close-set hairs; prothorax clouded with grey and having a few indistinct dark brown patches; elytra obliquely striated at the base, with fine greyish patches (in each of which is a central dark brown spot)—*i. e.* one at the base and one at the apex of each elytron, and a large common transverse one in the middle,—the sides also greyish; legs and under surface greyish white; antennæ pitchy red, with the club and eyes black. Length 3 lines.

[To be continued.]

XXXV.—*On the Nomenclature of the* Foraminifera.

By W. K. Parker, M. Micr. Soc., and T. R. Jones, F.G.S.

II. *On the Species enumerated by Walker and Montagu.*

The Foraminifera figured and described in Walker's 'Test. Min.'—Subsequently to 1758 (the date of Linnæus's 10th edition of the 'Systema Naturæ'), and prior to 1789, when Gmelin produced his edition of the 'Syst. Nat.', several authors noticed and figured recent and fossil Foraminifera. Among these, Ledermüller (1764) figured several, but did not aim at giving either specific determinations, or even names. Martini (1769) merely copied the figures and names given by Gualtieri and Plancus; and so also did others. Guettard (1770) figured several forms of fossil Nummulites, Orbitolites, &c., which may be more or less easily recognized. Schroeter (1776–87), Gronovius (1781), and Spengler (1781)* supplied valuable materials for the Rhizopodist, as we have indicated in our former paper (Annals and Mag. N. H. 3 ser. vol. iii. p. 474). Soldani (1780) in his 'Saggio orittografico,' &c., illustrated a large series of Foraminifera, but did not adopt the binomial nomenclature in his descriptions. We shall turn to the consideration of this work when we take in hand the much larger, and indeed enormous, accumulation of microzoic materials which Soldani has so industriously and elaborately depicted in his great work, 'Testaceographia et Zoophytographia,' &c. (1789–98).

There is, however, one work of the period referred to that requires of us critical examination, as far as the Foraminifera figured and described in it are concerned; and therefore, in pursuance of the object of these papers, we now offer some remarks on the species and varieties of Foraminifera represented by the figures in plates 1 and 3 of the 'Testacea minuta rariora,' &c., by G. Walker†.

* This date was inadvertently omitted in our last communication. In the Bibliographic list appended to Prof. Williamson's 'Monograph. Brit. Foram.' (p. 102) this date should be attached to the reference to Spengler.

† Testacea minuta rariora nuperrime detecta in arena littoris Sandvi-

The history and character of this work are so well given by Prof. Williamson in his elegant Monograph on the Recent Foraminifera of Great Britain (1857) that we borrow the following extract from pages v and vi of the introduction of that work:—

"The earliest British writer in whose works I have discovered any notice of the Foraminifera is Hooke†, the father of microscopical science in this country. In his 'Micrographia,' published in 1665, he figures a single specimen, apparently of a Rotalia, which he found in some sea-sand. This figure is copied in the 'Micrographia Illustrata' of the elder Adams (1747). No further progress was made until the time of Mr. Boys, the well-known conchologist, whose labours converted Sandwich Bay into classic ground. His discoveries amongst minute shells led to the publication of the 'Testacea Minuta Rariora,' for which work the drawings were made by Mr. George Walker, an intelligent bookseller at Faversham, whilst the well-known Edward Jacob wrote the descriptions*. The volume contained thirty-six figures of Foraminifera, divided into twenty-two supposed species; but the descriptions are very brief, rarely exceeding half-a-dozen words; and though the twelfth and thirteenth editions of Linnæus's 'Systema Naturæ' had appeared, containing both descriptions and binomial designations for the Linnæan forms, Walker avoided assigning trivial names to his objects, 'through the fear of giving such as might in any way interfere with those already given by Linnæus to shells of the same kinds†.' The fact that subsequent conchologists have usually ascribed to Walker several of the specific names now employed, requires a word in explanation. In 1787, George Adams the younger published his volume of 'Essays on the Microscope.' A second edition of this work, with considerable additions and improvements, appeared in 1798, edited by Frederic Kanmacher, who introduced into this edition Walker's figures of the Foraminifera, and appended to them generic and specific names in

censis a Gul. Boys, Arm. S.A.S. Multa adidit, et omnium Figuras ope Microscopii ampliatas accurate delineavit Geo. Walker. 4to, London [1784].

* "No date is attached to this work; but the copy in the library of Mr. J. G. Jeffreys, with the use of which I have long been favoured, and which was originally in the possession of Dr. Turton, contains the manuscript date of May 1st, 1784. That this was the date of publication is rendered increasingly probable by the fact that the copy in the library of the British Museum, which formerly belonged to Sir Joseph Banks, contains a manuscript letter from Jacobs to Sir Joseph, written to accompany the two copies of the work that Walker sent to the worthy baronet. The letter is dated May 2nd, 1784. For this fact I am indebted to Dr. Gray, of the British Museum."

† Test. Minut. Rar., Introduction, p. v.

accordance with the binomial plan of Linnæus. These names were chiefly modifications of prominent terms selected from Walker's, or rather Jacob's, brief descriptions: for example, the *Nautilus subarcuatus geniculis exertis* of the latter became the *Nautilus subarcuatulus* of Adams. These facts would lead us to ascribe the names usually given to the more common British Foraminifera to Adams rather than to the authors of the 'Testacea Minuta Rariora;' but my kind friend Dr. Gray has called my attention to a note on p. 344 of Dillwyn's 'Catalogue of Recent Shells,' where, under the head of *Nautilus lobatulus*, the author observes, 'It first appeared with the present name in the "Essays on the Microscope;" and Adams there says he had obtained a manuscript corrected copy of the minute shells, to which Walker had added all the trivial names [which he has used].' 'This,' as Dr. Gray observes to me in a recent communication, 'sets the matter at rest why they are quoted as Walker's.'"

It is in the second, or Kanmacher's, edition of Adams's 'Essays on the Microscope*' that the binomial appellations are given to Walker's figures, or rather to some of them, which are faithfully copied in Kanmacher's 14th plate. In a note at page 633, Kanmacher says, "Being possessed of Mr. Jacob's own corrected copy of the work (Test. Min.), to which he has annexed the trivial names, I am thereby enabled to affix them to the several shells here enumerated." Kanmacher's observations (including an extract from a letter written by Sir J. Banks to Mr. Jacob) on the joint work of Walker, Boys, and Jacob, and on the study of minute shells, are well worth reading (p. 630, &c.).

The specimens examined and figured by Walker were obtained by Mr. Boys and himself from the shore-sands of Sandwich, Faversham, Sheppey, and the intervening coast; and amongst them we have some fossil Foraminifera† washed by the action of the sea and streams from the tertiary clays and sands of the respective neighbourhoods, and mixed with the recent shells in the mud and sands of the coast‡.

* Essays on the Microscope, by the late George Adams. The second edition, with considerable additions and improvements, by Frederick Kanmacher, F.L.S., 4to, London, 1798.

† Still more fossil specimens from these localities were afterwards figured and described by Col. Montagu, who worked over Mr. Boys's collection, which appears to have been increased by materials accumulated during several years subsequent to the time when Walker and Jacob had it in hand.

‡ This was remarked by one of us some years since (Quart. Journ. Geol. Soc. vol. viii. p. 267). Foraminifera from the Chalk also are in many places abundantly mixed with the sea-sand of the Kentish coast; and

(**A.** *a–e*). Walker, *Test. Min.* figs.* 1, 2, 3, 4, & 10. These are *Miliolæ*, of the Quinqueloculine type. Some are young forms, as figs. 2 and 10. Fig. 10 is the double primordial chamber of a carinate *Quinqueloculina*†. Fig. 2 represents a young striated shell‡ in a more advanced stage of growth than that shown by fig. 10. These forms, which are characteristically the young forms of the Quinqueloculine varieties of *Miliola*, have been named *Adelosina* by D'Orbigny.

Figs. 1 & 3 represent small specimens of *Q. Seminulum*§; fig. 3 is probably a flattish individual‖, broken through the middle¶. Although showing only three chambers (and insomuch Triloculine), fig. 4 (*Vermiculum subrotundum*, Montagu) is probably an undeveloped form of the common inflated *Q. Seminulum*, var. *secans***.

(**B.**) Fig. 5 is a specimen of the common *Polymorphina*††, of small growth. This is well known as *P. communis*, D'Orb. (with interminable degrees of size and shape; but the name *lactea* (Kanmacher, for Walker and Jacob) is an older appellation.

(**C.** *a–d.*) Fig. 6 is a well-formed *Lagena*‡‡, with strong riblets, and presenting one of the countless modifications of the costate ornament. This is the *Serpula* (*Lagena*) *sulcata* of Walker and Jacob (in Kanmacher's edition of Adams's 'Essays'); also the *L. striata* of Montagu. In quoting Kanmacher, Turton in his 'Linn.' misnamed this *Lagena* "Serpula Lagena," instead of *S.* (*L.*) *sulcata*. Montagu appears not to have referred to Kanmacher, but to have used Turton's list; and he supplied the trivial name "striata" from the description in the 'Test. Minut.,' whence also Jacob had previously taken the name *sulcata*, published by Kanmacher.

Prof. Williamson has hence been led to figure and describe as recent two fossil specimens of *Frondicularia* well known as belonging to the Chalk.

* The figures on the plates in Walker's work are numbered consecutively throughout.

† For the plan of growth of *Miliolæ*, see Parker, 'On some Indian Miliolitidæ,' Microsc. Transact. new ser. vol. vi. p. 53; and Williamson's Monogr. Recent Foram. p. xviii.

‡ "From Sandwich and Reculver; though not common."

§ Fig. 1 is referred with a doubt to this species by Walker and Jacob, who also observe, "It varies in size and shape, and is found in every portion of the sea-sand which hath been examined." It is the *Vermiculum intortum* of Montagu, who hesitates to place it with *M. Seminulum*.

‖ "From Sandwich; very rare."

¶ Montagu also intimates that it must have been a mutilated specimen.

** "In sand of all the different parts of the shore."

†† "From Sandwich; not common."

‡‡ "From Sandwich, Reculver, and Sheppey; very rare."

Fig. 9 is a smooth *Lagena**, less globose than that shown by fig. 6, and tapering gently to the neck.

Fig. 8 is a smooth short-necked *Lagena*†, or rather represents a specimen having no external, but an internal neck-tube,—a form known as *Entosolenia* (Ehrenberg). Fig. 7 represents the *Entosolenia marginata*‡, a compressed *Lagena* with intussuscepted apertural tube. The relations of the externally and the internally tube-necked *Lagenæ* are so close that we cannot regard them as forming two distinct specific types. To this opinion we strongly bent in the paper on the Norway Foraminifera§; and we feel far more convinced by subsequent observations.

For the reasons which guided us in the consideration of *Nodosariæ* (Ann. N. Hist. 3rd ser. vol. iii. pp. 476, 478) we regard *Lagena sulcata* as the type of the species. It exhibits essential features of form and ornament. Rib-patterns appear abundantly on these single-celled Foraminifers, and on their polythalamous congeners, the *Nodosariæ* and *Uvigerinæ*, and much less strongly on the *Polymorphinæ*, which are also related, but more particularly, to the Entosolenian group. The reticulate ornament, formed by minute transverse concentric ridges uniting the parallel ribs, or by sinuous riblets anastomosing with each other, is more specially a feature in the latter group, though traces of it are occasionally to be found on the typical *L. sulcata*. The marginate condition obtains both in Entosolenian and Ectosolenian forms. The extrusion and intrusion of the aperture-tube occur to an exceedingly variable extent, and are often combined. The modifications of this feature are too numerous to be here described. We may remark that both *Ectosolenia* and *Entosolenia* often have tubes at each end of the shell; and occasionally there is a second internal tube attached to the side of the interior, appearing as though the tube had been broken off and its fragment had become attached during life. The *Lagenæ* are occasionally elongate and spindle-shaped, with an aperture at each end; these slender individuals are sometimes bent. Professor Williamson figures the section of a double or twin specimen of *Entosolenia*, in which two individuals had grown off divergently from the primordial cell.

Prof. Williamson prefers the smooth form‖ as a representative of the type, but objects to use as a specific name the term "lævis," expressive of the absence of ornamentation, inasmuch as, in this case, the varietal names, alluding to the ornament,

* "From Sandwich; very rare." † "From Sandwich; very rare."
‡ "From the Reculver; very rare."
§ Annals Nat. Hist. 1857, vol. xix.
‖ In our paper on the Norway Foraminifera (Ann. N. H. 1857, vol. xix. p. 278) we also took this as the type.

would appear contradictory; and he proposes "vulgaris" as the typical name. Taking *L. sulcata** as the characteristic form of the group, for the reasons already referred to, we think the varietal names *lævis, squamosa,* &c., whether expressing modification or absence of the ornament, will not be contradictory, and that a new specific name will not be required.

(**D.** *a, b*). Figs. 63 and 64 represent the common and well-known *Rotalia*† *Beccarii,* recognized as this species by Walker and Jacob. They make the following remarks: "The colour, while the fish is alive, is a fine pellucid crimson; when dead, is white. It is found alive on the *Fucus vesiculosus,* and is a very common shell on all the coast, and seems to be a universal littoral one, by the numbers found at Rimini and in the sand of the South Seas." The sinistral and dextral positions of the spire, which appeared to be an important feature to Walker and Jacob, are non-characteristic in Foraminifera‡.

(**E.**) Fig. 65 is the common *Polystomella crispa.* This also was recognized as a Linnæan species by Walker and Jacob. They observe: "The finest specimens are from Sheppey: not uncommon."

(**F.** *a.*) Fig. 66 is a variety of *Cristellaria Calcar,* rapidly enlarging in its whorls, ribbed, and keeled; approaching var. *Cassis.* This was from Sheppey, and most probably a fossil specimen from the London Clay of that island.

(**F.** *b.*) Fig. 67 is *Cristellaria Calcar,* orbicular and smooth. "From Sandwich and Seasalter: not common." We find it to be not uncommon in the recent state on the Kentish coast. Prof. Williamson mentions many other British localities for it. A large form occurs abundantly in the Tertiary sands and clays of Kent; and probably Montagu's specimen, 'Test. Brit. Suppl.' p. 75, pl. 18. figs. 7 & 8, "from the Boysian Collection," was one of these fossils.

(**F.** *c.*). Fig. 72 is a very young *Cristellaria,* probably of the Marginuline or crozier-like growth. "From Seasalter and Sandwich; very rare."

(**F.** *d.*) Fig. 73 is a well-developed, strongly ribbed, Marginu-

* Kanmacher's application of Jacob and Walker's MS. names should be strictly adhered to; and *sulcata* must be taken as the specific name.

Among Prof. Williamson's synonyma of his *Lagena vulgaris* a part only of Walker's diagnosis is quoted; *S.* (*L.*) *sulcata* is referred to "Adams, 1787," instead of Kanmacher, 1798; and Turton's *S. Lagena* (Linn. Syst. vol. iv. 1802, p. 609) is omitted.

† We agree with Prof. Williamson in discarding the name *Rosalina,* the differences once thought to exist between the two forms having very little value.

‡ Prof. Williamson has some good remarks on this point at p. 49 of his Monograph.

line *Cristellaria**, probably fossil. It was "from Sheppey Island: very rare."

(G. *a*.) Fig 68 appears to be a small *Nonionina*†, common on our shores, and of world-wide distribution, namely a delicate variety of the *N. asterisans* of Fichtel and Moll. Montagu, however, refers to this figure as being the same as that of his "Nautilus depressulus," which is a small *Cristellaria*. This mistake must have arisen from his finding his specimen mixed up with this little *Nonionina* in the Boysian collection. The many narrow, curved chambers, the rounded septal face, the sunken septal lines ("many depressed joints"), and the somewhat umbilicated spire, unmistakeably distinguish this from Montagu's.

(G. *b*.) Fig. 70 is another variety of *Nonionina asterisans*, with still more sunken joints or septal lines, and with a more open spire. It is common in some littoral sands. Walker found it at the Reculver,—"exceeding rare."

(H. *a*.) Fig. 69 is a common form of *Truncatulina lobatula*, having the outline of the cells uniform or flush; the septal lines being merely "furrowed." According to Walker, it was from Sandwich,—"not common."

Montagu (Test. Brit. Suppl. p. 78) refers to this figure when describing a little *Nonionina*; and Williamson (Monogr. p. 42) makes it a *Polystomella*. We believe that they must both be wrong, because in the specimen figured by Walker the two faces are decidedly unsymmetrical.

(H. *b*.) Fig. 71 represents the usual lobed form of *Truncatulina lobatula*‡, which is characteristically littoral. Walker found it at Whitstable,—"not common."

The more even-surfaced shell, fig. 69, is smaller than the last mentioned, and is generally found in deeper water. The raised, smooth, and nearly conical form, known as *T. refulgens*, D'Orb., inhabits still deeper zones. These three are few-celled varietal forms of *Planorbulina farcta*, Fichtel and Moll, sp., and usually attach themselves to sea-weeds and shells. Varied by their greater or less regularity of growth, and by the relative convexity of their cells, these varieties readily run into each other and into the Planorbuline (or Acervuline) forms, of which *P. farcta* is the type.

(I.) Fig. 74 is a not uncommon modification of the *Vaginulina Legumen* of the British coasts. "From Sandwich: exceeding

* For further remarks on *Cristellariæ*, see Ann. N. H. 1857, xix. p. 290.

† "From Reculver: very rare."

‡ In Ann. N. H. 1859, iii. p. 482, we have shown that the term *Serpula nautiloides*, formerly thought to have reference to *T. lobatula* (Ann. N. H. 1857, xix. p. 293), belongs to quite another animal.

rare," according to Walker. We may here remark that we retain "Vaginulina" as a subgeneric term, in preference to "Dentalina," used by Professor Williamson, because *Vaginulina* is the most perfect mean between the two extremes *Nodosaria* and *Cristellaria*; whereas *Dentalina* is as intimately connected with *Nodosaria* on the one hand, as *Marginulina* is with *Cristellaria* on the other. At the same time, we must repeat that there is no real divisional line existing between any of these forms.

(J.) Fig. 89, described by Walker and Jacob (p. 25) as "Echinus subrotundus planus lobatus. The colour opaque white. From Reculver; rare," is manifestly (from its minute size, faintly drawn spire, and peculiarly placed aperture) a common variety of *Globigerina bulloides*, D'Orb., which is found on our shores. Walker's fig. 89 has not been previously recognized (we believe) as representing a Foraminifer.

The opposite Table shows the species and varieties figured by Walker.

The Foraminifera figured and described in Montagu's 'Test. Brit.' and 'Supplement.'

Subsequent to Walker's work on the minute shells of the Kentish coast, little was done in England in the natural history of the Foraminifera until Colonel G. Montagu produced his 'Testacea Britannica*,' in 1803, and the 'Supplement†' in 1808. Walker's species, however, had received names in Kanmacher's second edition of G. Adams's 'Essays on the Microscope' (1798); and John Adams and other naturalists had noticed a few of the more common littoral species.

On the Continent several fossil forms, chiefly Nummulites, had been during this time noticed and figured by Tozzetti, Faujas, Fortis, and others; and Soldani had produced his gigantic Monograph on the fossil and recent Foraminifera and other minute shells of Tuscany. With the same date as that of the 'Test. Brit.', there was published at Vienna a handsome volume devoted to Foraminifera—the 'Testacea Microscopica,' &c., by Fichtel and Moll, containing good figures and careful descriptions. This work we hope to analyze in our next communication.

Professor Williamson has the following useful remarks on these works in the Introduction to his Monograph (p. vi.):—

"The appearance of Montagu's 'Testacea Britannica' in 1803, and the 'Supplement' in 1808, marked a new era in the study

* Testacea Britannica; or, British Shells. Parts I. & II. 4to, Romsey and London, 1803. In the 'Bibliograph. Zool. et Geol.,' published by the Ray Society, the date of this work is misprinted "1803–1808."

† Supplement to the Testacea Britannica, with additional plates. 4to, Exeter and London, 1808.

Table of the Species and Varieties of Foraminifera figured in Walker's 'Testacea Minuta.'

	Walker and Jacob's MS. Names in Kanmacher's edition of Adams's 'Essays on the Microscope' (1798).				References to Walker's 'Test. Minut.'			Corrected Names.
	Page	Pl.	fig.		Page	Pl.	fig.	
A. *c.*	...	...	...	.....	1	1	1	Miliola (Quinqueloculina) Seminulum, *L.*
A. *b.*	633	14	2	Serpula bicornis ...	1	1	2	,, ,, ,, (young).
A. *d.*	633	14	3	S. perforata	2	1	3	,, ,, ,,
A. *e.*	...	...	...	.....	2	1	4	,, ,, ,, var. subrotunda, *Montagu.*
B.	634	14	4	S. lactea	2	1	5	Polymorphina lactea, *Walker & Jacob**.
C. *a.*	634	14	5	S. (Lagena) sulcata.	2	1	6	Lagena sulcata, *W. & J.* (L. striata, *Montagu.*)
C. *d.*	...	...	...	.....	2	1	7	L. (Entosolenia) marginata, *Mont.*
C. *c.*	...	...	...	.....	3	1	8	L. (Entosolenia) globosa, *Mont.*
C. *b.*	...	...	...	.....	3	1	9	L. sulcata, *W. & J.*, var. lævis, *Mont.*
								} *Type*, Lagena sulcata, *W. & J.*
A. *a.*	634	14	6	Serpula retorta	3	1	10	Miliola (Quinqueloculina) Seminulum, *L.* (young).
D. *a.*	640	14	29	Nautilus Beccarii ...	18	3	63	} Rotalia Beccarii, *L.*
D. *b.*	...	...	...	.....	18	3	64	
E.	640	14	30	N. crispus	18	3	65	Polystomella crispa, *L.*
F. *a.*	641	14	31	N. Calcar	19	3	66	Cristellaria Calcar, *L.*, var. Cassis, *Fichtel & Moll.*
F. *b.*	641	14	32	N. lævigatulus	19	3	67	C. Calcar, *L.*, var. lævigatula, *W. & J.*
G. *a.*	641	14	33	N. depressulus	19	3	68	Nonionina asterisans, *F. & M.*, var. depressula, *W. & J.*
H. *a.*	641	14	34	N. umbilicatulus ...	19	3	69	Truncatulina lobatula, *W. & J.*, var. umbilicatula, *W. & J.* [*F. & M.*
G. *b.*	641	14	35	N. crassulus	20	3	70	Nonionina asterisans, *F. & M.*, var. crassula, *W. & J.* [*Type*, Planorbulina farcta,
H. *b.*	642	14	36	N. lobatulus	20	3	71	Truncatulina lobatula, *W. & J.* [*Type*, Planorbulina farcta, *F. & M.*]
F. *c.*	642	14	37	N. carinatulus	20	3	72	Cristellaria (young).
F. *d.*	642	14	38	N. subarcuatulus ...	20	3	73	C. (Marginulina) subarcuatula, *W. & J.* [*Type*, C. Calcar, *L.*]
I.	...	...	...	.....	21	3	74	Nodosaria (Vaginulina) Legumen, *L.* [*Type*, N. Raphanus, *L.*]
J.	644	14	46	Echinus lobatulus...	25	3	89	Globigerina bulloides, *D'Orbigny*, var. lobatula, *W. & J.*

* According to Kanmacher; see above, p. 335.

of British Foraminifera. Not only were several new forms added to the list, but improved figures and more elaborate descriptions were substituted for the imperfect ones hitherto published. In the first of these publications the difficulty of defining the limits of specific variation obviously dawned upon the mind of the author; and in describing his *Vermiculum intortum* (*Miliolina Seminulum*) he distinctly states that this is so variable in its formation, that, without great attention, it might be formed into several species,—a warning that might have been received with advantage by many of Montagu's successors in the study of Foraminifera. Shortly after the appearance of Montagu's first volume, the publication of the 'Testacea Microscopica' of Fichtel and Moll indicated that these accurate observers had obtained further light respecting the variableness of many of the Foraminifera,—a fact especially demonstrated by their description of *Nautilus Calcar* (*Cristellaria Calcar*); but notwithstanding his previous experience, when publishing his 'Supplement,' Montagu was unable to follow these authors in their accurate determinations. 'If,' he remarks, speaking of the numerous forms of *N. Calcar* delineated by these writers, 'these can be admitted as the same species, we may bid defiance to specific definition.' Nevertheless Fichtel and Moll were in all probability right."

The 'Test. Brit.' (which consists of two parts continuously paged—Part I., with Introduction and pp. 1–292, and Part II. pp. 293–606) contains thirty short descriptions of specimens that, with few exceptions, were in "the Boysian Collection," and more than half of which had been already described and figured by Walker. Montagu gave figures of six previously undescribed forms, but does not appear to have personally examined all the Boysian specimens, having in some instances worked from drawings and notes received from Mr. Boys. In the 'Supplement,' five years afterwards, he described more fully eleven forms, refiguring most of them; and introduced, with figures of all but one, six that he had not previously noticed. By this time Montagu had had the opportunity of personally examining "the Boysian Collection," presented to him by Mr. Henry Boys, and which seems to have been increased by additions made from the coast-sands since Walker first had it in hand. This examination led Montagu to correct and improve some of his previous descriptions*; but at the same time, from some cause or other, he was evidently led into mistakes as to the identity of specimens already figured by Walker. Thus

* He had also been enabled to enlarge his knowledge of these minute shells by comparing his recent specimens with fossil Foraminifera brought from Italy by Messrs. Mead and Higginson.

Walker's "umbilicatulus," "depressulus," and "lævigatulus" are species or varieties different from those so named by Montagu. The difficulty of recognizing essential differences in minute and very similar forms, the mixing of specimens, or the shifting of labels (numerals) may probably account for these discrepancies.

In criticising Montagu's nomenclature of the Foraminifera, as well as in noticing Walker's figures, we frequently refer to Prof. Williamson's Monograph of the Recent British Foraminifera, the latest and best work on the subject. As the works of these three authors comprise the main bulk of all the published original researches on British Rhizopods, it has been especially necessary to keep Prof. Williamson's elaborate and well-illustrated Monograph in view. Besides the occasions we have of noting our agreement with many of his determinations, we have also incidentally to notice points of disagreement between his views and our own, without systematically corroborating or discussing all the species which he has enumerated. We hope, however, at some future time to compare notes with our highly valued brother-naturalist; and in the meantime we believe that he will be as ready to take into consideration the points of difference which we notice, as to recognize and be gratified by our general concurrence with the results of his long-continued and important researches.

Occasional references are also made by us to the works of Maton and Rackett, Turton, and others; also to names adopted by Lamarck and D'Orbigny. The two last-named authors will supply us with matter for future papers; and then we shall treat of the generic names borrowed from them for the species figured by Walker and Montagu.

It may be well to observe in this place that we wish our readers to remember that, although we protest against the adoption of the numerous published binomial appellations of known Foraminifera as *specific* names, yet we are quite cognizant of the general convenience, and sometimes of the necessity, of retaining the published names of varietal forms for use among zoologists, and still more especially among palæontologists.

(**A.** *a.*) Pl. 14. fig. 9, p. 522. "Vermiculum oblongum." This is a common Triloculine form of *Miliola*, belonging to the typical species, *M. Seminulum*, Linn., and has been conveniently designated *Triloculina oblonga* by D'Orbigny (Tabl. Céphal., Annales des Sc. Nat. vol. vii. p. 300, No. 16). Montagu collected his specimens at Salcombe Bay, Devonshire. It is of frequent occurrence on most shores.

(**A.** *b, c.*) P. 519. "Vermiculum bicorne" and "V. perforatum." See above, p. 341.

(**A.** *d.*) P. 520. "Vermiculum intortum." This is Walker's fig. 1. Montagu felt much hesitation in separating it from Linné's *S. Seminulum.*

(**A.** *e.*) P. 521. "Vermiculum subrotundum." See above, p. 336.

Maton and Reckett, in the 'Linnæan Transact.,' 1807, vol. viii. p. 245, referred *Vermiculum intortum,* Montagu, and *Serpula ovalis,* Adams (Linn. Trans. 1800, vol. v. p. 4. pl. 1. f. 28–30), to Linné's *Serpula Seminulum.* They also united Montagu's *Vermiculum bicorne* and *V. perforatum,* terming it *S. bicornis.* Further, they expressed their doubt whether *S. Seminulum, S. subrotunda, S. oblonga,* and *S. bicornis* ought not to be considered rather as varieties than as distinct species.

Prof. Williamson (Monogr. p. 84) refers *M. subrotunda,* Mont., to *M. trigonula,* Lam.; but in this determination we entirely differ from him.

(**B.**) P. 522. "Vermiculum lacteum." *Polymorphina lactea.* See p. 336.

(**C.** *a.*) P. 523. "Vermiculum striatum." *Serpula* (*Lagena*) *sulcata* of Walker and Jacob, according to Kanmacher. Montagu, by following Turton, missed the name applied by Jacob, and gave another. See p. 336.

(**C.** *b–d.*) Pp. 523 and 524. "Vermiculum globosum," "V. læve," and "V. marginatum." Montagu thus termed those *Lagenæ* which remained unnamed by Kanmacher.

(**C.** *e.*) Pl. 14. f. 3, p. 525. "Vermiculum perlucidum." A six-ribbed variety of *Lagena sulcata,* Walker. From Seasalter (Whitstable Bay).

(**C.** *f.*) Pl. 14. f. 2. p. 526. "Vermiculum squamosum." A reticulate and common variety of the globose Entosolenian *Lagenæ.* From Seasalter.

(**D.** *a.*) Pl. 6. f. 4, p. 197. "Nautilus Radicula." This is distinct from the specimen figured at pl. 14. f. 6, which is a *Clavulina* (see p. 350). Montagu evidently felt the difficulty of placing the two together. Fig. 4 represents a specimen from Sandwich; and, since it is described as being of an "opaque brown" colour, it was possibly a fossil specimen. This elegant smooth variety of *Nodosaria* is common in the London Clay, but wanting in our recent British fauna. The regularity of form and smoothness of surface vary indefinitely among the recent and fossil congeners of *N. Radicula*; and indeed, at page 86 of the Supplement, Montagu refers to these "numerous varieties."

(**D.** *b.*) Pl. 14. f. 4, p. 198. "Nautilus jugosus." A tapering and slightly curved form of *Nodosaria Raphanus,* with the septal lines constricted. This specimen was "received from Mr. Boys," and was probably derived from the Thanet Sands or the London

Clay. In the latter this form is abundant. It is the *Nodosaria obliqua*, Linn. sp., as Montagu thought. D'Orbigny's *Dentalina acuta* is an analogous variety.

(D. *c.*) Pl. 14. f. 5, p. 199. "Nautilus costatus." The figure shows a straight and few-ribbed variety of *Nodosaria Raphanus*. This also is most probably fossil.

(D. *d.*) Supplem. pl. 19. f. 2, p. 83. "*Nautilus costatus*, var." A fragment of a straight symmetrical *Nodosaria*. In describing this variety, Montagu correctly remarks that this form is "subject to very great variation." Probably fossil.

(D. *e.*) Pl. 14. f. 1, p. 525. "Vermiculum Urnæ." "Found in sand from Sheppey." Probably the first cell of a *Nodosaria* (from the London Clay of Sheppey), showing the fractured wall of the next or second cell, encircling the base of the conically-produced septal face. The opposite, or lower, projecting point is the usual terminal pricklet.

(D. *f.*) Pl. 6. f. 5, p. 198. "N. subarcuatus." One of the innumerable Dentaline modifications of *Nodosariæ*. Montagu mentions having seen a drawing of another variety. Both were from Sandwich. The "brown epidermis" may probably have been due to fossilization.

Several varieties of these delicate tapering shells abound in the Tertiary clays (the cliff-washings of which afforded Boys and Walker so many Foraminifera); and some occur recent on our coasts, though they are neither large nor plentiful. In the Mediterranean and elsewhere they abound on deep mud bottoms. Authors have noticed and figured hundreds of the varieties, recent and fossil, as distinct species. D'Orbigny's *Dentalina communis* (from the Adriatic, and fossil in the Chalk) has the chambers oblique and distinct, and is a good sub-type; but Lamarck's older name, *Nodosaria dentalina* (An. s. Vert. vii. p. 596, no. 2) is well adapted for this group. Montagu's specimen, above referred to, has the septal lines of its earlier segments unmarked, and the later chambers are globose.

Prof. Williamson has taken Montagu's "N. subarcuatus" as the type of the Dentaline group. In this we cannot agree; for we do not regard this shell as a good typical form. The well-grown specimens of *Dentalina communis* (*N. dentalina*) of the Adriatic and Mediterranean far better represent the characters of the slender tapering arcuate *Nodosariæ* furthest removed from *N. Raphanus*.

(D. *g.*) P. 197, and Supplem. pl. 19. f. 4 & 7, p. 82. "Nautilus rectus." At p. 197, *N. Legumen* is described under this name: but in the "Supplement" these forms are separately and correctly defined. Montagu's *N. rectus* is a thickish and nearly straight form of *Nodosaria dentalina*, very common in the Lon-

don Clay, whence the "opaque brown" specimen submitted by Boys to Montagu was probably derived. D'Orbigny has recognized Montagu's figured specimen as a variety of his *Dentalina communis* (Tabl. Céph., Ann. d. Sc. Nat. vii. p. 254, no. 35), which is the same as Lamarck's *N. dentalina*.

(**D.** *h.*) Suppl. pl. 19. f. 5, p. 86. "Nautilus spinulosus." A fragment of a pretty spinose Dentaline *Nodosaria*, very common in the London Clay. It passes, on one hand, losing its ornament, into *N. dentalina*; and, on the other, by means of finely costate forms, into *N. Raphanus*, the prickles being equivalent to undeveloped riblets, and often passing into regular costæ. D'Orbigny has re-named this variety *Dentalina Adolphina*, in his 'Foram. Bassin Vienne;' and *D. floscula*, D'Orb., *Nod. hispida*, D'Orb., and *Nod. aculeata*, D'Orb., are like varieties. The *D. spinescens* of Reuss is the same.

(**D.** *i.*) Supplem. pl. 19. f. 6, p. 82. "Nautilus Legumen." This is the recent *Nodosaria* (*Vaginulina*) *Legumen*, Linn. sp.

(**D.** *j.*) Suppl. pl. 30. f. 9, p. 87. "Nautilus linearis." A delicate Vaginuline modification of *Nodosaria*, intermediate between *Vaginulina Legumen*, Linn., and *V. Badenensis*, D'Orb. Montagu obtained his specimen from "the shell-bank near Dunbar, North Britain;" Prof. Williamson has received this shell from other British localities. A fragment from the Norwegian coast is figured in our paper, Annals N. H. 1857, vol. xix. pl. 11. fig. 2.

(**E.** *a.*) P. 191, and Supplem. pl. 18. f. 1, p. 78. "Nautilus umbilicatulus." Montagu refers to Walker's fig. 69 for this shell; but Walker's two aspects of the specimen show an unsymmetrical shell, like a *Truncatulina**. In Montagu's further description in the "Supplement," he describes specimens collected by himself from a Sabella ("in the Bay of Kingsbridge"); and his figure differs materially from Walker's, and represents a small variety of *Nonionina asterisans*, Fichtel and Moll, sp. It cannot be the *Polystomella*† *striatopunctata*, F. & M. sp., which Prof. Williamson has called *P. umbilicatula* (Monograph, p. 42),

* See above, p. 339.

† In the Ann. N. H. 1857, xix. p. 288, we referred this *P. striatopunctata* to *Nonionina*; but, in spite of its extreme similarity of form to the small *Nonioninæ*, we now adhere to Mr. Williamson's opinion of its being a *Polystomella*. We must, however, go further, and regard it as specifically the same as *P. crispa*.

We may here observe that the tribe of small *Nonioninæ* converging round *N. asterisans*, although conveniently considered as a subspecific group, yet in reality are essentially of the same specific type as that to which *Polystomella crispa* belongs. They may be said to be arrested or feebly developed conditions of the form in which a luxuriant growth of exogenous shell-matter symmetrically bridges over the septal sulci and the aperture, and otherwise thickens and ornaments the shell.

referring to Walker's fig. 69 (erroneously) and to Montagu's pl. 18. fig. 1, as the same form. Walker's fig. 68 (*Nonionina depressula*) is the variety nearest to Montagu's figured specimen.

Intending to take *Nonionina crassula* (Walker and Montagu) as the specific type, we have noticed under this name a little *Nonionina* from Norway, in the Ann. N. H. 1857, xix. p. 286; but we believe that the form described by Fichtel and Moll as *Nautilus asterisans* best represents the essential characters of the specific group to which *Non. depressula*, Walker, *Non. crassula*, Walker, *Non. umbilicatula*, Montagu, *Non. incrassata*, F. & M., and many other varieties belong. The Norwegian form above referred to will therefore stand with us as *Nonionina asterisans*, F. & M., var. *umbilicatula*, Mont.

(**E.** *b.*) P. 191, and Supplem. pl. 18. f. 2, p. 79. "Nautilus crassulus." This is the same as Walker's fig. 70, and is a variety of *Nonionina asterisans*, F. & M. sp., which is a form having an extreme variability of outline and of thickness. The septal lines may be flush with the chamber-walls, or sulcate, or limbate in many modifications. In this specimen from Reculver we have an open umbilicus and sulcate septal lines, both in greater degree than in the former variety, pl. 18. fig. 1.

Similar varieties of this *Nonionina* abound in shallow seas, and are among the few Foraminifera that live high up in estuarine waters and in salt-marshes. The Foraminifera represented by pl. 18. figs. 1–6, and fig. 9 in pl. 14 (*Nonionina umbilicatula, N. crassula, Rotalia inflata, R. Beccarii, Polystomella crispa,* and *Triloculina oblonga*) are the group especially affecting these habitats.

(**F.**) Supplem. pl. 18. f. 3, p. 81. "Nautilus inflatus." This is a *Rotalia* of a typical specific form (as already remarked by Williamson), and characteristic of a subgenus. This sandy-shelled *Rotalia*, exhibiting a structural condition rare, if not unique, among the genus, differs from its congeners so strikingly in this particular, and in its almost globigerine mode of growth, that we propose to refer it to a separate subgenus under the name *Trochammina**.

The species under notice, which has always an arenaceous shell, has its fullest development in shallow water, where it is sometimes very abundant. For instance, some of the clay from the Peterborough Fens yields it profusely. Montagu had it from Devon, and Prof. Williamson has found it elsewhere on our coasts; usually it is rare. It occurs also at Leghorn. In deeper water it is represented by attenuated varieties, ultimately becoming Spirilline. The contrary to this habit holds good with

* From τροχὸς, *rota*; and ἄμμος, *arena*.

Rotalia repanda, F. & M. sp., whose varieties are depauperated on shore, but found to be typically fine in abyssal dredgings.

(G.) Pp. 186, 187, and Supplem. pl. 18. f. 4 & 6, p. 74. "Nautilus Beccarii," and "N. Beccarii perversus." Dextral and sinistral forms of *Rotalia Beccarii*, L. (See above, p. 338.)

(H.*a*.) P. 515. "Serpula lobata." Fig. 71 of Walker (*Truncatulina lobatula*) is here referred to, also the *Serpula nautiloides* of Gmelin. The latter is a sessile form of *Lituola* (*Placopsilina*).

Maton and Rackett re-transferred this shell to the nautiloid group after Montagu had placed it among the *Serpulæ*.

(H. *b*.) Supplem. p. 160. "Serpula concamerata." According to the description given, this is a minute Rotalian form, and may belong to either of the chief sub-groups of the genus *Rotalia* (viz. *Calcarina*, *Rotalia* proper, *Planorbulina*, and *Trochammina*). Prof. Williamson (Monogr. p. 52) has used the name *Rotalina concamerata* as typically indicative of certain forms comprising *Rosalina globularis*, D'Orb., *Rotalina Boueana*, D'Orb. &c. It appears however, to us, that in Prof. Williamson's pl. 4, figs. 101–103 represent an ordinary specimen of *Rotalia repanda*, F. & M. (*R. Boueana* is the same form); and that figs. 104 and 105 represent *Rosalina globularis*, which is a variety of *Rotalia trochidiformis*, Lamarck.

In our paper on some Norwegian Foraminifera (Ann. N. H. 2 ser. vol. xix.), we have also misarranged some of these *Rotaliæ*, led by the extreme similarity (as to external form) of the great typical *R. repanda* (*op. cit.* pl. 10. fig. 22–24) to *R. vesicularis*, Lam., which is a flat variety of *R. trochidiformis*, whilst the smaller form (pl. 11. figs. 13, 14) is really a variety of *R. trochidiformis*, being the *R. globularis* of D'Orb., Modèles, No. 69 (not No. 66, as in 'Monogr.' p. 52).

Prof. Williamson gives no definite reason for his application of this name used by Montagu. We are still of opinion that Montagu in this case referred to some Planorbuline (or Truncatuline) form, as we indicated in Ann. N. H. 2 ser. vol. xix. p. 294, *note*.

(I.) P. 187, and Supplem. pl. 18. f. 5. "Nautilus crispus." The well-known *Polystomella crispa*, L.

(J. *a*.) P. 189, pl. 15. f. 4, and Supplem. p. 76. "Nautilus Calcar." A characteristic keeled specimen of *Cristellaria Calcar*, but not essentially distinct from those figured in pl. 18. figs. 7–9, nor from Walker's figs. 66 & 67. The *Nautilus rotatus* figured in Wood's Catal. and referred to *N. Calcar* by Maton and Rackett, is a different shell.

(J. *b*.) P. 188, and Supplem. pl. 18. f. 7 & 8, p. 75. "Nautilus lævigatulus." A large-sized "pale ferruginous brown" speci-

men of *Cristellaria Calcar* is figured in the 'Supplement' under this name, from the "Boysian Cabinet." In this variety the umbo has encroached upon the limbated septal lines; but there is nothing to render this variety essentially distinct from those shown in pl. 15. f. 4, and pl. 18. fig. 9. Without doubt this specimen, which has its last chamber broken, was fossil. It is the *C. Wetherellii*, Jones, Quart. Journ. Geol. Soc. vol. viii. p. 267.

The *N. lævigatulus* of Walker (fig. 67) is a recent typical *C. Calcar*. Montagu appears to have had some difficulty in recognizing Walker's specimen, though in the 'Supplement' (p. 75) he intimates that his *N. Calcar* and Walker's *N. lævigatulus* "have been generally confounded."

(J. *c.*) P. 190, and Supplem. pl. 18. f. 9, p. 78. "Nautilus depressulus." At p. 190, Walker's fig. 68 is referred to, and his description given, of a *Nonionina*; but in the 'Supplement' a small keelless *Cristellaria Calcar*, probably recent, is figured and described. This has no relation whatever with the *Nautilus depressulus* of Walker. (See above, p. 339.)

Those who have followed Montagu's nomenclature have been led into the same mistake; and we necessarily consider that in Prof. Williamson's 'Monograph,' p. 25, "Nautilus depressulus, Adams, 1798, N. depressulus, Turton, N. depressulus, Mont. Suppl. p. 78, N. depressulus, Pennant," &c., should be erased from the synonyma of *C. Calcar*.

Maton and Rackett gave the name of *N. rotatus* to Montagu's fig. 4. pl. 15. In Wood's 'Index Test.' (pl. 13. fig. 5) a variety of *Rotalia Partschiana*, D'Orb., is represented under Maton and Rackett's name. The lower face of this *Rotalia* (shown in the figure referred to) closely resembles a *Cristellaria*. Wood's "N. rotatus" should also, therefore, be removed from the synonyma of *C. Calcar*.

(J. *d.*) Suppl. pl. 19. f. 1, p. 80. "Nautilus subarcuatulus." The Marginuline form of *Cristellaria Calcar*. It was from "the Boysian cabinet;" and as this collection contained specimens from various parts of the Kentish coast, it is quite probable that we have here a fossil shell from the Thanet Sands, in which this form is not uncommon*. In the 'Test. Brit.,' p. 196, "N. subarcuatulus" is placed as a synonym under "N. Semilituus."

(J. *e.*) P. 196, and Suppl. pl. 19. f. 3. p. 80. "Nautilus Semilituus." At p. 196, Walker's fig. 73 is referred to, and his description of *N. subarcuatulus* given under the name of "N. Semilituus, *Gmel.*," which is a misnomer, as mentioned in Ann. N. H. 1859, iii. p. 480. In the 'Supplement,' however, a different shell

* Quart. Journ. Geol. Soc. vol. viii. p. 267.

is described under this name, similarly misapplied. This is an interesting Marginuline variety of *Cristellaria Calcar* with ornamented septal lines, which is remarkably abundant and of large size in the London Clay*. We have here doubtless a specimen from that source. The pinched-in youngest chamber (taking on, as it were, a Dentaline character) frequently occurs in this fossil variety. San Domingo has a similar, but smaller, variety in its Tertiary clays; and a still more minute form is found in the clays of the English Oolites. Montagu's opinion that this is related to the crozier-shell (*Peneroplis planatus*) figured by Plancus is quite erroneous. (See above.)

Maton and Rackett followed Montagu in mixing "semilituus" with "subarcuatulus" (Linn. Trans. vol. viii. p. 118), and in similar mistakes. So also did Dillwyn in his 'Descriptive Catalogue of Recent Shells,' 1817, as well as Turton, Pennant, Fleming, &c.

(J. *f.*) Supplem. p. 86. "Nautilus bicarinatus." Described as being more arcuate than "N. subarcuatus, tab. 6. f. 5," rounded posteriorly, and furnished with two longitudinal ribs, "one along the arc, and another on the opposite side." From Sandwich.

Prof. Williamson has placed this among the synonyma of *Cristellaria subarcuatula* (Monogr. p. 29); and is most probably right in thus regarding it as a narrow Marginuline *Cristellaria*.

(J. *g.*) P. 195. "Nautilus carinatulus." Young of *Cristellaria Calcar*.

(K.) P. 197, pl. 14. f. 6. "Nautilus Radicula." This is the *Clavulina communis* of D'Orbigny, which is a dimorphous form of *Verneuilina tricarinata*, D'Orb.; that is, the trihedral arrangement characteristic of *Verneuilina* proper becomes soon replaced by a single series of chambers. Montagu, in his description (p. 198), refers to all the characters peculiar to this form, excepting its roughness of surface. He evidently had in hand specimens both of the form under notice and the very similarly shaped *Nodosaria Radicula*, which differs in its aperture and its terminal point, as he has noticed. From Sandwich. It is the *Nodosaria rustica*, Jones, Morris's 'Catal. Brit. Foss.' 1854, p. 38, and is very common in the London Clay. We have not met with it recent on the British coast, but abundantly in the Mediterranean.

* The *Marginulina Wetherellii*, Jones, Morris's Catalogue Brit. Foss. 1854, p. 37.

Table of the Corrected Nomenclature of the Foraminifera figured and described in the 'Testacea Britannica' *and* 'Supplement.'

	Montagu's Names.	Dates of new Names given by Montagu.	Corrected Names.
A. *a.*	Vermiculum oblongum	1803	Miliola (Triloculina) oblonga, *Mont.* [*Type*, M. Seminulum, *L.*]
A. *b.*	V. bicorne	.....	M. Seminulum, *L.* (young).
A. *c.*	V. perforatum	.....	M. Seminulum, *L.*
A. *d.*	V. intortum	1803	M. Seminulum, *L.*
A. *e.*	V. subrotundum	1803	M. Seminulum, *L.*, var. subrotunda, *Mont.*
A. *f.*	V. retortum	.....	M. Seminulum, *L.* (young).
B.	V. lacteum	.....	Polymorphina lactea, *Walker and Jacob.*
C. *a.*	V. striatum	1803	Lagena sulcata, *W. & J.* — *Type*, Lagena sulcata, *W. & J.*
C. *b.*	V. globosum	1803	L. (Entosolenia) globosa, *Mont.*
C. *c.*	V. læve	1803	L. sulcata, *W. & J.*, var. lævis, *Mont.*
C. *d.*	V. marginatum	1803	L. (Entosolenia) marginata, *Mont.*
D. *a.*	Nautilus Radicula	.....	Nodosaria Radicula, *L.*
D. *b.*	N. jugosus	1803	N. Raphanus, *L.*, var. obliqua, *L.*
D. *c.*	N. costatus	1803	N. Raphanus, *L.*, var. costata, *Mont.*
D. *d.*	N. costatus, var.	1808	N. Raphanus, *L.*, var. Raphanistrum, *L.*
D. *e.*	Vermiculum Urnæ	1803	Nodosaria (fragment).
D. *f.*	Nautilus subarcuatus	1803	Nodosaria dentalina, *Lam.*, var. subarcuata, *Mont.*
D. *g.*	N. rectus	1803	N. dentalina, *Lam.*, var. recta, *Mont.*
D. *h.*	N. spinulosus	1808	N. dentalina, *Lam.* var. spinulosa, *Mont.*
D. *i.*	N. Legumen	.....	N. (Vaginulina) Legumen, *L.*
D. *j.*	N. linearis	1808	N. (Vaginulina) Legumen, *L.*, var. linearis, *Mont.*
			Type, Nodosaria Raphanus, *L.*
E. *a.*	N. umbilicatulus *	1808	Nonionina asterisans, *Fichtel & Moll*, var. umbilicatula, *Mont.*
E. *b.*	N. crassulus	.....	N. asterisans, *F. & M.*, var. crassula, *W. & J.*
F.	N. inflatus	1808	Rotalia (Trochammina) inflata, *Mont.*
G.	N. Beccarii N. Beccarii perversus	}	Rotalia Beccarii, *L.*
H. *a.*	Serpula lobata	.....	Truncatulina lobatula, *W. & J.* — *Type*, Planorbulina farcta, *F. & M.*
H. *b.*	S. concamerata	1808	Planorbulina? concamerata, *Mont.*
I.	Nautilus crispus	.....	Polystomella crispa, *L.*
J. *a.*	N. Calcar		
J. *b.*	N. lævigatulus †	..	Cristellaria Calcar, *L.*
J. *c.*	N. depressulus ‡		
J. *d.*	N. subarcuatulus	....	C. Calcar, *L.*, var. subarcuatula, *W. & J.*
J. *e.*	N. Semilituus §	1808	C. Calcar, *L.*, var. Semilituus, *Montagu.*
J. *f.*	N. bicarinatus	1808	C. Calcar, *L.*, var. bicarinata, *Mont.*
J. *g.*	N. carinatulus	....	C. Calcar, *L.* (young).
K.	N. Radicula (Pl. 14. f. 6).	....	Verneuilina (Clavulina) communis, *D'Orb.* [*Type*, V. tricarinata, *D'Orb.*]

* Walker's "umbilicatulus" is a *Truncatulina*. Montagu's figured specimen is decidedly a *Nonionina*.

† This name was given by Walker and Jacob to a smooth *Cristellaria Calcar*, of the typical form. Montagu's specimen is of larger growth, and umbonate, but scarcely requires a varietal name.

‡ The term "depressulus" is applied by Walker and Jacob to a *Nonionina*. Montagu's figured specimen is a true *Cristellaria Calcar*.

§ Not the "Semilituus" of Linnæus. See p. 349.

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