. 11, f. 7.

**Fiss. alata** REUSS, 1851, Sept. Thon. Hermsdorf., Ztschr. deutsch. geol. Gesellsch. 3, p. 58, t. 3, f. 1; 1870, Wien. Ak. S. Ber. 62, p. 469, v. SCHLICHT, t. 4, ff. 7—9, 13—15; t. 5, ff. 19—21.

**Entosolenia marginata** (partim) WILL., 1858, Rec. For. Gr. Brit., p. 10, f. 21.

**Fiss. carinata, alata** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 338, 339, t. 6, f. 83; t. 7, ff. 86—87; v. SCHLICHT, t. 5, ff. 1—3.

**Lag. sulcata** var. **marginata** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 355, t. 13, ff. 42—43 (44?); t. 16, f. 12.

**Lag. marginata** WRIGHT, 1881, Rec. For. S. Donegal, Proc. Belf. nat. Field Cl. 1880—81, Append., t. 8, f. 4.

- L. marginata** BRADY, 1884, For. Chall. Rep., p. 476, t. 59, ff. 21—23.  
 BRADY, PARK. & JONES, 1888, For. Abrohlos Bank; Trans. Zool. Soc. London 12, 7, p. 222, t. 44, ff. 27, 29, 30, 32.  
**L. marginata** BALKW. & MILL., 1884, For. Galway, Journ. micr. Sc. 3, t. 3, f. 2.  
 » » var. **inæquilateralis** WRIGHT, 1885, For. Down & Antrim; Proc. Belf. nat. Field Club 1884—85, t. 26, f. 10.  
**L. trigono-elliptica** BALKW. & MILL., 1884, For. Galway; Journ. micr. Sc. 3, p. 13, t. 3, f. 8 (trigona).

Hab. ad oras Bahusiæ profund. metr. 20—150 passim; in sinu Codano metr. 160; mare Spetsbergicum metr. 2,500. Diam. mm. 0.18—0.50.

formæ affines:

1. *carinata* aut *alata*, *carina* triplicata; interdum *umbonata* (= var. *Walleriana* WRIGHT, Rec. For. Ireland., Trans. R. Ir. Ac. Sc. (3) No. 4, p. 481, t. 20, f. 8).

### **L. orbignyana** SEG.

- Fissurina orbignyana** SEG., 1862, For. monothal. Messina, p. 66, t. 2, ff. 25—26.  
 ? **Ool. compressa** D'ORB., 1846, Bass. tert. Vienne, p. 23, t. 21, ff. 1—2.  
**Entosolenia marginata** (partim) WILL., 1858, Rec. For. Gr. Brit., p. 110, ff. 19—20.  
**Lag. marginata** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 222, t. 2, ff. 22—23.  
 ? **Lag. tricincta** GÜMB., 1868, For. Nortalp. Eocän; Abh. Bay. Ak. Wissensch. 10, p. 606, t. 1, f. 8.  
**Fiss. carinata** Rss, 1870, For. Sept. Thon. Pietzpuhl; Wien. Ak. S. Ber. 62, p. 469, v. Schlicht, t. 5, ff. 13—15.  
**Lag. carinata** var. **orbignyana** WRIGHT, 1881, For. S. Donegal, Proc. Belf. nat. Field Club 1880—81, Append., t. 4, f. 5.  
**Lag. orbignyana** BRADY, 1884, For. Chall. Rep. Zool. 9, p. 484, t. 59, ff. 1 (18?) 24—25 (26?)  
 » » BALKW. & MILLETT, 1884, For. Galway, Journ. micr. Sc. 3, t. 3, f. 1.  
 BRADY, PARK. & JONES, 1888, For. Abrohlos Bank, Trans. Zool. Soc. London 12, 7, p. 222, t. 44, f. 20.

\* forma tri- aut quadrigona:

- Lag. trigono-marginata** PARK. & JONES, 1865, Phil. Trans. 155, t. 18, f. 1.  
 WRIGHT, 1877, Rec. For. Down & Antrim; Proc. Belfast, nat. Field Club 1876—77, App. t. 4, f. 8.  
**L. trigono-orbignyana** BALKW. & MILLETT, 1884, For. Galway, Journ. micr. Sc. 3, t. 3, f. 10.  
**L. quadrigono-orbignyana** BALKW. & MILLETT, *ibid.*, t. 4, f. 2.

2. *lenticularis*, *tricarinata*, plus minusve regulariter *costata* aut *semilineata*; interdum *trigona*.

- L. pulchella** BRADY, 1870, Brack. Water For. A. N. H. (4) 6, p. 294, t. 12, f. 1.  
 BALKW. & WRIGHT, 1885, Dubl. Rec. Foramf., Trans. R. Ir. Ac. Sc. 28, p. 342, t. 12, f. 19 (trigona).  
 BALKW. & MILLETT, 1884, For. Galw., Journ. micr. Sc. 3, t. 2, ff. 1, 3, *ibid.*, t. 3, f. 11 (trigona).

Hab. ad Sartorö, prope Bukken sinu Norvegiæ metr. 40—70, rara (NORMAN), pusilla, fere circularis, mm. 0.30.

## APPENDIX.

3. *ovalis* aut *elliptica*, *compressa* aut *subcompressa*, interdum *carinata*, sæpe *apiculata*.

*Entosol. marginata* v. *quadrata* WILLIAMS, Rec. For. Gr. Brit., t. 1, f. 27, a REUSS merito ad hanc relata.

Aliquando *trigona* = *Lag. trigono-oblonga* BALKW. & MILLETT, Journ. microsc. & nat. Sc. 1884, 3, p. 13, t. 3, f. 4.

**L. lucida** WILL.**Entosolenia marginata** v. **lucida** WILL., 1858, Rec. For. Gr. Brit., p. 10, f. 22.**L. lucida** REUSS, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 324, t. 2, f. 25.**Fissurina acuta, oblonga, apiculata** Rss, 1862, ibid., pp. 339—340, t. 6, f. 85; t. 7, ff. 89—91.**Lag. lucida** BALKW. & MILLETT, 1884, For. Galway; Journ. micr. Sc. 3, t. 2, f. 7.

Specimina sub nomine *Lag. bicarinata* TERQU. a Cel. Domino Jos. WRIGHT benignissime mihi communicata, valde compressa, collo abbreviato, a *Lag. lucida* WILL. nisi carina duplicata non diversa.

Hab. ad oras Anglicas.

**L. lagenoides** WILL.

Tab. XIII, fig. 752.

Compressa, endo-ectosolenica, marginata-alata, alæ tubulis transversis instructæ; interdum nunc seriatim punctata, nunc striata; aliquando trigona.

A *Lag. ornata* WILL. nisi alis hujus lacunosus distingvenda.**Entosolenia marginata** v. **lagenoides** WILL., 1858, Rec. For. Gr. Brit., p. 11, t. 1, ff. 25—26.**Lag. lagenoides** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 329, t. 2, ff. 27—28.

» » BRADY, 1884, For. Chall. Rep. Zool. 9, p. 479, t. 60, ff. 6, 7, 9, 12—14.

BALKW. &amp; WRIGHT, 1885, Rec. Dubl. For., Trans. R. Ir. Ac. Sc. 28, p. 341, t. 12, f. 22 (trifacialis).

BALKW. &amp; MILLETT, 1884, For. Galway, Journ. micr. Sc. 3, t. 2, f. 11.

Hab. mare Spetsbergiæ metr. 1,900 rara. Long. 0.28 mm.

**L. striatopunctata** PARK. & JONES.

Tab. XIII, fig. 753.

Pyriiformis, costata, costæ uni-biseraliter foveolatæ, nunc ecto-, nunc endosolenica aut endo-ectosolenica; collum interdum alatum.

Figg. 753, 753 a: e mari Spetsbergico profund. metr. 180.

**L. sulcata** var. **striatopunctata** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 350, t. 13, ff. 25—27.? **L. foveolata** Rss, 1862, Lagenid., Wien. Ak. S. Ber. 46, p. 332, t. 5, f. 65.**L. seriato-granulosa** Rss, 1870, For. Sept. Thon. Pictzpuhl; Wien. Ak. S. Ber. 62, p. 468; v. SCHLICHT, tab. 36, f. 20.**L. striatopunctata** BRADY, 1884, For. Chall. Rep. Zool. 9, p. 468, t. 58, f. 37 (40 var. *torquata* BRADY magis propinqua).

BALKW. &amp; WRIGHT, 1885, Rec. Dubl. Foranf., Trans. R. Irish Ac. Sc. 28, p. 339, t. 14, f. 19.

Hab. mare Spetsbergicum metr. 180 rara. Long. mm. 0.46—0.50.

**GLOBIGERINA** D'ORB.**G. bulloides** D'ORB.

Tab. XIV, figg. 754—762.

Subtrochoidea aut plano-convexa, anfractibus 2—3, segmentis anfr. ultimi 3—5, plerumque 4, plus minusve inflatis subglobosis; apertura umbilicali nunc vestibulum

magnum subquadratum exhibente, nunc valde coarctata. Testa sapissime areolata, spinosa aut spinoso-squamosa, poris nunc magnis nunc minutis.

Fig. 754: exempla duo minuta; *a, a*: facies orales; *b, b*: facies spirales.

Fig. 755: minima; *a*: facies oralis; *b*: facies spiralis.

Fig. 756: magis trochoidea; *a*: facies oralis; *b*: facies marginalis; omnes e mari Spetsbergensi profund. metr. 180—1,300.

Fig. 757: e mari Atlantico boreali profund. metr. 500; *a*: facies spiralis; *b*: facies marginalis.

Figg. 758—759: magis robusta, e mari Germanico profund. metr. 180; *a, a*: facies orales; *b*: facies marginalis.

Fig. 760: e mari Norvegico profund. metr. 200; poris crebris minutis; *a*: facies oralis.

Fig. 761: in *G. dubiam* EGGER vergens, e mari Caraibico profund. metr. 540; *a*: facies oralis; *b*: facies marginalis; *c*: exemplar magis trochoide ejusdem.

Fig. 762: in *G. æquilateralem* BRADY transiens, apertura valde coarctata; *a*: facies marginalis et oralis; *b*: facies umbilicalis; e mari Azorico profund. metr. 530.

D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 277, No. 1, Mod. No. 17, 76.

GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 92, ubi synonymi; t. 6, f. 203.

BRADY, 1884, Chall. Rep. Zool. 9, p. 593, t. 77, 79, f. 3—7.

BRADY, PARK. & JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 45, f. 15.

Hab. extra oras Sveciæ occidentales metr. 20—90; mare boreale atlant. & glaciale metr. 500—1,870 abundans; ad Spetsbergias metr. 350—1,250 (pygmæa). Diam. mm. 0.30—0.66.

**Orbulina** magnum globigerinæ segmentum embryonale est habenda maturum, quod prolem generare possit, quamobrem in *Orbulina* hanc inclusam haud raro invenis. Embryones istæ aut uniloculares, matri similes, sunt aut multiloculares, globigerinæformes. *Orbulinæ* singulæ maximæ nunquam fere embryones includunt, quasi nimis matura, ætate confectæ, seniles.

Naturali de connexu inter *Orbulinam* et *Globigerinam* interse præterea dissentierunt auctores. M. SCHULTZE et v. REUSS (Böhm. Gesellsch. Wissensch. Sitz. Ber. 1861, p. 13) *Orbulinam* segmentum *Globigerinæ* ultimum, disjunctum habuerunt. ALCOCK (Literar. & Philos. Soc. Manch. Mem. (3) 3, 1868, p. 175) *Orbulinam* sarcodi glomeramen *Globigerinæ* extra matrem collectum, ubi postea testa circumdatum ratione probabili censet.

DOM. SCHLUMBERGER (Comptes rendus d. Seances de l'Acad. Sciences April 1884) primus sententiam nostræ fere parem proposuit. Si *Globigerinæ* singulæ *Orbulinas*, et hæ *Globigerinas* pariunt, genera distincta non juste habenda.

DOM. SCHLUMBERGER (l. cit), BRADY (Challeng. Rep., p. 607, et præterea SCHACKO (Wiegmanns Arch. 49, p. 428) *orbulinas* magnitudine media (mm. 0.70) embryones *globigeriniformes* procreandi præcipue esse compotes observarunt, quæ potentia pro magnitudine superante decrescat.

formæ affines:

1. crassa, subglobosa, paullum depressa, anfractibus plerumque 2 indistinctis, segmentis anfr. ultimi 4, suturis indistinctis; apertura umbilico-suturali, semilunari, angusta.

**G. pachyderma** (EHRENB.) BRADY, 1884, Chall. Rep. Zool. 9, p. 600, t. 114, f. 19—20.

**Glob. bulloides** v. **borealis** BRADY, 1881, Österr. Ungar. N. pol. Exped., Wien. Ak. Dkschr. 43, p. 103; A. M. Nat. Hist. (5) 1, p. 435, t. 21, f. 10.

Hab. in sinibus Groenlandiæ passim; plerumque pygmæa.

2. facie spirali plana aut subplana, facie umbilicali tumida, anfractibus 3—4, segmentis anfr. ultimi 3—4, apertura plerumque suturali marginali, aut semimarginali magna, semilunari, interdum valde angusta fere oblitterata, poris minutis; superficie interdum scrobiculata; sæpe Pulleniæ obliqueloculata similis.

**G. inflata** D'ORB., Tab. XIV, figg. 763—765.

Fig. 763: facies umbilicalis; *a*: facies marginalis cum apertura; *b*: facies spiralis; e mari Azorico profund. metr. 530.

Fig. 764: facies spiralis; *a*: facies oralis; *b*: facies marginalis; e mari Germanico profund. metr. 180.

Fig. 765: facies spiralis; *a*: facies umbilicalis; *b*: facies marginalis, cum apertura angustissima; e mari Azorico profund. metr. 80—120.

D'ORB., 1839, For. Canar., p. 134, t. 2, ff. 7—9.

**Glob. bulloides** var. **inflata** PARK. & JONES, 1865, North Atlant. & Arct. Oc., Phil. Trans. 155, p. 367, t. 16, f. 16—17.

OWEN, 1867, Surface Fauna Mid. Ocean, Journ. Lin. Soc. (Zool.) 9, p. 148, t. 5, f. 13.

BRADY, 1884, Chall. Rep. Zool. 9, p. 601, t. 79, ff. 8—10.

Hab. mare Germanicum et sinum Codanum metr. 180, sat frequens. Diam. mm. 0.55—0.60.

## APPENDIX.

3. trochoidea, spira plus minusve prominens, anfractibus plerumque 3, singulo 3 camerato, cameris globosis, inflatis; apertura umbilicali, circulari quadrilatera aut semilunari, suturali; præterea aperturæ suturales semilunatæ paucæ supra facie spirali sparsæ.

Color dilute ruber, interdum albidus; a *Glob. triloba* REUSS non sat distincta; spira interdum applanata, interdum pyramidalis.

**G. rubra** D'ORB., Tab. XIV, fig. 766.

Fig. 766: facies umbilicalis; *a*: facies spiralis; *b*: facies marginalis, exempli spira minus elevata; e mari Caraibico.

D'ORB., 1839, For. Cuba, p. 94, t. 4, f. 12—14.

**Glob. rubra** VANDEN BROECK, Étude foranf. Barbade, Ann. Soc. Belg. microsc. 2, p. 125, t. 3, ff. 9—10.

» » BRADY, 1884, Chall. Rep. Zool. 9, p. 602, t. 79, ff. 11—16.

» » BRADY, PARK. & JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 45, f. 12.

? **Glob. canariensis** D'ORB., 1839, For. Canar., p. 133, t. 2, ff. 10—12.

Hab. mare Caraibicum locis certis abundans metr. 500 (Goës). Diam. mm. 1.25.

4. subsymmetrice planospiralis anfractibus  $1\frac{1}{2}$ —3, ultimo sæpe distante, 5—6 camerato, cameris subglobosis, singulis orificio late semilunari umbilicum versus aperto instructis.



**G. æquilateralis** BRADY, Tab. XIV, fig. 767.

Fig. 767: facies spiralis; *a*: facies umbilicalis; *b*: facies marginalis; e mari Azorico profund. metr. 530.

(1879) 1884, Chall. Rep., p. 605, t. 80, ff. 18—21.

**Glob. hirsuta** D'ORB., 1839, For. Canar., p. 133, t. 2, ff. 4—6.

GOËS, 1881, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 6, ff. 201—202.

Hab. mare Caraibicum metr. 500 (GOËS); ad Azores metr. 500 (SMITT & LJUNGMAN). Diam. mm. 0.50—1.

5. magis depressa, anfractu ultimo segmentis 5—7 prædita; præterea ut in typica, a qua non sat distincta, neque a *G. dubia* EGGER, magis inflata, distingui debet; poris sæpe minutis.

**G. cretacea** D'ORB., 1840, For. Craie bl. Paris, Mém. Soc. geol. France 4, p. 34, t. 3, ff. 12—14.

GOËS, 1881, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 6, ff. 204—206.

BRADY, 1884, Chall. Rep., p. 596, t. 82, f. 11 (fig. 10 potius ad typum referenda).

Hab. mare caraibicum metr. 500 passim, pygmæa mm. 0.15—0.30.

6. depressa, inflata, anfractu ultimo 3—4-camerata, segmentis globosis, ultimo (interdum et penultimo) conico-mitraformi, ab anfractu penultimo sæpe disjuncto; aperturæ aliquot magnæ.

**G. sacculifera** BRADY, 1884, Chall. Rep., p. 604, t. 80, ff. 11—17; t. 82, f. 4.

GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 6, ff. 197—200.

**Glob. helicina** CARPENTER, 1862, Introduct. Stud. Foramf., t. 12, f. 11.

Hab. mare Caraibicum metr. 300—700. Long. mm. 1.50.

7. globosa, compacta, anfractibus sæpe indistinctis, ultimo cameris 3, rare 4 prædito; apertura umbilicali magna, suturali femilunari, præterea aperturæ minores suturales in facie spirali sparsæ (interdum obsoletæ). Anfractus interni sæpe trigonaliter dispositi.

**G. conglobata** BRADY, Tab. XIV, figg. 768—769.

Fig. 768: facies umbilicalis; *a*: facies spiralis aperturis fere obsoletis; e mari Azorico.

Fig. 769: facies umbilicalis; *a*: facies spiralis, aperturis fere obsoletis aut minutis; e mari Caraibico.

BRADY, 1884, Chall. Rep., p. 603, t. 80, ff. 1—5, t. 82, f. 5.

GOËS, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 6, f. 196.

BRADY, PARK. & JONES, 1888, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 45, f. 13.

Hab. mare Caraibicum metr. 180—400 (GOËS); extra Azores insulas metr. 500 (SMITT, LJUNGMAN).

**SPHÆROIDINA** D'ORB.**S. bulloides** D'ORB.

Tab. XIV, fig. 770.

Globosa, interdum ovato-pyramidalis, anfractibus apparentibus 2 indistinctis, interdum 3, segmentis anfractus ultimi 3—4, tumidis, magnis; apertura rima semilunari aut semicirculari, suturali sæpe valvulata.

Sæpe nitida, poris minutis.

Fig. 770: facies oralis; *a*: facies spiralis; e mari Germanico.

D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 267, No. 1, Mod. 65.

? **Sexloculina Haueri** CZJZEK, 1847, For. Wienerbeck., Haidng. Nat. Wiss. Abh. 2, p. 149, t. 13, ff. 35—38.

GOËS, 1882, Ret. Rhiz. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 89, t. 6, ff. 190—193.

BRADY, 1884, Chall. Rep. Zool. 9, p. 620, t. 84, ff. 1—7.

BRADY, PARK. & JONES, 1888, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 45, ff. 9—11.

Hab. mare Germanicum metr. 180; Österfjord Norvegiæ metr. 180—360 passim (NORMAN). Diam. mm. 0.50—0.60.

**PULLENIA** PARK. & JONES.**P. sphaeroides** D'ORB.

Tab. XIV, figg. 771—772.

Subglobosa, paullum compressa, nautiloidea, nitida, segmentis 4, rare 5, suturis tenuibus, vix impressis; apertura rima angusta, transversa marginalis, suturalis.

Figg. 771—772; facies laterales; *a*, *a*: facies marginales; e mari Spetsbergico.

**Nonion sphaeroides** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 293, No. 1, Mod. 43.

**Pull. bulloides** Rss, 1870; v. SCHLICHT, Septar. Thon. Pietzpuhl, t. 20, ff. 1—2.

» **sphaeroides** BRADY, 1884, Chall. Rep., p. 615, t. 84, ff. 12—13.

» BRADY, PARK. & JONES, 1888, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 43, ff. 21, 24.

Hab. in Österfjord Norvegiæ metr. 670, passim (NORMAN), extra Spetsbergiam 72° Lat. bor. metr. 360 (v. OTTER). Diam. mm. 0.35.

forma affinis:

Magis compressa, segmentis apparentibus 4—5, suturis plerumque magis impressis, prætera ut in præcedente, qua sæpe paullo major.

**P. quinqueloba** Rss, Tab. XIV, fig. 773, a.

v. REUSS, 1851, Septar. Thon. Berlin; Zeitschr. deutsch. geol. Gesellsch. 3, t. 5, f. 31.

**P. compressiuscula** Rss, v. SCHLICHT, t. 20, ff. 5—6.

GOËS, 1881, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 8, ff. 248—249 (segm. extern. 4)

BRADY, 1884, Chall. Rep., p. 617, t. 84, ff. 14—15.

BRADY, PARK. & JONES, 1888, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 23, ff. 22, 23.

Hab. cum præcedente. Diam. mm. 0.50.

**PLANORBULINA** D'ORB.**P. lobatula** WALK. & JACOB.

Tab. XV, fig. 774.

Sæpissime affixa, plano- aut concavo-convexa, sæpe sinuose undata; facies aboralis s. spiralis anfractum solum ultimum plerumque exhibens, interdum obsolete umbilicata, segmentis 6—8; facies oralis anfractus 2—3 præbens; apertura rima suturalis, marginalis-extraumbilicalis.

Pori sæpe exigui, sparsi, interdum præcipue faciei oralis obsoleti.

Variat: magis compacta, segmentis anfractus ultimi usque ad 12.

Fig. 774: facies aboralis; *a*: facies marginalis; *b*: facies oralis, typicæ.

**Nautilus lobatulus** WALK. & JAC., 1798, ADAMS Essay microscop. (Kanmacher), p. 642, t. 14, f. 36.

**Truncatulina tuberculata** D'ORB., 1826; Tabl. méth., Ann. Sc. nat. 7, p. 279, No. 1, Mod. 37.

**Planulina incerta** D'ORB., ibid., p. 280, No. 1.

**Truncat. variabilis** REUSS, 1870; v. SCHLICHT, For. Septar. Thon. Pietzpuhl, t. 21, ff. 12—23, 27—29.

» **lobatula** BRADY, 1884, Chall. Rep. 9, p. 660, t. 92, f. 10; t. 93, ff. 1, 4—5; t. 115, ff. 4—5.

» » BRADY, PARK., JONES, 1887, Abrohlos Bank, Transact. Zool. Soc. London 12, 7, t. 45, f. 26.

» » SHERBORN & CHAPM., 1886, London Clay; Journ. R. micr. Soc. (2) 6, t. 16, f. 12.

Synonymiam ceteram vide GOËS, Ret. Rhizop. Caribb. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 96.

Obs. *Nautilus faretus* FICHT. & MOLL., 1803, Test. microsc., p. 64, t. 9, ff. g—i est forsan forma distincta, poris majoribus.

**Anomalina irregularis** TERQU., 1886, For. & Ostrac. Islande, Bullet. Soc. Zool. France 1886, p. 333, t. 11, ff. 14—15.

‡ **Truncat. globulosa** TERQU., ibid., t. 11, ff. 12—13.

**Truncat. lobatula** FORNASINI, 1893, For. marme messinesi, Mem. Accad. Sc. Institut. Bologna (5) 3, t. 2, ff. 15—16.

Hab. ad oras Sveciæ occidentales et Norvegiæ in algis lapidibusque adnata, profund. metr. 5—50 sat frequens; mare Groenlandicum profund. metr. 100—300. Diam. mm. 1.30 et ultra.

formæ affines:

1. cameris plus minusve irregulariter dispositis.

**P. variabilis** D'ORB.

**Truncatul. variabilis** D'ORB., 1826, Tabl. méth., Ann. Sc. nat. 7, p. 279; †1839, For. Canar. p. 135, t. 1, f. 29.

**Planorb. truncata** EGGER, 1857, Mioc. Ortenburg; Leonh. u. Bronns Jhb. 1857, p. 280, t. 10, ff. 15—17.

**Truncat. tuberosa** PARK., JONES, BRADY, 1871, Nomenclature Foram., A. M. N. Hist. (4) 8, p. 177, t. 12, f. 138.

» **innormalis** COSTA, 1854, Pal. Nap. 2, t. 21, f. 11.

» **variabilis** BRADY, 1884, Chall. Rep. 9, p. 661, t. 93, ff. 6, 7.

» » BRADY, PARK., JONES, 1887, Abrohlos Bank, Transact. Zool. Soc. London 12, 7, t. 45, f. 17.

Hab. e. præcedente rara præsertim in tropicis.

2. plus minusve elate conica, sæpe subcarinato-limbata, compacta, suturis interdum obscuris:

**P. refulgens** (MTF.) D'ORB. Tab. XV, figg. 775—776.

Fig. 775: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

Fig. 776: facies marginalis alius magis typicæ.

**Truncatulina refulgens** D'ORB., 1826, Tab. méthod. Ann. Sc. Nat. 7, p. 279, t. 13, ff. 8—11; Mod. 77, (cameris quam in nostra forma fere duplo frequentioribus).  
BRADY, 1884, Chall. Rep. 9, p. 659, t. 92, ff. 7—9.

Hab. in sinibus Norvegiæ, Spetsbergiæ, Groenlandiæ, metr. 120—250 passim. Diam. mm. 1—1.50.

3. deplanata, tenuis, suturis sæpe impressis, interdum limbatis, margine sæpe acuto, poris magnis; segmentis arcuatis; inter lobatulam et rotulam D'ORB. medium tenens; a Rotal. Schlönbachi Rss, 1862 (Nordd. Hils. u. Gault, Wien. Ak. S. Ber. 46, p. 84, t. 10, f. 5) vix distincta:

**P. Wüllerstorfi** SCHWAG. Tab. XV, fig. 777.

Fig. 777: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

**Anomal. Wüllerstorfi** SCHWAG., 1866, Novara Reise, Geol. 2, p. 258, t. 7, ff. 105—107.

**Anomal. tenuissima** Rss, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. S. Ber. 18, p. 244, t. 5, f. 60 et

**Truncat. costata** v. HKEN, 1877, For. Clávil. Szab. Sch. p. 73, t. 9, f. 2, non sat distinctæ.

**Wuellerstorfi** BRADY, 1884, Chall. Rep. Zool. 9, p. 662, t. 93, ff. 8, 9.

    UHLIG, 1886, Galliz. Carpat. Alttertiär. Mikr. Faun., Jhb. K. K. geol. Reichsanst. 36, p. 174, fig. 3.

Hab. mare glaciale et Atlanticum metr. 1,780—4,630 sat frequens (v. OTTER). Diam. mm. 0.80—1.50.

4. planoconvexa aut depresso biconvexa, facies aboralis sæpe plus minusve impressa aut centro subplano, suturis sæpe impressis; centrum faciei oralis interdum subunbonatum; forma nostra marginata; inter typicam et Ungarianam D'ORB. A Planorb. lobatula nisi spira faciei aboralis obsolete apparente et segmentis anfr. ultimi plerumque pluribus distincta:

A Rotal. Kalembergensi, Truncat. Boueana D'ORB., non sat distincta, illa libera, hæc affixa.

**P. Akneriana** D'ORB. Tab. XV, figg. 778—779.

Fig. 778: facies aboralis; *a*: facies marginalis; *b*: facies oralis exempli e Farsund, Norvegiæ, profund. metr. 35.

Fig. 779: facies aboralis; *a*: facies marginalis; *b*: facies oralis, exempli e sinu Hardanger, Norvegiæ, metr. 50.

**Rotal. Akneriana** D'ORB., 1846, Bass. tert. Vienne, p. 156, t. 8, ff. 13—15.

**Truncatulina Akneriana** BRADY, 1884, Chall. Rep., p. 663, t. 94, f. 8 (suturis faciei oralis sublimbatis; facies aboralis sparsim tuberculata.)

Hab. in sinibus Bahusiæ, Norvegiæ et Spetsbergensibus metr. 30—350 rara. Diam. mm. 0.75.

**P. Ungeriana** D'ORB.

Tab. XV, fig. 780.

Biconvexa aut subplano-convexa, altitudine valde varians, nunc tenuis, marginata, nunc magis distensa; segmentis anfractus ultimi 9—14; facies aboralis plus minusve — interdum obsolete — umbonata, umbone interdum granoso, prædita; facies oralis nunc obsolete umbilicata, nunc umbonata; poris magnitudine variantibus, formæ tropicæ minoribus, crebrioribus. Forma nostra lobatulæ proxima, a qua interdum vix distinguenda.

Fig. 780: facies aboralis; *a*: facies marginalis; *b*: facies oralis exempli formæ emaciatæ.

**Rotalina Ungeriana** D'ORB., 1846, Bass. tert. Vienne, p. 157, t. 8, ff. 16—18.

» **constricta** v. REUSS, 1861, Kreide v. Rügen; Wien. Ak. S. Ber. 44, p. 329, t. 6, f. 7: t. 7, f. 1.

**Truncat. Ungeriana** REUSS, 1870; v. SCHLICHT, Sept. Thon. Pietzpuhl, t. 21, ff. 1—3.

**Planorb. Ungeriana** GOËS, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 100, t. 7, ff. 234—240 (magis distensa; et variet. affixa); forma distensa a (Rotalia) **Truncat. rosea** (D'ORB.) BRADY, Chall. Rep., p. 667, t. 96, f. 1 vix distincta.

**Truncat. Ungeriana** BRADY, 1884, Chall. Rep. 9, p. 664, t. 94, f. 9.

» **pygmæa** (HÆKEN) BRADY *ibid.*, p. 666, t. 95, ff. 9—10 vix specificè distincta.

**Planorb. Ungeriana** SHERB. & CHAPM., 1886, London Clay, Journ. R. microsc. Soc. (2) 6, t. 16, f. 16.

Hab. ad oras Bahusiæ Sveciæ profund. metr. 50 minus frequens, præterea mare Germanicum et sinum Codanum metr. 180—890 (THÉEL), mare Atlant. boreale metr. 1.780 (LINDAHL).

**P. coronata** PARK. & JONES.

Tab. XV, figg. 781—783.

Truncato-conica aut plano-spiralis, discoidea aut plano-convexa, umbilicis concavis, depressis plerumque plicatis aut rugosis, spira anfractuum laterum amborum nuda aut subnuda, rugis tamen obscura, margine late truncato aut subrotundato, segmentis anfr. ultimi 8—9; apertura marginalis, suturalis, pori interdum obstructi, magnitudine medii.

Facies aboralis interdum valde angusta, quare forma Pl. refulgenti valde propinqua exstat, ex qua forsitan sit derivata.

Fig. 781: facies oralis, aporata.

Fig. 782: facies marginalis.

Fig. 783: facies aboralis exempli alius refulgenti similis; *a*: facies marginalis ejusdem.

**Anomalina coronata** PARK. & JONES, 1857, For. Coast Norway, A. M. N. H. (2) 19, p. 294, t. 10, ff. 15, 16.

» » BRADY, 1864, Rhizop. Shetland, Trans. Lin. Soc. 24, p. 469, t. 48, f. 13.

**Planorb. farcta** v. **coronata** PARK. & JONES, 1865, North Atl. & Arct. Oc., Phil. Transact. 155, p. 383, t. 14, ff. 7—11.

**Anomalina coronata** BRADY, 1884, Chall. Rep., p. 675, t. 97, ff. 1—2.

» » FORNASINI, 1893, For. marne messinesi; Mem. Accad. Sc. Instit. Bologna (5) 3, t. 2, f. 17.

Hab. ad oras Norvegiæ profund. metr. 100—530 haud rara. Diam. 1—1.20.

**P. ariminensis** D'ORB.

Tab. XV, figg. 784—785.

Plana, compressa, spiralis, segmentis anfract. ultimi 8—11, suturis saepe limbatis, interdum impressis, margine truncato aut subcarinato, latus utrumque alterum alteri fere simile, apertura marginali, suturali.

Fig. 784: facies aboralis; *a*: facies marginalis; *b*: facies oralis exempli e mari Azorico profund. metr. 530.

Fig. 785: facies oralis; *a*: facies marginalis, e mari Germanico profund. metr. 180.

(**Planulina**) **ariminensis** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 280, t. 14, ff. 1—3 bis, Mod. 49.

**Planorb. tuberosa** v. **Ariminensis** GOËS, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 98, t. 7, ff. 228—233.

**Anomalina ariminensis** BRADY, 1884, Chall. Rep. 9, p. 674, t. 93, ff. 10—11.

BRADY, PARK., JONES, 1888, Abroblos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 45, ff. 20—22.

Hab. mare Germanicum profund. metr. 180 rara; prætera ad Azores insulas metr. 530 (SMITT & LJUNGMAN).  
Diam. 0.87—1.

**P. mediterranensis** D'ORB.

Tab. XV, fig. 786.

Applanata, affixa, juvenis regulariter spiralis, adulta cameris irregulariter cyclice dispositis; facies affixa sive oralis sola spiram exhibens; hyalina, cameris centralibus fulvis.

Fig. 786: facies aboralis; *a*: facies marginalis.

D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 280, Mod. 79; 1846, Bass. tert. Vienne, p. 166, t. 9, ff. 15—17.

**Planorb. farcta** var. **vulgaris** GOËS, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 97, t. 7, f. 227. Synonymia ibid., ab qua Pl. variabilis D'ORB. abstrahenda est.

» **mediterranensis** BRADY, 1884, Chall. Rep., p. 656, t. 92, ff. 1—3.

Hab. ad oras Sveciæ et Norvegiæ profund. metr. 50—180, haud frequens. Diam. mm. 0.50—0.80.

**GYPSINA** CARTER.**G. inhærens** SCHULTZE.

Tab. XV, fig. 787.

Affixa, plus minusve depressa, irregulariter expansa, stadium juvenile segmentis saepe planospiraliter dispositis, præterea irregulariter acervatis, polygonis aut semiglobosis, apertura nulla, poris magnis, uti apud Planorbulinas, in facie affixa saepe obsoletis, margine excepto.

Fig. 787: facies superna sive libera; *a*: facies marginalis; *b*: facies affixa, exempli e mari Bahusia.

**Acervulina inhærens** SCHULTZE, 1854, Organ. Polythal. p. 68, t. 6, f. 12.

**Tinoporos lucidus** WRIGHT, 1877, Rec. For. Down & Antrim; Proc. Belfast. nat. Field. Club 1876—77; App. p. 105, t. 4, ff. 4—5.

**Gyps. inhærens** BRADY, 1884, Chall. Rep. 9, p. 718, t. 102, ff. 1—6.

Hab. ad oras Bahusiæ profund. metr. 40—50 in testaceis affixa, passim. Lat. mm. 1.80.

**G. vesicularis** PARK. & JONES var. **intermedia**.

Tab. XV, fig. 788.

Plerumque affixa, truncato-subconica, ovoidea aut subglobularis, foveolato-areolata; cameris magnitudine variantibus, poris nunc obsoletis aut minoribus, nunc majoribus. Inter Gyps. globulum (Rss) BRADY et vesicularem PARK. & JONES medium tenet.

Fig. 788: facies libera; *b*: facies affixa; *c*: sectio transversa.

**Orbitolina vesicularis** PARK. & JONES, 1866, Nomenclat. Foram., A. M. N. H. (3) 6, p. 31.

**Tinoporus lævis** CARP., 1861, Research. For., Phil. Transact. 150, p. 559, t. 21, ff. 1—3.

    "    **vesicularis** CARP., 1862, Introd. Foramf., p. 224, t. 15, ff. 1—4.

    "    **lævis** BRADY, 1864, Rhizop. Shetl., Trans. Lin. Soc. 24, p. 470, t. 48, f. 17.

**Gyps. vesicularis** BRADY, 1884, Chall. Rep. 9, p. 718, t. 101, ff. 9—12.

Hab. ad oras Bahusie et Norvegiæ profund. metr. 20—70 haud rara. Diam. 1.60.

**RUPERTIA** WALLICH.**R. stabilis** WALLICH.

Tab. XV, fig. 789.

Affixa, producto-spiralis, obovata aut clavata, plus minusve pedunculata, basi subexpansa; anfractibus 2—3, raptim incrementibus, interdum 5, segmentis anfractuuum 4—6 singulorum, sæpe plus minusve inflatis. Apertura, fissura semilunaris, marginalis, obliqua interdum in vestibulum umbilicale magnum spectans. Pori nunc crebri nunc sparsi, nunc minores nunc magni, interdum in series dispositi. Nunc subhyalina, nunc calcarea nitida, nunc valde incrustata suturis obsoletis.

Fig. 789: facies oralis; *a*: facies lateralis; *b*: basis affixa, subtus; *c*: sectio transversa anfr. medii.

WALLICH, 1877, On a new sessile Foramf. fr. the N. Atlantic., A. M. N. H. (4) 19, p. 501, t. 20.

SCHLUMBERGER, 1883, Note s. For. nouv. golfe de Gascogne; Feuille des jeunes naturalistes 13, p. 27, t. 2, ff. 6—8.

BRADY, 1884, Chall. Rep., p. 680, t. 98, ff. 1—12.

Hab. mare Spetsbergicum metr. 1,300; Atlanticum boreale profund. metr. 1,750 (LINDAHL); altitudo min. 1.50.

**PATELLINA** WILLIAMS.**P. corrugata** WILL.

Conica, patelliformis, orbicularis aut subovata, infra concava, segmentis plus minusve indistincte biserialibus, amplectentibus; stadio larvali apicali irregulariter spirali, anfractibus circiter 2; segmentis sequentibus septis incompletis, ut costis aut rugis verticalibus externe indicatis, divisis. Corpus testæ internæ ex cameris irregularibus constitutum.

WILLIAMS, 1858, Rec. For. Gr. Brit., p. 46, t. 3, ff. 86—89.

CARPENTER, 1862, Introd. Stud. Foramf., p. 230, f. 13, ff. 16—17 (segmentis cyclicis).

BRADY, 1884, Chall. Rep. 9, p. 634, t. 86, ff. 1—7.

PARK. & JONES, 1865, North. Atl. & Arct. Oc., Phil. Trans. 155, t. 15, f. 29.

Hab. ad Groenlandiam profund. metr. 90 rara (NORMAN).

## DISCORBINA PARK. & JONES.

### D. Berthelotiana D'ORB.

Tab. XV, fig. 790.

Depressa complanata tenuis, hyalina, facie aborali leniter concava nunc umbilicata, nunc paullum impressa, anfractu ultimo præcedentem nunc totum nunc ex parte obtegente; segmentis anfr. ultimi 5—9; facie orali excavata, interdum subumbilicata; suturis, hujus interdum uti costis prominentibus, distinctis; poris minutis.

Fig. 790: facies aboralis; *a*: facies marginalis; *b*: facies oralis exempli e mari Germanico.

**Rosalina** D'ORB., 1839, For. Canar., p. 135, t. 1, ff. 28—30.

GOES, 1882, Retic. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 105, t. 8, ff. 266—268.

BRADY, 1884, Chall. Rep., p. 650, t. 89, ff. 10—12.

**Discorb. baconica** v. HKEN, 1875, For. Cláv. Szab. Sch., Mittheil. Jhrb. ungar. geol. Aust. 4, p. 76, t. 10, f. 3 (major, limbata, carinata).

• **rarescens** BRADY, 1884, Chall. Rep. 9, p. 651, t. 90, ff. 2—3 (carinata vel carinato-alata).

• **Bertheloti** BRADY, PARK. & JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Loud. 12, 7, t. 46, ff. 7—8.

Hab. mare Germanicum profund. metr. 180 passim; ad oras Norvegicas metr. 90—540 (NORMAN, v. YHLEN). Diam. mm. 0.50—0.60.

### D. parisiensis D'ORB.

Tab. XV, fig. 791.

Convexa aut planoconvexa, tenuis, obtuse marginata, spira nunc aperta nunc anfractu ultimo celata, segmentis hujus 6—12, arcuatis, plus minusve angustatis; facie infera s. orali tuberculis minutissimis, in radios dispositis, instructa; suturis sæpe sinuosis.

Forma nostra suturis paullum impressis, interdum valde deplanata, fere discoidalis, poris sparsis, magnitudine mediis.

Variet segmentis angustioribus magis numerosis = D. opercularis D'ORB.

Fig. 791: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

**Rosalina** D'ORB., 1826, Tab. method; An. Sc. nat. 7, p. 271, No. 5, Mod. 38.

PARKER, JONES, BRADY, 1866, Crag. For., Palæogr. Soc. 19, t. 2, ff. 13—15.

WRIGHT, 1877, For. Down & Antrim, Proc. Belfast Nat. Field Club 1876—77, Append., p. 105, t. 4, f. 1.

BRADY, 1884, Chall. Rep. 9, p. 648, t. 90, ff. 5, 6, 9—12.

Hab. ad insulam Hven profund. metr. 20, rara (THÉEL & TRYBOM). Diam. mm. 0.45.



**D. rosacea** D'ORB.

Tab. XV, fig. 792.

Trochoidea, late conica, hyalina, obtuse marginata, subtus subplana aut paullum excavata, anfractibus 3—4, ultimo 4—7 segmentato, facie orali saepe lobulis umbilicalibus instructa ("asterisante"), poris minutis aut mediis saepe marginalibus; a Discorbina (Rotalia) turbone D'ORB. nisi statura magis depressa non distincta, quod valde varians.

Variat segmentis angustioribus, semilunaribus, amplectentibus, suturis saepe limbatis. Fig. 792: facies aboralis; *a*: facies marginalis; *b*: facies oralis; *c* mari Bahusiae.

**Rotalia** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 273, No. 15, Mod. 39.

**Asterigerina planorbis** D'ORB., 1846, For. Bass. tert. Vienne, p. 205, t. 11, ff. 1—3 (segmentis angustis amplectentibus).

**Rotal. mamilla** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 54, t. 4, ff. 109—111 (segment. amplectentibus, poris marginalibus limbata).

? **Discorb. stellata** Rss, 1867, Steinsalzablag. Wieliczka, Wien. Ak. S. Ber. 55, p. 101, t. 5, f. 1 (paullum limbata).

? **Discorb. squamula** Rss, ibid., t. 5, f. 2 (subtus limbatis suturis).

**Discorb. rosacea** BRADY, 1884, Chall. Rep. 9, p. 644, t. 87, ff. 1, 4 (enfr. Discorb. turbonis figuram ibidem tab. 87, f. 8).

Obs. **Discorb. orbicularis** (TERQUEM) BRADY, Chall. Rep., p. 647, t. 88, ff. 4—8, segmentis valde angustis amplectentibus, in anfractu ultimo 3—4, ab Asterigerina planorbi EGGER 1857, Mioc. Ortenburg, Leonh. & Bronns Jhb. 1857, p. 281, t. 11, ff. 8—10 nec a Rosal. Auberii D'ORB., 1839, For. Cuba, p. 94, t. 4, ff. 5—8 sat distincta, est varietas D. rosaceae habenda. Inter ambas medium tenet D. rosacea GOËS, 1882, Retie. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 105, t. 8, ff. 251—257.

**Rosalina squamiformis** Rss, 1854, Kreide Ostalp., Wien. Ak. DkSchr. 7, p. 69, t. 26, f. 2 (ab qua nostra nisi lobulis umbilicalibus destituta, non distincta).

**Rotalina nitida** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 54, t. 4, ff. 106—108 verosimiliter ad D. rosaceam referenda; a BRADY ad Rotaliam relata: Chall. Rep., p. 705; Synopsis Brit. Rec. For., Journ. Roy. microsc. Soc. 1887, p. 293.

Hab. in Skagerack sinus Codani profund. metr. 50 rara (HL. THÉEL). Diam. mm. 0.50—0.60.

**D. globularis** D'ORB.

Tab. XV, fig. 793.

Trochoidea, facie aborali convexa, spiram totam exhibente, anfractibus 2—3—3 $\frac{1}{2}$ , segmentis ultimi 5—7, margine obtuso, poris majoribus; facie orali saepe aporata, plerumque concava aut subplana, interdum irregulariter impressa et tumida, umbilico irregulari; suturis saepe impressis, interdum sinuosis.

Color testae plerumque flavidus.

Fig. 793: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

**Rosalina** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 271, t. 13, ff. 1—4, Mod. 69.

**Rot. semiporata** EGGER, 1857, LEONH. & BRONNS Jhb. 1857, p. 276, t. 8, ff. 1—3.

**concamerata** WILL. (ex parte), 1858, Rec. For. Gr. Brit., p. 53, t. 4, ff. 104—105.

**Disc. vesicularis** v. **globularis** PARK. & JONES, 1865, North Atl. & Arct. Oc., Phil. Transact. 155, p. 386, t. 14, ff. 22—23.

**globularis** BRADY, 1884, Chall. Rep. 9, p. 643, t. 86, ff. 8, 13.

Hab. ad oras occidentales Sveciae et Norvegiae inter algas profund. metr. 3—50, vulgaris. Diam. mm. 1—2.

Variat statura minore, poris exiguis:

*Discorbina* (*Rosalina*) *Vilardeboana*, *araucana* D'ORB., Tab. XVI, fig. 796;  
exemplum e mari Azorico; *a*: facies marginalis; *b*: facies oralis.

D'ORB., 1839, Voy. Amér. mérid. 5, p. 44, t. 6, ff. 13—18.

BRADY, Chall. Rep., p. 645, t. 86, ff. 9—12; t. 88, f. 2.

### **D. obtusa** D'ORB.

Tab. XV, figg. 794—795.

Planoconvexa, tumidiuscula, anfractibus faciei aboralis  $1\frac{1}{2}$ — $2\frac{1}{2}$ , ultimo segmentis 5—8, spiram nunc subtegente, nunc spiram totam nudam revelante, segmentis tumidiusculis, margine obtuso, aut rotundato; facie orali subplana tuberculis umbilicalibus et striis radiantibus prædita, interdum aporata; poris mediis aut minutis; facies aboralis interdum tuberculata.

Fig. 794: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

Fig. 795: juvenis; *a*: facies marginalis; *b*: facies oralis.

*Discorbina pulvinata* BRADY, Chall. Rep. Zool. 9, t. 88, f. 10, facie aborali tuberculata, valde propinqua, forsan eadem.

*Rosalina obtusa* D'ORB., 1846, Bass. tert. Vienne, p. 179, t. 11, ff. 4—6.

*Discorbina vesicularis* var. *obtusa* PARK. & JONES, 1865, N. Atlant. & Arct. Oc., Phil. Trans. 155, p. 386, t. 14, ff. 18—19.

? *Discorb. obtusa* BRADY, 1884, Chall. Rep. Zool. 9, p. 644, t. 91, f. 9 (sine striis tuberculisque).

Hab. ad Spetsbergias metr. 40 passim in Grantia. Diam. 0.50—1.80.

## PULVINULINA PARK. & JONES.

### **P. repanda** FICHT. & MOLL.

Tab. XVI, fig. 801.

Rataliformis, biconvexa aut subplano-convexa, facies spiralis anfractus 3 exhibens, segm. anfr. ultimi 6—10, suturis sæpe sublimbatis; facies oralis nunc vestibulo magno aperturali instructa, nunc apertura coarctata umbone obtecta, suturis sæpe "asterisantibus".

Faciei ambæ interdum scabræ sicuti apud varietatem concameratam MONTAG.

Fig. 801: facies aboralis; *a*: facies marginalis; *b*: facies oralis, exemplum e mari Azorico.

*Nautilus repandus* FICHT. & MOLL., 1803, Testac. microsc., p. 35, t. 3, ff. a—d.

*Pulv. repanda* GOES, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 110, t. 8, ff. 276—282.

BRADY, 1884, Chall. Rep., p. 684, t. 104, f. 18.

? *exigua* BRADY, ibid., p. 696, t. 103, ff. 13—14, non sat distincta.

? *P. repanda* SHERB. & CHAPM., 1886, London Clay, Journ. R. Micr. Soc. (2) 6, t. 16, f. 18.

Hab. ad Azores insulas profund. metr. 50—90 (SMITT & LJUNGMAN). Diam. mm. 2.25.

forma affinis:

Valde limbata, saepe plus minusve scabra aut tuberculata:

**P. (Rotalina) concamerata** (MONTAG) WILLIAMS, 1858, Rec. For. Gr. Brit., p. 52, t. 4, ff. 102—103.  
**Pulv. repanda** var. **concamerata** BRADY, 1884, Chall. Rep. 9, p. 685, t. 104, f. 19.

Hab. mare Anglicum.

### **P. punctulata** D'ORB.

Tab. XVI, figg. 797—800.

Affixa, expansa, plano- aut concavo-convexa, depressa, segmentis anfr. ultimi 6—8, irregulariter inflatis; facies oralis suturis sinuatis, dentatis aut laceratis, obsolete tuberculata, interdum poris magnis instructa.

Inter congenere maxima, juvenes suturis saepe sublimbatis. Interdum pygmaea, hyalina nitida.

Fig. 797: facies aboralis; *a*: facies marginalis; *b*: facies oralis, exempli e mari Germanico.

Fig. 798: juvenis e mari Azorico profund. metr. 600—780.

Fig. 799: e mari Germanico.

Fig. 800: pygmaea e mari Azorico profund. metr. 530.

**Rotalia** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 273, No. 25, Mod. 12.

**Rosalina vesicularis** PARK. & JONES, 1857, For. Coast of Norway, A. M. Nat. H. (2) 19, p. 292, t. 10, ff. 22—24.

**Pulv. repanda** v. **punctulata** PARK. & JONES, 1865, N. Atl. & Arct. Ocean, Philos. Transact. 155, p. 394, t. 14, ff. 12, 13.

» **repanda** PARK. & JONES, BRADY, 1866, Crag. For.; Palaeogr. Soc. 19, t. 2, ff. 22—24.

» **punctulata** BRADY, 1884, Chall. Rep. 9, p. 685, t. 104, f. 17.

Obs. **P. sacculata** PARK. & JONES, 1876 (A. M. Nat. H. (4) 17, p. 284, ff. 1—3) ab hac non sat distincta videtur.

Hab. in mari Germanico in Oculinis affixa, metr. 350 nec non in sinibus Norvegicis profund. metr. 90 (NORMAN).  
 Diam. 3—4 mm.

formæ affines:

1. affixa planoconvexa, suturis praesertim faciei aboralis late limbatis, facies oralis umbilico saepe lobato.

A juvenibus **P. punctulata** nisi limbatione lata suturarum non distincta; suturis juvenum tenuiter limbatis:

**P. concentrica** PARK. & JONES, Tab. XVI, figg. 802—803.

Fig. 802: facies aboralis; *a*: facies marginalis; *b*: facies oralis exempli e sinu Bergensium Norvegiae.

Fig. 803: e mari Azorico profund. metr. 75.

**Pulv. concentrica** BRADY, 1864, Rhizop. Shetland, Trans. Lin. Soc. 24, p. 470, t. 48, f. 14; 1884, Chall. Rep., p. 686, t. 105, f. 1.

» » UHLIG, 1886, Westgaliz. Karpath. Alttertiär., Jhb. K. K. geol. Reichsanst. 36, p. 190, t. 3, ff. 3, 4.

Hab. in sinibus Norvegiae passim profund. metr. 90—180 (LILLIEBORG, NORMAN).

**P. dispansa** BRADY.

Tab. XVI, figg. 804—806.

Nunc affixa nunc libera, plus minusve irregulariter lobata, segmentis plus minusve irregulariter dispositis, spira oblecta verrucosa; facies oralis plerumque laevis poris magnis sparsis praedita.

Juvenes magis regulariter constructa.

Fig. 804: magis regularis; *a*: facies marginalis; *b*: facies oralis.

Fig. 805: juvenis.

Fig. 806: valde irregularis; *a*: facies marginalis; *b*: facies oralis.

**Pulv. dispansa** BRADY, 1884. Chall. Rep. 9, p. 687, t. 115, f. 3.

Hab. ad Azores insulas metr. 50—600 (SMITT, LJUNGMAN). Diam. 2.25.

**P. Karsteni** Rss.

Tab. XVI, fig. 807.

Trochoidea, anfractibus  $3\frac{1}{2}$ —4, segmentis anfr. ultimi 7—8, semiamplectentibus; facies oralis convexa aut subplana, suturis rectis impressis, rare limbatis, umbone obsoleto; margine sublobato, limbato.

A Pulv. Schreibersii D'ORB. non sat distincta.

Fig. 807: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

**Rotal. Karsteni** Rss, 1855, Kreide Mecklenb., Zeitschr. deut. geol. Gesellsch. 7, p. 273, t. 9, f. 6.

**Pulvin. Karsteni** BRADY, 1864, Rhizop. Shetl., Transact. Lin. Soc. 24, p. 470, t. 48, f. 15.

\* **repanda** var. **Karsteni** PARK. & JONES, 1865, North. Atlant. & Arct. Oc., Philos. Transact. 155, p. 396, t. 14, ff. 14, 15, 17; t. 16, ff. 38—40.

\* **karsteni** BRADY, 1884, Chall. Rep. Zool. 9, p. 698, t. 105, ff. 8, 9.

Hab. in sinibus Spetsbergiae metr. 180 passim, ad Groenlandiam metr. 20, mare Atlant. boreale metr. 270 (LINDAHL). Diam. mm. 0.60—0.80.

**P. elegans** D'ORB.

Tab. XVI, fig. 808.

Trochoidea, plus minusve aequaliter biconvexa, marginata, anfractibus 3—4, segmentis anfract. ultimi 7—9, latere utroque saepe umbonato, suturis plane aut elevate limbatis; facies oralis saepe »stellata», apertura saepe rima apicalis marginis segmenti ultimi.

Variat suturis non limbatis. Recens testa vitrea, hyalina, albide variegata.

Fig. 808: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

**Rotal. elegans** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 276, No. 54.

**Pulv. elegans** GOËS, 1882, Ret. Rhiz. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, p. 111, t. 8, ff. 283—285

**Rotalina pleurostomata** SCHLUMBERG. For. d. Golfe Gascogne, Feuille d. Jeunes natur. 13, p. 27, t. 3, f. 5.

**Pulv. Partschiana** Rss, 1870; v. SCHLICHT, t. 20, ff. 23—25, 29—31.

» **partschiana, elegans** BRADY, 1884, Chall. Rep. 9, p. 699, t. 105, ff. 3—6.

» » BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 46, f. 2.

» » FORNASINI, 1893, For. marne messin; Mem. Accad. Sc. Institut. Bologna (5) 3, t. 2, f. 18.

Hab. mare Atlanticum boreale metr. 1,750 rara (LINDAHL). Diam. mm. 0.90; ad Spetsbergiam, Groenlandiam pygmæa.

### **P. auricula** FICHT. & MOLL.

Tab. XVI, figg. 809—810.

Ovalis plus minusve elongata, inæqualiter biconvexa, compressa, sæpe marginata, anfractibus  $1\frac{1}{2}$ —2, segmentis anfr. ultimi 7—10, segmento ultimo facie orali subventricosa, umbilicum plerumque obtegente; color sæpe flavescens.

Var. segmento ultimo decurrenti spiram superante = Valvul. cordiformis COSTA; ? Rotal. deformis D'ORB. etc.

Fig. 809: facies aboralis; *a*: facies marginalis; *b*: facies oralis.

Fig. 810: forma Brongniartii D'ORB.; *b*: facies oralis.

**Nautilus auricula** var. *α* et *β* FICHT. & MOLL., 1803, Test. microsc., p. 108, t. 20, ff. a—f.

**Pulv. auricula** GOËS, 1882, Ret. Rhizop. Carib. Sea; Sv. Vet. Akad. Handl. 19, 4, p. 109, t. 8, ff. 273—275, ubi synonymia completa; Obs. Rotal. contraria Rss, 1851 (Sept. Thon. Berlin., Ztschr. deut. geol. Gesellsch. 3, p. 76, t. 5, f. 37 est forsā Bulmina quedam; Rot. cristellarioides Rss, For. Crag. Anvers., Bullet. Acad. Belg. (2) 15, p. 154, t. 3, f. 44, est forsā Non. turgida WILLIAMS.

» » **oblonga** BRADY, 1884, Chall. Rep. 9, p. 688, t. 106, ff. 4—5.

Hab. mare Germanicum metr. 180; ad oras Norvegiæ metr. 130 (LILLIEBORG, NORMAN). Long. mm. 1.

## APPENDIX.

### **P. Schreibersii** D'ORB.

Trochoidea, subhemisphærica, anfractibus 4—6, spira umbone hemisphærico plerumque subobtectā; segmentis anfr. ultimi 6—8 subamplectentibus; facies oralis convexa aut subplana, suturis plerumque stellato-limbatis.

**Rotalina Schreibersii** D'ORB., 1846, Bass. tert. Vienne, p. 154, t. 8, ff. 4—6.

» **badensis** CZJZEK, 1847, Haid. Naturw. Abh. 2, p. 144, t. 13, ff. 1—3.

**Pulv. elegans** v. **trochus** GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 112, t. 8, ff. 286—288.

» **Schreibersii** BRADY, 1884, Chall. Rep. 9, p. 697, t. 115, f. 1.

» » BRADY, PARK. & JONES, 1888, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 46, f. 4.

Hab. mare Caraibicum sat frequens metr. 500—600 (GOËS).

**ROTALINA** (LMCK.) D'ORB.**R. Beccarii** LIN.

Tab. XVI, fig. 811.

Helicoidea, biconvexa aut subplano-convexa, margine rotundato, anfractibus 3—4, anfr. ultimo segmentis 8—12; facie aborali plerumque magis elevata, suturis sæpe limbatis nunc impressis, nunc superficiem testæ æquantibus; facie orali magis depressa, area centrali plus minusve rugosa, verrucosa, suturis irregulariter excavatis, rimosis, quasi in-crustatis; umbilico valde granuloso, profundo, interdum subumbonato. Apertura, rima marginalis, suturalis.

Formæ emaciatæ occurrunt, rugis verrucisque faciei oralis valde obsoletis.

Fig. 811: facies aboralis; *a*: facies marginalis; *b*: facies oralis exempli magis elevati e mari Bahusiæ.

**Nautilus Beccarii** testæ apertura obovata, anfractibus contiguis torulosis, geniculis inculptis, LIN. Syst. Nat. Ed. X, 1758, p. 710.

» » MONTAG. 1808, Test. Brit., Supplem. p. 74, t. 18, f. 4.

**Rotalia Beccarii** D'ORB. (Turbinulina), 1826, Tabl. méth., Ann. Sc. nat. 7, p. 275, No. 42, Mod. 74 (deplanata).

» **tortuosa, corallinarum** D'ORB., 1826, ibid., No. 40, 48, Mod. 75.

**Rosal. Parkinsoniana** D'ORB., 1839, For. Cuba, p. 99, t. 4, ff. 25—27.

» **Catesbyana** D'ORB., ibid., p. 99, t. 4, ff. 22—24.

» **viennensis** D'ORB., 1846, Bass. tert. Vienne, p. 177, t. 10, ff. 22—24.

» » EGGER, 1857, Mioc. Ortenburg, LEONH. & BRONN Jhb. 1857, p. 277, t. 8, ff. 11—13.

» **Amaliæ, radiata** COSTA, 1854, Pal. Napol. 2, p. 254, 255, t. 21, ff. 12—13.

» **inflata** SEG., 1862, Rhiz. Catania, Accad. Gioenia Atti (2) 18, p. 22 (separ.), t. 1, f. 6.

**Rotal. punctato-granulosa** SEG., 1879, For. terz. Prov. di Reggio; Atti R. Accad. Lincei (3) 6, p. 147, t. 13, f. 37.

» **Beccarii** WILLIAMS, 1858, Rot. For. Gr. Brit., p. 48, t. 4, ff. 90—92.

**Rosal. Mackeyi** KARR., 1864, Grünsand, N. Zealand, Novar. Exped. geol. Th. 1, 2, p. 82, t. 16, f. 14.

**Rotal. Beccarii** PARK. & JONES, 1865, N. Atl. & Aret. Oc., Phil. Trans. 155, p. 388, t. 16, ff. 29—30.

» » PARK. & JONES, BRADY, 1866, Crag. For., Palæogr. Soc. 19, t. 2, ff. 19—21.

» » UHLIG, 1883, For. rjäsan'shen Ornatenthone, K. K. geol. Reichsanst. Jhb. 33, p. 773, t. 8, f. 8.

» » BRADY, 1884, Chall. Rep. 9, p. 704, t. 107, ff. 2—3 (ubi *Synonymia vetusta* reperitur).

» » WRIGHT, Chalk. For. Keady Hill; Proc. Belfast Nat. Field Club 1884—85, Append. t. 27, f. 15.

Hab. ad oras Bahusiæ metr. 2—150 frequens, diam. mm. 1.10.

**R. Soldanii** D'ORB.

Tab. XVI, fig. 812.

Planoconvexa plus minusve tumida, nitida, interdum submarginata, facie aborali planiuscula, spira interdum paullum elevata, sæpe subumbonata, anfractibus 3—4, segmentis anfr. ultimi 8—11; facie orali sæpe valde turgida elevata, umbilicata, plerumque laevi.

A Rot. orbiculari D'ORB. nisi facie orali magis tumida non diversa.

Fig. 812: facies aboralis; *a*: facies marginalis; *b*: facies oralis exempli e mari Atlant. boreali profund. metr. 1,750. Fig. supra *a*: faciem aboralem exempli alius præbens.

- Rotalia (Gyroidina) Soldanii** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 278, No. 5, Mod. 36; 1846, Bass. tert. Vienne, p. 155, t. 8, ff. 10--12.
- » **umbilicata** D'ORB., 1839, Craie blanche d. Paris, Mém. Soc. geol. Fr. 4, p. 32, t. 3, ff. 4--6 (non sat distincta).
- » **turgida** v. HAGENOW, 1842, Rügens Kreide Verstein; Leonh. & Br. Jhb. 1842, p. 570, t. 9, f. 22.
- » **conoidea** CZJZ., 1847, For. Wien. Beck, Haid. naturwissen. Abh. 2, p. 145, t. 13, ff. 4--6.
- » **Girardana** Rss, Sept. Thon. Berl., Zeitschr. deut. geol. Gesellsch. 3, p. 73, t. 5, f. 34; v. SCHLICHT, t. 20, ff. 11--13.
- » **Beccarii** v. **Soldanii** PARK. & JONES, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 389, t. 16, ff. 31--33.
- » **nitidula** SCHWAG, 1866, For. Kar. Nikobar; Novara Reise geol. Th. 2, 2, p. 263, t. 7, f. 110.
- » **Soldanii** v. HKEN, 1875, For. Cláv. Szab. Sch., p. 80, t. 9, f. 7.
- »       » BRADY, 1884, Chall. Rep. 9, p. 706, t. 107, ff. 6--7 (conf. Rotal. orbicularis (D'ORB.), ibid., t. 115, f. 6, quae a figura, t. 107, ff. 6--7, non distingvenda est).

Hab. in Stoksund Norvegiæ metr. 140--180 (NORMAN); mare Atlanticum boreale metr. 1,750 (LINDAHL) haud frequens.

## POLYSTOMELLA D'ORB.

### **P. arctica** PARK. & JONES.

Tab. XVI, fig. 813.

Nautiloidea, disciformis, subumbonata, latere utroque subplano, margine rotundato, segmentis 8--14. Sutura saepe limbata impressa, ostiis canaliculorum interseptalium poriformibus utrinque (interdum uniserialibus) instructa, pontibus septalibus destituta; area umbilicalis ostiis sparsis provisa.

Apertura marginalis, suturalis porosa aut rima margine superno crenulata, ostiis interdum nonnullis supramarginalibus superpositis.

Fig. 813: exemplum e mari Spetsbergensi profund. metr. 150; *b*: facies marginalis.

**Polystomella arctica** PARK. & JONES, M. S. 1864.

BRADY, 1864, Rhiz. Shetl., Trans. Lin. Soc. 24, p. 471, t. 48, f. 18; 1878, Ret. Rhizop., N. Pol. Exped. 1875--76, A. M. N. H. (5) 1, p. 437, t. 21, f. 13.

**P. crispa** v. **arctica** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 401, t. 14, ff. 25--30. BRADY, 1884, Chall. Rep. 9, p. 735, t. 110, ff. 2--5.

BALKW. & WRIGHT, 1885, Dublin For., Trans. R. Irish Acad. Se. 28, p. 353, t. 13, f. 27.

Hab. mare Spetsbergicum & Groenlandicum metr. 140--180 sat frequens; ad Newfoundland et Nova Semjla. Diam. mm. 1.50.

### **P. sibirica** GOËS.

Tab. XVII, fig. 814.

Lenticularis, biconvexa plus minusve applanata, interdum subcarinata, cameris circiter 24, angustatis, umbonibus interdum circumscriptis, ostiis septalibus plerumque in binas series interdum in unam seriem dispositis; apertura poris minutis exhibita.

Fig. 814: facies lateralis; *a*: facies marginalis.

Hab. ad Nova Semjla, Matotschkin Sharr metr. 30 sat frequens (STUXBERG, THÉEL 1875). Diam. mm. 3--4.

**P. striato-punctata** (FICHT. & MOLL.) PARK. & JONES.

Tab. XVII, figg. 815—816.

Discoidea, lateribus subplanis, umbilicis subdepressis, interdum absentibus, umbonibus obsolete substitutis; segmentis 8—12 subinflatis, suturis paullum impressis, pontibus septalibus brevissimis, foveolis plus minusve distinctis, interdum fere evanescentibus; apertura marginalis, suturalis, porosa aut crenulata, poris septalibus interdum additis paucis.

Testa interdum obsolete squamoso-areolata, saepe hyalina, poris magnitudine variantibus: (testa aliquando subarenacea?).

Fig. 815: hyalina; *a*: facies marginalis; *b*: in luce transeunte visa; e Gullmaren sinu Bahusia.

Fig. 815 *c—f*: duae majores e mari Groenlandico profund. metr. 18; *c*: umbone obsolete granuloso.

Fig. 815 *g—i*: e mari Spetsbergico metr. 180—550, ostiis septalibus provisa.

Fig. 815 *k—l*: e mari N. Semjla.

Fig. 815 *m—r*: pygmae e mari Bahusiae profund. metr. 80; *m*: superficiem areolatam praebens.

Fig. 815 *s—u*: e mari Spetsbergico.

Fig. 816: forma subarenacea? Haplophragmio similis; ex eodem loco; *a*: facies marginalis.

? *Nautilus striatopunctatus* FICHT. & MOLL., 1803, Test. micr., p. 61, t. 9, ff. a—c (striata, inflata sine pontibus septalibus).

*Polyst. Poëyana* D'ORB., 1839, For. Cuba, p. 55, t. 6, ff. 25—26.

*Geoponus stella borealis* EHRENB., 1839, Jetzt lebende Thierarten der Kreidebild., Abh. K. Ak. Wiss. Berlin, p. 132, t. 1, ff. a—g.

*Polyst. Haurina* D'ORB., 1846, Bass. tert. Vienne, p. 122, t. 6, ff. 1—2.

? *Polyst. rugosa, obtusa* D'ORB., ibid., t. 6, ff. 3—6 (segment. 15—20).

*Polyst. Antonina, Listeri* D'ORB., ibid., p. 128, t. 6, ff. 17—22.

» *stella borealis, gibba, venusta* SCHULTZE, 1854, Organ. Polythal., p. 60, 67, ff. 1—9.

*Non. heteropora, densepunctata, Polyst. subcarinata* EGGER, Mioc. Ortenburg, Leonh. & Bronn Jhb. 1857, p. 299—301, t. 14, ff. 19—25.

*Polyst. umbilicatula* WILLIAMS, 1858, Rec. For. Gr. Brit., p. 42, t. 3, ff. 81—82

» » var. *incerta* WILL., ibid., t. 3, f. 82 a.

*Non. excavata* SEG., 1862, Rhizop. Catania, Atti Accad. Gioena (2) 18, t. 1, f. 4.

*Polyst. latidorsata* RSS, 1863, For. Oberburg, Steiermark, Wien. Ak. DkSchr. 23, p. 10, t. 1, f. 16.

» *minuta, discrepans* RSS, 1864, Oberoligocän, Wien. Ak. S. Ber. 50, p. 478, t. 4, ff. 6—7.

» *striatopunctata* JONES, PARK. & BRADY, 1866, For. Crag., Pal. Soc. 19, t. 2, ff. 38—39.

» *crispa* var. *striatopunctata* PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 402, t. 14, ff. 31—34, t. 17, f. 60.

» *minima* SEG., 1879, For. tert. Prov. Reggio, Atti Accad. Lincei (3) 6, p. 333, t. 17, f. 38.

» *crispa* var. *Poëyana* GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 116, t. 8, ff. 301—302.

» *striatopunctata* BRADY, 1884, Chall. Rep. 9, p. 733, t. 109, ff. 22—23.

» » BRADY, PARK., JONES, 1887, Abroholos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 43, f. 17.

Hab. ad oras Sveciæ, Norvegiæ, Groenlandiæ, Spetsbergiæ frequens, metr. 2—1,700. Diam. mm. 0.30—1.10.



forma affinis:

Magis inflata aut carinata, sæpe umbonata.

**P. subnodosa** v. MÜNST. (sec. REUSS). Tab. XVII, figg. 817—819.

Fig. 817: e mari Nova Semjla; *a*: facies marginalis oralis.

Fig. 818: pygmæa in typicam vergens; e mari Bahusiæ Sveciæ.

Fig. 819: crassa, e mari Newfoundlandico; *a*: facies marginalis oralis.

**Robulina subnodosa** v. MÜNST., LEONH. & BRONNS Jhb. 1838, p. 391, t. 3, f. 61.

**Nonionina splendida** BOLL., 1846, Geogr. deut. Ostseeländ., p. 177, t. 2, f. 15.

**Polyst. subnodosa** REUSS, 1855, Tert. Sch. nördl. u. mittl. Deutschl., Wien. Ak. Sitz. Ber. 18, p. 240, t. 4, f. 51.

» **exoleta** COSTA, 1854, Pal. Napol. 2, t. 19, f. 10.

» **cryptostoma, angulata, Ortenburgensis** EGGER, 1857, Mioc. Ortenburg; LEONH. & BRONNS Jhb. 1857, pp. 301, 302, t. 9, ff. 19—20; t. 15, ff. 5—9.

? **Naut. ambiguus** FICHT. & MOLL., 1803, Test. micr., p. 62, t. 9, ff. d—f.

? **Polyst. subumbilicalis** CZJZ., 1847, For. Wien. Beck., Haid. naturwiss. Abh. 2, p. 143, t. 12, ff. 32—33.

? **Polyst. Ungerii, flexuosa** Rss., 1849, Neue For. Österr., Wien. Ak. Dkschr. 1, p. 369, t. 48, ff. 2—3.

Hab. ad New Foundland rara (LINDAHL); Nova Semjla (STUXBERG).

### **P. crispa** LIN.

Tab. XVII, figg. 820—821; 822.

Lenticularis, plus minusve umbonata (aliquando umbonibus destituta), margine attenuato sæpe carinato; segmenta anfractus ultimi 12—24; suturis elevatis, extra marginem ut spinis plerumque prominentibus, pontibus septalibus transversis interse connectis aut subconnectis; apertura marginalis, suturalis, poris constituta.

Fig. 820: exemplum e mari Bahusiæ profund. metr. 80; *a*: facies marg. oralis.

Fig. 821: exemplum e Zostera litorum Bahusiæ; *a*: facies marg. oralis.

Fig. 822: inter *P. crispam* & striatopunctatam, e sinu Quænanng Norvegiæ profund. metr. 200.

**Nautilus crispus**, testæ apertura, semicordata, anfractibus contiguis, geniculis crenatis, LIN. Syst. nat., Ed. X, 1758, p. 709.

» » ? FICHT. & MOLL., 1803, Test. micr., p. 40, t. 4, ff. d—f, t. 5, ff. a—b (pontibus septal. omissis); MONTAGU, 1803, Test. Brit., p. 187, t. 18, f. 5.

**Polyst. crispa** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 283, Mod. 45.

» **oweniana** D'ORB., 1839, Voy. amér. mérid., p. 30, t. 3, ff. 3, 4.

» **Lanieri** D'ORB., 1839, For. Cuba, p. 54, t. 7, ff. 12—13.

» **Berthelotiana** D'ORB., 1839, For. Canar., p. 129, t. 2, ff. 31—32.

» **ornata, crispa, ? flexuosa** D'ORB., 1846, For. Bass. tert. Vienne, p. 125, t. 6, ff. 9—14, p. 127, t. 6, ff. 15—16 (*P. flexuosa* in *Polyst. striatopunct. v. subnodosam* MÜNST. vergens).

» **crispa, decipiens, striolata, ornata** COSTA, 1854, Pal. Napoli 2, t. 14, f. 11, t. 19, ff. 13, 15—16.

» **crispa** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 399, t. 14, f. 24; t. 17, f. 61.

» » WILLIAMS, 1858, Rec. For. Gr. Brit., p. 40, t. 3, ff. 78—80 (margine spinosa).

» » CARPENTER, 1862, Introd. Foramf., p. 278, t. 16, f. 4 (margine spinoso).

» » BRADY, Chall. Rep. 9, p. 736, t. 110, ff. 6—7.

Obs. *Polyst. regina, Josephinæ, aculeata* D'ORB., Bass. tert. Vienne, p. 129—131, t. 6, ff. 23—28, margine aculeis ornato, a typo difficillime distingvendæ.

Hab. ad oras Sveciæ occidentales, metr. 3—80, passim. Diam. mm. 0.80 (plerumque minuta).

## NONIONINA D'ORB.

**N. umbilicatulula** MONTAG.

Tab. XVII, figg. 823—824.

Nitida, interdum pellucida, nunc subdepressa, nunc paullum inflata, umbilicata aut subumbilicata, margine rotundato, segmentis 9—12, suturis vix impressis; facie septali convexa, semilunari; apertura suturali, marginali, angusta, poris mediocribus; interdum foveolis septalibus minutis provisa. Aliquando e particulis arenaceis et calcareis immixtis constructa, Haplophragmio similis.

Fig. 823: e sinu Bergensium Norvegiæ, profund. metr. 200; *a*: facies marginalis oralis.

Fig. 824: calcareo-arenacea e Gullmaren sinu Bahusiæ profund. metr. 70.

- Naut. umbilicatus** MONTAG, 1803, Test. Brit., p. 191, Supplem. 1808, p. 78, t. 18, f. 1.  
**Non. Soldanii** D'ORB., 1846, Bass. tert. Vienne, p. 109, t. 5, ff. 15—16 (in *N. pompilioidem* vergens).  
 » COSTA, 1854, Pal. Nap. 2, p. 201, t. 17, f. 11 (item).  
 » **falx** CZJZ, 1847, For. Wien. Beck., Haid. Nat. Wiss. Abh. 2, p. 142, t. 12, ff. 30—31.  
 » **polystoma** COSTA, 1854, Pal. Nap. 2, p. 206, t. 14, f. 10.  
 » **crassula** PARK. & JONES, 1857, For. Norw. A. M. N. H. (2) 19, p. 286, t. 11, ff. 5—6.  
 » **Barleana** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 32, t. 4, ff. 68—69.  
 » **bathyomphala** Rss, 1862, Nordd. Hils u. Gault, Wien. Ak. S. Ber. 46, p. 95, t. 13, f. 1.  
**Polystom. crispa** var. **umbilicatulula** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 405, t. 14, f. 42, t. 17, ff. 58—59.  
**Non. formosa** SEG., 1879, Foram. terz. Prov. Reggio, Atti Accad. Lincei (3) 6, p. 63, t. 7, f. 6.  
 » **umbilicatulula** BRADY, 1884, Chall. Rep. 9, p. 726, t. 109, ff. 8—9.  
 » » BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 43, f. 19.

Hab. ad oras occidentales Sveciæ et Norvegiæ metr. 40—180 frequens, ad Spetsbergiam metr. 180—1,250 frequentissima.

**N. depressula** WALK. & JACOB.

Tab. XVII, figg. 825—826.

Discoidea, margine plerumque rotundato, aliquando submarginata, umbilicis haud multum aut vix excavatis subgranulosis; interdum subumbonata; segmentis 7—11—14, suturis sæpe impressis, umbilicum versus sæpe stellate — excavatis, aut sublimbatis; plerumque hyalina, poris minutis creberrimis; a *Polystomella striatopunctata* interdum difficile distingvenda.

Fig. 825: e mari Germanico, in formam sequentem vergens; *a*: facies later. oralis.

Fig. 826: e mari Groenlandico; *a*: facies later. oralis.

- Naut. depressulus** WALK. & JAC., 1798, Adams Essays microsc., p. 641, t. 14, f. 33.  
**Non. perforata, granosa, punctata** D'ORB., 1846, Bass. tert. Vienne, p. 110, 111, t. 5, ff. 17—22.  
 » **crassula** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 33, t. 3, ff. 70—71.  
 » **affinis** Rss, 1851, Sept. Thon. Berl., Zeitschr. deut. geol. Ges. 3, p. 72, t. 5, f. 32.  
**Polystom. crispa** var. (**Non.**) **depressula** PARK. & JONES, 1865, North Atl. & Arct. Oc., Phil. Trans. 155, p. 403, t. 14, f. 39.

GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 8, ff. 269—271.  
**Non. depressula** BRADY, 1884, Chall. Rep. 9, p. 725, t. 109, ff. 6—7.

Obs. **Nautilus incrassatus** FICHT. & MOLL., 1803, Test. min., p. 38, t. 4, ff. a—c, a *N. depressula* non sat distinctus.

Hab. mare Germanicum metr. 180, mare Arcticum metr. 100—1,870, passim. Diam. mm. 0.40—0.45.

forma affinis:

Suturis stellate limbatis, umbilico plerumque depresso, poris saepe quam in typica paullo majoribus.

**N. stelligera** D'ORB., Tab. XVII, figg. 827—828.

Fig. 827: e mari Germanico; stella umbilicali impressa, non sat typica.

Fig. 828: exemplum e Bukken sinu Norvegico.

D'ORB., 1839, For. Canar., p. 128, t. 3, ff. 1—2.

BRADY, 1864, Rhizop. Shetl., Trans. Lin. Soc. 24, p. 471, t. 48, f. 19.

**Polyst. crispa** v. **stelligera** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Philos. Trans. 155, p. 404, t. 14, f. 40.

**Nonionina stelligera** BRADY, 1884, Chall. Rep. 9, p. 728, t. 109, ff. 3—5.

Hab. ad Spetsbergiam; in Bukken sinu Norvegico metr. 260—350 (NORMAN) minuta; mm. 0.30—0.40.

### **N. Boueana** D'ORB.

Tab. XVII, fig. 829.

Late ovalis aut elliptica, compressa, margine subacuto, umbilico vix excavato, interdum tenue granulato; segmentis anfractus ultimi 12—16; suturis saepe impressis paullum excavatis aut obsolete stelligeris. A sequente non sat limitanda.

Fig. 829: exemplum e mari Atlantico profund. metr. 1,240; *a*: facies marg. oralis.

D'ORB., 1846, Bass. tert. Vieme, p. 108, t. 5, ff. 11—12.

BRADY, 1884, Chall. Rep. 9, p. 729, t. 109, ff. 12—13.

Obs. **Non. Boueana** Rss, 1863, For. Crag d'Anvers, Bullet. Ac. Belg. (2) 15, p. 156, t. 3, ff. 47—48 inter hanc et sequentem medium tenet.

Hab. mare Atlanticum lat. 48° boreali longitud. occident. 10' metr. 1,240 passim (LINDAHL). Diam. mm. 0.65.

### **N. scapha** FICHT. & MOLL.

Tab. XVII, fig. 830.

Elongate aut late elliptica, compressa aut inflata, margine obtuse cuneato; segmentis 9—12, rare 15, ultimis raptim increnentibus, elongatis aut latis, tumidis; plerumque vix umbilicata, suturis interdum crenatis; (testa arena aliquando immixta?)

Figg. 830—830 *c*: exempla e sinu Gullmaren Bahusia.

? Fig. 831: tenue arenacea, Haphlophragm. cassidi aliquantum similis, e mari Groenlandico profund. metr. 40.

- Naut. scapha** FICHT. & MOLL., 1803, Test. micr., p. 105, t. 19, ff. d—f (in N. Boueanam D'ORB. vergens).  
**Non. Grateloupi, Sloanei, Brownii** D'ORB., 1839, For. Cuba, p. 46, t. 6, ff. 6—7, 18—18 bis; t. 7, ff. 22—23.  
 » **communis** D'ORB., 1846, Bass. tert. Vienne, p. 106, t. 5, ff. 7—8.  
 » PARK. & JONES, 1857, For. Coast Norway, A. M. N. H. (2), 19, p. 287, t. 11, ff. 7—8.  
 » **labradorica** PARK. & JONES, BRADY, 1866, Crag. For., Pal. Soc. 19, t. 2, ff. 44—45.  
**Pullenia communis** v. HTKN., 1875, For. Cláv. Száb. Sch., p. 59, t. 10, f. 10.  
 ? **Non. Fraasana** GÜMB., 1862, Streithberg Schwammilager, Jahresh. Würtemb. naturwiss. Vereins 1862, p. 233, t. 4, f. 5.  
**Polystom. crispa** var. **Scapha** PARK. & JONES, 1865 (ex parte), N. Atl. & Arct. Oc., Phil. Transact. 155, p. 404, t. 14, f. 38.  
 » **crassula** v. **Scapha** GOËS, 1881, Ret. Rhiz. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 114, t. 8, ff. 299—300.  
**Non. Scapha** BRADY, 1884, Chall. Rep. 9, p. 730, t. 109, ff. 14—15.  
 » **labradorica** DAWS., 1860, Canad. Natur., p. 192, f. 4; 1871, Gulf & River St. Lawrence A. M. N. H. (4) 7, p. 86, f. 5 (brevis inflata).

Hab. ad oras Sveciæ et Norvegiæ metr. 30—180 frequens; in mari Arctico profund. metr. 180—2,200 vulgaris. Diam. mm. 0.90.

forma affinis:

segmentis ultimis valde elongatis, ultimo sæpe inæquilaterali, spiram fere obtegente:

**N. turgida** WILLIAMS, Tab. XVII, fig. 832.

Fig. 832: exemplum e sinu Codano profund. metr. 230.

**Rotalina turgida** WILL., 1858, Rec. For. Gr. Brit., p. 50, t. 4, ff. 95—97.

? **Rotalia cristellarioides** Rss, 1863, Crag. d'Anvers, Bull. Ac. Belg. (2) 15, p. 154, t. 3, f. 44.

**Polystom. crispa** v. (**Non.**) **turgida** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 405, t. 17, f. 57.

**Non. turgida** BRADY, 1884, Chall. Rep. 9, p. 731, t. 109, ff. 17—19.

Hab. sinum Codanum profund. metr. 100—230 rara; Bukken sinum Norvegium metr. 260—350 (NORMAN). Diam. mm. 0.30—0.40.

## OPERCULINA D'ORB.

### **O. ammonoides** GRONOV.

Tab. XVII, fig. 833.

Planospiralis, complanata, sæpe obtuse- aut truncato-marginata, area umbilicali leniter impressa, anfractibus internis nunc exhibitis, nunc subobtectis; anfractibus 3, segmentis anfr. ultimi numero 9—13, sæpe paullum inflatis, angulo interno sæpe calloso, emarginato aut inciso; suturis plerumque impressis, aut impresse-limbatis.

Fig. 833: anfractibus internis non obtectis; *a*: facies marg. oralis, exempli e Gullmaren Bahusia metr. 75.

Fig. 833 *b*, *a*: anfractibus internis umbilico subobtectis; ex eodem loco.

Fig. 833 *c*: exempl. e Farsund Norvegiæ metr. 75.

**Naut. ammonoides** GRONOV, 1781, Zoophylac. Gronov., p. 282, t. 19, ff. 5—6.

» **balthicus** SCHROËT., 1783, Vollst. Einleitung, Gesch. Steine u. Versteiner. 1, p. 20, t. 1, f. 2.

**Operc. complanata** PARK. & JONES, 1857, For. Coast Norw., A. M. N. H. (2) 19, p. 285, t. 11, ff. 3—4.

K. Sv. Vet. Akad. Handl. Band 25. N:o 9.

**Non. elegans** WILL., 1858, Rec. For. Gr. Brit., p. 35, t. 3, ff. 74—75.

**Nummulina perforata** var. (**Operc.**) **ammonoides** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 398, t. 14, f. 44; t. 17, ff. 62—63.

**Operculina ammonoides** BRADY, 1884, Chall. Rep. Zool. 9, p. 745, t. 112, ff. 1, 2.

Hab. ad oras occidentales Sveciæ et Norvegiæ profund. metr. 70—260 sat frequens. Diam. mm. 0.50—0.85.

## CORNUSPIRA M. SCHULTZE.

### **C. foliacea** PHIL.

Tab. XVIII, fig. 834.

Planospiralis, valde applanata, anfractibus internis pernumerosis, tenuissimis, sequentibus plus minusve raptim latitudine increscentibus, sequentibus præeuntes haud multum aut vix amplectentibus, lineis plicisque transversis, arcuatis instructis; parte tubi plus matura saepe longitudinaliter striata aut rugosa; apertura obovata aut rima longa, tubo toto patente; margine interno saepe ex parte canaliculato aut fisso.

Figg. 834—834 *c*: exempla e mari Groenlandico; *a*, *c*: facies marg. oralis.

Fig. 834 *d*—*e*: lentius increscens, e mari Spetsbergensi; *e*: facies marg. oralis.

**Orbis foliaceus** PHIL., 1844, Moll. Sicil. 2, p. 147, t. 24, f. 26.

**Operculina striata, plicata** CZJZ, 1847, For. Wien. Beck., Haid. Nat. Wiss. Abh. 2, p. 146, t. 13, ff. 10—13.

**Cornuspira planorbis** SCHULTZE, 1854, Organ. Polythal., p. 40, t. 2, f. 21.

**Operculina ammonitiformis** COSTA, 1854, Pal. Nap. 2, p. 209, t. 17, f. 16.

**Spirillina foliacea** WILL., 1858, Rec. For. Gr. Brit., p. 91, t. 7, ff. 199—201.

**Cornuspira foliacea** REUSS, 1865, Deutsch. Septarienth., Wien. Ak. DkSchr. 25, p. 121, t. 1, ff. 8—9.

» » PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 408, t. 15, f. 33.

» » JONES, PARK., BRADY, 1866, For. Crag., Pal. Soc. 19, p. 2, t. 3, ff. 50—51.

» » GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 120, t. 9, f. 308.

» » BRADY, 1884, Chall. Rep. 9, p. 199, t. 11, ff. 5—9.

» » REUSS, 1870; v. SCHLICHT, Sept. Thon. Pietzpuhl, t. 35, ff. 11—12.

Hab. ad oras Scandinaviæ, Groenlandiæ, Spetsbergiæ profund. metr. 10—530, haud rara. Diam. mm. 3—4.

formæ affines:

1. margine anguste carinato.

### **C. carinata** COSTA.

**Operculina carinata** COSTA, 1854, Pal. Nap. 2, p. 209, t. 17, f. 15.

**C. Bornemanni** Rss, 1863, Sept. Thon. Offenbach, Wien. Ak. S. Ber. 48, p. 39, t. 1, f. 3.

» **carinata** BRADY, 1884, Chall. Rep. 9, p. 201, t. 11, f. 4.

Hab. in sinibus Norvegiæ passim (SARS, NORMAN).

2. minus compressa, anfractibus fere teretibus, quoque suum præcedentem ex parte amplectente.

### **C. involvens**, Rss.

**Operculina involvens** v. Rss, 1849, Neue Foramf. Österreichs., Wien. Ak. DkSchr. 1, p. 370, t. 46, f. 20.

**Cornuspira involvens** Rss, Sept. Thon. Offenbach, Wien. Ak. S. Ber. 48, p. 39, t. 1, f. 2.

- Cornuspira involvens** PARK. & JONES, BRADY, 1866, Crag. For., Pal. Soc. 19, p. 3, t. 3, ff. 52—54.  
 » » **polygyra** v. HËEN, 1875, Clávil. Szabói Sch., Mittheil. a. d. Jhb. K. Ungar. geol. Anst. 4, p. 19, t. 1, f. 11, t. 2, f. 1.  
 » » BRADY, 1884, Chall. Rep. 9, p. 200, t. 11, ff. 1—3.

Hab. mari Arctico et Norvegico passim, profund. metr. 30—180; pygmæa.

### **C. striolata** BRADY.

Tab. XVIII, fig. 835.

Anfractibus paucis raptim latitudine inerescentibus, quare forma flabelliformis adultarum, plus minusve plicato-striata aut rugoso-squamosa; striis verticalibus sæpe obsoletis; juvenes a var. involvente Rss sæpe vix discernendæ; megasphærica forsân typica; inter congeneres maxima.

Fig. 835: magnitudine naturali delineata; e mari Sibirico.

**Cornuspira striolata** BRADY, 1884, Chall. Rep. 9, p. 202, t. 113, ff. 18—19.

Hab. mare Sibiricum profund. metr. 150 (Dom. THÉEL, STUXBERG). Diam. mm. 35.

## SPIROLOCULINA D'ORB.

### **S. planulata** LAMCK.

Tab. XVIII, figg. 836—836 c.

Elliptica, utrinque excavata, margine truncato aut rotundato, cameris planis limbo destitutis; apertura subquadrata aut ovalis lingula simplici aut furcata plerumque instructa.

Fig. 836: angusta, typica, e sinu Bergensium Norvegiæ, 20 metr.

Fig. 836 b: in limbatam transiens; e Gullmaren Bahusiæ metr. 40.

**Miliolites planulata** LAMCK., 1805, Ann. Mus. 5, p. 352.

**Spir. depressa, perforata, ? rotundata** D'ORB., 1826, Ann. Sc. nat. 7, p. 298—299, No. 1, 2, 14, Mod. 92.

» **badenensis, dilatata** D'ORB., 1846, Bass. tert. Vienne. pp. 270, 271, t. 16, ff. 13—18.

» **depressa** var. **rotundata** WILL., 1858, Rec. For. Gr. Brit., p. 82, t. 7, f. 178.

» **Freyeri** REUSS, 1863, Oberburg. Steiermk, Wien. Ak. Sitz. Ber. 23, p. 7, t. 1, f. 9.

» **planulata** BRADY, PARK. & JONES, 1866, For. Crag., Pal. Soc. 19, p. 15, t. 3, ff. 37—38.

**Mil. planulata** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 408, t. 17, f. 82.

**Spir. planulata** BRADY, 1884, Chall. Rep. 9, p. 148, t. 9, f. 11.

» » BRADY, PARK. & JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, p. 214, t. 40, ff. 14—15.

forma affinis:

margine limbato, suturis prominentibus, a typica vix limitanda; nec a Spirol. excavata D'ORB. Bass. tert. Vienne, p. 271, t. 16, ff. 19—21 distincta:

**S. limbata** D'ORB., Tab. XVIII, fig. 837.

Fig. 837: e mari Azorico profund. metr. 70.

D'ORB., 1826, Ann. Sc. nat. 7, p. 299, No. 12.

**Spir. limbata** BORNEM., 1855, Sept. Thon Hermsd., Zeitschr. deut. geol. Gesellsch. 7, p. 348, t. 19, f. 1.

» **depressa** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 82, t. 7, f. 177.

» **limbata** Rss, 1863, Sept. Thon. Kreuznach, Wien. Ak. S. Ber. 48, p. 64, t. 8, f. 89.

**Mil. (Spirol.) limbata** PARK. & JONES, 1865, Phil. Trans. 155, p. 409, t. 17, f. 83.

**Spir. limbata** BRADY, 1884, Chall. Rep. 9, p. 150, t. 9, ff. 15—17.

Hab. ad oras Scandinaviæ profund. metr. 10—70 passim.

## MILIOLINA (LAMCK.) WILLIAMS.

### **M. seminulum** LIN.

Tab. XVIII, figg. 838—838 *n*; Tab. XIX, figg. 840—843.

Oblonga aut subrotundata, compressa aut plus minusve inflata, plerumque nitida, sectione transversa trigona aut triloba; apertura ovata aut subcirculari aut reniformi, lingua bifurcata aut simplici instructa. Segmenta apparentia 5—4, rare 3.

Fig. 838 *a, b*: e mari Groenlandico profund. metr. 296; *b*: facies oralis; *c, d*: sectiones transversæ, dispositionem segmentorum "Sigmoidinæ" præbentes.

Fig. 838 *e, f, g*: magis triangularis; e mari Azorico profund. metr. 1,780.

Fig. 838 *h, i, k*: in variet. Auberianam vergens, ex Atlantico boreali profund. metr. 150.

Fig. 838 *l, m, n*: magis orbicularis, tumida, e mari Bahusiæ profund. metr. 35.

Tab. XIX, fig. 240: e Koster fretis insularum Bahusiæ profund. metr. 2.

Fig. 841: valde inflata fere IV loculina, ex Atlantico boreali, profund. metr. 330.

Fig. 842: valde obliquata, e Skagerack, profund. metr. 700—850.

Fig. 843: in subrotundam transiens; e mari Groenlandico profund. metr. 110.

**Serpula seminulum** testa regulari ovali, libera, glabra LIN., 1758, Syst. Nat. Ed. X, 1, p. 786.

Synonymiam ceteram vide apud GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 124 *b*) et p. 187 *d*) partim, et BRADY, 1884, Chall. Rep. 9, p. 157, t. 5, f. 6.

**Quinqueloc. seminulum** (D'ORB.) SCHLUMB., 1893, Mil. golfe Marseille, Mém. Soc. Zool. France 6, p. 208, t. 4, ff. 80—81.

Hab. ad litora Scandinaviæ occidentales et Arctica profund. metr. 2—800 frequens; long. mm. 2.50; nec non mare Balticum (pygmæa) passim.

formæ affines:

1. triloculina plus minusve tumida; a formis larvalibus Mil. (Biloc.) simplicis difficile distincta.

**M. inornata** D'ORB., Tab. XVIII, fig. 839.

**Triloculina inornata** D'ORB., 1846, Bass. tert. Vienne, p. 279, t. 17, ff. 16—18.

? **Triloc. pyrula** KARR., 1867, For. Österreichs, Wien. Ak. S. Ber. 55, p. 359, t. 2, f. 7.

**Triloc. decipiens** REUSS, 1849, Neue For., Wien. Ak. DkSchr. 1, 1, p. 382, t. 49, f. 8.

Hab. extra Väderöarne insulas Bahusiæ profund. metr. 50.

2. segmentis acutangulis aut carinatis, a typo non sat distincta; sæpe lata suborbicularis:

**M. Auberiana** D'ORB., Tab. XIX, figg. 844—844 e.

Fig. 844 a, b: minus carinata, e mari extra Väderöarne insulas Bahusiæ profund. metr. 45.

Fig. 844 c, d, e: magis carinata, medio impresso, ex eodem loco.

**Quinqueloc. Auberiana** D'ORB., 1839, For. Cuba, p. 193, t. 12, ff. 1—3.

» **Gualteriana, Lamarckiana, Cuveriana** D'ORB., ibid., p. 189, 190, t. 11, ff. 14—15, 19—21.

» **Buchiana, Ungeriana, Partschii, peregrina** D'ORB., Bass. tert. Vienne, p. 277, 289, 291, 292, t. 18, ff. 10—12, 22—24, t. 19, ff. 1—6.

? **Triloc. anceps** Rss., 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 383, t. 49, f. 11 (complanata).

**Quinqueloc. inæqualis** D'ORB., 1839, For. Canareis, p. 142, t. 3, ff. 28—30.

**Mil. seminulum** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 9, ff. 346—347.

» **auberiana, cuveriana** BRADY, 1884, Chall. Rep. 9, p. 162, t. 5, ff. 8—9, 12.

Hab. ad oras occidentales profund. metr. 50 rara. Long. mm. 0.50.

3. segmentis angulatis, oblonga:

**M. Candeiana** D'ORB., Tab. XIX, fig. 845.

Fig. 845: exemplum non sat acute-carinatum e mari Atlantico boreali.

**Quinqueloc. Candeiana** D'ORB., 1839, For. Cuba, p. 199, t. 12, ff. 24—26.

**Quinqueloc. Candeiana, Kochi** Rss., 1855, Kreidegeb. Mecklenburg, Zeitschr. deut. geol. Ges. 7, p. 289, t. 11, ff. 6—7.

» **longirostra** D'ORB., 1846, Bass. tert. Vienne, p. 291, t. 18, ff. 25—27.

? » **venusta** KARR., 1868, Mioc. Kostej, Wien. Ak. Sitz. Ber. 58, p. 147, t. 2, f. 6.

? » BRADY, 1884, Chall. Rep. 9, p. 162, t. 5, ff. 5, 7.

? **Triloc. carinata** PHIL., 1843, Tert. Verstein. n. w. Deutschl., t. 1, f. 36.

Hab. mare Atlant. lat. bor. 51° profund. metr. 400, rara (LINDAHL).

4. disciformis suborbicularis aut transverse subovata, subplana, margine rotundato; apertura sæpe magna semilunata aut triangularis lingua minuta aut obsoleta; segmentis sæpe irregulariter dispositis, ultimis ambobus margine orali interse sæpe distantibus. Triloculina suborbicularis D'ORB., 1839, For. Cuba, p. 177, t. 10, ff. 9—11 huc forsàn referenda, forma striolata.

**M. subrotunda** WALK. & BOYS., Tab. XIX, figg. 846—847 a—h.

Fig. 846: inter seminulum et subrotundam, e Hällö Bahusiæ, profund. metr. 50.

Fig. 847 a—h: formæ variæ e mari Bahusiæ et mari Atlantico boreali e profundis parvis.

**Serpula subrotunda** WALK. & BOYS, 1784, Test. min., p. 2, t. 1, f. 4.

**Vermic. subrotundum** MONTAG, 1803, Test. Brit. 2, p. 521.

**Quinqueloc. subrotunda** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 302, No. 36.

» **dilatata** D'ORB., 1839, For. Cuba, p. 192, t. 11, ff. 28—30.

» » SCHLUMB., 1893, Miliol. Golfe de Marseille, Mém. Soc. Zool. France 6, p. 217, t. 3, ff. 70—74, t. 4, ff. 89—90.

» **meridionalis** D'ORB., 1839, Voy. Amér. mérid. 5, p. 75, t. 4, ff. 1—3, 10—13.

**Mil. subrotunda** PARK. & JONES, 1865, N. Atl. und Arct. Oc., Phil. Trans. 155, p. 411, t. 15, f. 38.

**Triloc. truncata** KARR., 1864, Leytakalk Wien. Beck., Wien. Ak. Sitz. Ber. 50, p. 704, t. 1, f. 2.

» **dilatata** KARR., 1868, Mioc. Kostej., Wien. Ak. S. Ber. 58, p. 139, t. 2, f. 1.



**Miliol. subrotunda** BRADY, 1884, Chall. Rep. 9, p. 168, t. 5, ff. 10—11.

? **Quinqueloc. implexa** TERQU., 1886, For. et Ostrac. d'Islande, Bull. Soc. Zool. France, 1886, p. 335, t. 11, ff. 24—26.

**Mil. subrotunda** WRIGHT, 1885, For. Belfast, Proc. Belf. nat. Field Club, 1885—86, Append. t. 29, f. 6.

Hab. ad oras occidentales Scandinaviæ profund. metr. 0.5—260; mare Arcticum profund. metr. 20—280  
ubique sat frequens. Diam. mm. 0.50—1.25.

5. testa arena incrustata colore brunneo-hepatico, plerumque magis complanata, segmentis teretiusculis; suturis sæpe fere obsolete, margine rotundato aut subtruncato aut obtuse angulato. Speciem formamque quamque suam formam agglutinantem habere est expectandum.

**M. agglutinans** PARK. & JONES, Tab. XIX, figg. 848—848 *l*; Tab. XX, fig. 849.

Figg. 848—848 *e*: ex arena minus grandi constructæ, e mari Groenlandico profund. metr. 130—440.

Fig. 848 *f—h*: pauperata, e mari Baltico; an = fusca BRADY.

Figg. 848 *i—l*: e mari Spetsbergico profund. metr. 180; in contortam vergens. Tab. XX, fig. 849: e mari Norvegico profund. metr. 90—180.

**Mil. (Quinqueloc.) agglutinans** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 410, t. 15, f. 37.

Obs. Quinqueloc. agglutinans D'ORB., 1839, For. Cuba, p. 168, t. 12, ff. 11—13, apertura dentata a nostra distincta, quare nomen formæ nostra in "arenaceam" melius sit transmutandum. *M. fuscæ* BRADY, 1870, For. tidal. Riv., Ann. M. N. H. (4) 6, p. 286, t. 11, f. 2, exempla a Dom. Cel. Jos. WRIGHT benigne communicata a nostra non specificè distincta.

**Quinqueloc. foeda** REUSS, 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 384, t. 50, ff. 5—6.

? **Miliolina seminulum** GOËS, 1884, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 9, ff. 319—320.

» **agglutinans** BRADY, 1884, Chall. Rep. 9, p. 180, t. 8, ff. 6—7 (magis rudis).

» » BALKW. & WRIGHT, 1885, Rec. Dubl. For., Trans. Roy. Irish. Acad. Sc. 28, p. 325, t. 13, ff. 1—3 (magis rudis).

» MOEBIUS, 1880, For. Mauritius, p. 77, t. 3, ff. 4—8.

» BRADY, PARK. & JONES, 1888, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, t. 40, ff. 34—35.

Hab. mare Arcticum metr. 100—350 passim; ad oras Sveciæ et Norvegiæ metr. 90—180 minus frequens; mare Balticum (pygmæa) passim. Long. mm. 1.30.

6. plus minusve elongata, plerumque tri-quadriloculina, a *Miliolina ringente* var. elongata D'ORB. interdum difficulter distingvenda.

**M. oblonga** MONTAG, Tab. XX, figg. 850—850 *f*.

Fig. 850: e mari Bahusiæ.

Fig. 850 *c*: apertura coarctata exempli alius.

Figg. 850 *d—850 f*: e sinu Bergensi Norvegico.

**Vermiculum oblongum** MONT., 1803, Testac. Brit., p. 522, t. 14, f. 9.

**Triloc. oblonga** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 300, Mod. 95.

Vide præterea GOËS, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, p. 124 (ubi Quinquelocul. tenuis CZJZ. est discernenda).

**Miliolina oblonga** BRADY, 1884, Chall. Rep. Zool. 9, p. 160, t. 5, f. 4.

? **Triloc. lævigata** (D'ORB.) SCHLUMB., 1893, Mil. golfe Marseille, Mém. Soc. Zool. France 6, p. 205, t. 1, ff. 45—47.

Hab. ad oras Sveciæ occidentales et Norvegiæ profund. metr. 20—50 passim. Long. mm. 1.50.

7. segmentis margine truncatis, aut obtuse carinatis aut rotundate truncatis; segmento antepenultimo projecto angulato aut carinato; testa plerumque opaca, grisea sabulo tenui intermixto constructa; interdum tamen albida subnitida, laevis. Formæ magis inflatæ a *M. seminulo* difficile distingvendæ:

**M. contorta** D'ORB., Tab. XX, figg. 851—852.

Fig. 851 *a, b*: e mari Groenlandico profund. metr. 100.

Fig. 851 *c*: magis tumida (interdum tamen submarginata) e mari Atlantico extra Lusitaniam profundo ignoto.

Fig. 852: intermedia aut angulatæ KARRER proxima e mari extra Väderöarne insulas Bahusiæ profund. metr. 50.

**Quinqueloc. contorta** D'ORB., 1846, Bass. tert. Vienne, p. 298, t. 20, ff. 4—6.

» **Juleana, Rodolphina, Badenensis** D'ORB., 1846, ibid., p. 298, 299, 300, t. 20, ff. 1—3, 7—12.

» **latidorsata** Rss, 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 386, t. 50, f. 12.

» **kostejana, sclerotica** KARR., 1868, Mioc. Kostej., Wien. Ak. Sitz. Ber. 58, p. 152, t. 3, ff. 4—5.

» ? **bidentata** D'ORB., 1839, For. Cuba, p. 197, t. 12, ff. 18—20.

» ? **opaca** Rss, Sept. Thon. Offenbach, Wien. Ak. S. Ber. 48, p. 42, t. 2, f. 9.

» ? **Berthelotiana** D'ORB., 1839, For. Canaries, p. 142, t. 3, ff. 25—27.

» ? **ovata** (ROEMER), REUSS, 1855, Tert. Sc. nördl. u. mittl. Deutschl., Wien. Ak. S. Ber. 18, p. 252, t. 9, f. 88.

**Mil. sclerotica** BALKW. & MILLETT, 1884, For. Galway, Journ. micr. & nat. Sc. 3, t. 1, f. 2.

? **Massilina annectens** SCHLUMB., 1893, Mil. golfe Marseille, Mém. Soc. Zool. France 6, p. 220, t. 3, ff. 77—79.

? **Quinqueloc. rugosa** SCHLUMB., ibid., p. 210, t. 4, ff. 91—93.

\* gibba:

**Trilocul. angulata** KARR., 1867, Foramfauna Österreichs Wien. Ak. Sitz. Ber. 55, p. 359, t. 2, f. 6.

» **intermedia** KARR., 1868, Mioc. Kostej., Wien. Ak. Sitz. Ber. 58, p. 138, t. 1, f. 11.

Hab. ad oras occidentales Sveciæ rara metr. 50—70; Groenlandiæ metr. 100; Spetsbergiæ metr. 25.

8. magis applanata, margine plerumque excavato-truncato; a præcedente vix distingvenda:

**M. concava** REUSS, Tab. XX, fig. 853.

Fig. 853: e Kilsund Norvegiæ profund. metr. 60.

**Quinqueloc. concava** REUSS, 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, 1, p. 386, t. 51, f. 2.

» **excavata** KARR., 1868, Mioc. For. Fauna Kostej, Wien. Ak. S. Ber. 58, p. 148, t. 2, f. 9.

? » **bicarinella** REUSS, 1869, Oligocæn Gaas, Wien. Ak. S. Ber. 59, p. 451, t. 1, f. 6.

Hab. in Kilsund Norvegico sinu profund. metr. 60—70 rara.

## APPENDIX.

9. segmento antepenultimo etiam truncato valde prominente; interdum obsolete striata, a præcedente vix discernda; opaca:

**M. polygona** D'ORB., Tab. XX, figg. 854—854 *g*.

Fig. 854 *a, b*: e mari Caraibico profund. metr. 580.

Fig. 854 *c, d*: sectiones transversæ.

Fig. 854 *e, f, g*: obsolete striata, ex eodem loco.

**Quinqueloc. polygona** D'ORB., 1839, For. Cuba, p. 198, t. 12, ff. 21—23.

? **Triloc. quadrilatera** D'ORB., ibid., p. 173, t. 9, ff. 14—16.

**Mil. seminulum** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 9, ff. 353—354.

Hab. mare Caraibicum profund. metr. 500 rara (GOËS). Long. mm. 1.40.

10. segmentis ultimis ambobus truncatis aut emarginatis, singulis costis (aut alis) binis-trinis præditis; segmentis ceteris etiam sæpe carinatis aut alatis:

**M. bicostata** D'ORB., Tab. XX, fig. 855 *a, b*.

Fig. 855 *a*: e mari Caraibico profund. metr. 500.

Fig. 855 *b*: facies oralis alius, alis paucioribus.

**Quinqueloc. bicostata** D'ORB., 1839, For. Cuba, p. 195, t. 12, ff. 8—10 (costata, nec ut nostra alata).

**Mil. seminulum**. var GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 9, ff. 351—352.

Hab. mare Caraibicum profund. metr. 500 rara (GOËS). Long. mm. 1—1.10.

### **M. secans** D'ORB.

Tab. XX, figg. 856—856 *g*.

Plerumque late aut interdum elongate ovalis, complanata, margine attenuato interdum subcarinato, segmentis latis, sæpe transversim undulato-subplicatis.

Fig. 856—856 *d*: e mari Bahusiæ profund. metr. 55.

Fig. 856 *a, e, f*: apertura formis variis.

Fig. 856 *g*: sectio transversa.

? **Quinqueloc. secans** D'ORB., 1826, Tabl. méth., An. Sc. nat. 7, p. 303 (figura Soldanii a D'ORB. citata Mil. bicornem var. angulatam WILLIAMS potius exhibens); Mod. 96.

? > **vulgaris** D'ORB., ibid., p. 302.

> **Haidingeri** D'ORB., 1846, Bass. tert. Viennæ, p. 289, t. 18, ff. 13—15.

> **secans** ROEM., 1838, Leonh. u. Bronns Jhb. 1838, p. 393, t. 3, f. 77.

**Miliolina seminulum** v. **disciformis** WILL., 1858, Rec. For. Gr. Brit., p. 86, t. 7, ff. 188—189.

? **Quinqueloc scidula** KARR., 1867, For. Österreichs, Wien. Ak. Sitz. Ber. 55, p. 361, t. 3, f. 1.

**Miliolina secans** BRADY, 1884, Chall. Rep. 9, p. 167, t. 6, ff. 1—2.

**Sigmoilina secans** SCHLUMBERG, 1887, Note sur le genre Planispirina, Bull. Soc. Zool. France 12, p. 118.

**Massilina secans** SCHLUMB., 1893, Mil. golfe Marseille, Mém. Soc. Zool. France 6, p. 218, t. 4, ff. 82—83.

formæ affines:

1. Oblonge ovalis, applanata, obtuse marginata, striolata; striis sæpe valde obsoletis.

**M. elegans** WILLIAMS, Tab. XX, fig. 857.

Fig. 857: e mari extra Hällö insulam Bahusiæ profund. metr. 50.

**Mil. bicornis** v. **elegans** WILL., 1858, Rec. For. Gr. Brit., p. 88, t. 7, f. 195.

? **Quinqueloc. Soldanii** D'ORB., 1826, Tabl. méth., An. Sc. nat. 7, p. 303.

Hab. ad oras Bahusiæ minus frequens, inter secantem vivens.

2. laevis aut obsolete ex parte striolata, nunc compressa, nunc subtrigona, margine segmentorum subtruncato, interdum angulis subplicatis; collo interdum paululum producto.

Inter *Mil. secantem* et *bicornem* medium tenet, cum quibus convivens, a quibus difficillime limitanda; ad *M. Ferusacii* D'ORB., cui valde propinqua, ab auctoribus forsitan saepe relata.

**M. angulata** WILL., Tab. XX, fig. 858, Tab. XXI, figg. 859—859 *e*.

Fig. 858: in *secantem* vergens, extra Hällö insulam Bahusiae profund. metr. 50. Tab. XXI, figg. 859—859 *e*: exempla duo e sinu Bergensium Norvegiae profund. metr. 18.

**Mil. bicornis** v. **angulata** WILL., 1858, Rec. For. Gr. Brit., p. 88, t. 7, f. 196.

**Quinqueloc. undosa** KARR., 1867, For. Österreichs, Wien. Ak. Sitz. Ber. 55, p. 361, t. 3, f. 3.

? **Mil. (Quinqueloc.) Ferusacii** PARK. & JONES, 1865, N. Atl. and Arct. Oc., Phil. Trans. 155, tab. 15, f. 36.

? **undosa** BRADY, 1884, Chall. Rep. 9, p. 176, t. 6, ff. 6--8.

? **seminuda** REUSS, 1865, For. deutsch. Sept. Thon., Wien. Ak. DkSchr. 25, p. 125, t. 1, f. 11.

Hab. ad Hällö Bahusiae, ad Bergen Norvegiae profund. metr. 20—50 rara. Long. mm. 1.30—1.70.

### **M. bicornis** WALK. & BOYS.

Tab. XXI, figg. 860—861 *e*.

Ovalis, sectio transversa elliptico-carinata, aut compressa margine truncato, aut trigona, collo nunc producto, nunc abbreviato, apertura nunc circulari nunc triangulari, nunc angusta, elongata; testa plus minusve complete striolata aut subcostata, striolis saepe undulatis.

*Mil. secanti* interdum valde propinquans.

Fig. 860, *a*, *b*: tenuissime-obsolete striata, var. "eleganti", cnfr. fig. 857, valde propinqua, e Kilsund Norvegiae profund. metr. 60.

Fig. 861, *a*, *b*: ex parte striata, e mari extra Hällö Bahusiae metr. 50.

Fig. 861, *c*, *d*, *e*: e mari Azorico profund. metr. 80.

**Serpula bicornis** WALK. & BOYS, 1784, Test. min., p. 1, t. 1, f. 2.

**Trilocul. tricostata**, **Brongniartii** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 300; ? **Quinqueloc. seminulum**, **Soldanii** D'ORB., ibid. p. 303.

? **Triloc. Gualteriana** D'ORB., 1839, For. Cuba, p. 170, t. 9, ff. 5—7.

? **flexuosa** D'ORB., 1839, Voy. Amér. mér. 5, p. 73, t. 4, ff. 4—6.

**Quinqueloc. nussdorfensis**, **striatella**, **obsoleta** COSTA, Pal. Nap. 2, p. 326, 328, t. 25, f. 11, t. 26, ff. 3—4.

**Mil. bicornis** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 87, t. 7, ff. 190—194.

? **Triloc. dichotoma** RSS., 1849, Neue For. Österr., Wien. Ak. DkSchr., p. 383, t. 49, f. 12.

**Quinqueloc. incrassata**, **Schroeckingeri**, **vermicularis** KARR., 1868, Mioc. Kostej, Wien. Ak. Sitz. Ber. 58, pp. 148—150, t. 2, ff. 10, 12, t. 3, f. 1.

**Mil. bicornis** BRADY, 1884, Chall. Rep. 9, p. 171, t. 6, ff. 9, 11, 12.

**Quinqueloc. undulata** (D'ORB.) SCHLUMB., 1893, Miliol. du Golfe de Marseille, Mém. Soc. Zool. France 6, p. 213, t. 2, ff. 60—61.

Hab. ad Hällö et alia loca Bahusiae minus frequens profund. metr. 50. Long. mm. 1.80.

formæ affines:

1. forma fere præcedentis, plicato-costata, striis aut costulis inter plicas sæpe interpositis, interdum magis compressa; apertura sæpe circularis; a typo sæpe difficillime distingvenda; a Triloc. Linnaëana D'ORB., For. Cuba, p. 172, t. 9, ff. 11—13, non sat distincta.

**M. pulchella** D'ORB., Tab. XXI, figg. 862—864.

Figg. 862—863: inter typicam formam et pulchellam D'ORB., e mari Bahusiæ extra Hällö insulam profund. metr. 50.

Fig. 864: magis typica, e mari Azorico.

**Quinqueloc. pulchella** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 303. No. 42.

**Trilocul. pulchella, Qu. Schreibersii, Josephina** D'ORB., 1846, Bass. tert. Vienne, p. 279, 296, 297, t. 17, ff. 19—21, t. 19, ff. 22—27.

**Quinqueloc.** » BRADY, 1864, Rhizop. Shetl., Transact. Lin. Soc. 24, p. 466, t. 48, f. 1.

» » PARK., JONES, BRADY, 1866, For. Crag., Pal. Soc. 19, p. 13, t. 4, f. 3.

» **tricarinata** D'ORB., 1839, For. Cuba, p. 187, t. 11, ff. 7—9, 13.

» **plicosa, Josephina** COSTA, 1854, Pal. Nap. 2, p. 322, t. 25, ff. 2, 4.

? **Mil. paucisulcata** RSS, 1864, Oberoligoçän, Wien. Ak. Sitz. Ber. 50, p. 452, t. 1, f. 7.

» **pulchella** BRADY, 1884, Chall. Rep., p. 174, t. 3, ff. 10—13, t. 6, ff. 13—14: **M. linnaëana** BRADY, ibid. p. 174, t. 6, ff. 15—20 magis complanata eum forma D'ORB., non sat congruens).

Hab. ad Hällö profund. metr. 50 Bahusiæ, rara. Long. mm. 2.

2. magis regulariter constructa et striata aut costulata, a typica non sat distincta.

**M. Boueana** D'ORB., Tab. XXI, fig. 865.

Fig. 865: e mari Bahusiæ extra Väderöarne insulas profund. metr. 50.

**Quinqueloc. Boueana** D'ORB., 1846, Bass. tert. Vienne, p. 293, t. 19, ff. 7—9.

» **affinis**, COSTA, 1854, Pal. Nap. 2, p. 329, t. 25, f. 15, t. 25, f. 13.

» **nussdorfensis** D'ORB., 1846, Bass. tert. Vienne, p. 295, t. 19, ff. 13—15.

? » **Guancha** D'ORB., 1839, For. Canar. 143, t. 3, ff. 34—36.

**Triloc. Brongniartiana** D'ORB., 1839, For. Cuba, p. 176, t. 10, ff. 6—8.

**Mil. scrobiculata** BRADY, 1884, Chall. Rep. 9, p. 173, t. 113, f. 15.

**Quinqueloc. striolata** RSS, 1849, Neue For. Österr., Wien. Ak. DkSchr. 1, p. 385, t. 50, f. 10.

» **costata** KARR., 1867, For. Österr., Wien. Ak. Sitz. Ber. 55, p. 362, t. 3, f. 4.

» **Karrereri** RSS, 1869, Oligoc. Gaas., Wien. Ak. Sitz. Ber. 59, p. 459.

**Triloc. striatella** KARR., 1868, Mioc. For. Kostej., Wien. Ak. Sitz. Ber. 58, p. 140, t. 2, f. 2.

» **porvaensis** HKN, 1875, For. Cláv. Szab. Sch., p. 21, t. 13, f. 3.

**Mil. boueana** BRADY, 1884, Chall. Rep. 9, p. 173, t. 7, f. 13.

? **Quinqueloc. disparilis** (D'ORB.) SCHLUMBERG. 1893, Mil. golfe Marseille, Mém. Soc. Zool. France 6, t. 2, ff. 55—57.

Hab. ad oras Bahusiæ rara, profund. metr. 50. Long. mm. 0.70.

### **M. tricarinata** D'ORB.

Tab. XXI, figg. 866—869.

Triloculina, aliquando quadriloculina, trigona, interdum elongata, sæpe tamen æque fere longa ac lata, cameris plerumque magnitudine subæqualibus, suturis angulos acutos aut carinas (interdum alas) exhibentibus; nitida porcellanea.

Fig. 866: magis elongata, e mari Spetsbergensi profund. metr. 4,630.

Fig. 867: e sinu Gullmaren Bahusiae profund. metr. 130.

Fig. 868: quadriloculina in seminulum vergens, e mari Caraibico profund. metr. 530.

Fig. 869: procera, e mari Spetsbergensi profund. metr. 350—400.

**Triloculina tricarinata** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 299, Mod. 94.

**Cruciloculina triangularis** D'ORB., 1846, Bass. tert. Vienne, p. 280, t. 21, f. 57.

**Mil. (Triloc.) tricarinata** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 409, t. 15, f. 40.

**Triloc. tricarinata** PARK., JONES, BRADY, Crag. For., Pal. Soc. 19, p. 7, t. 3, ff. 33—34.

» » BRADY, 1864, Rhizop. Shetl., Trans. Lin. Soc. 24, p. 466, t. 48, f. 3.

» » Rss. 1867, Steinsalz Ablag. Wieliczka, Wien. Ak. S. Ber. 55, p. 71, t. 2, f. 4.

**Mil. tricarinata** BRADY, 1884, Chall. Rep. 9, p. 165, t. 3, f. 17.

» » BRADY, PARK. & JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, p. 215, t. 40, f. 32.

Hab. ad oras Scandinaviae metr. 50—180 passim; ad Spetsbergiam metr. 350—4,600. Long. mm. 0.80—5.30.

forma affinis:

cameris paullum inflatis, angulis suturarum minus acutis aut rotundato-obtusis; in

Mil. trigonulam transiens:

**M. gibba** D'ORB., 1846, Bass. tert. Vienne, p. 274, t. 16, ff. 22—24.

**Mil. gibba** EGGER, 1857, Mioc. Ortenburg. Leonh. u. Bronns Jhb. 1857, p. 271, t. 6, ff. 1—3.

» » v. HKS, 1875, Clávuł. Szabói Sch., p. 21, t. 12, f. 10.

### **M. trigonula** LMCK.

Tab. XXII, fig. 870.

Sphaerica aut ovata, trigona, inflata, angulis rotundatis, suturis saepe callosis; saepe subgrisea minus nitens, subarenosa; a Mil. gibba difficillime distincta, a formis Miliol. ringentis juvenilibus sive triloculinis saepe vix limitanda.

Fig. 870: e Gullmaren sinu Bahusiae profund. metr. 50.

**Miliolites trigonula** LMCK, 1804, Ann. d. Mus. 5, p. 351.

» **cor angvinum** BLAINV., 1825, Man. d. Malac. et Conch., p. 369, t. 4, f. 3.

**Triloc. trigonula** D'ORB., 1826, Tab. méth., Ann. Sc. nat. 7, p. 299, Mod. 93.

» **austriaca** D'ORB., 1846, Bass. tert. Vienne, p. 275, t. 16, ff. 25—27.

? **Miliol. austriaca** EGGER, 1857, Mioc. Ortenburg; Leonh. u. Bronns Jhb. 1875, p. 271, t. 6, ff. 4—6.

» **trigonula** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 83, t. 7, ff. 180—182.

**Triloc. gibba** Rss. 1864, Oberoligocän, Wien. Ak. Sitz. Ber. 50, p. 450, t. 1, f. 4.

**Mil. trigonula** BRADY, 1884, Chall. Rep. 9, p. 164, t. 3, ff. 15—16.

Hab. ad oras Scandinaviae profund. metr. 50—180 semper Mil. simplicem et varietates hujus concomitans, minus frequens. Long. mm. 0.90.

### **M. valvularis** BRADY.

Tab. XXII, fig. 871.

Plus minusve obsolete tri-quadriloculina, ovalis ex margine plerumque compressa, nitida, laevis, cameris externis 2—3, sequente totam aut ex parte praecedentem amplectente, quare testa plus minusve incrassata; apertura rima semicircularis interdum crenata.

Facies externa et modus testæ accrescendi in memoriam revocant *Mil. sigmoideam* BRADY.

Fig. 871: facies segmenti penultimi; *a*: facies oralis; *b*: facies marginalis; *c*: facies segm. penultimi alius magis compressa; *d*: sectio transversa; e mari Atlantico boreali profund. metr. 1,740.

**Mil. valvularis** BRADY, 1884, Chall. Rep. 9, p. 161, t. 4, ff. 4—5.

Obs. *Triloculina valvularis* Rss, 1851, Sept. Thon. Berlin, Zeitschr. deut. geol. Gesellsch. 3, p. 85, t. 7, f. 56, a *Triloc. enoplostoma* et *turgida* Rss, ibid., p. 86, t. 7, ff. 57—58, et in SCHLICHTI, Separatenth. Pietzpubl, Wien. Ak. S. Ber. 62, t. 36, ff. 4—17, non vere distincta, verosimiliter ut varietas *triloculina* & *quadriloculina Mil. simplicis*. D'ORB., habenda, quare nomen "valvularis" Rss, delendum est. Præterea hæc nomen in lævigatam BORNEMANS, 1855, Sept. Thon. Hermsdorf; Zeitschr. deutsch. geol. Gesellsch. 7, p. 350, t. 19, f. 5 transferri potest.

Hab. mare Atlanticum boreale metr. 1,740 rara (LINDAHL). Long. mm. 1.

\*\* *Biloculina*.

### **B. bulloides** D'ORB.

Nitida, spherioidea aut ovoidea, plerumque haud marginata aut margine segmenti ultimi obtuso, interdum subacuto; apertura fere circulari, lingua plerumque bifurcata aut semilunari munita.

**Bil. bulloides** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 297, t. 16, ff. 1—4, Mod. 90.

» » SCHLUMBERGER, 1887, Note sur les *Biloc. bulloides* D'ORB. et *Bil. ringens* LAM., Bullet. Soc. geol. France (3) 15, p. 119, t. 15, ff. 10—13.

Obs. Forma **ringens** LAM. a Cel. Dom. SCHLUMB. sic est distingvenda: ovoidea, non depressa, adultæ sparsim transverse subplicatæ, margine rotundato aut obsolete, apertura fere circulari, grandi, testæ partem crassitudinis tertiam æquante, limbata, lingua bifurcata, aut stylo biauriculato, auriculis perforatis, aut lamina obovata, pedunculata foramine centrali perforata, munita.

SCHLUMB., ibid., p. 126, tab. 15, ff. 14—18.

Forma utraque extincta sec. SCHLUMBERGER.

formæ affines:

1. plerumque obtuse marginata, apertura ovata aut rima semicirculari, aut fibulæformi, nunc brevi nunc valde elongata, præterea typicæ similis, a qua non sat distincta. Margo posticus interdum denticulatus, plicatus aut incrassatus. Haud rare *triloculina*, id est stadium larvale continuatum.

**B. simplex** D'ORB., Tab. XXII, figg. 872—882, 885, Tab. XXIII, figg. 886—887.

Fig. 872: apertura magna, lingua bicornuta.

Fig. 873: apertura parva, lingua cruciformi; ambæ e fretis Koster insulam profund. metr. 35—132.

Fig. 874 *a*, *b*, *c*: *B. inornata* D'ORB. similis; exempla duo e Gullmaren sinu Bahusia profund. metr. 60.

Fig. 875: forma *triloculina*, apertura fibulæformi longa, ex eodem loco.

Fig. 876: *triloculina*, magis elongata, e sinu Bergensium Norvegiæ profund. metr. 125.

Fig. 877: ex eodem loco.

Fig. 878: triloculina, e Hækkelfjord Norvegia, forsan ad formam abyssorum referenda.  
 Figg. 879—880: sectiones transversæ duorum exemplorum, dimorphismum larvale exhibentes; e mari Bahusico.

Fig. 881: "Bil. appendiculata" REUSS, e mari Spetsberg. profund. metr. 80.

Fig. 882: exemplum duplicatum, aperturis formis interse discrepantibus.

Fig. 885: in depressam vergens, e mari Spetsberg. profund. metr. 50; B. brachyodonta FORNAS. propinqua.

Tab. XXIII, fig. 886: facies oralis formæ magis tumidæ, e mari Azorico profund. metr. 530—1,060; a: subtriloculina, ex eodem loco.

Fig. 887: triloculina ex eodem loco (forma larvalis).

**Biloc. simplex, clypeata** D'ORB., 1846, Bass. tert. Vienne, pp. 263, 264, t. 15, ff. 19—21, 25—27.

› **bulloides, simplex, circumclausa** COSTA, 1854, Pal. Nap. 2, p. 299, 300, 307, t. 24, ff. 1, 3, 6.

› **turgida** Rss, 1851, Septar. Thon. Berlin, Ztschr. deut. geol. Gesellsch. 3, p. 85, t. 7, f. 55; v. SCHLICHT, Sept. Thon. Pietzpuhl, t. 35, ff. 27—29, t. 36, ff. 1—3.

› **ringens** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 79, t. 6, 7, ff. 169—171.

› **bulloides v. calostoma, anodonta** KARR., 1868, For. Kostej., Wien. Ak. S. Ber. 58, p. 133, t. 1, ff. 4, 6.

› **globiformis** KARR., 1867, For. Österreichs, Wien. Ak. S. Ber. 55, p. 357, t. 2, f. 1.

› **canariensis** D'ORB., 1839, For. Canaries, p. 139, t. 3, ff. 10—12 (in elongatam D'ORB. vergens.)

› **affinis, inornata** D'ORB., 1846, Bass. tert. Vienne, p. 265—266, t. 16, ff. 1—3, 7—9 (in elongatam vergens.)

› **caudata** BORNEM., 1855, Sept. Thon. Hemsd., Zeitschr. deut. geol. Gesellsch., p. 348, t. 19, f. 2.

› **ringens** PARK., JONES, BRADY, 1866, For. Crag., Pal. Soc. 19, p. 5, t. 3, ff. 26—28.

› **serrata** BAILEY, 1862, Notes new spec. micr. obj., Boston Journ. Nat. Hist. 7, p. 350, t. 8.

**Triloc. bipartita** D'ORB., 1846, Bass. tert. Vienne, p. 275, t. 17, ff. 1—3.

› **enoplostoma** REUSS, 1851, Sept. Thon., Berl., Zeitsch. deutsch. geol. Gesellsch. 3, p. 86, t. 7, f. 57; v. SCHLICHT, 1870, Sept. Thon. Pietzpuhl, t. 36, ff. 4—17 (forma larvalis).

**Biloc. ringens** BRADY, 1884, Chall. Rep. 9, p. 142, t. 2, ff. 7—8.

‡ **Biloc. intermedia** FORNASINI, 1886, Bollet. Soc. geol. Ital. 5, t. 4, f. 2; 1893, Mem. Sc. Instit. R. Bologna (5) 3, t. 1, f. 1.

› **ringens** BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, p. 213, t. 40, ff. 19—20.

Hab. ad oras Scandinaviæ occidentalis profund. metr. 30—150 nec non mare Spetsbergicum et Groenlandicum profund. metr. 50—200 haud rara.

2. striolata aut semistriolata, apertura plerumque brevi.

**B. comata** BRADY, Tab. XXII, figg. 883—884.

Fig. 883: semistriolata, e fretis Koster insularum profund. metr. 133.

Fig. 884: apertura lingua biauriculata valde prominente, e Gullmaren sinu Bahusia profund. metr. 130.

**Biloc. comata** BRADY, 1884, Chall. Rep. 9, p. 144, t. 3, f. 9.

› SCHLUMBERG., 1891, Biloc. grands fonds, Soc. Zool. France 4, p. 178, t. 10, ff. 72—73.

Hab. in mari Bahusico rara.

3. inflata, lævis, e margine plerumque paulum compressa, i. e. altior paulo quam latior, non marginata, apertura nunc rima semilunari nunc fissura longa angulosa, irregulari. Bil. globulo Rss forsan propinqua.



**B. abyssorum** n., Tab. XXIII, figg. 888—889.

Fig. 888: exemplum ex Atlantico boreali profund. metr. 1,750.

Fig. 889: e mari Spetsbergensi profund. metr. 500.

Hab. mare Arcticum et boreale profund. metr. 500—2,000; mare Azoricum profund. metr. 700.

4. nitida, plus minusve irregulariter tri-quinqueloculina, globosa aut ovalis ex margine saepe paullum compressa; apertura rima semicirculari aut angulari aut irregulariter undata, interdum longissima, supramarginali; segmento antepenultimo nunc laterali nunc frontali, Forma multiloculina precedentis.

**M. bucculenta** BRADY, Tab. XXIII, figg. 890—903; Tab. XXIV, figg. 904—905.

Fig. 890: juvenis, e mari Atlant. boreali profund. metr. 1,740.

Fig. 891: Triloc. gibbæ D'ORB. similis, ex eodem loco.

Fig. 892: Triloc. enoplostomæ Rss similis; ex eodem loco.

Fig. 893: ? Juvenis, e mari Spetsbergensi, inter *M. bucculentam*, profund. metr. 1,388.

Fig. 894: ex eodem loco.

Fig. 895: Triloc. trigonulæ LAMCK. similis, e mari Azorico profund. metr. 530.

Figg. 896—901: formæ variæ, tri-quadriloculina, e mari Azorico profund. metr. 530—1,060.

Fig. 902: quadriloculina, e mari Spetsbergensi, profund. metr. 350.

Fig. 903: e mari Atlantico boreali profund. metr. 1,740.

T. XXIV, fig. 904: quadriloculina, facies lateralis; *a*: facies ventralis sive frontalis, e mari Spetsbergico profund. metr. 450.

Fig. 905: triloculina, facies lateralis, ex eodem loco.

BRADY, Chall. Rep., 1884, p. 170, t. 114, f. 3.

**M. bucculenta** v. **placentiformis** BRADY, *ibid.*, p. 171, t. 4, ff. 1—2.

**M. cryptella** PARK. & JONES, 1865; N. Atl. & Arct. Oc., Phil. Trans. 155, p. 410, t. 15, f. 39.

**M. ringens** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 10, ff. 374—375.

**Planispirina bucculenta** SCHLUMB., 1892, Mém. Soc. Zool. France 5, p. 194.

Hab. mare Arct. glaciale profund. metr. 350—1,400 passim (v. OTTER). Long. mm. 2.50; mare Azoricum (SMITT & LJUNGMAN).

5. elliptica, sublageniformis, impolita saepe in collum breve producta, apertura circularis; testa saepe albidogrisea, e pellicula arenosa tenui subscabra; saepe tri-sexloculina.

**B. tubulosa** COSTA.

1854, Pal. Nap. 2, p. 309, t. 24, f. 7.

**Biloc. lucernula** SCHW., 1866, For. Kar. Nikob., Novara Reise geol. Th. 2, p. 202, t. 4, ff. 14, 17.

**Mil. ringens** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 10, ff. 363—365, 376—383.

**Biloc. bulloides** BRADY, 1884, Chall. Rep. 9, p. 142, t. 2, ff. 5—6.

» **tubulosa** BRADY, *ibid.*, p. 147, t. 3, f. 6 (triloculina).

» **lucernula** SCHLUMBERG. 1891, Bilocul. des grands fonds, Mém. Soc. Zool. France 4, p. 185, t. 12, ff. 90—96.

Hab. mare Atlanticum metr. 530—2,000 passim. Diam. mm. 2.40.

6. magis angusta, elongate ovalis aut elliptica, segmento penultimo saepe postice attenuato, interdum fimbriato aut caudato ultimum excedente; margine plerumque obtuso aut rotundato; a typica non limitanda; nunc teres tumida, nunc depressa; formae tri-quadriloculinae etiam occurrunt.

**B. elongata** D'ORB., Tab. XXIV, figg. 906—913.

Fig. 906: in typicam vergens, e Hækkefjord, Norvegiae, metr. 180.

Figg. 907—913: formae bi-, tri-, quadriloculinae, aliquot in Biloc. simplicem vergentes; omnes a mari Bahusiae Sveciae, profund. metr. 30—65.

1826, Tab. méth., An. Sc. nat. 7, p. 298, No. 4.

**Biloc. oblonga** D'ORB., 1839, For. Cuba, p. 163, t. 8, ff. 21—23.

» **Patagonica, Bougainvillei** D'ORB., 1839, Voy. Amér. mér. 5, p. 65, 67, t. 3, ff. 15—17, t. 8, ff. 22—24.

» **constricta** COSTA, 1854, Pal. Nap. 2, p. 301, t. 24, f. 2.

» **ringens** var. **patagonica** WILLIAMS, 1858, Rec. For. Gr. Brit., p. 80, t. 7, ff. 175—176.

**Mil. (Biloc.) elongata** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 409, t. 17, ff. 88, 90—91.

**Biloc. bulloides** v. **truncata, gracilis** RSS, 1867, Steinsalzablag. Wieliczka, Wien. Ak. Sitz. Ber. 55, p. 68, t. 2, ff. 1—2.

» **tenuis** KARR., 1868, Mioc. Kostej, Wien. Ak. Sitz. Ber. 58, p. 133, t. 1, f. 5.

» **elongata** BRADY, Chall. Rep. 9, p. 144, t. 2, f. 9.

» » BRADY, PARK. & JONES, 1887, Abrohlos Bank, Trans. Lin. Soc. 12, 7, p. 214, t. 40, ff. 21—22.

» » SCHLUMB., 1891, Biloc. grands fonds, Mém. Soc. Zool. France 4, p. 184, t. 11, 12, ff. 87—89.

Hab. ad oras Scandinaviae occidentales cum typica passim.

7. ovalis, subdepressa, segmentis ultimis margine subcarinatis.

Segmentum ultimum postice saepe incrassatum et emarginatum. Inter typicam et var. depressam medium tenens, a neutra limitanda.

**B. laevis** DEFR., Tab. XXIV, figg. 914—918.

Figg. 914—917: formae variae e mari Spetsbergico profund. metr. 1,450—4,600.

**Pyrgo laevis** DEFR., 1824, Dict. Sc. nat. 32, p. 273, t. 88, f. 2.

**Biloc. laevis** D'ORB., 1826, Tab. méth., An. Sc. nat. 7, p. 298, No. 8.

» » BRADY, 1884, Chall. Rep. 9, p. 146, t. 2, ff. 13—14.

» **appendiculata** RSS, 1863, Crag d'Anvers, Bull. Acad. Belg. (2) 15, p. 139, t. 1, f. 1.

» **amphiconica** var. **platystoma** RSS, 1867, Steinsalzablag. Wieliczka, Wien. Ak. Sitz. Ber. 55, p. 67, t. 1, f. 8.

**Mil. ringens** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 10, ff. 361—362.

Hab. mare Arcticum metr. 1,450—4,600 vulgaris (v. OTTER).

8. nitida globosa aut ovalis aut subdepressa, segmento ultimo penultimum valde excedente saepe partim amplectente; apertura extensa, saepe rima protracta, angulata aut undulata, suprasuturalis; in var. depressam D'ORB. transiens.

**B. arctica** GOËS, Tab. XXV, figg. 919—920.

Fig. 919: procera, e mari Spetsbergensi profund. 4,600.

Fig. 920: in var. abyssorum vergens; ex eodem mari, profund. metr. 350.

**Mil. (Biloc.) ringens** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 409, t. 15, ff. 42—43.

? **Biloc. larvata** RSS, 1867, Steinsalzablag. Wieliczka, Wien. Ak. S. Ber. 55, p. 70, t. 2, f. 3.

Hab. mare Arcticum profund. metr. 350—1,460 passim Biloc. depressam concomitans (v. OTTER).  
Long. mm. 2—3.

**B. depressa** D'ORB.

Tab. XXV, figg. 921—925.

Nitida, orbicularis aut ovalis, depressa, segmento ultimo (et interdum penultimo) carinato-marginato; apertura rima protracta transversa aut fibulæformis aut subcircularis, lingua bifurcata sæpe provisiva; margo posticus interdum emarginatus. A *B. simplici* non sat limitata.

Fig. 921: ad "serratum" tendens, e mari Azorico, profund. metr. 980.

Fig. 922: e Skagerack, profund. metr. 270.

Fig. 923: sectio transversa, stadium larvale Vloculinum exhibens; e mari Spetsbergensi, profund. metr. 4,600; in *B. simplicem* vergens.

Fig. 924—925: e mari Bahusiæ profund. metr. 35—40.

1826, Tab. méth., Ann. Sc. nat. 7, p. 298, No. 7, Mod. 91.

**Biloc. carinata** D'ORB., 1839, For. Cuba, p. 164, t. 8, f. 24; t. 9, ff. 1—2.

» **lunula** D'ORB., 1846, Bass. tert. Vienne, p. 264, t. 15, ff. 22—24.

» **amphiconica** Rss., 1849, Neue For. Österr., Wien. Ak. DkSehr., p. 382, t. 49, f. 5.

» **ringens** var. **carinata** WILL., 1858, Rec. For. Gr. Brit., p. 79, t. 7, ff. 172—174.

**Mil. (Biloc.) depressa** PARK. & JONES, 1865, N. Atl. & Arct. Oc., Phil. Trans. 155, p. 409, t. 17, f. 89.

**Biloc. depressa** JONES, PARK., BRADY, 1866, For. Crag., Pal. Soc. 19, p. 6, t. 3, ff. 29—30.

» **scutella** KARR., 1868, Mioc. Kostej., Wien. Ak. Sitz. Ber. 58, p. 134, t. 1, f. 7.

» **plana** KARR., 1877, Hochqu. Wasserleit., Abh. geol. Reichsanst. 9, p. 375, t. 16, f. 9.

» **ringens** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 10, ff. 366—367, (in serratum vergens).

» **depressa** BRADY, 1884, Chall. Rep. 9, p. 145, t. 2, ff. 12, 15—17; t. 3, ff. 1—2.

» " " BRADY, PARK., JONES, 1887, Abrohlos Bank, Trans. Zool. Soc. Lond. 12, 7, p. 213, t. 40, ff. 17—18.

» " " SCHLUMBERG. 1891, Biloc. grands fonds, Mém. Soc. Zool. France 4, p. 160, t. 9, ff. 48—49.

Hab. ad oras occidentales Scandinaviæ metr. 40—500 sat frequens, mare Spetsbergicum metr. 900—1,800, haud rara. Diam. mm. usque ad 2.10.

forma affinis:

marginè segmentorum serrato-crenato, apertura plerumque ovali aut subcirculari; a typica non sat limitata.

**B. serrata** BRADY, Tab. XXV, fig. 926.

Fig. 926: e mari Atlantico boreali profund. metr. 1,740.

**Biloc. depressa** var. **serrata** BRADY, 1884, Chall. Rep. 9, p. 146, t. 3, f. 3.

» **serrata** SCHLUMBERG. 1883, Feuille jeunes natural. (separ.) 13, p. 23, t. 3, f. 3.

» " " SCHLUMBERG. 1891, Bil. grands fonds, Mém. Soc. Zool. France 4, p. 163, t. 9, ff. 50—51.

Hab. mare Atlanticum boreale profund. metr. 1,740.

**B. sphaera** D'ORB.

Tab. XXV, fig. 927.

Globosa, nitidissima, segmento ultimo valido, magnam penultimi vix prominentis partem amplectente; apertura nunc regularis rima semicircularis aut angulata aut rimæ undatæ sæpe ramosa.

Fig. 927: e fretis Koster insulam profund. metr. 70—80.

- Biloc. sphæra** D'ORB., 1839, Voy. Amér. mérid. 5, p. 66, t. 8, ff. 13—16.  
 ? » **globulus** (v. SCHLICHT) REUSS, 1870, Sitz.Ber. Wien. Ak. 62, t. 464; v. SCHLICHT, tab. 35, ff. 30—32.  
 ? » » BORNEM., 1855, Sept. Thon. Hermsdorf, Zeitschr. deut. geol. Ges. 7, p. 349, t. 19, f. 3.  
 » **ringens** var. GOËS, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl. 19, 4, t. 10, ff. 368—369.  
 » **sphæra** BRADY, 1884, Chall. Rep. 9, p. 141, t. 2, f. 4.  
 » **sphæroides** SCHLUMB., 1880, Feuille Jeunes Natur. 13, p. 22, t. 2, f. 3, a nostra non sat distincta.  
**Planispirina sphæra** SCHLUMBERG, 1891, Biloc. grands fonds, Mém. Soc. Zool. France 4, p. 190, ff. 45—46.

Hab. ad oras Scandinaviæ occidentales et Groenlandiæ profund. metr. 70—1,250 minus frequens.

## APPENDIX.

### **B. saccata** n.

Tab. XXV, fig. 928.

Biloculina a margine compressa, haud polita, segmento ultimo lageniformi, sæpe collo tubulari instructo; segm. penultimo magis compresso fere toto nudo, aut distante segmenti partem antepenultimi non obtegente: apertura circularis, lingula plerumque bifurcata.

Ut *B. tubulosa* COSTA constructa tamen compressa et forma alia.

Fig. 928: exemplum ordinarium cum facie orali *a*.

*b*: exemplum hians, segmentum antepenultimum præbens.

*c*: sectio transversa.

*d*: exempl. aliud valde compressum, collo abbreviato; omnia e mari Caraibico.

Hab. mare Caraibicum profund. metr. 500 rara (Goës). Long. mm. 1.10.

### **B. quadrangularis** n.

Tab. XXV, fig. 929.

Biloculina, ovalis, tetragona, subæquilateralis, segmentis subtriangularibus, ultimo (interdum et penultimo) marginato-carinato, angulo dorsali amborum uni-bicarinato, carinis sæpe undulato-crenatis, incompletis; apertura rima suturalis circumflexa.

Fig. 929: facies segmenti penultimi.

*a*: facies oralis.

*b*: facies marginalis.

*c*: sectio transversa; e mari Caraibico.

Inter Biloculinas nulla est relata forma angulosa nisi *Biloc. aculeata* D'ORB., An. Sc. nat. 7, p. 298, No. 3, Mod. 31, ex Aquitania Galliæ australis, fossilis.

Goës, 1882, Ret. Rhizop. Carib. Sea, Sv. Vet. Akad. Handl., t. 9, ff. 348—349.

Hab. mare Caraibicum profund. metr. 500 rara (Goës). Long. mm. 1.

**CERATINA** n. g.**C. trochamminoides** n.

Tab. XXV, fig. 930.

Plus minusve regulariter planospiralis, haud polita, margine rotundato. Anfractus subteretes, apparentes 3—4—5, interni saepe irregulariter convoluti, segmentis ultimi anfr. 10—12, suturis incisis, septis plus minusve completis.

Exemplorum paucitatis causa hoc genus sat investigare non potui, Trochammina proteo KARR. similis, structura certe tamen porcellanea.

Fig. 930: facies lateralis.

*a*: facies marginalis.

*b*: septum fere completum.

*c*: sectio transversa, stadium larvale miliolinæforme præbens.

Hab. Azores insulas mare alluens profund. metr. 540 (SMITT, LJUNGMAN). Diam. mm. 1.15.

## INDEX.

	Pag.
ALLOMORPHINA trigona v. REUSS.....	53
AMMODISCUS incertus D'ORB.....	31
» tenuis BRADY.....	31
ASTRORHIZA arenaria NORMAN.....	12
» crassatina BRADY.....	13
» limicola SANDAHL.....	12
BATHYSIPHON filiformis SARS.....	16
BIGENERINA digitata D'ORB.....	38
» nodosaria D'ORB.....	37
BILOCULINA abyssorum GOËS.....	118
» arctica GOËS.....	119
» bulloides D'ORB.....	116
» comata BRADY.....	117
» depressa D'ORB.....	120
» elongata D'ORB.....	119
» lævis DEFR.....	119
» quadrangularis GOËS.....	121
» ringens LAMCK.....	116
» saccata GOËS.....	121
» serrata BRADY.....	120
» simplex D'ORB.....	116
» sphaera D'ORB.....	120
» tubulosa COSTA.....	118
BOLLVINA ænariensis COSTA.....	50
» difformis WILLIAMS.....	50
» dilatata v. REUSS.....	50
» plicata (D'ORB.) BRADY.....	51
» punctata D'ORB.....	49
BOTELLINA labyrinthica BRADY.....	19
BULIMINA convoluta WILLIAMS.....	47
» ellipsoides COSTA.....	45
» marginata D'ORB.....	46
» Normani GOËS.....	47
» pyrula D'ORB.....	45
» subteres BRADY.....	46
CASSIDULINA Bradyi NORMAN.....	44
» crassa D'ORB.....	43
» lævigata D'ORB.....	43
CERATINA trochamminoides GOËS.....	122
CHILOSTOMELLA ovoidea v. REUSS.....	53
CLAVULINA communis D'ORB.....	40
» eocæna GUMB.....	41

	Pag.
CLAVULINA <i>levigata</i> GOËS.....	40
" <i>parisiensis</i> D'ORB.....	41
" <i>textularioidea</i> GOËS.....	42
" <i>rudis</i> COSTA.....	43
" <i>Soldanii</i> PARK. & JONES.....	42
CORNUSPIRA <i>carinata</i> COSTA.....	106
" <i>foliacea</i> PHIL.....	106
" <i>involvens</i> v. REUSS.....	106
" <i>striolata</i> BRADY.....	107
CRISTELLARIA <i>articulata</i> v. REUSS.....	60
" <i>Bradyi</i> GOËS.....	64
" <i>calcar</i> LIN.....	60
" <i>complanata</i> v. REUSS.....	62
" <i>crassa</i> D'ORB.....	61
" <i>crepidula</i> FICHT. & MOLL.....	62
" <i>elegantissima</i> COSTA.....	64
" <i>gibba</i> D'ORB.....	61
" <i>navicula</i> D'ORB.....	64
" <i>rotulata</i> LMK.....	59
" <i>spinigera</i> BRADY.....	63
" <i>Saulcyi</i> D'ORB.....	63
" <i>subarcuatula</i> MONTAG.....	63
" <i>variabilis</i> v. REUSS.....	62
CRITHONINA <i>granum</i> GOËS.....	15
" <i>manilla</i> GOËS.....	15
CYCLAMMINA <i>pusilla</i> BRADY.....	32
DISCORBINA <i>Berthelotiana</i> D'ORB.....	93
" <i>globularis</i> D'ORB.....	94
" <i>obtusa</i> D'ORB.....	95
" <i>parisiensis</i> D'ORB.....	93
" <i>rosacea</i> D'ORB.....	94
" <i>Vilardeboana</i> D'ORB.....	95
EHRENBURGINA <i>serrata</i> v. REUSS.....	44
GAUDRYINA <i>chilostoma</i> v. REUSS.....	34
" <i>pupoides</i> D'ORB.....	34
GLOBIGERINA <i>aquilateralis</i> BRADY.....	86
" <i>bulloides</i> D'ORB.....	83
" <i>conglobata</i> BRADY.....	86
" <i>cretacea</i> D'ORB.....	86
" <i>dubia</i> EGGER.....	86
" <i>inflata</i> D'ORB.....	85
" <i>pachyderma</i> (EHRENB.) BR.....	85
" <i>rubra</i> D'ORB.....	85
" <i>sacculifera</i> BRADY.....	86
GYPSINA <i>inhaerens</i> SCHULTZE.....	91
" <i>vesicularis</i> PARK. & JONES var.....	92
HALIPHYSEMA <i>Tumanowiczii</i> BOW. var. <i>abyssicola</i> GOËS.....	15
HAPLOPHRAGMIUM <i>agglutinans</i> D'ORB.....	23
" <i>canariense</i> D'ORB.....	20
" <i>cassis</i> PARK. & JONES.....	24
" <i>crassimargo</i> NORMAN.....	21
" <i>globigeriniforme</i> PARK. & JONES.....	22
" <i>glomeratum</i> BRADY.....	23
" <i>latidorsatum</i> BORNEM.....	21
" <i>nanum</i> BRADY.....	22
" <i>pseudospirale</i> WILL.....	23
HIPPOCREPINA <i>indivisa</i> PARK. & JONES.....	28
HORMOSINA <i>globulifera</i> BRADY.....	29
" <i>ovicula</i> BRADY.....	29

	Pag.
HYPERAMMINA arborescens NORM. ....	18
» elongata BRADY .....	17
» friabilis BRADY .....	17
» ramosa BRADY .....	18
» subnodosa BRADY .....	16
» vagans BRADY .....	17
JACULELLA obtusa BRADY .....	20
LAGENA apiculata v. REUSS .....	80
» clavata D'ORB. ....	75
» caudata D'ORB. ....	81
» distoma PARK. & JONES .....	77
» elongata EHRENB. ....	75
» globosa WALK. & JAC. ....	77
» gracilis WILLIAMS .....	77
» gracillima SEG. ....	75
» Hertwigiana BRADY .....	77
» hexagona WILL. ....	80
» hispida v. REUSS .....	74
» levis WALK. & BOYS .....	74
» lagenoides WILL. ....	83
» lucida WILL. ....	83
» marginata WALK. & BOYS .....	81
» Orbignyana SEG. ....	82
» pulchella BRADY .....	82
» semiornata TERQU. ....	80
» semistriata WILLIAMS .....	76
» squamosa MONTAG .....	79
» striata D'ORB. ....	75
» striatopunctata PARK. & JONES .....	83
» sulcata WALK. & JAC. ....	78
» Williamsoni ALCOCK .....	79
MILIOLINA agglutinans PARK. & JONES .....	110
» angulata WILLIAMS .....	113
» Auberiana D'ORB. ....	109
» contorta D'ORB. ....	111
» bicornis WALK. & JAC. ....	113
» bicostata D'ORB. ....	112
» Boucana D'ORB. ....	114
» bucculenta BRADY .....	118
» Candeiana D'ORB. ....	109
» inornata D'ORB. ....	108
» concava v. RSS .....	111
» elegans WILL. ....	112
» gibba D'ORB. ....	115
» oblonga MONTAG .....	110
» pulchella D'ORB. ....	114
» polygona D'ORB. ....	111
» secans D'ORB. ....	112
» seminulum LIN. ....	108
» subrotunda MONTAG .....	109
» tricarinata D'ORB. ....	114
» trigonula LMK. ....	115
» valvularis v. REUSS .....	115
NODOSARIA æqualis v. REUSS .....	72
» Boucana D'ORB. ....	69
» calomorpha v. RSS .....	72
» carinata D'ORB. ....	73
» communis D'ORB. ....	67
» levigata D'ORB. ....	71



	Pag.
NODOSARINA obliqua LIN.....	70
» pauperata D'ORB.....	68
» scalaris BATSCH.....	73
» seminuda v. REUSS.....	71
» soluta v. REUSS.....	70
» striolata GOËS.....	71
» vertebrulis BATSCH.....	70
NONIONINA Boueana D'ORB.....	104
» depressula WALK. & JAC.....	103
» scapha FICHT. & MOLL.....	104
» stelligera D'ORB.....	104
» turgida WILL.....	105
» umbilicatula MONTAG.....	103
OPERCULINA ammonoides GRONOV.....	105
PATELLINA corrugata WILLIAMS.....	92
PLACOSILINA bulla BRADY.....	28
PLANORBULINA Akneriana D'ORB.....	89
» ariminensis D'ORB.....	91
» coronata PARK. & JONES.....	90
» lobatula WALK. & JAC.....	88
» mediterraneensis D'ORB.....	91
» refulgens MTF.....	89
» Ungeriana D'ORB.....	90
» variabilis D'ORB.....	88
» Wüllerstorfi SCHWAG.....	89
POLYMORPHINA acuta ROEM.....	56
» angusta EGGER.....	58
» compressa D'ORB.....	58
» gibba D'ORB.....	55
» lactea WALK. & JAC.....	54
» problema D'ORB.....	56
» rotundata BORNEM.....	57
» Thouini D'ORB.....	59
» irregularis D'ORB.....	59
POLYSTOMELLA arctica PARK. & JONES.....	100
» crispa LIN.....	102
» sibirica GOËS.....	100
» striatopunctata PARK. & JONES.....	101
» subnodosa v. MÜNST.....	102
PSAMMOSPHERA fusca SCHULZE.....	14
PULLENIA quinqueloba v. REUSS.....	87
» sphæroides D'ORB.....	87
PULVINULINA auricula FICHT. & MOLL.....	98
» concamerata MONTAG.....	96
» concentrica PARK. & JONES.....	96
» dispansa BRADY.....	97
» elegans D'ORB.....	97
» Karsteni v. REUSS.....	97
» punctulata D'ORB.....	96
» repanda FICHT. & MOLL.....	95
» Schreibersii D'ORB.....	98
REOPHAX arcticus BRADY.....	25
» compressus GOËS.....	27
» dentaliniformis BRADY.....	25
» difflugiformis BRADY.....	26
» fusiformis WILL.....	24
» guttifer BRADY.....	26
» nodulosus BRADY.....	26
» pilulifer BRADY.....	25

	Pag.
REOPHAX procerus GOËS .....	27
» sabulosus BRADY .....	27
» scorpiurus MTFRT .....	24
RHABDAMMINA abyssorum SARS .....	19
» discreta BRADY .....	19
» linearis BRADY .....	18
ROTALINA Beccarii LIN. ....	99
» Soldanii D'ORB. ....	99
RUPERTIA stabilis WALL. ....	92
SACCAMMINA sphaerica SARS. ....	13
SAGRINA dimorpha PARK. & JONES .....	52
SPILEROIDINA bulloides D'ORB. ....	87
SPIROLOCULINA limbata D'ORB. ....	107
» planulata LAMCK. ....	107
SPIROPLECTA biformis PARK. & JONES .....	38
STORTHOSPHERA albida SCHULZE .....	13
TECHNITELLA legumen NORM. ....	14
TEXTULARIA agglutinans D'ORB. ....	35
» intermedia GOËS .....	36
» pectinata v. REUSS .....	37
» sagittula DEFR. var. ....	36
» Williamsoni GOËS .....	36
TROCHAMMINA inflata MONTAG. ....	29
» nitida BRADY .....	30
» Robertsoni BRADY .....	30
» vesicularis GOËS .....	31
UVIGERINA angulosa WILL. ....	51
» Auberiana D'ORB. ....	52
» canariensis D'ORB. ....	52
» pygmæa D'ORB. ....	51
VAGINULINA badenensis D'ORB. ....	66
» glabra D'ORB. ....	65
» lævigata ROEM. ....	65
» linearis MONTAG. ....	66
» striatocostata v. REUSS .....	66
VALVULINA conica PARK. & JONES .....	39
» fusca WILL. ....	39
VERNEULINA polystropha v. REUSS .....	32
» propinqua BRADY .....	33
» pygmæa (EGGER) BRADY .....	33
VIRGULINA obscura .....	48
» Schreibersiana CZJZ. ....	48
» squamosa D'ORB. ....	47
» subsquamosa EGGER .....	49
WEBBINA clavata PARK. & JONES .....	32

# EXPOSITIO TABULARUM.

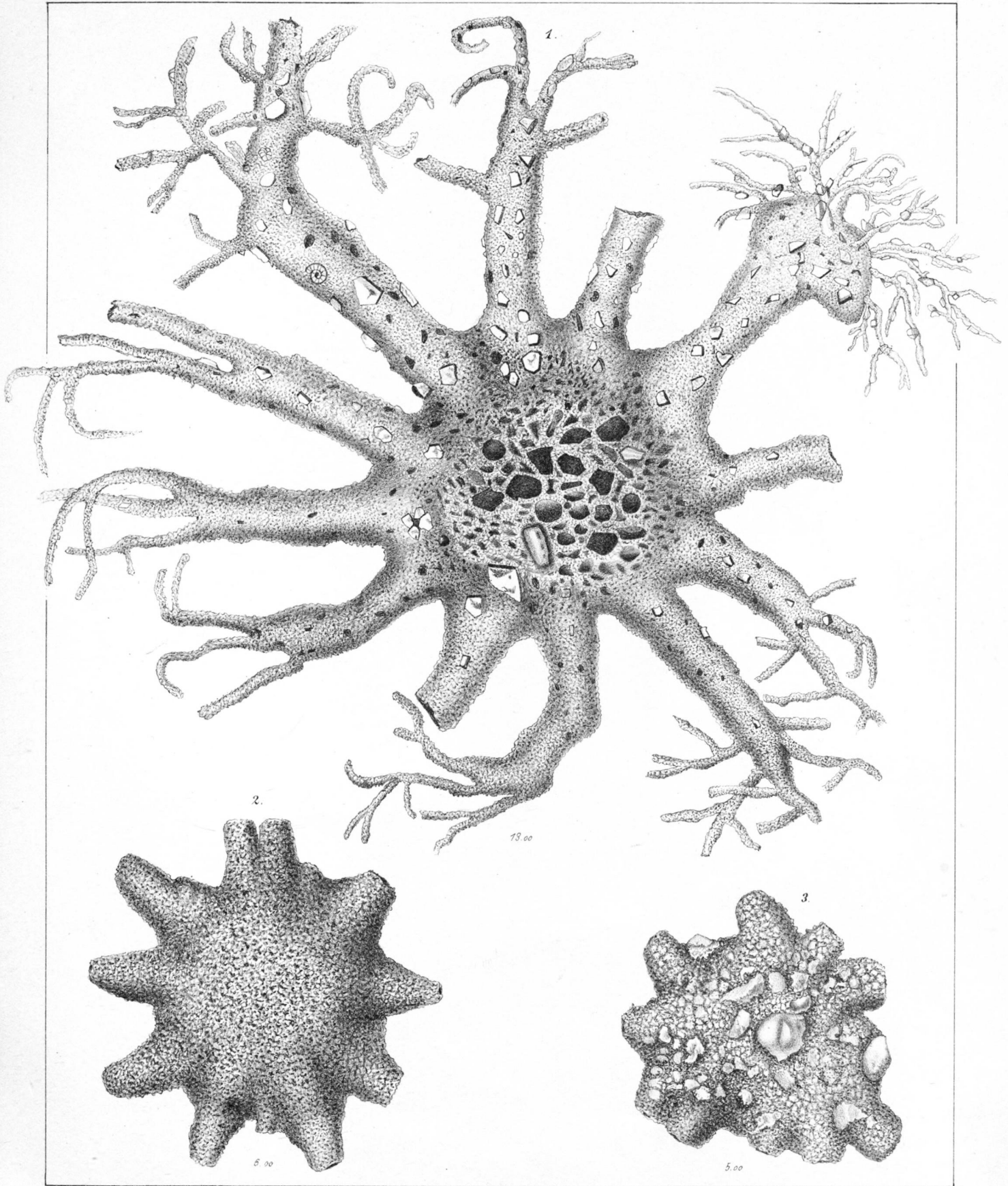
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**TAB. I.**

**Tab. I.**

**Figg. 1—3: *Astrorhiza limicola* SANDAHL..... p. 12.**

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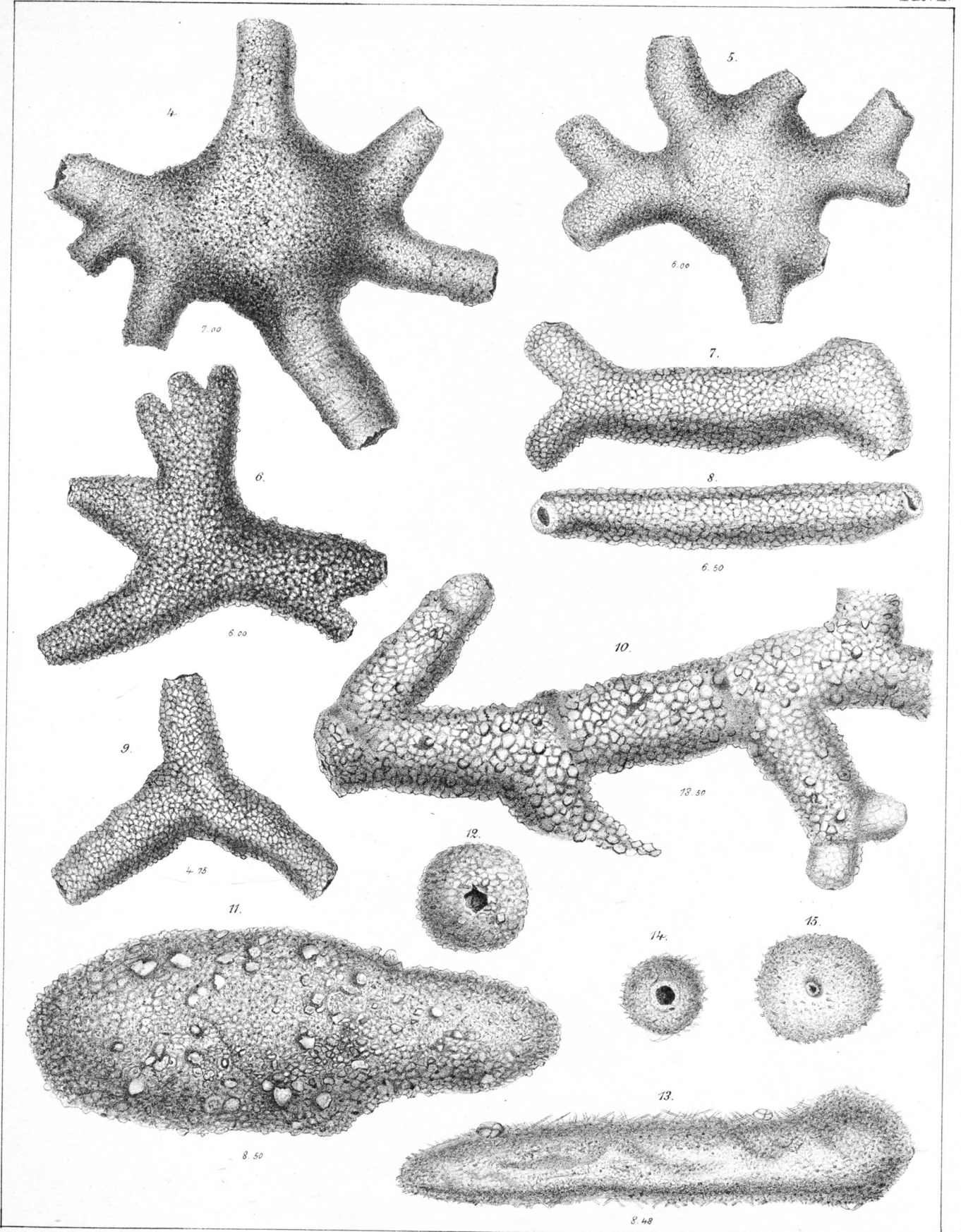
**TAB. II.**

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**Tab. II**

Figg. 4—10: <i>Astrorhiza arenaria</i> NORMAN .....	p. 12.
» 11—15: » <i>crassatina</i> BRADY.....	» 13.



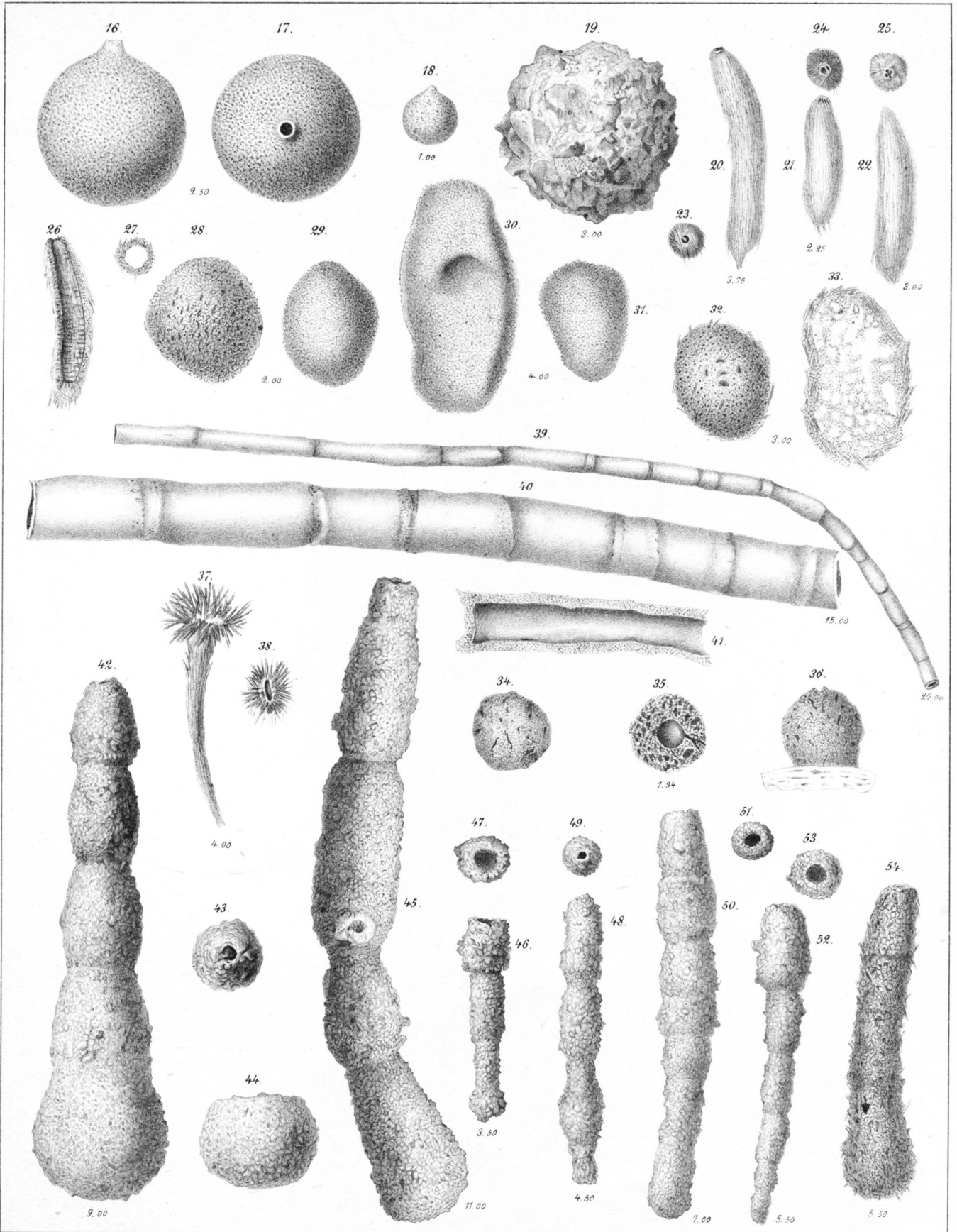


**TAB. III.**

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**Tab. III.**

Figg. 16--18: <i>Saccamina sphaerica</i> M. SARS .....	p. 13.
Fig. 19: <i>Psammosphaera fusca</i> E. SCHULZE .....	» 14.
Figg. 20--27: <i>Technitella legumen</i> NORMAN .....	» 14.
» 28--33: <i>Crithionina granum</i> GOËS .....	» 15.
» 34--36:       » <i>mamilla</i> GOËS .....	» 15.
» 37--38: <i>Haliphysema Tumanoviczii</i> BOWERBANK v. <i>abyssicola</i> GOËS .....	» 15.
» 39--41: <i>Bathysiphon filiformis</i> M. SARS .....	16.
» 42--54: <i>Hyperammia subnodosa</i> BRADY .....	» 16.



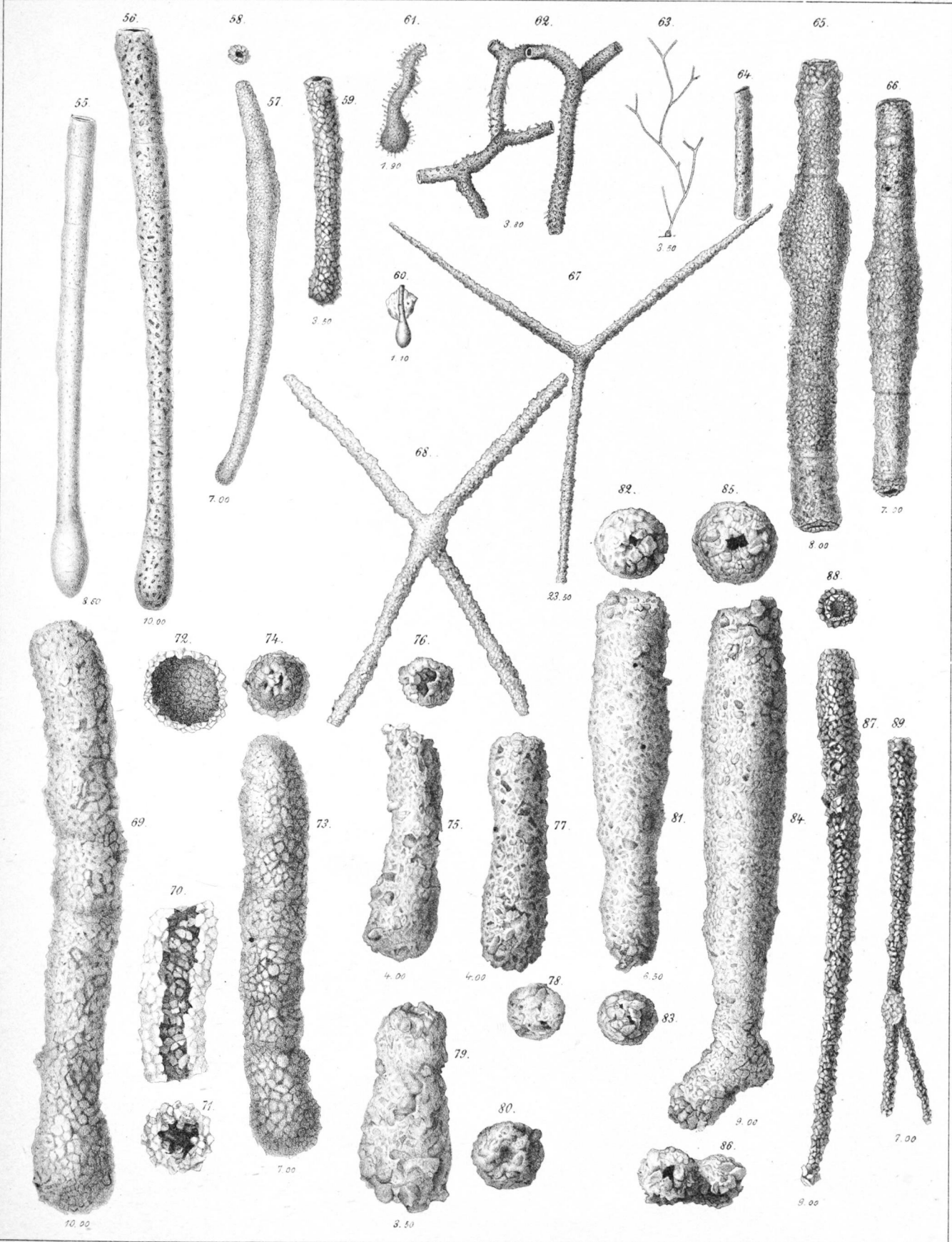
## TAB. IV.

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**Tab. IV.**

Figg. 55—58:	Hyperammina elongata BRADY.....	p. 17.
Fig. 59:	» ? friabilis BRADY.....	» 17.
» 60:	» vagans BRADY.....	» 17.
Figg. 61—62:	» ramosa BRADY.....	» 18.
» 63—64:	» arborescens NORMAN.....	» 18.
» 65—66:	Rhabdammina linearis BRADY.....	» 18.
» 67—68:	» abyssorum M. SARS.....	» 19.
» 69—86:	Botellina labyrinthica BRADY.....	» 19.
» 87—89:	Jaculella obtusa BRADY.....	» 20.

---



**Tab. V.**

Figg. 90—91: <i>Jaculella obtusa</i> BRADY .....	p. 20.
» 92—101: <i>Haplophragmium canariense</i> D'ORB. ....	» 20.
» 102—123: <i>latidorsatum</i> BORNEM. ....	» 21.
» 124—127: <i>nanum</i> BRADY .....	» 22.
» 128—133: <i>globigeriniforme</i> PARK. & JONES .....	» 22.
» 134—139: <i>glomeratum</i> BRADY .....	» 23.
» 140—141: <i>agglutinans</i> D'ORB. ....	» 23.
» 142—151: <i>pseudospirale</i> WILL. ....	» 23.
» 152—157: <i>cassis</i> PARK. ....	» 24.
» 158—163: <i>Reophax scorpiurus</i> MTF. ....	» 24.

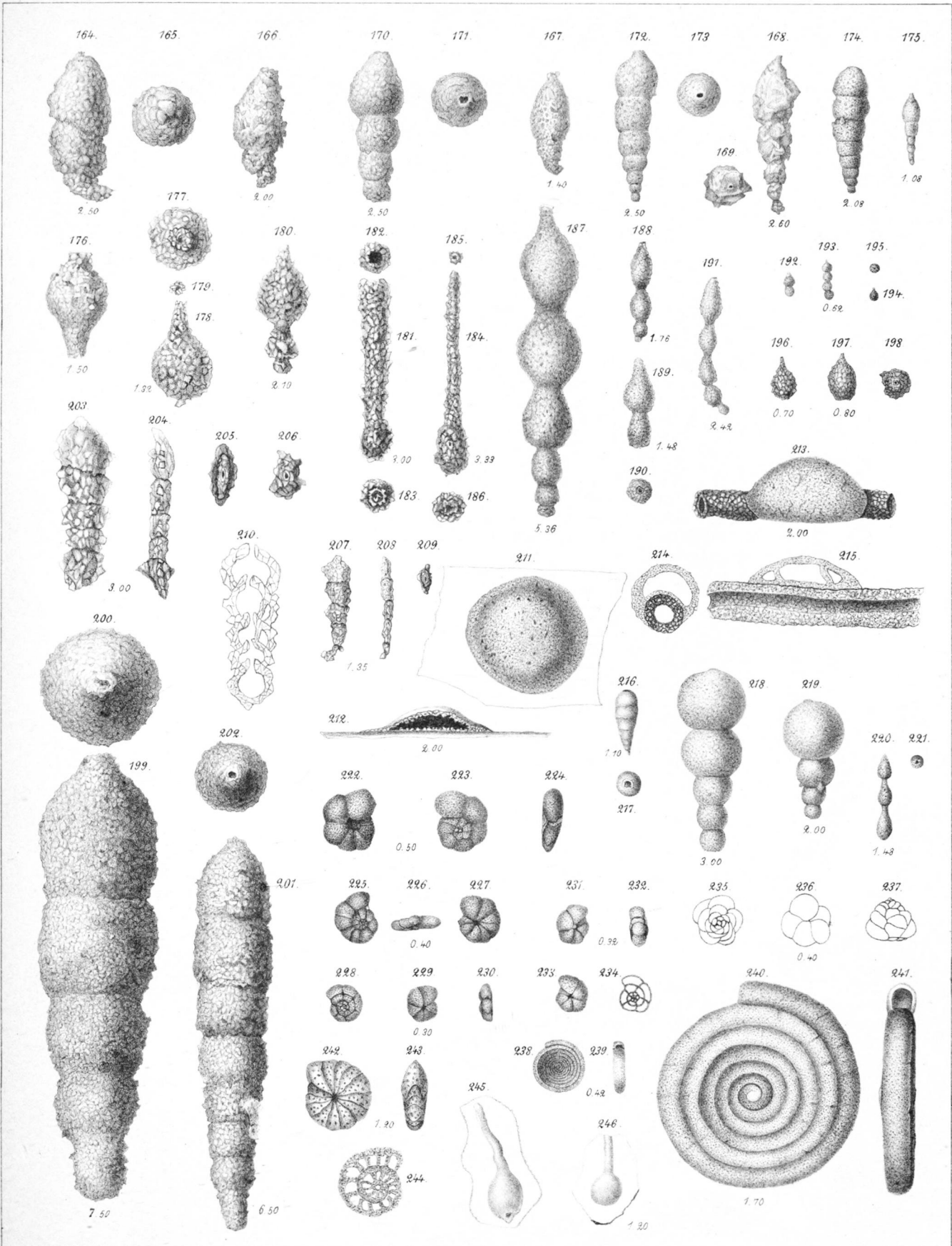




**TAB. VI.**

**Tab. VI.**

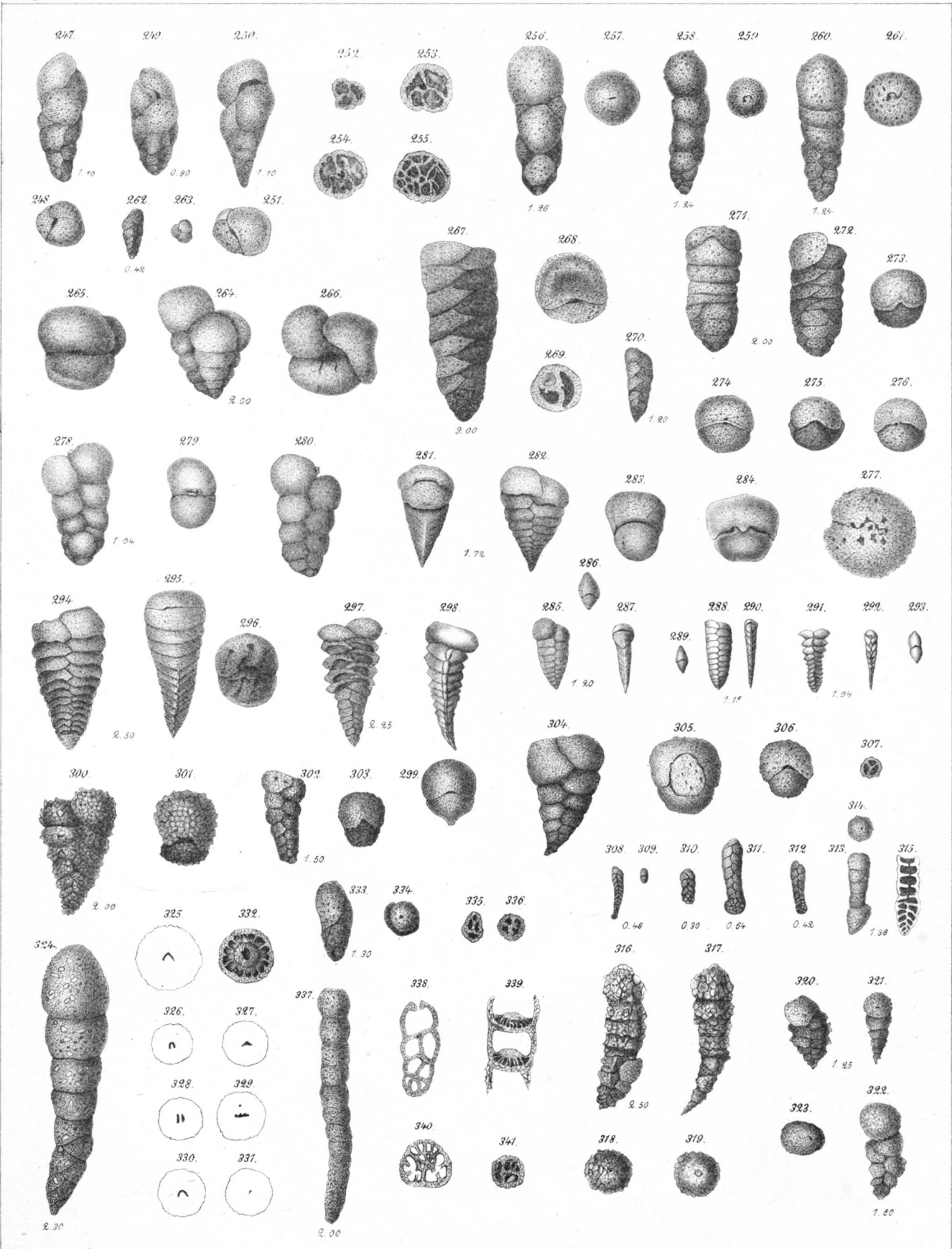
Figg.	164—171:	Reophax	scorpiurus MTF.	.....	p. 24.
»	172—175:	»	dentaliniformis BRADY	.....	» 25.
»	176—180:	»	pilulifer BRADY	.....	» 25.
»	181—186:	»	? distans BRADY	.....	» 26.
»	187—191:	»	nodulosus BRADY	.....	» 26.
»	192—195:	»	guttifer BRADY	.....	» 26.
»	196—198:	»	diffflugiformis BRADY	.....	» 26.
»	199—202:	»	sabulosus BRADY	.....	» 27.
»	203—210:	»	compressus GOËS	.....	» 27.
»	211—215:	Placopsilina	bulla BRADY	.....	» 28.
»	216—217:	Hippocrepina	indivisa	.....	» 28.
»	218—219:	Hormosina	globulifera BRADY	.....	» 29.
»	220—221:	»	ovicula BRADY	.....	» 29.
»	222—224:	Trochammina	inflata MONTAG.	.....	» 29.
»	225—230:	»	nitida BRADY	.....	» 30.
»	231—234:	»	Robertsoni BRADY	.....	» 30.
»	235—237:	»	vesicularis GOËS	.....	» 31.
»	238—239:	Ammodiscus	incertus D'ORB.	.....	» 31.
»	240—241:	»	tenuis BRADY	.....	» 31.
»	242—244:	Cyclammina	pusilla BRADY	.....	» 32.
»	245—246:	Webbina	clavata PARK. & JONES	.....	» 32.



**TAB. VII.**

**Tab. VII.**

Figg.	247—255:	Verneuilina polystropha v. REUSS .....	p. 32.
	»	256—261: forma Bigenerinae praeedentis .....	» 33.
	»	262—263: Verneuilina pygmæa (EGGER) BRADY .....	» 33.
	»	264—266:           »   propinqua BRADY .....	» 33.
	»	267—277: Gaudryina pupoides D'ORB. ....	» 34.
	»	278—280:       »   chilostoma v. REUSS .....	» 34.
	»	281—284: Textularia agglutinans D'ORB. ....	» 35.
	»	285—287:       »   Williamsoni ORB. ....	» 36.
	»	288—290:       »   sagittula v. cuneiformis D'ORB. ....	» 36.
	»	291—293:       »   pectinata v. REUSS .....	» 37.
	»	294—296:       »   agglutinans D'ORB. ....	» 35.
	»	297—299:       »       »   forma jugosa .....	» 35.
	»	300—301:       »       »   forma borealis .....	» 35.
	»	302—303:       »       »   forma angusta .....	» 35.
	»	304—307:       »   intermedia GOËS .....	» 36.
	»	308—312: Spiroplecta biformis PARK. & JONES .....	» 38.
	»	313—323: Bigenerina nodosaria D'ORB. ....	» 37.
	»	324—341:       »   digitata D'ORB. ....	» 38.



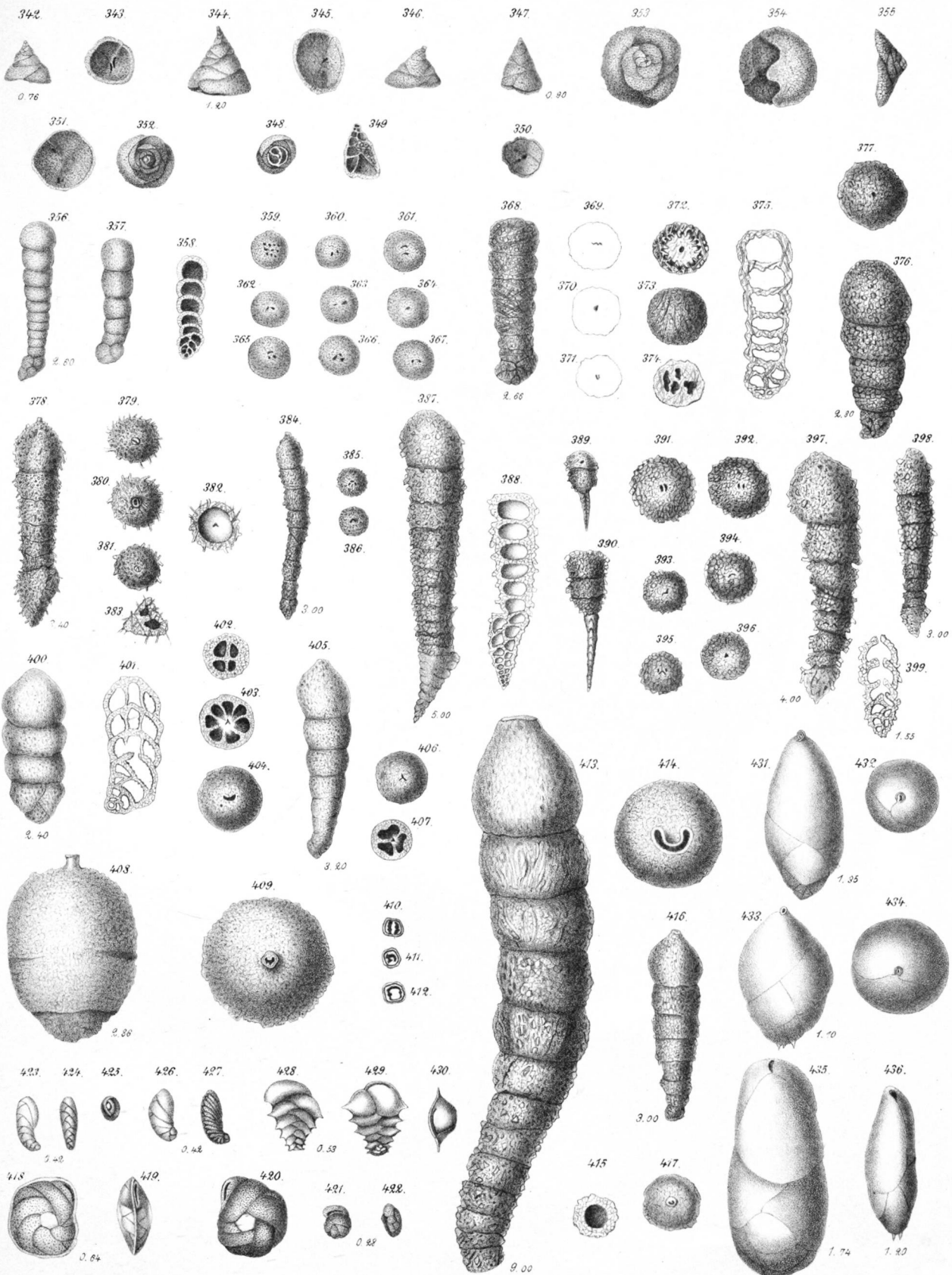
## TAB. VIII.

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**Tab. VIII.**

Figg. 342—352:	Valvulina conica PARK. & JONES.....	p. 39.
» 353—355:	» fusca WILLIAMS.....	» 39.
» 356—367:	Clavulina lævigata GOËS.....	» 40.
» 368—377:	» cocæna GÜMBEL.....	» 41.
» 378—386:	» parisiensis D'ORB.....	» 41.
» 387—399:	» textularioidea GOËS.....	» 42.
» 400—407:	» Soldanii PARK. & JONES forma emaciata.....	» 42.
» 408—412:	» rudis COSTA.....	» 43.
» 413—417:	Reophax procerus GOËS.....	» 27.
» 418—420:	Cassidulina lævigata D'ORB.....	» 43.
» 421—422:	» crassa D'ORB.....	» 43.
» 423—426:	» Bradyi NORMAN.....	» 44.
Fig. 427:	» » forma stenostegica GOËS.....	» 44.
Figg. 428—430:	Ehrenbergina serrata v. REUSS.....	» 44.
» 431—436:	Bulimina ellipsoides COSTA.....	» 45.

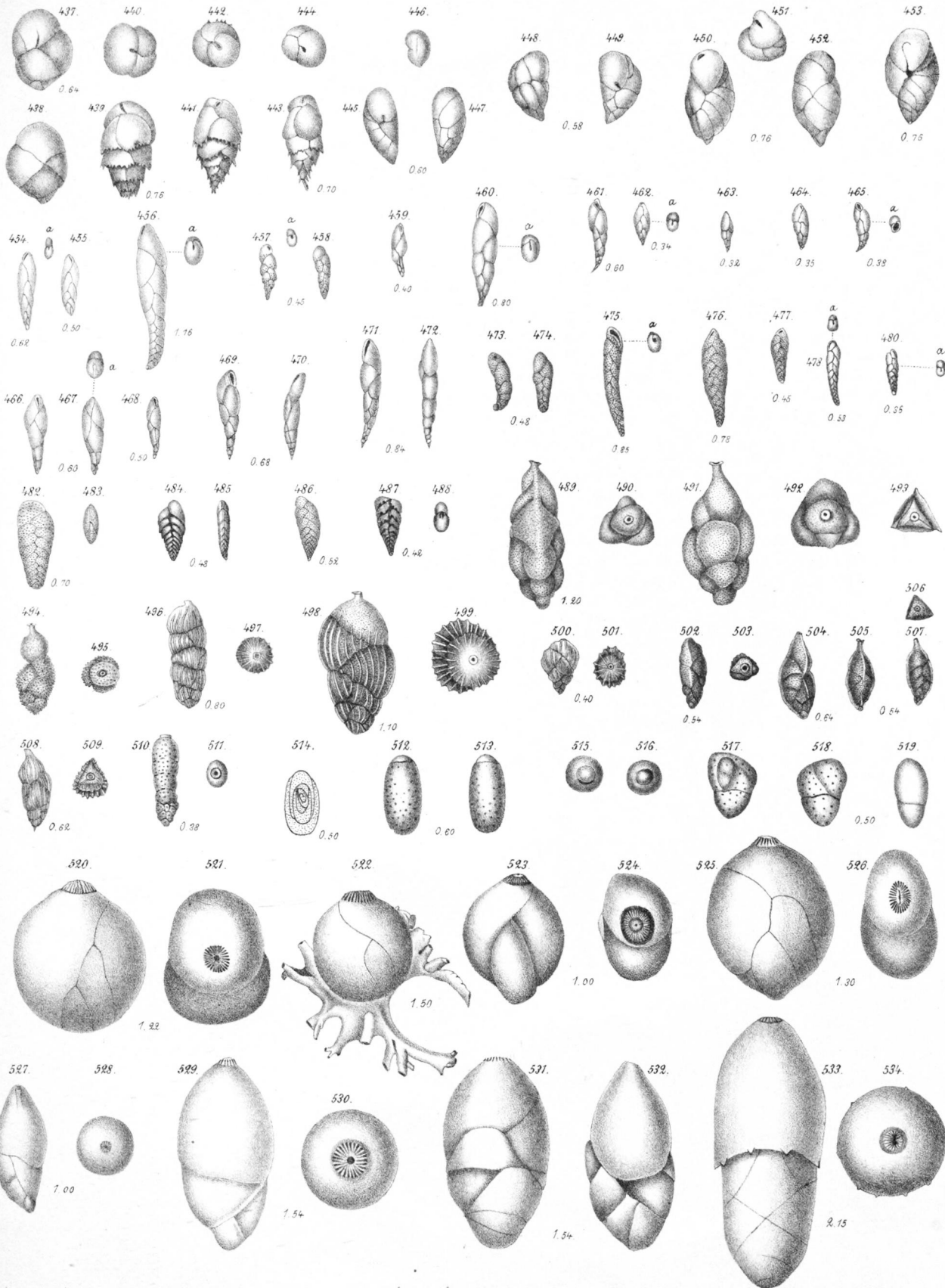


**TAB. IX.**

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**Tab. IX.**

Figg.	437—438:	Bulimina	Normani	GOËS.....	p. 47.
»	439—444:	»	marginata	D'ORB.....	» 46.
»	445—453:	»	subteres	BRADY.....	» 46.
»	454—456:	Virgulina	squamosa	D'ORB.....	» 47.
»	457—458:	»	obscura	GOËS.....	» 48.
Fig.	459:	»	Schreibersiana	CZJZEK.....	» 48.
»	460:	»	squamosa	D'ORB.....	» 47.
Figg.	461—472:	»	Schreibersiana	CZJZEK.....	» 48.
»	473—474:	»	subsquamosa	EGGER.....	» 49.
»	475—480:	Bolivina	punctata	D'ORB.....	» 49.
»	482—486:	»	dilatata	v. REUSS.....	» 50.
»	487—488:	»	plicata	D'ORB.....	» 51.
»	489—493:	Uvigerina	canariensis	D'ORB.....	» 52.
»	494—495:	»	Auberiana	D'ORB.....	» 52.
»	496—501:	»	pygmæa	D'ORB.....	» 51.
»	502—509:	»	angulosa	WILLIAMS.....	» 51.
»	510—511:	Sagrina	dimorpha	PARK. & JONES.....	» 52.
»	512—516:	Chilostomella	ovoidea	v. REUSS.....	» 53.
»	517—519:	Allomorphina	trigoua	v. REUSS.....	» 53.
»	520—526:	Polymorphina	gibba	D'ORB.....	» 55.
»	527—528:	»	acuta	ROEMER.....	» 56.
»	529—534:	»	rotundata	BORNEM.....	» 57.

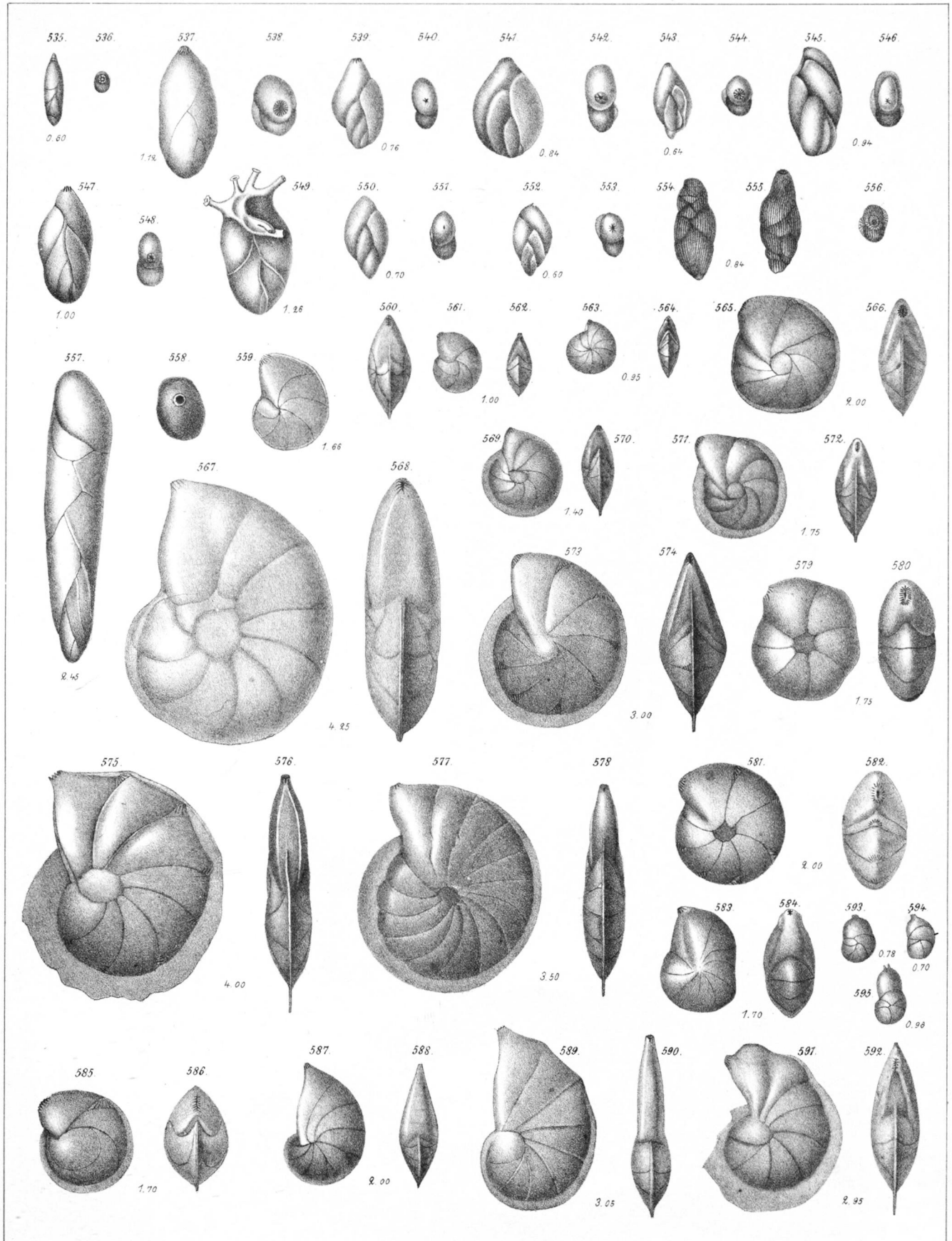


**TAB. X.**

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**Tab. X.**

Figg.	535—536:		Polymorphina angusta EGGER.....	p. 58.
	» 537—538:	»	acuta ROEMER.....	» 56.
	» 539—553:	»	compressa D'ORB.....	» 58.
	» 554—556:	»	irregularis D'ORB.....	» 59.
	» 557—558:	»	Thouini D'ORB.....	» 59.
	» 559—578:		Cristellaria rotulata LAMCK.....	» 59.
	» 579—? 584:	»	articulata v. REUSS.....	» 61.
	» 585—586:	»	crassa D'ORB.....	» 61.
	» 587—592:	»	gibba D'ORB.....	» 61.
	» 593—595:	»	variabilis v. REUSS.....	» 62.



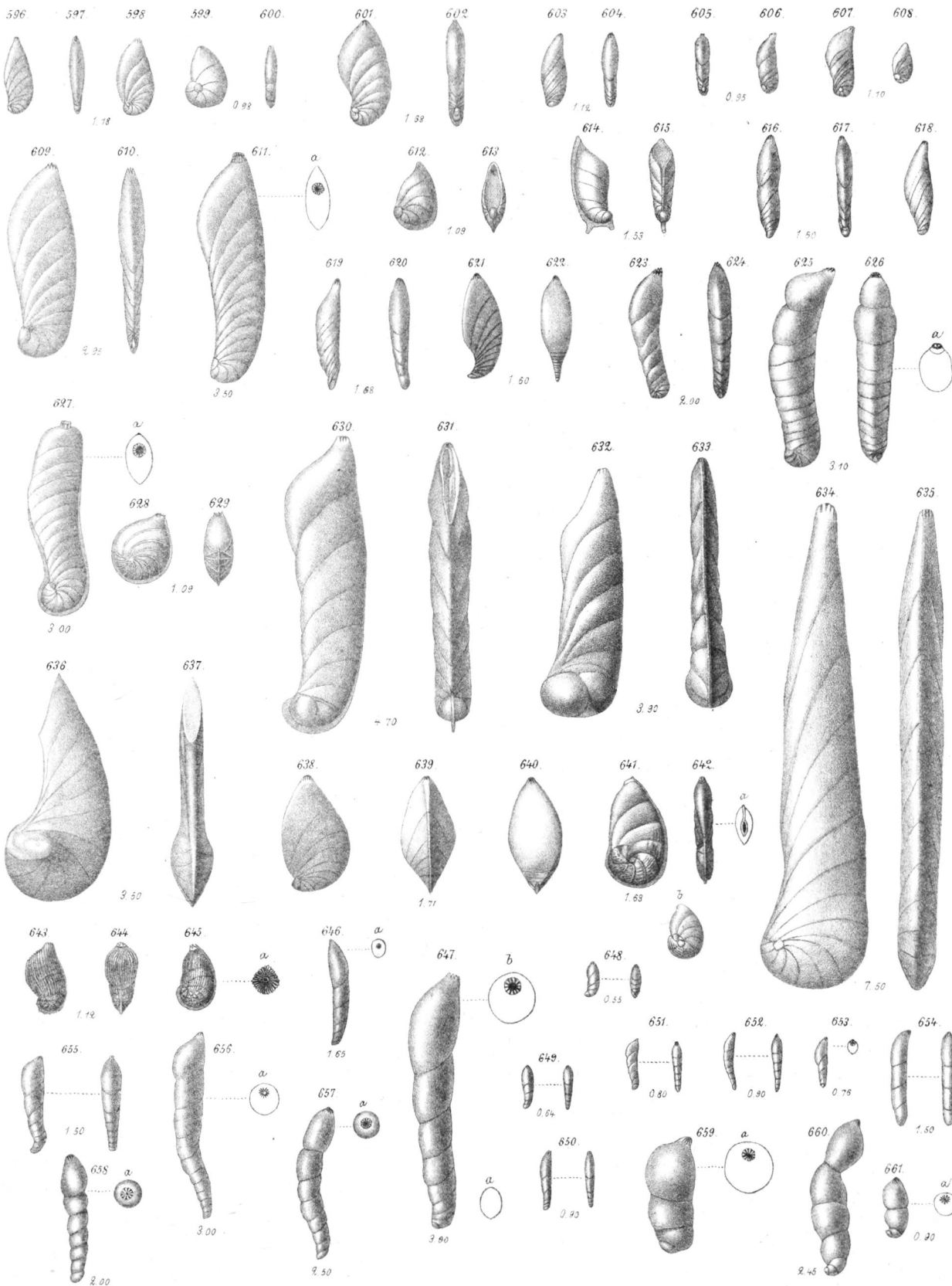


**TAB. XI.**

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**Tab. XI.**

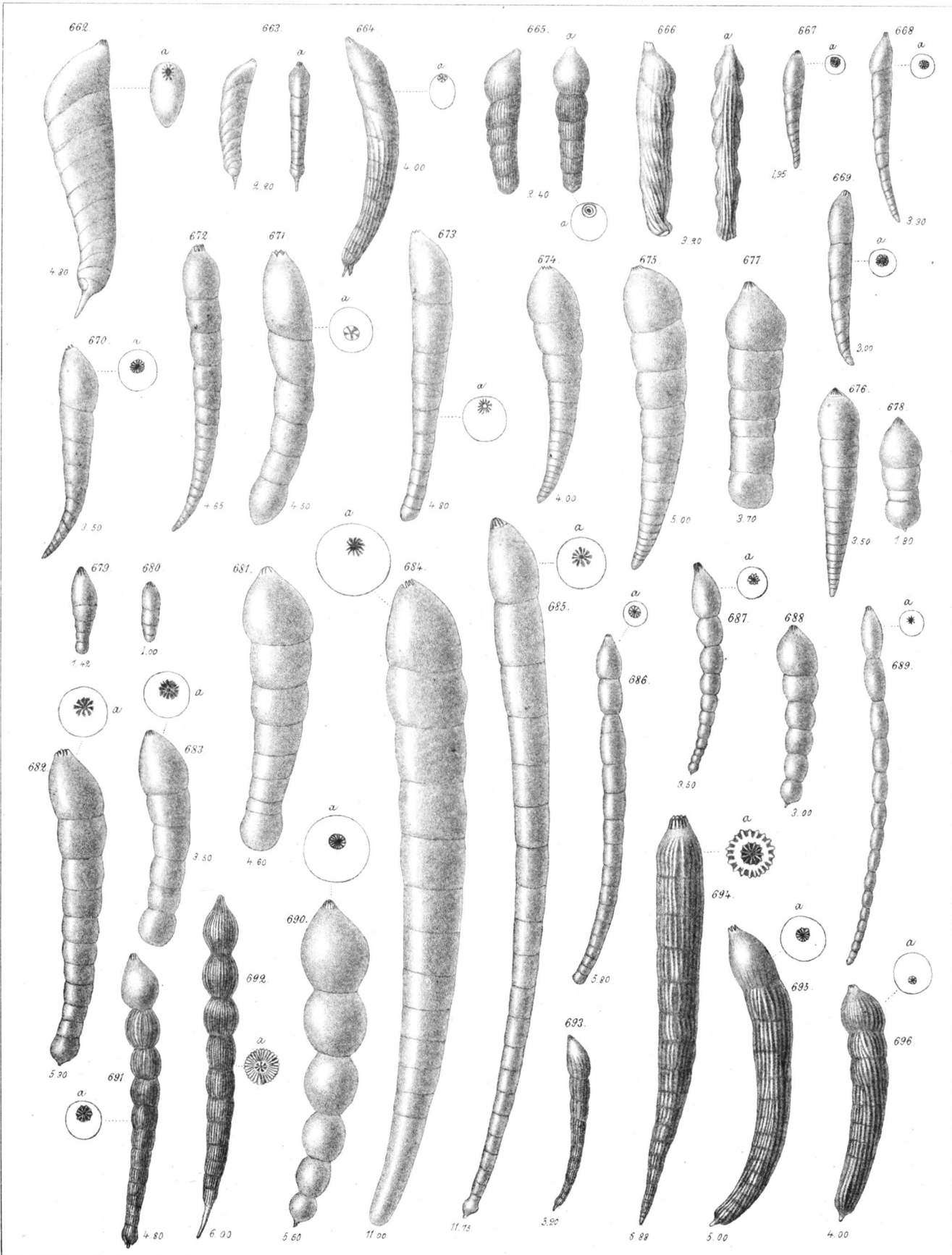
Figg. 596—613:	<i>Cristellaria</i>	<i>crepidula</i> v. REUSS .....	p. 62.
» 614—615:	»	<i>spinigera</i> BRADY .....	» 63.
» 616—622:	»	<i>complanata</i> v. REUSS .....	» 62.
» 623—629:	»	<i>Saulcyi</i> D'ORB. ....	» 63.
» 630—637:	»	<i>subarcuatula</i> MONTAG. ....	» 63.
» 638—640:	»	<i>navicula</i> D'ORB. ....	» 64.
» 641—642:	»	<i>elegantissima</i> COSTA .....	» 64.
» 643—645:	»	<i>Bradyi</i> GOËS .....	» 64.
» 646—655:	<i>Vaginulina</i>	<i>lævigata</i> ROEM. ....	» 65.
» 656—661:	»	<i>glabra</i> D'ORB. ....	» 65.



## TAB. XII.

**Tab. XII.**

Figg. 662—663:	Vaginulina	badenensis D'ORB. ....	p. 66.
Fig. 664:	»	linearis MONTAG. ....	» 66.
» 665:	»	striatocostata v. REUSS .....	» 66.
» 666:	»	costata BATSCH. ....	» 67.
Figg. 667—671:	Nodosaria	communis D'ORB. ....	» 67.
» 672—688:	»	pauperata D'ORB. ....	» 68.
Fig. 689:	»	Boueana D'ORB. ....	» 69.
» 690:	»	soluta v. REUSS .....	» 70.
Figg. 691—696:	»	obliqua LIN. ....	» 70.



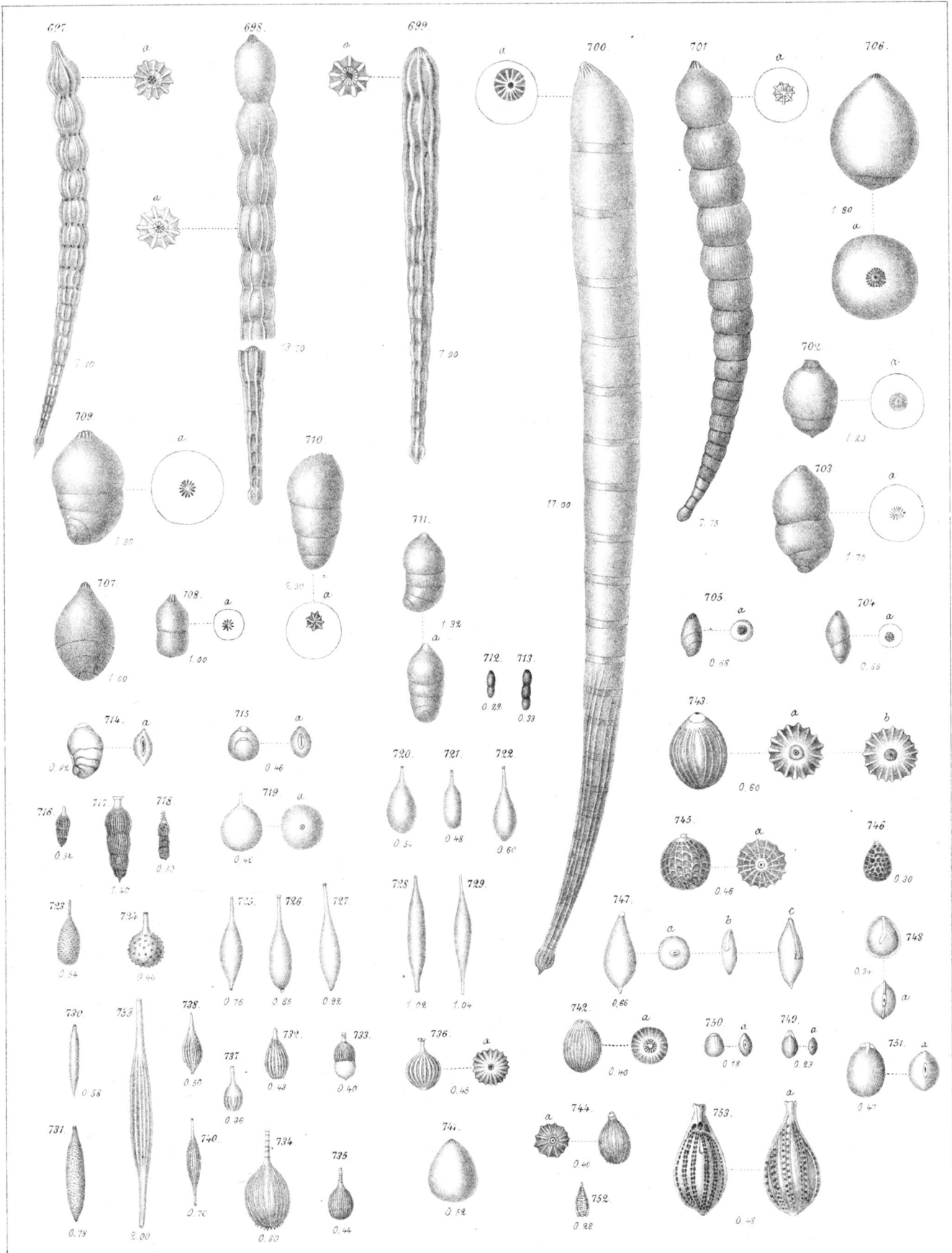
**TAB. XIII.**

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**Tab. XIII.**

Figg. 697—699:	Nodosaria	obliqua LIN v. vertebralis BATSCH.	p. 70.
Fig. 700:	»	seminuda v. REUSS	» 71.
» 701:	»	striolata GOËS	» 71.
Figg. 702—703:	»	lævigata D'ORB.	» 71.
» 704—705:	»	æqualis v. REUSS	» 72.
» 706—707:	»	lævigata D'ORB.	» 71.
Fig. 708:	»	æqualis v. REUSS	» 72.
» 709:	»	lævigata D'ORB.	» 71.
Figg. 710—711:	»	æqualis v. REUSS	» 72.
» 712—713:	»	calomorpha v. REUSS	» 72.
» 714—715:	»	(Lingulina) carinata D'ORB.	» 73.
» 716—718:	»	scalaris BATSCH.	» 73.
» 719—722:	Lagena	lævis WALK. & BOYS.	» 74.
Fig. 723:	»	hispida v. REUSS	» 74.
» 724:	»	tuberculata KARRER	» 75.
Figg. 725—727:	»	clavata D'ORB.	» 75.
» 728—730:	»	gracillima SEG.	» 75.
Fig. 731:	»	elongata (EHRENB.) BRADY	» 75.
Figg. 732—736:	»	striata D'ORB.	» 75.
Fig. 737:	»	semistriata WILLIAMS.	» 76.
» 738:	»	gracilis WILLIAMS.	» 77.
Figg. 739—740:	»	distoma PARK. & JONES	» 77.
Fig. 741:	»	globosa WALK. & JAC.	» 77.
Figg. 742—744:	»	sulcata WALK. & BOYS	» 78.
Fig. 745:	»	squamosa MONTAGU.	» 74.
» 746:	»	hexagona WILLIAMS.	» 80.
» 747:	»	apiculata v. REUSS	» 80.
Figg. 748—751:	»	marginata WALK. & BOYS.	» 81.
Fig. 752:	»	lagenoides WILLIAMS.	» 83.
» 753:	»	striatopunctata PARK. & JONES	» 83.

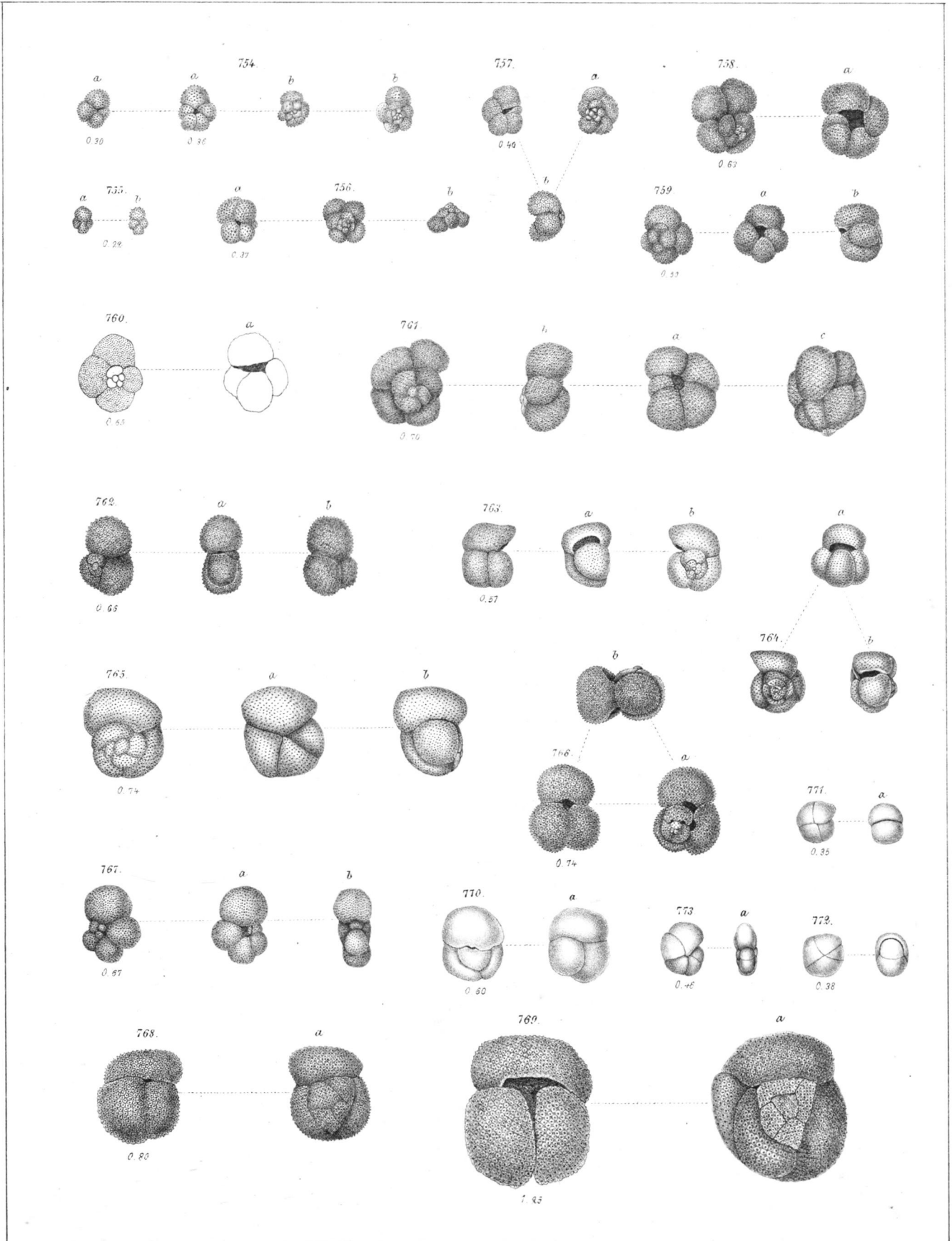




**TAB. XIV.**

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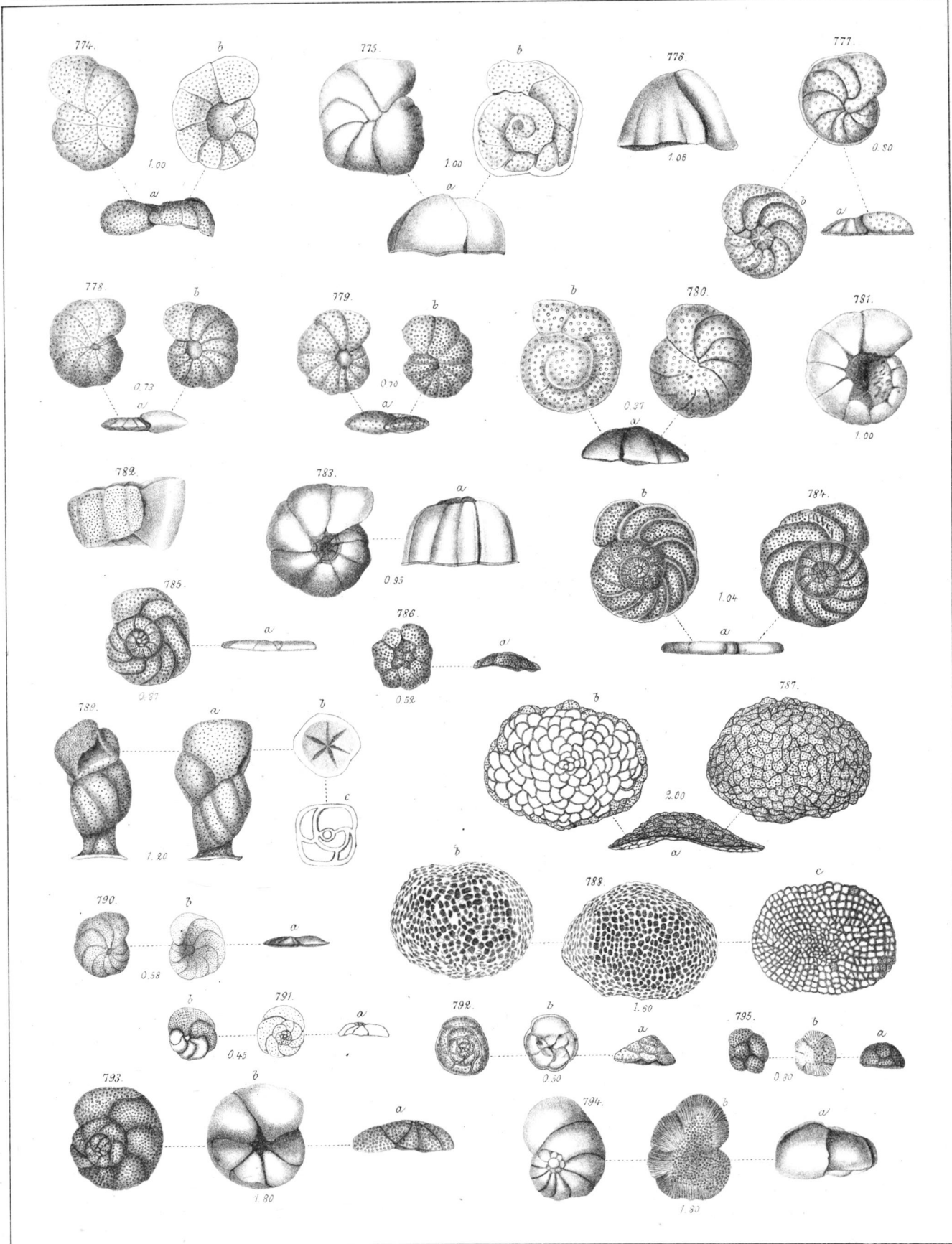
Figg. 754—762: <i>Globigerina bulloides</i> D'ORB.....	p. 83.
» 763—765: » <i>inflata</i> D'ORB.....	» 85.
Fig. 766: » <i>rubra</i> D'ORB.....	» 85.
» 767: » <i>æquilateralis</i> BRADY.....	» 86.
Figg. 768—769: » <i>conglobata</i> BRADY.....	» 86.
Fig. 770: <i>Sphaeroidina bulloides</i> D'ORB.....	» 87.
Figg. 771—772: <i>Pullenia sphaeroides</i> D'ORB.....	» 87.
Fig. 773: » <i>quinteloba</i> v. REUSS.....	» 87.



**TAB. XV.**

**Tab. XV.**

Fig. 774: <i>Planorbulina lobatula</i> WALK. & JAC. ....	p.	88.
Figg. 775—776: <i>Planorbulina refulgens</i> MTFRT .....	»	89.
Fig. 777:           » <i>Wüllerstorfi</i> SCHWAG. ....	»	89.
Figg. 778—779:     » <i>Akneriana</i> D'ORB. ....	»	89.
Fig. 780:           » <i>Ungeriana</i> D'ORB. ....	»	90.
Figg. 781—783:     » <i>coronata</i> PARK. & JONES .....	»	90.
» 784—785:     » <i>ariminiensis</i> D'ORB. ....	»	91.
Fig. 786:           » <i>mediterraneensis</i> D'ORB. ....	»	91.
» 787: <i>Gypsina inhærens</i> SCHULTZE .....	»	91.
» 788:       » <i>vesicularis</i> PARK. & JONES v. <i>intermedia</i> GOES. ....	»	92.
» 789: <i>Rupertia stabilis</i> WALLICH .....	»	92.
» 790: <i>Discorbina Berthelotiana</i> D'ORB. ....	»	93.
» 791:       » <i>parisiensis</i> D'ORB. ....	»	93.
» 792:       » <i>rosacea</i> D'ORB. ....	»	94.
» 793:       » <i>globularis</i> D'ORB. ....	»	94.
Figg. 794—795: <i>Discorbina obtusa</i> D'ORB. ....	»	95.

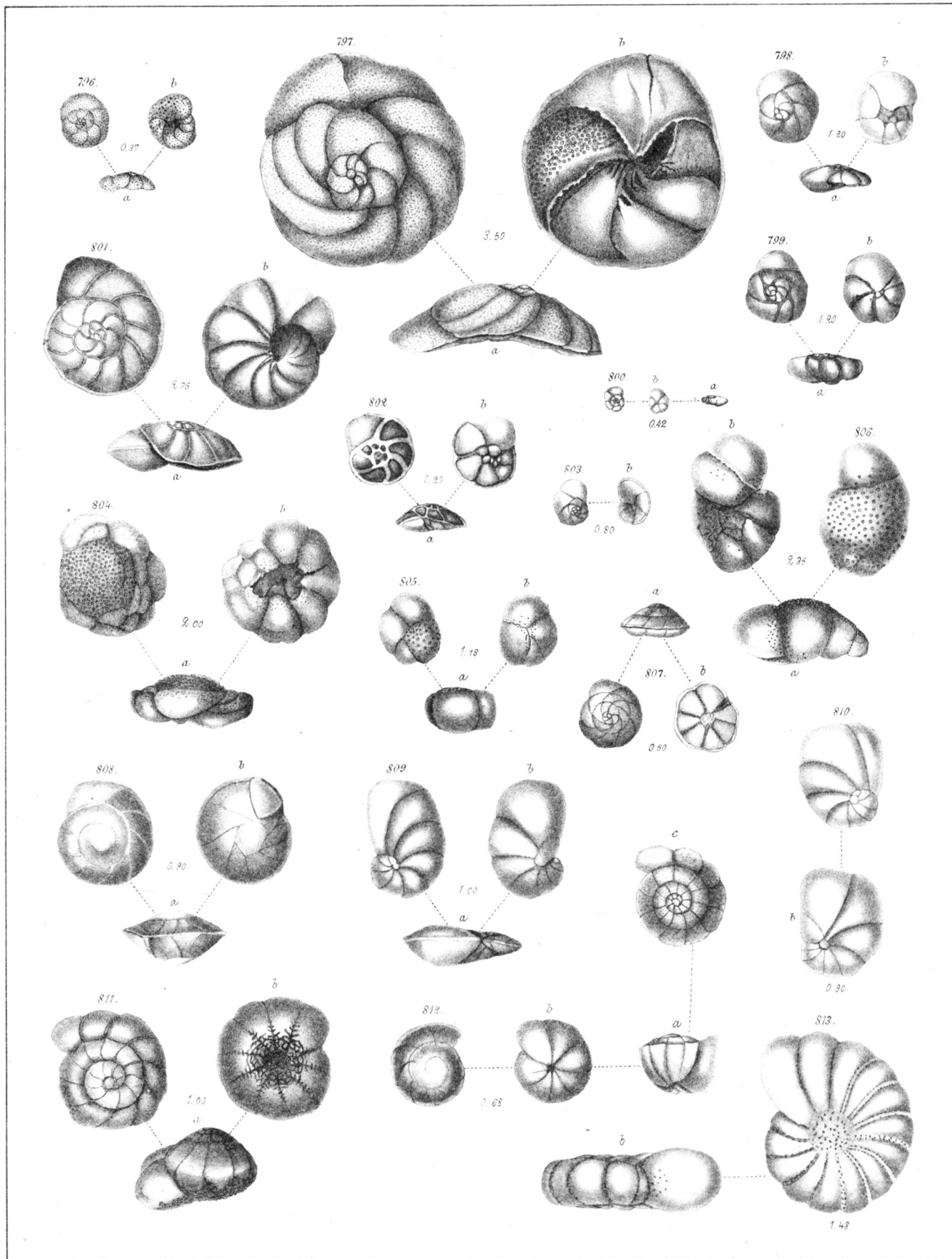


## TAB. XVI.



**Tab. XVI.**

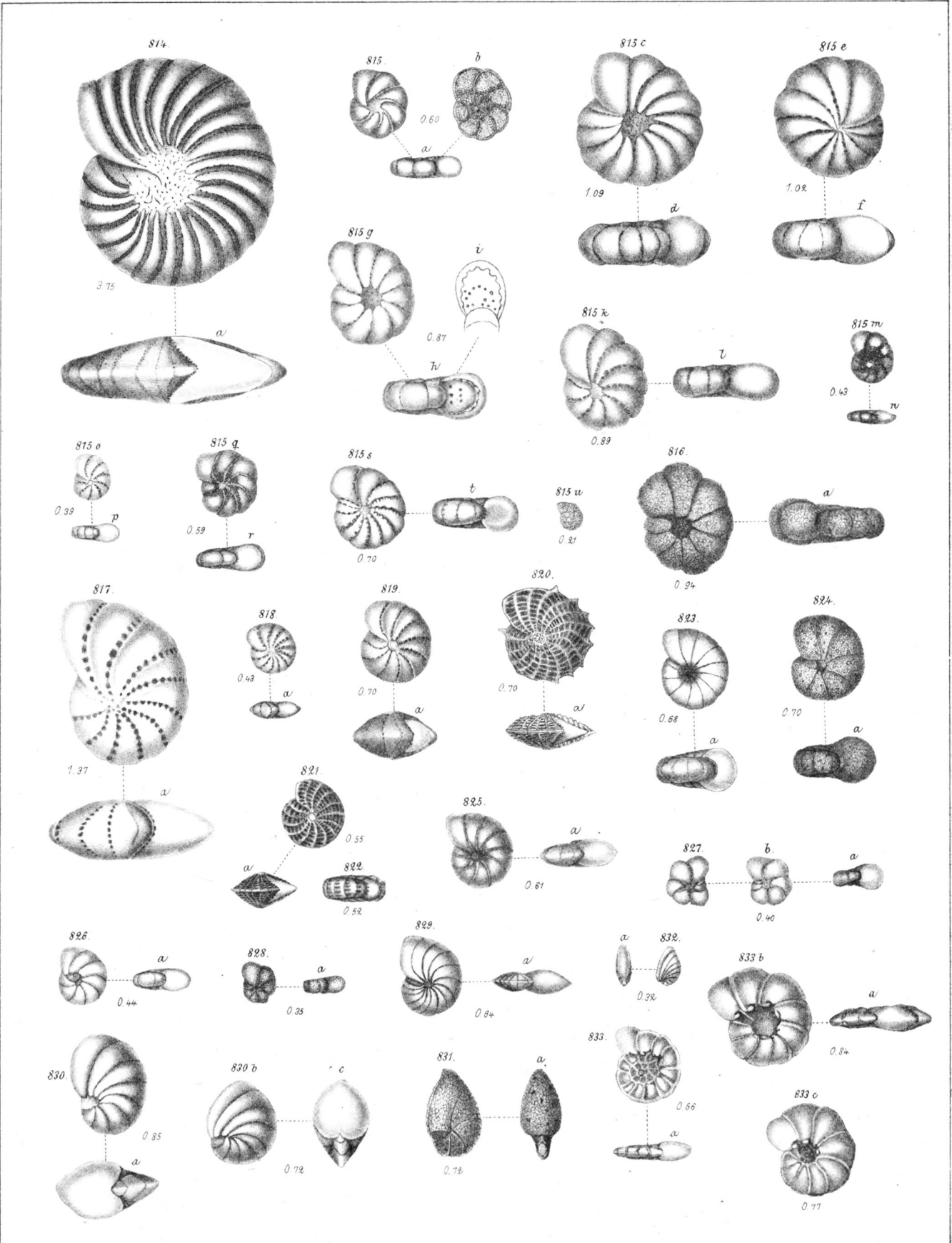
Fig. 796: <i>Discorbina Vilardeboana</i> D'ORB. ....	p.	95.
Figg. 797—800: <i>Pulvinulina punctulata</i> D'ORB. ....	»	96.
Fig. 801:           » <i>repanda</i> FICHT. & MOLL. ....	»	95.
Figg. 802—803:     » <i>concentrica</i> PARK. & JONES. ....	»	96.
» 804—806:     » <i>dispansa</i> BRADY ....	»	97.
Fig. 807:           » <i>Karsteni</i> v. REUSS. ....	»	97.
» 808:           » <i>elegans</i> D'ORB. ....	»	97.
Figg. 809—810:    » <i>auricula</i> FICHT. & MOLL. ....	»	98.
Fig. 811: <i>Rotalina Beccarii</i> LIN. ....	»	99.
» 812:         » <i>Soldanii</i> D'ORB., ad quam pertinet et figura, non signata supra fig. <i>a</i> ....	»	99.
» 813: <i>Polystomella arctica</i> PARK. & JONES. ....	»	100.



**TAB. XVII.**

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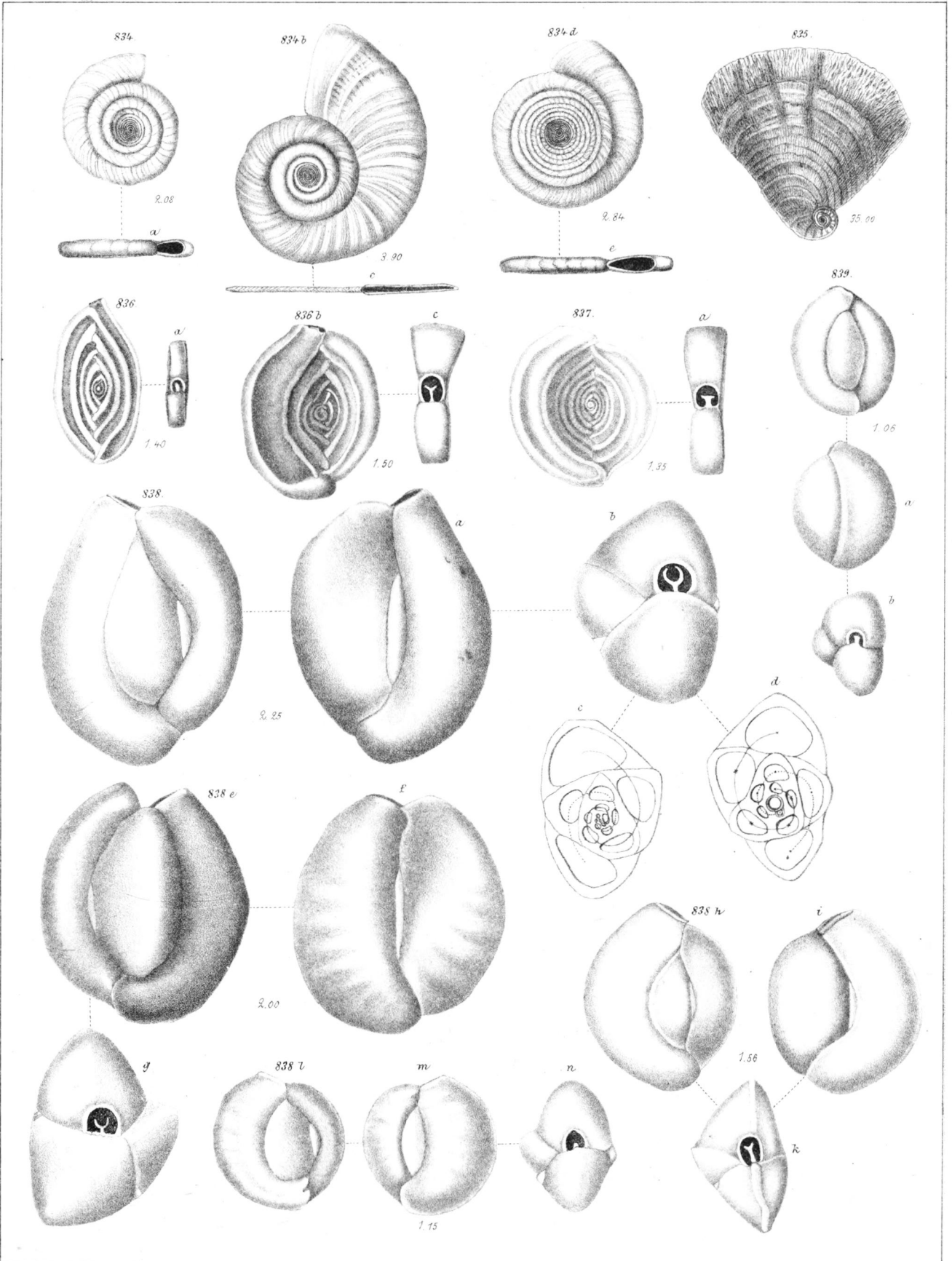
Fig. 814:	<i>Polystomella sibirica</i>	GOËS.....	p. 100.
Figg. 815—? 816:	<i>Polystomella striatopunctata</i>	(FICHT. & MOLL.) PARK. & JONES.....	» 101.
» 817—819:	»	<i>subnodosa</i> v. MÜNST.....	» 102.
» 820—821:	»	<i>crispa</i> LIN.....	» 102.
Fig. 822:	»	<i>crispa in striatopunctatam transiens</i> .....	» 102.
Figg. 823—824:	<i>Nonionina umbilicatula</i>	MONTAG.....	» 103.
» 825—826:	»	<i>depressula</i> WALK. & JAC.....	» 103.
» 827—828:	»	<i>stelligera</i> D'ORB.....	» 104.
Fig. 829:	»	<i>Boueana</i> D'ORB.....	» 104.
» 830:	»	<i>Scapha</i> FICHT. & MOLL.....	» 104.
» 831:	»	? <i>Scapha arenacea</i> .....	» 104.
» 832:	»	<i>turgida</i> WILLIAMS.....	» 105.
» 833:	<i>Operculina ammonoides</i>	GRONOV.....	» 105.



**TAB. XVIII.**

**Tab. XVIII.**

Figg. 834—834	<i>e</i> : <i>Cornuspira foliacea</i> PHIL.	p.	106.
Fig. 835:	» <i>striolata</i> BRADY	»	107.
Figg. 836—836	<i>c</i> : <i>Spiroloculina planulata</i> LAMCK.	»	107.
Fig. 837:	» <i>limbata</i> D'ORB.	»	107.
Figg. 838—838	<i>n</i> : <i>Miliolina seminulum</i> LIN.	»	108.
Fig. 839:	» <i>inornata</i> D'ORB.	»	108.



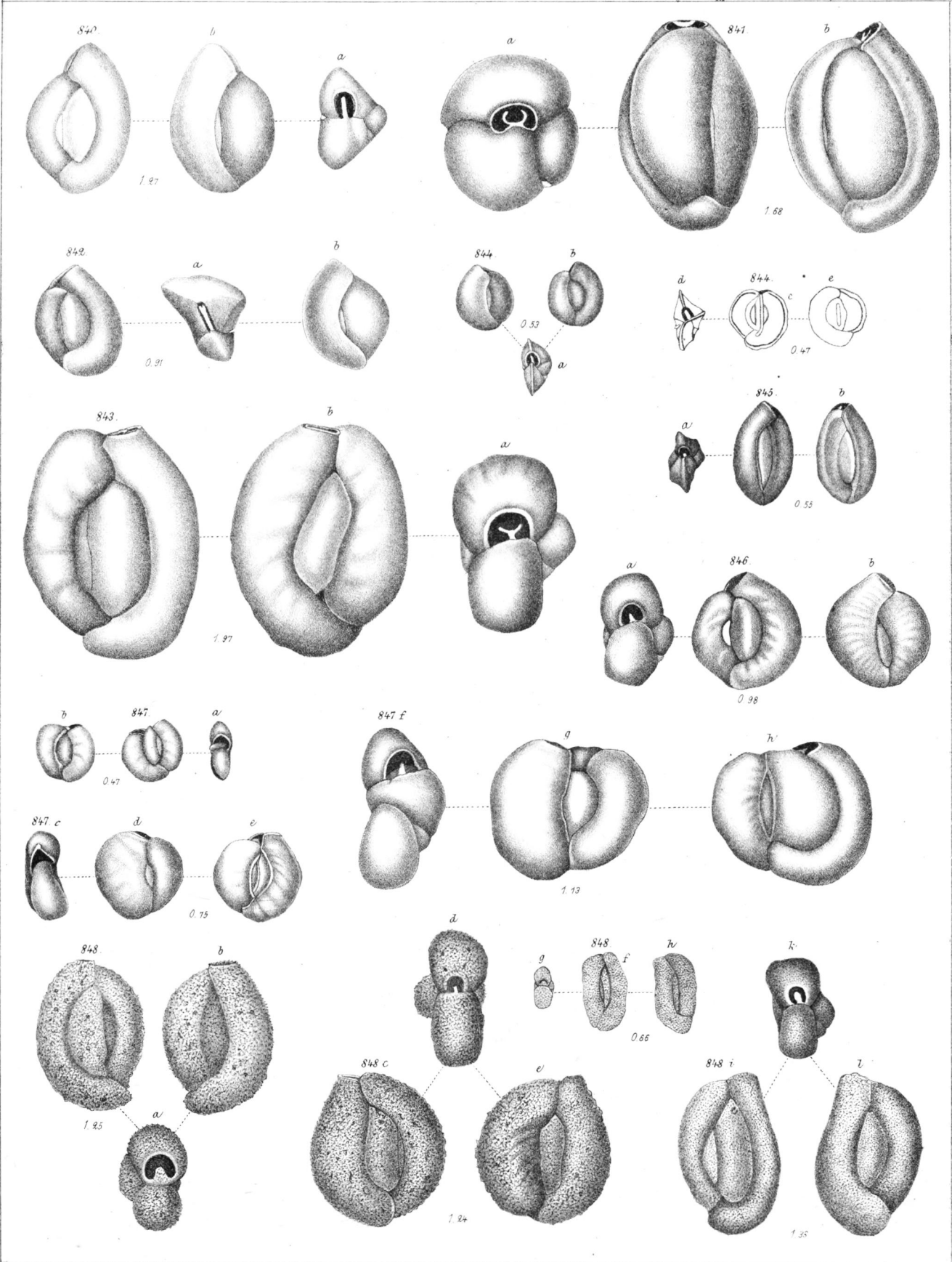


**TAB. XIX.**

**Tab. XIX.**

Figg. 840—843:	<i>Miliolina</i>	<i>seminulum</i>	LIN.	p.	108.
» 844—844 <i>e</i> :	»	<i>Auberiana</i>	D'ORB.	»	109.
Fig. 845:	»	<i>Candeiana</i>	D'ORB.	»	109.
Figg. 846—847 <i>h</i> :	»	<i>subrotunda</i>	WALK. & BOYS	»	109.
848—848 <i>l</i> :	»	<i>agglutinans</i>	(D'ORB.) PARK. & JONES	»	110.

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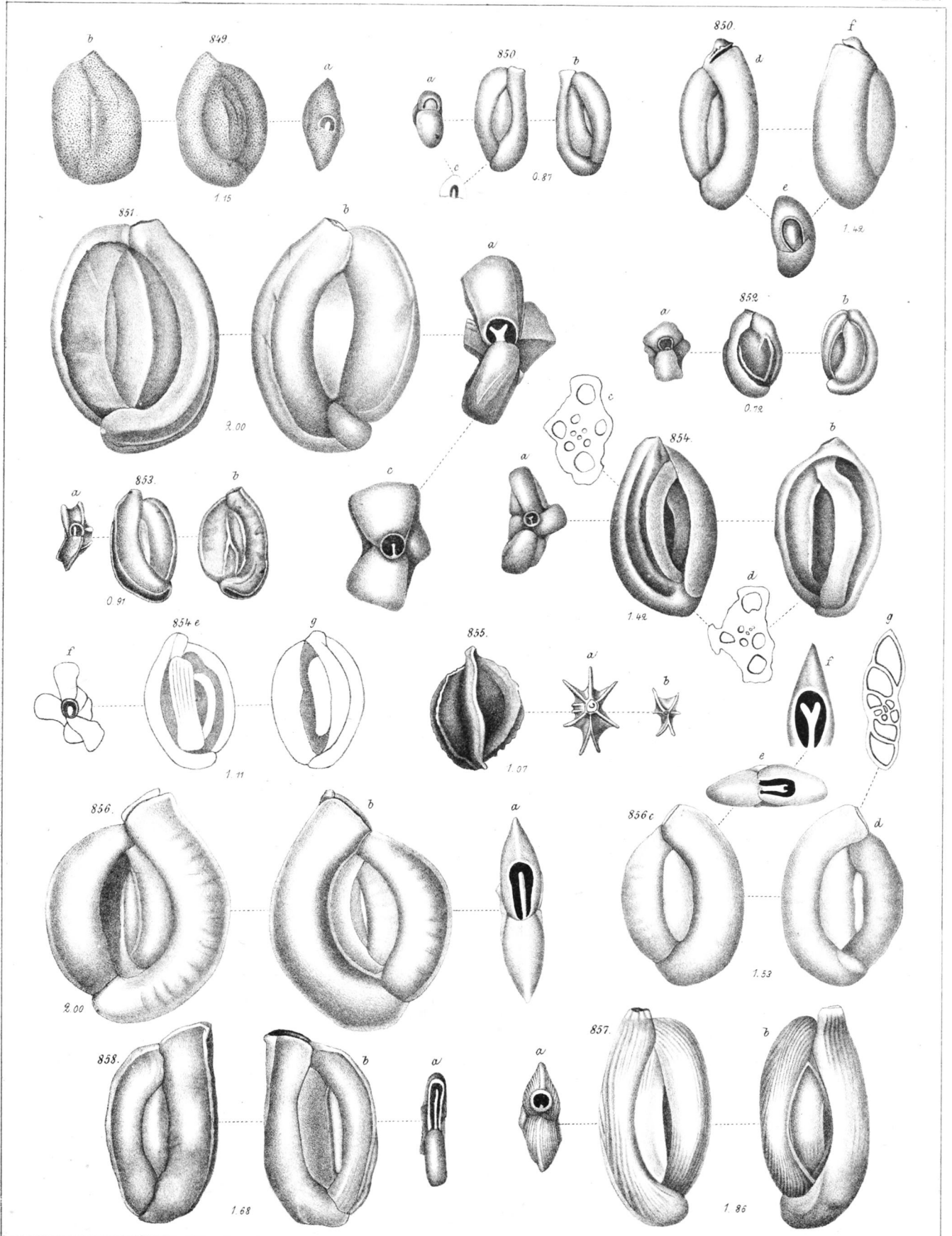
## TAB. XX.

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**Tab. XX.**

Fig. 849: <i>Miliolina agglutinans</i> PARK. & JONES.....	p.	110.
Figg. 850—850 <i>f</i> : <i>Miliolina oblonga</i> MONTAG.....	»	110.
851—852:           » <i>contorta</i> .....	»	111.
Fig. 853:               » <i>concava</i> v. REUSS.....	»	111.
Figg. 854—854 <i>g</i> :     » <i>polygona</i> D'ORB.....	»	111.
Fig. 855:               » <i>bicostata</i> D'ORB.....	»	112.
Figg. 856—856 <i>g</i> :     » <i>secans</i> D'ORB.....	»	112.
Fig. 857:               » <i>elegans</i> WILLIAMS.....	»	112.
858:                » <i>angulata</i> WILLIAMS.....	»	113.

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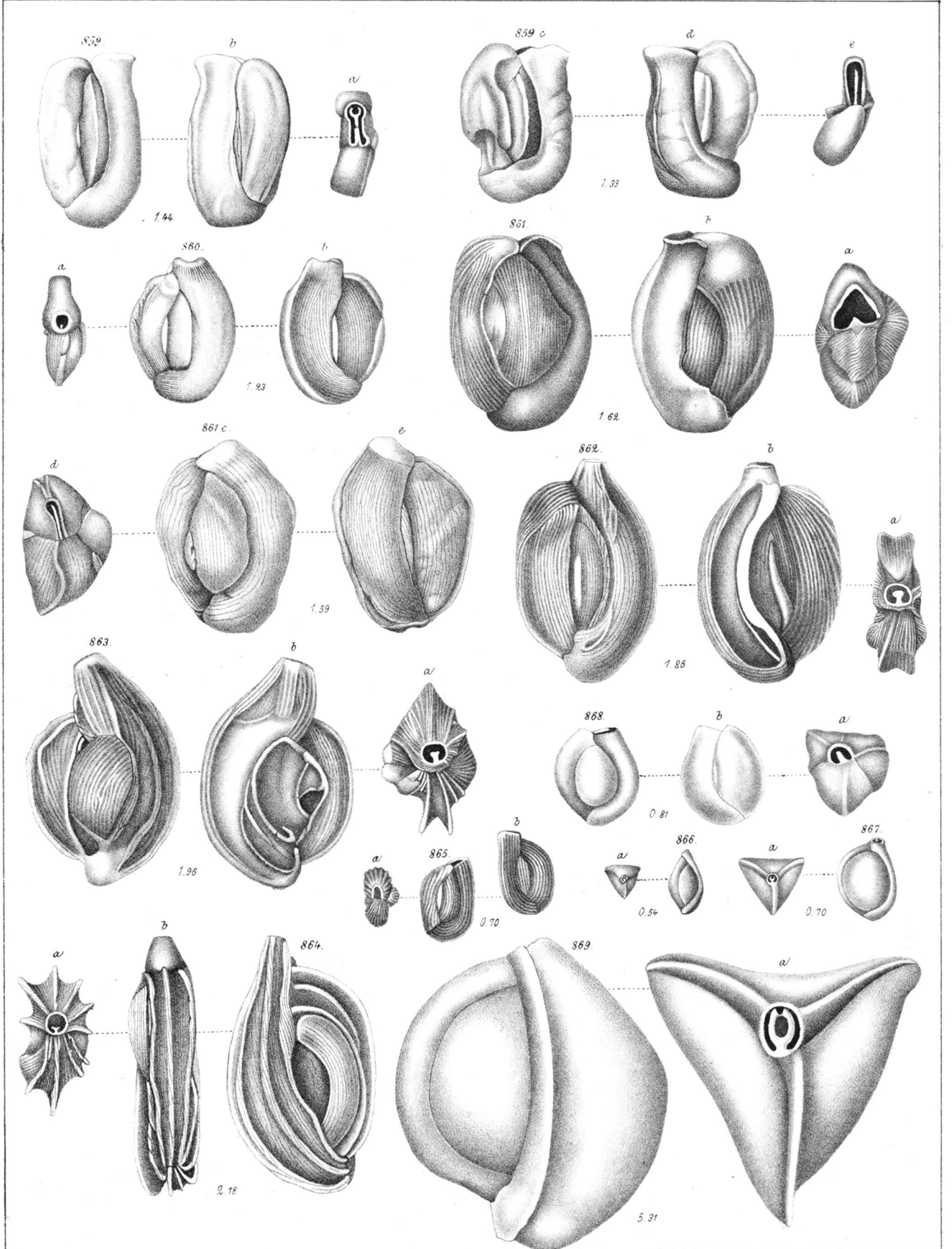
**TAB. XXI.**

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Figg. 859—859 <i>e</i> :	<i>Miliolina</i>	<i>angulata</i>	WILLIAMSON.....	p.	113.
» 860—861 <i>e</i> :	»	<i>bicornis</i>	WALK. & BOYS.....	»	113.
» 862—864	»	<i>pulchella</i>	D'ORB.....	»	114.
Fig. 865:	»	<i>Boueana</i>	D'ORB.....	»	114.
Figg. 866—869:	»	<i>tricarinata</i>	D'ORB.....	»	114.

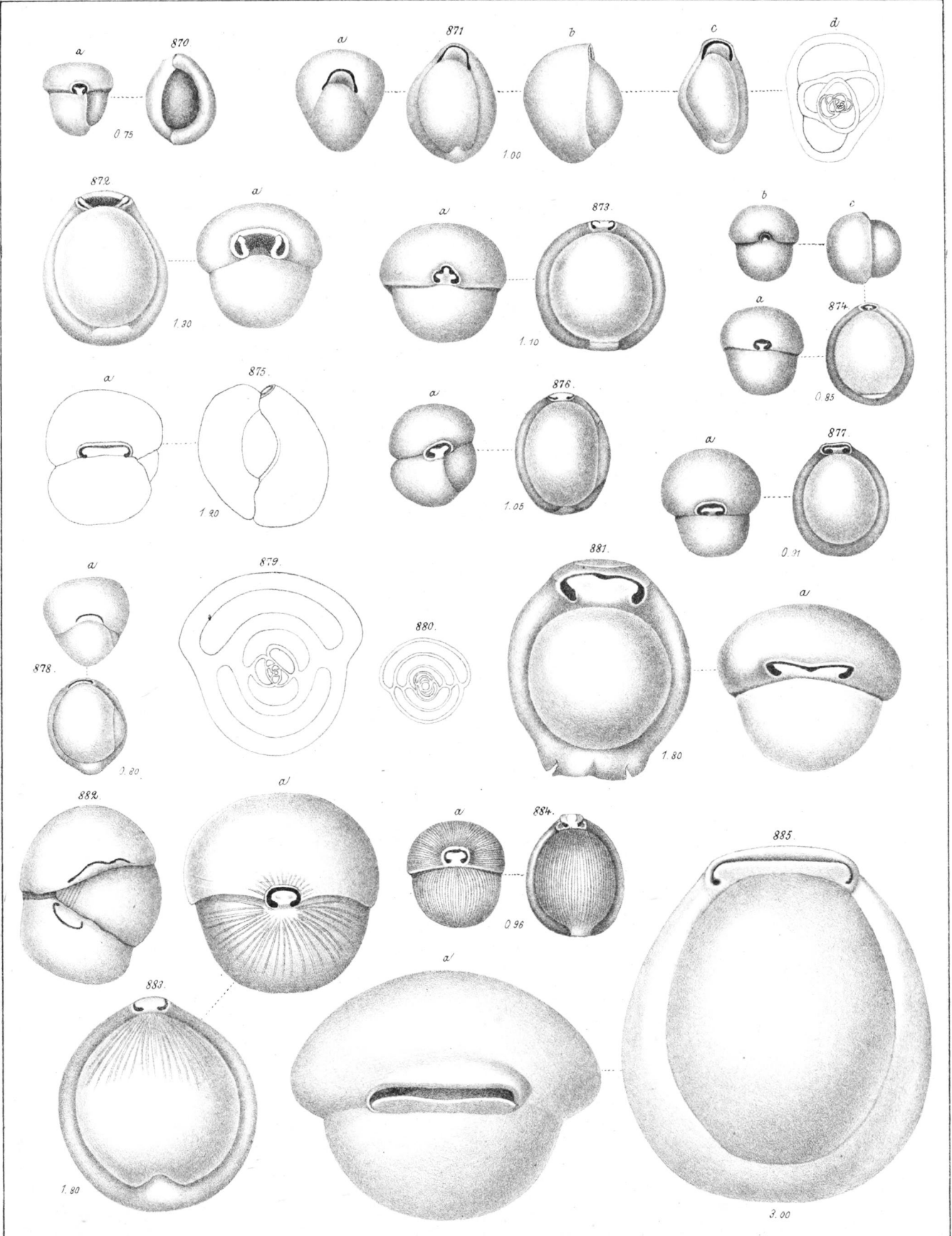




**TAB. XXII.**

**Tab. XXII.**

Fig. 870: <i>Miliolina trigouula</i> LAMCK. ....	p. 115.
» 871: » <i>valvularis</i> BRADY.....	» 115.
Figg. 872—882: <i>Biloculina simplex</i> D'ORB.....	» 116.
» 883—884: » <i>comata</i> BRADY.....	» 117.
Fig. 885: » <i>simplex</i> D'ORB. var.....	» 118.



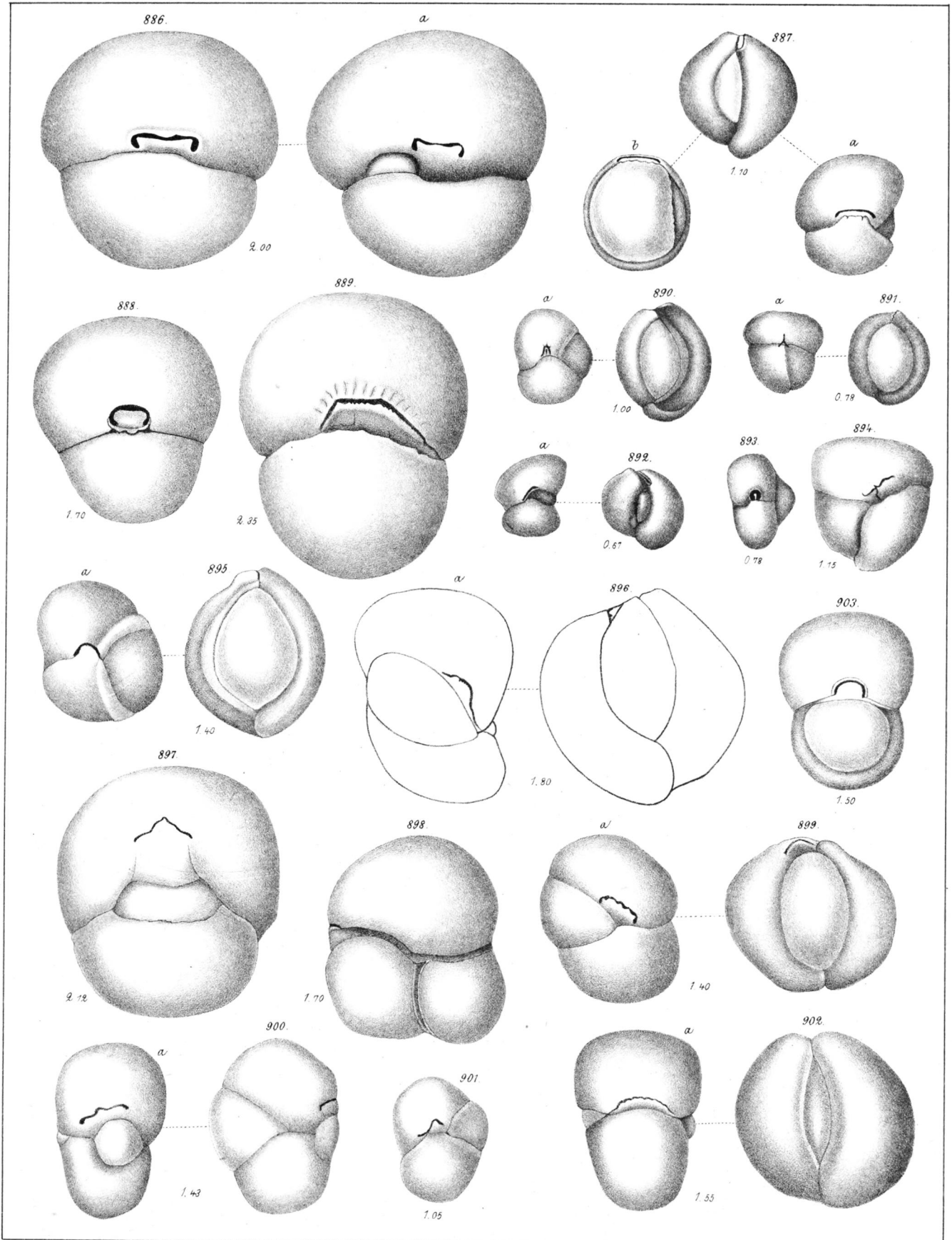
**TAB. XXIII.**

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Figg. 886—887: <i>Biloculina simplex</i> D'ORB.....	p. 116.
888—889:       » <i>abyssorum</i> GOËS .....	» 118.
890—903: <i>Miliolina bucculenta</i> BRADY .....	» 118.

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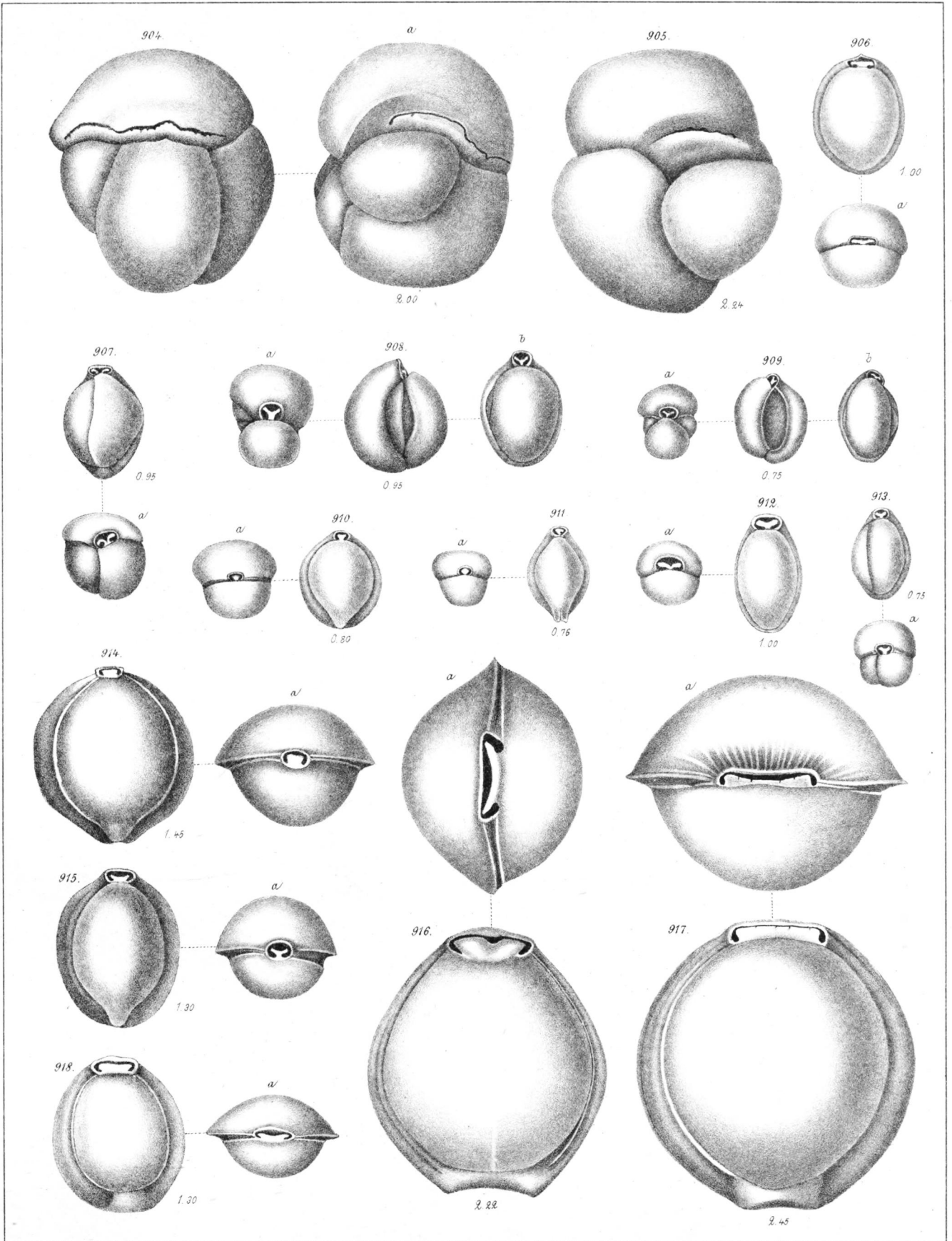
**TAB. XXIV.**



**Tab. XXIV.**

Figg. 904—905: <i>Miliolina bucculenta</i> BRADY .....	p. 118.
» 906—913: <i>Biloculina elongata</i> D'ORB. ....	» 119.
» 914—918:       » <i>lævis</i> DEF. ....	» 119.

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**TAB. XXV.**

**Tab. XXV.**

Figg. 919—920:	<i>Biloculina arctica</i>	GOËS	.....	p. 119.
» 921—925:	»	<i>depressa</i>	D'ORB.	..... » 120.
Fig. 926:	»	<i>serrata</i>	BRADY	..... » 120.
» 927:	»	<i>sphæra</i>	D'ORB.	..... » 120.
» 928:	»	<i>saccata</i>	GOËS	..... » 121.
» 929:	»	<i>quadrangularis</i>	GOËS	..... » 121.
» 930:	<i>Ceratina trochamminoides</i>	GOËS	.....	» 122.

