

It is convex and hairy externally, concave within, where the palpal organs are highly developed, prominent, and complicated, and of a reddish-brown colour.

*Falces* moderate-sized, convex, and same colour as the maxillæ. *Sternum* large, prominent, and heart-shaped, and, together with the *labium*, black.

*Abdomen* slightly hairy, shining, oval and *very convex* on the upper side; it projects considerably over the base of the cephalothorax. Colour, in adult males, *jet black*; in adult females, black, with at times a greenish-brown hue, and in some specimens with a few pale angulated lines towards the apex of the abdomen, the angles directed forwards. Immature individuals are often greenish black, with legs dirty greenish brown, *paler* at the joints.

Adult males and females of this species were discovered by myself in abundance, during the summer of 1859, at the roots of grass and underneath rubbish on dry bank-sides, near Church Town, Southport, Lancashire.

## XX.—On the Nomenclature of the Foraminifera.

By W. K. PARKER, M. Micr. Soc., and T. R. JONES, F.G.S.

[Continued from p. 116.]

24. *Nautilus Spengleri*. Five varieties. Page 84. Fichtel and Moll make the following appropriate references:—Linn. Syst. Nat. xiii. Gmel. p. 3371. no. 10: Spengler, Schrift. dän. Gesellsch. Kopenh. vol. i. p. 373, pl. 2. fig. 9 *a b c*: Schröter, Einleit. Conch.-Kennt. vol. i. p. 756; Neue Literat. u. Beytr. z. Naturg. vol. i. p. 309, pl. 1. figs. 3–6; Schreibers, Conch. Kenntn. vol. i. p. 5. no. 10.

*a*. Pl. 14. figs. *d–f*.

*β*. Pl. 14. figs. *g–i*.

*γ*. Pl. 15. figs. *a–c*.

*δ*. Pl. 15. figs. *d–f*.

*ε*. Pl. 15. figs. *g, h*.

Pl. 15. figs. *i, k*, sections.

“Recent: from sand in a *Buccinum cassideum* (Gmelin) from the East Indian Sea; and from the Red Sea.”

This belongs to the *Rotalian* group; the shell is unsymmetrical, like the other *Rotaliæ*, and is marked by an extensive growth of exogenous granular shell-matter. This luxuriant shell-growth is shown also in the very variable rays or spines, which, commencing near the umbilicus in the septal interspaces, advance outwards often to a considerable distance (equal even



to the width of the shell) from the periphery. The cell-growth also often becomes wild, the later chambers irregular and heaped, being outspread on the granulated surface of the upper side. The rough and prickly surface is a very constant character in this *Calcarina*, although some very minute forms show it only in an umbilical boss and a prickle on the periphery of each chamber. What seems to be a large aperture in these figures arises from the fracture of the newest chamber, which is, until well coated with exogenous matter, extremely thin. In well-preserved specimens of the typical forms we find that the real aperture, which is essentially a slit, as in the true *Rotalia*, becomes bridged over by delicate bars of shell-matter. *Calcarina* is a subgenus of *Rotalia*, characterized by its excessively spinous coating and cribriform aperture. In its spines, in the copiousness of its exogenous matter (which is tubuliferous), and in its generally cribriform aperture, it affords us an analogy to the *Polystomella crispa*; whilst other *Rotalia* have on their part a corresponding analogy to the smooth-shelled *Nummulina* and *Amphistegina*. *Rotalia Beccarii*, often prickly and even spinous, is the linking form between *Calcarina Spengleri* and the ordinary *Rotalia*, and at the same time is rich in varieties isomorphous with many conditions of *Polystomella*.

*Rotalia (Calcarina) Spengleri* is found in all warm seas. This is the *Siderolites calcitrapoides* of Lamarck, and *Siderolina laevigata*, D'Orb., both from Maestricht. The latter is Fichtel and Moll's var. *ε*.

25. *Nautilus repandus*. Page 35, pl. 3. figs. *a-d*. "Recent: zoophytic concretions, Mediterranean."

This is a true *Rotalia*, and is a typical form of a large number of varieties which have their cells numerous but very variable in their convexity,—so much so that they often produce a much more expanded shell than the one here figured, and even irregular in growth; on the other hand, they may become contracted and few-celled, forming a thick conical shell. The aperture is usually a large slit at the base of the last chamber; but in some of the more compact forms, in which the chamber-walls are flush, the aperture passes into the condition of a notch: hence the forms of aperture once supposed to be respectively characteristic of *Rosalina* and *Rotalia* are in this species shown to be non-essential. The specimen figured by Fichtel and Moll is probably not very well drawn; for in specimens of similar size and form we find the spire better marked.

A flatness of the septal face is a very usual feature in this species.

This is a world-wide species in its typical condition; and its many varieties are equally abundant and common. In deep



water this species is represented by the variety *Rotalia Menardii*, D'Orb., which is flattish, limbate, and granular, and has for companions the contracted varieties *R. Micheliniana*, D'Orb., *R. crassa*, D'Orb., and *R. nitida*, Reuss, together with intermediate forms. In shallower water, especially on muddy bottoms, we find large, smooth, flush-chambered and more or less limbate forms, such as *R. Partschiana*, D'Orb., and *R. Schreibersii*, D'Orb.; but the former of these is often found at great depths.

In the Laminarian zone this species often takes on an irregularity of growth, many of the latter chambers elongating themselves without septa. Thus (becoming almost as simple as *Spirillina vivipara*, Ehrenberg) it becomes the *Planorbulina vermiculata*, D'Orb., Ann. Sc. Nat. vol. vii. p. 280.

The two varieties of this species represented by D'Orbigny in his 'Modèles,' No. 12 (*R. punctulata*, D'Orb.) and No. 10 (*R. pulchella*, D'Orb., which is the same as *R. Caribbæa*, D'Orb.), must be placed very close to the typical *R. repanda* (which, indeed, is intermediate between these two).

In this species the shell is for the most part very finely pored; but when the septal face is much flattened, or the shell takes on a wild growth, a number of large holes give a punched aspect to the septum; and even, in the vermiculate forms, the whole of the under surface of the shell is thus coarsely pertused.

Varieties of this species occur fossil as far back as the Upper Trias, in nearly all the clays of the Oolites, in the Gault and Chalk, and throughout the Tertiaries. It may be found in all seas; and we have it from the Tropics, brought up from 2700 fathoms (Capt. Pullen's soundings).

26. *Nautilus sinuatus*. Page 65, pl. 10. figs. *a-d*. "Fossil: San Quirico in the Siennese."

This is a small-sized variety of the *Rotalia repanda*. It is more margined and flattened; it is limbate on some of the septal lines. The early part of the spire is hidden here by granules. This ornament is seen in other varieties on the upper and occasionally on the under surface. The different degrees of ornament produced by exogenous shell-growth in the margins, in limbation, and in granulation, scarcely permit us to find two specimens alike, to say nothing of the variability as to the size and thickness of the shell and the number of chambers. Still the species has a habit of its own, with a peculiar setting-on of the chambers, and style of ornament, which help us to see a specific relationship between forms at first sight very different, and at the same time to recognize limiting distinctions between the most aberrant forms and their isomorphs belonging to other species.



D'Orbigny's Model No. 71 (*Rotalia pulchella*, D'Orb.) is one of the nearest to this variety (*R. sinuata*), which is world-wide.

27. *Nautilus Auricula*. Page 108. Var.  $\alpha$ . pl. 20. figs. *a-c*. "Soldani, Testaceogr. vol. i. pl. 50. fig. Y." "Fossil: Coroncina."

Var.  $\beta$ . pl. 20. figs. *d-f*. "Recent: zoophytic concretions, Mediterranean."

These are delicate oblong varieties of *Rotalia repanda*, with rapidly increasing chambers. They bear the same relation to their type as *Nonionina Scapha* does to *Nonionina asterizans* and *Polystomella crispa*.

The intermediate links between the typical *R. repanda* and *R. Auricula* are found in the less oblong forms common in some of the Subapennine Tertiary beds, such as those of Palermo and Turin: in these a part only of the septal face is flattened and drilled with very coarse foramina, the rest remaining slightly gibbous and finely perforated; whilst in many other varieties of *R. repanda* the septal face is uniformly flat and pertused, for instance *R. Caribbaea*, D'Orb., and *R. pulchella*, D'Orb. In *R. Auricula* and its immediate congeners the whole septal face is more or less convex and delicately porous.

Some of these oblong varieties have been (as Professor Williamson has already noticed) erroneously grouped under the genus *Valvulina* by D'Orbigny; such as "*V. æqualis*," "*V. oblonga*," and "*V. excavata*."

In var.  $\alpha$ , the outline is more entire, and the chambers less vesicular than in var.  $\beta$ . These belong to a very variable group of small elongate varieties of *R. repanda*. Var.  $\alpha$  is intermediate between *R. Hauerii*, D'Orb. (For. Foss. Vien. pl. 7. figs. 22-24) and *R. Brongniartii*, D'Orb. (*op. cit.* pl. 8. figs. 22-24). Var.  $\beta$  approaches very closely to Williamson's *Rotalia oblonga* (Monogr. pl. 4. figs. 98-100); the latter, which is larger but less gibbous than var.  $\beta$ , attains its finest development in the English Channel and the Bay of Biscay, at from 50 to 70 fathoms; but similar varieties, though generally smaller, are to be met with in nearly every Foraminifer-bearing sea-sand or mud, at variable depths, and are rather common in almost all Tertiary deposits.

28. *Nautilus farctus*. Page 64, pl. 9. figs. *g-i*. "Fossil: Coroncina, near Sienna, Tuscany."

The shell here figured is essentially a plano-convex *Rotalia*; but in the further developments which varieties of this species exhibit we have characters presented that make it very convenient to divide the forms of this group (as well as those of another *Planorbulina*, typified by *Rosalina Poeyi*, D'Orb.) from the ordinary *Rotaliæ*. For this subdivision the well-known name *Planorbulina* is retained, which was used generically by D'Or-



bigny for the outspread many-celled varieties of *Nautilus farctus*\*. The common *Truncatulina lobatula*, Walker, is a simple form of this type, arrested, as it were, in its development; and many of the little so-called *Rosalinæ*, *Rotalinæ*, *Anomalinæ*, and *Planulinæ*, are equally simple dwarf forms; their relative vesicularity or complanation being due to accidental style of growth and place of attachment, whether it be sea-weed, rough or smooth shell, or other substance. The depth of water, also, and character of the sea-bottom affect the growth of these very variable shells. Every collector knows the *T. lobatula*, with its white plano-convex shell, crenulate outline, slit-like aperture, and coarse perforations. Similar features, modified, characterize *Nautilus farctus*; this, however, is differentiated by some amount of limbation on the convex face, and by the greater height of the chambers. *Planorbulina nitida*, D'Orb. (Modèles, No. 78), is a similar form to the last mentioned, not markedly limbate, and having more chambers. *Pl. Mediterranensis*, D'Orb. (Ann. Sc. N. vol. vii. p. 280, pl. 5. figs. 4-6; and Modèles, No. 79), presents a further developmental step in the growth of these instructive varieties; for here we find the same morphological plan, with an increase of chambers, in a delicate and scale-like shell. In *Pl. vulgaris*, D'Orb. (For. Cuba, pl. 6. figs. 11-15), we have a coarser and somewhat biconvex shell, with a wilder mode of growth. The chambers become baggy and divergent, and present supernumerary lipped apertures. The more irregularly constructed shells of *Pl. vulgaris*, whether heaped into a little racemous mass, or ringing the smooth stems of sea-weeds, have been denominated *Acervulinæ* by Schultze. Arrested conditions of this biconvex variety constitute the *Anomalinæ* of D'Orbigny: amongst the thickest and most symmetrical of these is our *A. coronata* (Ann. Nat. Hist. ser. 2. vol. xix. p. 294, pl. 10. figs. 15, 16); whilst the thinnest and most outspread is the *A. Rotula*, D'Orb. (For. Foss. Vien. pl. 10. figs. 10-12). This last-named variety, elegant in its delicate symmetry, is subject, among other modifications, to a variable exogenous overgrowth on its septal lines, as, for instance, *Rosalina Edwardsiana*, D'Orb. For. Cuba, pl. 6. figs. 8-10, and *Truncatulina ornata*, D'Orb. For. de l'Amér. Mérid. pl. 6. figs. 7-9; and thus it insensibly loses itself in the subsymmetrical and strongly limbate *Planulina Ariminensis*, D'Orb. (Ann. Sc. Nat. vol. vii. p. 280, pl. 5. figs. 1-3, Modèles, No. 49.) In our already quoted paper on the Rhizopods of the Norway coast, we have erroneously placed *Pl. Ariminensis* among the synonyms of *Operculina complanata*, misled by its extreme similarity of shape.

Soldani has devoted many plates in his 'Testaceographia' to

\* In his genus *Planorbulina*, D'Orbigny placed also some Spirilline varieties of *Rotalia repanda* (such as *Pl. vermiculata*).



figures of the very protean *Truncatulina variabilis*, D'Orb., a Mediterranean form exactly intermediate between the tropical *Planorbulina vulgaris* and *Nautilus farctus*, which we find recent in the Mediterranean and other seas. This noble work also affords numerous striking illustrations of the other varietal forms, differing in their extremes, yet blending by gentle gradations.

*Nautilus farctus* is a Planorbuline *Rotalia*, and is the type of the species comprehending the above-mentioned and many other varieties. Like *Rotalia repanda*, it represents the medium between extreme conditions; its discoidal growth and its high and well stuffed-out chambers give it good title to its name and systematic place. Whilst arrested, as compared with some of the extravagantly grown forms, it is much better developed than many of the varieties enumerated, presents indications of all its essential specific features, and keeps its subgeneric characters better than the trochiform varieties, some of which become, as it were, isomorphs of *Rotalia* proper, others of *Nonionina*.

29. *Nautilus tuberosus*. Page 111, pl. 20. figs. *g-k*. "Fossil: Coroncina."

This is a variety of *Planorbulina farcta*, with many chambers irregularly set on, and mostly narrow. This *Pl. tuberosa* has the biconvex form which chiefly characterizes D'Orbigny's *Anomalina*, and is intermediate to his *A. Badenensis* and *A. Austriaca*. This tuberoso variety may be said either to represent an early stage of *Planorbulina vulgaris*, or to be a neatly growing and nearly symmetrical modification of *Truncatulina variabilis*. Like *P. farcta*, this variety is very common in the Mediterranean and other warm seas, and occurs in Tertiary deposits.

30. *Nautilus planatus*. Page 91. Three varieties. "Recent: Leghorn coast, Tuscany."

Var. *α*. Pl. 16. figs. *a-c* (*i*, section). "Schröter, Neue Literat. d. Naturgesch. vol. i. p. 314, pl. 1. fig. 7."

Var. *β*. Pl. 16. figs. *d-f*.

Var. *γ*. Pl. 16. figs. *g, h*.

This is "le Pénérople aumusse" (the *Peneroplis planatus*) of Denys de Montfort, and is a distinctly specific type of one of the opaque-shelled Foraminifers. Commencing with a primordial double chamber, like that of the *Miliola*, *Orbiculina*, and *Orbitolites*, it soon takes on a Nautiloid growth; the aperture, at first single, margined, and irregular, soon becomes more irregularly trilobate in the successively enlarging triangular septal faces (as in *Dendritina*, where it is arborescent); in a further stage of the shell, the newer chambers are flat, narrow, and transversely long, spreading out with widening curve,—keeping a Nautiloid outline, as in var. *α*; becoming auricular or bonnet-shaped, as in var. *β*; or showing some modifications of the above, arising from an irregular periodicity of growth, as in var. *γ*. In other



forms, the shell grows on until the newest chambers extend in their curvature far back, even to three-fourths of a circle, as if they would take on a cyclical growth, such as is normal in *Orbiculina* and *Orbitolites*. In the broad, complanate, typical varieties, the septal face is necessarily very long and narrow, and is perforated by one or more rows of roundish or hourglass-shaped, thickly margined passages, subtubular and more or less ecto-ento-sole-nian. This condition is attained by the gradual lineation and subdivision of the lobulate and dendritine aperture. These broad forms are from the seaweed-belt of the warmer seas; but in somewhat deeper water they are gradually replaced by smaller and contracted varieties, in which the spiral portion is small and nautiloid, followed by a long series of either compressed or cylindrical joint-like cells, presenting altogether an elegant crozier-like outline. In these, as in *Dendritina*, the aperture is single and lobulate. The name *Spirolina* has been given to these attenuated varieties. Other Foraminifers, especially some varieties of *Lituola*, presenting similar elongate shells with a spiral commencement, have been included under the same name, thus adding to a confusion of nomenclature.

*Peneroplis* is characteristically a creature of warm climate, and does not exist in the North Atlantic, German Ocean, English Channel, and other north temperate seas. We fully agree with Prof. Williamson that the few specimens which he mentions and figures in his 'Monograph' are strangers to the British Fauna.

Since writing the above, we have been favoured with the valuable and beautifully elaborate memoir on *Peneroplis*, *Operculina*, &c., by Dr. Carpenter (Phil. Transact. 1859), and must refer our readers to that as a source of correct and detailed information respecting the forms under notice, the structure and tissue of which are therein described in a masterly manner; whilst they are most elegantly and copiously illustrated by some of George West's best lithographs.

*Peneroplis planatus* is well figured by Ehrenberg, both as to its shell and its sarcode, in the 'Abhandl. Akad. Berlin,' 1838 (1839), pl. 2. figs. *a-d*; and its Spiroline forms, under the name of "*Coscinospira* (*Spirolina*) *Hemprichii*," are also well delineated on the same plate, figs. *a, b*.

31. *Nautilus aduncus*. Page 115, pl. 23. figs. *a-e*. "Recent: Red Sea."

This elegant Foraminifer, now known by the generic name *Orbiculina*, which was instituted by Lamarck, has been of late years fully described and illustrated by Prof. Williamson (Trans. Microscop. Soc. 1st ser. vol. iii. p. 120) and by Dr. Carpenter (Phil. Trans. 1856, vol. cxlvi. p. 547, pl. 28. figs. 1-22, and pl. 29. figs. 1-3). To the latter we are indebted not only for a succinct history of this species, and for a clear exposition of its



structural characters, but also for the bold and masterly exposition of the true philosophical principles on which the zoological relations of this and other species of Foraminifera are to be studied. This ear-shaped *Orbiculina adunca* is doubtless the typical form, as compared with the further and extreme step in development by the increase and extension of the peripheral chambers, which produces suborbicular discoidal shells, bringing *Orbiculina* into close parallelism with the typically cyclical *Orbitolites*. The cyclical forms of *Orbiculina* may be often the result of continued growth of individuals under favourable circumstances; but frequently small starved forms quickly take on the cyclical condition, leaving the young sublenticular stage without passing through the aduncal. Therefore, in a sense, these may be regarded as varieties.

Ehrenberg has given good figures of *Orb. adunca* in Abhand. Akad. Berlin, 1838 (1839), pl. 3. figs. 1a-1d.

32. *Nautilus Orbiculus*. Page 112, pl. 21. figs. a-d. "Recent: Leghorn\*."

This is the thick orbicular, or subnautiloid condition of *Orbiculina adunca*, which small and young specimens almost uniformly exhibit, though some are flatter. The apertural surface is as yet very contracted.

33. *Nautilus angulatus*. Page 113, pl. 22. figs. a-e. "Recent: Red Sea."

In this stage, *Orbiculina adunca*, still sublenticular, puts on a broader and angular septal face, showing an increase in the space for pseudopodial apertures, which will extend along the marginal area, in the adult shell, for three-fourths of a circle, and around the entire periphery in the cyclical varieties.

The neat and uniform subdivision of the chambers in *Orbiculina* is shown in the three sections given by Fichtel and Moll. We may remark that, not unfrequently, feebly-developed Peneopliform varieties, as well as good-sized Adunciform specimens, occur in which the long narrow chambers are at times simple and undivided, being occupied by transversely elongate lobes of sarcode, instead of numerous minute subcubical blocks.

*Orbiculina* has its home, as it were, in the West Indies; it occurs also in the Red Sea, the Indian Ocean, and on many coasts of the warmer seas.

34. *Nautilus Melo*. Two varieties. Page 118. "Fossil: Brunn in Austria, Kroisbach in Hungary, and other places in Austria and Transylvania."

Var.  $\alpha$ . pl. 24. figs. a-f.

Var.  $\beta$ . pl. 24. figs. g, h.

\* This locality appears strange to us, as we have not, after much seeking, found this shell living in the Mediterranean. Dr. Carpenter, however, quotes it from the Ægean Sea; it occurs fossil in a white limestone at Corfu; and D'Orbigny figures a minute form (*O. Rotella*) from the Vienna Tertiaries.



This is an *Alveolina*, an opaque-shelled Foraminifer, which, in its close relation to *Orbiculina* or *Orbitolites*, may be said to represent a small thick *Orbiculina* drawn out transversely at its umbilici, and thus bears the same relation to its congeners that *Fusulina* does to *Nonionina*.

Dr. Carpenter (*op. cit.* p. 552, pl. 28. figs. 23, 24, and pl. 29. figs. 4–9) has so well described the structure of a recent *Alveolina* illustrative of the species to which var.  $\alpha$  (prolate spheroid) must be referred as a melon-shaped, and var.  $\beta$  (oblate spheroid) as a spheroidal variety, that we need merely refer to his memoir, where a historical account of the species is also given. The oldest specific name on record for *Alveolina* is *A. Melo*, which may well pass as the type. *A. Boscii* is a well-developed form, and *A. Quoyii* is a fine elongate variety, rather clubbed at the ends, which attains a large size ( $\frac{2}{3}$  inch in length) in Fiji, and is also large in Australia, where, with it, *Orbitolites* arrives at its greatest development,—a similar association to that obtaining in the Eocene deposit of Grignon. In India, Egypt, Austria, Spain, and elsewhere, *Alveolinae* occur fossil of many sizes, and of various shapes, from that of a shot to a spindle, or from that of a melon to a cucumber. They abound in rocks of the Nummulitic period. The largest we have seen was collected in Persia by the late Mr. W. K. Loftus, and is 3 inches long, and  $1\frac{1}{2}$  inch in diameter!

Fichtel and Moll's 'Testacea Microscopica.'			Specific and Varietal Names, after Fichtel and Moll.	Numbers of Reference.
Page.	Plate.	Fig.		
10	1	<i>a-c</i>	Argonauta Cornu *.	
31	1	<i>a-c</i>	Nonionina pompilioides .....	3
33	..	<i>d-i</i>	Cristellaria Vortex .....	18
35	3	<i>a-d</i>	Rotalia repanda .....	25
37	..	<i>e-h</i>	Nonionina asterizans .....	1
38	4	<i>a-c</i>	Nonionina incrassata .....	2
40	..	<i>d-f</i>	Polystomella crispa, Linn. ....	10
47	..	<i>g-i</i>	Cristellaria costata .....	19
40	5	<i>a, b</i>	Polystomella crispa, Linn. (Sections)	10
49	..	<i>c-e</i>	Polystomella strigillata, $\alpha$ .....	9
..	..	<i>f, g</i>	————— $\beta$ .....	9
51	..	<i>h-k</i>	Polystomella craticulata .....	11
53	6	<i>a-d</i>	Nummulina Mamilla .....	14
55	..	<i>e-h</i>	Nummulina lenticularis, $\alpha$ .....	15
..	7	<i>a, b</i>	————— $\beta$ .....	15
..	..	<i>c-f</i>	————— $\gamma$ .....	15
..	..	<i>g</i>	————— $\delta$ .....	15
..	..	<i>h</i>	————— $\epsilon$ .....	15

\* This is the *Lippistes Cornu* of Montfort, and probably the *Separatista Grayi* of Adams.



TABLE—continued.

Fichtel and Moll's 'Testacea Microscopica.'			Specific and Varietal Names, after Fichtel and Moll.	Numbers of Reference.
Page.	Plate.	Fig..		
58	8	<i>a-d</i>	<i>Nummulina radiata</i> .....	12
59	..	<i>e-h</i>	<i>Nummulina venosa</i> .....	13
61	9	<i>a-c</i>	<i>Polystomella striatopunctata</i> .....	6
62	..	<i>d-f</i>	<i>Polystomella ambigua</i> .....	7
64	..	<i>g-i</i>	<i>Planorbulina fareta</i> .....	28
65	10	<i>a-d</i>	<i>Rotalia sinuata</i> .....	26
66	..	<i>e-g</i>	<i>Polystomella macella, α</i> .....	8
..	..	<i>h-k</i>	————— <i>β</i> .....	8
69	11	<i>a-c</i>	<i>Cristellaria Calcar, Linn. α</i> .....	16
..	..	<i>d-f</i>	————— <i>β</i> .....	16
..	..	<i>g, h</i>	————— <i>γ</i> .....	16
..	..	<i>i, k</i>	————— <i>δ</i> .....	16
..	12	<i>a-c</i>	————— <i>ε</i> .....	16
..	..	<i>d-f</i>	————— <i>ζ</i> .....	16
..	..	<i>g, h</i>	————— <i>η</i> .....	16
..	..	<i>i, k</i>	————— <i>θ</i> .....	16
..	13	<i>a, b</i>	————— <i>ι</i> .....	16
..	..	<i>c, d</i>	————— <i>κ</i> .....	16
..	..	<i>e, f, g</i>	————— <i>λ</i> .....	16
..	..	<i>h, i</i>	————— <i>μ</i> .....	16
..	..	<i>k, l</i>	————— Sections ..	16
82	14	<i>a-c</i>	<i>Cristellaria papillosa</i> .....	17
84	..	<i>d-f</i>	<i>Calcarina Spengleri, Gm., α</i> .....	24
..	..	<i>g-i</i>	————— <i>β</i> .....	24
..	15	<i>a-c</i>	————— <i>γ</i> .....	24
..	..	<i>d-f</i>	————— <i>δ</i> .....	24
..	..	<i>g, h</i>	————— <i>ε</i> .....	24
..	..	<i>i, k</i>	————— Sections .....	24
91	16	<i>a-c</i>	<i>Peneroplis planatus, α</i> .....	30
..	..	<i>d-f</i>	————— <i>β</i> .....	30
..	..	<i>g, h</i>	————— <i>γ</i> .....	30
..	..	<i>i</i>	————— Section .....	30
95	17	<i>a-d</i>	<i>Cristellaria Cassis, α</i> .....	22
..	..	<i>e-g</i>	————— <i>β</i> .....	22
..	..	<i>h, i</i>	————— <i>γ</i> .....	22
..	..	<i>k, l</i>	————— <i>δ</i> .....	22
..	18	<i>a-c</i>	————— <i>ε</i> .....	22
100	..	<i>d-f</i>	<i>Cristellaria Galea</i> .....	23
102	..	<i>g-i</i>	<i>Cristellaria acutaauricularis</i> .....	20
103	19	<i>a-c</i>	<i>Nonionina Faba</i> .....	5
105	..	<i>d-f</i>	<i>Nonionina Scapha</i> .....	4
107	..	<i>g-i</i>	<i>Cristellaria Crepidula</i> .....	21
108	20	<i>a-c</i>	<i>Rotalia Auricula, α</i> .....	27
..	..	<i>d-f</i>	————— <i>β</i> .....	27
111	..	<i>g-k</i>	<i>Planorbulina tuberosa</i> .....	29
112	21	<i>a-d</i>	<i>Orbiculina Orbiculus</i> .....	32
113	22	<i>a-e</i>	<i>Orbiculina angulata</i> .....	33
115	23	<i>a-e</i>	<i>Orbiculina adunca</i> .....	31
118	24	<i>a-f</i>	<i>Alveolina Melo, α</i> .....	34
..	..	<i>g, h</i>	————— <i>β</i> .....	34





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