

西沙群岛的现代有孔虫* II

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本文为我国西沙群岛现代有孔虫研究报告的第二部分。

笔者在《西沙群岛的现代有孔虫 I》一文中已报道了 175 种。本文共记述了底栖有孔虫 240 种(包括 6 个未定种),其中的 235 种为首次记录,分隶于 3 亚目, 10 总科, 38 科, 110 属;有 8 个新属和 86 个新种。砂质胶结型种类有 31 种,占总种数的 13.2%;钙质无孔型种类有 48 种,占总种数的 20.4%;钙质有孔型种类有 156 种,占总种数的 66.4%;浮游有孔虫未见有新增加的种类。凡是在前文已报道过的属以及本文重复报道的 5 个种,均不再加以描述。新种的模式标本均保存于中国科学院海洋研究所。

通过本文对现有的 56 份砂样所含有孔虫的分析鉴定,可以看出西沙群岛的有孔虫区系是极其丰富的。随着今后更全面的调查,特别是水下样品的进一步补充采集,俟发现其他种类时,将另文报道。

分 类 名 录**

有孔虫目 FORAMINIFERIDA Eichwald, 1830

编织虫亚目 Textulariina Delage and Herouard, 1896

曲杖虫总科 Lituolacea de Blainville, 1825

链虫科 Hormosinidae Haeckel, 1894

链虫亚科 Hormosininae Haeckel, 1894

串房虫属 *Reophax* Montfort, 1808

1 海滨串房虫 *R. agglutinatus* Cushman var. *littoralis* Lacroix

2 纺锤串房虫 *R. fusiformis* (Williamson)

3 规则串房虫 *R. regularis* Höglund

4 亚象牙串房虫 *R. subdentaliniiformis* Parr

隐缝虫科 Nouridae Chapman and Parr, 1926

隐缝虫属 *Nouria* Heron-Allen and Earland, 1914

5 针隐缝虫 *N. harrisii* Heron-Allen and Earland

6 拟多形隐缝虫 *N. polymorphinoides* Heron-Allen and Earland

7 菱形隐缝虫(新种) *N. rhombiformis*, n. sp.

曲杖虫科 Lituolidae de Blainville, 1825

曲杖虫亚科 Lituolinae de Blainville, 1825

砂虫属 *Ammotium* Loeblich and Tappan, 1953

8 沼泽砂虫 *A. palustre* Warren

* 中国科学院海洋研究所调查研究报告第 433 号。所依据的材料系 1974—1976 年先后三次采自西沙群岛 18 个岛礁的 56 份砂样。有 48 份是采自潮间带环境,其余 8 份采自水下(水深几米至 50 米不等)环境。其中有中国科学院南海海洋研究所邹仁林于 1974 年采集的 13 份砂样,本所马绣同、谭智源、刘锡兴、李锦和、任先秋等同志于 1975 年采集的 28 份砂样(包括刘锡兴处理苔藓虫样品时冲洗出来的砂样),本所周显铜于 1976 年采集的 15 份砂样。本所宋华中拍摄显微照片。对以上诸同志的大力协助与辛勤劳动,表示衷心感谢。

** 名录中带*号的,系《西沙群岛的现代有孔虫 I》一文已报道过的种类。

拟单栏虫亚科 Haplophragmoidinae Maync, 1952

拟筛口虫属 *Cribrostomoides* Cushman, 1910

9 针壳拟筛口虫(新种) *C. spiculotesta*, n. sp.

编织虫科 Textulariidae Ehrenberg, 1838

编织虫亚科 Textulariinae Ehrenberg, 1838

编织虫属 *Textularia* Defrance, 1826

10 圆头编织虫 *T. bocki* Höglund

11 大头编织虫 *T. candeiana* d'Orbigny

12 叶编织虫 *T. foliacea* Heron-Allen and Earland

13 圆面编织虫 *T. orbica* Lalicker and McCulloch

14 半翼编织虫 *T. semialata* Cushman

管双属虫属(新属) *Siphobigenerina*, n. gen.

15 扁管双属虫(新属新种) *S. compressa*, n. gen., n. sp.

假箭头虫亚科 Pseudoboliviniinae Wiesner, 1931

假箭头虫属 *Pseudobolivina* Wiesner, 1931

16 短假箭头虫(新种) *P. brevis*, n. sp.

砂轮虫科 Trochamminidae Schwager, 1877

砂轮虫亚科 Trochammininae Schwager, 1877

砂轮虫属 *Trochammina* Parker and Jones, 1859

17 龙骨砂轮虫 *T. carinata* Cushman and McCulloch

18 夏洛特砂轮虫 *T. charlottensis* Cushman

19 四瓣砂轮虫 *T. quadriloba* Höglund

20 斜方砂轮虫(新种) *T. trapeziformis*, n. sp.

21 南方砂轮虫 *T. wiesneri* Parr

22 西沙砂轮虫(新种) *T. xishaensis*, n. sp.

砂车轮虫属 *Rotaliammina* Cushman, 1927

23 几丁砂车轮虫 *R. chitinsa* (Collins)

隔砂轮虫属(新属) *Septotrochammina*, n. gen.

24 褶隔砂轮虫 *S. plicata* (Terquem)

瓣砂轮虫属 *Tiphotrocha* Saunders, 1957

25 皱瓣砂轮虫 *T. kelletiae* (Thalman)

26 小瓣砂轮虫(新种) *T. minuta*, n. sp.

小砂轮虫属 *Trochamminula* Shchedrina, 1955

27 长小砂轮虫(新种) *T. elongata*, n. sp.

28 瓣小砂轮虫(新种) *T. lobatula*, n. sp.

时问壁虫科 Ataxophragmiidae Schwager, 1877

春虫亚科 Verneuilininae Cushman, 1911

锥头虫属 *Gaudryina* d'Orbigny, 1838

29 扭锥头虫 *G. (G.) contorta* Höglund

30 矛锥头虫 *G. (Pseudogaudryina) hastata* Parr

球编织虫亚科 Globotextulariinae Cushman, 1927

三属虫属 *Dorothia* Plummer, 1931

31 扭三属虫 *D. tortilis* Parr

粟虫亚目 Miliolina Delage and Herouard, 1896

粟虫总科 Miliolacea Ehrenberg, 1839

瓷旋虫科 Fischerinidae Millett, 1898

瓷旋虫亚科 Fischerininae Millett, 1899

小瓷旋虫属 *Fischerinella* Loeblich and Tappan, 1962

32 透明小瓷旋虫 *F. pellucida* (Millett)

小平旋虫属 *Planispirinella* Wiesner, 1931

- 33 龙骨小平旋虫(新种) *P. carinata*, n. sp.

云朵虫科 Nubeculariidae Jones, 1875

云朵虫亚科 Nubeculariinae Jones, 1875

云朵虫属 *Nubecularia* Defrance, 1825

- 34 畸云朵虫 *N. lucifaga* Defrance, 1825

眼睛虫亚科 Ophthalmidiinae Wiesner, 1920

吸口虫属 *Wiesnerella* Cushman, 1933

- 35 耳吸口虫 *W. auriculata* (Egger)

抱环虫亚科 Spiroloculiniinae Wiesner, 1820

抱环虫属 *Spiroloculina* d'Orbigny, 1826

- 36 角抱环虫 *S. angulata* Cushman

- 37 异抱环虫 *S. eximia* Cushman

- 38 平凸抱环虫(新种) *S. planoconvexa*, n. sp.

节棒虫亚科 Nodobaculariinae Cushman, 1927

小节棒虫属 *Nodobaculariella* Cushman and Hanzawa, 1937

- 39 乡小节棒虫 *N. rustica* Cushman and Todd

节眼虫属 *Nodo phthalmidium* Macfayden, 1939

- 40 龙骨节眼虫(新种) *N. carinata*, n. sp.

- 41 扁节眼虫 *N. compressum* (Rhumbler)

椎骨虫属 *Vertebralina* d'Orbigny, 1826

- 42 显纹椎骨虫 *V. insignis* Brady

粟虫科 Miliolidae Ehrenberg, 1839

五块虫亚科 Quinqueloculiniinae Cushman, 1917

五块虫属 *Quinqueloculina* d'Orbigny, 1826

- 43 角口五块虫(新种) *Q. angulostoma*, n. sp.

- 44 整洁五块虫 *Q. bellatula* Bandy

- 45 双肋五块虫(相似种) *Q. cf. Q. bicostata* d'Orbigny

- 46 肋纹五块虫 *Q. carinatastriata* (Wiesner)

- 47 粗龙骨五块虫 *Q. crassicarinata* Collins

- 48 华美五块虫(新种) *Q. decora*, n. sp.

- 49 纺锤五块虫(新种) *Q. fusiformis*, n. sp.

- 50 磨壁五块虫(新种) *Q. impolita*, n. sp.

- 51 粗糙五块虫(新种) *Q. inculta*, n. sp.

- 52 少室五块虫(新种) *Q. paucilocula*, n. sp.

- 53 贫五块虫 *Q. pauperata* d'Orbigny

- 54 管室五块虫(新种) *Q. tubilocula*, n. sp.

- 55 五块虫(?) (未定种) *Quinqueloculina* (?) sp.

挟心虫属 *Massilina* Schlumberger, 1893

- 56 大块心虫(新种) *M. magna*, n. sp.

假块心虫属 *Pseudomassilina* Lacroix, 1938

- 57 薄假块心虫 *P. macilenta* (Brady)

- 58 网纹假块心虫 *P. reticulata* (Heron-Allen and Earland)

假曲形虫属(新属) *Pseudosigmoilina*, n. gen.

- 59 小假曲形虫(新属新种) *P. minuta*, n. gen., n. sp.

双块虫属 *Pyrgo* Defrance, 1824

- 60 扁桶双块虫(新种) *P. compressioblonga*, n. sp.

- 61 小齿双块虫 *P. denticulata* (Brady)*

- 62 大口双块虫(新种) *P. megastoma*, n. sp.

小曲形虫属(新属) *Sigmoilinella*, n. gen.

- 63 扭小曲形虫(新属新种) *S. tortuosa*, n. gen., n. sp.

- 环曲形虫属 *Spirosigmoilina* Parr, 1942
 64 丽环曲形虫(新种) *S. pulchra*, n. sp.
 三袂虫属 *Triloculina* d'Orbigny, 1826
 65 光滑三袂虫 *T. laevigata* d'Orbigny
 66 平行三袂虫(新种) *T. parallela*, n. sp.
小粟虫亚科 Miliolinellinae Vella, 1957
 小粟虫属 *Miliolinella* Wiesner, 1931
 67 澳大利亚小粟虫 *M. australis* (Parr)
 68 大洋小粟虫 *M. oceanica* (Cushman)*
 小双室虫属 *Biloculinella* Wiesner, 1931
 69 球小双室虫 *B. globula* (Bornemann)
粟虫亚科 Miliolinae Ehrenberg, 1839
 扁袂虫属 *Hauerina* d'Orbigny, 1839
 70 东方扁袂虫 *H. orientalis* Cushman
 曲扁袂虫属(新属) *Sigmoihauerina* n. gen.
 71 弱纹曲扁袂虫 *S. bradyi* (Cushman)
 72 脆曲扁袂虫 *S. fragillissima* (Brady)
小管虫亚科 Tubinellinae Rhumbler, 1906
 小管虫属 *Tubinella* Rhumbler, 1906
 73 索小管虫 *T. funalis* (Brady)
 关节虫属 *Articulina* d'Orbigny, 1826
 74 短关节虫(新种) *A. curta*, n. sp.
 75 线纹关节虫 *A. lineata* Brady
 76 尖刺关节虫 *A. mucronata* (d'Orbigny)
 77 平行关节虫(新种) *A. parallela*, n. sp.
 78 昆士兰关节虫 *A. queenslandica* Collins
 79 张口关节虫(新种) *A. ricta*, n. sp.
小丘虫科 Soritidae Ehrenberg, 1839
马刀虫亚科 Peneroplinae Schultze, 1854
 旋卷虫属 *Spirolina* Lamarck, 1804
 80 尖旋卷虫 *S. acicularis* (Batsch)
蜂巢虫科 Alveolinidae Ehrenberg, 1839
 小蜂巢虫属 *Alveolinella* Douville, 1906
 81 现存小蜂巢虫 *A. quoyi* (d'Orbigny)
车轮虫亚目 Rotaliina Delage and Herouard, 1896
节房虫总科 Nodosariacea Ehrenberg, 1838
节房虫科 Nodosariidae Ehrenberg, 1838
节房虫亚科 Nodosariinae Ehrenberg, 1838
 两棒虫属 *Amphicoryna* Schlumberger, 1881
 82 少室两棒虫 *A. pauciloculata* (Cushman)
 虾虫属 *Astaculus* de Montfort, 1808
 83 拖鞋虾虫 *A. crepidula* (Fichtel and Moll)
 拟肠虫属(新属) *Botuloides*, n. gen.
 84 少室拟肠虫(新属新种) *B. pauciloculus*, n. gen., n. sp.
 齿虫属 *Dentalina* Risso, 1826
 85 线形齿虫 *D. filiformis* (d'Orbigny)
 86 强壮齿虫 *D. roemeri* Neugeboren
 瓶虫属 *Lagena* Walker and Jacob, 1798
 87 短肋瓶虫 *L. doveyensis* Haynes
 88 三肋瓶虫 *L. stria topunctata* Parker and Jones var. *tricostata* Cushman and Gray

- 透镜虫属 *Lenticulina* Lamarck, 1804
 89 距透镜虫 *L. calcar* (Linnaeus)
 90 镶边透镜虫(相似种) *L. cf. L. limbosa* (Reuss)
 掌虫属 *Palmula* Lea, 1833
 91 宽叶掌虫(新种) *P. latifolia*, n. sp.
 拟鞘虫属 *Vaginulinopsis* Silvestri, 1904
 92 曲拟鞘虫(新种) *V. sinuata*, n. sp.
编叶虫亚科 Plectofrondiculariinae Cushman, 1927
 小箭头虫属 *Bolivinella* Cushman, 1927
 93 精致小箭头虫 *B. elegans* Parr
多形虫科 Polymorphinidae d'Orbigny, 1839
多形虫亚科 Polymorphininae d'Orbigny, 1839
 球虫属 *Globulina* d'Orbigny, 1839
 94 长室球虫 *G. landesi* (G. D. Hanna and M. A. Hanna)
 假多形虫属 *Pseudopolymorphina* Cushman and Ozawa, 1928
 95 印度假多形虫 *P. indica* (Cushman)
 反称虫属 *Sigmomorphina* Cushman and Ozawa, 1928
 96 基纹反称虫(新种) *S. basistriata*, n. sp.
腺虫科 Glandulinidae Reuss, 1860
腺虫亚科 Glandulininae Reuss, 1860
 腺虫属 *Glandulina* d'Orbigny 1839
 97 凸粒腺虫(新种) *G. granulosa*, n. sp.
 管舌虫属 *Entolingulina* Loeblich and Tappan, 1961
 98 椭圆管舌虫 *E. inarimensis* (Buchner)
 斜舌虫属(新属) *Obliquilingulina*, n. gen.
 99 椭圆斜舌虫(新属新种) *O. oblonga*, n. gen., n. sp.
 曲管虫属 *Laryngosigma* Loeblich and Tappan, 1953
 100 突尾曲管虫(新种) *L. caudata*, n. sp.
 101 明亮曲管虫 *L. williamsoni* (Terquem)*
卵虫亚科 Oolininae Loeblich and Tappan, 1961
 卵虫属 *Oolina* d'Orbigny, 1839
 102 鼓双口卵虫(相似种) *O. cf. O. ampullodistoma* (Jones)
 103 短管卵虫(新种) *O. brevisolenia*, n. sp.
 104 带尾卵虫 *O. caudigera* (Wiesner)
 105 旋脊卵虫 *O. spiralis* (Brady)
 缝口虫属 *Fissurina* Reuss, 1850
 106 扁椭圆缝口虫(新种) *F. compressioblonda*, n. sp.
 107 坑壁缝口虫 *F. contusa* Parr
 108 双刺葫芦缝口虫 *F. cucurbitasema bispinata* Ujiie
 109 透明缝口虫 *F. diaphana* (Buchner)
 110 断圈缝口虫(新种) *F. disjuncta*, n. sp.
 111 不连缝口虫 *F. disjuncta* (Buchner)
 112 窄带缝口虫 *F. fasciata* (Egger)
 113 叉颈缝口虫(新种) *F. furcicolla*, n. sp.
 114 粒肋缝口虫(新种) *F. granulocostulata*, n. sp.
 115 方圆缝口虫 *F. jasolini* (Buchner)
 116 基林巴缝口虫 *F. kerimbatica* (Heron-Allen and Earland)
 117 坑斑缝口虫 *F. milletti* Todd
 118 细孔缝口虫(新种) *F. minipora*, n. sp.
 119 假球缝口虫 *F. pseudoglobosa* (Buchner)

- 120 假明亮缝口虫(新种) *F. pseudolucida*, n. sp.
- 121 假宽龙骨缝口虫 *F. pseudoorbignyana* (Buchner)
- 122 辐缘缝口虫 *F. radiatomarginata* (Parker and Jones)
- 123 辐口缝口虫(新种) *F. radiatostoma*, n. sp.
- 124 强壮缝口虫(新种) *F. robusta*, n. sp.
- 125 热带缝口虫(新种) *F. tropicalis*, n. sp.
- 126 凸圈缝口虫 *F. walleriana* (Wright)
- 127 宝石缝口虫 *F. wrightiana* (Brady)
- 仿缝口虫属 *Parafissurina* Parr, 1947
- 128 小仿缝口虫(新种) *P. minuta*, n. sp.
- 129 椭圆仿缝口虫(新种) *P. oblonga*, n. sp.
- 130 四刺仿缝口虫(新种) *P. quadrispinata*, n. sp.
- 131 反弯仿缝口虫(新种) *P. reflecta*, n. sp.

泡虫总科 Buliminacea Jones, 1875

塔虫科 Turritinidae Cushman, 1927

塔虫亚科 Turritininae Cushman, 1927

拟泡虫属 *Buliminoides* Cushman, 1911

- 132 美丽拟泡虫 *B. milletti* Cushman
- 133 平行拟泡虫 *B. parallela* (Cushman and Parker)
- 134 扭拟泡虫 *B. williamsonianus* (Brady)*
- 135 拟泡虫(未定种) *Buliminoides* sp.

箭头虫科 Bolivinitidae Cushman, 1927

箭头虫属 *Bolivina* d'Orbigny, 1839

- 136 矛箭头虫 *B. goesi* Cushman
- 137 多变箭头虫 *B. variabilis* (Williamson)
- 点头虫属 *Brizalina* Costa, 1856
- 138 短小点头虫 *B. abbreviata* (Heron-Allen and Earland)*
- 139 不列颠点头虫 *B. britannica* Macfadyen
- 140 少孔点头虫 *B. doniezi* (Cushman and Wickenden)
- 141 蓑衣点头虫(?) *B. (?) durrandii* (Millett)
- 142 停顿点头虫 *B. paula* (Cushman and Cahill)
- 143 假半裸点头虫(新种) *B. pseudoseminuda*, n. sp.
- 144 菱形点头虫 *B. rhomboidalis* (Millett)
- 145 棘刺点头虫 *B. spinescens* (Cushman)
- 146 细纹点头虫 *B. striatula* (Cushman)
- 147 亚头点头虫(新种) *B. subcapitata*, n. sp.
- 148 亚网点头虫 *B. subreticulata* Parr
- 149 亚细纹点头虫(新种) *B. substriatula*, n. sp.
- 150 亚细点头虫 *B. subtenuis* (Cushman)
- 直箭头虫属 *Rectobolivina* Cushman, 1927
- 151 高室直箭头虫(新种) *R. altilocula*, n. sp.
- 152 亚双叉直箭头虫(新种) *R. subbifrons*, n. sp.
- 153 亚萝卜直箭头虫(新种) *R. subraphanus*, n. sp.

冰岛虫科 Islandiellidae Loeblich and Tappan, 1964

拟盔虫属 *Cassidulinoides* Cushman, 1927

- 154 小拟盔虫 *C. chapmani* Parr

始葡萄虫科 Eouvigerinidae Cushman, 1927

隔室虫属 *Millettia* Schubert, 1911

- 155 网格隔室虫 *M. tessellata* (Brady)

泡虫科 Buliminidae Jones, 1875

孔雀虫亚科 Pavonininae Eimer and Fickert, 1899孔雀虫属 *Pavonina* d'Orbigny, 1826156 琉球孔雀虫 *P. ryukyuensis* Cushman and Hanzawa仿虫属 *Mimosina* Millett, 1900157 东方仿虫 *M. orientalis* (Cushman)158 棘仿虫 *M. sidebottomi* Dollfus三棱虫属 *Reussella* Galloway, 1933159 三棱虫(未定种) *Reussella* sp.**葡萄虫科** Uvigerinidae Haeckel, 1894管葡萄虫属 *Siphouvigerina* Parr, 1950160 长管葡萄虫 *S. porrecta* (Brady)三列虫属 *Trifarina* Cushman, 1923161 鳞三列虫 *T. lepida* (Brady)**圆盘虫总科** Discorbacea Ehrenberg, 1838**圆盘虫科** Discorbidae Ehrenberg, 1838**圆盘虫亚科** Discorbininae Ehrenberg圆盘虫属 *Discorbis* Lamarck, 1804162 隐口圆盘虫(新种) *D. latestoma*, n. sp.163 小圆盘虫 *D. minuta* Schubert164 奇异圆盘虫 *D. mira* Cushman小圆盘虫属 *Discorbinella* Cushman and Martin, 1935165 基林巴小圆盘虫(新种) *D. kerimbatica*, n. sp.小上口虫属 *Epistominella* Husezima and Maruhasi, 1944166 管小上口虫 *E. tubulifera* (Heron-Allen and Earland)小帽贝虫属 *Patellinella* Cushman, 1928167 荫路小帽贝虫 *P. ambulacrata* (Moebius)168 刺小帽贝虫(新种) *P. spinosa*, n. sp.平盘虫属 *Planodiscorbis* Bermudez, 1952169 粗孔平盘虫 *P. grossepunctatus* (Parr)拟平虫属 *Planulinoides* Parr, 1941170 平凹拟平虫 *P. planoconcavus* (Chapman, Parr and Collins)玫瑰虫属 *Rosalina* d'Orbigny, 1826171 韧硬玫瑰虫 *R. crustata* (Cushman)172 小玫瑰虫 *R. opima* (Cushman)173 简单玫瑰虫(相似种) *R. cf. R. simplex* d'Orbigny174 亚扁玫瑰虫 *R. subcomplanata* (Parr)175 圆顶玫瑰虫 *R. terquemi* (Rzehak)176 瘤头玫瑰虫 *R. tubero capitata* (Chapman)177 清晰玫瑰虫 *R. vilardeboana* d'Orbigny178 闪烁玫瑰虫 *R. williamsoni* (Chapman and Parr)**蟹虫亚科** Baggininae Cushman, 1927蟹虫属 *Canceris* de Montfort, 1808179 耳蟹虫 *C. auriculus* (Fichtel and Moll)**平滑虫科** Glabratellidae Loeblich and Tappan, 1964平滑虫属 *Glabratella* Dorreen, 1948180 厚平滑虫 *G. crassa* Dorreen181 精致平滑虫(新种) *G. elegans*, n. sp.182 镶边平滑虫(新种) *G. limbata*, n. sp.183 隆褶平滑虫 *G. makinoi* Uchio184 美丽平滑虫(新种) *G. pulchella*, n. sp.

185 粗糙平滑虫(新种) *G. scabra*, n. sp.

186 帐篷平滑虫 *G. tabernacularis* (Brady)

凹口虫属 *Heronallenia* Chapman and Parr

187 光滑凹口虫 *H. laevis* Parr

188 小凹口虫 *H. parva* Parr

旋虫总科 Spirillinacea Reuss, 1862

旋虫科 Spirillinidae Reuss, 1862

旋虫亚科 Spirillininae Reuss, 1862

旋虫属 *Spirillina* Ehrenberg, 1843

189 扁旋虫(新种) *S. compressa*, n. sp.

190 粗孔旋虫(新种) *S. grosseperforata*, n. sp.

191 梳缘旋虫 *S. pectinimarginata* Chapman, Parr and Collins

192 平凹旋虫(新种) *S. planoconcava*, n. sp.

193 孔缝旋虫(新种) *S. porisuturalis*, n. sp.

194 梯旋虫(新种) *S. scalaris*, n. sp.

195 母株旋虫 *Spirillina vivipara* Ehrenberg

196 旋虫(未定种) *Spirillina* sp.

内口虫属 *Mychostomina* Berthelin, 1881

197 龙骨内口虫(新种) *M. carinata*, n. sp.

198 缘孔内口虫(新种) *M. peripora*, n. sp.

199 回转内口虫 *M. revertens* (Rhumbler)

200 截锥内口虫(新种) *M. truncata*, n. sp.

平旋虫属 *Planispirillina* Bermudez, 1952

201 少旋平旋虫(新种) *P. paucispira*, n. sp.

间管虫属 *Sejunctella* Loeblich and Tappan, 1957

202 侧龙骨间管虫(新种) *S. laticarinina*, n. sp.

塔旋虫属 *Turrispirillina* Cushman, 1927

203 高旋塔旋虫(新种) *T. altispira*, n. sp.

帽贝虫亚科 Patellinae Rhumbler, 1906

帽贝虫属 *Patellina* Williamson, 1858

204 异地帽贝虫 *P. advena* Cushman

205 高形帽贝虫 *P. altiformis* Cushman

206 刺帽贝虫(新种) *P. spinosa*, n. sp.

蹄虫亚科 Ungulatellinae Seiglie, 1965

拟蹄虫属 *Ungulatelloides* Seiglie, 1965

207 堂皇拟蹄虫 *U. imperialis* Seiglie

208 塔拟蹄虫(新种) *U. pagoda*, n. sp.

209 拟蹄虫(未定种) *Ungulatelloides* sp.

车轮虫总科 Rotaliacea Ehrenberg, 1839

车轮虫科 Rotaliidae Ehrenberg, 1839

车轮虫亚科 Rotaliinae Ehrenberg, 1839

转轮虫属 *Ammonia* Brönnich, 1772

210 少孔转轮虫(新种) *A. paucipora*, n. sp.

坚实虫亚科 Pegidiinae Heron-Allen and Earland, 1928

坚实虫属 *Pegidia* Heron-Allen and Earland, 1928

211 疑坚实虫 *P. dubia* (d' Orbigny)

瘤球虫属 *Sphaeridia* Heron-Allen and Earland, 1928

212 乳突瘤球虫 *S. papillata* Heron-Allen and Earland

企虫科 Elphidiidae Galloway, 1933

企虫亚科 Elphidiinae Galloway, 1933

- 企虫属 *Elphidium* de Montfort, 1808
 213 大洋企虫 *E. oceanicum* Cushman
- 货币虫科** Nummulitidae de Blainville, 1825
货币虫亚科 Nummulitinae de Blainville, 1825
 货币虫属 *Nummulites* Lamarck, 1801
 214 拟日货币虫 *N. ammonoides* (Gronovius)
 215 脉货币虫 *N. venosa* (Fichtel and Moll)
 圆盾虫属 *Cycloclypeus* Carpenter, 1856
 216 凸心圆盾虫 *C. carpenteri* Brady
 异盖虫属 *Heterostegina* d'Orbigny, 1826
 217 扁异盖虫 *H. depressa* d'Orbigny
 218 长隔板异盖虫(新种) *H. longisepta*, n. sp.
- 面包虫科** Cibicididae Cushman, 1927
面包虫亚科 Cibicidinae Cushman, 1927
 小面包虫属 *Cibicidella* Cushman, 1927
 219 多变小面包虫 *C. variabilis* (d'Orbigny)
- 堆房虫科** Acervulinidae Schultze, 1854
 扁白垩虫属 *Planogypsina* Bermudez, 1952
 220 鳞形扁白垩虫 *P. squamiformis* (Chapman)
- 铙钹虫科** Cymbaloporidae Cushman, 1927
 拟梨冠虫属(新属) *Pyropiloides*, n. gen.
 221 长拟梨冠虫(新属新种) *P. elongatus*, n. gen., n. sp.
- 匀孔虫科** Homotrematidae Cushman, 1927
维多利亚虫亚科 Victoriellinae Chapman and Crespin, 1930
 藤壶虫属 *Carpenteria* Gray, 1858
 222 小囊藤壶虫 *C. utricularis* (Carter)
- 盔形虫总科** Cassidulinacea d'Orbigny, 1829
高加索虫科 Caucasinidae N. A. Bykova, 1959
 扭芽虫属 *Sigmavirgulina* Loeblich and Tappan, 1957
 223 基纹扭芽虫(新种) *S. basistriata*, n. sp.
 224 矛扭芽虫(新种) *S. lanceolata*, n. sp.
- 提诺斯虫科** Delosinidae Parr, 1950
 提诺斯虫属 *Delosina* Wiesner, 1931
 225 扁提诺斯虫 *D. complanata* Earland
- 盔形虫科** Cassidulinidae d'Orbigny, 1839
 盔形虫属 *Cassidulina* d'Orbigny, 1826
 226 娇柔盔形虫 *C. delicata* Cushman
 227 口纹盔形虫(新种) *C. striatostoma*, n. sp.
 球盔虫属 *Globocassidulina* Voloshinova, 1960
 228 冷球盔虫 *G. alida* (Cushman)
 229 扁球盔虫 *G. complanata* (Ujiie and Kusukawa)
- 九字虫科** Nonionidae Schultze, 1854
九字虫亚科 Nonioninae Schultze, 1854
 九字虫属 *Nonion* de Montfort, 1808
 230 亚鼓九字虫(新种) *N. subdilatum*, n. sp.
 星九字虫属 *Astrononion* Cushman and Edwards, 1937
 231 小星九字虫(新种) *A. minimum*, n. sp.
 假九字虫属 *Pseudononion* Asano, 1936
 232 粒脐假九字虫(新种) *P. granulumbilicatum*, n. sp.
 233 嵌线假九字虫 *P. limbatostriatum* (Cushman)

- 异常虫科 Anomalinidae Cushman, 1927
 异常虫亚科 Anomalininae Cushman, 1927
 蜜饼虫属 *Melonis* de Montfort, 1808
 234 小蜜饼虫(新种) *M. minutus*, n. sp.
 锤针虫总科 Carterinacea Loeblich and Tappan, 1955
 锤针虫科 Carterinidae Loeblich and Tappan, 1955
 锤针虫属 *Carterina* Brady, 1884
 235 针壳锤针虫 *C. spiculotesta* (Carter)
 弓虫总科 Robertinacea Reuss, 1850
 角小泡虫科 Ceratobuliminidae Cushman, 1927
 上口虫亚科 Epistomininae Wedekind, 1927
 密西西比虫属 *Mississippina* Howe, 1930
 236 同心密西西比虫 *M. concentrica* (Parker and Jones)
 缘口虫属 *Stomatorbina* Doreen, 1948
 237 缘口虫(未定种) *Stomatorbina* sp.
 弓虫科 Robertinidae Reuss, 1850
 双附室虫属 *Alliatina* Troelsen, 1954
 238 闪烁双附室虫 *A. nitida* (Millett)
 重旋虫属 *Geminospira* Makiyama and Nakagawa, 1941
 239 超美重旋虫 *G. bradyi* Bermudez
 蹄虫属 *Ungulatella* Cushman, 1931
 240 拟锥蹄虫 *U. conoides* Cushman

种 类 记 述

有孔虫目 Foraminifera Eichwald, 1830

编织虫亚目 Textulariina Delage and Herouard, 1896

曲杖虫总科 Lituolacea de Blainville, 1825

链虫科 Hormosinidae Haeckel, 1894

链虫亚科 Hormosininae Haeckel, 1894

串房虫属 *Reophax* Montfort, 1808

1. 海滨串房虫 *Reophax agglutinus* Cushman var. *littoralis* Lacroix (图版 I:5)

Reophax agglutinus Cushman var. *littoralis* Lacroix, 1930, p. 3, text figs. 2, 3.

壳直至稍弯。房室分明, 3—5个, 逐渐增大, 终室近卵形。缝合线缢缩。壳壁由粗颗粒及壳屑组成, 壳面粗糙。壳口大, 近圆形, 位于终室末端。

标本测量(毫米) IOAS-F674 (绘图标本编号——以下同)壳长 0.63 壳径 0.25 (珊瑚岛)¹⁾

分布 摩纳哥。

2. 纺锤串房虫 *Reophax fusiformis* (Williamson) (图版 I:1, 2)

Protonina fusiformis Williamson, 1858, p. 1, pl. 1, fig. 1. — Hoglund, 1947, p. 52, pl. 4, fig. 21, text figs. 20, 21. — Cushman, 1948, p. 11, pl. 1, fig. 6.

1) 绘图标本采集地——以下同。

Reophax fusiformis (Williamson). Brady, 1884, p. 290, pl. 30, figs. 7—10 (not 11). — Millett, 1899, p. 253, pl. 4, figs. 11a—b. — Graham and Militante, 1959, p. 23, pl. 1, fig. 8. — Loeblich and Tappan, 1955, p. 7, pl. 1, figs. 2—3. — Haynes, 1973, p. 23, pl. 3, figs. 3—4.

壳较小,长纺锤形,横切面近圆形。房室3个左右,终室约占全壳长一半以上,末端延伸成长颈。缝合线不甚清楚,稍缢缩。壳壁主要由较粗砂粒组成,壳面粗糙,颈部砂粒较细。壳口近圆形。

标本测量(毫米)	壳长	壳宽
IOAS-F675	0.65	0.25 (珊瑚岛)
IOAS-F676	0.60	0.20 (西沙洲水深45—50米)

本种与 *R. subfusiformis* Earland 较为相似,但后者壳体大(长可达2毫米多),壳壁由细砂粒组成,壳面平整。

分布 苏格兰、爱尔兰、格陵兰、斯卡格拉克海峡、北冰洋、菲律宾、马来群岛、夏威夷群岛、加利福尼亚湾、墨西哥湾。

3. 规则串房虫 *Reophax regularis* Höglund (图版 I:3)

Reophax dentaliniformis Goes, 1894 (not Brady, 1884), p. 25, pl. 6, figs. 172—175.

R. regularis Höglund, 1947, p. 86, pl. 9, figs. 11—12; pl. 26, figs. 37—43; pl. 27, figs. 24—27; p. 89, text fig. 53; pl. 9, figs. 11, 12.

壳较大而长,稍弯或直。房室4—6个,一般5个,近椭圆形。缝合线不甚清楚。壳壁由多角形的较大颗粒胶结而成,颗粒边缘相互接合较为规则,壳面粗糙。壳口较大,位于终室末端。

标本测量(毫米) IOAS-F677 壳长1.75 壳径0.68 (琛航岛与广金岛之间水深30米)。

分布 北海、斯卡格拉克海峡。

4. 亚象牙串房虫 *Reophax subdentaliniformis* Parr (图版 I:4)

Reophax dentaliniformis Earland, 1934 (not Brady), p. 81, pl. 2, figs. 32—35.

R. subdentaliniformis Parr, 1950, p. 269, pl. 4, fig. 20. — Echols, 1971, p. 167, pl. 1, fig. 8.

壳小而细长。房室6个左右,依次渐增大,开始几室短而宽,最后几室长大于宽,终室尤长,末端收缩成筒形短颈。缝合线较清楚,稍凹。壳壁由较粗砂粒组成,颈部砂粒较细,壳面不甚平滑。壳口近圆形,位于终室末端。

标本测量(毫米) IOAS-F678 壳长0.38 壳径0.10 (西沙洲水深45—50米)。

本种最初被 Earland (1934) 定为 *R. dentaliniformis* Brady (采自南极)。当时 Earland 曾提及南极的标本较 Brady 的细长,房室有时多至10—11个,缝合线不如典型种的明显。1950年 Parr 把南极的标本另立为新种——*R. subdentaliniformis*。

分布 印度洋、南极。

隐缝虫科 Nouriidæ Chapman and Parr, 1936

隐缝虫属 *Nouria* Heron-Allen and Earland, 1914

壳长,横切面扁至近圆形。房室2—5个,开始为多形虫式排列,随后为双列。缝合线不甚清楚或不清楚。壳壁薄,由砂粒、壳屑或骨针等胶结而成。壳口卵形至圆形,位于终室末端。(始新世?至现代)

5. 针隐缝虫 *Nouria harrisii* Heron-Allen and Earland (图版 I:8)

Nouria harrisii Heron-Allen and Earland, 1914, p. 376, pl. 37, figs. 16—20. — Cushman, 1924, p. 10, pl. 1, fig. 1. — Earland, 1933, p. 88, pl. 3, figs. 14—16. — Cushman and McCulloch, 1939, p. 112, pl. 12, figs. 11—13. — Uchio, 1960, pl. 3, fig. 28.

壳呈纺锤形,横切面近圆形至圆形。房室 2—4 个。缝合线不甚清楚。壳壁由单层纵行排列的海绵骨针胶结而成。壳口圆形,位于终室末端,具短颈。

标本测量(毫米) IOAS-F679 壳长 0.30 壳宽 0.13 壳厚 0.10 (西沙洲水深 45—50 米)

Heron-Allen and Earland (1914) 曾提及本种在不同地区个体大小变化较大,菲律宾的标本壳长一般为 1 毫米多,帝汶海的则较小。我国西沙群岛的个体也较小。

分布 菲律宾、爪哇海、帝汶海、萨摩亚群岛、加拉帕戈斯群岛、加利福尼亚湾、南乔治亚岛、南极海岭。

6. 拟多形隐缝虫 *Nouria polymorphinoides* Heron-Allen and Earland (图版 I:7)

Nouria polymorphinoides Heron-Allen and Earland, 1914, p. 376, pl. 37, figs. 1—15. — Cushman, 1919, p. 601, pl. 75, figs. 4—5; 1932, pl. 78, pl. 7, fig. 9a—b. — Heron-Allen and Earland, 1932, p. 346, pl. 8, figs. 25—26. — Cushman and McCulloch, 1939, p. 111, pl. 12, figs. 5—10. — Lankford and Phleger, 1973, p. 123, pl. 3, fig. 1.

壳扁,卵形或纺锤形。房室 2—4 个。缝合线不清楚。壳壁由粗细不一的砂粒或壳屑组成,颗粒物一般不突出于壳面,壳面较平整;壳壁内面较粗糙,室间隔壁不完整。壳口缝状至圆形,位于终室末端。

标本测量(毫米) IOAS-F680 壳长 0.55 壳宽 0.28 壳厚 0.23 (琛航岛与广金岛之间水深 30 米)

分布 基林巴群岛、墨西哥湾、加利福尼亚湾、加拉帕戈斯群岛、日本陆奥湾、马尔维纳斯群岛、斐济群岛、新西兰、大堡礁。

7. 菱形隐缝虫(新种) *Nouria rhombiformis*, n. sp. (图版 I:6)

壳较扁长,略呈菱形,基部较尖突,口端延伸成颈,壳缘圆。房室稍膨鼓,5 个左右,终室长,远离基部。缝合线稍清楚,微凹。壳壁由粗细砂粒胶结而成,颗粒一般不突出于壳面,壳面较平整。壳口圆形,位于终室末端。

标本测量(毫米) 正模标本 IOAS-F681 壳长 0.85 壳宽 0.45 壳厚 0.28 (羚羊礁)

新种与 *N. polymorphinoides* Heron-Allen and Earland 不同在于壳体较扁,略呈菱形,口端突长成颈,基部呈尾突状,终室离壳体基部较远。

曲杖虫科 Lituolidae de Blainville, 1825

曲杖虫亚科 Lituolinae de Blainville, 1825

砂虫属 *Ammotium* Loeblich and Tappan, 1953

壳扁。早期房室平卷露旋,后期房室趋于展伸,但房室脐端仍向初成壳圈部分回伸。壳壁胶结型。壳口简单,圆形,位于终室背缘角。(白垩纪至现代)

8. 沼泽砂虫 *Ammotium palustre* Warren (图版 I:9)

Ammotium palustre Warren, 1957, p. 33, pl. 3, figs. 8—10.

壳扁,早成部分平卷包旋,后成部分似趋展伸,但房室未离壳旋,壳缘圆。房室不分明,终圈 5—6 个。缝合线不清楚。壳壁由粗细不一的砂粒组成,壳面较粗糙。壳口卵形,

位于终室背缘角。

标本测量(毫米) IOAS-F682 壳长 0.43 壳宽 0.30 壳厚 0.15 (琛航岛)

据 Warren (1957) 报道, 本种为典型的沼泽种类。

分布 美国路易斯安那州沼泽, 墨西哥湾。

拟单栏虫亚科 Haplophragmoidinae Maync, 1952

拟筛口虫属 *Cribr stomoides* Cushman, 1910

壳平旋, 包旋或不完全包旋。房室简单。壳壁胶结型, 单层。壳口卵形、新月形或筛状, 位于终室口面基部稍上方。(上白垩纪至现代)

9. 针壳拟筛口虫 (新种) *Cribr stomoides spiculotesta*, n. sp. (图版 I:10, 11)

壳小, 较扁, 平旋, 不完全包旋, 脐部凹陷, 壳缘圆, 周缘略呈瓣状。房室稍膨鼓, 逐渐增大, 2 圈左右, 终圈一般 6 室。缝合线清楚, 微凹, 稍弯。壳壁薄, 由细砂粒和许多不同粗细的海绵骨针组成, 壳面较平。壳口新月形, 具微突上、下唇。

标本测量(毫米) 正模标本 IOAS-F683 壳径 0.22 壳厚 0.12 (西沙洲水深 45—50 米)

新种终室壳口的口唇不很突出, 侧面观略呈吻状, 但剖开终室壁可见前室壳口具明显上、下唇。新种的外形与 *Labrospira kosterensis* Höglund, 1947 较为相似, 但个体较小, 壳壁是由细砂粒和海绵骨针组成。

编织虫科 Textulariidae Ehrenberg, 1838

编织虫亚科 Textulariinae Ehrenberg, 1838

编织虫属 *Textularia* Defrance, 1826

10. 圆头编织虫 *Textularia bocki* Höglund (图版 I:12)

Textularia agglutinans Göes (not d'Orbigny), 1894, p. 35, pl. 7, figs. 281, 284, 294, 296.

T. bocki Höglund, 1947, p. 171, pl. 12, figs. 5—6.

Textilina bocki (Höglund) Haynes, 1972, p. 47, pl. 3, figs. 6, 7, pl. 8, fig. 8.

壳近三角形, 向口端迅速增宽和增厚, 壳缘锐, 具棱边, 侧面观壳缘外凸。房室分明, 早期较扁, 后期迅速增宽和增厚, 最后一对房室口面膨鼓, 壳缘逐渐变圆。缝合线清楚, 近平直, 稍凹。壳壁由细砂粒组成, 壳面平整。壳口宽, 窄缝状, 位于终室口面基部。

标本测量(毫米) IOAS-F684 壳长 0.90 壳宽 0.70 壳厚 0.55 (西沙群岛)

本种与 *T. secasensis* Lalicker and McCulloch, 1940 有些相似, 但后者壳体较薄, 壳缘稍锐, 壳壁由粗砂粒组成。壳面粗糙。本种与 *T. gramen* d'Orbigny 以及 *T. pseudo-gramen* Chapman and Parr 不同在于, 最后几室的壳缘逐渐变圆。

分布 斯卡格拉海峡、卡特加特海峡、爱尔兰海、卡迪根湾、法国比斯开湾。

11. 大头编织虫 *Textularia candeiana* d'Orbigny (图版 I:15)

Textularia candeiana d'Orbigny, 1839a, p. 143, pl. 1, figs. 25—27. — Cushman, 1932, p. 9, pl. 2, figs. 4a, b. — Lalicker and Bermudez, 1941, p. 8, pl. 2, fig. 4a—c. — Cushman, Todd and Post, 1954, p. 329, pl. 83, fig. 3.

壳较长,三角形,初成部分甚扁,壳缘稍锐;后成部分迅速增厚和增宽,壳缘圆。房室分明,低而宽,迅速增大,最后一对房室甚膨大,约占全壳长1/3左右。缝合线稍清楚,较斜,微凹。壳壁由较粗砂粒组成,壳面较粗糙。壳口宽,窄缝状。

标本测量(毫米) IOAS-F685 壳长 0.78 壳宽 0.63 壳厚 0.55 (西沙洲水深 45—50 米)

分布 古巴、委内瑞拉、巴西、马绍尔群岛、加罗林群岛、土阿莫土群岛、兰吉罗阿岛、马里亚纳群岛、菲律宾、马来群岛、红海、地中海、日本。

12. 叶编织虫 *Textularia foliacea* Heron-Allen and Earland (图版 I:14)

Textularia foliacea Heron-Allen and Earland, 1915, p. 638, pl. 47, figs. 17—20. — Cushman, 1932, p. 8, pl. 1, figs. 6—10.

壳较大而长,甚扁,呈叶状,壳缘圆。房室分明,9—11对,宽大于高,迅速增宽。缝合线清楚,凹下,斜直。壳壁粗砂质,壳面粗糙。壳口较大,拱形,位于终室口面基部。

标本测量(毫米) IOAS-F686 壳长 1.16 壳宽 0.58 壳厚 0.28 (西沙洲水深 45—50 米)

据 Cushman (1932) 报道,本种是印度-太平洋浅水区最常见种类之一,适于生活在珊瑚礁浅水环境。

分布 基林巴群岛、红海、印度、爪哇、菲律宾、马绍尔群岛、萨摩亚群岛、斐济群岛、汤加群岛、大堡礁、马里亚纳群岛。

13. 圆面编织虫 *Textularia orbica* Lalicker and McCulloch (图版 I:13)

Textularia orbica Lalicker and McCulloch, 1940, p. 136, pl. 15, figs. 17a—c.

壳呈陀螺形,宽大于长,口面观近圆形。房室低而宽,不膨鼓,早期的扁小,后期的迅速变厚,口面迅速增宽和增高。缝合线不甚清楚,不凹下。壳壁细砂质,壳面不甚平滑。口面较平,壳口低拱形,位于终室口面基部。

标本测量(毫米) IOAS-F687 壳长 0.50 壳宽 0.75 (珊瑚岛)

分布 加拉帕戈斯群岛、大堡礁。

14. 半翼编织虫 *Textularia semialata* Cushman (图版 I:16, 17)

Textularia semialata Cushman, 1913, p. 634, pl. 80, figs. 6, 7; 1932, p. 9, pl. 2, figs. 1—3 — Cushman, Todd and Post, 1954, p. 330, pl. 93, fig. 5.

壳扁,壳缘圆。房室分明,膨鼓,宽大于高,迅速增宽。缝合线清楚,不斜,凹下。壳壁由微细砂粒组成,壳面平滑。壳口位于终室口面基部,低拱形,具明显而稍外翻的上唇。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F688	0.63	0.65	0.30 (西沙洲水深 45—50 米)
IOAS-F689	0.55	0.50	0.28 (西沙洲水深 45—50 米)

本种最明显的特征是,壳口具外翻上唇,壳壁由微细砂粒组成,壳面平滑。西沙的标本与 Cushman (1932) 记载于热带太平洋的最为一致。

分布 菲律宾、马绍尔群岛、斐济群岛、土阿莫土群岛。

管双属虫属(新属) *Siphobigenerina*, n. gen.

模式种 扁管双属虫(新种) *Siphobigenerina compressa* n. sp.

壳长而较扁,早期房室双列,后期明显单列。壳壁胶结型,壁孔微细。双列部分房室壳口在口面基部,单列部分壳口椭圆形,位于终室末端,具内齿板。内齿板围折成半漏斗状,较短,不与前室壳口相连接;顺序生成房室的内齿板以 180° 转换方向。(现代)

新属与 *Bigennerina* 属有些相似,但后者壳口较圆,无内齿板。若新属相继房室的内齿板是相互连接的,则可作为 *Rectobolivina* 属的砂质同形。

15. 扁管双属虫 (新属新种) *Siphobigennerina compressa*, n. gen., n. sp. (图版 II:1—4)

壳较扁,口面观椭圆形,壳缘圆。房室分明,稍膨鼓,双列部分约占全壳长一半左右;单列部分房室甚重叠,外观低而宽,终室高宽约相等。缝合线清楚,稍凹,呈白带镶边状。壳壁由微细砂粒胶结而成,外表及内表光滑,具微细壁孔。壳口位于终室末端,椭圆形,口缘稍厚,具内齿板;内齿板围折成半漏斗状,其长度一般不及室腔长度之半;顺序生成房室的内齿板约以 180° 转换方向。壳体早成部分呈橙黄色,随后部分颜色较淡。

标本测量(毫米) 正模标本 IOAS-F690 壳长 0.78 壳宽 0.20 壳厚 0.14 (金银岛)

新种与 *Bifarina porrecta* (Brady) var. *arenacea* Heron-Allen and Earland, 1922 有些相似,但后者后期房室仅是趋向于单列而不是明显单列,颈部明显。

Graham and Militante (1959) 记载于菲律宾的 *Bifarina* sp. (Pl. 12, fig. 11a-b), 很可能是属于本种。

假箭头虫亚科 Pseudobolivinae Wiesner, 1931

假箭头虫属 *Pseudobolivina* Wiesner, 1931

壳初成部分双列,后成部分单列或趋于单列。初成部分壳口在房室基部,后成部分壳口在房室末端。(中侏罗纪至现代)

16. 短假箭头虫(新种) *Pseudobolivina brevis*, n. sp. (图版 III:8—10)

壳小而较扁,略呈叶状,中央部分最厚,向壳缘稍削薄,壳缘窄圆。房室较少,不甚分明,迅速增大,最后一对房室高而宽,约占全壳面一半以上。缝合线不甚清楚,稍凹。壳壁厚,主要由较细砂粒组成,壳面较粗糙;早期几室具假几丁质内膜。壳口椭圆形,稍离口面基部,壳口一侧具宽而稍弯内齿板。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F691	0.63	0.53	0.25 (琛航岛与广金岛之间水深 30 米)
副模标本 IOAS-F692	0.53	0.45	0.25 (琛航岛与广金岛之间水深 30 米)
副模标本 IOAS-F693	0.33	0.35	0.18 (琛航岛与广金岛之间水深 30 米)

我们做了标本的纵切面,发现其壳口一侧具内齿板,这一特征在该属其他种尚未见有人提及过。

砂轮虫科 Trochamminidae Schwager, 1877

砂轮虫亚科 Trochammininae Schwager, 1877

砂轮虫属 *Trochammina* Parker and Jones, 1859

壳螺旋。房室球形至卵形。壳壁胶结型。壳口位于终室腹面基部,自脐部伸至壳缘,有时具口唇。(石炭纪至现代)

17. 龙骨砂轮虫 *Trochammina carinata* Cushman and McCulloch (图版 II:7)

Trochammina carinata Cushman and McCulloch, 1939, p. 109, pl. 12, fig. 3.

壳小,背面凸,露现3圈,腹面平或稍凹,脐部凹陷,壳缘具薄片状粉砂质宽龙骨。房室分明,膨鼓,依次渐增大,终圈5—6室,腹面终圈房室脐端呈瓣状。缝合线清楚,凹下,稍弯至近辐射。壳壁由微细砂粒、少量较粗砂粒及短海绵骨针胶结而成。壳面不甚平滑,壳口位于终室腹面基部内缘。壳体初成部分呈深红褐色,后成部分颜色较淡。

标本测量(毫米) IOAS-F694 壳长0.33 壳宽0.28 (西沙洲水深45—50米)

从 Cushman and McCulloch (1939) 的本种图形看,腹面脐部稍敞露。西沙的标本,脐部不敞露。

本种背面观似附着于白砂质薄片上,但将标本翻过来,可见薄片并未覆盖腹面,仅与壳缘相连接,形成薄片状周边,周边被水润湿后很柔软,易破损。

分布 墨西哥。

18. 夏洛特砂轮虫 *Trochammina charlottensis* Cushman (图版 II:5)

Trochammina charlottensis Cushman, 1925, p. 39, pl. 6, fig. 4a, b. — Takayanagi, 1955, pl. 1, fig. 16a, b. — Uchio, 1960, p. 58, pl. 3, figs. 13, 14. — Lankford and Phleger, 1973, p. 130, pl. 3, fig. 3.

壳扁,低螺旋,背面稍凸,3圈,腹面凹陷,脐部封闭,壳缘圆。房室分明,稍膨鼓,依次渐增大,终圈4—5室。缝合线清楚,凹下,背面的弯曲,腹面的近辐射。壳壁由粗细不一的砂粒组成,壳面稍粗糙至平滑。壳口位于终室腹面基部内缘,有时具小唇。早期房室呈红褐色。

标本测量(毫米) IOAS-F695 壳径0.23 壳高0.08 (金银岛)

本种与 *T. pacifica* Cushman 有些相似,但后者个体较大,缝合线辐射,脐部稍敞露。

分布 加拿大夏洛特海峡、加利福尼亚湾、加拉帕戈斯群岛、日本松川浦。

19. 四瓣砂轮虫 *Trochammina quadriloba* Höglund (图版 II:9)

Trochammina pusilla Höglund, 1947, p. 201, pl. 17, fig. 4; text. figs. 183—184.

T. quadriloba Höglund, new name, 1948, p. 46. — Phleger, 1952, p. 86, pl. 13, figs. 33—34. — Parker, 1954, p. 503, pl. 5, figs. 14, 15. — Vilks, 1969, p. 45, pl. 1, fig. 24a, b. — Sen Gupta, 1971, p. 85, pl. 1, figs. 14—15. — Echols, 1971, p. 150, pl. 9, fig. 4.

壳小,近圆锥形,壳高略小于壳径,壳缘圆。房室膨鼓,3—4圈,背面的不甚分明,腹面的较分明。背面缝合线不甚清楚,腹面的清楚,稍凹。壳壁由较粗砂粒组成,壳面粗糙。壳口位于房室腹面基部。早期房室呈红褐色。

标本测量(毫米) IOAS-F696 壳径0.30 壳高0.25 (西沙洲水深45—50米)

分布 斯卡格拉克海峡、加拿大北极群岛、纽芬兰岛、墨西哥湾、南极。

20. 斜方砂轮虫(新种) *Trochammina trapeziformis*, n. sp. (图版 XXVI:9)

壳小而较扁,低螺旋,壳缘圆;背面中央部分较凸,终圈部分迅速展平;腹面较平,脐部凹陷。房室呈不等四边形,3圈多,终圈6室,背面不膨鼓,腹面稍膨鼓。背面缝合线不甚清楚,不凹,其初成部分的辐射,呈深褐色,终圈的稍弯;腹面缝合线辐射至稍弯,微凹。壳壁由细和较粗砂粒组成,腹面较背面尤为平整。壳口缝状,位于房室腹面基部,开向脐部。

标本测量(毫米) 正模标本 IOAS-F697 壳长0.20 壳宽0.18 壳厚0.08 (西沙群岛)

新种最突出的特征是：背面缝合线直而辐射，房室呈不等四边形，背面初成部分较凸，终圈部分相对较平。

21. 南方砂轮虫 *Trochammina wiesneri* Parr (图版 XXVI:8)

Trochammina wiesneri Parr, 1950, p. 279, pl. 5, fig. 14.

壳低螺旋，壳缘圆，周缘瓣状，腹面脐部凹陷、敞露。房室 3 圈多，终圈 4—5 室，膨鼓，依次渐增大。缝合线清楚，凹下，背面的近辐射，腹面的稍弯。壳壁由形状不甚规则的粗、细颗粒组成，壳面粗糙，腹面略较背面平滑。壳口位于房室腹面基部，开向脐穴。壳体初成部分呈深棕褐色。

标本测量(毫米) 正模标本 IOAS-F698 壳长 0.40 壳宽 0.35 壳厚 0.13 (西沙洲水深 45—50 米)

西沙的标本与典型种稍有不同，腹面脐部较敞露。

分布 印度洋。

22. 西沙砂轮虫(新种) *Trochammina xishaensis*, n. sp. (图版 II:8)

壳小，高螺旋，4—5 圈，背面凸，腹面较平，脐部封闭而凹陷，壳缘宽圆，周缘呈瓣状。房室膨鼓，分明，依次渐增大，4 个组成一圈。缝合线清楚，凹下，背面的辐射，腹面的稍弯。壳壁细砂质，胶结少量海绵骨针，腹面略较背面平滑。壳口呈低拱缝状，位于腹面终室基部，自壳缘伸延至脐部。壳体初成部分呈橙褐色，后成部分颜色较淡。

标本测量(毫米) 正模标本 IOAS-F699 壳长 0.38 壳宽 0.33 壳厚 0.25 (珊瑚岛)

新种的房室形状和数目都很稳定，背面房室呈长方形，所有标本都是 4 室组成一圈。

新种的房室形状及辐射状缝合线与 *T. discorbinoides* Uchio, 1960 的较为相似，但后者壳体更小，壳缘窄圆。新种与 *T. quadricamerata* Echols, 1971 亦较相似，但后者个体小，壳圈较少，壳口为高拱形。

砂车轮虫属 *Rotaliammina* Cushman, 1927

壳附着，螺旋。壳壁由薄假几丁质膜胶结少量细砂粒组成。壳口位于腹面终室脐端。(现代)

23. 几丁砂车轮虫 *Rotaliammina chitinsa* (Collins) (图版 II:10)

Trochammina chitinsa Collins, 1958, p. 354, pl. 1, fig. 12.

壳低螺旋，近圆形，甚扁薄，壳缘具假几丁质薄龙骨；背面凸，露现所有房室，终圈 6—7 室，腹面凹陷，脐部敞露。房室弯曲，不膨鼓，早期的呈棕褐色，后期的颜色较淡，最后几室有时形状不甚规则。缝合线呈镶边状，背面的弯曲，稍凹；腹面的显著呈反“S”形弯曲，白色。壳壁假几丁质，柔软，背面胶结少量细粉砂，腹面无胶结物，易破损。壳口位于腹面终室脐端，开向脐穴。

标本测量(毫米) IOAS-F670 壳径 0.27 壳厚 0.02 (赵述岛)

本种的壳缘龙骨易于破损，破损后的标本周缘略呈瓣状。

本种与 *R. mayori* Cushman, 1924 有些相似，但后者终圈具 10 个房室，壳壁厚。

分布 大堡礁。

隔砂轮虫属(新属) *Septotrochammina*, n. gen.

模式种 *Trochammina plicata* Terquem

壳呈鳞片状,低螺旋,腹面脐部敞露。室腔内具连接背、腹面壳壁的垂直辐射隔板。壳壁由假几丁质膜胶结少量细粉砂。壳口位于房室腹面脐端。(现代)

新属与 *Remaneica* Rhumbler, 1938 不同在于,房室内腔不是由横伸壳壁皱褶所分隔,而是由自背壁竖直伸向腹壁的辐射隔板所分隔,壳口开向脐穴。新属外表与 *Rotaliammina* Cushman, 1924 有些相似,但后者室腔无隔板。

24. 褶隔砂轮虫 *Septotrochammina plicata* (Terquem) (图版 II:12)

Patellina plicata Terquem, 1876, p. 163, pl. 8, figs. 9a—b.

Trochammina plicata (Terquem). Millett, 1899, p. 363, pl. 5, fig. 13. — Cushman, 1920, p. 76, pl. 15, fig. 4. — Lacroix, 1930, p. 16, fig. 21a, b.

壳呈鳞片状,壳缘锐薄,背面稍凸,4—5圈,腹面凹陷,仅露终圈,脐部敞露。房室不甚分明,早期的甚小,一般为红褐色,终圈6室,腹面最后几个房室稍鼓凸。室腔内具连接背、腹面壳壁的垂直隔板,隔板较厚,呈辐射状排列,有时分叉。整个腹面透显许多白色辐射皱褶。缝合线较弯,背面的不甚清楚,腹面的较清楚,稍凹。壳壁假几丁质,较薄,背面胶结少量钙质细粉砂。壳口圆,位于房室腹面脐端,开向脐穴。

标本测量(毫米) IOAS-F701 壳径0.28 壳厚0.02(珊瑚岛水深4米)

本种与 *Rotaliammina chitinsa* (Collins) 有些相似,但后者壳体较厚,室腔无隔板。

分布 马来群岛、基林巴群岛、地中海、大西洋。

瓣砂轮虫属 *Tiphotrocha* Saunders, 1957

壳螺旋,背面平至凸,腹面凹陷,脐部较小而敞露。房室迅速增大,后成房室呈新月形,腹面具明显脐瓣。缝合线凹下,背面的弯曲,腹面的双曲。壳壁胶结型,薄而脆弱。早期房室壳口位于腹面基部,自壳缘伸延至脐部;后期壳口位于房室脐瓣前端,有时在脐瓣后缘尚具次壳口。(中新世至现代)

25. 皱瓣砂轮虫 *Tiphotrocha kelletiae* (Thalmann) (图版 II:11)

Trochammina peruviana Cushman and Kellett, 1929, p. 4, pl. 1, fig. 8. — Cushman and Parker, 1931, p. 6, pl. 2, fig. 7a—c.

T. kelletiae Thalmann, 1932, new name, p. 313. — Cushman and McCulloch, 1939, p. 101, pl. 11, fig. 1. — Takayanagi, 1955, pl. 1, fig. 18a, b. — Uchio, 1960, p. 58, pl. 3, figs. 20, 21. — Lankford and Phleger, 1973, p. 130, pl. 3, fig. 5.

Tiphotrocha kelletiae (Thalmann). Matoba, 1970, p. 61, pl. 1, fig. 19a—c.

壳小而甚扁,3—4圈,背面稍凸,腹面稍凹,脐部敞露,壳缘略呈瓣状。房室分明,稍膨鼓,终圈10室左右,依次渐增大。缝合线清楚,背面的较弯,稍凹,腹面的甚弯,具1、2个内褶,凹下。壳壁薄,由假几丁质膜胶结细粉砂组成,润湿后较柔软。壳口位于房室腹面脐端,开向脐穴。

标本测量(毫米) IOAS-F702 壳径0.25 壳厚0.03(赵述岛)

分布 自秘鲁往北至美国加利福尼亚,日本松岛湾。

26. 小瓣砂轮虫(新种) *Tiphotrocha minuta*, n. sp. (图版 II:6)

壳甚小, 3—4 圈, 背面呈圆屋顶状, 腹面甚凹陷, 脐部稍敞露, 凹陷; 壳缘窄圆, 周缘不呈瓣状。房室不膨鼓, 背面的不分明, 腹面的较分明, 终圈可见 3 室, 终室约占腹面之半。缝合线弯曲, 不凹下, 背面的不清楚, 腹面的较清楚。壳壁细砂质, 腹面较背面平滑。壳口位于终室腹面基部, 并开向脐穴。

标本测量(毫米) 正模标本 IOAS-F703 壳径 0.15 壳高 0.06 (金银岛)

若不考虑壳口特征, 新种与 *Trochammina compacta* Parker 1952 有些相似。但后者壳体较大和较厚; 房室稍膨鼓; 壳壁由中砂粒组成, 壳面较粗糙。新种与 *Trochammina appressa* Parr, 1950 亦有些相似, 但后者背面缝合线清楚, 先凹而后呈凸镶边状, 壳缘锐, 终圈 6 室。

小砂轮虫属 *Trochamminula* Shchedrina, 1955

壳与 *Trochammina* 相似。但房室具两个壳口, 一个是在房室腹面基部, 自壳缘伸至脐部; 另一个是自房室腹面基部向口面斜伸。壳壁胶结型。(现代)

27. 长小砂轮虫(新种) *Trochamminula elongata*, n. sp. (图版 III: 3)

壳小而扁, 2 圈多到 3 圈; 壳缘圆, 后成部分呈瓣状; 背面稍凸, 腹面脐部深陷。房室长, 终圈 8—9 室, 依次迅速增大, 房室腹面脐端呈瓣状。缝合线清楚, 背面初成部分的直而辐射, 后成部分的稍弯而凹下, 腹面的辐射而凹下。壳壁主要为细砂质, 亦胶结少量较粗砂粒, 壳面较平。壳口位于房室腹面基部, 自壳缘伸至脐端, 脐端开口明显; 自房室壳缘面基部向上方斜伸的缝状次壳口较明显。壳体背面初成部分呈深棕褐色, 后成部分呈黄褐色。

标本测量(毫米) 正模标本 IOAS-F704 壳长 0.28 壳宽 0.18 壳厚 0.10 (西沙洲水深 45—50 米)

新种表面与 *Trochammina nitida* Brady 有些相似, 但后者房室短, 无斜伸壳口。

28. 瓣小砂轮虫(新种) *Trochamminula lobatula*, n. sp. (图版 III: 1, 2)

Haplophragmoides canariense Graham and Militante, 1959 (not *Nonionina canariensis* d'Orbigny), p. 25, pl. 1, fig. 17a, b.

壳扁, 2 圈多到 3 圈, 壳长约为壳宽 $1\frac{1}{2}$ 倍左右, 壳缘圆, 周缘呈瓣状, 脐部凹陷。房室长而膨鼓, 依次迅速增大, 终圈 9—10 室; 房室腹面脐端呈尖瓣状, 瓣的后缘隆起呈明显拱形开口。缝合线清楚, 凹下, 稍弯。壳壁由细粉砂组成, 壳面平滑。除在房室腹面基部有一缝状壳口外, 尚有一自房室壳缘面基部向上方斜伸的明显壳口; 终室的斜伸壳口常由薄膜状壳质物封闭。壳体初成部分呈深红褐色, 后成部分呈淡橙色。

标本测量(毫米)

	壳长	壳宽	壳厚
正模标本 IOAS-F705	0.53	0.38	0.20 (西沙洲水深 45—50 米)
副模标本 IOAS-F706	0.40	0.25	0.15 (西沙洲水深 45—50 米)

西沙的标本与 Graham and Militante (1959) 记载于菲律宾的 "*Haplophragmoides canariense* (Orbigny)" 最为相似。他们的这个种与 d'Orbigny 的 *Nonionina canariensis* (后来被一些作者改隶于 *Haplophragmoides* 属) 相比, 差异很大。后者从图形来看, 是个两面对称的平旋标本, 终圈有 6 个膨鼓房室, 壳口位于壳缘面, 对称, 高拱形。

新种终室的斜伸壳口常被薄膜状壳质物封闭, 但剖开终室壁, 则可见前房室的斜伸壳

口是敞开的。

畸间壁虫科 Ataxophragmiidae Schwager, 1877

春虫亚科 Verneuilininae Cushman, 1911

锥头虫属 *Gaudryina* d'Orbigny, 1839

29. 扭锥头虫 *Gaudryina* (*Gaudryina*) *contorta* (Höglund) (图版 III:6)

Textularia contorta Höglund, 1947, p. 182, pl. 13, fig. 4.

壳较小, 扁长, 有时扭曲, 向口端迅速增宽, 壳缘圆。房室分明, 稍膨鼓, 宽大于高, 5—7对, 依次迅速增大。缝合线稍清楚, 微凹。壳壁粗砂质, 壳面粗糙。壳口半圆形, 位于终室口面基部。

标本测量(毫米) IOAS-F707 壳长 0.43 壳宽 0.23 壳厚 0.15 (觅出礁)

Höglund (1947) 在本种的原始描述中, 曾提及初室不是在壳体的始端, 而是被一个球室所围绕, 这意味着初成部分的几个房室不是双列, 而可能是三列。西沙的标本始端常稍扭曲, 呈现为三列。Graham and Militante (1959) 记载于菲律宾的 “*Textularia crescentiformis* Cushman” 与西沙的标本最为相似, 与真正的 *T. crescentiformis* Cushman 则显然不同。后者壳体大, 壳壁细砂质, 壳口缝状并稍离口面基部。

分布 斯卡格拉克海峡、卡特加特海峡、菲律宾。

30. 矛锥头虫 *Gaudryina* (*Pseudogaudryina*) *hastata* Parr (图版 III:4, 5)

Gaudryina hastata Parr, 1932, p. 219, pl. 22, figs. 40a—b.

• *G. (Pseudogaudryina) hastata* Parr. Cushman, 1937, pp. 95, 98, pl. 14, figs. 7—8. — Graham and Militante, 1959, p. 30, pl. 2, figs. 10a, b.

壳长, 三列部分呈三棱锥状, 约占全壳长 1/3 左右, 缘角锐, 侧面平至稍凹。早期房室不甚分明, 后期双列部分房室分明, 膨鼓, 横切面呈宽卵形至圆长方形。三列部分的缝合线不甚清楚, 双列部分的清楚, 凹下。壳壁由较粗砂粒组成, 壳面较粗糙。壳口低拱形, 位于终室口面基部。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F708	0.83	0.50	0.43 (中建岛水深 5 米)
IOAS-F709	0.90	0.47	0.38 (华光礁)

分布 巴斯海峡、澳大利亚、菲律宾。

球编织虫亚科 Globotextulariinae Cushman, 1927

三属虫属 *Dorothia* Plummer, 1931

壳早期螺旋, 4 个多房室组成一圈, 随后三列, 后期双列。壳壁胶结型。壳口位于终室口面基部。(下白垩纪至现代)

31. 扭三属虫 *Dorothia tortilis* Parr (图版 III:7)

Dorothia tortilis Parr, 1950, p. 282, pl. 5, fig. 24.

壳较小而长, 壳缘圆, 早期房室不甚分明, 4—5 室组成一圈, 随后房室三列, 后期房室

较膨鼓，双列，常较扭曲。早期缝合线不甚清楚，不凹；双列部分的清楚，凹下。壳壁由细和较粗砂粒胶结而成，壳面不甚平滑。壳口低拱形，位于终室口面基部。壳体初成部分呈深棕褐色，随后壳色渐淡。

标本测量(毫米) IOAS-F710 壳长 0.54 壳宽 0.20 壳厚 0.15 (西沙洲水深 45—50 米)

本种与 *Dorothia exilis* Cushman, 1936 有些相似，但后者壳体较长，壳壁由细砂粒组成，壳面平滑。

分布 印度洋。

粟虫亚目 Miliolina Delage and Herouard, 1896

粟虫总科 Miliolacea Ehrenberg, 1839

瓷旋虫科 Fischerinidae Millett, 1898

瓷旋虫亚科 Fischerininae Millett, 1899

小瓷旋虫属 *Fischerinella* Loeblich and Tappan, 1962

壳扁。初室球形，第二室不分节，约一圈长，随后壳圈分节螺旋。壳壁钙质无孔型，薄。壳口位于终室末端。(现代)

32. 透明小瓷旋虫 *Fischerinella pellucida* (Millett) (图版 IV:1; 图 1)

Fischerina pellucida Millett, 1898, p. 611, pl. 13, figs. 14, 15. — Cushman, 1924, p. 53, pl. 19, fig. 9; 1932, p. 75, pl. 17, figs. 17a—c. — Graham and Militante, 1959, p. 61, pl. 9, fig. 14a, b. — Collins, 1958, n. 377, pl. 4, fig. 4.

壳扁，壳缘圆；一面露旋，可见 $1\frac{1}{2}$ —2 圈，另一面包旋或不完全包旋。房室 5—6 个组成一圈。缝合线清楚，凹下，呈白镶边状。壳壁薄，半透明，壳面较光滑。壳口圆，位于壳缘面终室末端。

标本测量(毫米) IOAS-F711 壳径 0.25 壳厚 0.10 (华光礁)

Loeblich and Tappan (1962) 检查了 *Fischerina* 的模式种，指出模式种的壳体完全平旋，壳口位于壳缘面。为此，他们将原先在 *Fischerina* 属下的壳体螺旋(背面露旋，腹面完全包旋)的种类归隶于他们所建立的新属 *Fischerinella*。

西沙的标本较扁，侧面观不象螺旋，一面露旋，另一面包旋，脐部敞开或稍露初圈，壳口位于终室末端，总的特征是界于 *Fischerina* 属与 *Fischerinella* 属之间。但从标本的横切面(图 1)可以看出，管室不是在同一平面旋卷，因此，我们把它归纳于 *Fischerinella* 属。

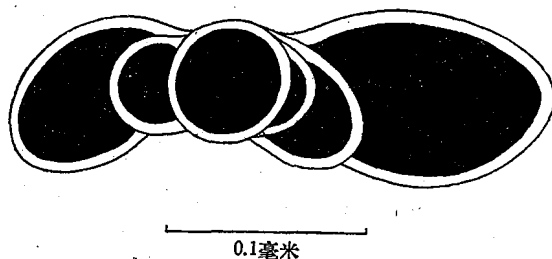


图 1 透明小瓷旋虫 *Fischerinella pellucida* (Millett). 横切面

分布 马来群岛、大堡礁、新西兰、萨摩亚群岛、加罗林群岛、菲律宾、基林巴群岛。

小平旋虫属 *Planispirinella* Wiesner, 1931

壳扁,平卷包旋,初室由无分隔管室环绕,随后由3个或2个房室环绕一圈。缝合线不甚明显。内隔板甚薄,较斜。壳壁钙质无孔型,每增加一新房室则增加一层壳壁覆盖整个壳体。壳口高而长,近三角形或缝状,位于终室末端。(第三纪至现代)

33. 龙骨小平旋虫 (新种) *Planispirinella carinata*, n. sp. (图版 IV:2; XXVII: 9, 10; 图 2)

壳小而扁薄,近圆形,壳缘具脊状龙骨。初室圆,由无分隔管室环绕,随后由2室组成一圈。仅终圈缝合线较清楚。壳面光滑,呈瓷状。壳口位于终室末端,长缝状。

标本测量(毫米) 正模标本 IOAS-F713 壳径 0.38 壳厚 0.10 (西沙洲水深 45—50 米)

新种与 *P. exigua* (Brady) 有些相似,但后者壳缘无龙骨,3室组成一圈。

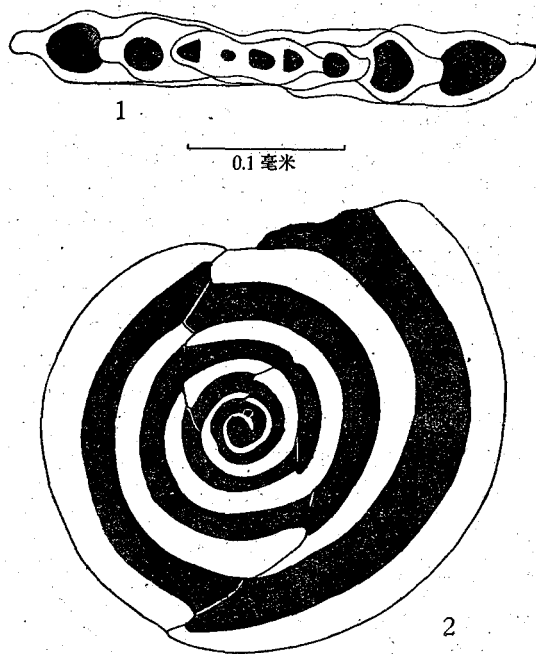


图 2 龙骨小平旋虫 (新种) *Planispirinella carinata*, n. sp.

1. 横切面; 2. 水平切面。

云朵虫科 Nubeculariidae Jones, 1875

云朵虫亚科 Nubeculariinae Jones, 1875

云朵虫属 *Nubecularia* Defrance, 1825

壳附着,早期管室平旋,后期分室,继续旋卷或变为直列,房室形状不一,末端可成为管状。壳壁钙质无孔型,常粘结少量砂粒。标本的附着阶段壳口长缝状,直列阶段壳口变

圆,口缘具内褶壁。(侏罗纪至现代)

34. 畸云朵虫 *Nubecularia lucifaga* Defrance (图版 IV:3)

Nubecularia lucifaga Defrance, 1825, p. 210, pl. 44, fig. 3. — Brady, 1884, p. 134, pl. 1, figs. 9—16. — Millett, 1898, p. 261, pl. 5, fig. 7. — Cushman, 1917a, p. 41, pl. 8, fig. 6.

描述与属同。

标本测量(毫米) IOAS-F716 壳长 0.78 (晋卿岛水深 6 米)

分布 马来群岛、澳大利亚、洛德豪岛、汤加群岛、南极、萨摩亚群岛、地中海、加勒比海、英国。

眼睛虫亚科 Ophthalmitinae Wiesner, 1920

吸口虫属 *Wiesnerella* Cushman, 1933

壳早期平旋,后期房室略重叠,半圈长。壳壁薄,钙质无孔型,壳面呈瓷状。壳口大,近圆形,口唇外翻。(现代)

35. 耳吸口虫 *Wiesnerella auriculata* (Egger) (图版 IV:4)

Planispirina auriculata Egger, 1893, p. 53, pl. 3, figs. 13—15. — Heron-Allen and Earland, 1915, p. 590, pl. 46, figs. 3—7. — Cushman, 1922a, p. 62, pl. 10, fig. 8; 1929, p. 93, pl. 22, figs. 3a—b; 1932, p. 72, pl. 16, figs. 6a—c.

Wiesnerella auriculata (Egger). Cushman, 1933a, p. 33, pl. 3, figs. 7—9. — Asano, 1951, p. 2, figs. 6—8. — Cushman, Todd and Post, 1954, p. 341, pl. 85, fig. 30. — Graham and Militante, 1959, p. 60, pl. 9, fig. 13a, b. — Matoba, 1970, p. 69, pl. 2, figs. 2a, b.

壳小而扁,宽卵形。房室分明。缝合线清楚。壳壁薄,半透明。壳口椭圆形或近圆形,偏向壳体一侧面,口缘呈吸盘状。

标本测量(毫米) IOAS-F717 壳长 0.25 壳宽 0.20 壳厚 0.03 (中建岛水深 5 米)

分布 广泛分布于太平洋、印度洋、大西洋。

抱环虫亚科 Spiroloculininae Wiesner, 1820

抱环虫属 *Spiroloculina* d'Orbigny, 1826

36. 角抱环虫 *Spiroloculina angulata* Cushman (图版 IV:7)

Spiroloculina grata Terquem var. *angulata* Cushman, 1917a, p. 36, pl. 7, fig. 5.

S. antillarum d'Orbigny var. *angulata* Cushman (part), 1921, p. 408, pl. 81, fig. 5; 1924, p. 55, pl. 20, fig. 2; 1932, p. 37, pl. 9, figs. 6—9.

S. angulata Cushman. Cushman and Todd, 1944, p. 50, pl. 7, figs. 18—22. — Cushman, Todd and Post, 1954, p. 334, pl. 84, figs. 11, 12.

壳扁,纺锤形,两侧面中部凹陷,壳缘具中央凸脊,侧缘角突出。房室分明,迅速增大,基部圆突,口端延伸成长筒形颈部。缝合线清楚,凹下,相继房室基部与颈部之间有时具三角形间隙。壳面具隆肋,隆肋一般与壳缘相平行。壳口圆形,具简单或分叉齿。

标本测量(毫米) IOAS-F718 壳长 1.33 壳宽 0.75 壳厚 0.25 (觅出礁)

分布 菲律宾、马绍尔群岛、萨摩亚群岛、汤加群岛、澳大利亚、夏威夷群岛、红海、地中海。

37. 异抱环虫 *Spiroloculina eximia* Cushman (图版 IV:5, 6)

Spiroloculina eximia Cushman, 1922a, p. 61, pl. 11, fig. 2; 1924, p. 56, pl. 21, fig. 2; 1929, p.

42, pl. 8, fig. 7; 1932, p. 39, pl. 10, figs. 2, 3; 1944, p. 46, pl. 6; figs. 36—38. — Brooks, 1973, p. 406, pl. 6, fig. 8.

Spiroloculina sp. B. 郑执中、郑守仪, 1978, 171 页, 图版 VII 图 7—9。

壳长约为壳宽 $1\frac{1}{2}$ —2 倍, 两侧面中部甚凹陷, 壳缘宽圆或稍平。房室分明, 迅速增大和增厚, 外缘面圆凸, 基部较突, 渐向口端削细, 口端具短或长颈。缝合线清楚, 凹下。壳面不甚光滑。壳口圆形至椭圆形, 具简单或短“T”形齿。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F719	0.80	0.50	0.28 (中建岛水深 5 米)
IOAS-F720	0.65	0.35	0.20 (琛航岛)

本种个体较小的标本, 壳缘一般较圆凸; 个体较大的标本, 壳缘趋于平截, 颈部常较压扁, 壳口呈横椭圆形。

分布 美国(佛罗里达州)、萨摩亚群岛、汤加群岛、斐济群岛、菲律宾、加勒比海。

38. 平凸抱环虫(新种) *Spiroloculina planoconvexa*, n. sp. (图版 IV:8)

壳扁薄, 纺锤形, 壳缘呈锐薄龙骨状。一侧面较凸, 中央不凹; 另一侧面较平, 中央甚凹陷。房室分明, 迅速增大; 最后 2 室甚宽, 内侧最厚, 向外缘削薄; 终室基部突出, 口端迅速收尖成长颈。缝合线清楚。壳面光滑。壳口较小, 圆形, 具简单齿。

标本测量(毫米) 正模标本 IOAS-F721 壳长 1.20 壳宽 0.78 壳厚 0.13 (西沙洲水深 45—50 米)

新种最明显的特征是, 壳体较平坦一側面的中央部分甚凹陷, 终室口端迅速收尖成长颈部。

Cushman, Todd and Post (1954) 的 *Spiroloculina* sp. A 很可能是本种。

节棒虫亚科 Nodobaculariinae Cushman, 1927

小节棒虫属 *Nodobaculariella* Cushman and Hanzawa, 1937

壳扁, 早期平卷, 后期展伸。壳口位于终室末端, 对称。(第三纪至现代)

39. 乡小节棒虫 *Nodobaculariella rustica* Cushman and Todd (图版 IV:9)

Nodobaculariella rustica Cushman and Todd, 1944, p. 73, pl. 12, figs. 4, 5.

壳扁, 平卷露旋, 壳缘具窄锐龙骨, 房室末端延伸成颈部。缝合线清楚, 稍凹。壳面具明显隆肋, 隆肋稍弯斜或与壳缘相平行。壳口长椭圆形, 口缘厚而外翻。

标本测量(毫米) IOAS-F722 壳长 0.78 壳宽 0.63 壳厚 0.15 (全富岛)

分布 菲律宾、土阿莫土群岛。

节眼虫属 *Nodophthalmidium* Macfayden, 1939

初室球形或卵形, 一般由一平旋管状第二室环绕, 随后由单列直伸房室组成。壳壁钙质无孔型。壳口位于终室末端, 具唇。(古新世至现代)

40. 龙骨节眼虫(新种) *Nodophthalmidium carinata*, n. sp. (图版 V:1)

壳小, 初室球形, 由一个壳缘具龙骨的平旋第二室环绕, 随后为一个基部最宽的管状直列房室。缝合线清楚。直列房室表面具几条微弱纵肋纹。壳口大, 圆形, 口唇厚而外翻。

标本测量(毫米) 正模标本 IOAS-F723 壳长 0.29 壳厚 0.06 (甘泉岛)

新种与 *N. compressum* (Rhumbler) 不同在于, 直列房室呈圆管状而不是扁的, 初成部分的壳缘具明显龙骨。

41. 扁节眼虫 *Nodophthalmidium compressum* (Rhumbler) (图版 V:2)

Nodobacularia compressa Rhumbler, 1906, p. 38, pl. 2, fig. 14.

Nodophthalmidium compressum (Rhumbler). Macfayden, 1939, p. 168, text fig. 3. Cushman and Todd, 1944, p. 65, pl. 11, fig. 1.

壳小, 稍扁, 壳缘窄圆。初室球形, 管状第二室稍重叠并环绕初室, 随后为两个长大于宽、稍扁的单列直伸房室。缝合线清楚, 直列部分的稍缢缩。直列房室表面具几条微弱纵肋纹。壳口椭圆形, 口缘稍厚。

标本测量(毫米) IOAS-F724 壳长 0.38 壳厚 0.05 (琛航岛与广金岛之间水深 30 米)

Hofker (1964) 的 *Articulina paucicostata* Cushman 有可能是本种。他的图形及描述与 Cushman (1944a) 的图形及原始描述差异较大。Cushman 描述 *A. paucicostata* 的初成部分为三块虫式排列(其图形亦清楚地显示出呈三块虫式排列); 而 Hofker 则提及他的标本的初成部分是由一个大的初室(包括属于初室的颈室)以及环绕初室的第二室组成, 不能断定其初成部分是否为三块虫式。

分布 亚得里亚海。

椎骨虫属 *Vertebralina* d'Orbigny, 1826

42. 显纹椎骨虫 *Vertebralina insignis* Brady (图版 V:3)

Vertebralina insignis Brady, 1884, p. 187, pl. 12, figs. 9—11.

壳甚扁, 壳缘锐或具龙骨。房室分明。壳面密布高凸肋条, 有的肋条相互接合成不规则网格状。壳口窄长, 对称, 在终室末端中线部位, 口缘厚。

标本测量(毫米) IOAS-F725 壳长 1.63 壳宽 0.83 壳厚 0.18 (全富岛)

本种与 *V. striata* d'Orbigny 最明显的差别在于, 壳口对称而不是偏向腹面。

分布 汤加塔布岛珊瑚礁。

粟虫科 Miliolidae Ehrenberg, 1839

五块虫亚科 Quinqueloculininae Cushman, 1917

五块虫属 *Quinqueloculina* d'Orbigny, 1826

43. 角口五块虫(新种) *Quinqueloculina angulostoma*, n. sp. (图版 V:8)

壳甚小, 近圆形, 口面观双凸, 壳缘窄圆。房室不甚分明, 膨鼓。缝合线不甚清楚。壳面具斜网格状纹饰。壳口三角形, 具简单齿。

标本测量(毫米) 正模标本 IOAS-F726 壳长 0.20 壳宽 0.18 壳厚 0.13 (珊瑚岛)

新种与同属其他具网格状纹饰的种区别在于, 壳体甚小而厚, 壳口呈三角形。

44. 整洁五块虫 *Quinqueloculina bellatula* Bandy (图版 V:5)

Quinqueloculina akneriana var. *bellatula* Bandy, 1950, p. 273, pl. 41, figs. 1a—c. — Lankford and Phleger, 1973, p. 18, pl. 2, fig. 7.

Q. bellatula Bandy. Arnal, 1958, p. 39, pl. 10, figs. 13—15.

壳长卵形, 长约为宽的 $1\frac{1}{2}$ —2 倍, 口面观呈圆三角形, 壳缘浑圆。房室较膨鼓, 基部宽圆。缝合线清楚, 稍凹。壳面光滑。口端斜截, 无颈部, 壳口拱形, 具棒状或分叉齿。

标本测量(毫米) IOAS-F727 壳长 0.43 壳宽 0.25 壳厚 0.15 (中建岛)

分布 美国(索耳顿湖)、北美沿岸; 美国俄勒冈州更新统和加利福尼亚州上新统。

45. 双肋五块虫(相似种) *Quinqueloculina* cf. *Q. bicostata* d'Orbigny (图版 V:6)

Quinqueloculina bicostata d'Orbigny, 1839, p. 195, pl. 12, figs. 8—10. — Bermudez and Seiglie, 1963, p. 129, pl. 8, fig. 3. — Cushman, 1917a, p. 47, pl. 13, fig. 1.

壳宽卵形, 基部稍突, 口端稍斜截而收缩。房室分明, 侧面稍内凹, 背缘角呈双凸肋状, 双肋间甚内凹。壳面有光泽, 房室侧面及背缘角具细纵肋纹。壳口卵形, 具简单齿。

标本测量(毫米) IOAS-F728 壳长 0.50 壳宽 0.40 壳厚 0.28 (珊瑚岛)

我们仅掌握一个标本, 主要特征与典型种相似, 即房室具明显双凸肋, 与典型种不同在于壳面尚具细纵肋纹。

分布 古巴、牙买加、委内瑞拉、菲律宾。

46. 肋纹五块虫 *Quinqueloculina carinatastriata* (Wiesner) (图版 V:4)

Miliolina cultrata Brady, striate var. Heron-Allen and Earland, 1915, p. 564, pl. 42, figs. 6—10.

M. bosciana (d'Orbigny) Millett, (part), 1898, p. 267, pl. 6, fig. 3.

M. milletti var. *carinata-striata* Wiesner, 1912, p. 221.

壳卵形, 壳缘锐。房室分明, 弯斜, 两侧面膨鼓, 壳缘削薄呈锐脊状。缝合线清楚, 凹下。壳面具明显纵斜细肋。口端斜截, 稍收缩, 具短颈; 壳口椭圆形, 口缘厚, 具简单齿及短对向齿。

标本测量(毫米) IOAS-F729 壳长 0.40 壳宽 0.23 壳厚 0.15 (全富岛)

分布 基林巴群岛、意大利、马来群岛。

47. 粗龙骨五块虫 *Quinqueloculina crassicarinata* Collins (图版 VI:4)

Quinqueloculina crassicarinata Collins, 1958, p. 359, pl. 2, fig. 6a—c.

壳长稍大于宽, 基部稍突。壳缘呈圆突脊状。房室分明, 外侧面内凹, 内侧面较鼓。缝合线清楚, 稍凹。壳面有光泽, 具微细纵刻纹。口端侧扁, 壳口椭圆形, 具简单长齿。

标本测量(毫米) IOAS-F730 壳长 0.50 壳宽 0.43 壳厚 0.28 (晋卿岛水深 6 米)

西沙的标本主要特征与典型种一致, 唯个体较小, 壳面具微细纵刻纹。

分布 澳大利亚大堡礁。

48. 华美五块虫(新种) *Quinqueloculina decora*, n. sp. (图版 VI:7)

壳长卵形, 基部较突, 口端斜截, 稍收缩并压扁, 壳缘宽圆, 4 室面较凸, 3 室面凹陷。房室较分明, 背缘面具斜向或横向显著波状凸肋; 两侧面内凹, 无波凸。缝合线清楚, 稍凹。壳面密布微细纵肋纹。壳口长, 上宽下窄, 口缘稍厚, 具简单长齿。

标本测量(毫米) 正模标本 IOAS-F731 壳长 0.80 壳宽 0.48 壳厚 0.33 (觅出礁)

新种的波状凸肋仅局限于房室背缘面, 全壳面均具微细纵肋纹, 易区别于同属其他具波凸状纹饰的种。

49. 纺锤五块虫(新种) *Quinqueloculina fusiformis*, n. sp. (图版 V:7; 图 3)

壳小, 纺锤形, 基端尖突, 口端延伸成细颈。壳缘呈高凸钝脊状, 中段为单脊, 上、下段

均为双脊。房室不甚分明，迅速增大。缝合线稍清楚。壳面不甚光滑，粘结少量细砂粒。壳口近圆形，口缘稍厚，具简单齿。

标本测量(毫米) 正模标本 IOAS-F732 壳长 0.50 壳宽 0.26 壳厚 0.15 (羚羊礁)

新种与记载于罗马尼亚中新统的 *Q. lachesis* Karrer, 1868 有些相似，但后者壳体较大，壳缘凸脊仅在靠近基端的三分之一是分叉的，其余部位均为单脊。

50. 磨壁五块虫(新种) *Quinqueloculina impolita*, n. sp. (图版 VI:5)

壳长稍大于宽，基部稍突，窄圆；壳缘呈

钟脊状，两端为单脊，中段为双脊。房室分明。缝合线清楚，稍凹。壳面较粗糙。口端略收缩，稍斜截，壳口近圆形，具短“T”形齿。

标本测量(毫米) 正模标本 IOAS-F734 壳长 0.43 壳宽 0.35 壳厚 0.28 (珊瑚岛)

新种最明显的特征是房室背缘上、下段为单脊，中段分叉为双脊，双脊之间稍内凹。新种与 *Q. parvatriangularis* Hussey, 1949 有些相似，但后者个体较小，壳缘角锐，口齿简单。

51. 粗糙五块虫(新种) *Quinqueloculina inculta*, n. sp. (图版 XXVI:10)

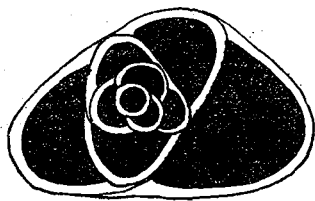
壳呈菱形，壳长不及壳宽 $1\frac{1}{2}$ 倍，基部稍圆突，口端具细短颈，壳缘窄圆。房室较分明，较膨鼓，缘角锐或亚锐。缝合线稍清楚，微凹。壳面胶结细粉砂，较粗糙。壳口圆，具短“T”形齿。

标本测量(毫米) 正模标本 IOAS-F735 壳长 0.58 壳宽 0.40 壳厚 0.30 (西沙洲水深45—50米)

新种与 *Q. compta* Cushman 有些相近，但后者壳体较长，壳缘较锐，房室不膨鼓，口齿简单。

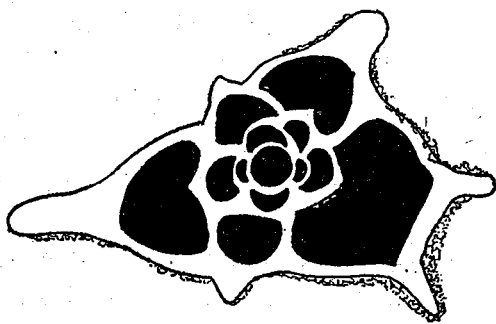
52. 少室五块虫(新种) *Quinqueloculina paucilocula*, n. sp. (图版 V:9, 10; 图 4)

壳体中部最宽，向两端收小，基部圆突，口端斜截，壳缘圆。房室分明，近基部最宽；多室面凸，露现 3—4 室；少室面平，露现 2—3 室。缝合线清楚，稍凹。壳面光滑。口端较扁，壳口三角形，具简单长齿。



0.1毫米

图 4 少室五块虫(新种)
Quinqueloculina paucilocula,
n. sp. 横切面



0.1毫米

图 3 纺锤五块虫(新种) *Quinqueloculina fusiformis*, n. sp. 横切面

标本测量(毫米) 壳长 壳宽 壳厚

正模标本 IOAS-F736 1.08 0.73 0.30 (西沙洲水深 45—50 米)

副模标本 IOAS-F737 0.73 0.40 0.30 (西沙洲水深 45—50 米)

新种外露房室数目常较一般五块虫为少，致使外观似呈三块虫式。从其横切面可以看出，房室明显叠覆其前一邻近房室，由于叠覆程度不同，外露房室数目有多有少，当少室面外露 3 室时，中间一室仅露现很少部分。

53. 贫五块虫 *Quinqueloculina pauperata* d'Orbigny (图版 VI:1)*Quinqueloculina pauperata* d'Orbigny, 1846, p. 286, pl. 17, figs. 22—24.

壳较扁,卵形至宽卵形,壳缘圆。口端近平截,基部圆。房室分明,膨鼓。缝合线清楚,凹下。壳面光滑。壳口大而圆,具末端分叉长齿。

标本测量(毫米) IOAS-F739 壳长 0.43 壳宽 0.33 壳厚 0.18 (觅出礁)

分布 德国第三系。

54. 管室五块虫(新种) *Quinqueloculina tubilocula*, n. sp. (图版 VI:2, 3)

壳小而细长,壳长约为壳宽 3—4 倍;基部宽圆,不突;壳缘圆。多室面凸,少室面较平。房室分明,呈管状,基部甚弯。缝合线清楚,稍凹。壳壁较薄,壳面光滑。壳口圆,有时具短颈,具简单齿,口缘有时加厚而外翻。

标本测量(毫米)

	壳长	壳宽	壳厚
正模标本 IOAS-F740	0.28	0.08	0.05 (金银岛)
副模标本 IOAS-F741	0.40	0.10	0.08 (琛航岛与广金岛之间水深 30 米)

新种与 *Q. bosciana* d'Orbigny, 1839 有些相似,但后者壳体扁,房室基部宽,口端窄。新种与 *Q. anguina* Terquem, 1878 亦较相似,但后者壳体较大和较扁,壳口无齿。

55. 五块虫? (未定种) *Quinqueloculina?* sp. (图版 VI:6)

壳长约为壳宽 5—6 倍,稍扭曲,口面观椭圆形,壳缘圆;终室基部最宽,甚圆突,口端延伸成细长颈。房室不甚分明,稍膨鼓。缝合线不清楚。壳面具少数纵隆肋。壳口小而圆。

标本测量(毫米) IOAS-F742 壳长 0.70 壳宽 0.13 壳厚 0.10 (金银岛)

我们仅掌握一个标本,不便作横切面观察其房室排列情况,暂以存疑置于本属。由于标本颈部甚细,壳口甚小,未能看清是否有齿。

块心虫属 *Massilina* Schlumberger, 1893**56. 大块心虫(新种) *Massilina magna*, n. sp. (图版 VII:1)**

壳大而长,基部尖突,口端延伸成长颈,壳缘平截,缘角锐。房室不分明,迅速增厚。缝合线不清楚。壳面粘结大小均一的较粗砂粒,粗糙。壳口低而宽,长方形,具短棒状齿。

标本测量(毫米) 正模标本 IOAS-F743 壳长 1.50 壳宽 0.55 壳厚 0.50 (西沙洲水深 45—50 米)

假块心虫属 *Pseudomassilina* Lacroix, 1938

壳宽扁,早期房室呈五块虫式排列,2 室组成一圈,后期房室平旋。壳壁钙质有孔型,壳面瓷状,壳壁内具通向壳面小凹坑但不与室腔相通的细管。室腔内有一层无穿孔假几丁质膜。壳口高缝状,具唇,无齿。(现代)

57. 薄假块心虫 *Pseudomassilina macilenta* (Brady) (图版 VI:8)

Miliolina macilenta Brady, 1884, p. 167, pl. 7, figs. 5—6. — Chapman, 1902, p. 399.

Massilina macilenta (Brady). Heron-Allen and Earland, 1915, p. 583, pl. 45, figs. 13, 14. — Cushman, 1924, p. 64, pl. 24, figs. 3—4; 1932, p. 33, pl. 8, figs. 4a—b.

Pseudomassilina macilenta (Brady) Lacroix, 1938, p. 7. — Graham and Militante, 1959, p. 39. pl. 4, figs. 1a, b.

壳扁,卵形至近圆形,壳缘圆。房室分明。缝合线清楚,稍凹。壳面具斜或与壳缘平行的纵隆肋。壳口长,口唇厚而外翻。

标本测量(毫米) IOAS-F744 壳长 0.35 壳宽 0.35 壳厚 0.10 (珊瑚岛)

分布 斐济群岛、汤加群岛、富纳富提岛、新几内亚、菲律宾、基林巴群岛。

58. 网纹假块心虫 *Pseudomassilina reticulata* (Heron-Allen and Earland) (图版 VI:9; XXVII:7; 图 5)

Massilina secans var. *reticulata* Heron-Allen and Earland, 1915, p. 582, pl. 45, figs. 1, 2 (not 3, 4).

Pseudomassilina australis var. *reticulata* (Heron-Allen and Earland) Lacroix, 1938, p. 6, fig. 4. — Graham and Militante, 1959, p. 39, pl. 3, fig. 22a—e.

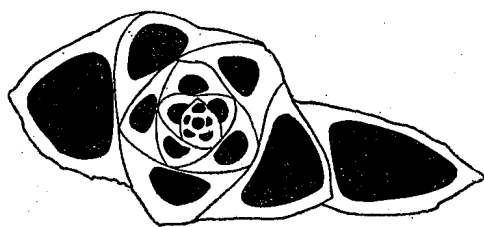
壳宽卵形,外露 5 室,壳缘钝。由终室和倒数第二房室所环围的房室较凸。缝合线稍清楚。壳面具不甚明显的斜格状网纹。口端圆突,壳口高而窄,口唇较厚。

标本测量(毫米) IOAS-F745 壳长 0.83
壳宽 0.65 壳厚 0.43 (觅出礁)

西沙的标本与 Heron-Allen and Earland (1915) 的 *Massilina secans* var. *reticulata* (图版 45, 图 1、2) 最为相似。后者被 Lacroix

(1938) 改隶为 *Pseudomassilina australis* 的变种。我们认为 *Massilina secans* var. *reticulata* 与 *P. australis* 的差异较大,故将其提升为独立种。本种壳面纹饰有的较清楚,有的不清楚,有时同一标本的某些部位纹饰呈斜格状,而另一些部位呈斜肋状或不具纹饰。

分布 基林巴群岛、菲律宾。



0.1毫米

图 5 网纹假块心虫 *Pseudomassilina reticulata* (Heron-Allen and Earland) 横切面

假曲形虫属(新属) *Pseudosigmoilina*, n. gen.

模式种 小假曲形虫(新种) *Pseudosigmoilina minuta*, n. sp.

房室略呈曲形虫式排列,顺序生成房室约以 180° 角增添。横切面观房室两侧壁呈跨形展伸,部分或全部叠覆于前成房室两侧面,致使外观仅露现最后 2 个房室。各房室具完整室壁,相邻房室室壁大部分不紧贴,两层室壁之间有较大间隙。壳壁钙质无孔型,壳口无齿。(现代)

新属与 *Sigmoilina* 主要区别在于相邻房室室壁之间具较大间隙,壳口无齿。

59. 小假曲形虫(新属新种) *Pseudosigmoilina minuta*, n. gen., n. sp. (图版 VII: 2, 3; 图 6)

壳小,略呈长纺锤形,横切面呈透镜形;基部突,口端延伸并收细成颈;壳缘锐。房室不分明,甚重叠,外露 2 室。缝合线不清楚。壳面光滑,房室背缘两侧各具一、二条纵隆肋。壳口圆形,较小,无齿,有时具瓶口唇。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F747	0.43	0.13	0.05 (觅出礁泻湖水深 6 米)
副模标本 IOAS-F748	0.43	0.13	0.05 (觅出礁泻湖水深 6 米)

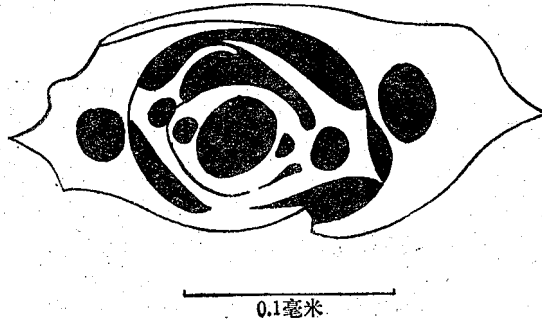


图6 小假曲形虫(新属新种) *Pseudosigmoilina minuta*, n. gen., n. sp. 横切面

双块虫属 *Pyrgo* Defrance, 1824

60. 扁椭双块虫(新种) *Pyrgo compressioblonga*, n. sp. (图版 VII:6, 7)

壳椭圆形,背腹稍压扁,壳缘圆,侧面观两侧缘近平行,口端稍削细。房室分明,膨鼓。缝合线清楚。壳面光滑。壳口宽度略小于全壳宽之半,具宽板状齿。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F750	0.80	0.53	0.35 (觅出礁泻湖水深6米)
副模标本 IOAS-F751	0.63	0.38	0.25 (西沙洲水深45—50米)

新种与 *P. elongata* (d'Orbigny) var. *quadrata* Heron-Allen and Earland, 1930 有些相似,但后者壳体较大,圆方形,壳口较宽大。新种与 *Biloculina oblonga* d'Orbigny, 1839 亦较相似,但后者壳体不是背腹压扁,房室甚膨鼓。

61. 小齿双块虫 *Pyrgo denticulata* (Brady) (图版 VII:8)

标本测量(毫米) IOAS-F752 壳长 0.85 壳宽 0.78 壳厚 0.58 (西沙洲水深45—50米)

据 Cushman (1932) 报道,本种的形态变异很大,壳体基部突齿可有可无。该标本的基部突齿甚发达,壳口甚宽,与 Cushman (1921) 记载于菲律宾的最为相似。

62. 大口双块虫(新种) *Pyrgo megastoma*, n. sp. (图版 VII:5)

壳长卵形,壳缘圆,基部宽圆,口端稍缢缩。房室分明,膨鼓。缝合线清楚,稍凹。壳面光滑。壳口甚宽,约为全壳宽 3/4 左右,具外翻唇及宽齿板。

标本测量(毫米) 正模标本 IOAS-F753 壳长 0.53 壳宽 0.30 壳厚 0.28 (西沙洲水深45—50米)

新种壳体形状较接近于 *Pyrgo elongata* (d'Orbigny), 但后者壳口窄小。

小曲形虫属(新属) *Sigmoilinella*, n. gen.

模式种: 扭小曲形虫(新种) *Sigmoilinella tortuosa*, n. sp.

新属与 *Sigmoilopsis* 不同在于壳壁钙质,无胶结外层;与 *Sigmoilina* 不同在于房室两侧室壁不展伸包掩其前成房室,致使后成部分房室外露。(现代)

63. 扭小曲形虫(新属新种) *Sigmoilinella tortuosa*, n. gen., n. sp. (图版 VII:4; 图7)

壳长,纺锤形,稍扭曲,两侧面凹陷,基部突出,窄圆,口端具细长颈。壳缘窄圆。房室

不甚分明,两面各露 3—4 室,侧面中线部位内凹,呈半透明;横切面略呈三角形,房室呈反“S”形排列。缝合线不甚清楚。壳面光滑,近壳缘处具少数纵隆肋。壳口近圆形,口缘稍厚,具短“T”形齿。

标本测量(毫米) 正模标本 IOAS-F754 壳长 0.63 壳宽 0.25 壳厚 0.25 (觅出礁)

Graham and Militante (1959) 记载于菲律宾的 ?*Spiroloculina* sp. 有可能是本新种。

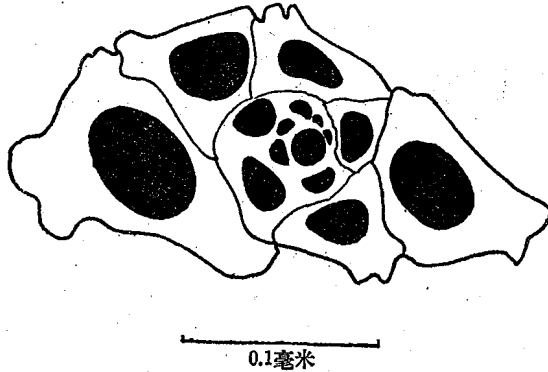


图 7 扭小曲形虫(新属新种) *Sigmoilina tortuosa*, n. gen., n. sp. 横切面

环曲形虫属 *Spirosigmoilina* Parr, 1942

早期房室呈曲形虫式排列,后期房室平旋,呈抱环虫式排列。壳壁钙质无孔型。壳口位于终室末端,具口齿。(中新世至现代)

64. 丽环曲形虫(新种) *Spirosigmoilina pulchra*, n. sp. (图版 VIII:1; 图 8)

Spiroloculina crenata Brady, 1884, (not Karrer, 1868), p. 156, pl. 10, figs. 24—26.——Heron-Allen and Earland, 1915, p. 557, pl. 41, figs. 6—8.

Massilina crenata (Karrer). Cushman, 1917a, p. 57, pl. 20, figs. 2a, b; 1921, p. 445; 1924, p. 66, pl. 25, fig. 4; 1929, p. 38, pl. 7, fig. 5; 1932, p. 33, pl. 8, figs. 5a—b.——Graham and Militante, 1959, p. 36, pl. 3, figs. 12a, b.

Hauerina speciosa (Karrer). Brooks, 1973, p. 412, pl. 9, figs. 11—12.

壳宽椭圆形至近圆形,壳缘宽圆,初成部分双凸,后成部分扁薄。房室分明,早期呈曲形虫式排列;随后房室平旋,呈抱环虫式排列。缝合线清楚,稍凹。室面具横波状起伏。壳口长椭圆形,位于终室末端,具简单长齿。

标本测量(毫米) 正模标本 IOAS-F756 壳长 0.70 壳宽 0.55 壳厚 0.10 (珊瑚岛)

本种曾被许多作者归隶于首次记载于罗马尼亚中新世的 *Spiroloculina crenata* Karrer [后来改为 *Massilina crenata* (Karrer).]

Cushman (1946) 检查了保存于维也纳博物馆的模式标本后指出,虽然 Karrer 的原始图形所示壳口敞开并具单一口齿,但是,模式标本的壳口却是筛状的,应属于 *Hauerina* 属。

新种早期房室呈曲形虫式排列而不是五块虫式排列,壳口具齿而不是筛状,显然不是个 *Hauerina*。

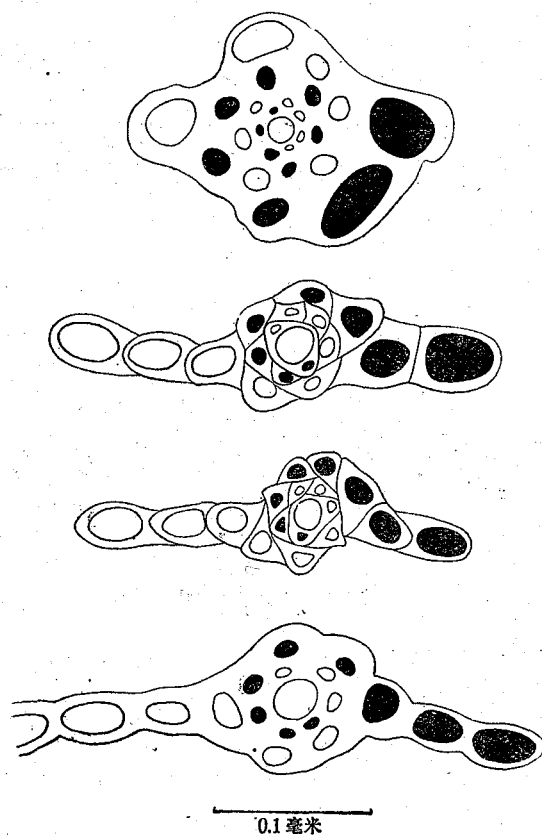


图8 丽环曲形虫(新种) *Spirosigmoilina pulchra*, n. sp. 横切面

分布 主要分布于热带珊瑚礁环境。夏威夷群岛、菲律宾、萨摩亚群岛、阿德米勒尔提群岛、斯里兰卡、基林巴群岛、加勒比海。

三块虫属 *Triloculina* d'Orbigny, 1826

65. 光滑三块虫 *Triloculina laevigata* d'Orbigny (图版 VII:11)

Triloculina laevigata d'Orbigny, 1826, p. 134, pl. 4, figs. 1a—c. — Asano, 1951, p. 15, text fig. 103—105. — Matsunaga, 1963, pl. 29, fig. 8. — Matoba, 1970, p. 61, pl. 2, fig. 21a, b.

壳较扁,卵形,口端斜截,基部圆,壳缘圆。房室分明,膨鼓。缝合线清楚,稍凹。壳面光滑。壳口大而圆,具长分叉齿。

标本测量(毫米) IOAS-F761 壳长 0.55 壳宽 0.38 壳厚 0.23 (中建岛)

本种壳体较扁及壳口特征与 *T. olomucensis* Toula, 1893 较为相似,但后者壳面具不规则横波纹及浅沟状纵纹。

分布 地中海、日本;日本上新统。

66. 平行三块虫(新种) *Triloculina parallela*, n. sp. (图版 VII:9, 10; 图9)

壳略呈圆长方形,较扁,壳缘圆,侧面观两侧缘近平行。房室膨鼓,较直,基部最宽而

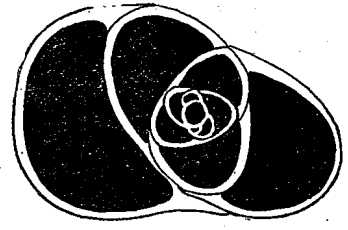
较弯, 渐向口端收窄。缝合线清楚, 稍凹。壳面光滑, 具微弱横纹。口端截平, 壳口高拱形; 齿宽短, 稍分叉, 常突出于口缘。

标本测量(毫米) 壳长 壳宽 壳厚

正模标本 IOAS-F762 0.70 0.43 0.25 (珊瑚岛水深 4 米)

副模标本 IOAS-F763 0.68 0.38 0.25 (珊瑚岛水深 4 米)

新种的房室形状与 *T. lutea* d'Orbigny 的较为相似, 但后者侧面观两侧缘不平行, 壳口低而宽, 无齿。新种与 J. and Y. LeCalvez 的 *T. oblonga* (1958, p. 192, pl. 6, figs. 60, 61) 较为相近, 但据 Montagu 的原始图形及描述, 后者具短颈。



0.1毫米

图9 平行三块虫(新种) *Triloculina parallela*, n. sp. 横切面

小粟虫亚科 Miliolinellinae Vella, 1957

小粟虫属 *Miliolinella* Wiesner, 1931

67. 澳大利亚小粟虫 *Miliolinella australis* (Parr) (图版 VIII: 2, 3)

Miliolinella australis (Parr). Ponder, 1974, pp. 127—133, pl. 1, figs. 1—5; pl. 2, figs. 1—5; pl. 3, figs. 1—12.

壳卵形至近圆形, 壳缘圆。早期房室呈五块虫式排列, 幼体一般外露 5—6 室, 壳体较厚的成体外露 3—5 室, 壳体较扁的成体一般外露 4—8 室。缝合线清楚, 凹下。壳面光滑。壳口位于终室末端, 被半月形或新月形口板遮掩, 仅显一新月形开口, 口唇稍外翻。

标本测量(毫米) 壳长 壳宽 壳厚

IOAS-F765 0.60 0.50 0.33 (西沙洲水深 45—50 米)

IOAS-F766 0.48 0.48 0.25 (西沙洲水深 45—50 米)

分布 太平洋、印度洋、地中海、大西洋。

68. 大洋小粟虫 *Miliolinella oceanica* (Cushman) (图版 VIII: 4)

标本测量(毫米) IOAS-F767 壳长 0.63 壳宽 0.45 壳厚 0.30 (珊瑚岛)

Ponder 1974 年对在澳大利亚水域出现的几种小粟虫作了较系统的修正。他发现 *Triloculina oceanica* Cushman 的形态变异很大(如壳面自光滑至具隆肋的类型都有), 并认为应属于 *Miliolinella* 属。另外, Ponder 在北昆士兰的样品中, 发现 Parr 1945 年所建立的新种 *Quinqueloculina baragwanathi* 与 *Miliolinella oceanica* 之间也存在着一系列的过渡类型, 为此, 他把前者也列为后者的同物异名。

在西沙的样品中, 我们也逐渐发现 *M. oceanica* 的各种形态变异。本文所示 *M. oceanica* 的壳体较长, 与 *Q. baragwanathi* Parr 最为相近。

小双室虫属 *Biloculinella* Wiesner, 1931

壳球形至卵形, 初室由半圈长房室围绕。微球型初成房室呈五块虫式排列, 后成房室呈三块虫式排列, 最后露现 2 室; 显球型可始终为双块虫式。壳壁钙质无孔型。壳口位于

终室末端,几被宽口板遮掩。(始新世至现代)

69. 球小双室虫 *Biloculinella globula* (Bornemann) (图版 VIII:5)

Biloculina globulus Bornemann, 1855, p. 349, pl. 19, fig. 3. — Schlumberger, 1891, p. 188, pl. 12, figs. 97—100; figs. 42—44 (in text). — Chapman, 1907, p. 15, pl. 1, figs. 17, 18.

Pyrgo globulus (Bornemann). Cushman, 1932, p. 65, pl. 15, figs. 6—8.

Biloculinella globula (Bornemann). J. and Y. Le Calvez, 1958, p. 201, pl. 7, fig. 76. — Boltovskoy, 1959, p. 57, pl. 6, fig. 11.

壳近球形。房室分明,甚膨鼓。缝合线清楚,稍凹。壳面光滑。壳口几被新月形口板遮掩,仅显一缝状开口。

标本测量(毫米) IOAS-F768 壳长 0.33 壳宽 0.30 壳厚 0.28 (华光礁)

本种与 *B. labiata* Wiesner var. *subsphaerica* 有些相似,但后者壳口及口板甚宽。

分布 热带太平洋诸岛、地中海、巴西。

扁玦虫属 *Hauerina* d'Orbigny, 1839

70. 东方扁玦虫 *Hauerina orientalis* Cushman (图版 VIII:6)

Hauerina ornatissima (Karrer). Brady, 1884 (part), p. 192, pl. 7, figs. 18—20 (not 15—17, 21, 22). — Cushman, 1921, p. 452; 1924, p. 67, pl. 24, figs. 7—9; 1932, p. 43, pl. 10, figs. 16—17. — Graham and Militante, 1959, p. 35, pl. 3, fig. 9.

H. orientalis Cushman, 1946, p. 12, pl. 2, figs. 22—24.

壳甚扁,呈不规则圆形,壳缘不甚锐。房室分明,早期呈五块虫式排列,缘角突出;后期平旋,甚扁,一般由 3 室组成一圈。缝合线清楚,稍凹。壳壁薄,室面具许多横波状凸肋及横贯凸肋的纵细条纹。壳口筛状。

标本测量(毫米) IOAS-F769 壳径 0.98 壳厚 0.13 (珊瑚岛)

本种被许多作者定为首次记载于欧洲中新统的 *H. ornatissima* (Karrer), 但据 Cushman (1946) 报道,后者壳缘锐,壳体较厚,壳面条纹较粗,壳口筛状结构较粗。本种与 *H. involuta* 有些相似,但后者壳体较厚,包旋。

分布 斐济群岛、萨摩亚群岛、马绍尔群岛、菲律宾、印度洋。

曲扁玦虫属(新属) *Sigmoihauerina*, n. gen.

模式种 *Hauerina bradyi* (Cushman)

早期房室呈曲形虫式排列,后期平旋,终圈一般由 2—3 个房室组成。壳壁钙质无孔型。壳口筛状。(现代)

新属与 *Hauerina* 不同在于,早期房室为曲形虫式排列而不是五块虫式排列。

71. 弱纹曲扁玦虫 *Sigmoihauerina bradyi* (Cushman) (图版 VIII:8; 图 10)

Hauerina compressa Brady (not d'Orbigny) 1844, p. 190, pl. 11, figs. 12, 13. — Millett, 1898, p. 610, pl. 13, fig. 11.

H. bradyi Cushman, 1917, p. 62, (not pl. 23, fig. 2); 1933, pl. 14, fig. 5; 1946, p. 11, pl. 2, figs. 14, 20. — Cushman, Todd and Post, 1954, p. 336, pl. 84, fig. 32. — Bermudez and Seiglie, 1963, p. 89, pl. 12, fig. 2. — Hofker, 1964, p. 61, figs. 166—167.

壳近圆形,壳缘圆至稍锐,初成部分较凸,后成部分扁薄。房室分明,早期的凸,呈曲形虫式排列;随后房室平旋,2 室组成一圈,终圈一般由 2 个多或 3 个房室组成。缝合线

清楚,稍凹。壳壁薄,壳面具微弱细条纹,壳口筛状。

标本测量(毫米) IOAS-F770 壳径 0.90 壳厚 0.10 (珊瑚岛)

Hofker (1964, p. 61) 曾注意到本种及其后一种的早期房室为曲形虫式排列,并指出其初室具壁孔。

分布 澳大利亚、新几内亚、马绍尔群岛、委内瑞拉、美国(加利福尼亚)、加勒比海。

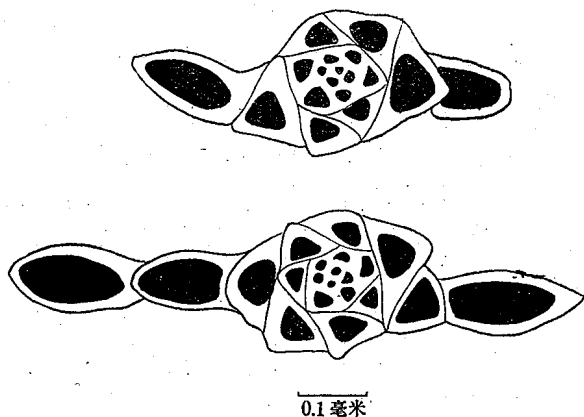


图 10 弱纹曲扁蛸 *Sigmoidia bradyi* (Cushman) 横切面

72. 脆曲扁蛸 *Sigmoidia fragillissima* (Brady) (图版 VIII:7; 图 11)

Spiroloculina fragillissima Brady, 1884, p. 149, pl. 9, figs. 12—14.

Hauerina fragillissima (Brady). Millett, 1898, p. 610, pl. 13, figs. 8—10. — Cushman, 1924, p. 68, pl. 25, figs. 2, 3; 1932, p. 42, pl. 10, fig. 9; 1946, p. 9, pl. 2, figs. 1—6, 8. — Hofker, 1952, p. 119, fig. 63. — Graham and Miltante 1959, p. 35, pl. 3, fig. 9.

壳近圆形,壳缘窄圆,初成部分较凸,后成部分甚扁薄。房室分明,早期的呈曲形虫式排列;随后房室平旋,2室组成一圈。缝合线清楚,稍凹。壳壁甚薄,半透明,沿缝合线处呈现白色。壳口筛状。

标本测量(毫米) IOAS-F773 壳径 0.88 壳厚 0.06 (琛航岛与广金岛之间水深 30 米)

分布 广泛分布于印度-太平洋区。

小管虫亚科 Tubinellinae Rhumbler, 1906

小管虫属 *Tubinella* Rhumbler, 1906

壳初成部分由卵形初室及紧贴初室的第二室组成,随后房室筒形,单列。室间隔壁退化,仅显一圈加厚的内壁。壳口位于终室末端。(现代)

73. 索小管虫 *Tubinella funalis* (Brady) (图版 IX:1, 2)

Articulina funalis Brady, 1884, p. 185, pl. 13, figs. 6—11. — Chapman, 1907, p. 22, pl. 2, fig. 44.

Tubinella funalis (Brady) Rhumbler, 1906, p. 26, pl. 2, fig. 3. — Cushman, 1924, p. 54, pl. 19, figs. 7, 8; 1929, p. 54, pl. 12, fig. 8. — Bermudez and Seiglie, 1963, p. 187, pl. 14, fig. 6.

壳细长,直或弯。初室卵形,较膨鼓;单列房室筒形,长大于宽,依次缓慢增宽。缝合

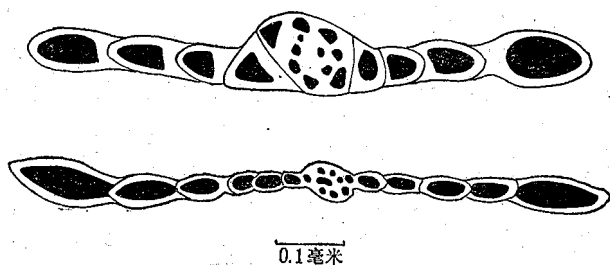


图 11 脆曲扁蛭虫 *Sigmoihauserina fragillissima* (Brady) 横切面

线不甚清楚。壳壁较薄,有时呈半透明,壳面具纵细肋纹。壳口位于终室末端。

标本测量(毫米) IOAS-F776 壳长 0.40 壳径 0.05 (晋卿岛)

我们仅掌握一个完整的标本,初成部分只有一个卵形初室,未见有第二室。

分布 萨摩亚群岛、马绍尔群岛、马来群岛、克尔格伦岛、基林巴群岛、爱德华岛。

关节虫属 *Articulina* d'Orbigny, 1826

74. 短关节虫(新种) *Articulina curta*, n. sp. (图版 IX:8)

壳较小而扁,初成部分呈三块虫式,卵形,壳缘亚锐;随后的单列部分仅有一个房室,宽稍大于长。缝合线清楚,稍凹。壳面光滑。壳口长椭圆形,口缘稍厚。

标本测量(毫米) 模式标本 IOAS-F777 壳长 0.45 壳宽 0.25 壳厚 0.10 (赵述岛水深 3 米)

新种与 *A. parallela*, n. sp. 有些相似,但初成部分较宽短,单列房室宽大于长,壳缘亚锐。

75. 线纹关节虫 *Articulina lineata* Brady (图版 IX:6)

Articulina lineata Brady, 1884, p. 183, pl. 12, figs. 19—21. — Cushman, 1921, p. 73, pl. 18, fig. 6; 1944a, p. 12, pl. 3, figs. 1—6.

壳长,侧扁,壳缘圆。房室分明,早期呈三块虫式排列,后期几个房室单列,依次渐增大,长稍大于宽。缝合线清楚,缢缩。壳面具纵细隆肋,最后 2 室末端的纹饰逐渐减弱。壳口长椭圆形,口唇厚而外翻,两端稍向后弯。

标本测量(毫米) IOAS-F778 壳长 0.85 壳宽 0.25 壳厚 0.15 (西沙洲水深 45—50 米)

分布 加勒比海、墨西哥湾、牙买加、斐济群岛、托雷斯海峡。

76. 尖刺关节虫 *Articulina mucronata* (d'Orbigny) (图版 IX:5)

Vertebralina mucronata d'Orbigny, 1839, p. 52, pl. 7, figs. 16—19.

V. cassis d'Orbigny, var. *mucronata* Cushman, 1922a, p. 63; 1929, p. 96, pl. 22, fig. 5.

Articulina sagra Flint (not d'Orbigny), 1897, p. 301, pl. 47, fig. 1. — Cushman, 1917a, p. 59, pl. 22, fig. 8 (not 7).

A. mucronata (d'Orbigny). Cushman, 1944a, p. 12, pl. 2, figs. 11—18. — Hofker, 1964, p. 33, figs. 49—57.

壳长,侧扁,早期房室呈三块虫式排列;后期单列,1—4 室,依次迅速增宽,最后一、二个房室宽大于高。缝合线清楚,凹下。壳面具显著纵隆肋。壳口窄长,口唇薄而明显外翻,两端向后延伸成尖刺状。

标本测量(毫米) IOAS-F779 壳长 1.50 壳宽 0.88 壳厚 0.30 (珊瑚岛)

分布 古巴、墨西哥湾、加勒比海、汤加群岛。

77. 平行关节虫(新种) *Articulina parallela*, n. sp. (图版 IX:4)

壳较小而扁,壳缘圆。初成部分呈三块虫式,长椭圆形;随后仅有一个单列房室,两侧缘近平行,横切面椭圆形,末端圆突,长约为宽的2倍。缝合线清楚,稍凹。壳面光滑。壳口长椭圆形,口唇稍厚。

标本测量(毫米) 正模标本 IOAS-F780 壳长0.43 壳宽0.14 壳厚0.08 (珊瑚岛)

新种与 *A. crespinae* Cushman, 1944 较为相似,但后者壳体较大,初成部分壳缘呈窄龙骨状,单列房室末端具微弱纵条纹。

78. 昆士兰关节虫 *Articulina queenslandica* Collins (图版 IX:3)

Articulina queenslandica Collins, 1958, p. 306, pl. 3, figs. 8—10.

壳小而长。房室分明,初成部分呈抱环虫式排列,较扁;随后由2—4个单列圆筒形房室组成,筒形房室长约为宽的3倍左右,基部较粗,略向口端收细。缝合线清楚。壳壁薄,壳面具微细纵肋纹。壳口椭圆形至圆形,口唇较厚而外翻。

标本测量(毫米) IOAS-F781 壳长0.48 壳厚0.06 (琛航岛与广金岛之间水深30米)

分布 澳大利亚。

79. 张口关节虫(新种) *Articulina ricta*, n. sp. (图版 IX:7)

壳较小,初成部分呈五块虫式,壳缘圆,最后房室的基部具明显纵肋条;后成部分由三个单列房室组成,宽度逐渐增大,前两个较扁,宽大于长,终室长略大于宽,稍膨鼓。缝合线清楚,稍凹,壳面具微弱纵肋纹。壳口张大,偏向壳体一面,口唇厚而稍外翻。

标本测量(毫米) 正模标本 IOAS-F782 壳长0.50 壳宽0.18 壳厚0.14 (金银岛)

新种壳口张大并稍偏向壳体一面,易与同属其他种相区分。

小丘虫科 Soritidae Ehrenberg, 1839**马刀虫亚科 Peneroplinae Schultze, 1854****旋卷虫属 *Spirolina* Lamarck, 1804****80. 尖旋卷虫 *Spirolina acicularis* (Batsch) (图版 IX:9, 10)**

Peneroplis cylindraceus Brady (not Lamarck), 1884, p. 205, pl. 13, figs. 20—21.

Spirolina acicularis (Batsch). Cushman, 1930, p. 42, pl. 15, figs. 1—3; 1933b, p. 63, pl. 19, figs. 6—7. — Cushman, Todd and Post, 1954, p. 348, pl. 87, fig. 6. — Graham and Militante, 1959, p. 64, pl. 10, figs. 7—8. — Bermudez and Seiglie, 1963, p. 160, pl. 15, figs. 7, 8.

壳细长,初成部分平卷包旋,较扁;后成部分房室单列直伸,稍膨鼓,横切面一般为圆形,宽度约相等,一般略大于长度,长度依次稍增大。缝合线清楚,初成部分的呈镶边状,近辐射,后成部分的较缢缩。壳壁薄,壳面具纵肋纹,肋纹两侧有成行小坑点。壳口位于终室末端,近圆形,周缘有时呈不规则齿突状。

标本测量(毫米)	壳长	壳径
IOAS-F783	0.65	0.20 (中建岛)
IOAS-F784	0.38	0.06 (晋卿岛)

分布 斐济群岛、汤加群岛、土阿莫土群岛、马绍尔群岛、菲律宾、红海、地中海、大西洋。

蜂巢虫科 Alveolinidae Ehrenberg, 1839

小蜂巢虫属 *Alveolinella* Douville, 1906

壳纺锤形,隔板排列连续,具多层小室。房室底具隔板前通道,终圈可有小的次隔板前通道。壳口数行,最上面一行具顶管道。(中新世至现代)

81. 现存小蜂巢虫 *Alveolinella quoyi* (d'Orbigny) (图版 IX:11; XXVII:1—3, 5; 图 12)

Alveolina quoyi d'Orbigny, 1826, p. 307, pl. 17, figs. 11—13.

A. boscii (DeFrance). Brady, 1884, p. 222, pl. 17, figs. 7—12. Cushman, 1917a, p. 98, pl. 39, fig. 3; 1921, p. 487, pl. 90, figs. 2—5.

Alveolinella quoyi (d'Orbigny). Hofker, 1930, p. 166, pl. 41, figs. 6—8, pl. 63. — Cushman, 1933b, p. 68, pl. 19, fig. 10. — Hofker, 1952, p. 115, figs. 61—62. Hanzawa, 1957, p. 57, pl. 23, fig. 2. — Graham and Militante, 1959, p. 65, pl. 10, fig. 12.

壳大,长纺锤形。房室甚长,伸达全壳两端,绕纵轴旋卷。缝合线清楚,稍凹。壳面具横条纹。口面截平,两端展宽。壳口为许多周缘微凸的小圆孔,在口面中部一般排列成行,在口面两端排列不规则。

标本测量(毫米) IOAS-F785 壳长 2.46 壳径 0.88 (西沙洲水深 45—50 米)

我们做了本种的横切面、纵切面以及胶蜡塑模。所观察的标本都是显球型。

从显球型标本的横切面(图 12:3, 6)可以看出:初室近圆形,颈室近一圈长。初室直径约 80 微米左右,室壁薄,具微细壁孔;颈室室壁厚度约为初室室壁厚度 2—3 倍,局部有少数微细壁孔。从标本的纵切面可见:初室略呈肾形,颈室略呈半圆形或椭圆形(图 12:7, 8)。每个房室有基壁(base wall)及顶壁(roof wall),前圈房室顶壁与后圈房室基壁相贴合(图 12:1)。房室之间的隔板不伸至基壁(图 12:5, 6)。每个房室由次隔板分为许多小室,小室相互对齐而不是交错排列(图 12:1, 4)。初成房室的小室不分层,随后房室的小室由层壁(floor)分隔为几层层室(storey),愈后成房室的小室分层愈多。我们所观察的几个标本远较 Hofker (1930) 所记载的为小,最后几圈房室的小室一般分为 3 层层室。小室的顶部一般有两条(亦有一条或三条的)顶管道(roof canal, attics)(图 12:1—5),顶管道与层室相互沟通(图 12:3)。层室亦与在房室基壁上的隔板前通道(preseptal canal)相沟通。

据 Hofker (1930),一些极度发育的标本,在隔板前通道之上、顶管道之下,尚有第二条隔板前通道。西沙群岛的标本最后一、二圈房室也有第二隔板前通道,其直径较第一隔板前通道为小(图 12:5)。

分布 马来群岛、澳大利亚、斐济群岛、夏威夷群岛、菲律宾、红海、基林巴群岛。

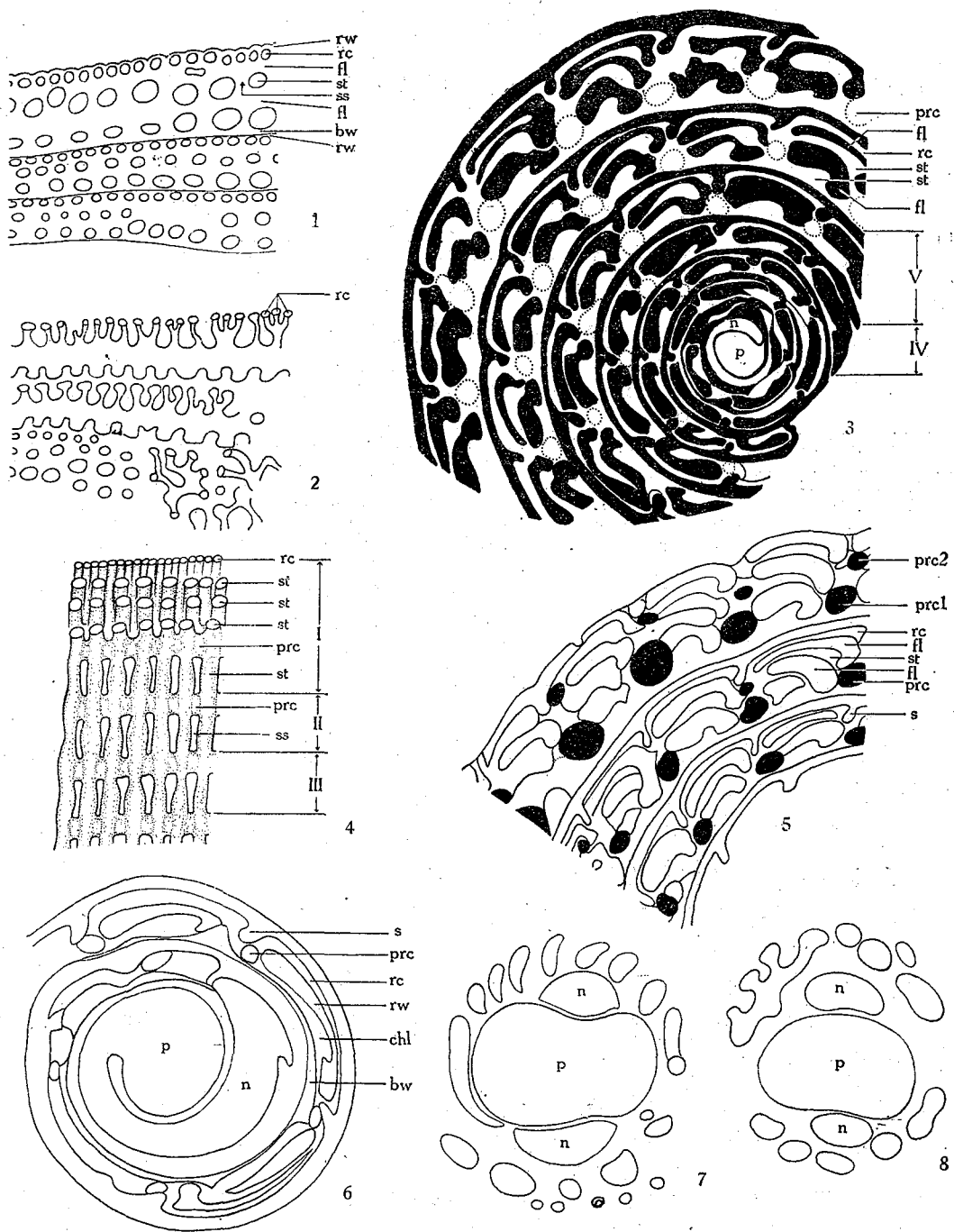


图 12 现存小蜂巢虫 *Alveolinella quoyi* (d'Orbigny)

1. 局部纵切面, 示: 顶壁 (rw)、顶管道 (rc)、层壁 (fl)、层室 (st)、小室之间的次隔板 (ss) 和基壁 (bw)。($\times 90$)
2. 局部纵切面树脂塑模, 示顶管道 (rc)。($\times 90$)
3. 局部横切面树脂塑模, 示: 隔板前通道 (prc)、层壁 (fl)、顶管道 (rc)、层室 (st) (两个层室之间的黑区系层壁被酸溶蚀后所留下的空位)、初室 (p) 及其颈室 (n), 房室的小室在第四圈 (IV) 为单层, 房室的小室在第五圈 (V) 开始分层。($\times 90$)
4. 三个房室 (I—III) 局部胶蜡塑模, 示: 顶管道 (rc)、层室 (st)、隔板前通道 (prc)、小室之间的次隔板被酸溶蚀后所留下的空位 (ss), 相继房室的小室相互对齐而不是交错排列。($\times 65$)
5. 后成壳圈局部横切面, 示: 第二隔板前通道 (prc 2)、第一隔板前通道 (prc 1)、顶管道 (rc)、层室 (st)、层壁 (fl) 和隔板 (s)。($\times 90$)
6. 壳体初成部分横切面, 示: 隔板 (s)、隔板前通道 (prc)、顶管道 (rc)、顶壁 (rw)、小室 (chl)、基壁 (bw)、初室 (p) 及其颈室 (n)。($\times 200$)
- 7, 8. 壳体初成部分纵切面树脂塑模, 示初室 (p) 及其颈室 (n)。($\times 200$)

车轮虫亚目 Rotaliina Delage and Herouard, 1896

节房虫总科 Nodosariacea Ehrenberg, 1838

节房虫科 Nodosariidae Ehrenberg, 1838

节房虫亚科 Nodosariinae Ehrenberg, 1838

两棒虫属 *Amphicoryna* Schlumberger, 1881

壳长。微球型,早期房室扁,排列弯斜,缝合线斜;后期房室直列,缝合线横直并显著缢缩。显球型:房室始终直列,缝合线横直;早期房室连接紧凑,后期房室以颈部相接。壳壁钙质有孔型,壳面光滑或具纹饰。壳口辐射状,位于颈端。(中新世至现代)

82. 少室两棒虫 *Amphicoryna pauciloculata* (Cushman) (图版 IX:14)

Nodosaria pauciloculata Cushman, 1917b, p. 655; 1921, p. 205, pl. 36, figs. 10—12. — Cushman and McCulloch, 1950, p. 324, pl. 42, figs. 1—3. — Cushman, Todd and Post, 1954, p. 343, pl. 86, fig. 14.

Lagenonodosaria pauciloculata (Cushman). Asano, 1951b, p. 20, fig. 92; 1956, p. 24, pl. 5, figs. 9, 10; pl. 6, figs. 1—4.

壳长,房室近球形,初成的2—3室排列紧凑,随后的房室以长颈相接,排列松弛。缝合线凹下。壳面具少数较粗而连续的纵隆脊。

标本测量(毫米) IOAS-F793 壳长0.48 壳径0.23 (珊瑚岛)

仅获一尚未形成松弛房室的标本。

分布 菲律宾、加拉帕戈斯群岛、日本。

虾虫属 *Astacolus* de Montfort, 1808

壳扁,长而弯。房室多,低而宽,纵轴稍弯。缝合线斜、弯、直或反曲。壳口辐射状,位于房室末端缘角。(二叠纪至现代)

83. 拖鞋虾虫 *Astacolus crepidula* (Fichtel and Moll) (图版 XIV:8)

Cristellaria crepidula (Fichtel and Moll). Parker, Brady and Jones, 1888, p. 224, pl. 44, figs. 8, 9. — Cushman, 1913, p. 10, pl. 29, figs. 2—5.

Lenticulina crepidula (Fichtel and Moll). Hofker, 1960, p. 248, fig. 82.

Astacolus crepidulus (Fichtel and Moll). Boltovskoy, 1959, p. 62, pl. 7, fig. 12.

壳扁,长卵形,壳缘圆。房室分明,膨鼓,迅速增高。缝合线清楚、弯曲、稍凹。壳壁薄而透明。壳口辐射状。

标本测量(毫米) IOAS-F794 壳长0.45 壳宽0.23 壳厚0.15 (西沙洲水深45—50米)

本种分类较紊乱,曾被不同作者分别归纳于5、6个不同属。西沙的标本与 Brady, Parker and Jones (1888) 及 Boltovskoy (1959) 记载于巴西的最为相似。

本种的分布记录很广,但从各作者所提供的图形看,很可能包括了几个不同的种,故其确切分布情况尚难确定。

分布 巴西、加拉帕戈斯群岛、夏威夷群岛、日本、那不勒斯湾。

拟肠虫属(新属) *Botuloides*, n. gen.

模式种 少室拟肠虫(新种) *Botuloides pauciloculus*, n. sp.

壳长而稍弯。房室稍扁,单列。缝合线横直。壳壁薄而透明,壁孔细,壳面光滑。壳口位于房室末端,圆形,不呈辐射状,具短颈。

新属与 *Nodosaria* Lamarck, 1812 不同在于,房室稍扁而不是圆筒状,壳口圆而不是辐射状。新属与 *Dentalinoides* Marie, 1941 有些相似,但后者房室圆筒形,壳口偏向壳体一面。

84. 少室拟肠虫(新属新种) *Botuloides pauciloculus*, n. gen., n. sp. (图版 IX: 15, 16)

壳小,长而稍弯,由 2 个稍扁的腊肠形房室组成。初室较第二室为长,长约为宽的 $2\frac{1}{2}$ 倍,基端削尖成短刺。第二室稍重叠于初室。缝合线横直,稍缢缩。壳壁薄、甚透明,壳面光滑。壳口圆,较小,在短颈末端。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F795	0.38	0.08	0.06 (觅出礁泻湖水深 6 米)
副模标本 IOAS-F796	0.35	0.08	0.06 (东岛)

Sidebottom (1907) 记载于希腊提诺斯岛的 *Nodosaria calomorpha* Reuss 很可能是本种(尤其是图 7—8)。他曾特别指出图 7 的标本是扁的,图 8 的稍扁。

Nodosaria calomorpha, 据其作者的描述,是具有内管的;而 Sidebottom 的标本则无内管。

齿虫属 *Dentalina* Risso, 1826

壳长而稍弯,房室单列。缝合线一般较斜。壳口辐射状,位于壳体末端中央或稍偏于一侧。(二叠纪至现代)

85. 线形齿虫 *Dentalina filiformis* (d'Orbigny) (图版 IX:12)

Nodosaria filiformis d'Orbigny, 1826, p. 253. — Brady, 1884, p. 500, pl. 63, figs. 3—5. — Flint, 1897, p. 310, pl. 55, fig. 6. — Cushman, 1913, p. 55, pl. 27, figs. 1—4; 1921, p. 194, pl. 34, fig. 9; 1923, p. 76, pl. 12, figs. 1, 2.

Dentalina filiformis (d'Orbigny). Cushman and McCulloch, 1950, p. 314, pl. 40, fig. 17. — Said, 1950, p. 7, pl. 1, fig. 19. — Asano, 1956, p. 18, pl. 14, fig. 30.

壳细长,稍弯,横切面近圆形。初成房室宽稍大于长;后成房室长度迅速增大,长大于宽,稍重叠。缝合线稍斜,凹下。壳壁薄而透明。壳口辐射状。

标本测量(毫米) IOAS-F791 壳长 0.68 壳宽 0.10 壳厚 0.10 (西沙洲水深 45—50 米)

本种的分布记录很广,但由于其分类较紊乱,故其确切分布情况尚难确定。

分布 太平洋和大西洋均有记载。

86. 强壮齿虫 *Dentalina roemeri* Neugeboren (图版 IX:13)

Dentalina roemeri Neugeboren, 1856, p. 82, pl. 2, figs. 13—17.

Nodosaria roemeri (Neugeboren). Cushman, 1913, p. 55, pl. 24, fig. 5(not 4, 6).

Dentalina cf. *communis* d'Orbigny. Cushman and McCulloch, 1950, p. 314, pl. 41, figs. 1—4.

壳长而弯曲,稍扁,横切面呈卵形。初室长大于宽,随后房室宽大于长,稍重叠。缝合线斜,稍凹。壳壁薄而透明。壳口辐射状,稍突。

标本测量(毫米) IOAS-F792 壳长 0.63 壳宽 0.14 壳厚 0.10 (西沙洲水深 45—50 米)

本种的房室形状和缝合线特征与 *D. communis* d'Orbigny 较为相似,但后者壳体不扁,基部削尖成刺状。西沙的标本与 Cushman and McCulloch (1950) 记载于太平洋的 *D. cf. communis* 最为相似。

分布 太平洋、大西洋;德国第三系,澳大利亚第三系,罗马尼亚中新统。

瓶虫属 *Lagena* Walker and Jacob, 1798

壳由单一房室组成,末端延伸成颈。壳面有或无纹饰。壳口不辐射,有时具瓶口唇。(侏罗纪至现代)

87. 短肋瓶虫 *Lagena doveyensis* Haynes (图版 X:2)

Lagena vulgaris var. *perlucida* (Montagu). Williamson, 1858, p. 5, pl. 1, fig. 7 (not fig. 8).

L. perlucida (Montagu). Cushman and McCulloch, 1950, p. 342, pl. 46, figs. 1, 2.

L. doveyensis Haynes, 1973, p. 82, pl. 12, figs. 7, 8.

L. oceanica Albani, 1974, p. 37, pl. 1, figs. 7, 10, 11.

壳卵形至长卵形,下半段最宽,基部具较短辐射条肋,基端圆至钝,末端延伸成长颈。壳口圆形,有时具瓶口唇。

标本测量(毫米) IOAS-F797 壳长 0.28 壳径 0.11 (西沙洲水深 45—50 米)

分布 英国、阿拉斯加、新西兰;挪威第四系。

88. 三肋瓶虫 *Lagena striatopunctata* Parker and Jones var. *tricosta* Cushman and Gray (图版 X:5)

Lagena striatopunctata Parker and Jones, var. *tricosta* Cushman and Gray, 1946, pl. 4, fig. 5. — Cushman and McCulloch, 1950, p. 354, pl. 47, figs. 19, 20.

壳宽卵形,末端具长颈。壳壁薄,壳面具三条间距相等的带管的隆肋。

标本测量(毫米) IOAS-F798 壳长 0.25 壳径 0.11 (琛航岛与广金岛之间水深 30 米)

分布 加利福尼亚湾、墨西哥、哥伦比亚;美国加利福尼亚更新统。

透镜虫属 *Lenticulina* Lamarck, 1804

壳透镜形,平卷,一般为包旋,极少数为露旋,壳缘锐或具龙骨。房室一般宽大于高。缝合线辐射状,斜直或弯,凹至凸。壳壁钙质有孔型,壳面可具各种纹饰。壳口辐射状,位于口面顶端。(三叠纪至现代)

89. 距透镜虫 *Lenticulina calcar* (Linnaeus) (图版 X:7)

Cristellaria calcar (Linnaeus). Brady, 1884, p. 551, pl. 70, figs. 9—12 (not 13—15).

壳近圆形,壳缘观厚透镜形,壳缘具透明窄龙骨。房室少,终圈 5 室,逐渐增大。缝合线似与脐盾相切,弯曲,呈透明镶边状。壳壁半透明,壳面光滑。口面低,两侧缘甚凸,中间凹陷。壳口辐射状,腹缝长而明显。

标本测量(毫米) IOAS-F799 壳径 0.30 壳厚 0.18 (东岛)

西沙的标本与 Brady (1884) 记载于菲律宾的 (Pl. 70, figs. 9, 10) 最为相似,但壳缘无刺。

分布 本种的分布记录很广,但由于分类较紊乱,尚难确定其确切的分布范围。

90. 镶边透镜虫(相似种) *Lenticulina* cf. *L. limbosa* (Reuss) (图版 X:8)

Robulina limbosa Reuss, 1863, p. 55, pl. 6, fig. 69.

R. limbosus Cushman, 1933b, p. 3, pl. 1, figs. 4—6, pl. 2, figs. 5a, b. — Cushman and McCulloch, 1950, p. 297, pl. 38, fig. 8; pl. 39, figs. 1—4. — Cushman, Todd and Post, 1954, p. 343, pl. 86, fig. 1.

壳近圆形,完全包旋,壳缘具透明钝龙骨,壳缘观透镜形。房室不膨鼓,终圈8室,逐渐增大。缝合线甚弯,呈窄凸镶边状。壳壁厚,半透明。壳口较突,辐射状,腹缝长而明显。

标本测量(毫米) IOAS-F800 壳径 1.00 壳厚 0.48 (琛航岛与广金岛之间水深 30 米)

西沙的标本与典型种不同在于缝合线稍凸。

分布 太平洋、红海、那不勒斯湾。

掌虫属 *Palmula* Lea, 1833

壳扁,长或掌形。微球型早期房室平旋排列,显球型早期房室弯曲排列;后期房室均展伸直列,房室低而宽,呈跨状。壳壁钙质有孔型。早期的缝合线近辐射,后期的弯曲或在壳体中线部位明显弯折。壳口辐射状,位于房室末端。(下侏罗纪至现代)

91. 宽叶掌虫(新种) *Palmula latifolia*, n. sp. (图版 X:6)

壳大而扁,宽叶形,壳缘圆,始端圆突,随后逐渐增宽。房室多,早期的旋卷;后期的展伸,低而宽,呈跨状。缝合线镶边状。壳面具许多长滴状凸肋。壳口突出,辐射状。

标本测量(毫米) 正模标本 IOAS-F801 壳长 1.95 壳宽 1.13 壳厚 0.35 (珊瑚岛)

新种与 *Frondicularia robusta* Brady var. *repanda* Cushman (1913, p. 83, pl. 29) 有些相似,但后者壳体较扁薄,壳面纹饰为断续纵隆肋。

拟鞘虫属 *Vaginulinopsis* Silvestri, 1904

壳早期似透镜虫属,房室闭卷;后期房室展伸,稍扁。壳口辐射状,位于房室背缘角。(三叠纪至现代)

92. 曲拟鞘虫(新种) *Vaginulinopsis sinuata*, n. sp. (图版 X:9, 10)

壳长,稍弯,长轴略呈“S”形弯曲,横切面呈椭圆形。背缘一般向内弯,腹缘外凸,略呈瓣状。房室多而分明,早期旋卷,低而宽;随后展伸直列,宽大于高;最后3室迅速增高,甚膨鼓,占全壳长一半以上。缝合线清楚,呈“S”形弯曲,后成部分的凹下。壳壁厚,半透明,壳面光滑。壳口辐射状,稍突。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F802	1.60	0.50	0.38 (西沙洲水深 45—50 米)
副模标本 IOAS-F803	2.20	0.50	0.40 (西沙洲水深 45—50 米)

Cushman and McCulloch (1950, p. 309, pl. 40, fig. 12) 的 *Marginulina bacheii* Bailey 很可能是本新种,他们所提供的图形与 Bailey 的原始图形和描述差异较大。Bailey 的图形所示缝合线斜直至横,口面观呈圆形。

新种与 *V. tasmanica* Parr, 1950 较为相似,但后者背缘较直或明显外弯,房室逐渐增大。新种与 *Polymorphinella compressa* Cushman and Hanzawa, 1936 有些相似,但后者房室甚斜,最后几室的腹缘占全腹缘长度的绝大部分。

编叶虫亚科 Plectofrondiculariinae Cushman, 1927

小箭头虫属 *Bolivinella* Cushman, 1927

壳扁,扇形,房室低而宽,始终双列。壳壁钙质有孔型。缝合线清楚。壳口筛状,位于终室口面基部,口面覆以微细辐射粒肋。(始新世至现代)

93. 精致小箭头虫 *Bolivinella elegans* Parr (图版 X:11, 12; 图 13)

Textularia folium Brady (not Parker and Jones, 1865) 1884, p. 357, pl. 42, figs. 3—5 (not 1, 2). — Cushman, 1911, p. 19, figs. 31—33; 1924, pl. 12, pl. 7, fig. 2.

Bolivinella folia Cushman (not Parker and Jones, 1865), 1928, pl. 34, fig. 8 (not pl. 33, figs. 15, 16): 1929, p. 29, pl. 5, figs. 1, 2; 1942, p. 3, pl. 2, figs. 1—4, 6. — Cushman, Todd and Post, 1954, p. 349, pl. 87, figs. 10, 11.

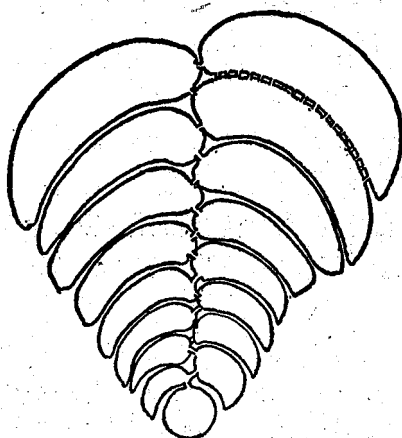
B. elegans Parr, 1932, pp. 223, 224 — Graham and Militante, 1959, p. 78, pl. 12, figs. 8—9a, b.

壳扁,略呈三角形,中线部位最厚,渐向两侧削薄,壳缘锐,有时具粗缘刺。房室多,低而宽,迅速增宽,较弯。缝合线镶边状,稍凹。壁孔细。口面稍凸,具微细辐射粒肋;壳口位于口面基部,口面具小孔。

标本测量(毫米) IOAS-F804 壳长 0.30 壳宽 0.30 壳厚 0.05 (西沙洲水深 45—50 米)

从本种的水平切面可见,房室之间的隔板具少数穿孔,似可提示房室的口面是有穿孔的。

分布 澳大利亚、巴斯海峡、斐济群岛、马绍尔群岛、夏威夷群岛、菲律宾、红海、毛里求斯、基林巴群岛。



0.1毫米

图 13 精致小箭头虫 *Bolivinella elegans* Parr 水平切面树胶塑模

多形虫科 Polymorphinidae d'Orbigny, 1839

多形虫亚科 Polymorphininae d'Orbigny, 1839

球虫属 *Globulina* d'Orbigny, 1839

壳球形至卵形,横切面圆形至椭圆形。房室呈五块虫式排列,甚重叠。缝合线清楚。壳壁钙质有孔型。壳口辐射状,位于终室末端,有时被痿管状物遮掩。(上侏罗纪至现代)

94. 长室球虫 *Globulina landesi* (G. D. Hanna and M. A. Hanna) (图版 XI:2)

Polymorphina landesi Hanna and Hanna, 1924, p. 60, pl. 13, figs. 16, 17.

Globulina landesi (Hanna and Hanna). Cushman and Ozawa, 1930, p. 71, pl. 15, figs. 9a, b. — Asano, 1951a, p. 6, fig. 31, 32.

壳扁,卵形至近圆形,壳缘圆。房室长,甚重叠,外露3室,房室不离开壳体基部。缝合线清楚,稍凹。壳壁近透明,壳面光滑。壳口辐射状,微突。

标本测量(毫米) IOAS-F810 壳长 0.53 壳宽 0.33 壳厚 0.20 (珊瑚岛)

分布 日本始新统至现代,北美始新统。

假多形虫属 *Pseudopolymorphina* Cushman and Ozawa, 1928

壳长,早期房室呈五块虫式排列,后期双列。房室高,稍重叠。缝合线凹下。壳口辐射状。(侏罗纪至现代)

95. 印度假多形虫 *Pseudopolymorphina indica* (Cushman) (图版 XI:3, 4)

Polymorphina problema d'Orbigny var. *indica* Cushman, 1921, p. 265, pl. 52, figs. 1, 2; pl. 53, fig. 1.

Pseudopolymorphina indica (Cushman) Cushman and Ozawa, 1930, p. 99, pl. 25, fig. 7. — Asano, 1951a, pt. 8, p. 7, fig. 35.

P. indica (Cushman) var. *japonica* Cushman and Ozawa, 1929, p. 71, pl. 13, fig. 6; pl. 15, fig. 6.

壳大,稍扁,房室膨鼓,最后几个房室有时趋于单列。缝合线清楚,凹下。壳壁厚,早期房室具明显纵隆肋,后期房室的隆肋仅局限于基部。壳口辐射状。

标本测量(毫米) 壳长 壳宽 壳厚

IOAS-F811 1.60 0.93 0.73 (全富岛)

IOAS-F812 1.88 0.83 0.70 (全富岛)

据 Cushman and Ozawa 报道, *P. indica* var. *japonica* (1951年 Asano 将其提升为亚种),与典型种不同在于,前者壳体较扁,后成双列部分较规则。从西沙的大量标本看来,典型种与变种之间存在着一系列连续的形态变异,因此,我们认为两者不应截然分开。

分布 加里曼丹岛 Sibuku 湾、马来西亚(达夫耳湾)、日本;日本上新统。

反称虫属 *Sigmomorphina* Cushman and Ozawa, 1928

壳长而扁,房室以小于 180° 角增添,横切面呈“S”形排列,房室逐渐远离基部。缝合线凹下。壳口辐射状。(侏罗纪至现代)

96. 基纹反称虫(新种) *Sigmomorphina basistriata*, n. sp. (图版 XI:5, 6)

壳扁,卵形或椭圆形,基端窄圆,口端稍钝,壳缘窄圆。房室长,中部最厚,向壳缘削薄,早期房室壳缘削薄成隆脊状;房室呈反“S”形排列,早期房室伸至壳体基部,后期房室逐渐远离基部。缝合线清楚,稍凹。壳壁半透明,房室下半部具微细断续纵肋纹。壳口辐射状。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F813	0.73	0.48	0.23 (珊瑚岛)
副模标本 IOAS-F814	0.73	0.35	0.20 (西沙洲水深 45—50 米)

新种表面特征与 *S. batesfordensis* Parr and Collins, 1937 最为相似,但后者壳缘圆,壳面光滑,无纹饰。

腺虫科 Glandulinidae Reuss, 1860

腺虫亚科 Glandulininae Reuss, 1860

腺虫属 *Glandulina* d'Orbigny, 1839

壳长,横切面近圆形。早期房室双列,后期单列。房室甚重叠。缝合线清楚。壳口辐射状,位于终室末端,具内管。(古新世至现代)

97. 凸粒腺虫(新种) *Glandulina granulosa*, n. sp. (图版 XI:7)

壳长,房室甚膨鼓,迅速增大。缝合线清楚,凹下。壳壁厚,半透明,壳面满布微细凸粒。壳口辐射状,具粗短内管。

标本测量(毫米) 正模标本 IOAS-F815 壳长 0.63 壳径 0.45 (金银岛)

新种的壳面满布微细凸粒,易与其他种相区分。

管舌虫属 *Entolingulina* Loeblich and Tappan, 1961

壳扁长。房室 2 个或更多,单列。壳壁钙质有孔型,透明。壳口长缝状或卵形,具内管。(现代)

98. 椭圆管舌虫 *Entolingulina inarimensis* (Buchner) (图版 XI:1)

Lingulina inarimensis Buchner, 1942, p. 134, text fig. 13.

壳扁,长椭圆形至圆长方形,两侧缘平行,两端宽圆。外观呈现 2 个房室,两室之间由一条横直或稍弯的玻璃透明状窄带所标志。第一房室宽大于长;第二房室比第一房室长,长大于宽。壳壁薄而透明,壁孔甚细,壳体基端有一小椭圆形透明区。壳口卵形,在两片小唇之间,具直而细长的内管。

标本测量(毫米) IOAS-F806 壳长 0.20 壳宽 0.11 壳厚 0.08 (觅出礁泻湖水深 6 米)

分布 首次以化石种记载于意大利 Ischia 岛的海相沉积。

斜舌虫属(新属) *Obliquilingulina*, n. gen.

模式种 椭圆斜舌虫(新种) *Obliquilingulina oblonga*, n. sp.

壳扁,口面观呈椭圆形。房室偏斜,似呈双列,趋于单列。缝合线交错斜向,约与水平线成 45° 角。壳壁薄,钙质有孔型,壁孔细,壳面光滑。壳口缝状,具内管。(现代)

新属与 *Lingulina* 属不同在于, 房室似呈双列, 趋于单列。

99. 椭圆斜舌虫(新属新种) *Obliquilingulina oblonga*, n. gen., n. sp. (图版 X: 13—15)

壳扁, 口面观呈椭圆形。房室少, 2—4 个, 迅速增大, 似呈双列, 趋于单列。缝合线交错斜向, 约与水平线成 45° 角, 稍凹。壳壁薄, 透明或不透明, 壁孔细。壳口缝状, 终室具直长内管。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F807	0.25	0.10	0.05 (金银岛)
副模标本 IOAS-F808	0.34	0.13	0.10 (觅出礁)
副模标本 IOAS-F809	0.25	0.10	0.05 (晋卿岛水深 6 米)

曲管虫属 *Laryngosigma* Loeblich and Tappan, 1953

100. 突尾曲管虫(新种) *Laryngosigma caudata*, n. sp. (图版 XI:8)

壳较扁, 长纺锤形, 壳缘圆, 基端窄圆、突出。房室窄长, 较膨鼓, 横切面呈“S”形排列, 房室逐渐稍离壳体基部。缝合线凹下。壳壁透明, 壳面光滑。壳口辐射状, 具短直内管。

标本测量(毫米) 正模标本 IOAS-F816 壳长 0.85 壳宽 0.35 壳厚 0.18 (金银岛)

新种与 *L. hyalascidia* Loeblich and Tappan, 1953 不同在于, 壳体基端突出, 房室较长。

101. 明亮曲管虫 *Laryngosigma williamsoni* (Terouern) (图版 XIV:9)

标本测量(毫米) IOAS-F817 壳长 0.37 壳宽 0.17 壳厚 0.10 (觅出礁泻湖水深 6 米)

《西沙群岛的现代有孔虫(I)》(1978) 仅记载了一个破损标本, 现补充记载一个完整无损的标本, 以示其壳口特征。

卵虫亚科 Oolininae Loeblich and Tappan, 1961

卵虫属 *Oolina* d'Orbigny, 1839

壳仅由一球形成卵形房室组成, 有时不甚对称。壳壁钙质有孔型, 壳面光滑或具纹饰。壳口圆, 可具辐射沟, 具内管, 有时具颈部。(侏罗纪至现代)

102. 鼓双口卵虫(相似种) *Oolina* cf. *O. ampullodistoma* (Jones) (图版 XI:10)

Lagena vulgaris Williamson var. *ampullo-distoma* Jones, 1874 p. 63, pl. 19, fig. 52.

L. ampullo-distoma Jones. Brady, 1884, p. 458, pl. 57, fig. 5. — Millett, 1901, p. 5, pl. 1, fig. 5. — Cushman, 1913, p. 14; pl. 14, fig. 7. — Buchner, 1940, pl. 6, fig. 90.

Oolina ampulla-distoma (Jones). Matsunaga, 1963, pl. 31, fig. 26.

壳卵形, 口面观近圆形。壳体下半部、尤其基部具许多大小和形状不规则的疣状突粒, 壳体上半部尚具长或短的较细条肋。壳口圆, 内管长度大于壳长之半, 末端稍扩张, 壳体基端尚有一与内管末端相对的短管状突物。

标本测量(毫米) IOAS-F818 壳长 0.25 壳径 0.15 (琛航岛与广金岛之间水深 30 米)

西沙的标本与典型的 *O. ampulladistoma* 不同在于, 壳面除有疣状突粒外, 上半部尚

有纵条肋。大多数作者所示 *O. ampulladistoma* 的图形都是无肋的。但 Buchner (1940) 所示的图形, 疣突在壳体中部似连成条肋状, 西沙的标本与其较为相近。

分布 爪哇海、托雷斯海峡、夏威夷群岛、日本、那不勒斯湾。

103. 短管卵虫(新种) *Oolina brevisolenia*, n. sp. (图版 XII:1)

壳宽卵形。壳面具较疏的有时呈分叉状的隆脊, 隆脊向口端渐趋消失。壳壁厚。壳口辐射状; 内管很短, 仅在颈部, 未伸入室腔。

标本测量(毫米) 正模标本 IOAS-F819 壳长 0.33 壳径 0.25 (琛航岛与广金岛之间水深 30 米)

新种与 *Oolina borealis* Loeblich and Tappan, 1950 不同在于, 壳面隆脊在近口端消失。新种的内管很短, 仅在颈部, 无伸入室腔的游离部分。

104. 带尾卵虫 *Oolina caudigera* (Wiesner) (图版 XI:9)

Lagena (*Entosolenia*) *globosa* (Montagu) var. *caudigera* Wiesner, 1931, p. 119, pl. 18, fig. 214.

L. (*Entosolenia*) *ovata* (Terquem) var. *caudigera* Wiesner, 1931, p. 119, pl. 18, fig. 215.

Entosolenia lineata Williamson, Cushman, 1948 (not Williamson, 1848), p. 64, pl. 7, fig. 5.

Oolina caudigera (Wiesner) Loeblich and Tappan, 1953, p. 67, pl. 13, figs. 1—3.

壳卵形至球形, 基部具一长度不一的钝刺。壳壁薄, 透明至半透明, 壳面光滑。壳口圆, 周围具短辐射沟; 内管细长, 几伸达壳体基部, 末端稍扩张。

标本测量(毫米) IOAS-F820 壳长 0.20 壳径 0.11 (金银岛)

本种的细长内管末端一般对着壳体基部的突刺, 有时呈现与基刺相接。

分布 南极、北极。

105. 旋脊卵虫 *Oolina spiralis* (Brady) (图版 X:3, 4; 图 14: 1)

Lagena spiralis Brady, 1884, p. 468, pl. 114, fig. 9. — Cushman, 1933b, p. 30, pl. 7, figs. 15, 16.

L. striato-punctata Parker and Jones var. *spiralis* Millett, 1901, p. 489, pl. 8, fig. 7. — Sidebottom, 1912, p. 394, pl. 16, fig. 14. — Cushman and McCulloch, 1950, p. 353, pl. 47, fig. 17, 18.

壳卵形至长卵形, 末端常延伸成细长颈。壳面具数条螺旋隆脊, 隆脊具单行小管。壳口圆, 有时具瓶口唇; 内管细直, 长度不及壳长之半。

标本测量(毫米) 壳长 壳径

IOAS-F821 0.23 0.10 (金银岛)

IOAS-F822 0.26 0.10 (觅出礁泻湖水深 6 米)

Brady (1884) 的原始描述未述及是否有内管。西沙的标本具内管。

分布 据 Cushman (1933b), 这是个印度-太平洋种, 一般出现于浅水环境。

缝口虫属 *Fissurina* Reuss, 1850

壳单室, 卵形至球形, 扁, 壳缘有或无龙骨。壳壁钙质有孔型, 壳面光滑或具纹饰。壳口缝状至圆形, 具内管。(白垩纪至现代)

106. 扁椭圆缝口虫(新种) *Fissurina compressiobloma*, n. sp. (图版 XII:4; 图 14:7)

壳扁, 椭圆形, 壳缘具透明脊状龙骨; 两侧面近壳缘处各具一圈细凸侧脊, 其基端与壳缘龙骨并接, 其颈端收拢伸至口唇。壳壁薄, 半透明, 壁孔细, 壳面光滑。口端延伸成稍缢缩的短颈; 壳口较小, 具厚瓶口唇; 内管直, 长度不及壳长之半。

标本测量(毫米) 正模标本 IOAS-F823 壳长 0.31 壳宽 0.15 壳厚 0.08 (觅出礁泻湖水深 6 米)

新种与 *Fissurina tricarinata* Terquem (1882, pl. 1, fig. 28a, b) 有些相似,但后者颈部不缢缩,壳口无明显的唇,侧脊在壳体基部不与壳缘龙骨相并接。据 Le Calvez (1940), *F. tricarinata* Terquem 壳体中央具长凸粒,无颈。

107. 坑壁缝口虫 *Fissurina contusa* Parr (图版 XII:5)

Lagena castrensis? Brady (not Schwager), 1884, pl. 60, fig. 3.

Fissurina contusa Parr, 1945, p. 203, pl. 9, fig. 6.

壳近圆形,口面观两面凸。壳缘具宽薄龙骨;壳体两侧面近壳缘处各具一圈稍凸的侧脊,侧脊基端连续。壳面具许多凹坑,中部的凹坑较大,周围的较小。壳口长缝状,口缘较厚;内管长度约为壳长之半,弯向壳体一面。

标本测量(毫米) IOAS-F824 壳长 0.25 壳宽 0.23 壳厚 0.13 (金银岛)

本种与 *Fissurina lacunata* (Burrows and Holland) 有些相似,但后者壳口透镜形,壳面凹坑较深而大。

分布 澳大利亚。

108. 双刺葫芦缝口虫 *Fissurina cucurbitasema bispinata* Ujiie (图版 XII:6)

Fissurina cucurbitasema Loeblich and Tappan *bispinata* Ujiie, 1963, p. 232, pl. 1, figs. 9—11. — Matoba, 1970, p. 54, pl. 3, fig. 22a, b.

壳长卵形,横切面宽椭圆形,壳缘圆;基部近平截,两侧角呈突粒状。壳壁薄,壳缘及口端稍呈玻璃透明状,其余部位不透明。壳口长缝状,具短直内管。

标本测量(毫米) IOAS-F825 壳长 0.16 壳宽 0.13 壳厚 0.09 (珊瑚岛水深 4 米)

分布 日本东京湾、松岛湾,那不勒斯湾;日本更新统、全新统。

109. 透明缝口虫 *Fissurina diaphana* (Buchner) (图版 XII:7, 8)

Lagena diaphana Buchner, 1940, p. 480, pl. 14, figs. 266—271.

壳扁,宽卵形至近圆形,口面观长椭圆形至宽椭圆形。壳壁薄而透明,壳体两侧面近壳缘处各具“U”形磨玻璃状窄带。壳口透镜形;内管直,末端分叉,长度不及壳长之半。

标本测量(毫米) 壳长 壳宽 壳厚

IOAS-F826 0.13 0.10 0.08 (金银岛)

IOAS-F827 0.14 0.13 0.05 (觅出礁泻湖水深 6 米)

分布 那不勒斯湾。

110. 断圈缝口虫(新种) *Fissurina disjuncta*, n. sp. (图版 XII:3; 图 14:4)

Lagena orbignyana Seguenza var. *walleriana* Heron-Allen and Earland (not Wright), 1915, p. 666, pl. 50, figs. 31—33, 35—36 (not fig. 34)

壳扁,长卵形至宽椭圆形,口面观长椭圆形,壳缘具窄钝透明龙骨。壳体两侧面近壳缘处各有一圈稍凸的透明侧肋,侧肋基端与壳缘龙骨并接,侧肋内缘有一圈稍宽磨玻璃状环带,环带围绕稍凸的玻璃透明区,透明区近中部尚有一略呈括号形或“U”形的较宽而稍凹的磨玻璃状带。口端收窄成颈部。壳口透镜形,口缘较厚;内管直,长度不及壳长之半。

标本测量(毫米) 正模标本 IOAS-F828 壳长 0.29 壳宽 0.18 壳厚 0.10 (盘石屿)

新种的壳体侧面与 *Fissurina walleriana* (Wright) 较为相似,但中部透明区的饰带未连成完整一圈,较凹,呈磨玻璃状。后者中央区的饰带连成完整一圈,较凸,呈玻璃透明状。另外,新种的侧肋基端与壳缘龙骨并接,而后的侧肋不与壳缘龙骨并接。

分布 基林巴群岛。

111. 不连缝口虫 *Fissurina disjungens* (Buchner) (图版 X:1)

Lagena tenuistriata forma *disjungens* Buchner, 1940, p. 447, pl. 7, figs. 111—116.

壳小, 较扁, 卵形, 中央最厚, 向壳缘削薄, 口端延伸成细长颈。壳缘具一条片状龙骨, 龙骨具微细横管。壳壁薄, 壳面具排列不甚规则的断续纵肋纹。壳口圆, 具瓶口唇, 内管细直, 伸入室腔一小段距离。

标本测量(毫米) IOAS-F829 壳长 0.20 壳宽 0.10 壳厚 0.05 (琛航岛与广金岛之间水深 30 米)

Buchner (1940) 原将本种归纳于 *L. tenuistriata* (Brady) 的一个型(他把 Brady 的 *L. lagenoides* var. *tenuistriata* 提升为独立种)。由于 *tenuistriata* 一名已被 *L. tenuistriata* Stache, 1865 所占用, 加之他的 *disjungens* 型与典型种差异较大, 所以, 我们将其提升为独立种。另外, 由于本种壳体扁以及具内管, 故将其改隶于 *Fissurina* 属。

本种与 *Lagena lagenoides* (Williamson) var. *tenuistriata* 不同在于, 壳缘龙骨没有后者发达, 壳面肋纹较少而不连续。

分布 那不勒斯湾。

112. 窄带缝口虫 *Fissurina fasciata* (Egger) (图版 XIV:3)

Lagena fasciata (Egger). Sidebottom, 1906, p. 6, pl. 1, figs. 14—17 (not fig. 12, 13).——Buchner, 1940, p. 479, pl. 14, figs. 263—265.

壳卵形或宽卵形, 稍扁, 壳缘圆。壳壁半透明, 壳体侧面两侧近壳缘处各具一条与壳缘平行的微凹白色窄带。壳口缝状; 内管直, 未伸达室腔之半, 末端分叉。

标本测量(毫米) IOAS-F830 壳长 0.18 壳宽 0.15 壳厚 0.10 (西沙群岛)

分布 马来群岛、爱琴海、日本; 萨哈林岛下中新统。

113. 叉颈缝口虫(新种) *Fissurina furcicolla*, n. sp. (图版 XIII:13)

壳宽卵形, 口面观宽椭圆形, 基端中央呈缺刻状, 壳缘具伸至口端的薄宽龙骨。壳体两侧面近壳缘处各具一圈薄侧脊, 壳缘龙骨及侧脊在基端相互并接。壳面周围密布较大突粒, 中部有一玻璃透明椭圆形区, 该区突粒较小而稀疏; 壳缘龙骨和侧脊及其之间的区域亦有较小突粒; 口端具两条呈钳叉形透明凸肋。口端窄圆, 壳口透镜形, 口缘加厚, 与壳缘龙骨相接; 内管末端稍扩张, 偏向一面, 长度约为壳长之半。

标本测量(毫米) 正模标本 IOAS-F831 壳长 0.25 壳宽 0.23 壳厚 0.14 (晋卿岛水深 6 米)

新种最明显的特征是口端具钳叉形凸肋。

114. 粒肋缝口虫(新种) *Fissurina granulocostulata*, n. sp. (图版 XII:9)

壳小, 近圆形, 口面观宽椭圆形, 壳缘具窄龙骨。壳体两侧面近壳缘处各具一圈侧脊。壳壁半透明, 壳面上部三分之二具纵隆肋, 近基部具珠状突粒。壳口透镜形, 口缘稍厚; 内管直, 长度不及壳长之半。

标本测量(毫米) 正模标本 IOAS-F832 壳长 0.16 壳宽 0.15 壳厚 0.10 (晋卿岛水深 6 米)

新种与 *Lagena clathrata* Brady forma *striata* Buchner (1940) 有些相似, 但后者壳面纵隆肋自基端延伸至口端, 无珠状突粒。

115. 方圆缝口虫 *Fissurina jasolini* (Buchner) (图版 XII:10)

Lagena jasolini Buchner, 1940, p. 466, pl. 11, figs. 198—200.

壳扁,宽椭圆形至方形,口面观呈长椭圆形。壳壁薄,除壳体侧面近壳缘处具略呈“U”形、但基端并未对接的磨玻璃状宽带外,其余部位均呈玻璃状透明。壳口窄缝状;内管直,长度约为壳长 $1/3$ 左右。

标本测量(毫米) IOAS-F833 壳长 0.13 壳宽 0.10 壳厚 0.08 (觅出礁泻湖水深 6 米)

西沙的标本与典型种很相似,惟内管较直而不弯向壳体一面。

分布 首次以化石种记载于意大利。

116. 基林巴缝口虫 *Fissurina kerimbatica* (Heron-Allen and Earland) (图版 XII: 12—14)

Lagena orbignyana var. *kerimbatica* Heron-Allen and Earland, 1915, p. 667, pl. 50, figs. 38—40.

壳扁,卵形,有时稍扭,基部不完整,具一缺口。壳缘稍圆凸,有两行方形凹坑;每行的外缘稍凸;两行的凹坑有时相互对正,有时交错排列;两行凹坑的内缘有时愈合为一条凸脊,有时分开致使两行凹坑之间形成一条夹沟。壳面稍粗糙,呈磨玻璃状,壁孔呈细斑点状。颈部收细;壳口圆形,口缘稍厚;内管弯向壳体一面,末端扩张,长度约为壳长之半。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F834	0.33	0.18	0.06 (晋卿岛)
IOAS-F835	0.35	0.20	0.06 (金银岛)

西沙的标本与 Heron-Allen and Earland (1915) 记载于基林巴群岛的 *Lagena orbignyana* var. *kerimbatica* 极为相似,惟凹坑边缘不突出于壳缘呈齿状,壳体基部具一缺口。本种特异的壳缘纹饰足以与 *Fissurina orbignyana* 相区分,应提升为独立种。Cushman 所提供的 *Lagena lagenoides* (Williamson) (1933b, pl. 6, figs. 4,5) 与西沙的标本很相似,有可能是本种。

分布 基林巴群岛。

117. 坑斑缝口虫 *Fissurina milletti* Todd (图版 XIII:1, 2; 图 14: 3)

Lagena marginato-perforata Millett (not Seguenza), 1901, p. 621, pl. 14, fig. 4. — Heron-Allen and Earland, 1915, p. 663, pl. 50, figs. 24—30. — Cushman, 1933b, p. 19, pl. 5, figs. 1a, b; pl. 6, figs. 1a, b.

Fissurina milletti Todd, 1954, p. 351, pl. 87, fig. 30.

壳扁,长卵形,近壳体基部最厚。壳缘具三条窄龙骨,侧龙骨不甚明显,其基端与中间龙骨相愈合。壳壁薄,半透明,壳面匀布较大斑点状凹坑,颈部有时具几条短纵肋条。口端具短颈,口缘厚而外翻;内管较短,约伸达室腔 $1/3$ 左右。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F836	0.25	0.16	0.10 (金银岛)
IOAS-F837	0.29	0.15	0.08 (觅出礁泻湖水深 6 米)

本种的侧龙骨不甚突出,侧面观仅明显可见中间龙骨,壳缘观则显出具三条龙骨。西沙的标本与 Heron-Allen and Earland (1915) 记载于基林巴群岛的最为相似,他们也曾述及其壳缘具三条龙骨。

分布 马来群岛、斐济群岛、马绍尔群岛、关岛、加罗林群岛、基林巴群岛。

118. 细孔缝口虫(新种) *Fissurina minipora*, n. sp. (图版 XIII:7; 图 14: 6)

壳扁,卵形,中部最厚,渐向壳缘削薄。壳缘具一条锐薄窄龙骨,近壳体基部龙骨稍宽。壳壁薄,半透明,壁孔细密。口端缢缩成短颈,具厚瓶口唇;内管弯向壳体一面,长度

不及壳长之半,末端呈喇叭状。

标本测量(毫米) 正模标本 IOAS-F838 壳长 0.28 壳宽 0.20 壳厚 0.11 (金银岛)

新种的标本数量较多,壳口及内管特征相当稳定,内管长度总是不超过壳长之半,并弯向壳体一面。

119. 假球缝口虫 *Fissurina pseudoglobosa* (Buchner) (图版 XIII:3—6)

Lagena pseudoglobosa Buchner, 1940, p. 463, pl. 11, figs. 167—172.

壳扁,卵形至近圆形,壳缘圆。壳壁薄,近透明,基端具一甚小玻璃透明区。壳口缝状,内管长度一般不及壳长之半,弯向壳体一面,有时末端稍扩张。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F839	0.18	0.13	0.05 (觅出礁泻湖水深 6 米)
IOAS-F840	0.15	0.10	0.08 (晋卿岛水深 6 米)
IOAS-F841	0.13	0.13	0.09 (珊瑚岛水深 4 米)
IOAS-F842	0.18	0.13	0.08 (东岛)

分布 那不勒斯湾。

120. 假明亮缝口虫(新种) *Fissurina pseudolucida*, n. sp. (图版 XIII:8, 9)

壳扁,卵形至近椭圆形,口面观长椭圆形。壳体侧面外围有一“U”形磨玻璃状宽带,其余部位均呈玻璃透明或近透明状。口面观玻璃透明区呈宽“十”字形。壳口长缝状;内管短直,长度约为壳长 1/4,末端分叉。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F843	0.15	0.10	0.05 (东岛)
副模标本 IOAS-F844	0.15	0.12	0.08 (金银岛)

新种的壳壁特征与一些作者的 *Fissurina lucida* (Williamson) 相似,但根据 Williamson (1858) 的图形,后者内管长度远远超过壳长之半,末端扩张而不分叉。新种与 *F. lucida* 主要不同在于,壳体很扁,内管短直,末端叉状。新种的叉状内管与 *Lagena* (= *Fissurina*) *furcillifera* Buchner 的相似,但后者壳体较厚,壳壁透明而无磨玻璃状区。

121. 假宽龙骨缝口虫 *Fissurina pseudoorbignyana* (Buchner) (图版 XIII:12)

Lagena pseudoorbignyana Buchner, 1940, p. 460, pl. 10, figs. 157, 158.

壳宽卵形,中部最厚,向壳缘削薄。壳缘具一圈较锐薄龙骨,壳体两侧面近壳缘处各具一圈稍凸侧肋。壳壁薄,半透明,壁孔细。壳口透镜形,具厚唇;内管较短,约为壳长 1/3 左右,稍偏向壳体一面。

标本测量(毫米) IOAS-F845 壳长 0.38 壳宽 0.33 壳厚 0.18 (琛航岛与广金岛之间水深 30 米)

仅获一标本,一面甚膨鼓,另一面稍鼓,可能是个畸形。

分布 那不勒斯湾。

122. 辐缘缝口虫 *Fissurina radiatomarginata* (Parker and Jones) (图版 XIV:1, 2)

Lagena radiato-marginata Parker and Jones, 1865, p. 355, pl. 18, fig. 3. — Brady, 1884, p. 481, pl. 61, figs. 8, 9. — Cushman, 1933b, p. 31, pl. 7, figs. 17, 18.

Fissurina radiato-marginata (Parker and Jones). Cushman, Todd and Post, 1954, p. 351, pl. 87, fig. 29.

F. radiatomarginata (Parker and Jones) Graham and Militante, 1959, p. 83, pl. 12, fig. 26.

壳甚扁,椭圆形或卵形;口面观长椭圆形,壳缘具一条窄肋状龙骨。壳面具许多隆肋,中间隆肋纵行直列,两侧隆肋均向中央弯折,似呈辐射状。口端稍延伸成短颈,壳口缝状;内管几伸达室腔中部,偏于壳体一面,末端稍扩张。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F846	0.38	0.18	0.09 (琛航岛与广金岛之间水深 30 米)
IOAS-F847	0.38	0.23	0.10 (琛航岛与广金岛之间水深 30 米)

本种与 *Fissurina wrightiana* (Brady) 有些相似,但后者壳面中央部分无隆肋,呈玻璃透明状。

分布 菲律宾、澳大利亚珊瑚礁、托雷斯海峡、阿德米勒尔提群岛、斐济群岛、马绍尔群岛、埃利斯群岛、马来群岛、基林巴群岛。

123. 辐口缝口虫(新种) *Fissurina radiatostoma*, n. sp. (图版 XIII:10)

壳小,近圆形,中部较厚,渐向壳缘削薄,壳缘呈镶边状,不甚锐。壳壁薄而透明。口端稍突,近平截,颈部短,稍缢缩;壳口椭圆形,具瓶口唇,口缘具几条不甚明显的短辐射条纹;内管短直,长度约为壳长 1/3 左右。

标本测量(毫米) 正模标本 IOAS-F848 壳长 0.14 壳宽 0.13 壳厚 0.08 (觅出礁)

新种与同属其他种主要区别在于,口缘具短辐射条纹。

124. 强壮缝口虫(新种) *Fissurina robusta*, n. sp. (图版 XIII:11)

壳近圆形,口面观宽椭圆形,壳缘窄圆。壳体两侧面外围均有一“U”形磨玻璃状宽带,其余部位均呈玻璃透明状。壳口长缝状;内管直,长度不及壳长之半,末端分叉。

标本测量(毫米) 正模标本 IOAS-F849 壳长 0.18 壳宽 0.15 壳厚 0.12 (珊瑚岛水深 4 米)

新种与 *Lagena* (= *Fissurina*) *modesta* Matthes var. *stolata* Matthes, 1939 较为相似,但后者基部具粗刺状突物,内管较短,口端较尖突。

125. 热带缝口虫(新种) *Fissurina tropicalis*, n. sp. (图版 XII:11; 图 14:5)

Lagena squamoso-marginata Millett (not Parker and Jones, 1865) 1901, p. 622, pl. 14, fig. 7.

L. orbignyana (Seguenza) var. *lacunata* Cushman (not Burrows and Holland, 1895) 1933b, p. 27, pl. 7, figs. 1—5, 8.

壳卵形至长卵形,口面观双凸,基端呈缺刻状,壳缘具伸至口端的薄龙骨。壳体两侧面近壳缘处各具一圈侧脊,近口端逐渐收拢伸向颈部,基端连续并与壳缘龙骨并接。壳面具许多多角形深凹坑,下半部凹坑较大。口端收窄成长颈,壳口透镜形,口缘稍厚;内管弯向一面,末端稍扩张,长度约为壳长之半。

标本测量(毫米) 正模标本 IOAS-F850 壳长 0.28 壳宽 0.16 壳厚 0.10 (金银岛)

西沙的标本与 Millett (1901) 记载于马来群岛的 *Lagena squamoso-marginata* Parker and Jones 较为相似。据 Millett 报道,后者仅具一条壳缘龙骨而无侧脊,但他将有侧脊的标本也归纳为此种。我们认为,有无侧脊应是区别两个种的主要依据之一。我们将他的种与 Parker and Jones 的原始图形相比较,认为两者的差异较大,应为两个独立种。

新种与 *Fissurina lacunata* (Burrows and Holland) 的区别在于,壳面密布多角形深坑,而不是分布不规则的浅坑。

分布 斐济群岛、马来群岛。

126. 凸圈缝口虫 *Fissurina walleriana* (Wright) (图版 XII:2)

Lagena orbignyana Seguenza var. *walleriana* Wright. Sidebottom, 1895, p. 417, pl. 19, fig. 21; 1910, p. 19, pl. 2, fig. 5; 1913, p. 195. — Heron-Allen and Earland, 1915, p. 666, pl. 50, fig. 34.

壳扁,宽卵形,壳缘具较宽而薄的透明龙骨。壳体两侧面近壳缘处各具一圈高凸透明侧脊,近中央部分有一玻璃透明凸圈,凸圈所环围的部位及凸圈与侧脊之间均呈磨玻璃状。口端收窄成短颈,口缘较厚;内管甚短,未见伸入室腔。

标本测量(毫米) IOAS-F851 壳长 0.24 壳宽 0.18 壳厚 0.09 (金银岛)

Wright (1886) 建立变种 *Lagena orbignyana* var. *walleriana* 时,未提供图形,但在描述中曾提到变种的两凸面中央具一明显的栓。Sidebottom (1912) 提供了变种的图形,并述及其中央栓稍凸,被一环圈围绕,有时无中央栓,仅显一稍凸环圈。西沙的标本与 Sidebottom 所述无中央栓的标本一致。

分布 西南太平洋、基林巴群岛、提诺斯岛、大西洋。

127. 宝石缝口虫 *Fissurina wrightiana* (Brady) (图版 XIII:14, 15; 图 14:2)

Lagena wrightiana Brady, 1881, p. 32; 1884, p. 482, pl. 61, figs. 6, 7. — Cushman, 1933b, p.

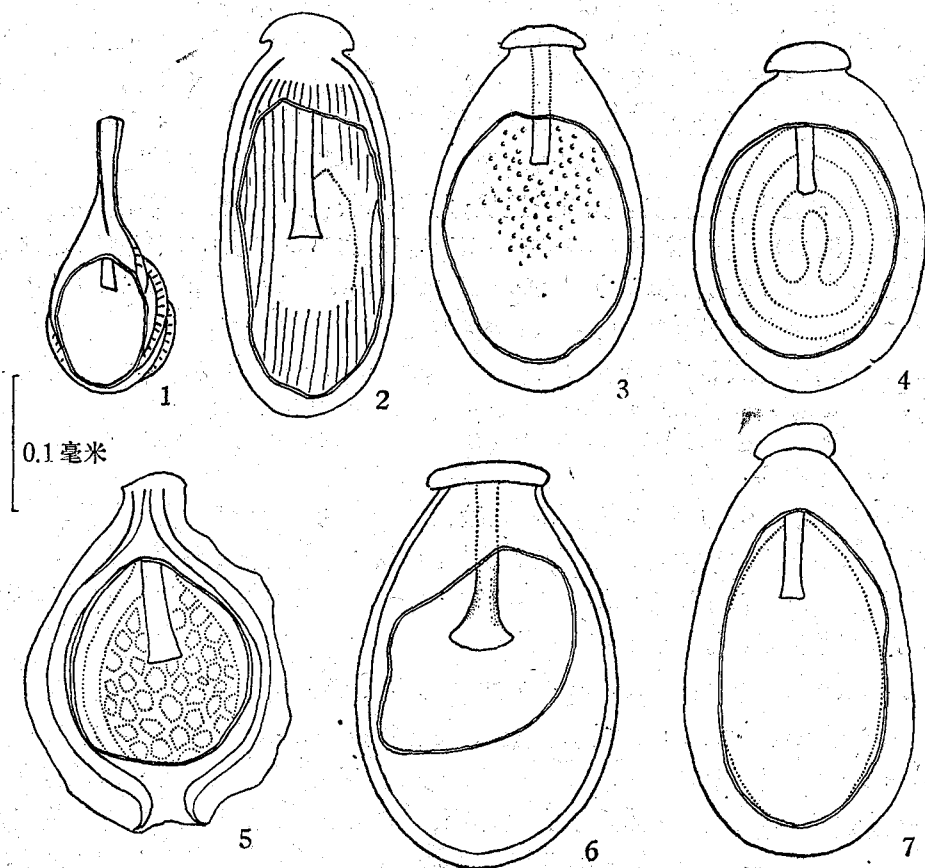


图 14 卵虫、缝口虫的内管

1. 旋脊卵虫 *Oolina spiralis* (Brady) 2. 宝石缝口虫 *Fissurina wrightiana* (Brady) 3. 坑斑缝口虫 *Fissurina milletti* Todd 4. 断圈缝口虫(新种) *Fissurina disjuncta*, n. sp. 5. 热带缝口虫(新种) *Fissurina tropicalis*, n. sp. 6. 细孔缝口虫(新种) *Fissurina minipora*, n. sp. 7. 扁棉缝口虫(新种) *Fissurina compressioblonda*, n. sp.

31, pl. 7, figs. 19, 20.

壳扁,长卵形至椭圆形,口面观长椭圆形,壳缘具一条肋状龙骨。壳壁薄,壳面中央部分呈玻璃透明状,其余部位具许多隆肋,中间隆肋纵行直列,两侧隆肋均向中央弯折。口端稍突,口缘厚;内管伸至室腔中央,偏于壳体一面,末端扩张。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F852	0.35	0.18	0.11 (觅出礁)
IOAS-F853	0.30	0.18	0.10 (金银岛)

分布 澳大利亚、阿德米勒尔提群岛、埃利斯群岛、加罗林群岛、基林巴群岛、马来群岛、毛里求斯。

仿缝口虫属 *Parafissurina* Parr, 1947

壳由单一房室组成。壳口开向壳体一面,具内管。(中始新世至现代)

128. 小仿缝口虫(新种) *Parafissurina minuta*, n. sp. (图版 XIV:5)

壳扁,圆长方形,壳长约为壳宽 2 倍,口面观长椭圆形,壳缘圆,两侧缘平行。壳壁薄而透明。壳口缝状,约为壳宽之半,稍偏于一面;内管长度约为壳长 2/3,偏于背面,下半段呈半管状,紧贴于背壁,末端扩张。

标本测量(毫米) 正模标本 IOAS-F854 壳长 0.21 壳宽 0.10 壳厚 0.06 (全富岛)

新种与 *P. quadrata* Parr 最为相似,但后者壳体较大和较厚,壳口长度接近于壳宽,内管较直。新种与 *Lagena* (= *Parafissurina*) *removens* Buchner 亦有些相似,但后者内管甚长,有时伸至基端。

129. 椭圆仿缝口虫(新种) *Parafissurina oblonga*, n. sp. (图版 XIV:4)

壳椭圆形,口面观椭圆形,壳缘窄圆,口端较基端稍窄,基端近平截,壳体中部较厚而平坦,向两端逐渐削薄。壳壁半透明,壳缘呈玻璃透明状。壳口稍偏向壳体一面,长度约为壳宽 1/3;内管长度约为壳长 3/4,紧贴于背壁,近口端 1/3 段呈管状,下 2/3 段呈半管状,末端扩张。

标本测量(毫米) 正模标本 IOAS-F855 壳长 0.24 壳宽 0.13 壳厚 0.09 (琛航岛与广金岛之间水深 30 米)

新种的形状与 *Parafissurina hamigera* (Buchner) 有些相似,但后者内管甚长,自背面伸达壳体基端并弯向腹面一段,壳口侧偏程度较大。新种与 *P. quadrata* Parr 不同在于壳口较窄,而后的壳口几乎等于壳宽。

Sidebottom (1906) 记载于希腊提诺斯岛的 *Lagena quadrata* (Williamson) (pl. 1, figs. 21, 22), 其中图 21 的壳口偏向壳体一面,显然与 Williamson (1858) 的种不同,应属 *Parafissurina*, 可能与西沙的标本是一样的。Williamson 的种的壳口不偏向壳体一面,应属 *Fissurina*。

130. 四刺仿缝口虫(新种) *Parafissurina quadrispinata*, n. sp. (图版 XIV:7)

壳小而较扁,宽卵形至近圆形,中部最厚,向壳缘削薄,口端较平。壳缘具两条厚而钝的龙骨,壳体基部两条龙骨之间具四根间距约相等的短尖刺。壳壁薄而透明。壳口稍偏向一面,长缝状;内管甚长,约为壳长 5/6 左右,几乎与背壁相接触,末端稍扩张。

标本测量(毫米) 正模标本 IOAS-F856 壳长 0.13 壳宽 0.14 壳厚 0.05 (觅出礁)

新种与 *Lagena staphyllearia* (Schwager) *forma reducta* Buchner 有些相似,但后者口端

较尖突,壳缘仅具一条龙骨,龙骨基端延伸成基刺。

131. 反弯仿缝口虫(新种) *Parafissurina reflecta*, n. sp. (图版 XIV:6)

壳扁,近圆形,口面观椭圆形,壳缘圆,无龙骨。壳壁不透明。壳口稍偏向壳体一面,短缝状,约为壳宽之半;内管呈半管状,紧贴于背壁,伸至壳体基端并反弯向腹面一段。

标本测量(毫米) 正模标本 IOAS-F857 壳长 0.12 壳宽 0.13 壳厚 0.08 (金银岛)

新种的內管特征与 *Parafissurina dohrnii* (Buchner) 有些相似,但后者壳口甚宽,约等于全壳宽。

泡虫总科 Buliminacea Jones, 1875

塔虫科 Turritinidae Cushman, 1927

塔虫亚科 Turritininae Cushman, 1927

拟泡虫属 *Buliminoides* Cushman, 1911

壳螺旋,低至高圆锥形。4—5 室组成一圈。缝合线镶边状。壳口扣眼形,位于终室口面凹陷处,具内齿板,口面具辐射条纹。(现代)

Seiglie (1970) 修正了本属的描述,指出本属与 *Buliminella* 属不同在于口面具辐射条纹,房室不膨鼓,生殖方式为胞质配合。

132. 美丽拟泡虫 *Buliminoides milletti* (Cushman) (图版 XIV:10)

Buliminella milletti Cushman, 1933b, p. 78, pl. 8, figs. 5, 6; 1942, p. 7, pl. 3, figs. 1—4. — Hofker, 1956, p. 43, pl. 4, figs. 3—4. — Graham and Militante, 1959, p. 81, pl. 12, fig. 22.

Buliminoides milletti (Cushman). Seiglie, 1970, p. 114, text figs. 8—10.

壳小,始端钝或突,有时具短刺,向口端迅速增宽。房室 2—3 圈,终圈 4—5 室,稍膨鼓。缝合线清楚,略呈镶边状,平或稍凹。壁孔细,壳面光滑。口面具少数辐射条纹,壳口高拱形,位于口面基部。壳呈淡黄色。

标本测量(毫米) IOAS-F858 壳长 0.28 壳径 0.15 (觅出礁泻湖水深 6 米)

分布 斐济群岛、萨摩亚群岛、马绍尔群岛、加罗林群岛、桑给巴尔、提诺斯岛。

133. 平行拟泡虫 *Buliminoides parallela* (Cushman and Parker) (图版 XIV:12)

Buliminella parallela Cushman and Parker, 1931, p. 13, fig. 15. — Cushman and McCulloch, 1948, p. 239, pl. 29, fig. 7.

Buliminoides parallela (Cushman and Parker) Seiglie, 1970, p. 114, text figs. 13, 14.

壳长,两端圆,两侧缘近平行,横切面近圆形。房室分明,3 圈,终圈 5 室,稍膨鼓。缝合线清楚,略呈平镶边状。壳面光滑,壁孔细。口面稍内凹,具辐射条纹,壳口圆。

标本测量(毫米) IOAS-F859 壳长 0.30 壳径 0.10 (金银岛)

分布 波多黎各岛、巴西里约热内卢港、马尔维纳斯群岛、加利福尼亚湾向南至厄瓜多尔。

134. 扭拟泡虫 *Buliminoides williamsonianus* (Brady) (图版 XIV:13)

标本测量(毫米) IOAS-F860 壳长 0.55 壳径 0.14 (西沙群岛)

《西沙群岛的现代有孔虫(I)》(1978) 仅记载了一个壳口不完整的标本。在补充采集的样品中,标本数量较多且壳体较完整。

135. 拟泡虫(未定种) *Buliminoides* sp. (图版 XIV:11)

壳较大,始端窄圆,向口端迅速增宽,口端圆,口面观近圆形。房室 2 圈多,不甚分明,

终圈 5 室, 稍膨鼓。缝合线不甚清楚, 镶边状。壳壁不透明, 壁孔较粗而密。口面具辐射细条纹, 壳口圆。

标本测量(毫米) IOAS-F862 壳长 0.48 壳径 0.25 (永兴岛)

本种与 *B. milleti* (Cushman) 不同在于, 个体较大, 缝合线不甚清楚, 壁孔较粗。

箭头虫科 Bolivinitidae Cushman, 1927

箭头虫属 *Bolivina* d'Orbigny, 1839

136. 矛箭头虫 *Bolivina goesi* Cushman (图版 XV:3)

Bulimina (*Bolivina*) *punctata* d'Orbigny var. Göes. 1882, pl. 4, figs. 124—126.

Bolivina goesi Cushman, 1922b, p. 34, pl. 6, fig. 5; 1937, p. 154, pl. 18, fig. 25.

壳扁, 略呈菱形, 中央部分最厚, 向两侧缘削薄, 壳缘窄圆。房室分明, 低而宽, 依次迅速增宽, 最后几对房室内端后伸物较明显。缝合线清楚, 镶边状, 稍凹。壳面光滑, 壁孔细, 口端呈箭簇状, 壳口窄长。

标本测量(毫米) IOAS-F863 壳长 0.37 壳宽 0.21 壳径 0.09 (琛航岛与广金岛之间水深 30 米)

分布 美国(佛罗里达州)、巴哈马群岛、加勒比海、巴西东北岸。

137. 多变箭头虫 *Bolivina variabilis* (Williamson) (图版 XV:1, 2)

Textularia variabilis Williamson, 1858, p. 76, pl. 6, figs. 162, 163.

Bolivina variabilis (Williamson). Cushman, 1937, p. 158, pl. 16, figs. 6, 12—14; 1942, p. 32, pl. 9, figs. 3. —Sliter, 1970, p. 166, pl. 5, fig. 4; pl. 6, figs. 1—3; pl. 8, figs. 15—16. —Haynes, 1973, p. 141, pl. 10, fig. 8, pl. 2, figs. 8; text-fig. 25, no. 16.

壳长, 稍扁, 壳缘窄圆, 呈瓣状。房室膨鼓, 早期的低而宽, 随后的房室宽度和高度迅速增大, 高宽约相等, 房室基部有不甚明显的波状后伸物。缝合线清楚, 弯曲, 甚凹下。壳壁厚, 不透明, 壁孔甚粗, 孔缘凸, 壳面粗糙。壳口高拱形。

标本测量(毫米) IOAS-F864 壳长 0.63 壳宽 0.18 壳厚 0.10 (西沙洲水深 45—50 米)

分布 大不列颠岛、比利时、基林巴群岛、红海、斐济群岛、洛德豪岛、新西兰、南极、委内瑞拉。

点头虫属 *Brizalina* Costa, 1856

138. 短小点头虫 *Brizalina abbreviata* (Heron-Allen and Earland) (图版 XV:4—6)

标本测量(毫米) 壳长 壳宽 壳厚

IOAS-F865 0.38 0.14 0.08 (琛航岛与广金岛之间水深 30 米)

IOAS-F866 0.40 0.18 0.10 (觅出礁)

本种壳体形状有一定变化。一般标本的两侧缘几近平行, 缝合线呈镶边状, 不凹陷。但有些标本最后几个房室较膨鼓, 缝合线基本上不呈镶边状, 较凹下。

139. 不列颠点头虫 *Brizalina britannica* Macfadyen (图版 XV:10)

Textularia variabilis Williamson var. *laevigata* Williamson, 1858 (not *T. laevigata* d'Orbigny), p. 77, pl. 6, fig. 168.

Bolivina laevigata (Williamson). Cushman, 1922b, p. 36, pl. 4, fig. 2; 1937, p. 159, pl. 16, figs. 1—5.

B. britannica Macfadyen, 1942, p. 143.

B. (Brizalina) britannica Macfadyen. Haynes, 1973, p. 128, text fig. 25, nos. 1, 2.

壳小而扁长,口面观呈宽椭圆形,壳缘宽圆。房室分明,稍膨鼓,早期的甚低而宽,后期的迅速增高,最后几对房室高宽约相等。缝合线略呈镶边状,弯曲,稍凹。壳壁薄而透明,壁孔细。壳口长椭圆形。

标本测量(毫米) IOAS-F868 壳长 0.30 壳宽 0.10 壳厚 0.08 (琛航岛与广金岛之间水深 30 米)

分布 英国、阿根廷、马来群岛。

140. 少孔点头虫 *Brizalina doniezi* (Cushman and Wickenden) (图版 XV:8)

Bolivina doniezi Cushman and Wickenden, 1929, p. 9, pl. 4, figs. 3a, b. — Cushman and Kellett, 1929, p. 8, pl. 3, figs. 8a, b. — Cushman, 1937, p. 140, pl. 19, fig. 6.

壳短小,扁,壳缘宽圆,房室 6—8 对,稍膨鼓,低而宽,最后一对迅速增大,高宽约相等,约占全壳长 1/3,终室顶端圆突。缝合线清楚,凹下。壳壁薄而透明,壁孔粗而稀疏。口端圆,壳口长椭圆形。

标本测量(毫米) IOAS-F869 壳长 0.20 壳宽 0.10 壳厚 0.08 (西沙洲水深 45—50 米)

分布 秘鲁、智利。

141. 菱点点头虫(?) *Brizalina(?) durrandii* (Millelt) (图版 XVI:2)

Bolivina durrandii Millelt, 1900, p. 544, pl. 4, fig. 7a, b.

Loxostoma durrandii (Millelt). Cushman, 1937, p. 191, pl. 22, fig. 6.

Bolivina sp. aff. *B. durrandii* Millelt, Matoba, 1970, p. 49, pl. 3, fig. 30a, b.

壳长而较扁,壳缘锐。房室稍膨鼓,8 对,宽大于高,依次渐增大;房室外侧削薄成锐龙骨状;房室基部显著外突,致使壳体侧面观壳缘呈明显锯齿状。缝合线深刻。壳壁薄,房室表面具纵隆肋。壳口透镜形,具厚唇。

标本测量(毫米) IOAS-F892 壳长 0.37 壳宽 0.15 壳厚 0.08 (西沙洲水深 45—50 米)

我们仅掌握一个标本,未进行解剖观察其壳口特征,故暂以存疑置于本属。

分布 新几内亚、新加坡、缅甸、日本。

142. 停顿点头虫 *Brizalina paula* (Cushman and Cahill) (图版 XV:9)

Bolivina paula Cushman and Cahill, 1932, p. 84, pl. 12, fig. 6. — Cushman and McCulloch, 1942, p. 202, pl. 24, figs. 11, 12. — Phleger, Parker and Peirson, 1953, p. 35, pl. 7, figs. 13, 14.

B. cf. paula Cushman and Cahill. Cushman, 1942, p. 33, pl. 9, fig. 4.

壳小而扁,细长,向口端缓慢增宽,壳缘窄圆。房室分明,早期的宽大于高,后期的高稍大于宽。缝合线清楚,略呈镶边状,稍凹,弯曲。壁孔细。壳口长椭圆形,位于口面中央。

标本测量(毫米) IOAS-F870 壳长 0.31 壳宽 0.13 壳厚 0.04 (东岛)

分布 加利福尼亚湾、哥伦比亚、秘鲁、加拉帕戈斯群岛、阿拉斯加、土阿莫土群岛、那不勒斯湾;首次记载于美国 Yorktown 中新世地层。

143. 假半裸点头虫(新种) *Brizalina pseudoseminuda*, n. sp. (图版 XV:17)

壳小而稍扁,长,宽度逐渐增大,壳缘宽圆。房室稍膨鼓,初成的低而宽,后成的迅速增高。缝合线清楚,稍凹,约与水平线成 45° 角。壳壁薄,半透明,壁孔甚细,分布均匀。壳口长椭圆形。

标本测量(毫米) 正模标本 IOAS-F871 壳长 0.38 壳宽 0.10 壳厚 0.06 (觅出礁)

新种外形与 *Brizalina seminuda* (Cushman) 有些相似,但后者壳体较大而厚,缝合线

倾斜度较小,壁孔较粗,仅分布在房室下半部。

新种与 *B. midwayensis* (Cushman) 亦较相似,但后者壳体较大而厚,房室形状始终不变,壳口卵形。

144. 菱形点头虫 *Brizalina rhomboidalis* (Millett) (图版 XV:7)

Textularia rhomboidalis Millett, 1898, p. 559, pl. 7, fig. 4. — Sidebottom, 1905, p. 8, pl. 2, fig. 2.

Bolivina rhomboidalis (Millett). Cushman, 1937, p. 138, pl. 18, fig. 7; 1942, p. 19, pl. 6, figs. 7, 8. — Hofker, 1964, p. 77, figs. 205—206.

壳长三角形,有时稍扭,初成部分壳缘钝,后成部分壳缘迅速变为截形,缘角突,致使口面观呈长方形。房室多而分明,稍膨鼓。缝合线弯斜,凹下。壁孔粗。壳口长椭圆形,一侧缘内翻,一侧缘稍外翻。

标本测量(毫米) IOAS-F872 壳长 0.30 壳宽 0.18 壳厚 0.13 (觅出礁)

分布 马来群岛、托雷斯海峡、热带太平洋诸岛、地中海、巴西、马尔纳维斯群岛、加勒比海。

145. 棘刺点头虫 *Brizalina spinescens* (Cushman) (图版 XVI:1)

Bolivina textularioides Brady (not Reuss), 1884, p. 419, pl. 52, figs. 24, 25.

B. spinescens Cushman, 1911, p. 46, fig. 76a, b; 1937, p. 142, pl. 18, figs. 17—19; 1942, p. 27, pl. 7, fig. 7. — Hofker, 1951, p. 57, fig. 24. — Asano, 1958, p. 22, pl. 4, fig. 6. — Matoba, 1967, p. 251, pl. 25, fig. 17.

B. subspinescens Cushman, 1922b, p. 48, pl. 7, fig. 5; 1937, p. 157, pl. 19, figs. 1—3.

壳小,壳长约为壳宽的 $2\frac{1}{2}$ —3 倍,渐向口端增宽,壳缘宽圆,瓣状。房室膨鼓,早期的宽大于高,随后的宽高约相等。缝合线清楚,深刻,弯斜。壳壁薄而透明,房室基部具刺或颗粒状突起,壁孔粗而稀疏。壳口长卵形。

标本测量(毫米) IOAS-F893 壳长 0.33 壳宽 0.10 壳厚 0.08 (西沙洲水深 45—50 米)

由于 Cushman 在 1911 年建立新种 *Bolivina spinescens* 及 1922 年建立新种 *B. subspinescens* 时,均以 *Bolivina textularioides* Brady, 1884 (not Reuss) 作为同物异名。为此, *B. subspinescens* 应为 *B. spinescens* 的同物异名。

分布 夏威夷群岛、斐济群岛、日本南岸、马来群岛、巴西、墨西哥湾、美国东北岸、加勒比海、爱尔兰。

146. 细纹点头虫 *Brizalina striatula* (Cushman) (图版 XV:11, 12)

Bolivina striatula Cushman, 1922b, p. 27, pl. 3, fig. 11. — 1937, p. 154, pl. 18, figs. 30, 31; 1942, p. 30, pl. 9, fig. 1. — Bhatia, 1956, p. 21, pl. 1, fig. 9. — Arnal, 1958, p. 37, pl. 11, figs. 13—15. — Boltovskoy and Lena, 1966, p. 287, pl. 1, figs. 22, 23.

Brizalina striatula (Cushman). Sliter, 1970, p. 170, pl. 7, fig. 6; pl. 8, fig. 19.

Bolivina (Brizalina) striatula Cushman. Haynes, 1973, p. 137, pl. 10, figs. 1; pl. 11, fig. 1.

壳扁长,长约为宽的 3 倍左右,口端最宽,向始端渐收细,壳缘圆。房室微膨鼓,迅速增大,早期的宽大于高,后期的高度相对增大,最后三对房室的高度几占壳长之半。缝合线清楚,呈镶边状,稍弯斜,约与水平线成 30° — 40° 角,后成部分的稍凹。壳壁半透明,壁孔细,壳体下半段具断续纵细肋纹。壳口呈扣眼形,具内齿板。

标本测量(毫米) IOAS-F873 壳长 0.33 壳宽 0.15 壳厚 0.07 (金银岛)

分布 美国(佛罗里达州)、巴西、阿根廷、汤加群岛、斐济群岛、新西兰、夏威夷群岛、那不勒斯湾;日本全新统。

147. 亚头点头虫(新种) *Brizalina subcapitata*, n. sp. (图版 XV:15)

壳长而扁,向口端增宽,壳缘圆。房室多,膨鼓,迅速增高。缝合线清楚,凹下,弯斜。壳壁薄,近透明,壁孔细。壳口长,弯缝状,偏于壳体一面,有时倾向位于末端。

标本测量(毫米) 正模标本 IOAS-F874 壳长 0.45 壳宽 0.25 壳厚 0.08 (中建岛)

新种与 *Brizalina capitata* (Cushman) 不同在于,壳体较扁,壳口一般偏于壳体一面,长弯缝状而不是宽椭圆形。

148. 亚网点头虫 *Brizalina subreticulata* Parr (图版 XV:16)

Bolivina reticulata Brady (not Hantken). 1884, p. 426, pl. 54, figs. 30, 31.

B. subreticulata Parr, 1932a, p. 12, pl. 1, figs. 21a, b. — Cushman 1937, p. 148, pl. 19, figs. 24—26; 1942, p. 31, pl. 9, fig. 2.

壳小而扁,菱形,中央部分最厚,向两侧缘削薄,壳缘锐至稍锐,具钝龙骨。房室低而宽。缝合线呈凸镶边状,具横伸物,致使壳面呈现凸网状纹饰。壁孔细。壳口长椭圆形。

标本测量(毫米) IOAS-F875 壳长 0.38 壳宽 0.24 壳厚 0.10 (西沙洲水深 45—50 米)

分布 托雷斯海峡、埃利斯群岛、新赫布里底群岛、坎达伍岛、塔希提岛、土阿莫土群岛、澳大利亚、爪哇岛、毛里求斯、日本琉球群岛等。

149. 亚细纹点头虫(新种) *Brizalina substriatula*, n. sp. (图版 XV:13, 14)

壳扁而长,始端窄圆,向口端迅速增宽,壳缘圆。房室分明,稍膨鼓,依次逐渐增大。初成部分缝合线不甚清楚,后成部分的清楚,稍凹,斜。壁孔细,壳体基部具微细纵条纹。壳口长椭圆形;齿板突出于壳口,外缘呈锯齿状。

标本测量(毫米) 正模标本 IOAS-F876 壳长 0.30 壳宽 0.13 壳厚 0.06 (琛航岛)

新种与 *Brizalina striatula* (Cushman) 较为相似,但后者壳体较细长,壳缘窄圆至稍锐,纹饰较多而粗,齿板外缘不呈锯齿状。

150. 亚细点头虫 *Brizalina subtenuis* (Cushman) (图版 XV:18)

Bolivina tenuis Brady (not Montagu), 1884, p. 419, pl. 52, fig. 29. — Cushman, 1924, p. 17, pl. 5, fig. 7, 8.

B. subtenuis Cushman, 1936, p. 57, pl. 8, fig. 10; 1942, p. 29, pl. 8, fig. 15.

壳甚扁,宽叶形,壳长稍大于壳宽,壳缘锐,具窄龙骨。房室清楚,低而宽,依次迅速增大。缝合线清楚,弯曲,稍凹。壳面光滑,壁孔细。壳口偏于一面,缝状,其上缘具少数辐射纹,具内齿板。

标本测量(毫米) IOAS-F877 壳长 0.30 壳宽 0.23 壳厚 0.08 (琛航岛与广金岛之间水深 30 米)

分布 萨摩亚群岛、斐济群岛、马绍尔群岛、澳大利亚大堡礁。

直箭头虫属 *Rectobolivina* Cushman, 1927**151. 高室直箭头虫(新种) *Rectobolivina altilocula*, n. sp. (图版 XVI:3, 4)**

壳小,直或稍扭,口面观近圆形。房室分明,双列部分占全壳长一半左右,房室 5—6 对,较扁,单列部分房室近圆筒形。缝合线呈透明宽镶边状,初成部分的与壳面齐平,后成部分的稍凹。壳壁半透明至不透明,壁孔粗,壳面具少数微细纵肋纹。壳口圆形,具厚唇。

标本测量(毫米)	壳长	壳径
正模标本 IOAS-F878	0.35	0.09 (金银岛)
副模标本 IOAS-F879	0.53	0.12 (觅出礁)

新种与 *Rectobolivina glabra* Bermudez, 1949 较为相似,但后者缝合线凹陷,不呈镶边状。

152. 亚双叉直箭头虫(新种) *Rectobolivina subbifrons*, n. sp. (图版 XVI:6—8)

壳长,口面观近圆形,双列部分扁,中线部位稍凹,单列部分逐渐变圆。房室分明,宽大于高。缝合线呈透明镶边状,与壳面齐平。壁孔粗,壳面光滑,有几条细纵条纹。壳口椭圆形,具厚唇。

标本测量(毫米) 正模标本 IOAS-F880 壳长 1.33 壳径 0.30 (觅出礁泻湖水深 6 米)

新种与 *Rectobolivina bifrons* (Brady) 有些相似,但后者壳体始终较扁,口面观呈椭圆形,整个壳体的中线部位均较明显凹下。

153. 亚萝卜直箭头虫(新种) *Rectobolivina subraphanus*, n. sp. (图版 XVI:5)

壳大而长,口面观圆形,双列部分短而扁,房室甚低而宽,单列部分长,房室低而宽,迅速变圆,最后几室稍膨鼓,较高。缝合线呈透明镶边状,仅最后几个房室的稍凹。壁孔较粗,壳面具许多细弱纵肋纹。壳口圆形,具厚唇。

标本测量(毫米) 正模标本 IOAS-F882 壳长 1.38 壳径 0.20 (金银岛)

新种与 *Rectobolivina raphanus* (Parker and Jones) 不同在于,纵肋纹很细弱。

冰岛虫科 Islandiellidae Loeblich and Tappan, 1964

拟盔虫属 *Cassidulinoides* Cushman, 1927

壳长,早期近球形,房室双列旋卷,后期房室双列不卷。壳壁钙质有孔型,显微结构辐射状。壳口扣眼形,自房室基部延伸至房室顶部。(上始新世至现代)

154. 小拟盔虫 *Cassidulinoides chapmani* Parr (图版 XVI:9)

Cassidulinoides chapmani Parr, 1931, p. 99, 100, text fig. a—c. — Chapman, Parr and Collins, 1934, p. 560, pl. 10, fig. 28a—c.

壳小而长,扁,一般较弯曲,两端宽圆,两侧缘近平行。房室不膨鼓,初成部分双列旋卷;后成部分双列直伸,约占全壳长 3/4。缝合线稍清楚,镶边状,不凹下。壳壁薄而透明,壁孔细,壳面光滑。壳口近圆形,位于终室口面基部凹陷处。壳体初成部分常呈红褐色。

标本测量(毫米) IOAS-F883 壳长 0.38 壳宽 0.10 壳厚 0.08 (金银岛)

本种与 *Cassidulina bradyi* Norman var. *elongata* Sidebottom (1905) 较为相似,但后者房室甚低,始端窄圆。

分布 首次记载于澳大利亚中新世地层。尚未见其他现代记录。

始葡萄虫科 Eouvierinidae Cushman, 1927

隔壁虫属 *Millettia* Schubert, 1911

壳细长,弯曲,初成部分房室双列,后成部分房室少,近圆筒形,单列。房室由垂直及

横隔板分隔为小室,小室呈蜂巢式横行排列。壳壁钙质有孔型,显微结构辐射状,壳面具蜂巢状纹饰,标志室腔内的分隔。壳口位于房室末端,有时具唇,具内齿板。(第三纪至现代)

155. 网格隔室虫 *Millettia tessellata* (Brady) (图版 XVI:10)

Sagrina tessellata Brady, 1884, p. 585, pl. 76, figs. 17—19. — Millett, 1903, p. 273, pl. 5, figs. 16a—b. — Heron-Allen and Earland, 1915, p. 677, pl. 51, fig. 9. — Hofker, 1951, p. 63, figs. 28—31.

Schubertia tessellata (Brady). Cushman, 1937, p. 206, pl. 23, figs. 22—28. — Graham and Militante, 1959, p. 86, pl. 13, fig. 5.

Millettia tessellata (Brady). Loeblich and Tappan, 1964, p. C558 fig. 441, 1—3.

壳长,弯曲,横切面圆形或椭圆形。早期房室双列,稍扭,无分隔;后期房室单列,圆筒形,分隔成小室。缝合线清楚,凹下。壁孔细,壳面具成行并相互交错的蜂巢状纹饰,标志室腔内的分隔。壳口圆形,有或无唇。

标本测量(毫米) IOAS-F885 壳长 0.23 壳径 0.10 (全富岛)

分布 托雷斯海峡、阿德米勒尔提群岛、马来群岛、基林巴群岛、菲律宾;澳大利亚第三系。

泡虫科 Buliminidae Jones, 1875

孔雀虫亚科 Pavonininae Eimer and Fickert, 1899

孔雀虫属 *Pavonina* d'Orbigny, 1826

156. 琉球孔雀虫 *Pavonina ryukyuensis* (Cushman and Hanzawa) (图版 XVI: 17)

Bifarinella ryukyuensis Cushman and Hanzawa, 1936, p. 46, pl. 8, figs. 7, 8. — Cushman, 1937, p. 202, pl. 23, figs. 36, 37.

Pavonina ryukyuensis (Cushman and Hanzawa) Loeblich and Tappan, 1964, p. C563, fig. 444, 4a, b.

壳长而扁,向口端迅速变宽,壳缘锯齿状。初成部分近圆筒形,稍扭,房室三列,随后变为双列,最后几个房室较扁,单列。初成部分缝合线不甚清楚,后成部分的清楚,呈镶边状。壳壁近透明,房室基部具一、二行短管状突物,初成部分的管突较为发达,最后一、二个房室仅具周缘较凸的粗孔。壳口位于房室末端,长椭圆形,口缘厚,有时口缘两侧角延伸成下垂的粗刺。

标本测量(毫米) IOAS-F884 壳长 0.58 壳宽 0.33 壳厚 0.13 (琛航岛与广金岛之间水深 30 米)

分布 首次记载于日本琉球群岛更新世地层。

仿虫属 *Mimosina* Millett, 1900

早期房室三列,后期房室双列。壳壁钙质有孔型,显微结构辐射状。壳面具细肋纹,肋纹间有细孔。壳口两个,一个位于口面基部,另一个位于口面基部上方。(现代)

157. 东方仿虫 *Mimosina orientalis* (Cushman) (图版 XVI:11)

Trimosina orientalis Cushman, 1933b, p. 78, pl. 8, fig. 4; — 1942, p. 43, pl. 12, figs. 1—5.

壳小而长,壳长约为壳宽的 2—3 倍。房室清楚,膨鼓,房室基部缘角尖锐。缝合线清楚,凹下。壁孔粗。壳口两个,一个在终室基部,呈低拱形,具微唇;另一个在基部上方,呈拱形,具齿板。

标本测量(毫米) IOAS-F886 壳长 0.19 壳宽 0.10 (晋卿岛)

本种的壳口特征不易观察清楚, 仅在适当的光照条件下尚可看到除终室基部有一低拱形壳口外, 其上方亦有一拱形壳口。根据其壳口特征, 应为 *Mimosina* 属。

分布 斐济群岛、汤加群岛、马绍尔群岛。

158. 棘仿虫 *Mimosina sidebottomi* Dollfus (图版 XVI:12)

Mimosina hystrix Millett var., Sidebottom, 1905, p. 16, pl. 3, fig. 9.

M. sidebottomi Dollfus, 1905, p. 223.

M. echinata Heron-Allen and Earland, 1915, p. 651, pl. 50, figs. 12—18.

壳小, 三列部分短小, 双列部分长。房室不甚分明, 依次迅速增大, 最后一对房室尤大。除最后一对房室外, 其余房室表面均布满刺突, 初室基端有一针状刺。口面基部具一缝状开口, 其上方尚有一卵形小孔。

标本测量(毫米) IOAS-F887 壳长 0.19 壳宽 0.14 (珊瑚岛水深 4 米)

Dollfus (1905) 把 Sidebottom 1905 年的 *M. hystrix* Millett var. 提升为独立种, 而 Heron-Allen and Earland 1919 年所建立的新种 *M. echinata* 也是以 Sidebottom 的 *M. hystrix* Millett var. 作为同物异名。根据优先权法则, Dollfus 的 *M. sidebottomi* 应为有效名。

分布 澳大利亚大堡礁、萨摩亚群岛、基林巴群岛、地中海、古巴。

三棱虫属 *Reussella* Galloway, 1933

壳三列, 口端最宽, 向始端削尖, 横切面呈三角形。壳壁钙质有孔型。壳口位于终室口面基部, 具内齿板。(中始新世至现代)

159. 三棱虫(未定种) *Reussella* sp. (图版 XVI:16)

壳三列, 扭曲, 侧面内凹, 壳缘具稍锐窄龙骨。房室分明, 不膨鼓, 依次渐增大。缝合线清楚, 弯曲, 呈镶边状, 不凹下, 初成部分的稍凸。壳壁半透明, 壁孔细而稀疏, 初成部分壳面具少数短刺。壳口长椭圆形。

标本测量(毫米) IOAS-F888 壳长 0.40 壳径 0.21 (金银岛)

本种的形状与 *Reussella aequa* Cushman and McCulloch (1948) 较为相似, 但侧面较内凹, 壁孔较细而稀疏, 壳体扭曲。

葡萄虫科 *Uvigerinidae* Haeckel, 1894

管葡萄虫属 *Siphouvigerina* Parr, 1950

壳长, 三列, 早期房室紧密相贴, 后期房室趋于单列, 松弛排列。缝合线切刻状。壳壁钙质有孔型, 壳面具棘刺、突粒或隆脊。壳口位于颈部末端, 圆形, 具瓶口唇; 齿板简单, 直, 与前房室壳口外缘相连。(渐新世至现代)

160. 长管葡萄虫 *Siphouvigerina porrecta* (Brady) (图版 XVI:15)

Uvigerina porrecta Brady, 1879, p. 60, pl. 8, figs. 15, 16; 1884, p. 577, pl. 74, figs. 21—23, —Cushman, 1924, p. 27, pl. 7, figs. 6—7; 1942, p. 48, pl. 13, figs. 7, 8. —Cushman, Todd and Post, 1954, p. 355, pl. 88, figs. 14, 15. —Graham and Militante, 1959, p. 89, pl. 13, figs. 12, 13.

Neouvigerina porrecta (Brady) Hofker, 1951, p. 213, fig. 142.

Siphouvigerina porrecta (Brady). Albani, 1968, p. 108, pl. 8, fig. 11.

壳长,房室膨鼓,早期的紧贴,后期的排列松弛,最后几室相隔较远,趋于单列。房室底面稍内凹,上面较凸,具粗纵隆肋,突出于房室底缘,呈锯齿状。缝合线清楚,深刻。壳壁一般不透明。颈部呈长管状,具瓶口唇。

标本测量(毫米) IOAS-F889 壳长 0.40 壳径 0.15 (金银岛)

分布 菲律宾、托雷斯海峡、斐济群岛、马绍尔群岛、萨摩亚群岛、马来群岛、基林巴群岛、毛里求斯。

三列虫属 *Trifarina* Cushman, 1923

壳长,横切面呈三角形。房室三列,早期的紧密相贴,后期的较松弛,趋于单列。壳壁钙质有孔型,壁孔细,显微结构辐射状。壳口位于房室末端,卵形,具短颈和厚唇,具内齿板。(始新世至现代)

161. 鳞三列虫 *Trifarina lepida* (Brady) (图版 XVI:13, 14)

Tritaxis lepida Brady, 1881, p. 35; 1884, p. 389, pl. 49, fig. 12. — Millett, 1899, pl. 12, pl. 1, fig. 15.

壳长,有时稍扭,横切面呈三角形,缘边稍锐。房室稍膨鼓。缝合线略呈镶边状,稍凹,弯曲。壳壁薄,半透明,壁孔较粗。壳口位于终室末端,具短颈,口缘稍厚。

标本测量(毫米)	壳长	壳径
IOAS-F890	0.28	0.18 (赵述岛水深3米)
IOAS-F891	0.31	0.15 (晋卿岛)

本种的壳壁是钙质有孔型,应为 *Trifarina* 属,它与 *Trifarina bradyi* Cushman 不同在于,房室稍膨鼓,缝合线稍凹,壳缘无龙骨。

分布 北美、托雷斯海峡。

圆盘虫总科 Discorbacea Ehrenberg, 1838

圆盘虫科 Discorbidae Ehrenberg, 1838

圆盘虫亚科 Discorbinae Ehrenberg, 1838

圆盘虫属 *Discorbis* Lamarck, 1804

162. 隐口圆盘虫(新种) *Discorbis latestoma*, n. sp. (图版 XVII:1—3)

壳长稍大于壳宽,低至高螺旋,壳缘圆,周缘略呈瓣状,背面平至凸,腹面脐部凹陷。房室膨鼓,依次渐增大,一般为3圈,终圈6室;房室腹面脐端瓣状,脐瓣呈星状排列,覆盖脐部。缝合线清楚,宽镶边状,辐射,凹下。壳壁厚,背面壁孔甚粗,较稀疏,有时成行排列;腹面透明,有时散布少数较粗壁孔。壳口不外露,终室口面基部被较宽透明片状物覆盖;室间壳口低拱形,自壳缘伸至近脐部。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F894	0.40	0.38	0.23 (晋卿岛)
副模标本 IOAS-F895	0.45	0.38	0.20 (琛航岛)

新种与 *Discorbis subvesicularis* Collins 不同在于, 壁孔较粗, 缝合线呈镶边状, 周缘不是明显呈瓣状。

163. 小圆盘虫 *Discorbis minuta* Schubert (图版 XVII:7)

Discorbina rugosa Brady (part) 1884, pl. 91, fig. 4.

D. rugosa (d'Orbigny) var. *minuta* Schubert, 1904, p. 420.

壳较扁, 壳长约为壳宽的 $1\frac{1}{2}$ 倍, 壳缘圆, 周缘瓣状, 背腹面中央部分均较凹陷。房室长而分明, 膨鼓, 迅速增大, 2 圈, 终圈 7 室, 房室腹面脐端呈瓣状。缝合线清楚, 背面的弯曲, 凹下, 内端呈裂缝状; 腹面的稍弯至近辐射, 凹下。壁孔粗。壳口位于房室腹面基部, 自壳缘伸至脐部, 脐瓣后缘具逗号形缝合线次壳口。壳呈红褐色。

标本测量(毫米) IOAS-F897 壳长 0.35 壳宽 0.28 壳厚 0.15 (西沙洲水深 45—50 米)

Schubert (1904) 把 Brady (1884) 的 *Discorbina rugosa* d'Orbigny 其中一个标本 (Pl. XCI, fig. 4) 列为他所建立的变种 *Discorbina rugosa* (d'Orbigny) var. *minuta* 的同物异名。我们认为他的变种与典型种差异较大(典型种壳体较大, 房室脐瓣大而明显), 应提升为独立种。

分布 南太平洋卡伊群岛 (Kei Islands); 德国中新统。

164. 奇异圆盘虫 *Discorbis mira* Cushman (图版 XVII:4)

Discorbina turbo Brady (not d'Orbigny), 1884, p. 642, pl. 87, fig. 8.

Discorbis mira Cushman, 1922a, p. 39, pl. 6, figs. 10, 11; 1931, p. 25, pl. 5, figs. 5, 6. — Boltovskoy and Lena, 1966, p. 296, pl. 3, figs. 1, 2. — Brooks, 1973, p. 414, pl. 10, figs. 1, 2.

Rotorbinella mira (Cushman). Todd, 1965, p. 18, pl. 8, fig. 2.

Discorbis mirus Cushman. Graham and Militante, 1959, p. 93, pl. 13, fig. 23.

Gavelinopsis sp. cf. *G. mira* (Cushman) Lankford and Phleger, 1973, p. 124, pl. 5, fig. 16.

壳近圆形, 壳缘稍锐, 具窄镶边, 周缘略呈瓣状, 背面凸, 腹面平或稍凸, 脐部具脐塞。房室不甚分明, 终圈 6 室, 房室腹面脐端具后伸翼状突物。缝合线弯斜, 背面的不甚清楚, 略呈镶边状, 腹面的稍凹。壳壁厚, 壁孔粗, 背面的一般分布于近缝合线处。壳口位于房室腹面基部。

标本测量(毫米) IOAS-F898 壳径 0.58 壳厚 0.28 (珊瑚岛)

分布 百慕大群岛、波多黎各岛、佛得角群岛、委内瑞拉、巴西、阿森松岛、澳大利亚、热带太平洋诸岛、菲律宾。

小圆盘虫属 *Discorbinella* Cushman and Martin, 1935

165. 基林巴小圆盘虫(新种) *Discorbinella kerimbatica*, n. sp. (图版 XVIII:3)

Discorbina pustulata Heron-Allen and Earland (not Heron-Allen, 1913) 1915, p. 701, pl. 52, figs. 24—26. — Sidebottom, 1918, p. 254—255, pl. 6, figs. 9—11.

壳甚小, 平凸, 壳缘具宽薄片状龙骨。背面凸, 露旋, 近 2 圈, 腹面包旋, 平坦。房室分明, 终圈 5—6 室, 逐渐增大, 稍膨鼓, 房室腹面脐端呈瓣状。缝合线稍凹, 背面的稍弯至近辐射, 腹面的甚弯曲。背面壁孔粗而少, 孔缘凸, 腹面呈玻璃透明, 壁孔甚细。壳口位于房室腹面基部, 缝合线次壳口明显。

标本测量(毫米) 正模标本 IOAS-F899 壳长 0.15 壳宽 0.13 壳厚 0.06 (觅出礁)

Heron-Allen and Earland 1913 年首次记载于爱尔兰岛的 *Discorbina pustulata*, 背面

凸,包旋,终圈仅露4个房室,腹面平,露旋,应是个 *Planodiscorbis*。1915年,他们在基林巴群岛又记载了此种,他们曾提及基林巴的标本除终圈房室一般为5个外,其余特征与记载于爱尔兰岛的典型种无多大区别。但是,从他们所提供的图形看,其背面露旋而不是包旋,腹面包旋而不是露旋,这些基本特征与 *Planodiscorbis* 完全不同,而应属于 *Discorbinella*。因此,我们认为它应是个独立种。西沙的标本与基林巴群岛的十分相似。

分布 基林巴群岛、澳大利亚。

小上口虫属 *Epistominella* Husezima and Maruhasi, 1944

166. 管小上口虫 *Epistominella tubulifera* (Heron-Allen and Earland) (图版 XVII: 8)

Truncatulina tubulifera Heron-Allen and Earland, 1915, p. 710, pl. 52, figs. 37—40. — Cushman, 1924, p. 38, pl. 11, fig. 8.

Alabamina tubulifera (Heron-Allen and Earland) Hofker, 1951, p. 392, figs. 270—273.

Epistominella tubulifera (Heron-Allen and Earland). Cushman, Todd and Post, 1954, p. 365, pl. 90, fig. 20. — Graham and Militante, 1959, p. 110, pl. 18, fig. 8. — Todd, 1965, p. 31, pl. 10, fig. 2.

壳不等双凸,2—3圈,背面露旋,平或稍凸,腹面包旋,甚凸。房室不甚分明,长而弯曲。缝合线镶边状,弯曲。壳壁厚,背面具少数粗孔及管状突起,管突有时顺房室形状弯曲;腹面壁孔细,有时亦有少数短管突。壳口自终室腹面基部伸向口面。

标本测量(毫米) IOAS-F900 壳径0.28 壳厚0.18 (东岛)

分布 基林巴群岛、望加锡海峡、马来群岛、萨摩亚群岛、马绍尔群岛、菲律宾。

小帽贝虫属 *Patellinella* Cushman, 1928

壳呈扁圆锥形,平凸,螺旋。初圈可多于2个房室,随后均由2个房室组成一圈。背面可见全部房室,腹面仅露最后一对房室。壳壁钙质有孔型,壁孔细,显微结构辐射状。壳口位于腹面,拱形,开向脐穴。(现代)

167. 荫路小帽贝虫 *Patellinella ambulacrata* (Moebius) (图版 XVII: 9)

Bolivina ambulacrata Moebius, 1880, p. 95, pl. 9, figs. 14, 15.

Discobolivina ambulacrata (Moebius) Hofker, 1951, p. 430, fig. 295.

壳小,扁圆锥形,口面观椭圆形,壳缘圆。房室分明,稍膨鼓,迅速增大。缝合线清楚,略呈镶边状。壳壁薄,半透明,近缝合线处具孔缘加厚的微细壁孔。口面光滑,壳口宽拱形。

标本测量(毫米) IOAS-F901 壳长0.18 壳宽0.23 壳厚0.15 (赵述岛)

分布 毛里求斯、马来群岛。

168. 刺小帽贝虫(新种) *Patellinella spinosa*, n. sp. (图版 XVII: 10—12)

壳扁,始端窄圆,渐向口端增宽,口面观圆长方形,壳缘圆。房室低而宽,口面膨凸,周缘具凸肋,壳缘处自凸肋突伸出一根或几根粗壮棘刺。缝合线稍清楚。壳壁薄,壁孔较明显,壳面似呈颗粒状,壳缘附近常具许多微细茸刺,房室口面透明,无壁孔,壳口高拱形,位于房室口面基部。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F902	0.33	0.28	0.18 (珊瑚岛)
副模标本 IOAS-F903	0.30	0.20	0.15 (珊瑚岛)

新种与 *Patellinella jugosa* (Brady) 主要不同在于, 壳缘处自凸肋突伸出粗壮棘刺, 壳面近壳缘处具微细茸刺。新种棘刺的多少、钝锐以及茸刺的有无, 均有一定的变化, 这可能与标本磨损程度有关。

平盘虫属 *Planodiscorbis* Bermudez, 1952

169. 粗孔平盘虫 *Planodiscorbis grossepunctatus* (Parr) (图版 XVIII:1,2)

Discorbis grossepunctatus Parr, 1945, p. 210, pl. 10, fig. 4.

壳平凸, 近卵形, 壳缘呈凸肋镶边状, 周缘略呈瓣状。背面凸, 仅露终圈 4 室, 终室约占背面面积 1/3; 腹面平坦, 露旋, 2 圈。缝合线清楚, 背面的近辐射, 稍凹, 腹面的呈平镶边状, 较弯。壳壁厚, 背面壁孔粗而密, 呈白斑点状, 腹面壁孔细。主壳口不显露, 房室腹面基部中央与前一房室接触处具一明显内凹的拱形次壳口, 内齿板伸至房室背壁, 背面透显其轮廓, 有时背面相应部位略显内凹。终室次壳口开敞, 前几个房室的则被一层透明壳质物封闭。

标本测量(毫米) IOAS-F904 壳长 0.45 壳宽 0.38 壳厚 0.13 (金银岛)

本种特征相当稳定, 终圈都是由 4 个房室组成。

分布 澳大利亚。

拟平虫属 *Planulinoides* Parr, 1941

壳几乎平卷露旋, 壳缘宽截形。主壳口位于壳缘面稍离基部, 房室腹面基部具次壳口。(上新世至现代)

170. 平凹拟平虫 *Planulinoides planoconcavus* (Chapman, Parr and Collins) (图版 XVIII:4,5)

Planulina biconcava (Jones and Parker) var. *planoconcava* Chapman, Parr and Collins, Parr, 1932b, p. 232, pl. 22, fig. 34.

Discorbis planoconcava (Chapman, Parr and Collins) Chapman, Parr and Collins, 1934, p. 560, pl. 11, figs. 40a—c.

壳小, 宽耳形, 壳缘斜截, 稍内凹。背面较腹面为小, 甚凹陷, 露旋, 2 圈, 壳缘及缝合线均呈凸镶边状, 壁孔粗而密; 腹面露旋, 中央凹陷, 壳缘及缝合线均呈平镶边状, 壳面光滑, 透明, 壁孔细。室间壳口位于房室壳缘面基部上方; 房室腹面近脐端具逗号形缝合线次壳口, 内连齿板。

标本测量(毫米) IOAS-F906 壳长 0.33 壳宽 0.25 壳厚 0.15 (金银岛)

本种总的特征与 *Planulinoides biconcavus* (Jones and Parker) 有些相似, 但背腹面不等大, 终室壳口不显露。当剖去终室壁之后, 可见室间壳口呈高拱形, 在口面上方, 其下方具齿板, 齿板与房室腹面缝合线次壳口相连。

分布 澳大利亚现代及其第三纪地层。

玫瑰虫属 *Rosalina* d'Orbigny, 1826171. 韧硬玫瑰虫 *Rosalina crustata* (Cushman) (图版 XVII:5)

Discorbis crustata Cushman, 1933a, p. 88, pl. 9, fig. 4. — Cushman, Todd and Post, 1954, p. 358, pl. 89, fig. 6.

Neoconorbina crustata (Cushman). Todd, 1965, p. 15, pl. 2, figs. 2, 3.

壳扁至低螺旋,壳缘稍锐,呈镶边状,背面中央部分较凸,后成部分趋于摊平,腹面平至凹,脐部敞露。房室多而分明,3—4圈,背面初成部分的呈半月形,4—5室组成一圈,后成部分的迅速增长,呈新月形,甚重叠,3室或2室组成一圈,腹面终室约占腹面面积一半左右。缝合线清楚,甚弯曲;背面的呈窄镶边状,齐平;腹面的不呈镶边状,稍凹。壳面光滑,壁孔较粗,背面的较密,腹面的较稀疏。壳口位于房室腹面基部,具微弱口唇,近脐端具逗号形缝合线次壳口。

标本测量(毫米) IOAS-F908 壳径 0.48 壳厚 0.18 (西沙洲水深45—50米)

Cushman (1933a) 描述本种壳体甚扁,呈鳞片状,但从 Todd (1965) 所示本种的图形看,其螺旋程度有自低至高的变化。西沙标本的特征较接近 Todd 的描述。本种脐部敞露,腹面无明显的脐瓣,应为 *Rosalina* 属。

分布 斐济群岛、马绍尔群岛。

172. 小玫瑰虫 *Rosalina opima* (Cushman) (图版 XVIII:6)

Discorbis opima Cushman, 1933a, p. 88, pl. 9, fig. 3. — Cushman, Todd and Post, 1954, p. 358, pl. 89, figs. 10, 11.

Rosalina opima (Cushman). Todd, 1958, p. 196, pl. 1, fig. 16.

壳近圆形,低螺旋,背面凸,腹面凹陷或较平,壳缘窄圆。房室分明,2—3圈,终圈4室,迅速增大,房室腹面脐端呈瓣状。缝合线清楚,弯曲,背面的平至微凹,腹面的凹下。壳面光滑,背面壁孔较粗而密,腹面壁孔细。壳口位于房室腹面基部,具逗号形缝合线次壳口。

标本测量(毫米) IOAS-F909 壳径 0.50 壳厚 0.15 (珊瑚岛)

本种与 *Rosalina micens* (Cushman) 较为相似,但后者背腹面壁孔均较粗。

分布 斐济群岛、马绍尔群岛。

173. 简单玫瑰虫(相似种) *Rosalina* cf. *R. simplex* d'Orbigny (图版 XVIII:10)

Rosalina simplex d'Orbigny, 1846, p. 178, pl. 10, figs. 25—27.

壳扁平,宽卵形,壳缘圆,周缘略呈瓣状;背面较平,3圈,中央部分稍凹陷,腹面脐部敞露,凹陷。房室较膨鼓,终圈7室,逐渐增大,房室腹面脐端呈瓣状。缝合线清楚,背面初成部分的呈镶边状,不凹,后成部分的较凹下;腹面初成部分缝合线辐射,后成部分的弯曲稍凹。背面壁孔较粗而密,稍越过壳缘;腹面外缘壁孔较粗,内缘壁孔较细而稀疏,近脐端壳壁透明,无壁孔。壳口低拱形,自壳缘伸至脐端,口缘稍厚。

标本测量(毫米) IOAS-F910 壳长 0.38 壳宽 0.30 壳厚 0.18 (琛航岛)

本种与 *Rosalina orientalis* (Cushman) 不同在于,壳体扁平,房室较多,背面后成部分缝合线凹下。本种主要特征与 *R. simplex* d'Orbigny, 1846 一致,惟腹面壁孔仅局限于近壳缘区。

分布 德国第三系。

174. 亚扁玫瑰虫 *Rosalina subcomplanata* (Parr) (图版 XVIII:8)

Discorbis subcomplanata Parr, 1950, p. 355, pl. 14, figs. 1—2.

壳近圆形,低螺旋,背面凸,腹面较平,脐部稍凹,壳缘圆。房室稍膨鼓,2圈,终圈7室,逐渐增大。缝合线清楚,弯曲,镶边状,背面初成部分的稍凸,后成部分的微凹;腹面的稍凹。壳壁厚,背面壁孔粗,腹面壁孔细。壳口位于房室腹面基部,自近壳缘处伸至脐部。

标本测量(毫米) IOAS-F911 壳径 0.25 壳厚 0.10 (金银岛)

西沙的标本与典型种的主要特征很相似,惟壳缘较圆,背面壁孔较腹面的粗。

分布 印度洋。

175. 圆顶玫瑰虫 *Rosalina terquemi* (Rzehak) (图版 XVIII:7)

Rosalina orbicularis Terquem (not d'Orbigny, 1850) 1876, p. 34, pl. 3, fig. 5a—c.

Discorbina orbicularis (Terquem). Brady, 1884, p. 647, pl. 88, fig. 4—8. — Sidebottom, 1908, p. 13, pl. 4, fig. 7a—c.

D. terquemi Rzehak, new name, Rzehak, 1888, p. 228.

Discorbis orbicularis (Terquem). Cushman, 1915, p. 16, text fig. 18a—c, pl. 11, fig. 1a—c.

Neoconorbina terquemi (Rzehak). Parker, 1958, p. 267, pl. 3, fig. 26, 27. — Hofker, 1971, p. 1, pl. 55, figs. 1—8.

Rosalina terquemi (Rzehak). Graham and Militante, 1959, p. 98, pl. 14, figs. 13—14a—c. — Hornibrook, 1961, p. 101, pl. 13, fig. 272. — Bermudez and Seiglie, 1963, p. 150, pl. 22, fig. 1.

壳圆,背面圆凸,腹面甚凹陷,壳缘稍锐,镶边状。房室2—3圈,早期的呈半月形,每圈4室;后期的迅速变长,呈弯月形,终圈3室或2室,甚重叠,腹面脐端呈瓣状。缝合线清楚,弯曲,有时呈窄镶边状。壳壁薄而透明,壁孔较粗而稀疏。壳口位于房室腹面脐瓣下方。

标本测量(毫米) IOAS-F912 壳径 0.33 壳厚 0.10 (琛航岛与广金岛之间水深30米)

本种与 *Rosalina concinna* (Brady) 较为相似,但后者壳缘圆,无镶边。

分布 世界广布种。大西洋、印度洋和太平洋很多地区都有记载。

176. 瘤头玫瑰虫 *Rosalina tuberocapitata* (Chapman) (图版 XVIII:9)

Discorbina tuberocapitata Chapman, 1900, p. 11, pl. 1, figs. 9a—c.

Discorbis tuberocapitata (Chapman). Cushman, Todd and Post, 1954, p. 359, pl. 89, fig. 16.

Neoconorbina tuberocapitata (Chapman). Todd, 1965, p. 17, pl. 1, fig. 8, 9.

壳平凸,背面高凸,呈圆屋顶状,腹面平或稍凸,壳缘稍锐,镶边状。房室3—4圈,弯月形,甚重叠,背面早期房室被透明厚壳质物覆盖,腹面一般仅露终圈4室,终室约占腹面面积一半左右。背面缝合线镶边状,齐平,腹面的稍凹,不呈镶边状。壳壁厚,壁孔细,腹面近脐区具瘤状突起及粗孔。壳口在房室腹面基部,拱缝状,瓣状口唇有时稍外翻,近脐端具较小的逗号形缝合线次壳口。

标本测量(毫米) IOAS-F913 壳径 0.33 壳高 0.23 (金银岛)

分布 富纳富提岛、斐济群岛、马绍尔群岛、马利亚纳群岛。

177. 清晰玫瑰虫 *Rosalina vilardeboana* d'Orbigny (图版 XVIII:11)

Discorbina vilardeboana (d'Orbigny). Brady, 1884, p. 645, pl. 86, figs. 9, 12; pl. 88, fig. 2. — Heron-Allen and Earland, 1932, p. 409, pl. 13, figs. 37—39.

Rosalina vilardeboana d'Orbigny. Todd, 1965, p. 13, pl. 3, figs. 2, 5. — Matoba, 1967, p. 257, pl. 26, figs. 15a—c, 16a—c; 1970, p. 61, pl. 4, fig. 11a—c.

壳低螺旋,腹面较背面鼓凸,脐部凹陷,壳缘圆,周缘略呈瓣状。房室分明,约 $2\frac{1}{2}$ 圈,终圈 5—6 室,依次渐增大,腹面尤为膨鼓,脐端呈钝瓣状。缝合线清楚,背面的呈窄镶边状,稍弯,微凹;腹面的不呈镶边状,凹下,近辐射状。壳壁较薄,壁孔较粗而清晰,腹面的较背面的密;壳面光滑,背面早期壳圈被薄透明壳质物覆盖。壳口位于房室腹面基部,开向脐穴。

标本测量(毫米) IOAS-F914 壳径 0.45 壳厚 0.20 (中建岛)

西沙的标本与 Todd (1965) 记载于热带太平洋的最为相似。

分布 马尔维纳斯群岛、新西兰、热带太平洋、北太平洋;日本新生界。

178. 闪烁玫瑰虫 *Rosalina williamsoni* (Chapman and Parr) (图版 XVII:6)

Discorbina nitida Sidebottom, 1908 (not *R. nitida* Williamson) pl. 4, fig. 6. — Heron-Allen and Earland, 1916, p. 269, pl. 42, figs. 26—30.

Discorbis nitida (Brady). Cushman, 1949, p. 41, pl. 8, fig. 1.

D. williamsoni Chapman and Parr, Parr 1932b, p. 226, pl. 21, fig. 25.

Rosalina williamsoni (Chapman and Parr). Voorthuysen, 1960, p. 252, pl. 2, fig. 19a, b.

壳小;壳缘锐,镶边状,周缘一般不呈瓣状;背面呈低圆锥形,显露 2 圈多房室,腹面稍凹陷。房室分明,半月形,4 室组成一圈。缝合线清楚,背面的呈镶边状,齐平,较弯;腹面的稍弯,微凹。壳壁薄而透明,壁孔细。壳口位于房室腹面基部近脐端,具较小的逗号形缝合线次壳口。

标本测量(毫米) IOAS-F915 壳径 0.25 壳厚 0.10 (金银岛)

西沙的标本与 Chapman and Parr (1932b) 记载于澳大利亚的 *Discorbis nitida* 及 Sidebottom (1908) 记载于东地中海的 *Discorbina nitida* 最为相似,房室形状(半月形)及数目(每圈 4 室)都很稳定。Chapman and Parr 及 Sidebottom 都把他们的标本列为 *Rotalina nitida* Williamson 的同物异名。Chapman and Parr (1932b) 发现 *Rotalina nitida* 一名已被占用,提出 *Discorbis williamsoni* 作为新名。实际上,他们的标本与 Williamson 的 *Rotalina nitida* 截然不同。*R. nitida* 的房室是不等边四边形,6 室组成一圈,壳缘呈瓣状。

分布 澳大利亚、东地中海、比利时、西德埃姆斯河河口。

蟹虫亚科 Baggininae Cushman, 1927

蟹虫属 *Cancris* de Montfort, 1808

壳螺旋,双凸,一般呈长耳形,腹面脐部可稍微敞露。房室迅速增大。壳壁钙质有孔型,显微结构辐射状。壳口位于房室腹面基部,开向脐端。(始新世至现代)

179. 耳蟹虫 *Cancris auriculus* (Fichtel and Moll) (图版 XVIII:12)

Cancris auriculus (Fichtel and Moll). Cushman and Todd, 1942, p. 74, pl. 18, figs. 1—11; pl. 23, fig. 6. — Todd, 1965, p. 22, pl. 5, fig. 5.

壳小,呈耳形,两面凸,腹面较背面凸,壳缘稍锐,具窄镶边。房室分明,稍膨鼓,终圈 6—7 室,依次渐增大。缝合线凹下,背面的呈窄镶边状,较弯,腹面的不呈镶边状,近辐射。壳壁薄,壁孔较粗。壳口位于房室腹面基部,拱缝状。

标本测量(毫米) IOAS-F916 壳长 0.23 壳厚 0.13 (琛航岛与广金岛之间水深 30 米)

我们仅发现一个终室已破损的标本,总的特征与典型种一致,惟个体较小。

分布 世界广布种。其地质分布自中新统至现代。

平滑虫科 Glabratellidae Loeblich and Tappan, 1964

平滑虫属 *Glabratella* Dorreen, 1948

180. 厚平滑虫 *Glabratella crassa* Dorreen (图版 XIX:1)

Glabratella crassa Dorreen, 1948, p. 294, pl. 39, figs. 1a—c. — Loeblich and Tappan, 1964, p. C588, fig. 464, 1a—c.

壳小,低螺旋,背面较平,腹面脐部凹陷,壳缘宽圆,周缘略呈瓣状。房室 2 圈多,稍膨鼓,早期的较小,终圈 5 室,显著增大,终圈占壳体大部分。缝合线清楚,凹下,近辐射。背面壁孔较粗而密,腹面较光滑,壁孔不明显,具少数辐射条纹。壳口位于终室腹面基部,开向脐穴,具小唇。

标本测量(毫米) IOAS-F917 壳径 0.18 壳厚 0.13 (琛航岛与广金岛之间水深 30 米)

西沙标本终圈房室显著增大,与 Loeblich and Tappan (1964) 所示的 *Glabratella crassa* Dorreen 很相似,惟个体较小。根据 Dorreen (1948) 的原始描述,其背面满布细颗粒。西沙的标本背面壁孔粗而密,似呈颗粒状。

分布 新西兰始新统。

181. 精致平滑虫(新种) *Glabratella elegans*, n. sp. (图版 XIX:2)

壳甚小,近圆形,壳缘圆,周缘略呈瓣状。背面凸,2 圈,腹面脐部凹陷。房室分明,逐渐增大,较膨鼓,终圈 6 室,终室腹面脐端呈瓣状。缝合线清楚,常呈红褐色,背面的弯曲,呈窄镶边状,稍凹,腹面的近辐射,凹下。壳面光滑,背面壁孔细密,腹面除近壳缘处外均呈玻璃透明状,具微细辐射条纹。壳口开向脐穴。壳体初成部分呈红褐色,随后逐渐变淡。

标本测量(毫米) 正模标本 IOAS-F918 壳径 0.15 壳厚 0.09 (西沙洲水深 45—50 米)

新种个体虽小,但壳面清晰,房室数目稳定,终圈都是 6 室,大多数标本的脐部披露,它的背面很象一个 *Ammonia*,但腹面具 *Glabratella* 的典型特征,即具有辐射条纹。新种与 *Pulvinulina* (= *Glabratella*) *globosa* Sidebottom 有些相似,但后者背面缝合线不呈镶边状。

182. 镶边平滑虫(新种) *Glabratella limbata*, n. sp. (图版 XIX:4)

Discorbina patelliformis Brady (part), 1884, p. 647, pl. 88, fig. 3 (not pl. 89, fig. 1).

Glabratella patelliformis (Brady). 郑执中、郑守仪, 1978, 214 页,图版 XX, 图 5。

壳近圆形,背面凸,腹面平,壳缘稍锐,镶边状。房室分明,2—3 圈,终圈 6—7 室,逐渐增大。缝合线清楚,背面的弯斜,宽镶边状,齐平或稍凸;腹面的辐射,稍凹。壳壁厚,背面壁孔粗,无纹饰,腹面具许多微细辐射条纹,脐部中央常具一小圆盾,房室脐端具卵形壳质凸粒,凸粒围绕圆盾呈星射状排列。壳口位于房室腹面基部,延伸至脐部。

标本测量(毫米) 正模标本 IOAS-F919 壳径 0.28 壳厚 0.12 (珊瑚岛水深 4 米)

Brady (1884) 建立新种 *Discorbina patelliformis* 时,提供了两个标本图形(图版 88 图 3 和图版 89 图 1)。我们检查了西沙样品中上述两个类型的大量标本,认为 Brady 的两

个图包括了两个不同的种。为此,我们将其中的一个种(图版 88 图 3)定为新种。新种与 *Glabratella paielliformis* (Brady) 不同在于,壳缘镶边状,背面无自锥顶向下辐射的条纹,腹面除具辐射条纹外,尚有星射状壳质凸粒。

分布 Brady 的标本是采自阿德米勒尔提群岛。

183. 隆褶平滑虫 *Glabratella makinoi* Uchio (图版 XIX:5)

Discorbis pulvinatus (Brady) var. *makinoi* Uchio, 1952, p. 155, pl. 7, fig. 5.

壳宽卵形至近圆形,背面凸,腹面平,脐部稍凹。房室分明,2圈多,终圈4室,依次渐增大,房室背面呈半月形。房室背壁(主要是周围部分)具许多高纵管突,管突排接成高纵围壁,致使壳体背面呈隆凸皱褶状;腹面具微细辐射粒肋。缝合线清楚,背面的斜直,裂刻状,腹面的稍弯至辐射,稍凹。壳口不明显。

标本测量(毫米) IOAS-F920 壳径 0.33 壳厚 0.18 (金银岛)

本种原被 Uchio 定为 *Discorbis* (= *Glabratella*) *pulvinatus* (Brady) 的一个变种。我们认为它与 *Glabratella pulvinata* (Brady) 差异较大,后者终圈具3个房室,背面无高纵管突。为此,我们将它提升为独立种。

分布 日本太平洋岸及八丈岛。

184. 美丽平滑虫(新种) *Glabratella pulchella*, n. sp. (图版 XIX:6)

Glabratella australensis (Heron-Allen and Earland). Lankford and Phleger, 1973 (not *Discorbis australensis* Heron-Allen and Earland, 1932), p. 121, pl. 4, figs. 26a, b.

壳甚小,低螺旋,稍扁,宽耳形,壳缘窄圆,腹面脐部凹陷。房室分明,2圈,终圈7室,依次渐增大,稍膨鼓;终室腹面脐端呈长瓣状,遮掩脐部。缝合线清楚,镶边状,背面的弯曲,凸;腹面的近辐射,稍凹。背面壁孔较粗,顺缝合线成行排列;腹面呈玻璃透明,壁孔微细,脐穴周围有微细辐射条纹。壳口位于房室腹面基部。

标本测量(毫米) 正模标本 IOAS-F921 壳长 0.14 壳宽 0.12 壳厚 0.06 (东岛)

新种形状与 Lankford and Phleger (1973) 所记载的 *Glabratella australensis* (Heron-Allen and Earland) 最为相似,惟个体较小,终圈房室较少(后者为9室)。他们的 *Glabratella australensis* (Heron-Allen and Earland) 与典型种差异较大,后者螺旋较高,呈圆锥形,房室甚窄而弯长。

185. 粗糙平滑虫(新种) *Glabratella scabra*, n. sp. (图版 XIX:3)

壳甚小,近圆形,壳缘圆,周缘略呈瓣状。背面凸,腹面脐部凹陷。房室不甚分明,稍膨鼓,2圈,终圈6—7室,依次渐增大。缝合线不甚清楚,稍凹,背面的弯曲,腹面的辐射。背面壁孔较粗而密,略显成行排列,腹面脐部具辐射细条纹。壳口位于房室腹面基部,壳呈淡黄色。

标本测量(毫米) 正模标本 IOAS-F922 壳径 0.19 壳厚 0.08 (赵述岛)

新种与 *Glabratella crassa* Dorreen 不同在于,房室较多(后者每圈4—5室),壳体较扁,背面较凸。

186. 帐篷平滑虫 *Glabratella tabernacularis* (Brady) (图版 XIX:7, 8)

Discorbina tabernacularis Brady, 1881, p. 65; 1884, p. 648, pl. 89, figs. 5—7. — Heron-Allen and Earland, 1915, p. 704, 1924, p. 633, pl. 36, figs. 47—49; 1930, p. 186, pl. 4, figs. 59—61.

壳高螺旋,帐篷形,侧缘线稍凸,腹面凹陷。房室长而斜,3—4圈,终圈5室。缝合

线呈宽镶边状, 齐平。腹面的不甚清楚, 辐射。壳壁厚, 背面自锥顶向下辐射细条纹, 腹面亦具辐射条纹。壳口开向脐端。

标本测量(毫米) IOAS-F923 壳径 0.18 壳高 0.23 (觅出礁)

分布 巴布亚、阿德米勒尔提群岛、基林巴群岛。

凹口虫属 *Heronallenia* Chapman and Parr, 1931

壳扁, 螺旋。房室迅速增宽。背面缝合线镶边状。壳壁钙质有孔型, 显微结构辐射状。腹面具辐射条纹。壳口高拱形, 位于终室腹面脐端凹陷处。(始新世至现代)

187. 光滑凹口虫 *Heronallenia laevis* Parr (图版 XIX:9)

Heronallenia laevis Parr, 1950, p. 457, pl. 14, fig. 8.

壳甚小而扁, 耳形, 壳缘圆。房室分明, 稍膨鼓, 终圈 5 室。缝合线清楚, 弯而稍凹。壳壁薄, 半透明, 壁孔甚细, 壳面光滑。壳口高拱形, 周围具辐射条纹。

标本测量(毫米) IOAS-F925 壳长 0.13 壳宽 0.10 壳厚 0.03 (琛航岛与广金岛之间水深 30 米)

西沙的标本与典型种很相似, 惟个体较小。

分布 塔斯马尼亚岛。

188. 小凹口虫 *Heronallenia parva* Parr (图版 XIX:10)

Heronallenia parva Parr, 1950, p. 358, pl. 14, fig. 10.

壳小而扁, 背面稍凸, 腹面凹, 壳缘呈窄镶边状, 不甚锐。房室分明, 2 圈, 终圈 4—5 室, 迅速增大。缝合线清楚, 背面的弯曲, 呈窄镶边状, 稍凸; 腹面的近辐射, 稍凹。背面不光滑, 具珠粒状突起, 腹面辐射条纹较稀疏。壳口高拱形。

标本测量(毫米) IOAS-F926 壳长 0.28 壳宽 0.25 壳厚 0.08 (珊瑚岛)

我们仅掌握一个标本, 背面细珠粒状突起大部分已被磨掉。

分布 塔斯马尼亚岛东岸。

旋虫总科 Spirillinacea Reuss, 1862

旋虫科 Spirillinidae Reuss, 1862

旋虫亚科 Spirillininae Reuss, 1862

旋虫属 *Spirillina* Ehrenberg, 1843

壳平旋, 初室由无分隔旋管紧凑旋绕。壳壁钙质有孔型。壳口位于旋管末端。(三叠纪? 侏罗纪至现代)

189. 扁旋虫(新种) *Spirillina compressa*, n. sp. (图版 XIX:11)

壳甚小而扁, 圆形, 旋管 5 圈。背面比腹面稍宽, 旋管背缘锯齿状, 齿稍向上翘; 腹面具辐射排列的细颗粒, 中央部分稍凹陷, 具少数小圆孔。

标本测量(毫米) 正模标本 IOAS-F927 壳径 0.15 壳厚 0.02 (觅出礁泻湖水深 6 米)

新种壳缘具稍上翘的齿, 这较接近于 *Spirillina scalaris* n. sp., 但它的背面较平, 前旋的缘齿不甚突出, 腹面无沿旋缝合线排列的明显颗粒状突起。

新种壳缘呈锯齿状, 与 *S. spinigera* Chapman, 1900 较为相似, 但后者壳体较大而厚, 缘齿较少而不向上翘。

190. 粗孔旋虫(新种) *Spirillina grosseperforata*, n. sp. (图版 XIX:12)

壳较小,圆形,两面直径约相等,旋管 8—9 圈,壳缘近截形,缘角稍锐。背面较平,密布粗大壁孔;腹面较粗糙,壁孔不明显,中央部分稍凹,壳口拱形,略偏向腹侧。

标本测量(毫米) 正模标本 IOAS-F928 壳径 0.28 壳厚 0.05 (觅出礁)

新种与 *Spirillina perforata* (Schultze) 不同在于,壳体较小,仅壳体一面显露粗大凹坑,壳口略偏向腹侧。

191. 梳缘旋虫 *Spirillina pectinimarginata* Chapman, Parr and Collins (图版 XX:1,2)

Spirillina pectinimarginata Chapman, Parr and Collins, 1934, p. 558, pl. 8, fig. 3.

壳小而扁平,圆形,旋管 5—6 圈,管径逐渐增大,两面均较平,中央部分稍凹陷;壳缘向腹侧削薄,周缘呈梳齿状。背面管圈表面具横条纹,旋线较凸;腹面具辐射粒突,中央部分粒突较大。壳口新月形。

标本测量(毫米) IOAS-F929 壳径 0.23 壳厚 0.05 (觅出礁泻湖水深 6 米)

分布 首次记载于澳大利亚第三系。

192. 平凹旋虫(新种) *Spirillina planoconcava*, n. sp. (图版 XX:4, 5)

壳较小,圆形,旋管多达十几圈,早期的甚窄,最后几圈迅速增宽和增厚,壳缘宽截形,缘角稍锐,较厚;一般背腹两面直径约相等或背面略小。背面甚凹陷,具粗壁孔,旋线有时较凸;腹面平至微凹,有时具少数小突粒。壳口位于旋管末端,低而宽。

标本测量(毫米) 正模标本 IOAS-F931 壳径 0.30 壳厚 0.10 (觅出礁)

新种最明显的特征是最后几圈迅速增宽和增厚,壳体呈平凹形。

193. 孔缝旋虫(新种) *Spirillina porisuturalis*, n. sp. (图版 XX:3)

壳小,甚扁,旋管 4 圈,逐渐增宽。壳缘具锐薄宽龙骨,龙骨宽度约为管宽 1/3。背面旋线处凹陷,沿线具一行较粗的孔;腹面稍凹陷,具少数辐射排列的粒状突起,缝合线呈镶边状,凹下。壳口卵形,位于旋管末端。

标本测量(毫米) 正模标本 IOAS-F933 壳径 0.20 壳厚 0.02 (觅出礁)

新种背面旋线处具粗孔,与 *S. vivipara* Ehrenberg var. *unilinearis* Jones, 1895 较为相似,但壳缘具锐薄宽龙骨。

194. 梯旋虫(新种) *Spirillina scalaris*, n. sp. (图版 XIX:13)

壳甚小,平凸,壳缘圆凸,旋管 4 圈,侧面观呈阶梯状。背面略较腹面宽,旋壁高凸,具向上翘的突齿;腹面平,具少数顺旋线排列的颗粒状突起。壳口三角形。

标本测量(毫米) 正模标本 IOAS-F934 壳径 0.18 壳厚 0.05 (中建岛)

新种与 *Spirillina spinigera* Chapman, 1900 有些相似,但后者背面旋壁不呈阶梯状,突齿较少而不向上翘,个体较大,腹面光滑。

195. 母株旋虫 *Spirillina vivipara* Ehrenberg (图版 XX:6)

Spirillina vivipara Ehrenberg. Brady, 1884, p. 630, pl. 85, figs. 1—5. — Cushman, 1924, p. 30, pl. 9, figs. 1, 2; 1931, p. 3, pl. 1, figs. 1—4. — Todd, 1965, p. 6.

壳小而扁,壳缘圆。一面较平,另一面稍凹陷,旋管 6 圈,依次增宽。旋线清楚,稍凹。壳壁薄,壁孔粗细不匀,壳面不平滑。壳口拱形,一般略偏向凹面。

标本测量(毫米) IOAS-F935 壳径 0.23 壳厚 0.02 (觅出礁)

分布 世界广布种。一般出现于浅水环境。

196. 旋虫(未定种) *Spirillina* sp. (图版 XX:7,8)

壳小,甚扁,一面较平,另一面稍凹,旋管圈数较多。旋线稍凹,略呈镶边状,沿旋线处具单行小孔(润湿后尤为明显)。壁孔较细。壳口拱形,略偏向凹面。

标本测量(毫米) IOAS-F936 壳径 0.30 壳厚 0.03 (西沙群岛)

内口虫属 *Mychostomina* Berthelin, 1881

壳低螺旋,圆锥形或凹凸。初室球形,随后由无分隔旋管在背面紧凑旋卷几圈,最后跨过壳缘面向腹面脐部旋卷 1—2 圈。壳缘可具窄龙骨。壳壁钙质有孔型或具假孔。壳口位于旋管末端,开向腹面脐部。

Berthelin 1881 年建立 *Mychostomina* 作为 *Spirillina* Ehrenberg, 1843 的亚属,但未曾指定模式种。1933 年 Galloway 把 *Mychostomina* 提升为属,并指定 *Spirillina vivipara* Ehrenberg var. *revertens* Rhumbler 为其模式种。后来的一些作者认为 *Mychostomina* 是 *Spirillina* 的同物异名。Smith and Isham 1974 年根据 *Mychostomina* 管室的旋卷特征与 *Spirillina* 有所不同,重新恢复了此属,并对此属的描述进行了修正。

Mychostomina 与 *Spirillina* 主要区别在于,前者螺旋,壳口在腹面,后者平旋,壳口在壳缘面。*Mychostomina* 与 *Turrispirillina* Cushman 主要区别在于,前者壳口在腹面,腹面不完全露旋,后者壳口位于壳缘面,背腹面完全露旋。*Mychostomina* 与 *Conicospirillina* Cushman, 1927 主要区别在于,前者腹面不完全包旋,而后者腹面完全包旋。

197. 龙骨内口虫(新种) *Mychostomina carinata*, n. sp. (图版 XXI:9)

壳小,背面凸,中央微凹,腹面平,中央凹陷,周缘具宽片状龙骨,润湿时龙骨质地柔软,呈浅橙色。旋管逐渐增宽。背面旋线凹下,腹面的略呈平镶边状,透明。壁孔少而粗,背面的较腹面的明显,壳口位于腹面旋管末端,开向脐部。

标本测量(毫米) 正模标本 IOAS-F938 壳径 0.25 壳厚 0.10 (觅出礁)

新种具宽片状龙骨,较接近于 *Spirillinoides circumcinctus* Rhumbler, 1938, 但后者壳壁胶结型,壳口是在壳缘面。

198. 缘孔内口虫(新种) *Mychostomina peripora*, n. sp. (图版 XX: 12)

壳甚小而扁,背面较平,稍宽于腹面,腹面中央部分凹陷,壳缘窄圆。旋管 4 圈,逐渐增宽。壳壁较厚,壁孔较粗,旋管壳缘处壁孔尤为明显。旋管末端位于腹面,壳口缝状。

标本测量(毫米) 正模标本 IOAS-F939 壳径 0.17 壳厚 0.03 (觅出礁泻湖水深 6 米)

新种与 *Mychostomina revertens* 不同在于,壳体扁平,壁孔粗大。新种与 *Spirillina* var. *densepunctata* (应属 *Mychostomina*) 不同在于,个体较小,壁孔较粗。

199. 回转内口虫 *Mychostomina revertens* (Rhumbler) (图版 XXI:1—6)

Spirillina vivipara Ehrenberg var. *revertens* Rhumbler, 1906, p. 32, pl. 2, figs. 8—10. — Cushman, Todd and Post, 1954, p. 357, pl. 88, fig. 30.

Spirillina revertens (Rhumbler). Loeblich and Tappan, 1964, p. C600, figs. 475, 3, 4.

Mychostomina revertens (Rhumbler). Smith and Isham, 1974, pp. 61—68, pl. 1, figs. 1—3, 7—9, pl. 2, figs. 1—7, pl. 3, figs. 1—6, pl. 4, figs. 1—6; text, figs. 1—3.

壳甚小,近圆形,壳缘窄圆。背面圆凸,旋管5—6圈,旋线清楚;腹面被终圈旋管遮掩大部分,中央部分凹陷。壳壁较薄,半透明,壁孔较少。最后1—2圈旋管盘旋于腹面,末端有时伸达脐部。壳口位于旋管末端,椭圆形。

标本测量(毫米)	壳径	壳厚
IOAS-F940	0.15	0.09 (觅出礁)
IOAS-F941	0.13	0.05 (觅出礁)

本种与 *Spirillina* (= *Mychostomina*) *lucida* Sidebottom 较为相似,但后者壳缘锐。

分布 夏威夷群岛、新西兰查塔姆群岛、马绍尔群岛。

200. 截锥内口虫(新种) *Mychostomina truncata*, n. sp. (图版 XXI: 8)

壳甚小,截锥形,壳缘斜截,腹缘角呈脊状。背面不完全露旋;腹面较平,光滑,无壁孔,中央部分凹陷。背面壁孔较粗而密。壳口开向脐部。

标本测量(毫米) 正模标本 IOAS-F944 壳径 0.13 壳厚 0.13 (金银岛)

新种与同属其他种主要不同在于,背面不是完全露旋。

平旋虫属 *Planispirillina* Bermudez, 1952

201. 少旋平旋虫(新种) *Planispirillina paucispira*, n. sp. (图版 XX:10,11; XXVII: 6)

壳较小,壳缘截形,背腹面约同等大小。背面露旋,2—3圈,旋壁高耸;腹面平坦,具较大瘤状突粒,旋线稍清楚。壳壁厚,背面壁孔粗而明显,排列成二、三行。壳口位于旋管末端,管端背壁向前呈舌状突伸。

标本测量(毫米) 正模标本 IOAS-F946 壳径 0.23 壳厚 0.10 (觅出礁)

新种与 *Spirillina inaequalis* Brady 有些相似,但后者腹面大于背面,背面旋壁不高凸。

间管虫属 *Sejunctella* Loeblich and Tappan, 1957

壳平旋,盘状,壳缘可具龙骨。初室卵形至球形,随后由无分隔旋管松弛旋绕,各圈旋管由实心片状物所间隔。壳壁钙质有孔型。壳口位于旋管末端。(现代)

202. 侧龙骨间管虫(新种) *Sejunctella laticarinina*, n. sp. (图版 XX:9)

壳甚小而扁,宽椭圆形,2—3圈;背面凸,腹面平坦;壳缘具薄片状龙骨,龙骨明显偏于腹侧。相邻旋管由薄片状物间隔,隔片较窄,约为旋管宽度1/3左右。背面旋管鼓凸,腹面旋管不凸,约与隔片齐平。壳壁薄,旋管两面均具横纹。壳口位于旋管末端。

标本测量(毫米) 正模标本 IOAS-F948 壳径 0.18 壳厚 0.02 (晋卿岛)

新种与 *Spirillina lateseptata* Terquem, 1875 有些相似,但后者个体大(壳径0.84毫米),旋管窄,隔片甚宽(宽于旋管宽度)。另外据 Halkyard (1889) 所提供 *S. lateseptata* 的图形,其旋管在背腹两面均较鼓凸,由此可见,其隔片及壳缘龙骨不是偏于一侧。新种的隔片及壳缘龙骨则是明显偏于腹侧。

塔旋虫属 *Turrispirillina* Cushman, 1927

壳由无分隔旋管绕初室旋卷,使壳体形成空心圆锥状,背腹面均露旋。壳壁钙质有孔

型。壳口位于腹面旋管末端。(侏罗纪至现代)

203. 高旋塔旋虫(新种) *Turrispirillina altispira*, n. sp. (图版 XXI:10)

壳甚小,高螺旋,背面圆凸,腹面甚凹陷,光滑。壳缘向腹侧斜截,腹缘角钝,背缘角较锐。旋管 8 圈以上,甚重叠,后圈约叠覆其前圈宽度一半左右,显露甚窄。壁孔较明显。壳口位于旋管末端。

标本测量(毫米) 正模标本 IOAS-F949 壳径 0.19 壳厚 0.10 (觅出礁)

新种与 *Turrispirillina depressa* Parr, 1950 有些相似,但后者螺旋较低,旋管圈数较少,腹面具珠粒状突起。

帽贝虫亚科 Patellininae Rhumbler, 1906

帽贝虫属 *Patellina* Williamson, 1858

壳圆锥形,背面凸,露旋,腹面平,包旋。初室椭圆形,由无分隔的旋管环绕 1—3 圈(微球型),随后每两个房室组成一圈。室腔具许多不完整横隔板。壳壁钙质有孔型。壳口拱形,位于终室腹面基部中央。(下白垩纪至现代)

204. 异地帽贝虫 *Patellina advena* Cushman (图版 XXI:11)

Patellina advena Cushman, 1922, p. 135, pl. 31, fig. 9; 1924, p. 32. — Cushman and Herrick, 1945, p. 67, pl. 11, fig. 1. — Cushman, Todd and Post, 1954, p. 357. — Todd, 1965, pl. 7, pl. 1, fig. 2.

壳小,背面凸,腹面平。早期由无分隔旋管绕初室旋卷一圈或几圈,后期每两个房室组成一圈,室腔具排列较密的不完整辐射隔板。缝合线不甚清楚,不呈镶边状。壳壁薄,壁孔细。腹面透显最后两个房室的不完整隔板。

标本测量(毫米) IOAS-F950 壳径 0.20 壳厚 0.05 (珊瑚岛水深 4 米)

分布 首次记载于美国下渐新世地层。热带太平洋、南极、大西洋的现代沉积中亦有出现。

205. 高形帽贝虫 *Patellina altiformis* Cushman (图版 XXI:13)

Patellina advena var. *altiformis* Cushman, 1933b, p. 87, pl. 9, fig. 8a, b. — Cushman, Todd and Post, 1954, p. 257, pl. 89, fig. 1.

P. advena altiformis Cushman. Todd, 1965, p. 8, pl. 1, fig. 1.

壳小,高圆锥形。房室多,后成房室甚弯,大于半环长,辐射隔板排列较密。背面缝合线呈凸镶边状,稍向上翘。腹面平坦,中央稍凹陷。

标本测量(毫米) IOAS-F951 壳径 0.25 壳厚 0.23 (觅出礁)

本种原被 Cushman (1933) 定为 *Patellina advena* 的变种。Todd (1965) 认为是个亚种。Cushman 1922 年建立新种 *P. advena* 时,未提及缝合线特征,但从其图形看,缝合线不呈镶边状。尽管 Cushman (1933b) 亦未提及 *P. advena* var. *altiformis* 的缝合线特征,但其图形却显示呈镶边状。西沙标本的缝合线也呈镶边状。为此,我们将其提升为独立种。

分布 马绍尔群岛、斐济群岛。

206. 刺帽贝虫(新种) *Patellina spinosa*, n. sp. (图版 XXI:12)

壳小,圆锥形。背面缝合线呈窄凸镶边状,缝合线处具间距不等的上翘小刺,室腔的

横隔板短而疏,不甚明显。腹面脐部凹陷。壳口不明显。

标本测量(毫米) 正模标本 IOAS-F952 壳径 0.20 壳厚 0.10 (觅出礁)

新种与同属其他种不同在于,背面缝合线处具间距不等的小刺。

蹄虫亚科 Ungulatellinae Seiglie, 1965

拟蹄虫属 *Ungulatelloides* Seiglie, 1965

壳小,螺旋。背面可见所有房室,腹面仅露终圈。初室具漏斗状空心管突,随后由1—2圈无分隔的旋管环绕,后期每两个房室组成一圈。壳壁钙质有孔型,透明,壁孔细。壳口拱缝状,位于终室腹面脐侧。(现代)

本属的特征与 *Patellinoides* Cushman, 1933 较为相似,但前者的初室具空心管突,后者的则无管突。

207. 堂皇拟蹄虫 *Ungulatelloides imperialis* Seiglie (图版 XXI:14)

Ungulatelloides imperialis Seiglie, 1965, p. 509, 510, pl. 5, figs. 5—8.

壳小,背面凸,高螺旋,顶部具空心管突,腹面平。背面呈现为旋梯状,6—7圈,旋缘上翘,具少数粗而上翘的刺。腹面露现终圈两个半圈长的房室,脐部凹陷,凹处常露现部分前成房室。壳口拱缝状,位于终室腹面脐侧。

标本测量(毫米) IOAS-F953 壳径 0.20 壳厚 0.08 (中建岛)

仅获一标本,除其旋顶的空心管突象是断掉之外,其他特征与记载于委内瑞拉特斯提戈斯群岛 (Los Testigos) 的典型种一致。

分布 委内瑞拉特斯提戈斯群岛。

208. 塔拟蹄虫(新种) *Ungulatelloides pagoda*, n. sp. (图版 XXII: 1—3; XXVII 4; 图 15)

壳小,圆锥形,高螺旋,顶部迅速收细成空心管突,腹面稍膨鼓。房室边缘具稍向上翘的宽片状龙骨。早期旋管界线清楚,随后的双列房室界线不甚分明。壁孔细,腹面被一层玻璃透明状壳质物覆盖,隐约透显房室界线。壳口不外露。

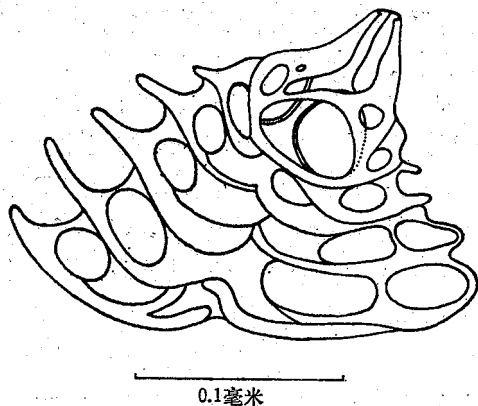


图 15 塔拟蹄虫(新种) *Ungulatelloides pagoda*, n. sp. 纵切面

标本测量(毫米) 正模标本 IOAS-F954 壳径 0.24 壳厚 0.14 (琛航岛与广金岛之间水深 30 米)
 从新种标本后成房室的树胶塑模(图版 XXII: 2, 3), 可以清楚地看出每圈是由两个房室组成的。新种与 *Ungulatelloides imperialis* Seiglie 有些相似, 但后者个体甚小, 腹面平坦, 背面最后几个房室边缘具向上翘的刺。

209. 拟蹄虫(未定种) *Ungulatelloides* sp. (图版 XXI:7)

壳甚小, 背面凸, 略呈低旋塔状, 顶端具空心管突, 腹面较平, 壳缘具宽片状龙骨。背面缝合线呈窄镶边状, 稍凸; 腹面缝合线不呈镶边状, 不凹下。壳壁薄, 壁孔较细。

标本测量(毫米) IOAS-F945 壳径 0.13 壳厚 0.08 (琛航岛与广金岛之间水深 30 米)

本种旋顶具空心管突, 与 *Ungulatelloides* 相似, 但腹面房室呈现环状而不是半环状, 有可能是 *Ungulatelloides* 的幼体。

车轮虫总科 Rotaliacea Ehrenberg, 1839

车轮虫科 Rotaliidae Ehrenberg, 1839

车轮虫亚科 Rotaliinae Ehrenberg, 1839

转轮虫属 *Ammonia* Brünnich, 1772

210. 少孔转轮虫(新种) *Ammonia paucipora*, n. sp. (图版 XXII:4)

壳甚小, 背面高凸, 腹面稍凸, 脐部凹陷而敞露, 壳缘圆, 周缘瓣状。房室分明, 3 圈多, 终圈 5 室, 膨鼓, 逐渐增大。缝合线清楚, 弯曲, 稍凹。壳壁薄, 壁孔细, 主要分布于壳缘处, 其他部位壁孔稀少或无壁孔, 近透明。壳口位于房室腹面基部, 延伸至脐端。

标本测量(毫米) 正模标本 IOAS-F956 壳径 0.17 壳厚 0.10 (晋卿岛水深 6 米)

新种壳体甚小, 壁孔主要分布于壳缘处, 致使每个房室具半月形透明区, 易与其他种相区分。

坚实虫亚科 Pegidiinae Heron-Allen and Earland, 1928

坚实虫属 *Pegidia* Heron-Allen and Earland, 1928

壳两面不等凸。房室 3—4 个相对排列。壳壁钙质有孔型, 厚, 壁孔粗。腹面脐区的内管开口于壳表。(中新世至现代)

211. 疑坚实虫 *Pegidia dubia* (d'Orbigny) (图版 XXII: 5—12)

Rotalia dubia d'Orbigny, 1826, p. 274. — Heron-Allen and Earland, 1915, p. 546.

Pegidia dubia (d'Orbigny) Heron-Allen and Earland, 1928, p. 290, pl. 1, figs. 8—15. — Cushman, Todd and Post. 1954, p. 361. — Todd, 1965, p. 32, pl. 18, fig. 5. — Guileher, et al., 1965, p. 192, pl. 15, fig. 9.

壳宽椭圆形至圆方形, 壳缘具钝圆龙骨, 背面甚圆凸, 腹面稍鼓。背面房室界线不甚分明, 隐约可见 4 室, 其中两个相对排列的大房室较为明显, 稍膨鼓。腹面房室界线不清楚。壳壁甚厚, 壁孔细密, 背面散布许多较大的形状不一的实心壳质突粒; 腹面除具细孔外, 在两个相对的大房室之间尚透显树枝状支管的轮廓, 管端开口于壳表。

标本测量(毫米) IOAS-F957 壳长 1.35 壳宽 1.05 壳厚 0.75 (觅出礁)

我们做了本种的胶蜡塑模,从塑模腹面可见3个略呈“品”字型排列的房室(有时尚露现部分初室)。紧靠这些房室的两侧各有一条约半周长的围管,围管中段分别向背、腹面最后两个房室之间横伸。背面的横伸管较短,不分叉;腹面的较长,具许多树枝状支管,支管开口于壳体腹面。剖去围管之后,可见壳体共具4个房室,略呈低螺旋排列,腹面显露3室,有时稍露初室,背面显露4室。

分布 印度洋、基林巴群岛、毛里求斯、爪哇海、土阿莫土群岛、兰吉罗阿岛、菲律宾、马绍尔群岛。

瘤球虫属 *Sphaeridia* Heron-Allen and Earland, 1928

壳球形。房室3—4个,相对排列。壳壁厚,钙质有孔型,壳面具瘤状壳质物。口区具许多内管的开口。(现代)

212. 乳突瘤球虫 *Sphaeridia papillata* Heron-Allen and Earland (图版XXIII: 1—5)

Sphaeridia papillata Heron-Allen and Earland, 1928, p. 294, pl. 2, 3, figs. 27—37. — Cushman, Todd and Post, 1954, p. 362. — Todd, 1965, p. 33.

壳球形,壳壁厚,壳面除口区外,均布满粗大乳头状壳质实心突粒。口区略呈心脏形,稍突出于壳表,呈半透明,壁孔细密。口区表面具许多凹坑,即树枝状内管之开口。

标本测量(毫米) IOAS-F961 壳径0.88 (赵述岛水深3米)

从本种的胶蜡塑模可以看出有3个房室,3个房室的接合处有一簇树枝状内管,管端开口于口区表面。

分布 基林巴群岛、毛里求斯、马绍尔群岛、斐济群岛。

企虫科 Elphidiidae Galloway, 1933

企虫亚科 Elphidiinae Galloway, 1933

企虫属 *Elphidium* de Montfort, 1808

213. 大洋企虫 *Elphidium oceanicum* Cushman (图版 XXIII:6)

Elphidium oceanicum Cushman, 1933b, p. 52, pl. 12, figs. 7a—b. — Hofker, 1955, pl. 24, figs. 1—3. — Lehmann, 1957, p. 348, pl. 3, figs. 9—12. — Levy, 1966, p. 5, pl. 1, fig. 2a, b.

壳小,近圆形,壳缘圆,周缘略呈瓣状,脐部凹陷。房室分明,稍膨鼓,依次缓慢增大,终圈9—12室。缝合线清楚,凹下,壁间桥细短,十多条,壳缘处有时具微弱细纵肋纹。壳壁薄,半透明,壁孔细。壳口一般不明显,室间壳口拱缝状,位于口面基部。

标本测量(毫米) IOAS-F962 壳径0.33 壳厚0.15 (中建岛)

分布 萨摩亚群岛、斐济群岛、汤加群岛、大堡礁、美国得克萨斯州马塔戈达湾。

货币虫科 Nummulitidae de Blainville, 1825

货币虫属 *Nummulites* Lamarck, 1801

壳平卷包旋至露旋,旋壁具或无空隙。(古新世至现代)

214. 拟日货币虫 *Nummulites ammonoides* (Gronovius) (图版 XXIII:7; 图16)

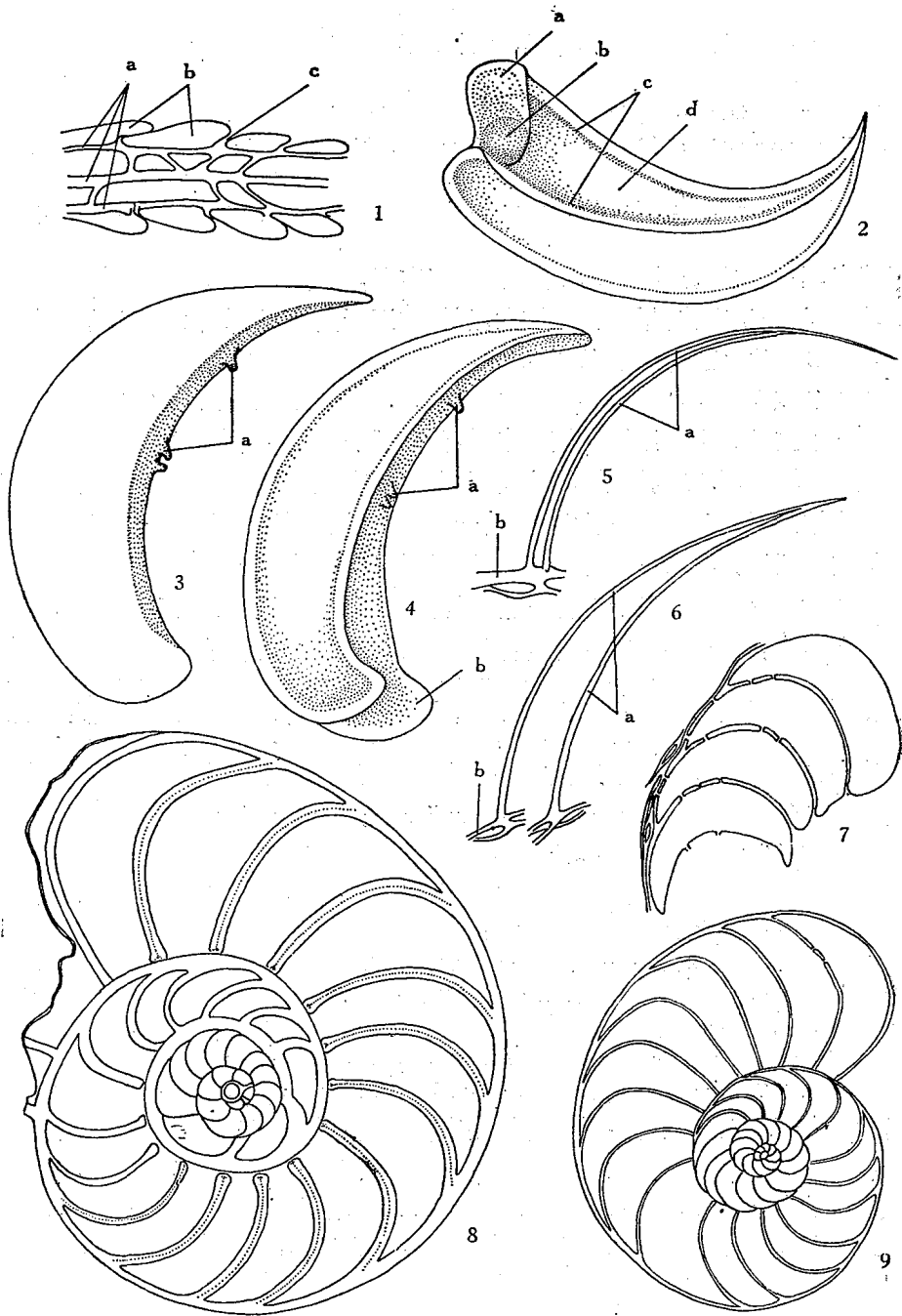


图 16 拟日货币虫 *Nummulites ammonoides* (Gronovius)

1. 四个房室的胶蜡塑模底面视。(×100) a. 旋管道 b. 跨形房室基部两侧的翼伸物 c. 自旋管道向两个房室之间派生壁间管道的部位。
2. 单一房室的胶蜡塑模侧视。(×100) a. 重叠于前圈房室外缘的侧面翼伸物 b. 与前圈房室外缘紧贴的底面凹陷处 c. 房室凹面两侧的浅沟 d. 房室凹面。
- 3, 4. 单一房室的胶蜡塑模侧视。(×100) a. 房室凹面上的与前房室相通的孔道 b. 重叠于前圈房室外缘的侧面翼伸物。
- 5, 6. 跨形壁间管道的胶蜡塑模。(×100) a. 跨形壁间管道 b. 旋管道。
7. 连在一起的四个房室的胶蜡塑模, 示房室口面具孔道。(×46)
8. 整体标本水平切面。(×46)
9. 整体标本的胶蜡塑模(壳体表面的壁孔道塑模已刷掉)。(×23)

Nautilus ammonoides Gronovius, 1781, p. 282, pl. 19, figs. 5—6.

Operculina ammonoides (Gronovius). Graham and Militante, 1959, p. 76, pl. 12, figs. 1—2a, b.

O. granulosa (Leymerie) (?). Cushman, 1933b, p. 56, pl. 14, figs. 1—6, pl. 15, figs. 1—6; pl. 16, figs. 1—3.

壳甚扁,平卷露旋,近圆形,壳缘窄圆。房室多,新月形,依次缓慢增大。缝合线清楚,镶边状,沿线具珠状突粒,早期突粒较大,后期的逐渐变小,不甚明显。壁孔甚细而密,壳面光滑。壳口缝状,位于壳缘面终室基部。

标本测量(毫米) IOAS-F963 壳径 1.30 壳厚 0.18 (琛航岛与广金岛之间水深 30 米)

我们作了整体标本的胶蜡塑模及水平切面树脂塑模,并对其进行解剖观察。把整体标本的胶蜡塑模表面的壁孔道塑模(即壁孔被胶蜡填充后而形成的柱状物)刷掉后,可见房室是平旋排列,但每一壳圈稍跨叠其前一壳圈;塑模的壳缘处可见由许多细管道形成的缘带。从整体塑模分离出一个房室塑模,可以看出房室甚弯曲,呈跨形,房室基部两侧稍延伸成翼伸物,重叠于前圈房室外缘;房室的凹面有几个短突柱(图 16:3, 4),此即与其前一房室相沟通的孔道;房室凹面两侧各具一条浅沟(图 16:2),即跨形壁间管道所在之处。从整体塑模分离出连在一起的几个房室塑模,观察其紧贴前圈的底面,可见有三束管道(每束均由几条微细管汇集而成),这三束就是旋管道(图 16:1)。中间一束较粗,派生支管与侧管相连;两侧的较细,在两个房室之间派生贴在房室凹面两侧的跨形壁间管道。

据 Loeblich and Tappan (1964), *Operculina* 是 *Nummulites* 的同物异名。

分布 广泛分布于印度-太平洋热带区。

215. 脉货币虫 *Nummulites venosa* (Fichtel and Moll) (图版 XXIII: 8)

Nautilus venosus Fichtel and Moll, 1798, p. 59, pl. 8, figs. e—h.

Amphistegina cumingii Carpenter, 1860, p. 32, pl. 5, figs. 13—17, pl. 6, figs. 5—6.

Nummulites cumingii (Carpenter). Brady, 1894, p. 749, pl. 112, figs. 11—13. — Cushman, 1914, p. 39, pl. 14, figs. 6a—b.

Operculinella venosa (Fichtel and Moll). Cushman, 1924, p. 50, pl. 17, fig. 7; 1933b, p. 54, pl. 18, figs. 2—6. — Graham and Militante, 1959, p. 77, pl. 12, figs. 6—7a, b.

壳大,平卷包旋,双凸,壳缘钝圆,早期壳体厚,随后迅速削薄。缝合线清楚,呈凸镶边状,弯曲。

标本测量(毫米) IOAS-F968 壳径 3.80 壳厚 1.33 (全富岛)

分布 菲律宾、中途岛、萨摩亚群岛、夏威夷群岛、澳大利亚、东非沿岸。

圆盾虫属 *Cyclocypeus* Carpenter, 1856

微球型初成部分象异盖虫的初成部分,即房室无分隔;显球型初成部分具双室胎室,随后由数个无分隔房室所环绕。两型的后成部分房室均成环排列,并分隔为方形小室。(始新世至现代)

216. 凸心圆盾虫 *Cyclocypeus carpenteri* Brady (图版 XXIV:1;图 17)

Cyclocypeus, Carpenter, 1856, p. 555, pl. 30, figs. 1, 3.

C. carpenteri Brady, 1881, p. 67. — Chapman, 1900, p. 22, pl. 2, figs. 6, 7; pl. 3, figs. 1—5. — Hofker, 1927, p. 71, pl. 24, fig. 1; pl. 37, pl. 38, figs. 1—9, 12, 13. — Cushman, Todd and Post, 1954, p. 347, pl. 82, fig. 9. — Loeblich and Tappan, 1964, p. C649, figs. 521, 1.

C. guembelianus Brady, 1881, p. 66; 1884, p. 751, pl. 111, figs. 8a, b. — Guileher, et al.,

1965, pl. 15, fig. 3.

壳大,圆盘形,约占壳径 1/3 的中央区双凸,整个壳面布满较大钙质突粒,突粒顶端略收尖。

标本测量(毫米) IOAS-F969 壳径 4.09 (中建岛)

我们作了两个标本的水平切面树胶塑模,其中一个标本是显球型,另一个是微球型。显球型初室近球形,直径约 200 微米,围绕初室约半周长的是一个较大的肾形房室(有的作者称初室和肾形房室为双室胎室或胚器),紧接着由 7—8 个较大的略呈方圆形房室环绕一圈,随后房室不甚规则环绕,分隔为略呈方形的小室。微球型初室球形,直径约 80 微米,紧接着是 4 个简单房室,前两个呈肾形,后两个略呈方形,随后房室分为许多长方形小室,愈后成房室的小室数目愈多。显球型和微球型最后形成的房室成环排列。从标本的水平切面树胶塑模亦可清楚地看到其管道系统。房室之间的隔壁有一条壁间管道,由这条管道派生出小室之间的壁间管道。

分布 富纳富提岛、斐济群岛、汤加群岛、印度尼西亚、卡伊群岛、马绍尔群岛、科摩罗群岛、毛里求斯。

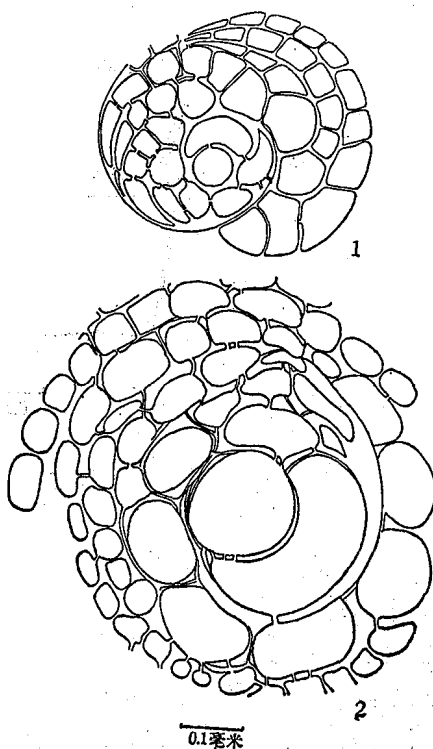


图 17 凸心圆盾虫 *Cycloclypeus carpenteri* Brady

1. 微球型个体呈异盖虫式排列的初成部分树胶塑模; 2. 显球型个体初成部分树胶塑模。

异盖虫属 *Heterostegina* d'Orbigny, 1826

217. 扁异盖虫 *Heterostegina depressa* d'Orbigny (图版 XXIII:9; 图 18)

Heterostegina depressa d'Orbigny, 1826, p. 305, no. 2, pl. 17, figs. 5—7; Modeles no. 99. Parker, Jones and Brady, 1865, p. 34, pl. 3, fig 100—Brady, 1884, p. 746, pl. 112, figs. 14—20. —Cushman, 1914, p. 38, pl. 19, fig. 5. —Cushman, 1933b, p. 57, pl. 16, figs. 4—9. —Guilcher, et al., 1965, pl. 16, fig. 9.

壳扁,初成部分包旋,厚,后成部分甚扁薄,壳缘钝圆。房室分明,长而弯,分隔成许多小室。缝合线清楚,镶边状,稍凸。壁孔细,壳面光滑。

标本测量(毫米) IOAS-F972 壳径 3.14 壳厚 0.57 (西沙群岛)

本种与 *Heterostegina suborbicularis* d'Orbigny 不同在于,壳体较薄,房室很早就分隔为小室。

分布 阿德米勒尔提群岛、汤加群岛、塔希提岛、夏威夷群岛、土阿莫土群岛、马里亚纳群岛、马达

加斯加岛、科摩罗群岛、斯里兰卡、西印度群岛。

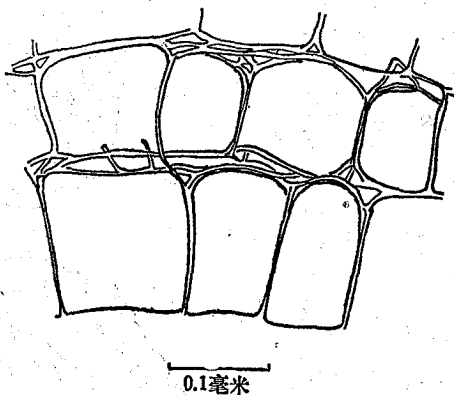


图 18 扁异盖虫 *Heterostegina depressa* d'Orbigny
小室的胶蜡塑模, 示旋管道和壁间管道

218. 长隔板异盖虫 (新种) *Heterostegina longisepta*, n. sp. (图版 XXIII:10; XXVII:8; 图 19)

壳扁, 壳缘钝圆, 初成部分被厚壳质物覆盖, 双凸。房室长而弯, 很早就分隔为小室。早期壳圈窄, 后期壳圈迅速增宽。房室隔壁线及小室次隔板线均呈镶边状, 稍凸。次隔板长而完整。壁孔细, 初成部分壳面具较大珠状突粒, 一般在次隔板与房室隔壁交接处, 后成部分壳面常布满细颗粒状突起。

标本测量(毫米) 正模标本 IOAS-F974 壳径 2.05 壳厚 0.28 (西沙群岛)

从标本的水平切面可以看出: 初室球形 (直径约 50 微米), 紧接着有 4—5 个简单房室, 随后的房室分隔为小室, 次隔板长而完整。新种的壳面装饰及显球型个体的胚器特征与 *Heterostegina granulata* Papp and Kupper 有些相似, 但后者有时具不完整次隔板, 房室隔壁线及小室次隔板线均呈突粒状。

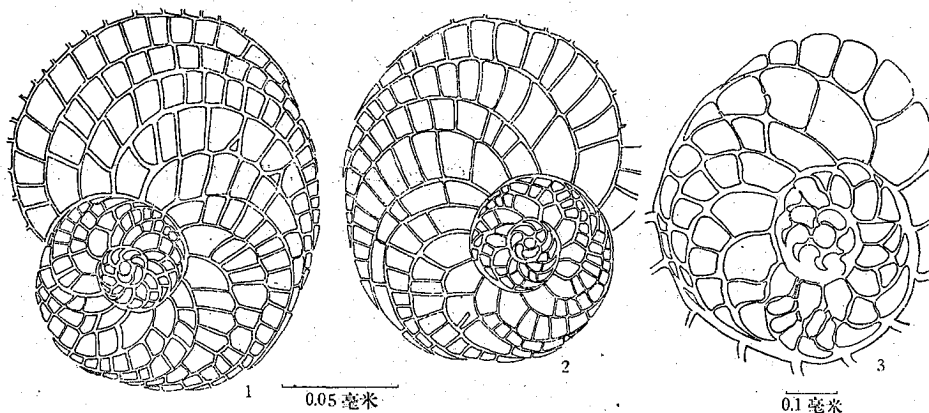


图 19 长隔板异盖虫 (新种) *Heterostegina longisepta*, n. sp.

1. 水平切面, 第六个房室开始分小室; 2. 水平切面, 第五个房室开始分小室; 3. 水平切面树胶塑模, 第六个房室开始分小室。

面包虫科 Cibicididae Cushman, 1927

面包虫亚科 Cibicidinae Cushman, 1927

小面包虫属 *Cibicidella* Cushman, 1927

壳附着, 早期规则螺旋, 如 *Cibicides* 属, 后期不甚规则。壳壁钙质有孔型。早期房室壳口如 *Cibicides* 属, 后期房室可有几个壳口, 壳口拱形, 具唇。(中新世至现代)

219. 多变小面包虫 *Cibicidella variabilis* (d'Orbigny) (图版 XXIV:3)

Truncatulina variabilis d'Orbigny. Sidebottom, 1909, p. 2, pl. 1, figs. 5—6, pl. 2, figs. 1—3.

壳大, 螺旋, 背面中央部分稍凹, 腹面脐部凹陷, 壳缘圆, 周缘瓣状。房室一圈多, 终圈 8 室, 膨鼓。缝合线凹下, 稍弯至直。壳壁厚, 粉白色, 壁孔粗, 略呈漏斗状, 孔缘连成网格状。壳口长椭圆形, 具厚唇, 自房室腹面近脐部跨过壳缘稍伸至背面; 前几个房室的壳口未被完全遮掩, 致使背、腹面露现两侧口角; 终室腹面近脐端具较小的缝合线次壳口。

标本测量(毫米) IOAS-F979 壳长 0.68 (晋卿岛)

西沙的标本较接近于 Sidebottom 记载于提诺斯岛的, 看来是个早期阶段的个体。

分布 由于在本种名下包括了很多奇形怪状的类型, 分类较紊乱, 无法确定其确切的分布范围。

堆房虫科 Acervulinidae Schultze, 1854

扁白垩虫属 *Planogypsina* Bermudez, 1952

壳大, 甚扁, 盘形。早期房室球形, 平旋; 随后房室蠕虫状, 排列不规则。壳壁钙质有孔型。无总壳口。(第三纪至现代)

220. 鳞形扁白垩虫 *Planogypsina squamiformis* (Chapman) (图版 XXIV:2)

Gypsina vesicularis var. *squamiformis* Chapman, 1901, p. 200, pl. 19, fig. 15. — Heron-Allen and Earland, 1915, p. 727. — Cushman, 1924, p. 46, pl. 15, fig. 4.

Planogypsina squamiformis (Chapman) Bermudez, 1952, p. 124, pl. 24, fig. 15. — Loeblich and Tappan, 1964, p. C698, figs. 568, 1.

壳一般附着, 扁, 背面稍凸, 渐向壳缘削薄, 腹面平, 可见早期的平旋房室; 随后房室呈蠕虫状, 排列不规则, 稍膨鼓, 完全覆盖早期房室。壳壁薄, 壁孔细密。

标本测量(毫米) IOAS-F980 壳径 0.95 壳厚 0.13 (西沙群岛)

分布 富纳富提岛、萨摩亚群岛、基林巴群岛。

饶钹虫科 Cymbaloporidae Cushman, 1927

拟梨冠虫属(新属) *Pyropiloides* n. gen.

模式种 长拟梨冠虫(新种) *Pyropiloides elongatus*, n. sp.

壳象 *Pyropilus* 属, 但后期房室的壳口在房室腹面脐端。(现代)

221. 长拟梨冠虫(新属新种) *Pyropiloides elongatus*, n. gen., n. sp. (图版 XXIV: 4, 5)

壳扁,形状不甚规则,背面较平,腹面稍凸,壳缘圆。早期房室规则螺旋,2圈多,终圈7—8室,膨鼓,依次迅速增高;缝合线稍凹,近辐射。后期房室较长,形状不甚规则,不规则地围绕初成部分。壁孔粗而密。早期房室的壳口拱形,在房室腹面基部,自壳缘伸至脐部;后期房室的壳口在房室腹面脐端,拱形。壳体背面初成部分呈红褐色,后成部分颜色变淡。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F981	0.80	0.58	0.25 (华光礁)
副模标本 IOAS-F982	0.45	0.30	0.20 (华光礁)

新种与 *Pyropilus rotundata* Cushman 有些相似,但早期的规则螺旋部分较大且不偏于壳体一端,壳口拱形,开向脐穴而不是沿缝合线排列的成行小孔。

匀孔虫科 Homotrematidae Cushman, 1927

藤壶虫属 *Carpenteria* Gray, 1858

壳附着,螺旋,平凸,后期可摊展于附着基质表面。在附着面可见所有房室,凸面仅露终圈房室。壳壁钙质有孔型。早期阶段的壳口窄,后期壳口稍圆,在管状突起的末端。(第三纪至现代)

222. 小囊藤壶虫 *Carpenteria utricularis* (Carter) (图版 XXIV:6)

Polytrema utricularis Carter, 1876, p. 210, pl. 13, figs. 11—16.

Carpenteria utricularis (Carter). Brady, 1884, p. 678, pl. 99, figs. 6, 7; pl. 100, figs. 1—4. — Chapman, 1900, p. 12, pl. 2, fig. 4, pl. 4, figs. 3, 4. — Hofker, 1930, p. 126, pl. 50, pl. 52, figs. 1—5, 8, 9.

壳附着,平凸,螺旋,附着面平坦,露旋,凸面包旋。房室球形、饼形或袋形。缝合线清楚,凹下。壳壁厚,壁孔粗,孔缘隆起呈网格状。壳口张大,在终室末端,口缘厚,具短颈。

标本测量(毫米) IOAS-F983 壳径 2.00 (西沙洲水深 45—50 米)

分布 阿德米勒尔提群岛、富纳富提岛、汤加群岛、印度尼西亚、菲律宾、毛里求斯、南美沿岸、西印度群岛。

盔形虫总科 Cassidulinacea d'Orbigny, 1839

高加索虫科 Caucasinidae N. A. Bykova, 1959

扭芽虫属 *Sigmavirgulina* Loeblich and Tappan, 1957

223. 基纹扭芽虫(新种) *Sigmavirgulina basistriata*, n. sp. (图版 XXIV:9, 10)

壳长,始端稍扭曲,中部最宽,向壳缘削薄;壳缘具龙骨,稍锐。早期房室低而宽,后期房室迅速增高,宽稍大于高,稍膨鼓。缝合线略呈镶边状,稍弯曲。壁孔粗,较稀疏,壳体下半部具许多断续细纵肋纹,壳口扣眼形。

标本测量(毫米)	壳长	壳宽	壳厚
正模标本 IOAS-F984	0.45	0.19	0.08 (赵述岛)
副模标本 IOAS-F985	0.35	0.18	0.08 (琛航岛与广金岛之间水深 30 米)

新种与 *Sigmavirgulina tortuosa* (Brady) 不同在于, 壳体较窄长而扁, 扭曲较轻, 壳体下半部具细纵肋纹。

224. 矛扭芽虫(新种) *Sigmavirgulina lanceolata*, n. sp. (图版 XXIV:8)

壳长, 较扁, 始端稍扭曲, 窄圆, 两侧缘近平行, 壳缘窄圆, 无龙骨。房室低而宽, 逐渐增高。初成部分缝合线不甚清楚, 后成部分的较明显, 稍凹。壳壁半透明, 壁孔较粗而稀疏, 呈白斑点状。口端宽圆, 壳口扣眼形。

标本测量(毫米) 正模标本 IOAS-F986 壳长 0.45 壳宽 0.18 壳厚 0.08 (觅出礁)

新种与 *Sigmavirgulina basistriata*, n. sp. 不同在于, 壳缘无龙骨, 壳面无纹饰, 缝合线不呈镶边状, 壳体两侧缘近平行。

提诺斯虫科 Delosinidae Parr, 1950

提诺斯虫属 *Delosina* Wiesner, 1931

壳长, 横切面椭圆形至圆形。房室长, 螺旋排列, 每圈有 3 个极度重叠的房室, 终圈房室几乎占全壳长。缝合线凹下。壳壁钙质有孔型, 壁孔细。缝合线处有小孔, 即缝合线下管道之开口。壳口筛状, 有时呈弯环状。(现代)

225. 扁提诺斯虫 *Delosina complanata* Earland (图版 XXIV:7)

Polymorphina complexa Sidebottom (part), 1907, p. 16, pl. 4, figs. 4, 8. — Heron-Allen and Earland, 1916, p. 48, pl. 8, figs. 5—7.

Delosina complanata Earland, 1934, p. 128.

壳稍扁, 长卵形至长椭圆形, 基端宽圆。壳体一面可见最后两个房室环抱成终圈, 另一面可见最后三个房室组成终圈。房室长而膨鼓。缝合线清楚, 凹下, 沿线小孔不明显。壳面光滑, 壁孔细。终室口端圆凸, 壳口筛状。

标本测量(毫米) IOAS-F987 壳长 0.25 壳宽 0.15 壳厚 0.13 (东岛)

Earland (1934) 将 Sidebottom (1907, 图版 4, 图 1—9) 的 *Polymorphina complexa* 分为几个不同的种。西沙的标本总的特征是壳体稍扁, 基端宽圆, 房室长, 最后两个房室几乎呈抱环虫式排列, 与 Earland 所描述的 *Delosina complanata* 最为相似。

分布 提诺斯岛、地中海、英国、智利。

盔形虫科 Cassidulinidae d'Orbigny, 1839

盔形虫属 *Cassidulina* d'Orbigny, 1826

壳体两面一般均具脐部, 壳缘观呈透镜形。房室交错双列旋卷, 壳缘观可见房室相互交错排列。壳壁钙质有孔型, 显微结构颗粒状。壳口长缝状, 自终室基部向上延伸, 与终室前缘相平行, 无内齿板。(始新世至现代)

226. 娇柔盔形虫 *Cassidulina delicata* Cushman (图版 XXV:1)

Cassidulina delicata Cushman, 1927, p. 168, pl. 6, fig. 5. — Chapman, Parr and Collins, 1934, p. 560, pl. 10, fig. 27a—c. — Bandy, 1961, p. 14, pl. 4, fig. 13. — Cushman, Todd and Post, 1954, p. 365, pl. 90, fig. 25. — Todd, 1965, p. 42, pl. 17, figs. 6, 7. — Matoba, 1967, p. 252, pl. 28, figs. 7a—c.

壳扁,宽卵形,壳缘窄圆。房室分明,稍膨鼓,4对组成终圈。缝合线清楚,凹下,不呈镶边状。壳壁薄,半透明,壁孔细,壳面光滑。壳口长缝状,顺前圈壳缘弯伸,约占口面全宽2/3,口面具辐射纹。

标本测量(毫米) IOAS-F988 壳径0.25 壳厚0.10 (中建岛)

分布 北美西岸、巴拿马、日本太平洋沿岸、鄂霍次克海、马绍尔群岛。

227. 口纹盔形虫(新种) *Cassidulina striatostoma*, n. sp. (图版 XXV:2)

壳小,近圆形,壳缘观呈厚透镜形,壳缘窄圆。房室不甚分明,不膨鼓,4对组成终圈。缝合线尚清楚,平镶边状。壳壁不透明,壁孔较粗;壳口两侧端具几条辐射细肋纹,前些房室相应部位的肋纹亦有显露,脐部也有少数辐射纹。壳口长缝状,弯曲,约占口面全宽2/3,口缘具少数辐射纹。

标本测量(毫米) 正模标本 IOAS-F989 壳径0.23 壳厚0.15 (中建岛)

新种的双凸壳形与 *Cassidulina lens* Earland (1934) 较为相似,但后者个体较大,终圈有5对房室,壳面无纹饰。

球盔虫属 *Globocassidulina* Voloshinova, 1960

壳近球形,壳缘圆,脐部封闭。房室交错双列旋卷。壳壁钙质有孔型。壳口缝状,自房室基部向口面上方延伸,可具窄而内摺的缘边,但无齿板。(始新世至现代)

228. 冷球盔虫 *Globocassidulina algida* (Cushman) (图版 XXV: 3)

Cassidulina algida Cushman, 1944b, p. 35, pl. 4, fig. 24.

壳近圆形,壳缘观呈宽卵形,壳缘宽圆。房室稍分明,4对组成终圈,稍膨鼓。缝合线稍清楚,微凹。壳壁厚,不透明,壁孔细,壳面光滑。壳口宽缝状,略横伸于口面基部,并竖直伸向口面上方,口缘稍内翻。

标本测量(毫米) IOAS-F990 壳径0.35 壳厚0.26 (觅出礁)

本种与 *Cassidulina subglobosa* Brady (1881) 不同在于,壳体较小而较扁,两侧近对称,房室排列较规则。西沙的标本与典型种差异在于,壳面光滑而不是无光泽。

分布 美国缅因州卡斯科湾。

229. 扁球盔虫 *Globocassidulina complanata* (Ujiie and Kusukawa) (图版 XXV: 4)

Cassidulina complanata Ujiie and Kusukawa, 1969, p. 766, pl. 1, figs. 1, 2.

壳小而较扁,近圆形,壳缘面呈椭圆形,两侧面近平行,壳缘宽圆。房室分明,5对组成终圈。缝合线清楚,与壳面齐平。壳壁薄,稍透明,壁孔细,壳面光滑。壳口宽缝状,长度约为口面宽度1/3,远端稍向口面扩伸。

标本测量(毫米) IOAS-F991 壳径0.19 壳厚0.13 (晋卿岛)

分布 日本宫古湾。

九字虫科 *Nonionidae* Schultze, 1854九字虫亚科 *Nonioninae* Schultze, 1854九字虫属 *Nonion* de Montfort, 1808

壳一般为平卷包旋,稍扁,两侧对称。房室多。缝合线清楚,凹下,稍弯至近辐射。壳壁钙质有孔型,显微结构颗粒状。壳口拱缝状,位于口面基部。(古新世至现代)

230. 亚鼓九字虫(新种) *Nonion subdilatatum*, n. sp. (图版 XXV: 5)

壳宽卵形,壳缘窄圆,周缘呈瓣状,壳缘面呈厚透镜形,对称。房室分明,膨鼓,终圈 6—7 室,依次迅速增大,终室脐端覆盖脐区。缝合线清楚,弯曲,凹下。壳壁厚,壁孔细,沿缝合线处及壳口上、下缘各具单行细颗粒状突起。壳口位于口面基部,拱缝状。

标本测量(毫米) 正模标本 IOAS-F992 壳长 0.53 壳宽 0.38 壳厚 0.28 (琛航岛与广金岛之间水深 30 米)

新种的房室形状及数目与 *Nonion dilatatum* Galloway and Hemingway, 1941 最为相似,但后者壳缘宽圆而不是窄圆,缝合线处及壳口上、下缘均无颗粒状突起。

星九字虫属 *Astrononion* Cushman and Edwards, 1937

壳平卷包旋,脐部稍凹。房室具向后突伸的无壁孔脐瓣,部分遮掩前室缝合线及脐区,呈现为次小室。壳壁钙质有孔型。壳口位于口面基部,脐瓣末端亦具小开口。(渐新世至现代)

231. 小星九字虫(新种) *Astrononion minimum*, n. sp. (图版 XXV:6)

壳小而扁,近圆形,壳缘圆,周缘不呈瓣状。房室分明,稍膨鼓,终圈 8—9 室,依次渐增大,房室脐瓣呈管状。缝合线较弯而凹下。壳壁薄,半透明,壁孔较细而明显。壳口拱缝状,位于口面基部。

标本测量(毫米) 正模标本 IOAS-F993 壳径 0.20 壳厚 0.09 (西沙洲水深 45—50 米)

新种的壳体较同属大多数种为小。新种与 *Astrononion australe* Cushman and Edwards, 1937 较相似,但后者个体大(壳径 1.10 毫米),壁孔粗,脐瓣菱形而不是管状。

假九字虫属 *Pseudononion* Asano, 1936

壳两面不对称,背面露旋,腹面包旋。房室无长脐瓣。壳壁钙质有孔型,壁孔细。壳口缝状,位于口面基部。(上新世至现代)

232. 粒脐假九字虫(新种) *Pseudononion granulumbilicatum*, n. sp. (图版 XXV:9)

Nonionella sp. (?) Cushman, 1933b. p. 46, pl. 11, figs. 3a—e.

壳小而扁,宽耳形,壳缘圆,周缘略呈瓣状,背面显露 2 圈,腹面包旋,脐部凹陷。房室稍膨鼓,较低而宽,依次渐增大,终圈 8 室,房室腹面脐端稍外翘。缝合线清楚,较弯而凹下。壳壁薄而透明,房室腹面脐端具较粗颗粒状突起。壳口自终室口面基部向腹面脐部延伸,口缘具少量细颗粒物,略呈微锯齿状。

标本测量(毫米) 正模标本 IOAS-F994 壳长 0.28 壳宽 0.20 壳厚 0.09 (琛航岛与广金岛之

间水深 30 米)

新种与 Cushman (1933b) 记载于南太平洋马塔希瓦岛附近的 *Nonionella* sp. (?) 十分相似。

233. 嵌线假九字虫 *Pseudononion limbatostriatum* (Cushman) (图版 XXV:7, 8, 10)

Nonionella limbato-striata Cushman, 1931b, p. 30, pl. 4, fig. 8a—c; 1934, p. 121, pl. 14, figs. 10a—c; 1939, p. 32, pl. 8, figs. 13, 14.

壳小而扁,耳形,壳缘圆,口面甚高,两侧近平行。背面显露 2 圈,腹面完全包旋,脐部凹陷。房室长而分明,终圈 8—10 室,依次渐增大和增长。缝合线清楚,弯而稍凹。壳壁薄而透明,壁孔细。壳口自终室口面基部延伸至腹面脐端。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F995	0.20	0.10	0.05 (晋卿岛)
IOAS-F996	0.20	0.13	0.05 (晋卿岛)
IOAS-F997	0.30	0.20	0.09 (琛航岛与广金岛之间水深 30 米)

本种壳壁透明,缝合线处透显被重叠的前房室,使缝合线似宽镶边状。本种与 *Nonionella japonica* (Asano) var. *mexicana* Cushman and McCulloch, 1940 难以区分。

分布 汤加群岛;斐济群岛上新统。

异常虫科 Anomalinidae Cushman, 1927

异常虫亚科 Anomalininae Cushman, 1927

蜜饼虫属 *Melonis* de Montfort, 1808

壳早期螺旋,成体平卷包旋,两侧对称,均具深脐。脐穴常由无壁孔的壳质物环围。房室多。缝合线与壳面齐平至稍凹。隔壁双层。壳壁钙质有孔型,显微结构颗粒状。脐穴周围及缝合线处光滑,无壁孔。壳口拱缝状,位于终室口面基部,并延伸至两侧面脐部。(上白垩纪? 古新世至现代)

234. 小蜜饼虫(新种) *Melonis minutus*, n. sp. (图版 XXV:11)

壳小,壳缘窄圆,脐穴小。房室分明,逐渐增大,不甚膨鼓,终圈 11 室。缝合线清楚,镶边状,较弯。壁孔较细而明显,脐穴周围的无壁孔壳质物约占壳体直径 1/3 左右。口面呈箭簇形,壳口拱缝状。

标本测量(毫米) 正模标本 IOAS-F997 壳径 0.20 壳厚 0.10 (西沙群岛)

新种的个体较小以及口面呈箭簇形等特征易与其他种相区分。新种的形状与 *Nonion politum* (d'Orbigny) (Cushman, 1939, p. 22, pl. 5, fig. 20) 有些相似,但由于原作者所提供的标本图形太简单,加之未提供描述,不便作详细比较。

锤针虫总科 Carterinacea Loeblich and Tappan, 1955

锤针虫科 Carterinidae Loeblich and Tappan, 1955

锤针虫属 *Carterina* Brady, 1884

壳早期螺旋,不附着,具脐部;后期不规则地摊展,周缘具无分隔的摊展于附着基质表

面的宽片状稜边。初成房室无分隔,随后房室具不完整次隔板,后成房室次隔板几乎完整,愈后成房室次隔板愈多,小室约同等大小。壳壁薄,由钙质泡沫状物粘结许多纺锤形钙质骨针构成。早期壳体的壳口位于腹面,后期壳体的壳口不显露。(现代)

235. 针壳锤针虫 *Carterina spiculotesta* (Carter) (图版 XXV:12; 图 20)

Rotalia spiculotesta Carter, 1877, p. 470, pl. 16, figs. 1—3.

Carterina spiculotesta Carter, Brady, 1884, p. 346, pl. 41, figs. 7—10. — Loeblich and Tappan, 1955, p. 28, pl. 4, figs. 9—10.

壳螺旋,背面初成部分凸,后成部分摊展。腹面平坦或凹陷,脐部敞露,深陷。房室分明,初成房室较膨鼓,排列规则,4—5个组成一圈,无次隔板;随后的房室长,背面呈新月形,厚度约相等,2—4室组成一圈;室腔具垂直于壳缘的不完整次隔板,愈后成房室的次隔板愈多;最后几个房室的形状及其排列不规则,次隔板近于完整。缝合线清楚,背面仅可见室间隔壁线较弯而凹下,腹面可见室间隔壁线及次隔板线凹下、近辐射。壳壁薄,由泡沫状钙质物粘结大量纺锤形钙质骨针而成,骨针系由原生质分泌而成,壳面尚较平滑。

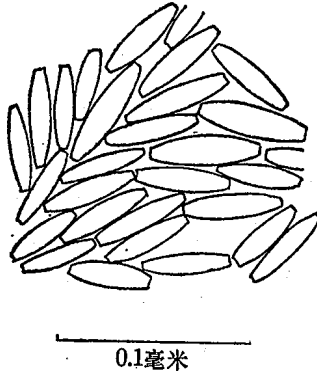


图 20 针壳锤针虫 *Carterina spiculotesta* (Carter) 局部壳壁,示骨针排列

壳口位于房室腹面脐端。壳体初成部分呈深红褐色,后成部分呈淡黄褐色。

标本测量(毫米) IOAS-F998 壳径 0.65 壳厚 0.15 (珊瑚岛)

我们所掌握的几个标本,个体较小,周缘无片状稜边,尚未发育到附着阶段。

分布 马纳尔湾、苏伊士湾、大洋洲、菲律宾。

弓虫总科 Robertinacea Reuss, 1850

角泡虫科 Ceratobuliminidae Cushman, 1927

上口虫亚科 Epistomininae Wedekind, 1927

密西西比虫属 *Mississippina* Howe, 1930

壳早期螺旋,后期平旋。缝合线近辐射。壳壁钙质有孔型。壳口位于房室腹面基部,自壳缘伸至脐部;带状次壳口靠近并平行于壳缘。(下渐新世至现代)

236. 同心密西西比虫 *Mississippina concentrica* (Parker and Jones) (图版 XXVI: 1)

Pulvinulina concentrica (Parker and Jones) Brady, 1864, p. 470, pl. 48, fig. 14; 1884, p. 686,

pl. 105, fig. 1a—b. — Sidebottom, 1909, p. 7, pl. 3, fig. 5. — Cushman, 1915, p. 51, pl. 28, fig. 4.

Eponides concentrica (Parker and Jones). Cushman, 1931b, p. 8, pl. 9, figs. 4, 5. — Chapman, Parr and Collins, 1934, p. 565, pl. 9, figs. 17a—c.

Mississippina concentrica (Parker and Jones). Said, 1949, p. 37, pl. 4, fig. 1. — Uchio, 1952, p. 197, pl. 18, figs. 3a—c, 4a—c, 5a—c. — Cushman, Todd and Post, 1954, p. 360, pl. 89, fig. 27.

Stomatorbina concentrica (Parker and Jones). Dorreen, 1948, p. 295. — Phleger and Parker, 1951, p. 22, pl. 12, fig. 2a, b. — Parker, 1958, p. 274. — Boltovskoy, 1959, p. 97, pl. 15, fig. 8a, b.

Discopulvinulina (Mississippina) concentrica Hofker, 1955, p. 180, pl. 27, figs. 1—8.

壳扁,背面稍凸,腹面稍凹,壳缘圆。房室2圈多,终圈5—7室,依次迅速增大。缝合线呈宽凸镶边状,背面的尤为明显。壳壁厚,壁孔细,房室近壳缘处具与壳缘相平行的腊肠形不透明区。壳口位于终室腹面基部,自脐部伸至近壳缘处,具缝合线次壳口。

标本测量(毫米) IOAS-F1000 壳长0.33 壳宽0.25 壳厚0.10 (西沙洲水深45—50米)

分布 日本、菲律宾、马绍尔群岛、坎达伍岛、澳大利亚、新西兰、马来群岛、红海、地中海、提诺斯岛、挪威沿岸、墨西哥湾。

缘口虫属 *Stomatorbina* Dorreen, 1948

壳螺旋,背面凸,露旋,腹面仅露终圈。壳壁钙质有孔型。壳口位于房室腹面基部,缝状,不伸达壳缘。成体标本房室腹面具与壳缘相平行的长方形磨玻璃状区。(始新世)

237. 缘口虫(未定种) *Stomatorbina* sp. (图版 XXV:13)

壳小,圆形,螺旋,壳缘窄圆,周缘略呈瓣状。背面凸,腹面较平,脐部敞露、凹陷。房室3圈多,6个组成终圈,背面观呈长方形,依次渐增大。缝合线清楚,辐射,呈窄镶边状,腹面的凹下。壳壁薄,壁孔细;背面除近旋缝合线处具一玻璃透明状窄条外,其余部位均呈磨玻璃状;腹面外侧具一与壳缘相平行的长方形磨玻璃状区,其余部位近透明。壳口不明显,房室脐端开向脐穴。

标本测量(毫米) IOAS-F999 壳径0.18 壳厚0.08 (琛航岛与广金岛之间水深30米)

本种房室形状与 *Hoeglundina* Brotzen 较相似,但是没有象 *Hoeglundina* 那样的侧缘壳口。

弓虫科 Robertinidae Reuss, 1850

双附室虫属 *Alliatina* Troelsen, 1954

壳平旋,房室背腹面脐端均具附加房室。壳壁钙质有孔型,壁孔细。壳口缝状,位于终室口面基部,口面上方近中央处尚有一卵形开口,其内面连接一条横切面呈倒“V”形的不对称的内隔壁(即内齿板),内隔壁近端与前一房室壳口基部相接。(上新世至现代)

238. 闪烁双附室虫 *Alliatina nitida* (Millett) (图版 XXVI:2, 3)

Bulimina convoluta var. *nitida* Millett, 1900, p. 280, pl. 2, fig. 10. — Sidebottom, 1905, p. 12, pl. 3, fig. 3.

Nonion grateloupi (Orbigny) (?) of Cushman, Graham and Militante, 1959, p. 71, pl. 10, fig. 31.

壳耳形,螺旋不甚明显,右旋。房室分明,终圈9室,迅速增大;附加房室较小,腹面的较背面的明显。缝合线清楚,镶边状,较弯而凹下。壳壁薄,有的部位透明,壁孔细。壳口位于终室腹面基部,缝状;外观可透显自前室壳口基部斜伸向终室口面的内齿板轮廓;终室口面具一圆形小凹陷区,此即内齿板远端与终室口面接合处。

标本测量(毫米) IOAS-F1001 壳长 0.30 壳宽 0.20 壳厚 0.09 (西沙洲水深 45—50 米)

本种与 *Alliatina excentrica* (di Napoli) 较为相似,但个体较小而扁,房室较少。

分布 提诺斯岛、马来群岛、菲律宾。

重旋虫属 *Geminospira* Makiyama and Nakagawa, 1941

壳长,早期房室螺旋,后期房室不旋卷,弯曲。背腹面内侧均显露次列小室,次列小室在腹面较为发育。壳壁霰石型,壁孔细,壳面光滑。壳口位于口面基部,具竖伸向口面的长环状沟,具内齿板。(上新世至现代)

239. 超美重旋虫 *Geminospira bradyi* Bermudez (图版XXVI:4, 5)

Bulimina convoluta Brady, 1894 (not Williamson), p. 409, pl. 113, figs. 6a—c. — Millett, 1900, p. 279, pl. 2, figs. 9a—b.

Geminospira bradyi Bermudez, 1952, p. 80, pl. 13, figs. 7a—c. — Graham and Militante, 1959, p. 90, pl. 13, figs. 16a, b.

壳长肾形,腹面较背面为凸,壳缘圆。早期房室旋卷,后期房室不旋卷,趋于直伸,迅速增大;次列小室在腹面较为发育。缝合线弯曲,稍凹,镶边状。壳面光滑,呈淡橙色。壳口位于终室腹面基部,并竖伸向口面与内齿板相连;口缘稍内翻,呈微锯齿状。

标本测量(毫米)	壳长	壳宽	壳厚
IOAS-F1003	0.31	0.15	0.13 (西沙洲水深 45—50 米)
IOAS-F1004	0.40	0.10	0.20 (琛航岛与广金岛之间水深 30 米)

分布 菲律宾、马来群岛、基林巴群岛、大堡礁、托雷斯海峡。

蹄虫属 *Ungulatella* Cushman, 1931

壳长,螺旋,初室圆锥状,随后房室整圈长,似呈单列,但一边缘重叠于另一边缘。壳壁钙质有孔型,壁孔粗。腹面光滑或具微弱辐射纹。壳口位于腹面脐部,弯环状。(现代)

240. 拟锥蹄虫 *Ungulatella conoides* Cushman (图版 XXVI:6, 7)

Ungulatella conoides Cushman, 1934a, p. 102, pl. 13, figs. 6—7.

壳小,较短,圆锥形;始端延伸成管突状,口端最宽;口面较平,中央凹陷。缝合线略呈镶边状,不甚清楚。壁孔粗而较稀,腹面较光滑,透明。壳口窄眼形,位于终室末端,开向脐部。

标本测量(毫米)	壳长	壳径
IOAS-F1005	0.20	0.10 (琛航岛与广金岛之间水深 30 米)
IOAS-F1006	0.15	0.13 (金银岛)

从 Loeblich and Tappan (1964) 对本属壳口的描述看,似乎是将脐部的深凹处作为壳口,西沙标本的壳口是位于终室末端。

分布 土阿莫土群岛。

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THE RECENT FORAMINIFERA OF THE XISHA ISLANDS, GUANGDONG PROVINCE, CHINA.* II

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ABSTRACT

This is the second part of our study on the foraminiferal fauna of the Xisha Islands. The material upon which this study is based come from three batches of 56 samples collected during the years 1974—1976 from eighteen islands representing diverse environments. The majority of the samples were collected from the littoral zone while a few were collected underwater ranging in depths of from a few meters to fifty meters. A total of 235 species belonging to 38 families and 110 genera is added to the previously recorded 175 species. Eight genera and 86 species are considered as new. There is a marked increase in members of the superfamilies Nodosariacea, Bulminacea and Spirillinacea, as a result of which calcareous perforate species amounted to 66.4%. The calcareous imperforate species although not as predominant as in the first batch of samples collected in 1957, still make up 20.4%. The remaining 13.2% is made up of arenaceous-agglutinated species.

It is to be expected that with continued and more extensive collections from new localities and with the acquisition of more underwater samples of various depths, many more species are to be added to the foraminiferal fauna of these islands.

DESCRIPTION OF NEW GENERA AND NEW SPECIES

Family Nouriidæ Chapman and Parr, 1936

Genus *Nouria* Heron-Allen and Earland, 1914

Nouria rhombiformis, n. sp. (Pl. I: 6)

Test elongate, compressed, rhombiform, basal end obtusely produced, apertural end extended into a neck, periphery round. Chambers slightly inflated, about five, the final one elongate, much farther removed from the base. Sutures slightly distinct, slightly depressed. Wall composed of coarse and fine sand grains which usually do not protrude out of the surface of the test, surface neatly finished. Aperture round, at the end of the final chamber.

Dimensions: Holotype, IOAS-F681, length, 0.85 mm, width, 0.45 mm, thickness, 0.28 mm. (Lingyang Reef, Xisha Islands)

This new species differs from *N. polymorphinoides* Heron-Allen and Earland in its more compressed, rhombiform test, the basal end appearing obtusely caudate, in the apertural end being produced into a distinct neck and in the final chamber being

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much farther removed from the base.

Family Lituolidae de Blainville, 1825

Genus *Cribrostomoides* Cushman, 1910

Cribrostomoides spiculotesta, n. sp. (Pl. I: 10, 11)

Test small, compressed, planispiral, not completely involute, umbilical region depressed, periphery round, slightly lobulate. Chambers slightly inflated, increasing gradually in size as added, of about 2 whorls, final whorl usually with 6. Sutures distinct, slightly depressed and slightly curved. Wall thin, composed of fine sand grains and sponge spicules of various sizes, surface neatly finished. Aperture crescentiform, with slightly protruding upper and lower lips.

Dimensions: Holotype, IOAS-F683, diameter, 0.22 mm, thickness, 0.12 mm. (Xishazhou, 45—50 m, Xisha Islands).

The aperture of the final chamber of this new species is not very produced, in side view appearing snoutlike. But when the final chamber is dissected off, the intercameral aperture can be seen to have a distinct upper and lower lip. In the general form of the test, it resembles *Labrospira kosterensis* Höglund, 1947 but differs from it in being much smaller in size and in the composition of the wall which is not made up of large sand grains but of fine sand grains and sponge spicules.

Family Textulariidae Ehrenberg, 1838

Genus *Siphobigenerina*, n. gen.

Type species: *Siphobigenerina compressa*, n. sp.

Test elongate, compressed, early portion biserial, later portion distinctly uniserial. Wall agglutinated, finely perforate. Aperture of biserial portion basal, of uniserial portion terminal, oblong, with internal tooth plate. Tooth plate like a half funnel, rather short, not connecting with the aperture of the preceding chamber. Tooth plate of successive chambers alternating in position in planes about 180° apart.

If it were not for the internal tooth plate of successive chambers not connecting with each other, this genus may well be considered an arenaceous isomorph of *Rectobolivina*.

Siphobigenerina compressa, n. gen., n. sp. (Pl. II: 1—4)

Test compressed, apertural view oblong, periphery round. Chambers distinct, slightly inflated, the biserial chambers making up about $\frac{1}{2}$ the length of the test; uniserial chambers much overlapping, low and broad, the final chamber about as high as broad. Sutures distinct, slightly depressed, appearing as a white limbate band. Wall finely agglutinated, outer and inner surface smooth, finely perforated. Aperture at the end of the final chamber, oblong, with slightly thickened rim and half funnel-shaped short tooth plate which usually does not reach $\frac{1}{2}$ the length of the chamber cavity, the tooth plates of successive chambers alternating in position in planes about 180° apart. Early portion of test yellow orange, becoming of a lighter hue in the later portion.

Dimensions: Holotype, IOAS-F690, length, 0.78 mm, width, 0.20 mm, thickness,

0.14 mm. (Jinyindao, Xisha Islands).

Genus *Pseudobolivina* Wiesner, 1931

***Pseudobolivina brevis*, n. sp. (Pl. III: 8, 9)**

Test small, compressed, leaf-shaped, median portion thickest, thinning towards the periphery which is narrowly rounded. Chambers few, not very distinct, increasing rapidly in size, the final pair high and broad, making up more than $\frac{1}{2}$ the entire area of the test. Sutures not very distinct, slightly depressed. Wall thick, composed mostly of fine sand grains, surface rather rough, early chambers with pseudochitinous lining. Aperture elliptical, slightly above the base of the apertural face, one side with a slightly curved inner tooth plate.

Dimensions: Holotype, IOAS-F691, length, 0.63 mm, width, 0.53 mm, thickness, 0.25 mm. Paratypes, IOAS-F692, length, 0.53 mm, width, 0.45 mm, thickness, 0.25 mm; IOAS-F693, length, 0.33 mm, width, 0.35 mm, thickness, 0.18 mm. (Between Shenhangdao and Guangjindao, 30 m, Xisha Islands).

Longitudinal sections of this species show that at one side of the aperture is a slightly curved tooth plate. This feature is hitherto undescribed in the other species of this genus.

Family Trochamminidae Schwager, 1877

Genus *Trochammina* Parker and Jones, 1859

***Trochammina trapeziformis*, n. sp. (Pl. XXVI: 9)**

Test small, compressed, low trochospiral, periphery narrowly rounded, the central portion of the dorsal side convex, the final whorl flattening rapidly, ventral side rather flattened, umbilical region depressed. Chambers trapeziform, about three whorls, final whorl with six, dorsal side not inflated, ventral side slightly inflated. Sutures of dorsal side not very distinct, not depressed, those of the early portion radial, dark brown, those of the final whorl slightly curved; sutures of ventral side slightly curved and depressed. Wall composed of coarse and fine sand grains, surface neatly finished, ventral side especially so. Aperture slitlike, at the base of the final chamber on the ventral side and opening into the umbilicus.

Dimensions: Holotype, IOAS-F697, length, 0.20 mm, width, 0.18 mm, thickness, 0.08 mm (Xisha Islands).

The most distinguishing features of this new species are its radial dorsal sutures and trapeziform chambers, and the rapidly flattening dorsal spire.

***Trochammina xishaensis*, n. sp. (Pl. II: 8)**

Test small, high trochospiral of 4—5 whorls, periphery broadly rounded, lobulate, dorsal side convex, ventral side more or less flattened, umbilical region depressed, closed. Chambers inflated, distinct, gradually increasing in size as added, four in the final whorl. Sutures distinct, depressed, those of the dorsal side radial, of the ventral side slightly curved. Wall finely arenaceous, incorporating a few sponge spicules, the ventral side more neatly finished than the dorsal side. Aperture a low arched slit at the base of the final chamber on the ventral side, extending from the periphery

to the umbilicus. Early portion of the dorsal side orange brown, of a lighter hue in the later portion.

Dimensions: Holotype, IOAS-F699, length, 0.38 mm, width, 0.33 mm, thickness, 0.25 mm. (Shanhudao, Xisha Islands).

The shape and number of chambers in the final whorl of this new species is very stable. On the dorsal side the chambers appear to be rectangular, invariably four making up the final whorl. It resembles *T. discorbinoides* Uchio, 1960 in the shape of the chambers and in the radial sutures, but differs from it in the much larger size and broadly rounded periphery. It also resembles *T. quadricamerata* Echols, 1971 but the latter is of a much smaller size, has fewer whorls, and has a highly arched aperture.

Septotrochammina, n. gen.

Type species: *Trochammina plicata* (Terquem)

Test scalelike, low trochospiral, umbilicus open. Chambers with radial secondary septa which connect the dorsal and ventral wall. Wall pseudochitinous, agglutinating a small amount of silt. Aperture at the umbilical end of the chambers on the ventral side.

This new genus differs from *Remaneica* Rhumbler, 1838 in that the chambers are not subdivided by transverse infoldings of wall but by radial secondary septa which connect the dorsal and ventral wall of the chambers. In external appearance, this new genus also resembles somewhat *Rotaliammina* Cushman, 1924, but the chambers of the latter are not subdivided.

Genus *Tiphotrocha* Saunders, 1957

Tiphotrocha minuta, n. sp. (Pl. II: 6)

Test minute, of 3—4 whorls, dorsal side dome-shaped, ventral side concave, umbilical region open, depressed, periphery narrowly rounded, entire. Chambers not inflated, on the dorsal side not distinct, on the ventral side slightly distinct, three visible in the final whorl, the final chamber occupying about $\frac{1}{2}$ the entire ventral surface. Sutures curved, not depressed, those of the dorsal side not distinct, of the ventral side slightly distinct. Wall finely arenaceous, ventral side more neatly finished than the dorsal side. Aperture at the base of the final chamber on the ventral side and opening into the umbilicus.

Dimensions: Holotype, IOAS-F703, length, 0.15 mm, height, 0.06 mm. (Jinyindao, Xisha Islands).

Disregarding the difference in apertural characters, this new species resembles *Trochammina compacta* Parker, 1952, but the latter is of a larger size, thicker, and has inflated chambers; furthermore, the wall is coarsely arenaceous. This new species also resembles somewhat *Trochammina appressa* Parr, 1950, but the latter has distinct dorsal sutures, at first depressed and then becoming raised and limbate, has six chambers to the final whorl, and has an acute periphery.

Genus *Trochamminula* Shehedrina, 1955

Trochamminula elongata, n. sp. (Pl. III: 3)

Test small, compressed, of 2—3 whorls, periphery round, later portion lobulate, dorsal side convex, ventral side with sunken umbilicus. Chambers elongate, final whorl with 8—9, increasing gradually in size as added; umbilical end of chamber flaplike. Sutures distinct, those of the early portion on the dorsal side radial, on the final whorl slightly curved and depressed; those of the ventral side radial, depressed. Wall composed mainly of fine sand grains, with a small amount of coarse sand grains, neatly finished. Aperture at the base of the chamber on the ventral side, extending from the periphery to the umbilicus and distinctly opening into the umbilicus; secondary aperture extending obliquely from the base of the chamber up the apertural face, slitlike, distinct. Early portion of dorsal side dark brown, becoming of a lighter hue in the later portion.

Dimensions: Holotype, IOAS-F704, length, 0.28 mm, width, 0.18 mm, thickness, 0.10 mm. (Xishazhou, 45—50 m, Xisha Islands).

This new species resembles *Trochammina nitida* Brady in general appearance, but the latter has shorter chambers and has no secondary aperture.

***Trochammina lobatula*, n. sp. (Pl. III: 1, 2)**

Test compressed, of 2—3 whorls, about $1\frac{1}{2}$ times as long as broad, periphery round, lobulate, umbilical region depressed. Chambers elongate, inflated, increasing rapidly in size as added, final whorl with 9—10; umbilical ends of chambers flaplike, posterior margin of flap distinctly arched into an aperture. Sutures distinct, depressed, slightly curved. Wall finely arenaceous, smoothly finished. Aperture slitlike, one at the base of the final chamber on the ventral side, and another extending obliquely from the base of the chamber up the apertural face, usually closed by a thin film of shell material. Early portion of the dorsal side dark reddish brown in colour, later portion of a lighter hue.

Dimensions: Holotype, IOAS-F705, length, 0.53 mm, width, 0.38 mm, thickness, 0.20 mm; paratype, IOAS-F706, length, 0.40 mm, width, 0.25 mm, thickness, 0.15 mm. (Xishazhou, 45—50 m, Xisha Islands).

Our specimens agree in all respects with the species figured by Graham and Militante (1959) as "*Haplophragmoides canariense* (Orbigny)." from the Philippines, which is a very different species when compared with *Nonionina canariensis* d'Orbigny. The type figure of the latter represents a planispiral, symmetrical specimen, having six inflated chambers and a highly arched equatorial aperture.

The oblique aperture extending up the apertural face of the final chamber is usually closed by a thin film of shell material. When the final chamber is dissected off, the intercameral chamber, can be seen as an arched open slit.

Family Fischerinidae Millett, 1898

Genus *Planispirinella* Wiesner, 1931

***Planispirinella carinata*, n. sp. (Pl. IV: 2; fig. 2)**

Test small, compressed, subcircular, periphery with ridgelike carina. Proloculus round, surrounded by undivided tubular chamber, later chambers 2 to a whorl. Only the suture of last whorl distinct. Wall porcelaneous, smooth. Aperture a high slitlike opening at the end of the final chamber.

Dimensions: Holotype, IOAS-F713, diameter, 0.38 mm, thickness, 0.10 mm. (Xishazhou, 45—50 m, Xisha Islands).

This new species differs from *P. exigua* (Brady) in being carinate and in having two instead of three chambers to a whorl.

Family Nubeculariidae Jones, 1875

Genus *Spiroloculina* d'Orbigny, 1826

***Spiroloculina planoconvexa*, n. sp. (Pl. IV: 8)**

Test thin, compressed, fusiform, one side convex, the central portion not concave, the other side rather flattened, central portion concave; periphery with acute thin carina. Chambers distinct, increasing rapidly in size as added, the last two very broad, the inner side thickest, thinning out towards the periphery; basal end of final chamber projecting, apertural end extending into a rapidly tapering elongate neck. Sutures distinct. Wall smooth. Aperture small, circular, with a simple tooth.

Dimensions: Holotype, IOAS-F721, length, 1.20 mm, width, 0.78 mm, thickness, 0.13 mm. (Xishazhou, 45—50 m, Xisha Islands).

The very concave central portion of the flattened side and the rapidly tapering elongate neck are distinctive features of this new species.

Genus *Nodophthalmidium* Macfayden, 1939

***Nodophthalmidium carinata*, n. sp. (Pl. V: 1)**

Test small, proloculus globular, surrounded by a planispiral tubular second chamber with carinate periphery, followed by a tubular rectilinear chamber which is broadest at the base. Sutures distinct. Wall calcareous imperforate, rectilinear chamber with a few weak longitudinal costae. Aperture large, circular, with a thickened, flaring lip.

Dimensions: Holotype, IOAS-F723, length, 0.29 mm, width, 0.06 mm. (Ganquandao, Xisha Islands).

This new species differs from *N. compressum* (Rhumbler) in the tubular instead of compressed rectilinear chamber and in the carinate early portion.

Family Miliolidae Ehrenberg, 1839

Genus *Quinqueloculina* d'Orbigny, 1826

***Quinqueloculina angulostoma*, n. sp. (Pl. V: 8)**

Test minute, subcircular, biconvex in apertural view, periphery obtusely rounded. Chambers inflated, not very distinct. Sutures not very distinct. Wall with obliquely reticulate markings. Aperture triangular, with a simple tooth.

Dimensions: Holotype, IOAS-F726, length, 0.20 mm, width, 0.18 mm, thickness, 0.13 mm. (Shanhudao, Xisha Islands).

The minute size, thick test and triangular aperture distinguish this species from its reticulate congeners.

***Quinqueloculina decora*, n. sp. (Pl. VI: 7)**

Test elongate oval, basal end projecting, apertural end obliquely truncate, slightly contracted and compressed, periphery broadly rounded; four-chambered side convex, three-chambered side concave. Chambers rather distinct, the peripheral face with oblique or transverse folds, the lateral faces slightly concave, without folds. Sutures distinct, slightly depressed. Wall not smooth, with very fine longitudinal striae. Aperture elongate, widening towards the top, with thickened lip and simple elongate tooth.

Dimensions: Holotype, IOAS-F731, length, 0.80 mm, width, 0.48 mm, thickness, 0.33 mm. (Nichujiao, Xisha Islands).

The finely longitudinally striated wall and transverse folds being limited only to the peripheral face of each chamber are the main features which distinguish this species from allied species with transverse ornamentation.

***Quinqueloculina fusiformis*, n. sp. (Pl. V:7; fig. 3)**

Test small, fusiform, basal end acutely projecting, apertural end extended into a narrow neck, periphery with a highly projecting ridge, the upper and lower portion double, the middle portion single. Chambers not very distinct, increasing rapidly in size as added. Sutures distinct. Wall not polished, incorporating a small amount of fine sand grains. Aperture subcircular, with thickened rim and simple tooth.

Dimensions: Holotype, IOAS-F732, length, 0.50 mm, width, 0.26 mm, thickness, 0.15 mm. (Lingyangjiao, Xisha Islands).

This new species resembles somewhat *Q. lachesis* Karrer, 1868, but differs from it in the smaller size and in having the upper and lower portion of the periphery instead of the basal one third, with double peripheral ridges.

***Quinqueloculina impolita*, n. sp. (Pl. VI:5)**

Test slightly longer than broad, basal end slightly projecting, periphery obtusely ridged, the upper and lower portion single, the middle portion double. Chambers, distinct. Sutures distinct, slightly depressed. Wall rather rough. Apertural end slightly constricted and slightly oblique, aperture subcircular, with T-shaped tooth.

Dimensions: Holotype, IOAS-F734, length, 0.43 mm, width, 0.35 mm; thickness, 0.28 mm. (Shanhudao, Xisha Islands).

The most distinguishing feature of this new species is the periphery being doubly ridged in the middle portion and singly ridged in the upper and lower portion. It slightly resembles *Q. parvatriangularis* Hussey, 1949, but the latter is of a smaller size, has acute periphery and simple tooth.

***Quinqueloculina inculta*, n. sp. (Pl. XXVI:10)**

Test fusiform, length less than $1\frac{1}{2}$ times its width, basal end projecting, apertural end extended into a short neck, periphery narrowly rounded. Chambers slightly inflated, peripheral angle subacute to acute. Sutures slightly distinct, slightly depressed. Wall incorporating a small amount of fine sand grains. surface rough. Aperture round, with short T-shaped tooth.

Dimensions: Holotype, IOAS-F735, length, 0.58 mm, width, 0.40 mm, thickness, 0.30 mm. (Xishazhou, 45—50 m, Xisha Islands).

This new species in certain respects resembles *Q. compta* Cushman but differs from it in the smaller and shorter test and in the rough texture of the wall.

Quinqueloculina paucilocula, n. sp. (Pl. V:9, 10; fig. 4)

Test broadest in the middle, narrowing towards both ends, basal end roundly projecting, apertural end obliquely truncate, periphery round. Chambers distinct, broadest near the basal end; one side with 3—4 chambers, the other side with 2—3 chambers. Sutures distinct, slightly depressed. Wall smooth. Apertural end compressed, aperture triangular, with elongate simple tooth.

Dimensions: Holotype, IOAS-F736, length, 1.08 mm, width, 0.73 mm, thickness, 0.30 mm; paratype, IOAS-F737, length, 0.73 mm, width, 0.40 mm, thickness, 0.30 mm. (Xishazhou, 45—50 m, Xisha Islands).

In this new species, the number of chambers exposed is usually four so that it appears to be triloculine externally. Transverse sections show that succeeding chambers usually overlap preceding chambers. The extent to which one chamber overlaps the other is not constant so that the number of chambers exposed externally also varies.

Quinqueloculina tubilocula, n. sp. (Pl. VI:2, 3)

Test small and elongate, about 3—4 times as long as broad, periphery round, basal end broadly rounded, not projecting, four-chambered side convex, three-chambered side rather flat. Chambers distinct, tubular, basal end curved. Sutures distinct, slightly depressed. Wall rather thin, surface smooth. Aperture round, sometimes with a short neck, with thickened and sometimes flaring rim, with a simple tooth.

Dimensions: Holotype, IOAS-F740, length, 0.28 mm, width, 0.08 mm, thickness, 0.05 mm (Jinyindao, Xisha Islands); paratype, IOAS-F741, length, 0.40 mm, width, 0.10 mm, thickness, 0.08 mm. (Between Shenhangdao and Guangjindao, 30 m, Xisha Islands).

This new species somewhat resembles *Q. bosciana* d'Orbigny but the latter is compressed, the chambers are broadest near the basal end, narrowing towards the apertural end.

Genus *Massilina* Schlumberger, 1893***Massilina magna***, n. sp. (Pl. VII:1)

Test large, elongate, basal end acutely projecting, apertural end extended into an elongate neck, periphery truncate, angles acute. Chambers not distinct, increasing rapidly in size. Sutures not distinct. Wall of agglutinated coarse and fine sand grains, surface rough. Aperture low and broad, rectangular, with short club-shaped tooth.

Dimensions: Holotype, IOAS-F743, length, 1.50 mm, width, 0.55 mm, thickness, 0.50 mm. (Xishazhou, 45—50 m, Xisha Islands)

Genus *Pseudosigmoilina*, n. gen.

Type species: ***Pseudosigmoilina minuta***, n. sp.

Chambers like *Sigmoilina*, successive chambers in planes about 180° apart, appearing equitant in section, the lateral extensions of the chamber wall partly or entirely overlapping all preceding chambers except penultimate one, so that in external view only

two chambers visible. Each chamber with wall independent of the adjacent one, the walls of adjacent chambers not closely appressed, with large spaces between. Wall calcareous, imperforate. Aperture without tooth.

This new genus differs from *Sigmoilina* in the presence of spaces between walls of adjacent chambers and in the edentate aperture.

Pseudosigmoilina minuta, n. gen., n. sp. (Pl. VII: 2, 3; fig. 6)

Test minute, elongate fusiform, lenticular in section; basal end projecting, apertural end extended and tapering into a slender neck, periphery acute. Chambers not distinct, two visible externally, much overlapping. Sutures not distinct. Wall smooth, near the periphery with one or two longitudinal costae. Aperture circular, small, without tooth, sometimes with phialine lip.

Dimensions: IOAS-F747, length, 0.43 mm, width, 0.13 mm, thickness, 0.05 mm; paratype, IOAS-F748, length, 0.43 mm, width, 0.13 mm, thickness, 0.05 mm. (Lagoon at Nichujiao, 6 m, Xisha Islands).

Genus *Pyrgo* Defrance, 1824

Pyrgo compressioblonga, n. sp. (Pl. VII: 6, 7)

Test oblong, compressed, periphery round, in side view the two sides of the test nearly parallel, apertural end narrowed. Chambers distinct, inflated. Sutures distinct. Wall smooth. Width of the aperture slightly less than $\frac{1}{2}$ the entire width of the test, with a broad tooth.

Dimensions: Holotype, IOAS-F750, length, 0.80 mm, width, 0.53 mm, thickness, 0.35 mm; paratype, IOAS-F751, length, 0.63 mm, width, 0.38 mm, thickness, 0.25 mm. (Lagoon at Nichujiao, 6 m, Xisha Islands).

This new species resembles somewhat *Pyrgo elongata* var. *quadrata* Heron-Allen and Earland, 1930, but the latter is larger, roundly quadrate, and has a much broader aperture.

Pyrgo megastoma, n. sp. (Pl. VII: 5)

Test elongate oval, periphery round, basal end broadly rounded, apertural end slightly constricted. Chambers distinct, inflated. Sutures distinct, slightly depressed. Wall smooth. Aperture very broad, about $\frac{3}{4}$ the entire width of the test, with flaring lip and broad tooth.

Dimensions: Holotype, IOAS-F753, length, 0.53 mm, width, 0.30 mm, thickness, 0.28 mm. (Xishazhou, 45—50 m, Xisha Islands).

In external appearance this species resembles *Pyrgo elongata* (d'Orbigny) but the latter has a narrow aperture.

Genus *Sigmoilinella*, n. gen.

Type species: ***Sigmoilinella tortuosa***, n. sp.

This genus differs from *Sigmoilopsis* in being calcareous throughout, does not have any outer agglutinated layer; it differs from *Sigmoilina* in being evolute, the lateral faces of the chambers do not overlap the preceding ones.

Sigmoilinella tortuosa, n. gen., n. sp. (Pl. VII: 4; fig. 7)

Test elongate, fusiform, slightly twisted, basal end projecting, narrowly rounded apertural end extended into a slender neck; periphery narrowly rounded, the lateral faces concave. Chambers not distinct, both faces exposing 3—4 chambers, the central portion of their lateral faces depressed, translucent; in section triangular, arranged in counterclockwise sigmoid series. Sutures not very distinct. Wall smooth, with a few longitudinal costae. Aperture subcircular, with slightly thickened rim, and short T-shaped tooth.

Dimensions: Holotype, IOAS-F754, length, 0.63 mm, width, 0.25 mm, thickness, 0.25 mm. (NICHUJIAO, Xisha Islands).

Genus *Spirosigmolina* Parr, 1942

Spirosigmolina pulchra, n. sp. (Pl. VIII:1; fig. 8)

Test subcircular, periphery broadly rounded, early portion biconvex, later portion flattened. Chambers distinct, early ones sigmoidine, later ones planispiral, like *Spiroloculina*. Sutures distinct, slightly depressed. Wall with transverse crenulations. Aperture oblong, at the end of the final chamber, with simple elongate tooth.

Dimensions: Holotype, IOAS-F756, length, 0.70 mm, width, 0.55 mm, thickness, 0.10 mm. (Shanhu-dao, Xisha Islands).

This species may be the same species placed by some authors under the name *Spiroloculina crenata* Karrer or *Massilina crenata* (Karrer). According to Cushman (1940) who examined the types in the Museum at Vienna, *S. crenata* Karrer although drawn as having an open aperture with a single tooth, has in reality a cribrate aperture and should belong to *Hauerina*.

In this new species the arrangement of the early chambers is sigmoidine, the aperture is open, with elongate tooth. These features are very different from those of *Hauerina*.

Genus *Triloculina* d'Orbigny, 1826

Triloculina parallela, n. sp. (Pl. VII:9,10; fig. 9)

Test roundly quadrate, compressed, periphery round, in side view the two sides of the test nearly parallel. Chambers inflated, rather straight, widest at the basal end, curved, gradually narrowing towards the apertural end. Sutures distinct, slightly depressed. Wall smooth, with faint transverse lines. Apertural end truncate, aperture highly arched, with slightly bifid, short, broad tooth, sometimes projecting out.

Dimensions: Holotype, IOAS-F762, length, 0.70 mm, width, 0.43 mm, thickness, 0.25 mm; paratype, IOAS-F763, 0.68 mm, width, 0.38 mm, thickness, 0.25 mm. (Shanhu-dao, Xisha Islands).

This species resembles *T. lutea* d'Orbigny in the shape of the chambers, but in the latter the two sides of the test in side view are not parallel, and the aperture is low and broad, without a tooth.

Genus *Sigmoihauerina*, n. gen.

Type species: *Hauerina bradyi* (Cushman)

Early chambers sigmoiline in arrangement, later chambers planispiral. Final whorl usually with 2—3 chambers. Wall calcareous, imperforate. Aperture, cribrate.

This new genus differs from *Hauerina* in the sigmoiline instead of quinqueloculine arrangement of the early chambers.

Genus *Articulina* d'Orbigny, 1826

***Articulina curta*, n. sp. (Pl. IX:8)**

Test small, compressed, early portion triloculine, oval, periphery subacute, following rectilinear portion composed of one chamber, slightly wider than long. Sutures distinct, slightly depressed. Wall smooth. Aperture elongate oblong, with slightly thickened rim.

Dimensions: Holotype, IOAS-F777, length, 0.45 mm, width, 0.25 mm, thickness, 0.10 mm. (Zhaoshudao, 3 m, Xisha Islands).

This new species resembles *A. parallela*, n. sp., but differs from it in the shorter and broader initial portion, in the shape of the rectilinear chamber which is broader than long instead of longer than broad, and in the periphery being subacute instead of round.

***Articulina parallela*, n. sp. (Pl. IX:4)**

Test small, compressed, periphery round. Early portion triloculine, oblong, the following rectilinear portion composed of one chamber, the two sides of which are nearly parallel, in section, oblong, the apertural end roundly projecting, about two times as long as broad. Sutures distinct, slightly depressed. Wall smooth. Aperture elongate oblong, with slightly thickened rim.

Dimensions: Holotype, IOAS-F780, length, 0.43 mm, width, 0.14 mm, thickness, 0.08 mm. (Shanhudao, Xisha Islands).

This new species resembles *A. crespinae* Cushman, 1944, but the latter is of a much larger size, the periphery of the early portion is narrowly keeled and the outer end of the uniserial chamber has faint traces of longitudinal costae.

***Articulina ricta*, n. sp. (Pl. IX:7)**

Test small, early portion quinqueloculine, periphery round, the basal end of the final chamber with distinct longitudinal costae; following rectilinear portion composed of three chambers, increasing gradually in width, the first two rather compressed, broader than long, the final one longer than broad, slightly inflated. Sutures distinct, slightly depressed. Wall with faint longitudinal striae. Aperture large, gaping, opening to one side of the test, with slightly flaring, thickened lip.

Dimensions: Holotype, IOAS-F782, length, 0.50 mm, width, 0.18 mm, thickness, 0.14 mm. (Jinyindao, Xisha Islands).

The slightly eccentric and large, gaping aperture are distinguishing characteristics of this new species.

Family Nodosariidae Ehrenberg, 1838

Genus *Botuloides*, n. gen.

Type species: ***Botuloides pauciloculus*, n. gen.**

Test elongate, slightly curved, subcircular or slightly depressed in section. Chambers uniserial. Sutures horizontal, straight. Wall thin, transparent, smooth, finely perforate. Aperture terminal, round, not radiate, with short neck.

This genus differs from *Nodosaria* Lamarck, 1812 in being subcircular and slightly depressed in section and in having a round instead of radiate aperture. It resembles somewhat *Dentalinoides* Marie, 1941, but the latter is round in section and has an aperture which is slightly to one side of the test.

***Botuloides pauciloculus*, n. gen., n. sp. (Pl. IX: 15, 16)**

Test small, elongate, slightly curved, subcircular or slightly depressed in section. Chambers two, sausage-shaped, the first longer than the second, about $2\frac{1}{2}$ times as long as broad, basal end tapering into a short spine; the second slightly overlapping the first. Sutures horizontal, straight, slightly constricted. Wall thin, transparent, smooth, finely perforate. Aperture small, round, at the end of a short neck.

Dimensions: Holotype, IOAS-F795, length, 0.38 mm, width, 0.08 mm, thickness, 0.06 mm (Lagoon at Nichujiao, 6 m, Xisha Islands); paratype, length, 0.35 mm, width, 0.08 mm, thickness, 0.06 mm (Dongdao, Xisha Islands).

Sidebottom's (1907) figure of *Nodosaria calomorpha* Reuss (Pl. 1, figs. 7—8) may be this same species. He especially pointed out that fig. 7 is depressed, while fig. 8 is slightly so. According to Reuss, *N. calomorpha* is provided with an entosolenian tube. Sidebottom's figure does not show such a structure.

Genus *Palmula* Lea, 1833

***Palmula latifolia*, n. sp. (Pl. X: 6)**

Test large, compressed, broad, leaf-shaped, periphery round, initial end roundly projecting, gradually broadening towards the apertural end. Chambers numerous, early ones coiled, later ones uncoiling, low and broad, equitant. Sutures limbate. Wall ornamented with drop-shaped ridges. Aperture produced, radiate.

Dimension: Holotype, IOAS-F801, length, 1.95 mm, width, 1.13 mm, thickness, 0.35 mm. (Shanhudao, Xisha Islands).

This species resembles somewhat *Fronicularia robusta* Brady var. *repanda* Cushman, 1913, but the latter is more compressed, the surface ornamentation consists of irregular or interrupted longitudinal costae.

Genus *Vaginulinopsis* Silvestri, 1904

***Vaginulinopsis sinuata*, n. sp. (Pl. X: 9, 10)**

Test elongate, slightly curved, elliptical in transverse section, longitudinal axis sigmoid, the dorsal periphery inwardly curved, the ventral periphery convex, lobulate. Chambers numerous, distinct, the early ones coiled, low and broad, the later ones uncoiling, rectilinear, broader than high, the last few ones increasing rapidly in height, very inflated, making up more than $\frac{1}{2}$ the entire length of the test. Sutures distinct, sigmoid, those of the later portion depressed. Wall thick, translucent, smooth. Aperture radiate, slightly produced.

Dimensions: Holotype, IOAS-F802, length, 1.60 mm, width, 0.50 mm, thickness,

0.38 mm; paratype, IOAS-F803, length, 2.20 mm, width, 0.50 mm, thickness, 0.40 mm. (Xishazhou, 45—50 m, Xisha Islands).

Very close to this species is Cushman and McCulloch's *Marginulina bacheii* Bailey (1950, p. 309, pl. 40, fig. 12) which when compared with the type figure and description of Bailey is a very different species. The type figure of Bailey's *M. bacheii* is round in section and has straight, oblique or horizontal sutures. This new species is also similar to *V. tasmanica* Parr, 1950, but the dorsal periphery of the latter is rather straight or distinctly convex and the chambers increase gradually in size.

Family Polymorphinidae d'Orbigny, 1839

Genus *Sigmomorphina* Cushman and Ozawa, 1928

Sigmomorphina basistriata, n. sp. (Pl. XI: 5, 6)

Test compressed, oval to oblong, basal end narrowly rounded, apertural end slightly obtuse, periphery narrowly rounded, Chambers long, thickest in the middle portion, thinning towards the periphery, early ones with thin ridgelike periphery. Chambers arranged in a clockwise sigmoid series, the early ones reaching the base of the test, the later ones gradually removed from the base. Sutures distinct, slightly depressed. Wall translucent, the basal half of the chambers with very fine longitudinal interrupted costae. Aperture radiate.

Dimensions: Holotype, IOAS-F813, length, 0.73 mm, width, 0.48 mm, thickness, 0.23 mm (Shanhudao, Xisha Islands); paratype, IOAS-F814, length, 0.73 mm, width, 0.35 mm, thickness, 0.20 mm. (Xishazhou, 45—50 m, Xisha Islands).

This new species is similar to *S. batesfordensis* Parr and Collins in external appearance but the latter has rounded periphery and has no ornamentation.

Family Glandulinidae Reuss, 1860

Genus *Glandulina* d'Orbigny, 1839

Glandulina granulosa, n. sp. (Pl. XI: 7)

Test elongate. Chambers very inflated, increasing rapidly in size as added. Sutures distinct, depressed. Wall thick, translucent, minutely granulated. Aperture radiate, entosolenian tube short and coarse.

Dimensions: Holotype, IOAS-F815, length, 0.63 mm, diameter, 0.45 mm. (Jinyindao, Xisha Islands).

The minutely granulated wall easily distinguishes this species from its congeners.

Genus *Obliquilingulina*, n. gen.

Type species: *Obliquilingulina oblonga*, n. sp.

Test compressed, elliptical in section. Chambers seemingly biserially arranged, tending to become uniserial. Sutures alternately oblique, forming an angle of about 45° with the horizontal. Wall calcareous, thin, finely perforate. Aperture slitlike, with entosolenian tube.

This new genus differs from *Lingulina* in having chambers seemingly biserial and tending to become uniserial in arrangement and in having alternately oblique instead

of horizontal sutures.

***Obliquilingulina oblonga*, n. gen., n. sp. (Pl. X:12—14)**

Test compressed, elliptical in section. Chambers few, 2—4, increasing rapidly in size as added, seemingly biserial, tending to become uniserial. Sutures alternately oblique, forming an angle of about 45° with the horizontal, slightly depressed. Test thin, translucent to transparent, finely perforate. Aperture slitlike, final chamber with a long, straight, entosolenian tube.

Dimensions: Holotype, IOAS-F807, length, 0.25 mm, width, 0.10 mm, thickness, 0.06 mm. (Jinyindao, Xisha Islands). Paratypes, IOAS-F808, length, 0.34 mm, width, 0.13 mm, thickness, 0.10 mm (Nichujiao, Xisha Islands); IOAS-F809, length, 0.25 mm, width, 0.10 mm, thickness, 0.05 mm. (Jinyindao, 6 m, Xisha Islands).

Genus *Laryngosigma* Loeblich and Tappan, 1953

***Laryngosigma caudata*, n. sp. (Pl. XI:8)**

Test rather compressed, fusiform, periphery round, basal end narrowly rounded, protruding. Chambers gradually removed from the base. Sutures depressed. Wall transparent, smooth. Aperture radiate, entosolenian tube short and straight.

Dimensions: Holotype, IOAS-F816, length, 0.85 mm, width, 0.35 mm, thickness, 0.18 mm. (Jinyindao, Xisha Islands).

This new species differs from *L. hyalascidia* Loeblich and Tappan, 1953, in the more elongate chambers and protruding initial portion.

Genus *Oolina* d'Orbigny, 1839

***Oolina brevisolenia*, n. sp. (Pl. XII:1)**

Test ovate, with sparsely distributed, longitudinal, sometimes bifurcated costae which become obsolete near the apertural end. Wall thick. Aperture radiate, entosolenian tube short, at the apertural end, not extending into the chamber cavity.

Dimensions: Holotype, IOAS-F819, length, 0.33 mm, diameter, 0.25 mm. (Between Shenhangdao and Guangjindao, 30 m, Xisha Islands)

This species resembles somewhat *Oolina borealis* Loeblich and Tappan, 1954, but differs from it in having longitudinal costae which become obsolete at the apertural end.

Genus *Fissurina* Reuss, 1850

***Fissurina compressioblonga*, n. sp. (Pl. XII:4; fig. 14, 7.)**

Test compressed, oblong, periphery with transparent ridgelike carina. Near and parallel to the periphery at the two sides of the test is a surrounding ridge which extends up the tip of the neck at the apertural end and meets the peripheral carina at the base of the test. Wall thin, translucent, finely perforate, smooth. Apertural end extended into a slightly constricted short neck. Aperture small, with thickened phialine lip; entosolenian tube straight, not reaching half the length of the test.

Dimensions: Holotype, IOAS-F823, length, 0.31 mm, width 0.15 mm, thickness, 0.08 mm. (Lagoon at Nichujiao, 16 m, Xisha Islands).

This species resembles somewhat *F. tricarinata* Terquem (1882, pl. 1, fig. 28a, b) but the neck of the latter is not constricted, the aperture has no lip, the peripheral carina and lateral carina are independent of each other, not joining at the base of the test. Furthermore, according to Le Calvez (1940) the central portion of the test has elongate, raised ridges.

***Fissurina disjuncta*, n. sp.** (Pl. XII: 3; fig. 14, 4)

Test compressed, elongate oval, to broadly ovate, oblong in section; periphery with narrow transparent carina. Near and parallel to the periphery at the two sides of the test is a transparent, narrow, slightly raised lateral ridge which joins the peripheral carina at the basal end. Inside the lateral ridge is a broad, opaque band which encircles a slightly raised transparent central area within which is a slightly depressed U-shaped or parenthesis-shaped broad opaque band. Apertural end narrowed into a neck portion, aperture lenticular, with slightly thickened rim, entosolenian tube straight, not reaching $\frac{1}{2}$ the entire length of the test.

Dimensions: Holotype, IOAS-F828, length, 0.29 mm, width, 0.18 mm, thickness, 0.10 mm (Panshiyu, Xisha Islands).

In side view this species is very similar to *Fissurina walleriana* (Wright) but the opaque bands at the transparent central area are not joined in a circle and are slightly depressed. In *F. walleriana*, the central portion of the test has an encircling slightly raised band. Furthermore the lateral ridges are independent of the peripheral carina.

***Fissurina furcicolla*, n. sp.** (Pl. XIII: 3)

Test broadly oval, oblong in section, basal end emarginate at the middle, periphery with a thin broad carina extending up to the apertural end. Near the periphery at both sides of the test is a thin lateral carina which joins the peripheral carina at the basal end. Wall ornamented with rather dense large raised bosses at the peripheral portion, the central portion hyaline, with sparsely distributed smaller raised bosses; the peripheral carina and lateral carina as well as the region between them with fine raised granules. Apertural end narrowly rounded, with a pronglike transparent ridge, aperture lenticular, thickened apertural rim continuous with peripheral carina; entosolenian tube about one half the length of the test, with tip curved to one side of the test.

Dimensions: Holotype, IOAS-F831, length, 0.25 mm, width, 0.23 mm, thickness, 0.14 mm (Jinqingdao, 6 m, Xisha Islands)

The most distinguishing feature of this species is the presence of the pronglike raised ridges at the apertural end.

***Fissurina granulocostata*, n. sp.** (Pl. XII: 9)

Test small, subcircular, oblong in section, periphery with a narrow carina, near the periphery at the two sides of the test is an encircling lateral carina. Wall translucent, the upper two thirds of the test with raised longitudinal costae, the basal third with raised pearl-like bosses. Aperture lenticular, with slightly raised rim; entosolenian tube straight, not reaching half the length of the test.

Dimensions: Holotype, IOAS-F832, length, 0.16 mm, width, 0.15 mm, thickness, 0.10 mm. (Jinqingdao, 6 m, Xisha Islands).

This new species somewhat resembles *Lagena clathrata* Brady forma *striata*

Buchner (1940) but the latter has only longitudinal costae extending from the basal end to the apertural end.

***Fissurina minipora*, n. sp. (Pl. XIII: 7; fig. 14, 6.)**

Test compressed, oval, thickest in the middle portion, thinning towards the periphery provided with a sharp thin carina which is broader at the basal end. Wall thin, translucent, finely and densely perforate. Apertural end constricted into a short neck, with thick phialine lip; entosolenian tube with flaring tip, bent to one side of the test, not reaching $\frac{1}{2}$ the length of the test.

Dimensions: Holotype, IOAS-F838, length, 0.28 mm, width, 0.20 mm, thickness, 0.11 mm. (Jinyindao, Xisha Islands).

This species occurs in greater number than most of the other fissurines. The apertural characters are very stable. The entosolenian tube invariably does not reach one half the length of the test and is always bent towards one side of the test.

***Fissurina pseudolucida*, n. sp. (Pl. XII: 8, 9)**

Test compressed, oval to oblong, oblong in section. Near the periphery at both sides of the test is an opaque U-shaped area, the rest of the test hyaline. In apertural view the hyaline area appears as a broad hyaline cross. Aperture an elongate slit; entosolenian tube short, straight, with bifurcate tip, reaching to about $\frac{1}{4}$ the length of the test.

Dimensions: Holotype, IOAS-F843, length, 0.15 mm, width, 0.10 mm, thickness, 0.05 mm. (Dongdao, Xisha Islands); paratype, IOAS-F844, length, 0.15 mm, width, 0.12 mm, thickness, 0.05 mm. (Jinyindao, Xisha Islands).

This species resembles *F. lucida* (Williamson) of some authors. Williamson's type figure shows a specimen with a long entosolenian tube with flaring tip and reaching more than $\frac{1}{2}$ the entire length of the test. This species differs from *F. lucida* in the entosolenian tube being very short and being bifurcate at the tip. The shape of the entosolenian tube makes it resemble *F. furcillifera* (Buchner), but the latter is thicker and is hyaline throughout.

***Fissurina radiatostoma*, n. sp. (Pl. XIII: 10)**

Test small, subcircular, the middle portion thick, gradually thinning out towards the periphery which is limbate and subacute. At both sides of the test, very close to the periphery is a narrow ridgelike carina, the space between the carinae slightly depressed. Wall thin, transparent. Apertural end short collar-shaped, with a few slightly distinct, short, radial striae; aperture elliptical, with phialine lip. entosolenian tube short and straight, reaching about $\frac{1}{3}$ the length of the test.

Dimensions: Holotype, IOAS-F848, length, 0.14 mm, width, 0.13 mm, thickness, 0.08 mm. (Nichujiao, Xisha Islands).

The main characteristic which distinguishes this species from allied species is the presence of radial striae on the apertural collar.

***Fissurina robusta*, n. sp. (Pl. XIII: 11)**

Test subcircular, broadly oblong in section, periphery narrowly rounded. At both sides of the test is a broad U-shaped opaque area, the rest of the test hyaline. Aperture an elongate slit; entosolenian tube bifurcate at the tip, not reaching $\frac{1}{2}$ the length of the test.

Dimensions: Holotype, IOAS-F849, length, 0.18 mm, width, 0.15 mm, thickness, 0.12 mm. (Shanhudao, 4 m, Xisha Islands).

This species closely resembles *F. modesta* (Matthes) var. *stolata* Matthes, 1939, but the latter species has a stout spine at the basal end, has a narrow projecting apertural end and has shorter entosolenian tube. It differs from *F. pseudolucida* n. sp., in the stouter test and longer entosolenian tube.

***Fissurina tropicalis*, n. sp. (Pl. XII:11; fig. 14, 5.)**

Test oval to elongate oval, biconvex in section, basal end emarginate, periphery with a thin carina extending up to the apertural end; near the periphery at both sides of the test is a narrow lateral carina which also extends up the apertural end, and at the basal end is joined with the peripheral carina. Wall with deep polygonal depressions, those at the basal half being larger. Apertural end tapering into an elongate neck, aperture lenticular, with slightly raised rim; entosolenian tube with slightly flaring tip, bent toward one side of the test, reaching $\frac{1}{2}$ the length of the test.

Dimensions: Holotype, IOAS-F850, length, 0.28 mm, width, 0.16 mm, thickness, 0.10 mm. (Jinyindao, Xisha Islands).

Our specimens are very similar to the species figured by Millett (1901) as *Lagena squamoso-marginata* Parker and Jones. In spite of the fact that Millett pointed out that *L. squamoso-marginata* has only one peripheral carina, he also placed his tricarinate specimens under this specific name. Comparing his figures with the type figure, we are of the opinion that they represent two distinct species.

Genus *Parafissurina* Parr, 1947

***Parafissurina minuta*, n. sp. (Pl. XIV:5)**

Test compressed, roundly quadrangular, about twice as long as broad, elongate oblong in section, the two sides of the peripheral margins parallel. Wall thin, transparent. Aperture slightly opening towards the ventral side, slitlike, about $\frac{1}{2}$ the entire width of the test; entosolenian tube adhering to the dorsal wall, the upper end cylindrical, the lower end semicylindrical, with flaring tip.

Dimensions: Holotype, IOAS-F854, length, 0.21 mm, width, 0.10 mm, thickness, 0.06 mm. (Quanfudao, Xisha Islands).

This species resembles closely *P. quadrata* Parr, but the latter is larger and thicker, the length of the aperture is almost equal to the entire width of the test, the entosolenian tube is rather straight and not bent to one side of the test. This species also resembles *Parafissurina removens* (Buchner) but the latter has a very long entosolenian tube, sometimes reaching the basal end.

***Parafissurina oblonga*, n. sp. (Pl. XIV:4)**

Test oblong, elliptical in section, periphery narrowly rounded, apertural end slightly narrower than the basal end which is nearly truncate; the central portion of both faces thick, nearly parallel, thinning gradually towards both ends. Wall translucent, periphery hyaline. Aperture slightly opening to the ventral side, about $\frac{1}{3}$ the width of the test; entosolenian tube long, about $\frac{3}{4}$ the length of the test, adhering to the dorsal wall, the upper $\frac{1}{3}$ cylindrical, the lower $\frac{2}{3}$ semicylindrical, with slightly flaring tip.

Dimensions: Holotype, IOAS-F855, length, 0.24 mm, width, 0.13 mm, thickness, 0.09 mm. (Between Shenhangdao and Guangjindao, 30 m, Xisha Islands).

This species resembles *Parafissurina hamigera* (Buchner) in the general shape of the test, but in the latter species, the entosolenian tube is very long, extending down to the base and curving towards the ventral side a short distance. Furthermore, the degree to which the aperture opens towards the ventral side is greater. This new species differs from *P. quadrata* Parr in having a narrower aperture, the aperture of the latter is almost equal to the width of the test.

***Parafissurina quadrispinata*, n. sp. (Pl. XIV: 7)**

Test small, compressed, broadly ovate to subcircular, middle portion thickest, gradually thinning out toward the periphery, apertural end nearly truncate. Periphery with two thick and obtuse carinae, at the basal end, between the two carinae are four nearly equally spaced short acute spines. Wall thin, transparent. Aperture elongate, slitlike; entosolenian tube very long, with slightly flaring tip, reaching about $\frac{5}{6}$ the length of the test, bent towards the dorsal side of the test and nearly adhering to it.

Dimensions: Holotype, IOAS-F856, length, 0.13 mm; width, 0.14 mm, thickness, 0.05 mm. (Nichujiao, Xisha Islands.)

This species resembles *Lagena staphyllearia* (Schwager) forma *reducta* Buchner, but the latter species has a more acutely projecting apertural end and its periphery is provided with only one carina which at the basal end gives rise to basal spines. In this species the spines are independent of the carina, arising from the furrow between the two carinae.

***Parafissurina reflecta*, n. sp. (Pl. XIV: 6)**

Test compressed, subcircular, oblong in section, periphery round, without carina. Wall not transparent. Aperture slitlike, short, about $\frac{1}{2}$ the width of the test, only slightly to one side of the test; entosolenian tube semicylindrical, bent toward and adhering to the dorsal wall, extending to the basal end and then curving towards the ventral side a short distance.

Dimensions: Holotype, IOAS-F857, length, 0.12 mm, width, 0.13 mm, thickness, 0.08 mm. (Jinyindao, Xisha Islands).

The reflexed character of the long entosolenian tube of this species brings it close to *Parafissurina dohrni* (Buchner) but the latter has an aperture about as wide as the width of the test.

Family Bolivinitidae Cushman, 1927

Genus *Brizalina* Costa, 1856

***Brizalina pseudoseminuda*, n. sp. (Pl. XV: 17)**

Test small, compressed, elongate, increasing gradually in width, periphery round. Chambers slightly inflated, the early ones low and broad, the later ones increasing rapidly in height. Sutures distinct, slightly depressed, forming an angle of about 45° with the horizontal. Wall thin, translucent, finely perforate, pores evenly distributed. Aperture elliptical.

Dimensions: Holotype, IOAS-F871, length, 0.38 mm, width, 0.10 mm, thickness,

0.06 mm. (Nichujiao, Xisha Islands).

In external appearance, this species resembles *Brizalina seminuda* (Cushman), but the latter is smaller and thicker, the sutures are slightly oblique and the wall is coarsely perforate, the pores being distributed only on the lower half of the chamber.

***Brizalina subcapitata*, n. sp. (Pl. XV: 15)**

Test elongate, compressed, increasing in width towards the apertural end, periphery round. Chambers numerous, inflated, increasing rapidly in height. Sutures distinct, depressed, obliquely curved. Wall thin, nearly transparent, finely perforate. Aperture elongate, a curved slit, slightly eccentric, sometimes tending to become terminal.

Dimensions: Holotype, IOAS-F874, length, 0.45 mm, width, 0.25 mm, thickness, 0.08 mm. (Zhongjiandao, Xisha Islands).

This species differs from *B. capitata* (Cushman) in being more compressed, in the eccentric instead of terminal aperture, and in the shape of the aperture which is elongate-curved, instead of being oblong.

***Brizalina substriatula*, n. sp. (Pl. XV: 13, 14)**

Test elongate, compressed, initial end narrowly rounded, widening rapidly towards the apertural end, periphery round. Chambers distinct, slightly inflated, gradually increasing in size as added. Sutures of the early portion not very distinct, of the later portion distinct, slightly depressed, oblique. Wall finely perforate, basal end of the test with very fine longitudinal striae. Aperture elongate loop-shaped, tooth plate projecting out, its outer edge serrate.

Dimensions: Holotype, IOAS-F876, length, 0.30 mm, width, 0.13 mm, thickness, 0.06 mm. (Shenhangdao, Xisha Islands).

This species differs from *Brizalina striatula* (Cushman) in the less tapering test, in the rounded instead of obtusely angled periphery, in the finer longitudinal striae and in the outer edge of the tooth plate being serrate.

Genus *Rectobolivina* Cushman, 1927

***Rectobolivina altilocula*, n. sp. (Pl. XVI: 3, 4)**

Test small, straight, or slightly curved, apertural view nearly circular. Chambers distinct, those of the biserial portion compressed, 5—6 pairs, making up about $\frac{1}{2}$ the entire length of the test; those of the uniserial portion subcylindrical. Sutures limbate, transparent, those of the early portion flush with the surface, of the later portion slightly depressed. Wall coarsely perforate, translucent to opaque, with a few faint longitudinal costae. Aperture round, with thickened rim.

Dimensions: Holotype, IOAS-F878, length, 0.35 mm, diameter, 0.09 mm (Jinyindao, Xisha Islands); paratype, IOAS-F879, length, 0.53 mm, diameter, 0.12 mm. (Nichujiao, Xisha Islands).

This new species resembles *Rectobolivina glabra* Bermudez but in the latter, the sutures are simply depressed, not limbate.

***Rectobolivina subbifrons*, n. sp. (Pl. XVI: 6—8)**

Test elongate, apertural view nearly round, the early biserial portion compressed, the median line slightly depressed; the later uniserial portion gradually becoming

cylindrical. Chambers distinct, broader than high. Sutures limbate, transparent, flush with the surface. Wall smooth, coarsely perforate, with a few faint longitudinal striae. Aperture oblong, with thickened rim.

Dimensions: Holotype, IOAS-F880, length, 1.33 mm, diameter, 0.30 mm.

This species differs from *Rectobolivina bifrons* (Brady) in the much larger size, in the more conspicuous biserial portion and in the chambers becoming cylindrical in the later portion. The latter species is compressed throughout, with conspicuously depressed median line.

***Rectobolivina subraphanus*, n. sp. (Pl. XVI: 5)**

Test large, elongate, apertural view round. Early biserial portion short, compressed, chambers broad and low; later uniserial portion very long, chambers at first broad and low, the last few ones rapidly becoming inflated, only slightly broader than high. Sutures limbate, transparent, only those of the last few chambers slightly depressed. Wall rather coarsely perforate, with several faint and fine longitudinal costae. Aperture round, with thickened rim.

Dimensions: Holotype, IOAS-F882, length, 1.38 mm, diameter, 0.20 mm. (Jinyindao, Xisha Islands)

This species differs from *Rectobolivina raphana* (Parker and Jones) in the less conspicuous surface ornamentation. The costae of the latter are very distinct and coarse.

Family Discorbidae Ehrenberg, 1838

Genus *Discorbis* Lamarek, 1804

***Discorbis latestoma*, n. sp. (Pl. XVII: 1—3)**

Test slightly longer than broad, low to high trochospiral, periphery round, slightly lobulate; dorsal side flat to convex, umbilical region on ventral side depressed. Chambers inflated, gradually increasing in size, usually of three whorls, final whorl with six; on the ventral side, the umbilical end of the chambers flaplike, forming a stellate mass covering the umbilical region. Sutures distinct, limbate, radiate, depressed. Wall thick, perforations on the dorsal side coarse and sparsely distributed, sometimes arranged in rows; ventral side transparent, with a few coarse perforations. Aperture not apparent, the base of the apertural face of final chamber covered by a transparent band of clear shell material; intercameral aperture a low arch, extending from the periphery to the umbilical end.

Dimensions: Holotype, IOAS-F894, length, 0.40 mm, width, 0.38 mm, thickness, 0.23 mm (Jinqingdao, Xisha Islands); paratype, IOAS-F895, length, 0.45 mm, width, 0.38 mm, thickness, 0.20 mm. (Shenhangdao, Xisha Islands).

This species differs from *Discorbis subvesicularis* Collins, 1958, in the coarser perforation, the limbate sutures, in the periphery being only slightly lobulate and in the aperture of the final chamber being closed by a transparent band of shell material.

Genus *Discorbinella* Cushman and Martin, 1935

***Discorbinella kerimbatica*, n. sp. (Pl. XVIII: 3)**

Test very small, planoconvex, periphery with a broad, thin carina; dorsal side convex, evolute, of about two whorls, ventral side flat, involute. Chambers distinct, final whorl with 5—6, slightly inflated, increasing gradually in size as added, the umbilical end of the chambers on the ventral side flaplike. Sutures slightly depressed, those on the dorsal side slightly curved to radial, on the ventral side very curved. Wall coarsely and sparsely perforate, on the dorsal side, the rim of the pores slightly thickened and raised; ventral side hyaline, finely perforate. Aperture at the base of the chamber on the ventral side, with distinct secondary sutural aperture.

Dimensions: Holotype, IOAS-F899, length, 0.15 mm, width, 0.13 mm, thickness, 0.06 mm. (Nichujiao, Xisha Islands).

The type figure of *Discorbina pustulata* Heron-Allen and Earland, 1913 shows a planoconvex form, the convex side is involute, (with four chambers visible), while the flattened side is evolute, which features should place it under *Planodiscorbis*. In 1915, Heron-Allen and Earland again recorded this species in their Kerimba report. Although they pointed out that "they have little to add to the diagnosis and description originally given except that the number of chambers visible in the final convolution appears to be normally five", their figures show a rather different form. The convex side is evolute, (showing 5—6 chambers in the final whorl) while the flattened side is involute. These are basic features which are very different from those of the type species and which should place it under *Discorbinella*. We are of the opinion that their Kerimba specimens represent a distinct species.

Genus *Patellinella* Cushman, 1928

Patellinella spinosa, n. sp. (Pl. XVII: 10—12)

Test compressed, initial end narrowly rounded, gradually widening towards the apertural end, apertural face roundly quadrangular, periphery rounded. Chambers low and broad, apertural face inflated, surrounded by a raised ridge, which extends into one or more stout spines at the periphery. Sutures slightly distinct. Wall thin, with distinct perforations, surface appearing granulate, near the peripheral region minutely spinose; apertural face hyaline, nonperforate. Aperture highly arched, at the base of the apertural face.

Dimensions: Holotype, IOAS-F902, length, 0.33 mm, width, 0.28 mm, thickness, 0.18 mm; paratype, IOAS-F903, length, 0.30 mm, width, 0.20 mm, thickness, 0.15 mm. (Shanhudao, Xisha Islands).

This species somewhat resembles *Patellinella jugosa* (Brady) but differs from it mainly in having coarse stout spines and in the minutely spinose peripheral region.

Family Glabratellidae Loeblich and Tappan, 1964

Genus *Glabratella* Dorreen, 1948

Glabratella elegans, n. sp. (Pl. XIX: 2)

Test very small, subcircular, periphery round, slightly lobulate, dorsal side convex, of two whorls, ventral side with depressed umbilical region. Chambers distinct, increasing gradually in size as added, inflated, final whorl with six, umbilical end of final chamber on the ventral side flaplike. Sutures distinct, usually of reddish

brown color, those of the dorsal side curved, narrowly limbate, slightly depressed; of the ventral side radial, depressed. Wall smooth, dorsal side finely and densely perforate, ventral side hyaline except for the peripheral region which is perforate, with fine radiating striae. Aperture opening into the umbilical region. Early portion reddish brown, of a lighter hue in the later portion.

Dimensions: Holotype, IOAS-F918, diameter, 0.15 mm, thickness, 0.09 mm. (Xishazhou, 45—50 m, Xisha Islands).

In spite of its small size, the characteristics of this new species are very distinct. The final whorl invariably has 6 chambers. Its dorsal side resembles an *Ammonia*, but its ventral side is that of a typical *Glabratella*, with fine radiating striae. The majority of the specimens found have an open umbilicus. This new species resembles somewhat *Pulvinulina globosa* Sidebottom, but in the latter species the sutures are not limbate.

Glabratella limbata, n. sp. (Pl. XIX:4)

Test subcircular, dorsal side convex, ventral side flattened, periphery subacute, limbate. Chambers distinct, of 2—3 whorls, final whorl with 7, increasing gradually in size as added. Sutures distinct, those on the dorsal side obliquely curved, broadly limbate, flush or slightly raised; those on the ventral side radial, slightly depressed. Wall thick, dorsal side coarsely perforate, without ornamentation; ventral side with many fine radiating striae, the umbilical region with a small rounded boss, the umbilical ends of the chambers thickened and raised into oval studs which surround the central boss imparting a stellate appearance. Aperture at the base of the chamber on the ventral side and extending into the umbilicus.

Dimensions: Holotype, IOAS-F919, diameter, 0.28 mm, thickness, 0.12 mm. (Shanhudao, Xisha Islands).

Under the specific name *Discorbina patelliformis*, Brady (1884) gave two figures, one on plate 88, fig. 3, and the other on plate 89, fig. 1. Figures of specimens attributed to *Discorbina patelliformis* or *Glabratella patelliformis* by subsequent authors correspond in form to his figure 1 on plate 89. In our material, we have come across many specimens which correspond closely to his two figures of the species. Comparing the characteristics of these two forms, we come to the conclusion that they represent two distinct species. The species represented by fig. 3 in plate 88 differs from the species represented by fig. 1 in pl. 89 in having stellate bosses on the ventral side, in lacking fine striae radiating from the top of the spire, and in having a limbate periphery.

Glabratella pulchella, n. sp. (Pl. XIX:6)

Test very small, low trochospiral, slightly compressed, broadly auriculate, periphery narrowly rounded, umbilical region depressed. Chambers distinct, of two whorls, final whorl with seven, slightly inflated, increasing gradually in size as added, umbilical end of final chamber elongate, flaplike, covering the umbilicus. Sutures distinct, limbate, those on the dorsal side curved, raised, those on the ventral side radial, slightly depressed. Wall coarsely perforate on the dorsal side, the pores arranged in rows along the sutures; ventral side hyaline, finely perforate, umbilical region with fine radiating lines. Aperture at the base of the chamber on the ventral side.

Dimensions: Holotype, IOAS-F921, length, 0.14 mm, width, 0.12 mm, thickness, 0.06 mm. (Dongdao, Xisha Islands).

This species resembles *Glabratella australensis* (Heron-Allen and Earland) as figured by Lankford and Phleger (1973) in many respects except for the smaller size and fewer chambers in the final whorl (the latter has 9). Compared with the type figures and description of *Discorbis australensis* Heron-Allen and Earland, their species is evidently a distinct one. The former has a higher spire, appearing conical, and has very elongate narrowly arched chambers.

***Glabratella scabra*, n. sp. (Pl. XIX:3)**

Test very small, subcircular, periphery round, slightly lobulate. Dorsal side convex, ventral side with depressed umbilicus. Chambers not very distinct, slightly inflated, of two whorls, final whorl with 6—7, increasing gradually in size as added. Sutures not very distinct, slightly depressed, those on the dorsal side curved, those on the ventral side radial. Wall coarsely and densely perforate, on the dorsal side, the pores appearing to be arranged in rows; ventral side with fine radiating lines. Aperture at the base of the chamber on the ventral side. Color, light yellow.

Dimensions: Holotype, IOAS-F922, diameter, 0.19 mm, height, 0.08 mm. (Zhaoshudao, Xisha Islands).

This species differs from *Glabratella crassa* Dorreen in having more chambers to a whorl and in the smaller and more compressed test.

Family Spirillinidae Reuss, 1862

Genus *Spirillina* Ehrenberg, 1843

***Spirillina compressa*, n. sp. (Pl. XIX:11)**

Test very small and compressed, circular, of five coils. Dorsal side slightly broader than the ventral side, the dorsal peripheral angle of the coil serrate, the teeth slightly directed upward; ventral side with radiating rows of fine granules, the central region slightly depressed and with a few round pores.

Dimensions: Holotype, IOAS-F927, diameter, 0.15 mm, thickness, 0.02 mm. (Lagoon at Nichujiao, 6 m, Xisha Islands).

This species resembles *Spirillina spinigera* Chapman, 1900 in having a serrate periphery, but differs from it in the smaller and more compressed test, in the denser serration of the periphery and in the upward direction of the teeth.

***Spirillina grosseperforata*, n. sp. (Pl. XIX:12)**

Test small, circular, the dorsal and ventral side of equal width, of 8—9 coils, periphery truncate, peripheral angles subacute. Dorsal side flattened, coarsely and densely perforate; ventral side not visibly perforate, rather rough, central portion depressed. Aperture arched, opening slightly to the ventral side.

Dimensions: Holotype, IOAS-F928, diameter, 0.28 mm, thickness, 0.05 mm. (Nichujiao, Xisha Islands).

This species differs from *Spirillina perforata* (Schultze) in the smaller test, in being perforate only on the dorsal side and in the aperture opening slightly to the ventral side.

***Spirillina planoconcava*, n. sp. (Pl. XX: 4, 5)**

Test small, circular, of more than ten coils, those of the early portion very narrow, increasing rapidly in width in the last few coils; periphery truncate, peripheral angles acute, thickened; dorsal and ventral side of equal width or ventral side slightly wider than dorsal side. Dorsal side very concave, coarsely perforate, the spiral sutures sometimes raised; ventral side flattened to slightly depressed, sometimes with a few small raised bosses. Aperture at the open end of the tube, low and broad.

Dimensions: Holotype, IOAS-F931, diameter, 0.30 mm, thickness, 0.10 mm. (Nichujiao, Xisha Islands).

The most distinguishing characteristic of this new species is the rapid increase in width and thickness of the last few coils and the planoconcave shape of the test.

***Spirillina porisuturalis*, n. sp. (Pl. XX: 3)**

Test small, much compressed, of four coils, increasing gradually in width. Periphery carinate, acute, carina about $\frac{1}{2}$ the width of the tubular chamber. Spiral sutures depressed, with a row of coarse pores. Ventral sides slightly depressed, sutures limbate, slightly depressed, with a few radiating rows of fine bosses. Aperture oval, at the end of the tube.

Dimensions: Holotype, IOAS-F933, diameter, 0.20 mm, thickness, 0.02 mm. (Nichujiao, Xisha Islands).

The presence of coarse pores along the spiral sutures on the dorsal side makes this species resemble *Spirillina vivipara* Mhrenberg var. *unilinearis* Jones, 1895, but it differs from the latter in having a thin and broad carina.

***Spirillina scalaris*, n. sp. (Pl. XIX: 13)**

Test very small, planoconvex, periphery roundly convex. of 4 coils, in side view scalariform. Dorsal side slightly broader than ventral side, spiral wall high, with upwardly directing teeth. Ventral side flattened, with a few bosses along the sutures. Aperture triangular.

Dimensions: Holotype, IOAS-F934, diameter, 0.18 mm, thickness, 0.05 mm. (Zhongjiandao, Xisha Islands).

This species resembles *Spirillina spinigera* Chapman, 1900. in the serrate periphery, but the latter has lesser and stouter peripheral spines which are not directed upward, is of a larger size, and has a smooth ventral surface.

Genus *Mychostomina* Berthelin, 1881***Mychostomina carinata*, n. sp. (Pl. XXI: 9)**

Test small, dorsal side convex, central portion slightly depressed; ventral side flattened, central portion depressed, with a broad carina which becomes flexible when wet, of light orange color. Tubular chamber increasing gradually in width. Dorsal sutures depressed, ventral sutures limbate, hyaline. Wall coarsely and sparsely perforate, pores on the dorsal side slightly coarser and more distinct than those on the ventral side. Aperture at the open end of the tubular chamber on the ventral side, opening into the umbilicus.

Dimensions: Holotype, IOAS-F938, diameter, 0.25 mm, thickness, 0.10 mm. (Nichu-

jiao, Xisha Islands).

The carinate periphery of this species makes it resemble *Spirillinoides circumcinctus* Rhumbler, 1938, but differs from it in being calcareous instead of arenaceous and in having the aperture opening on the ventral side instead of on the periphery.

***Mychostomina peripora*, n. sp. (Pl. XX:12)**

Test very small, compressed, periphery narrowly rounded, dorsal side rather flattened, slightly broader than the ventral side which is depressed in the central portion. Coils four, gradually increasing in width. Wall thick, pores coarse, those near the periphery especially distinct. Aperture slitlike, opening on the ventral side.

Dimensions: Holotype, IOAS-F939, diameter, 0.17 mm, thickness, 0.03 mm. (Lagoon at Nichujiao, 6 m, Xisha Islands).

This species differs from *Mychostomina revertens* (Rhumbler) in the more compressed test and in the coarser perforations.

***Mychostomina truncata*, n. sp. (Pl. XXI:8)**

Test very small, like a truncated cone, periphery obliquely truncate, ventral peripheral angle appearing ridged. Dorsal side not entirely evolute. Ventral side flattened, two coils visible, central portion depressed. Dorsal side coarsely and densely perforate, ventral side without visible perforations, smooth. Aperture opening into the umbilicus.

Dimensions: Holotype, IOAS-F944, diameter, 0.13 mm, height, 0.13 mm. (Jinyindao, Xisha Islands).

This species differs from the other species of *Mychostomina* in the dorsal side being incompletely evolute.

Genus *Planispirillina* Bermudez, 1952

***Planispirillina paucispira*, n. sp. (Pl. XX:10, 11)**

Test small, periphery truncated, the dorsal and ventral sides of about equal breadth. Dorsal side evolute, of 2—3 coils, spiral wall thickened and raised into a high ridge. Ventral side flattened, with large rounded bosses, sutures distinct. Wall thick, dorsal side coarsely perforate, the pores in two to three rows. Aperture at the end of the hoodlike extension of the tubular chamber.

Dimensions: Holotype, IOAS-F946, diameter, 0.23 mm, thickness, 0.10 mm. (Nichujiao, Xisha Islands).

This species resembles somewhat *Spirillina inaequalis* Brady, but differs from it in the dorsal and ventral sides being of about equal breadth and in the dorsal side having high spiral ridges.

Genus *Sejunctella* Loeblich and Tappan, 1957

***Sejunctella laticarinina*, n. sp. (Pl. XX:9)**

Test very small and compressed, oblong, planoconvex, of 2—3 coils, periphery with thin platelike carina. Dorsal side convex, ventral side flattened. Adjacent coils separated from each other by the septal carina which is about $\frac{1}{3}$ the width of the tubular chamber. On the dorsal side, the tubular chamber is inflated, convex; on the

ventral side the tubular chamber is not inflated, is flush with the septal carina. Wall thin, both sides of the tubular chambers with transverse lines. Aperture at the end of the tubular chamber.

Dimensions: Holotype, IOAS-F948, diameter, 0.18 mm, thickness, 0.02 mm. (Jungtingdao, Xisha Islands).

This new species resembles *Spirillina lateseptata* Terquem 1875 in having the coils of the tubular chamber being separated by septal carina, but the latter species is much larger (diameter, 0.84 mm), has a narrower tubular chamber and has septal carina wider than the tubular chamber. Furthermore, from the figures of the transverse section of *S. lateseptata* as given by Halkyard, (Cushman, 1931, pl. 1, fig. 12b) it can be seen that the tubular chamber is inflated both on the dorsal and ventral sides, the septal carina being in the middle instead of being on the ventral side as is in this species.

Genus *Turrispirillina* Cushman, 1927

Turrispirillina altispira, n. sp. (Pl. XXI:10)

Test very small, high trochospiral, dorsal side roundly convex, ventral side concave. Periphery obliquely truncate, the dorsal peripheral angle more or less acute, the ventral peripheral angle obtuse. Coils more than 8, much overlapping, each succeeding coil overlapping about $\frac{1}{2}$ the width of its preceding coil, leaving only a narrow portion visible. Wall distinctly perforate. Aperture at the end of the tubular chamber, opening on the ventral side.

Dimensions: Holotype, IOAS-F949, diameter, 0.19 mm, height, 0.10 mm. (Nichujiao, Xisha Islands).

This species differs from *Turrispirillina depressa* Parr, 1950, in the higher spire, greater number of coils and in the absence of ornamentation on the ventral side.

Genus *Patellina* Williamson, 1858

Patellina spinosa, n. sp. (Pl. XXI:12)

Test small, conical. Dorsal side with limbate, raised sutures which are provided with inequally spaced small spines directed upward. Transverse septa of the chambers short and widely spaced, not very distinct. Umbilical region depressed. Aperture not distinct.

Dimensions: Holotype, IOAS-F952, diameter, 0.20 mm, height, 0.10 mm. (Nichujiao, Xisha Islands).

The presence of upwardly directing spines on the dorsal sutures easily distinguishes this species from its congeners.

Genus *Ungulatelloides* Seiglie, 1965

Ungulatelloides pagoda, n. sp. (Pl. XXII:1—3; fig. 15)

Test small, conical, high trochospiral, the top of the spire rapidly attenuated into a hollow tubular projection. Ventral side slightly inflated. Chambers with wide, peripheral carina, which is slightly curved upwards. Sutures of the early coiled por-

tion distinct, those of the biserial later portion not very distinct. (Wall finely perforate, ventral side covered with a layer of transparent shell material, the sutures of the chambers slightly showing through. Aperture not distinct externally.

Dimensions: Holotype, IOAS-F954, diameter, 0.24 mm, thickness, 0.14 mm. (Between Shenhangdao and Guangjindao, 30 m, Xisha Islands).

This new species differs from *Ungulatelloides imperialis* Seiglie, 1965 in being larger, in the ventral side being inflated, and in the absence of spines on the dorsal sutures.

Family Rotaliidae Ehrenberg, 1839

Genus *Ammonia* Brünnich, 1772

Ammonia paucipora, n. sp. (Pl. XXII: 4)

Test very small for the genus, dorsal side highly convex, ventral side slightly so, umbilicus open, depressed; periphery round, lobulate. Chambers distinct, inflated, more than three whorls, final whorl with five. Sutures distinct, curved, slightly depressed. Wall thin, finely perforate, the perforations mainly distributed along the peripheral portion, the rest of the test very sparsely perforated or without perforations, nearly transparent. Aperture at the base of the chamber on the ventral side and extending to the umbilicus.

Dimensions: Holotype, IOAS-F966, diameter, 0.17 mm, thickness, 0.10 mm. (Jinqingdao, 6 m, Xisha Islands).

The most distinguishing character of this species is its perforation being limited largely to the peripheral portion of the test, so that each chamber appears to have a semilunate transparent area.

Family Nummulitidae de Blainville, 1825

Genus *Heterostegina* d'Orbigny, 1826

Heterostegina longisepta, n. sp. (Pl. XXIII: 10; fig. 18)

Test compressed, periphery obtusely rounded, the early portion covered by thick glassy shell material, biconvex. Chambers elongate, curved, very early divided into chamberlets. Whorls of the early portion narrow, of the later portion increasing rapidly in width. Sutures of chambers and chamberlets limbate, slightly raised, secondary septa long and complete. Wall finely perforate, the early portion with large raised bosses, usually marking the sutures of the chambers, the rest of the test with densely distributed fine granulate projections.

Dimensions: Holotype, IOAS-F974, diameter, 2.05 mm, thickness, 0.28 mm. (Xisha Islands).

Horizontal sections of megalospheric specimens show that the proloculus is globular, with a diameter of about 50 micra, followed by 4—5 simple chambers, after which the chambers are divided into chamberlets, the secondary septa being long and complete. This species resembles *Heterostegina granulatatesta* Papp and Kupper in the granulate ornamentation of the test and in the character of the embryonic chambers, but differs from it in that the sutures of chambers and chamberlets are not

beaded, and in the secondary septa being complete throughout. The latter species sometimes have incomplete secondary septa.

Family Cymbaloporidae Cushman, 1927

Genus *Pyropiloides*, n. gen.

Type species: *Pyropiloides elongatus*, n. sp.

Test like *Pyropilus* but the aperture of the later chambers on the ventral side is at the umbilical end and opens into the umbilicus.

Pyropiloides elongatus, n. gen., n. sp. (Pl. XXIV: 4, 5)

Test compressed, irregular in shape, dorsal side flattened, ventral side slightly convex, periphery round. Early chambers regularly trochospiral, of more than two whorls, final whorl with 7—8 inflated chambers, increasing rapidly in height as added, sutures slightly depressed. Later chambers elongate, irregular in shape, irregularly surrounding the early formed chambers. Wall coarsely and densely perforate. Aperture of the early chambers arched, at the base of the chamber on the ventral side, extending from the periphery to the umbilicus; of the later chambers an arched opening at the umbilical end of the chamber and opening into the umbilicus. Early portion of the dorsal side reddish brown, of a lighter hue in the later portion.

Dimensions: Holotype, IOAS-F981, length, 0.80 mm, width, 0.58 mm, thickness, 0.25 mm; paratype, IOAS-F982, length, 0.45 mm, width, 0.30 mm, thickness, 0.20 mm. (Huaguangjiao, Xisha Islands).

This species differs from *Pyropilus rotundata* Cushman in the more conspicuous and larger early trochospiral portion which is not disposed at one end of the test, and in the aperture of the chamber being an arched opening at the umbilical end instead of a row of openings at the sutural region.

Family Caucasinidae N. A. Bykova, 1959

Genus *Sigmavirgulina* Loeblich and Tappan, 1957

Sigmavirgulina basistriata, n. sp. (Pl. XXIV: 9, 10)

Test elongate, initial end slightly twisted, thickest in the middle, thinning out to the periphery which is narrowly carinate, subacute. Early chambers low and broad, later chambers rapidly increasing in height, slightly broader than long, slightly inflated. Sutures limbate, slightly curved. Wall coarsely and sparsely perforate, the basal half of the test with numerous interrupted fine longitudinal striae. Aperture loop-shaped.

Dimensions: Holotype, IOAS-F984, length, 0.45 mm, width, 0.19 mm, thickness, 0.08 mm (Zhaoshudao, Xisha Islands); paratype, IOAS-F985, length, 0.35 mm, width, 0.18 mm, thickness, 0.08 mm. (Between Shenhangdao and Guangjindao, Xisha Islands).

This species differs from *Sigmavirgulina tortuosa* (Brady) in the more elongate and compressed test, in the initial end being only slightly twisted, and in the presence of fine longitudinal striae on the basal half of the test.

Sigmavirgulina lanceolata, n. sp. (Pl. XXIV: 8)

Test elongate, compressed, initial end slightly twisted, narrowly rounded, thickest

near the median line, thinning out towards the periphery which is narrowly rounded, the two sides of which are nearly parallel. Chambers low and broad, rapidly increasing in height. Sutures of the early portion not very distinct, of the later portion more distinct, slightly depressed. Wall semi-transparent, coarsely and sparsely perforate, the perforations appearing as white dots. Apertural end broadly rounded, aperture loop-shaped.

Dimensions: Holotype, IOAS-F986, length, 0.45 mm, width, 0.18 mm, thickness, 0.08 mm. (Niehujiao, Xisha Islands).

Family Cassidulinidae d'Orbigny, 1839

Genus *Cassidulina* d'Orbigny, 1826

***Cassidulina striatostoma*, n. sp. (Pl. XXV: 2)**

Test small, subcircular, peripheral view broadly lenticular, periphery narrowly rounded. Chambers not very distinct, not inflated, four pairs making up the final whorl. Sutures distinct limbate, flush with the surface. Wall not transparent, coarsely perforate, the two lateral ends of the aperture with fine radiating lines, those of the early chambers also showing; umbilical region also with fine radiating lines. Aperture elongate, slitlike, curved, about $\frac{2}{3}$ the entire width of the apertural face which has a few radiating striae.

Dimensions: Holotype, IOAS-F989, diameter, 0.23 mm, thickness, 0.15 mm. (Zhongjiandao, Xisha Islands).

This species resembles *Cassidulina lens* Earland (1934) in peripheral view, but differs from it in its smaller size, in having 4 instead of 5 pairs of chambers in the final whorl and in having striate ornamentation.

Family Nonionidae Schultze, 1854

Genus *Nonion* de Montfort, 1808

***Nonion subdilatum*, n. sp. (Pl. XXV: 5)**

Test broadly ovate, periphery obtusely rounded, lobulate, peripheral view broadly lenticular, symmetrical. Chambers distinct, inflated, 6—7 in the final whorl, increasing rapidly in size as added, the umbilical end of the final chamber covering the umbilicus. Sutures distinct, curved, depressed. Wall thick, finely perforate, the base and upper margin of the aperture as well as the sutural regions with a row of fine granules. Aperture an arched slit at the base of the apertural face.

Dimensions: Holotype, IOAS-F992, length, 0.53 mm, width, 0.38 mm, thickness, 0.28 mm. (Between Shenhangdao and Guangjindao, 30 m, Xisha Islands).

This species most closely resembles *Nonion dilatatum* Galloway and Hemingway, 1941, but differs from it in the narrowly rounded instead of broadly rounded periphery, and in the presence of fine granular projections along the sutures and along the lower and upper margins of the aperture.

Genus *Astrononion* Cushman and Edwards, 1937

***Astrononion minimum*, n. sp. (Pl. XXV: 6)**

Test small and compressed, subcircular, periphery round, not lobulate. Chambers distinct, slightly inflated, final whorl with 8—9, increasing gradually in size as added; umbilical flap tubular. Sutures curved, depressed. Wall thin, semi-transparent, finely and distinctly perforate. Aperture an arched slit, at the base of the apertural face.

Dimensions: Holotype, IOAS-F993, diameter, 0.20 mm, thickness, 0.09 mm. (Xishazhou, 45—50 m, Xisha Islands).

This species differs from most other species of the genus in its small size. It resembles somewhat *Astrononion australe* Cushman and Edwards, 1937, but differs from it in its smaller size and in the tubular instead of rhomboid shape of the umbilical flaps.

Genus *Pseudononion* Asano, 1936

Pseudononion granulumbilicatum, n. sp. (Pl. XXV: 9)

Test small, compressed, broadly auriculate in outline, periphery round, lobulate, two whorls visible on dorsal side, ventral side involute, umbilical region depressed. Chambers slightly inflated, low and broad, increasing gradually in size as added, final whorl with 8; umbilical end of chambers slightly curved outwards. Sutures distinct, curved and depressed. Wall thin, transparent, the umbilical ends of chambers coarsely granulated. Aperture an arched slit at the base of the chamber on the ventral side, extending from the periphery to the umbilical region, apertural rim finely granulate, appearing serrate.

Dimensions: Holotype, IOAS-F994, length, 0.28 mm, width, 0.20 mm, thickness, 0.09 mm. (Between Shenhangdao and Guangjindao, Xisha Islands).

This species is identical with *Nonionella* sp. (?) Cushman (1933, p. 46, pl. 11, fig. 3a—c) recorded from the tropical Pacific.

Family Anomalinidae Cushman, 1927

Genus *Melonis* de Montfort, 1808

Melonis minutus, n. sp. (Pl. XXV: 11)

Test small, periphery narrowly rounded. Chambers distinct, increasing gradually in size as added, slightly if at all inflated, 11 in the final whorl. Sutures distinct, limbate, curved. Wall finely and distinctly perforate, the nonperforate mass of shell material surrounding the umbilicus occupying about $\frac{1}{3}$ the diameter of the test. Apertural face sagittate, aperture arched, slitlike.

Dimensions: Holotype, IOAS-F997, diameter, 0.20 mm, thickness, 0.10 mm. (Xisha Islands).

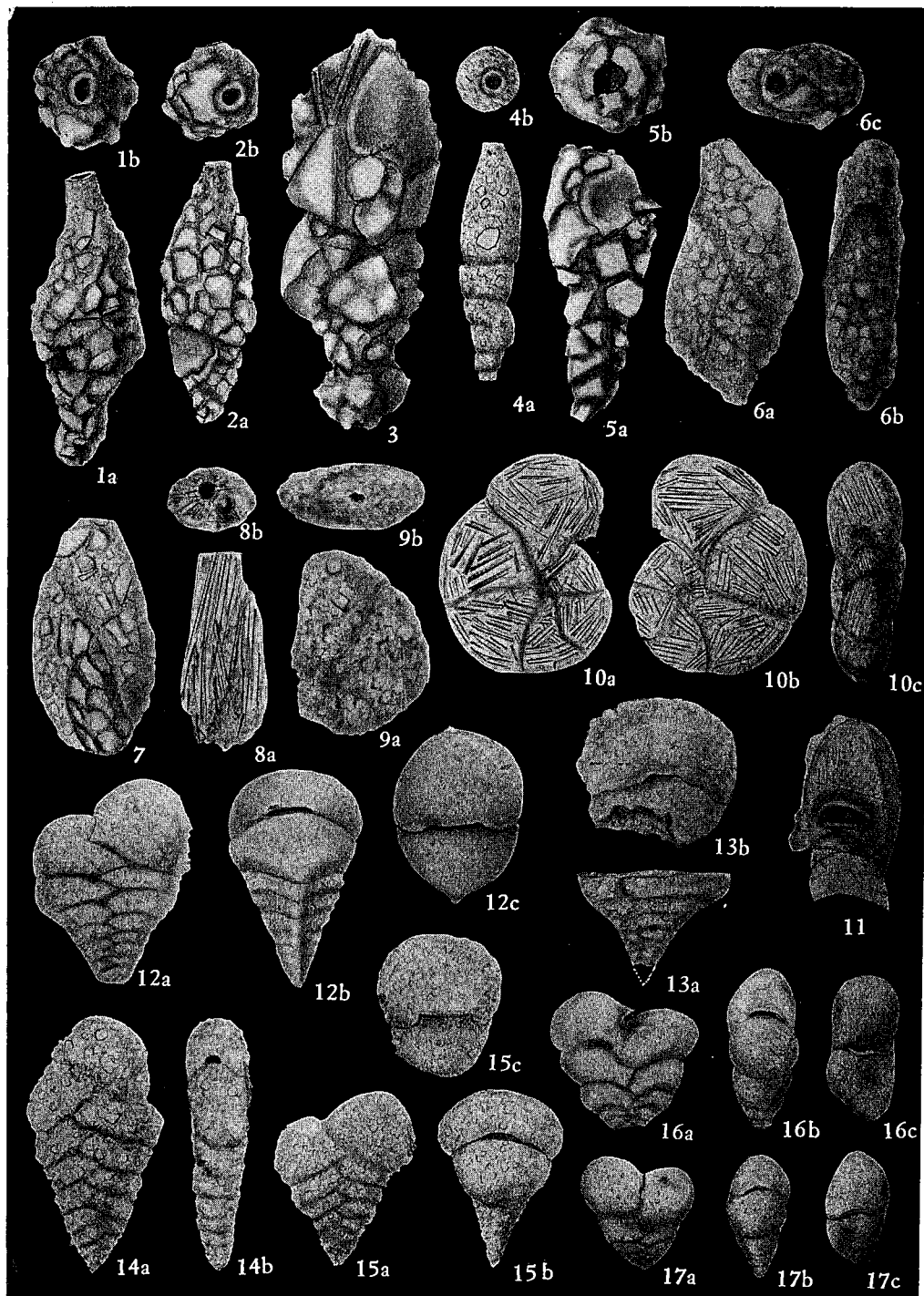
The small size and sagittate apertural face easily distinguish this species from allied species.

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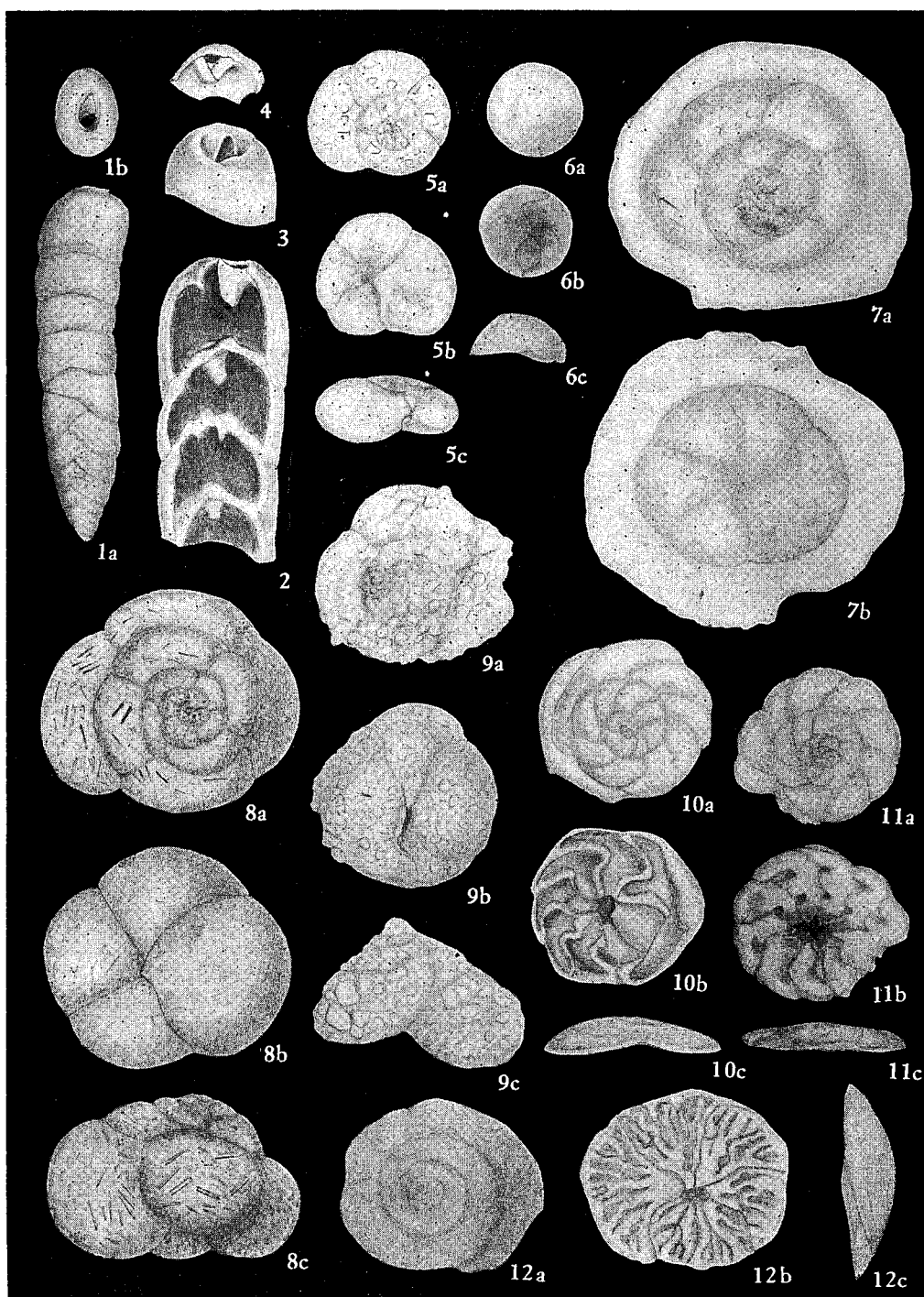
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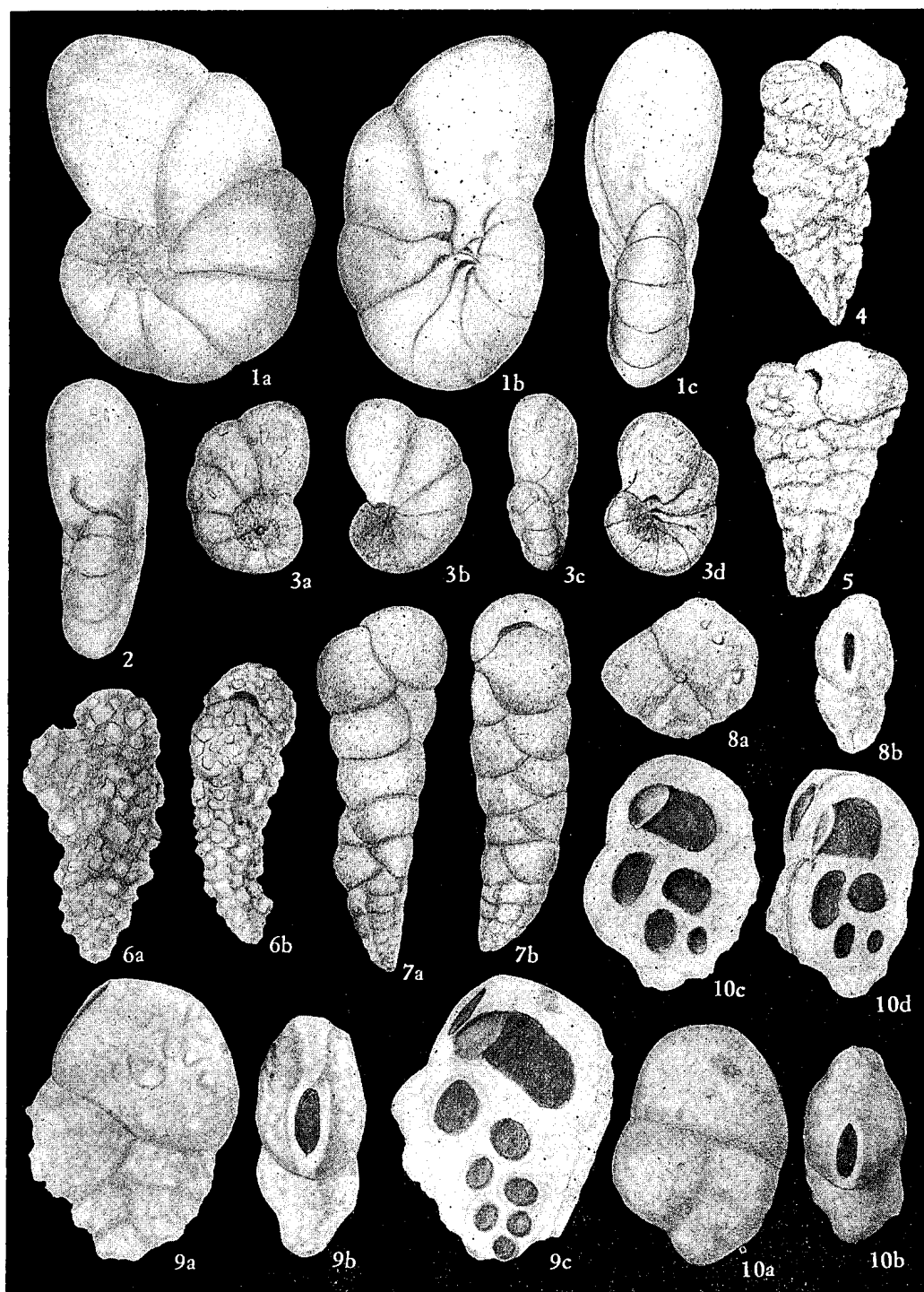


1, 2. 纺锤串房虫 *Reophax fusiformis* (Williamson). ($\times 65$) a. 侧视; b. 口视。 3. 规则串房虫 *Reophax regularis* Höglund. ($\times 32.5$) 侧视。 4. 亚象牙串房虫 *Reophax subdentalimiformis* Parr. ($\times 100$) a. 侧视; b. 口视。 5. 海滨串房虫 *Reophax agglutinatus* var. *littoralis* Lacroix. ($\times 65$) a. 侧视; b. 口视。 6. 菱形隐缝虫(新种) *Nouria rhombiformis*, n. sp. ($\times 46$) 正模标本: a. 侧视; b. 壳缘视; c. 口视。 7. 拟多形隐缝虫 *Nouria polymorphinoides* Heron-Allen and Earland. ($\times 46$) 侧视。 8. 针隐缝虫 *Nouria harrisii* Heron-Allen and Earland. ($\times 90$) a. 侧视; b. 口视。 9. 沼泽砂虫 *Ammotium palustre* Warren. ($\times 65$) a. 侧视; b. 口视。 10, 11. 针壳拟筛口虫(新种) *Cribrostomoides spiculotesta*, n. sp. ($\times 100$) 10. 正模标本: a, b. 侧视; c. 壳缘视。 11. 另一标本, 剖去终室壁示室间壳口。 12. 圆头编织虫 *Textularia bocki* Höglund. ($\times 32.5$) a. 侧视; b. 壳缘视; c. 口视。 13. 圆面编织虫 *Textularia orbica* Lalicker and McCulloch. ($\times 32.5$) a. 侧视; b. 口视。 14. 叶编织虫 *Textularia foliacea* Heron-Allen and Earland. ($\times 32.5$) a. 侧视; b. 壳缘视。 15. 大头编织虫 *Textularia candeiana* d'Orbigny. ($\times 32.5$) a. 侧视; b. 壳缘视; c. 口视。 16, 17. 半翼编织虫 *Textularia semialata* Cushman. ($\times 32.5$) a. 侧视; b. 壳缘视; c. 口视。

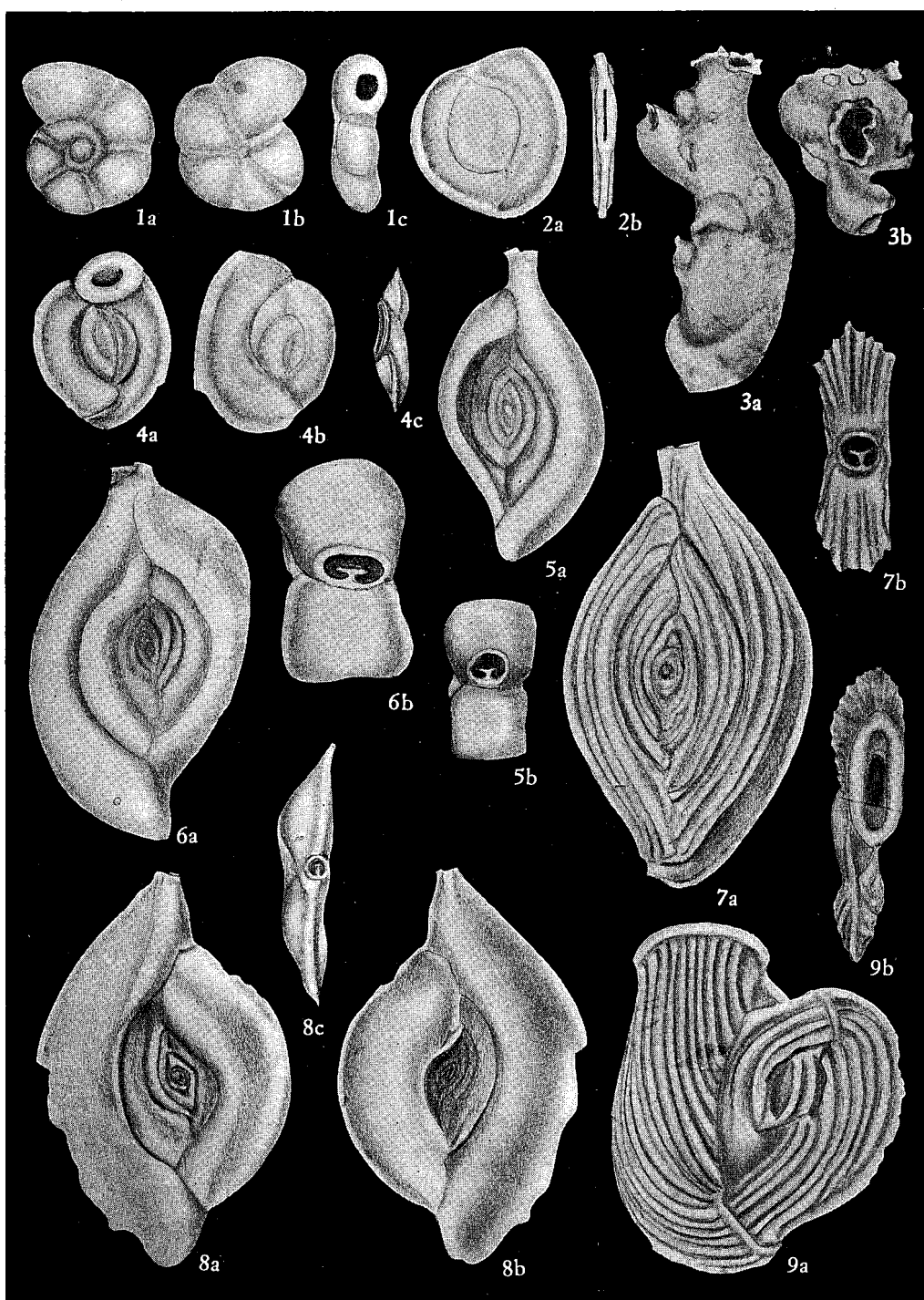
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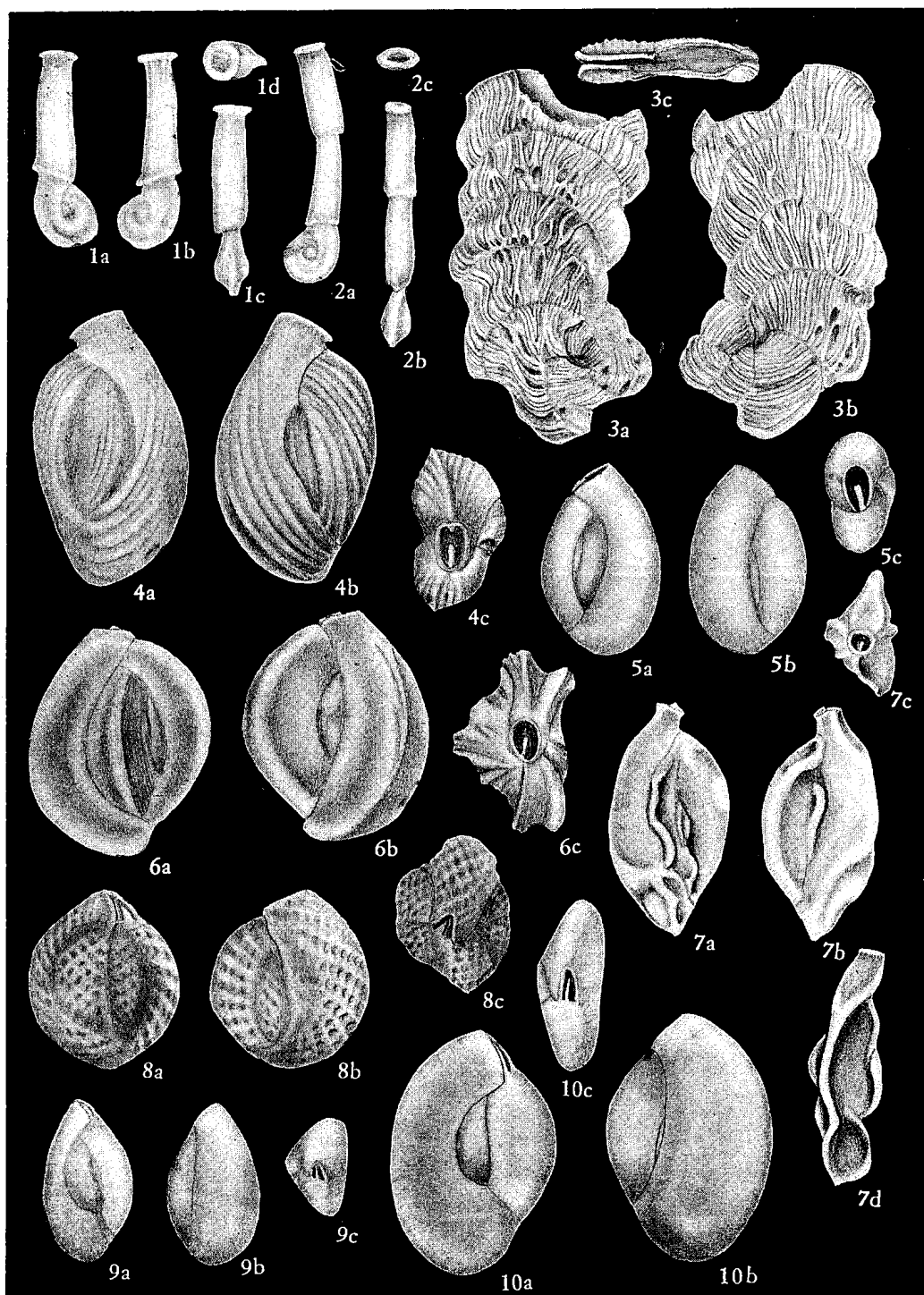
1—4.扁管双属虫(新属新种) *Siphobigenerina compressa*, n. gen., n. sp. 1.正模标本: a. 侧视; b. 口视。(×65) 2.单列部分纵切面。(×100) 3.终室口端侧视,示壳口。(×100) 4.剖去终室口端的部分侧壁,示半漏斗状内齿板。(×100) 5.夏洛特砂轮虫 *Trochammina charlottensis* Cushman. (×100) a. 背视; b. 腹视; c. 壳缘视。 6.小瓣砂轮虫(新种) *Tiphotrocha minuta* n. sp. (×100) 正模标本: a. 背视; b. 腹视; c. 壳缘视。 7.龙骨砂轮虫 *Trochammina carinata* Cushman and McCulloch. (×100) a. 背视; b. 腹视。 8.西沙砂轮虫(新种) *Trochammina xishaensis*, n. sp. (×100) 正模标本: a. 背视; b. 腹视; c. 壳缘视。 9.四瓣砂轮虫 *Trochammina quadriloba* Höglund. (×100) a. 背视; b. 腹视; c. 壳缘视。 10.几丁砂轮虫 *Rotaliammina chitinoza* (Collins). (×100) a. 背视; b. 腹视; c. 壳缘视。 11.皱瓣砂轮虫 *Tiphotrocha kellestae* (Thalmann). (×100) a. 背视; b. 腹视; c. 壳缘视。 12.褶隔砂轮虫 *Septotrochammina plicata* (Terquem). (×100) a. 背视; b. 腹视; c. 壳缘视。



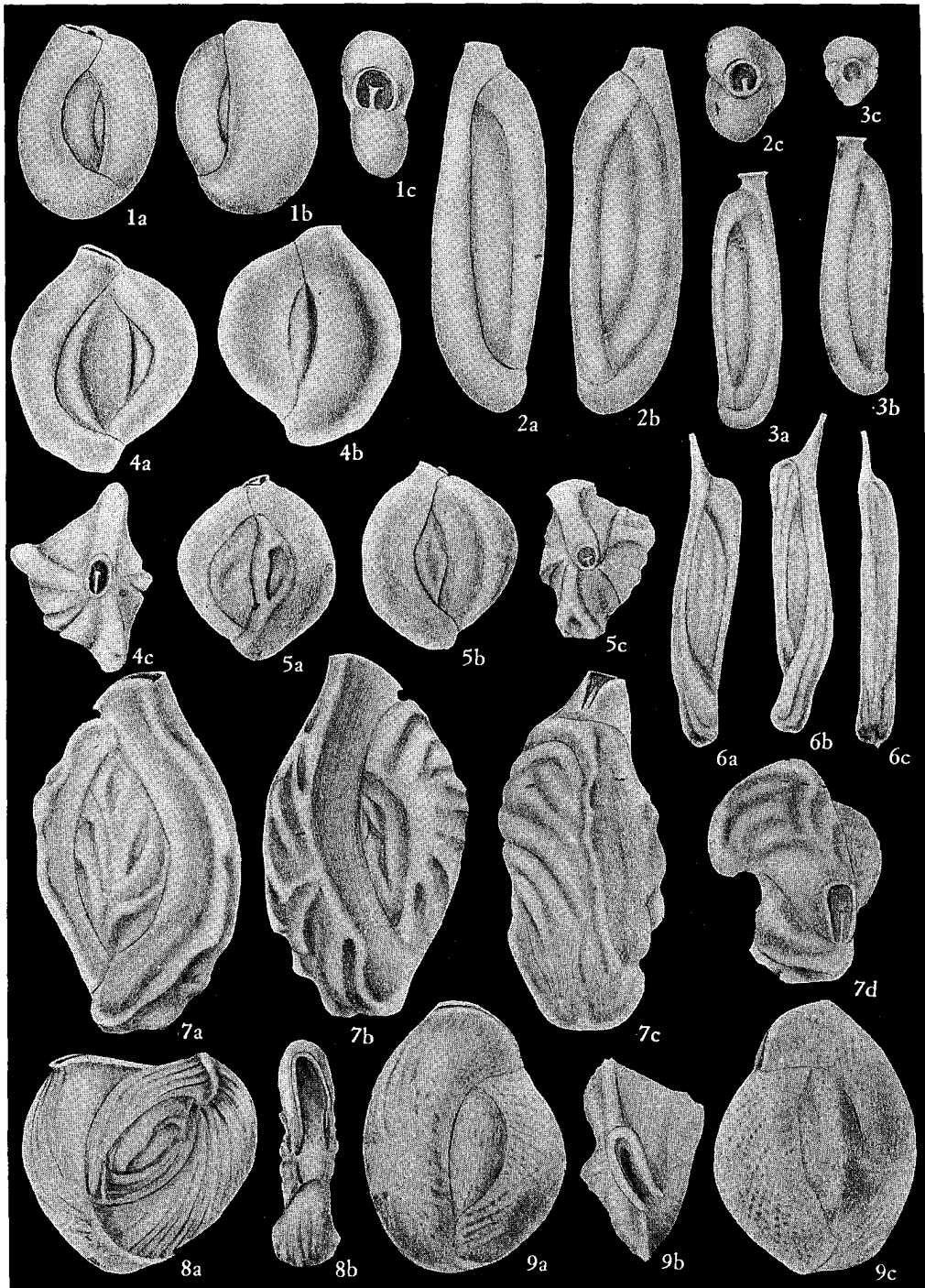
1—2. 瓣小砂轮虫(新种) *Trochamminula lobatula*, n. sp. ($\times 100$) 1. 正模标本: a. 背视; b. 腹视; c. 壳缘视。示终室的斜伸壳口封闭。 2. 另一剖去终室的标本, 示室内斜伸壳口敞开。壳缘视。 3. 长小砂轮虫(新种) *Trochamminula elongata*, n. sp. ($\times 100$) 正模标本: a. 背视; b. 腹视; c. 壳缘视; d. 腹面稍仰视。示脐瓣后缘隆起呈明显拱形开口。 4, 5. 矛锥头虫 *Gaudryina* (*Pseudogaudryina*) *hastata* Parr. ($\times 46$) 侧视。 6. 扭锥头虫 *Gaudryina* (*Gaudryina*) *contorta* Höglund. ($\times 100$) a. 侧视; b. 壳缘视。 7. 扭三属虫 *Dorothia tortilis* Parr. ($\times 100$) a. 侧视; b. 壳缘视。 8—10. 短假箭头虫(新种) *Pseudobolivina brevis*, n. sp. ($\times 65$) a. 侧视; b. 口视; c, d. 纵切面。



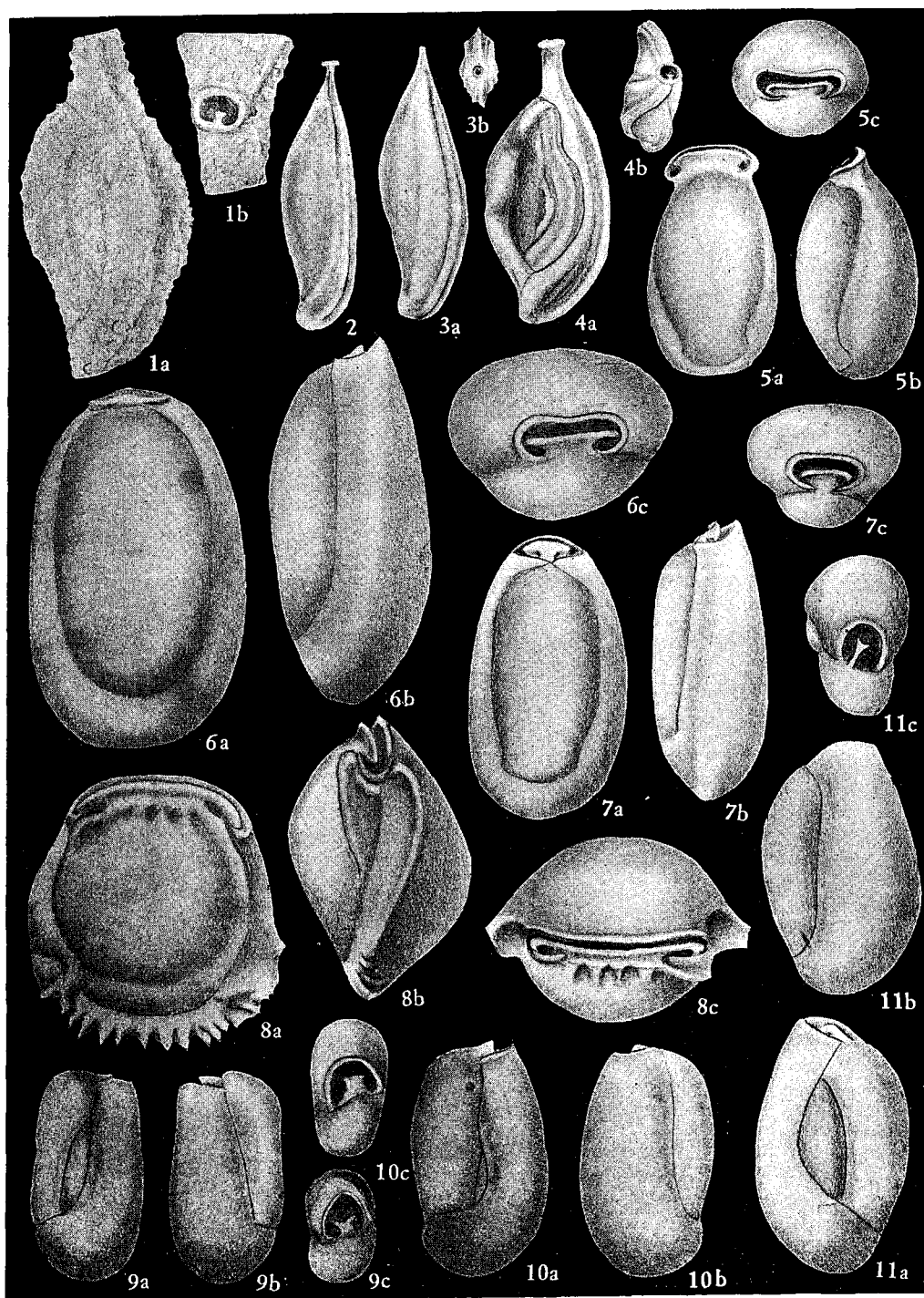
1.透明小瓷旋虫 *Fischerinella pellucida* (Millett). ($\times 90$) a. 背视; b. 腹视; c. 壳缘视。 2.龙骨小平旋虫(新种) *Planispirinella carinata*, n. sp. ($\times 100$) 正模标本; a. 侧视; b. 口视。 3.畸云朵虫 *Nubecularia lucifaga* DeFrance. ($\times 65$) a. 侧视; b. 口视。 4.耳吸口虫 *Wiesnerella auriculata* (Egger). ($\times 100$) a, b. 侧视; c. 顶视。 5, 6.异抱环虫 *Spiroloculina eximia* Cushman. ($\times 65$) a. 侧视; b. 口视。 7.角抱环虫 *Spiroloculina angulata* Cushman. ($\times 46$) a. 侧视; b. 口视。 8.平凸抱环虫(新种) *Spiroloculina planoconvexa*, n. sp. ($\times 46$) 正模标本; a, b. 侧视; c. 口视。 9.乡小节棒虫 *Nodobacularella rustica* Cushman and Todd. ($\times 65$) a. 侧视; b. 口视。



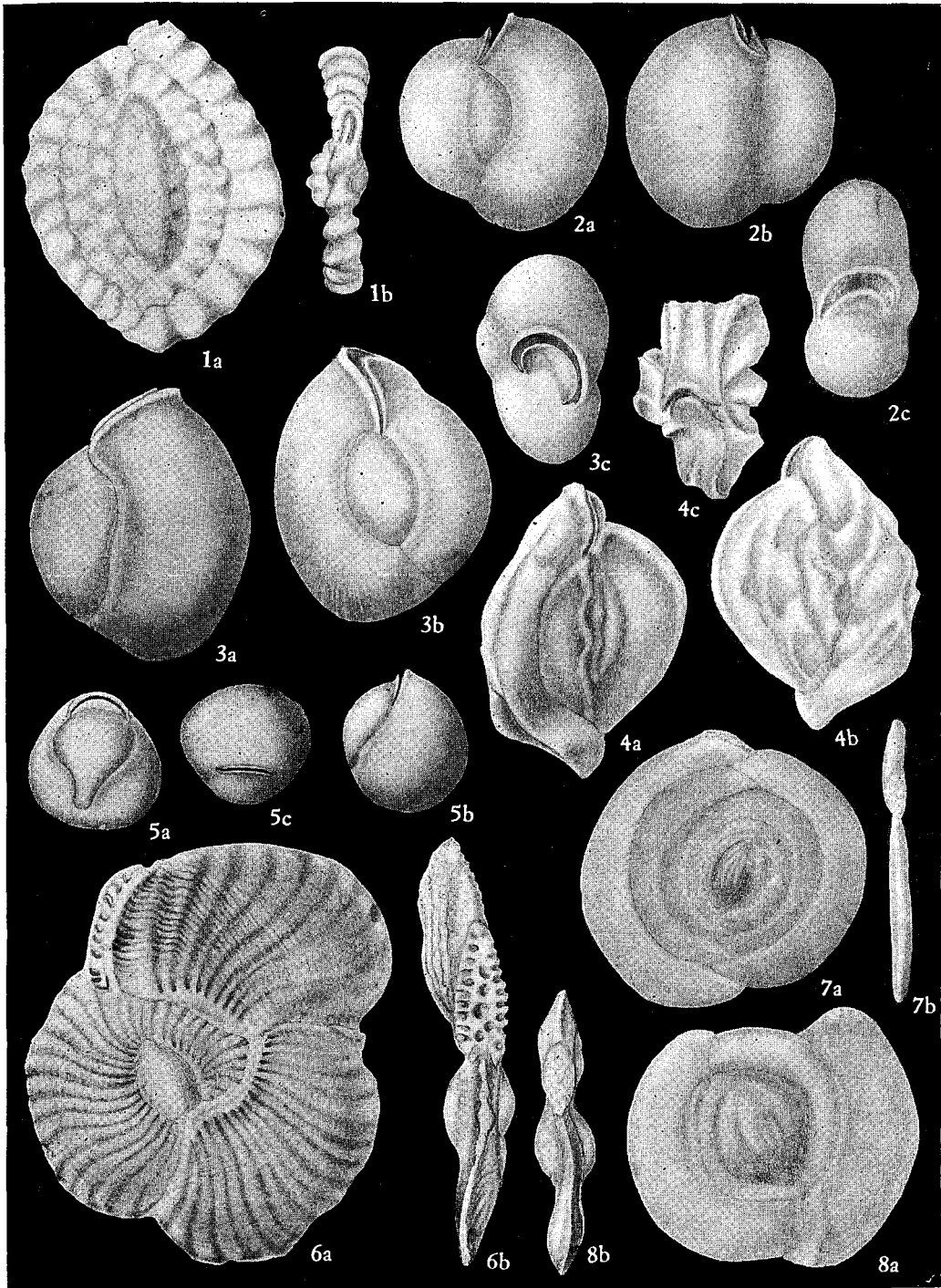
1. 龙骨节眼虫 (新种) *Nodophthalmidium carinata*, n. sp. ($\times 100$) 正模标本 a, b. 侧视; c. 壳缘视; d. 口视。 2. 扁节眼虫 *Nodophthalmidium compressum* (Rhumbler). ($\times 100$) a. 侧视; b. 壳缘视; c. 口视。 3. 显纹椎骨虫 *Vertebralina insignis* Brady. ($\times 32.5$) a, b. 侧视; c. 口视。 4. 肋纹五块虫 *Quinqueloculina carinatastriata* (Wiesner). ($\times 100$) a, b. 侧视; c. 口视。 5. 整洁五块虫 *Quinqueloculina bellatula* Bandy. ($\times 65$) a, b. 侧视; c. 口视。 6. 双肋五块虫 (相似种) *Quinqueloculina* cf. *bicostata* d'Orbigny. ($\times 65$) a, b. 侧视; c. 口视。 7. 纺锤五块虫 (新种) *Quinqueloculina fusiformis*, n. sp. ($\times 65$) 正模标本: a, b. 侧视; c. 口视; d. 背缘视。 8. 角口五块虫 (新种) *Quinqueloculina angulostoma*, n. sp. ($\times 135$) 正模标本: a, b. 侧视; c. 口视。 9, 10. 少室五块虫 (新种) *Quinqueloculina paucilocula*, n. sp. ($\times 65$) 9. 副模标本: a, b. 侧视; c. 口视。 10. 正模标本: a, b. 侧视; c. 口视。



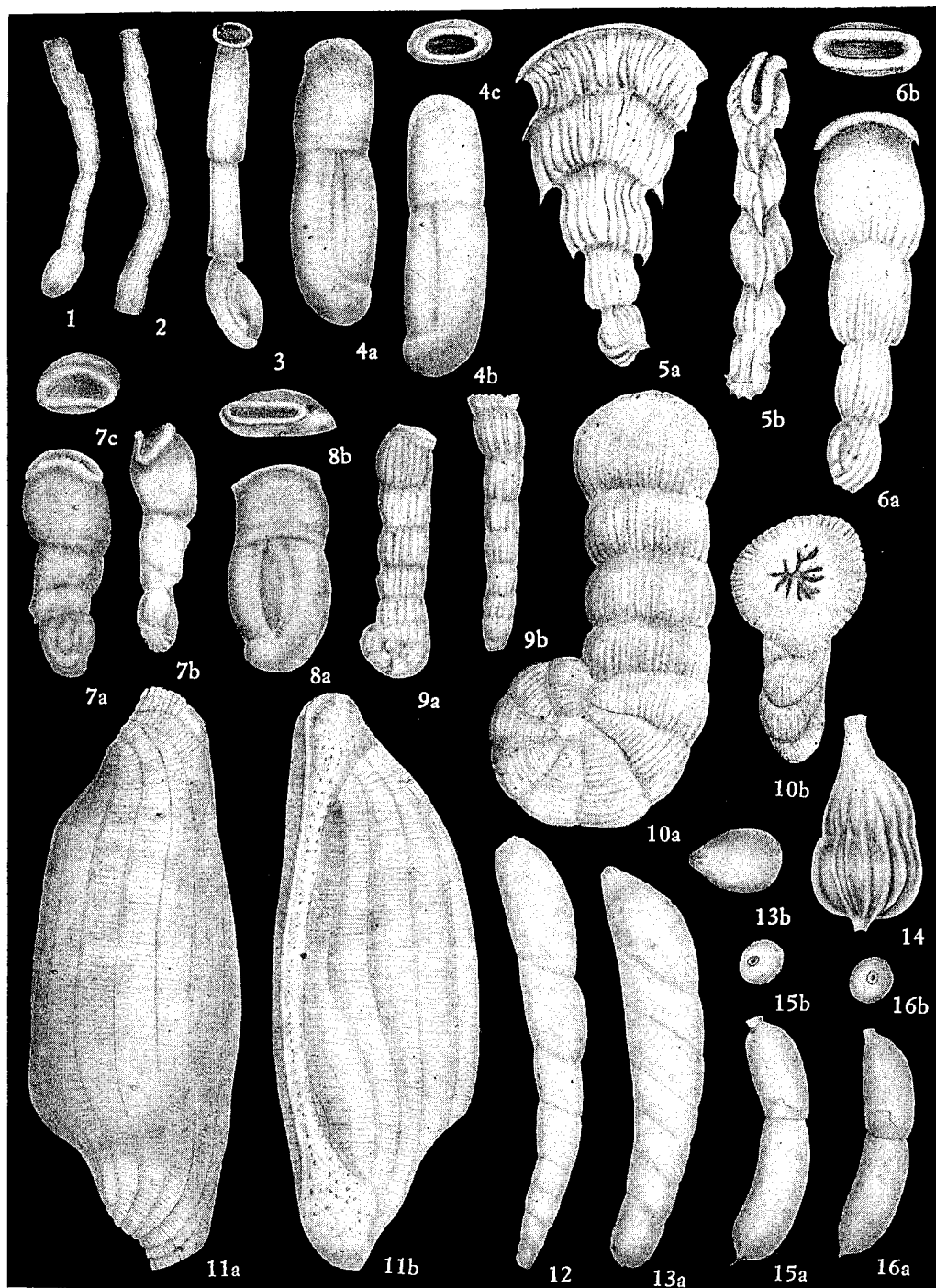
1. 贫五块虫 *Quinqueloculina pauperata* d'Orbigny. ($\times 65$) a, b. 侧视; c. 口视。 2, 3. 管室五块虫(新种) *Quinqueloculina tubilocula*, n. sp. ($\times 135$) 正模标本 a, b. 侧视; c. 口视。 4. 粗龙骨五块虫 *Quinqueloculina crassicarinata* Collins. ($\times 65$) a, b. 侧视; c. 口视。 5. 磨壁五块虫(新种) *Quinqueloculina impolita*, n. sp. ($\times 65$) 正模标本: a, b. 侧视; c. 口视。 6. 五块虫?(未定种) *Quinqueloculina?* sp. ($\times 65$) a, b. 侧视; c. 壳缘视。 7. 华美五块虫(新种) *Quinqueloculina decora*, n. sp. ($\times 65$) 正模标本: a, b. 侧视; c. 壳缘视; d. 口视。 8. 薄假块心虫 *Pseudomassilina macilenta* (Brady). ($\times 100$) a. 侧视; b. 口视。 9. 网纹假块心虫 *Pseudomassilina reticulata* (Heron-Allen and Earland). ($\times 46$) a, b. 侧视; c. 口视。



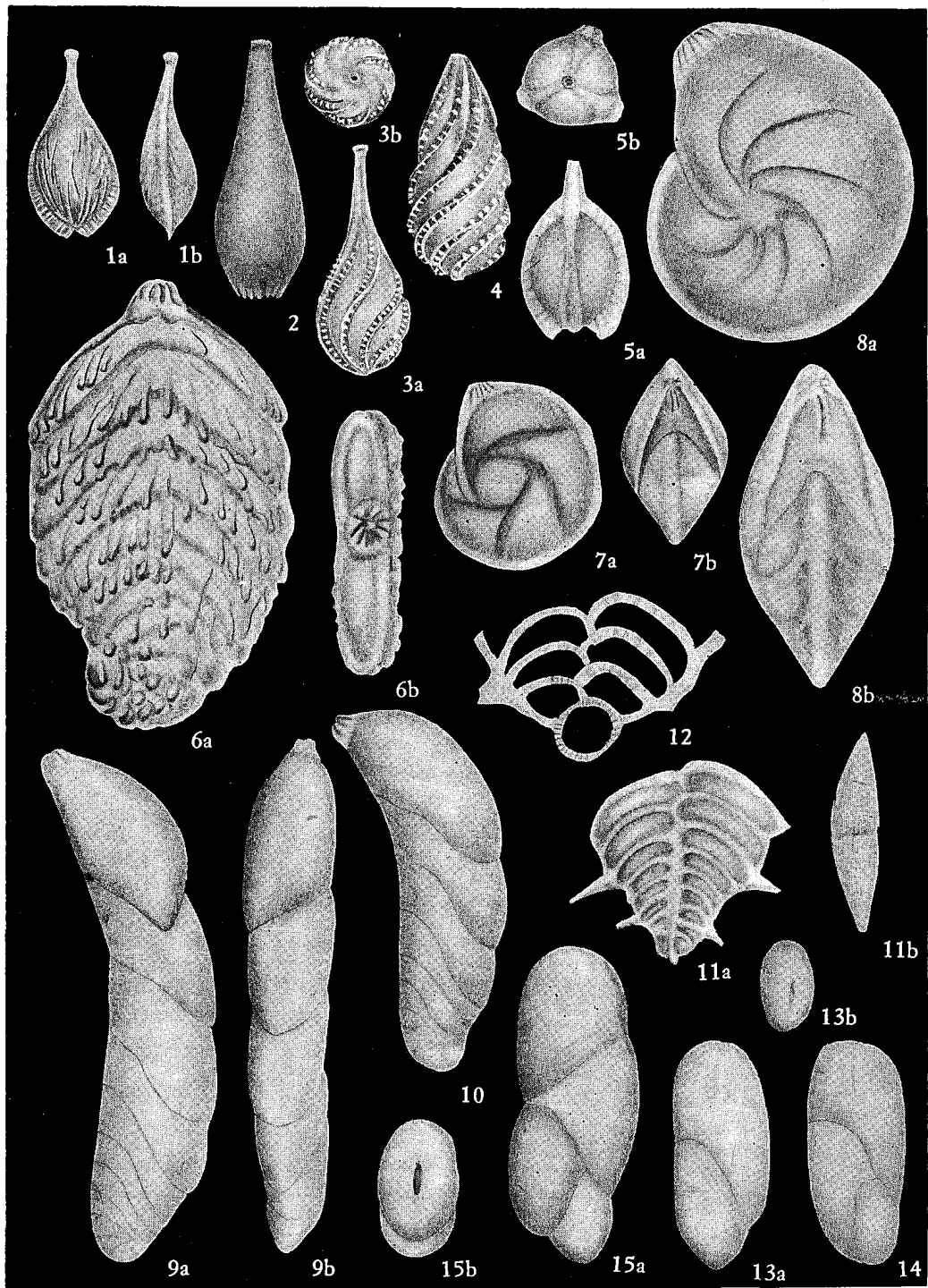
1. 大块心虫(新种) *Massilina magna*, n. sp. ($\times 46$) 正模标本: a. 侧视; b. 口视。 2, 3. 小假曲形虫(新属新种) *Pseudosigmoilina minuta*, n. gen., n. sp. ($\times 90$) 2. 副模标本: 侧视。 3. 正模标本: a. 侧视; b. 口视。 4. 扭小曲形虫(新属新种) *Sigmoilinella tortuosa*, n. gen., n. sp. ($\times 65$) 正模标本: a. 侧视; b. 口视。 5. 大口双块虫(新种) *Pyrgo megastoma*, n. sp. ($\times 65$) 正模标本: a. 侧视; b. 壳缘视; c. 口视。 6, 7. 扁椭双块虫(新种) *Pyrgo compressioblonga*, n. sp. ($\times 65$) 6. 正模标本: a. 侧视; b. 壳缘视; c. 口视。 7. 副模标本: a. 侧视; b. 壳缘视; c. 口视。 8. 小齿双块虫 *Pyrgo denticulata* (Brady). ($\times 46$) a. 侧视; b. 壳缘视; c. 口视。 9, 10. 平行三块虫(新种) *Triloculina parallela*, n. sp. ($\times 46$) 9. 副模标本: a, b. 侧视; c. 口视。 10. 正模标本: a, b. 侧视; c. 口视。 11. 光滑三块虫 *Triloculina laevigata* d'Orbigny. ($\times 65$) a, b. 侧视; c. 口视。



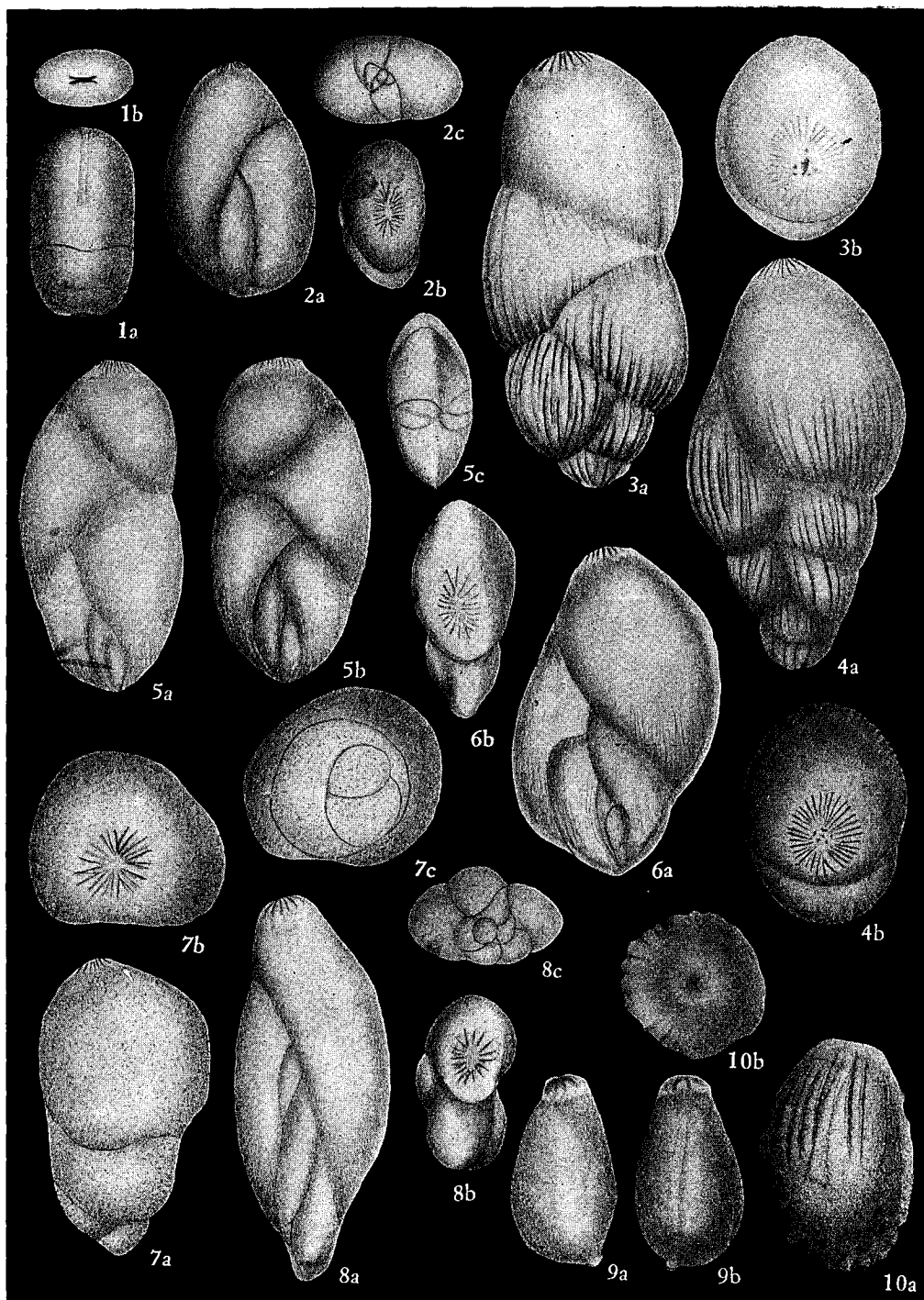
1. 丽环曲形虫(新种) *Spirosigmoilina pulchra*, n. sp. ($\times 65$) 正模标本: a. 侧视; b. 口视。 2, 3. 澳大利亚小粟虫 *Miliolinella australis* (Parr). ($\times 65$) a, b. 侧视; c. 口视。 4. 大洋小粟虫 *Miliolinella oceanica* (Cushman). ($\times 65$) a, b. 侧视; c. 口视。 5. 球小双室虫 *Biloculinella globula* (Bornemann). ($\times 65$) a. 前视; b. 侧视; c. 口视。 6. 东方扁块虫 *Hauerina orientalis* Cushman. ($\times 65$) a. 侧视; b. 口视。 7. 脆曲扁块虫 *Sigmoihauerina fragillissima* (Brady). ($\times 46$) a. 侧视; b. 口视。 8. 弱纹曲扁块虫 *Sigmoihauerina bradyi* (Cushman). ($\times 46$) a. 侧视; b. 口视。



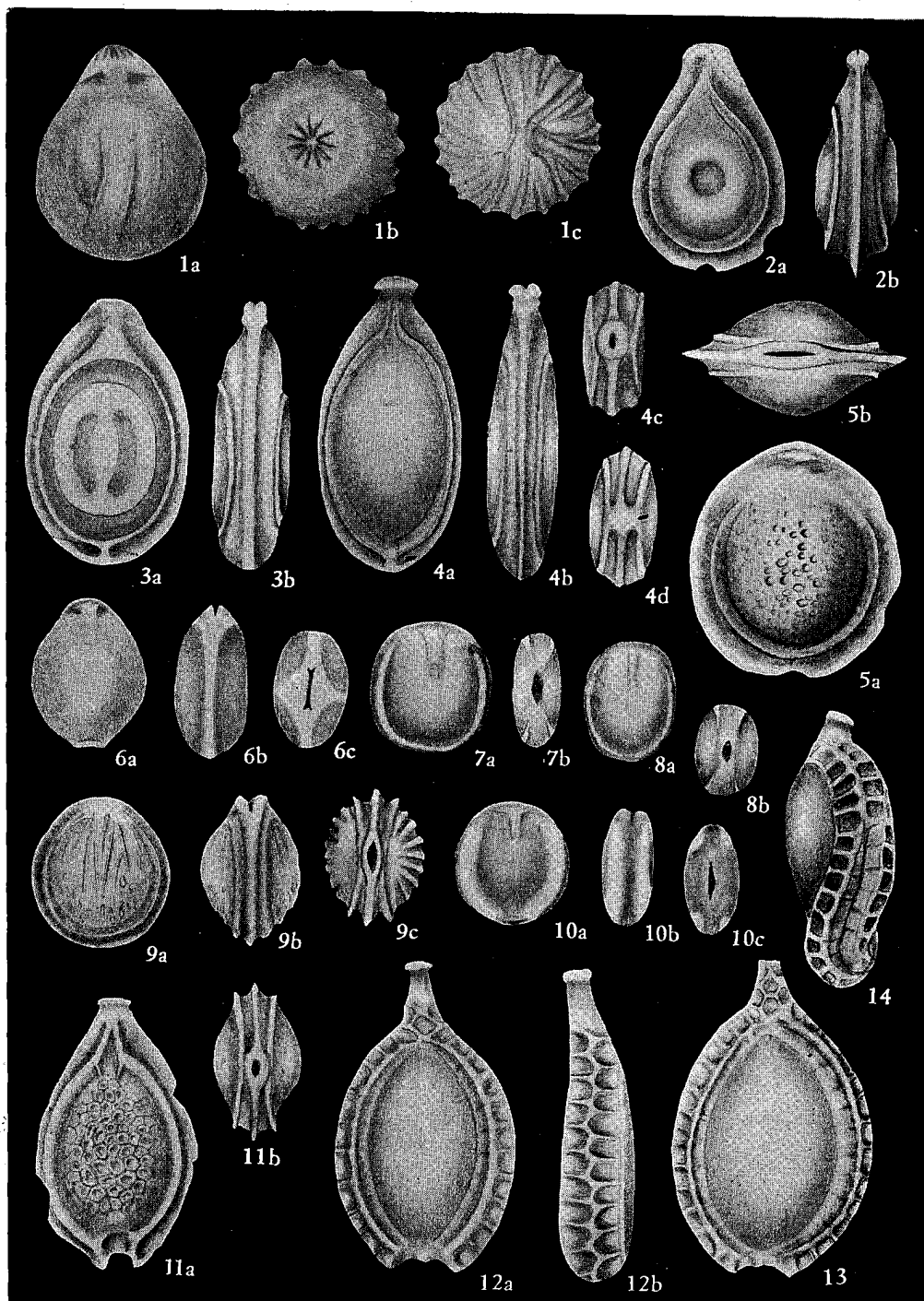
1, 2. 索小管虫 *Tubinella funalis* (Brady). 1. 侧视 ($\times 46$) 2. 初成部分已断掉的标本. ($\times 100$).
 3. 昆士兰关节虫 *Articulina queenslandica* Collins. ($\times 100$) 侧视. 4. 平行关节虫 (新种) *Articulina parallela*, n. sp. ($\times 100$) 正模标本: a, b. 侧视; c. 口视. 5. 尖刺关节虫 *Articulina mucronata* (d'Orbigny). ($\times 32.5$) a. 侧视; b. 壳缘视. 6. 线纹关节虫 *Articulina lineata* Brady. ($\times 65$) a. 侧视; b. 口视. 7. 张口关节虫 (新种) *Articulina ricta*, n. sp. ($\times 100$) 正模标本: a. 侧视; b. 壳缘视; c. 口视. 8. 短关节虫 (新种) *Articulina curta*, n. sp. ($\times 65$) 正模标本: a. 侧视; b. 口视. 9, 10. 尖旋卷虫 *Spirolina acicularis* (Batsch). ($\times 100$) 9a. 侧视; 9b. 壳缘视. 10a. 侧视; 10b. 口视. 11. 现存小蜂巢虫 *Alveolinella quoyi* (d'Orbigny). ($\times 32.5$) a, b. 侧视. 12. 线形齿虫 *Dentalina filiformis* (d'Orbigny). ($\times 90$) 侧视. 13. 强壮齿虫 *Dentalina roemeri* (Neugeboren). ($\times 90$) a. 侧视; b. 口端视. 14. 少室两棒虫 *Amphicoryna pauciloculata* (Cushman). ($\times 65$) 侧视. 15, 16. 少室似肠虫 (新属新种) *Botuloides pauciloculus* n. gen., n. sp. ($\times 100$) 15. 正模标本: a. 侧视; b. 口视. 16. 副模标本: a. 侧视; b. 口视.



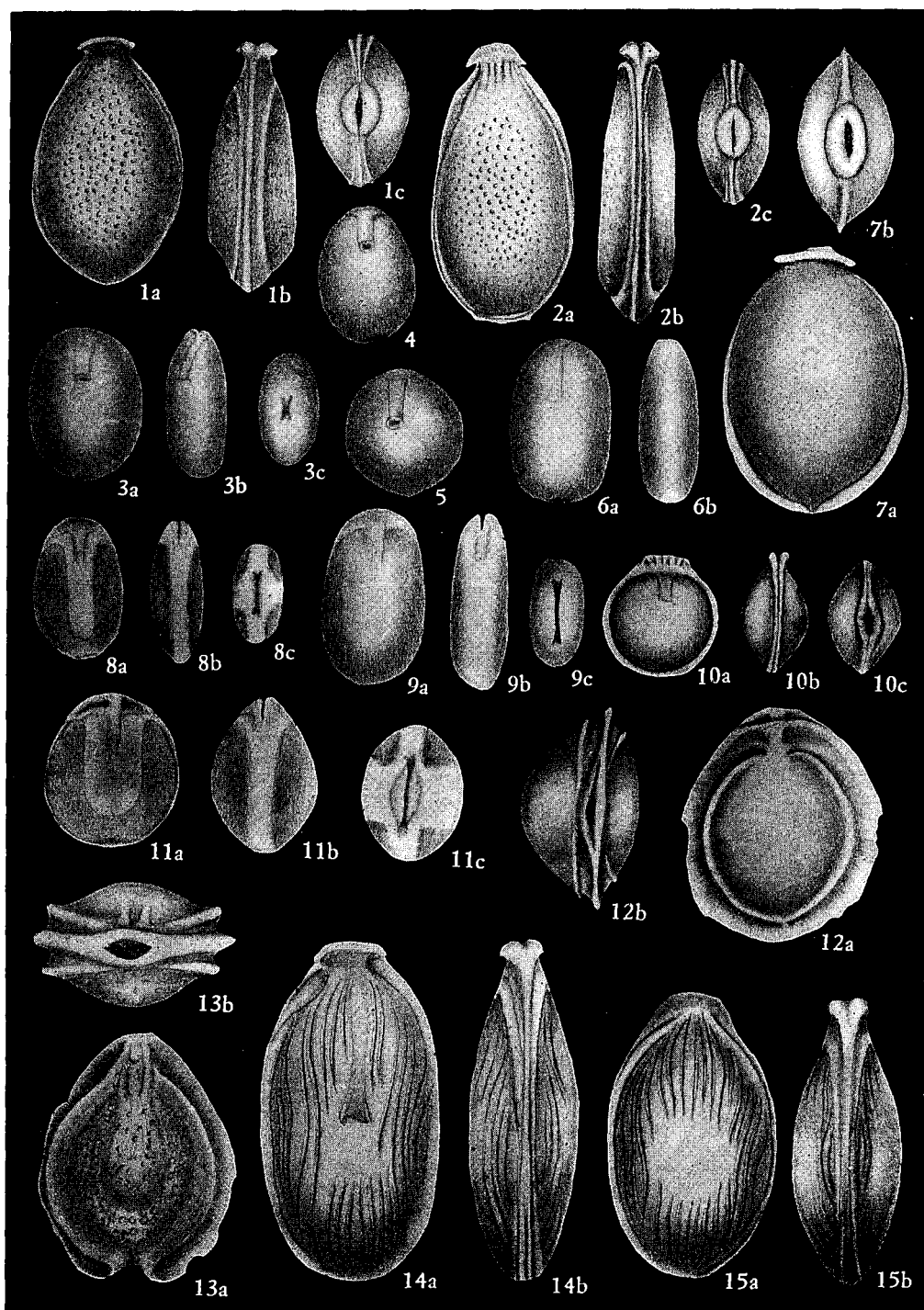
1. 不连缝口虫 *Fissurina disjungens* (Buchner). ($\times 135$) a. 侧视; b. 壳缘视。 2. 短肋瓶虫 *Lagena doveyensis* Haynes. ($\times 135$) 侧视。 3, 4. 旋脊卵虫 *Oolina spiralis* Brady. ($\times 135$) 3a. 侧视; 3b. 口视。 4. 侧视。 5. 三肋瓶虫 *Lagena striatopunctata* Parker and Jones var. *tricosta* Cushman and Gray. ($\times 135$) a. 侧视; b. 口视。 6. 宽叶掌虫(新种) *Palmula latifolia*, n. sp. ($\times 32.5$) 正模标本: a. 侧视; b. 口视。 7. 距透镜虫 *Lenticulina calcar* (Linnaeus). ($\times 90$) a. 侧视; b. 壳缘视。 8. 镶边透镜虫(相似种) *Lenticulina* cf. *L. limbosa* (Reuss). ($\times 46$) a. 侧视; b. 壳缘视。 9, 10. 曲拟鞘虫(新种) *Vaginulinopsis sinuata*, n. sp. ($\times 32.5$) 9. 正模标本: a. 侧视; b. 壳缘视。 10. 副模标本: 侧视。 11, 12. 精致小箭头虫 *Bolivinella elegans* Parr. 11a. 侧视; 11b. 口视。 12. 初成部分水平切面树脂塑模, 示室间隔板具穿孔。 ($\times 210$) 13, 14, 15. 椭圆斜舌虫(新属新种) *Obliquilingulina oblonga*, n. gen. n. sp. ($\times 135$) 13. 副模标本: a. 侧视; b. 口视。 14. 侧视。 15. 正模标本: a. 侧视; b. 口视。



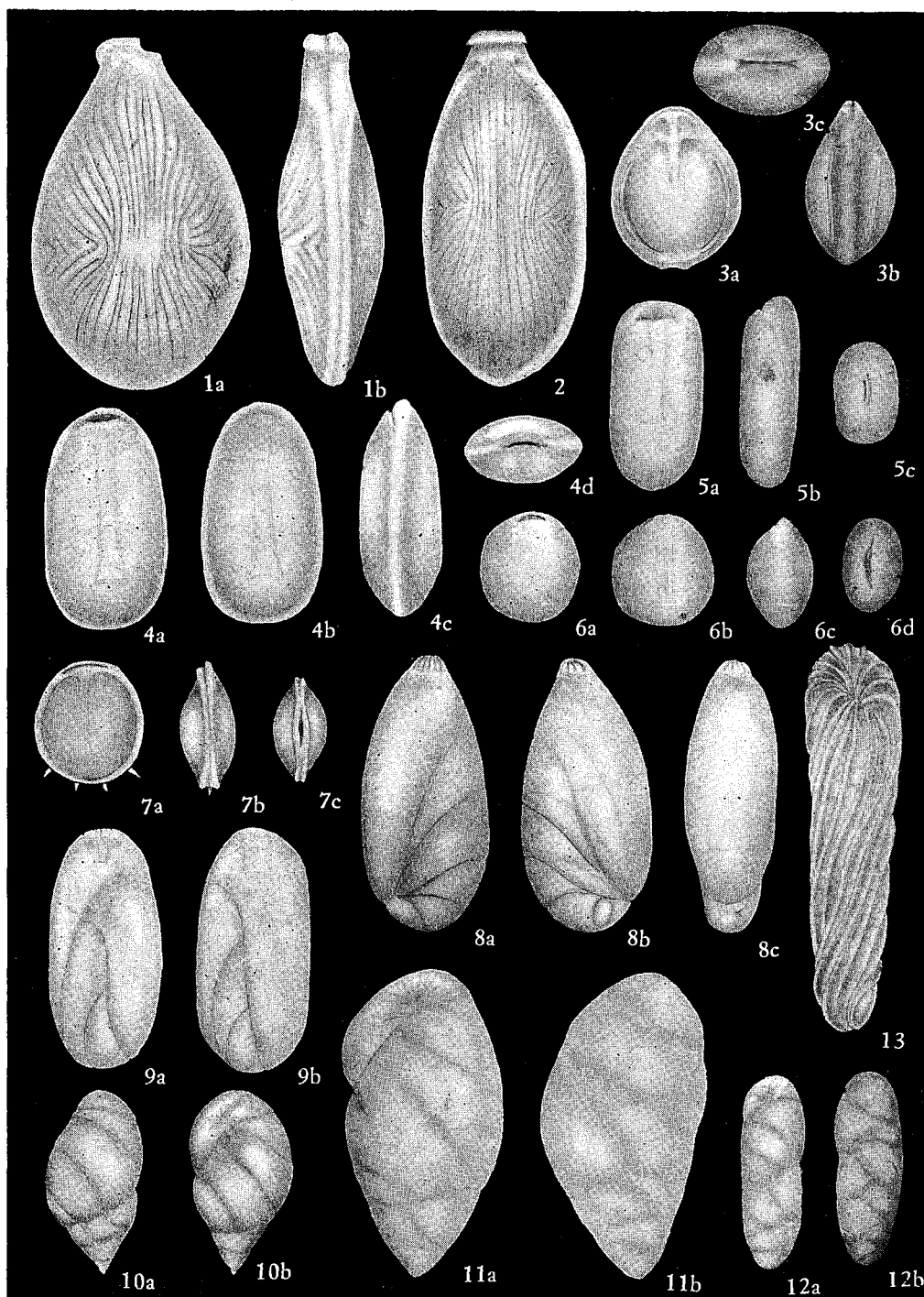
1. 椭圆管舌虫 *Entolingulina inarimensis* Buchner. ($\times 135$) a. 侧视; b. 口视。2. 长室球虫 *Globulina landesi* (Hanna and Hanna). ($\times 65$) a. 侧视; b. 口视; c. 底视。3, 4. 印度假多形虫 *Pseudopolymorphina indica* (Cushman). ($\times 32.5$) a. 侧视; b. 口视。5, 6. 基纹反称虫(新种) *Sigmomorphina basistriata*, n. sp. ($\times 65$) 5. 副模标本: a, b. 侧视; c. 底视。6. 正模标本: a. 侧视; b. 口视。7. 凸粒腺虫(新种) *Glandulina granulosa*, n. sp. ($\times 65$) 正模标本: a. 侧视; b. 口视; c. 底视。8. 突尾曲管虫(新种) *Laryngosigma caudata*, n. sp. ($\times 65$) 正模标本: a. 侧视; b. 口视; c. 底视。9. 带尾卵虫 *Oolina caudigera* (Wiesner). ($\times 135$) a, b. 侧视。10. 鼓双口卵虫(相似种) *Oolina* cf. *O. ampullodistoma* (Jones). ($\times 135$) a. 侧视; b. 口视。



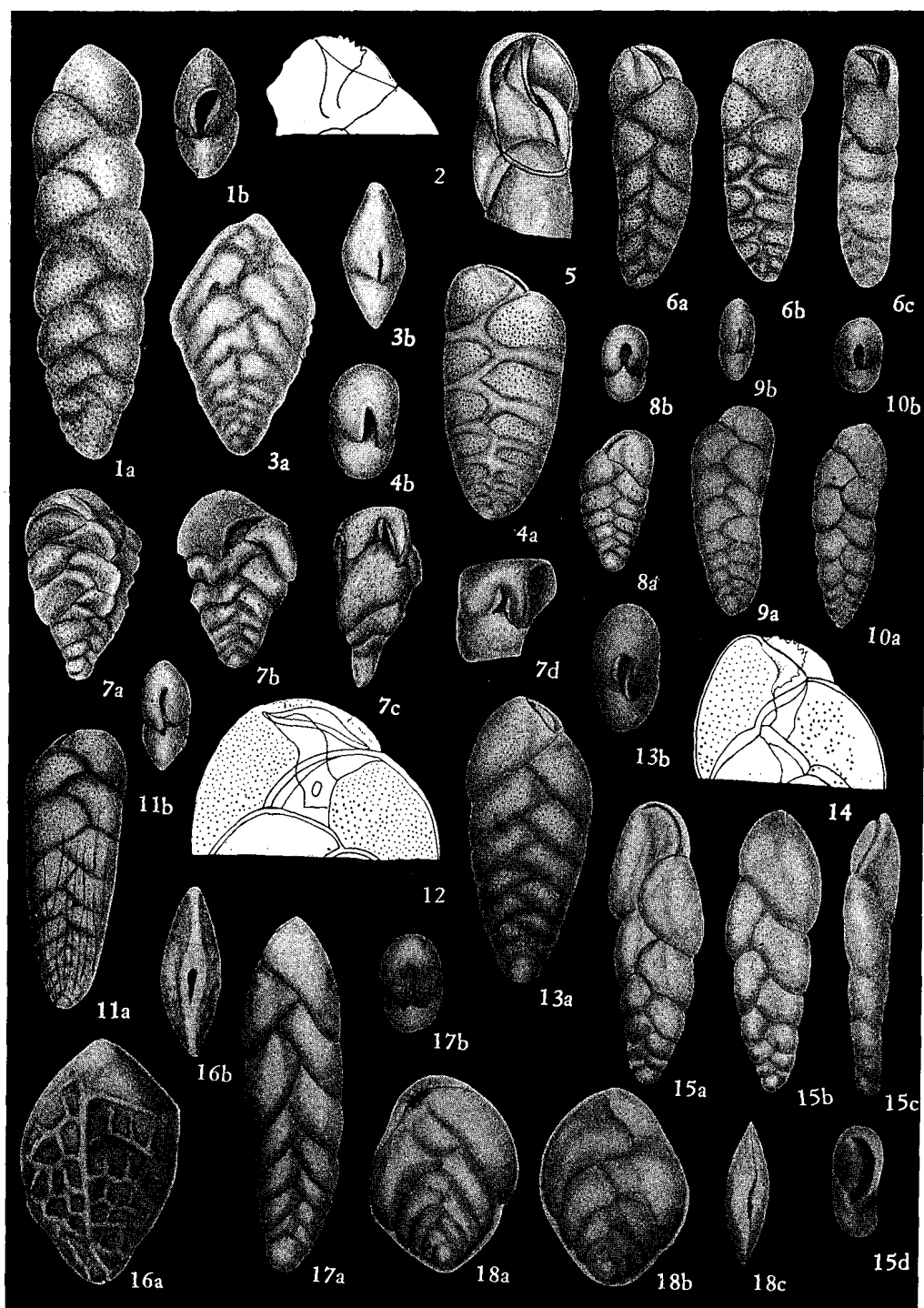
1.短管卵虫(新种) *Oolina brevisolenia*, n. sp. (×100) 正模标本: a. 侧视; b. 口视; c. 底视。 2. 凸圈缝口虫 *Fissurina walleriana* (Wright). (×135) a. 侧视; b. 壳缘视。 3. 断圈缝口虫(新种) *Fissurina disjuncta*, n. sp. (×135) 正模标本: a. 侧视; b. 壳缘视。 4. 扁槽缝口虫(新种) *Fissurina compressioblona*, n. sp. (×135) 正模标本: a. 侧视; b. 壳缘视; c. 口视; d. 底视。 5. 坑壁缝口虫 *Fissurina contusa* Parr. (×135) a. 侧视; b. 口视。 6. 双刺葫芦缝口虫 *Fissurina cucurbitasema bispinata* Ujiie. (×130) a. 侧视; b. 壳缘视; c. 口视。 7, 8. 透明缝口虫 *Fissurina diaphana* (Buchner). (×135) a. 侧视; b. 口视。 9. 粒肋缝口虫(新种) *Fissurina granulocostulata*, n. sp. (×135) 正模标本: a. 侧视; b. 壳缘视; c. 口视。 10. 方圆缝口虫 *Fissurina jasolini* (Buchner). (×135) a. 侧视; b. 壳缘视; c. 口视。 11. 热带缝口虫(新种) *Fissurina tropicalis*, n. sp. (×135) 正模标本: a. 侧视; b. 口视。 12—14. 基林巴缝口虫 *Fissurina kerimbatica* (Heron-Allen and Earland). (×135) 12a. 侧视; 12b. 壳缘视。 13. 侧视。 14. 壳体稍扭曲的标本, 示壳缘两行凹坑之间呈现夹沟状。



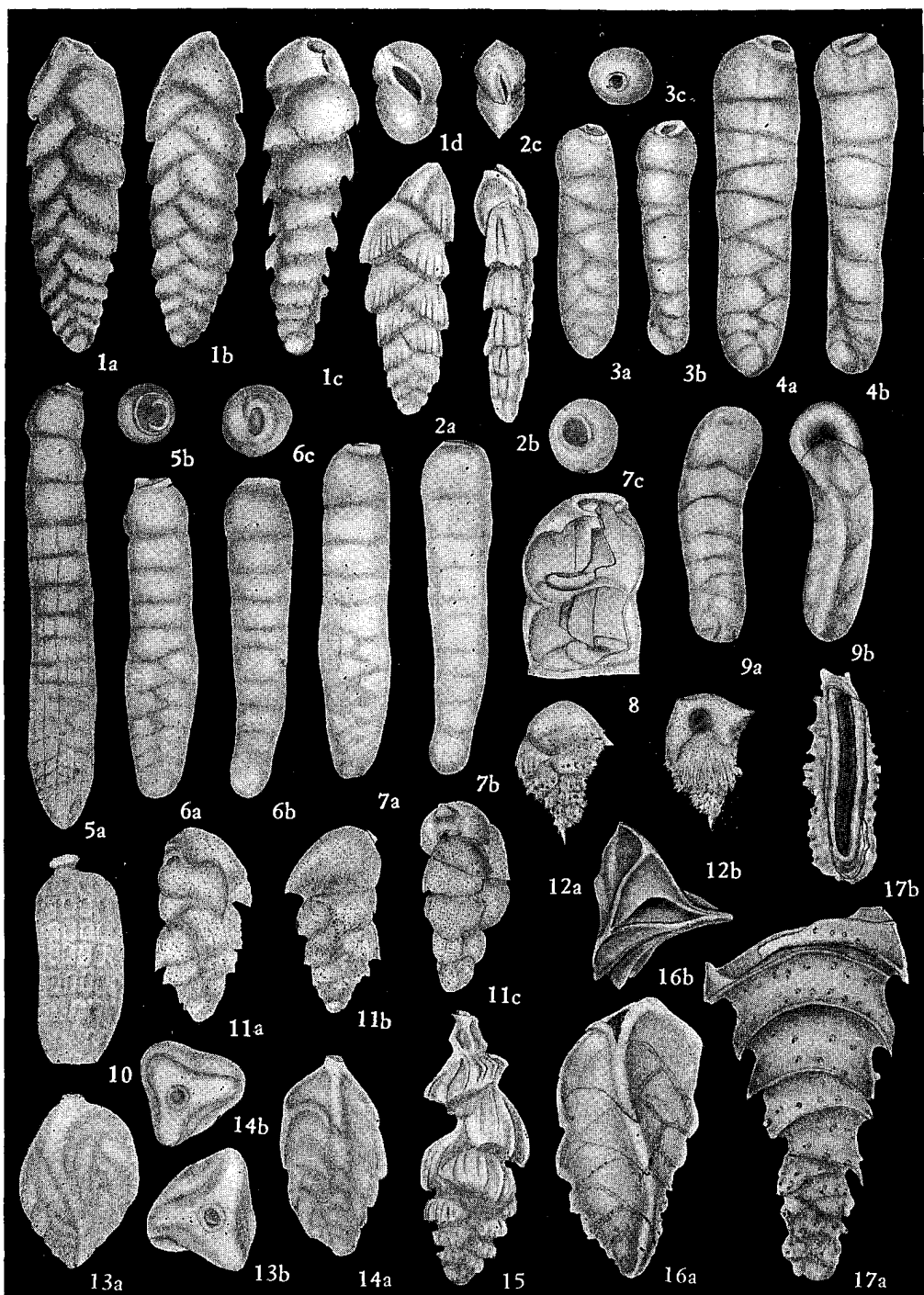
1, 2. 坑斑缝口虫 *Fissurina milletti* Todd. ($\times 135$) a. 侧视; b. 壳缘视; c. 口视。 3—6. 假球缝口虫 *Fissurina pseudoglobosa* (Buchner). ($\times 135$) 3a. 侧视; 3b. 壳缘视; 3c. 口视。 4, 5. 侧视。 6a. 侧视; 6b. 壳缘视。 7. 细孔缝口虫(新种) *Fissurina minipora*, n. sp. ($\times 135$) 正模标本: a. 侧视; b. 口视。 8, 9. 假明亮缝口虫(新种) *Fissurina pseudolucida*, n. sp. ($\times 135$) 8. 正模标本; 9. 副模标本: a. 侧视; b. 壳缘视; c. 口视。 10. 辐口缝口虫(新种) *Fissurina radiatostoma*, n. sp. ($\times 135$) 正模标本: a. 侧视; b. 壳缘视; c. 口视。 11. 强壮缝口虫(新种) *Fissurina robusta*, n. sp. ($\times 135$) 正模标本: a. 侧视; b. 壳缘视; c. 口视。 12. 假宽龙骨缝口虫 *Fissurina pseudoorbignyana* (Buchner). ($\times 90$) a. 侧视; b. 口视。 13. 叉颈缝口虫(新种) *Fissurina furcicolla*, n. sp. ($\times 135$) 正模标本: a. 侧视; b. 口视。 14, 15. 宝石缝口虫 *Fissurina wrightiana* (Brady). ($\times 135$) a. 侧视; b. 壳缘视。



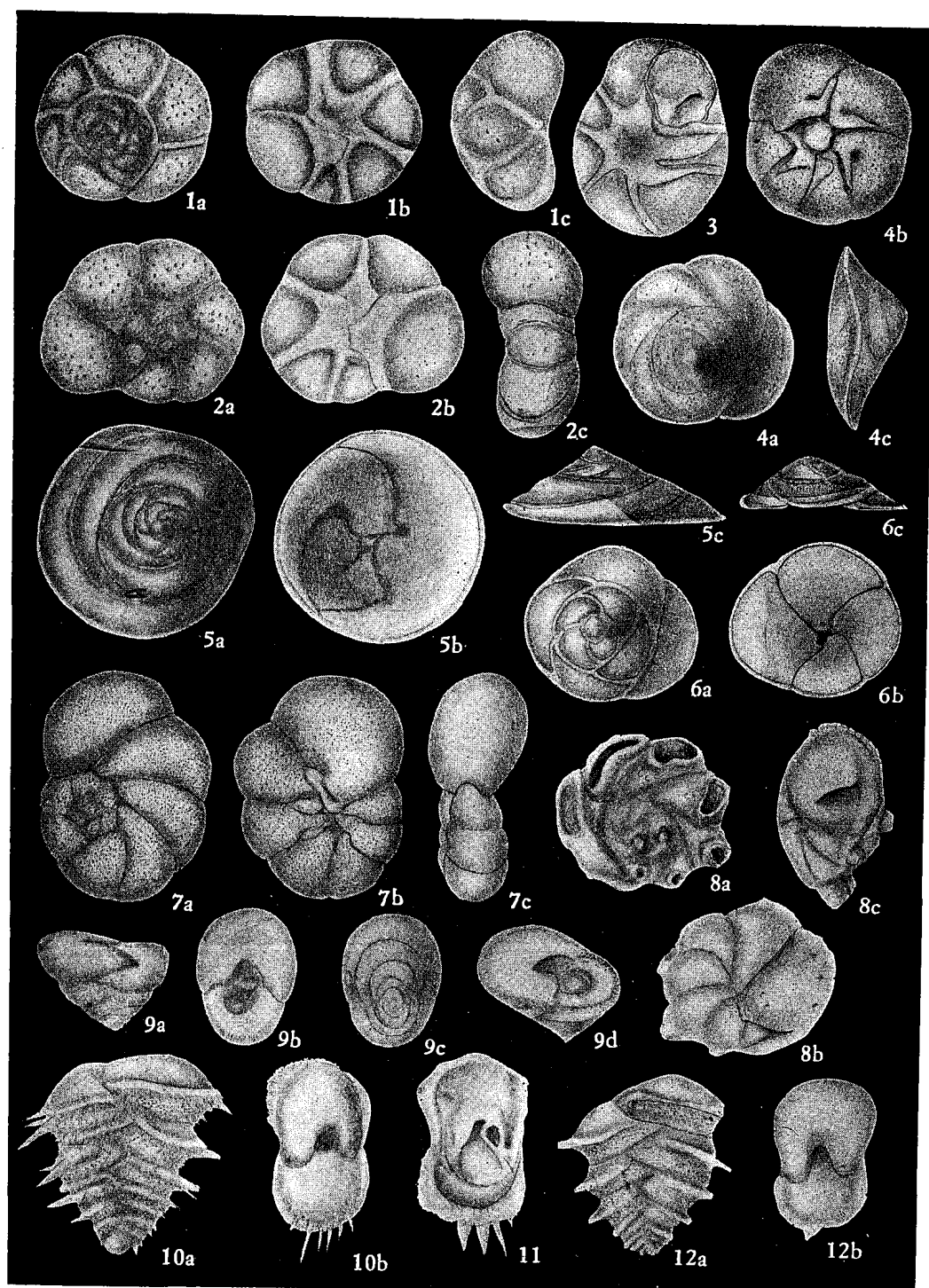
1, 2. 辐缘缝口虫 *Fissurina radiatmarginata* (Parker and Jones). ($\times 135$) 1a. 侧视; 1b. 壳缘视。
 2. 侧视。 3. 窄带缝口虫 *Fissurina fasciata* (Egger). ($\times 135$) a. 侧视; b. 壳缘视; c. 口视。 4.
 椭圆仿缝口虫(新种) *Parafissurina oblonga*, n. sp. ($\times 135$) 正模标本: a. 腹侧视; b. 背侧视; c. 壳
 缘视; d. 口视。 5. 小仿缝口虫(新种) *Parafissurina minuta*, n. sp. ($\times 135$) 正模标本: a. 腹侧视;
 b. 壳缘视; c. 口视。 6. 反弯仿缝口虫(新种) *Parafissurina reflecta*, n. sp. ($\times 135$) 正模标本: a. 腹侧
 视; b. 背侧视; c. 壳缘视; d. 口视。 7. 四刺仿缝口虫(新种) *Parafissurina quadrispinata*, n. sp.
 ($\times 135$) 正模标本: a. 腹侧视; b. 壳缘视; c. 口视。 8. 拖鞋虾虫 *Astacolus crepidulus* (Fichtel
 and Moll). ($\times 90$) a, b. 侧视; c. 壳缘视。 9. 明亮曲管虫 *Laryngosigma williamsoni* (Terquem).
 ($\times 100$) a, b. 侧视。 10. 美丽拟泡虫 *Buliminoides milletti* (Cushman). ($\times 100$) a, b. 侧视。 11.
 拟泡虫(未定种) *Buliminoides* sp. ($\times 100$) a, b. 侧视。 12. 平行拟泡虫 *Buliminoides parallela*
 (Cushman and Parker). ($\times 100$) a, b. 侧视。 13. 扭拟泡虫 *Buliminoides williamsonianus* (Brady).
 ($\times 100$) 侧视。



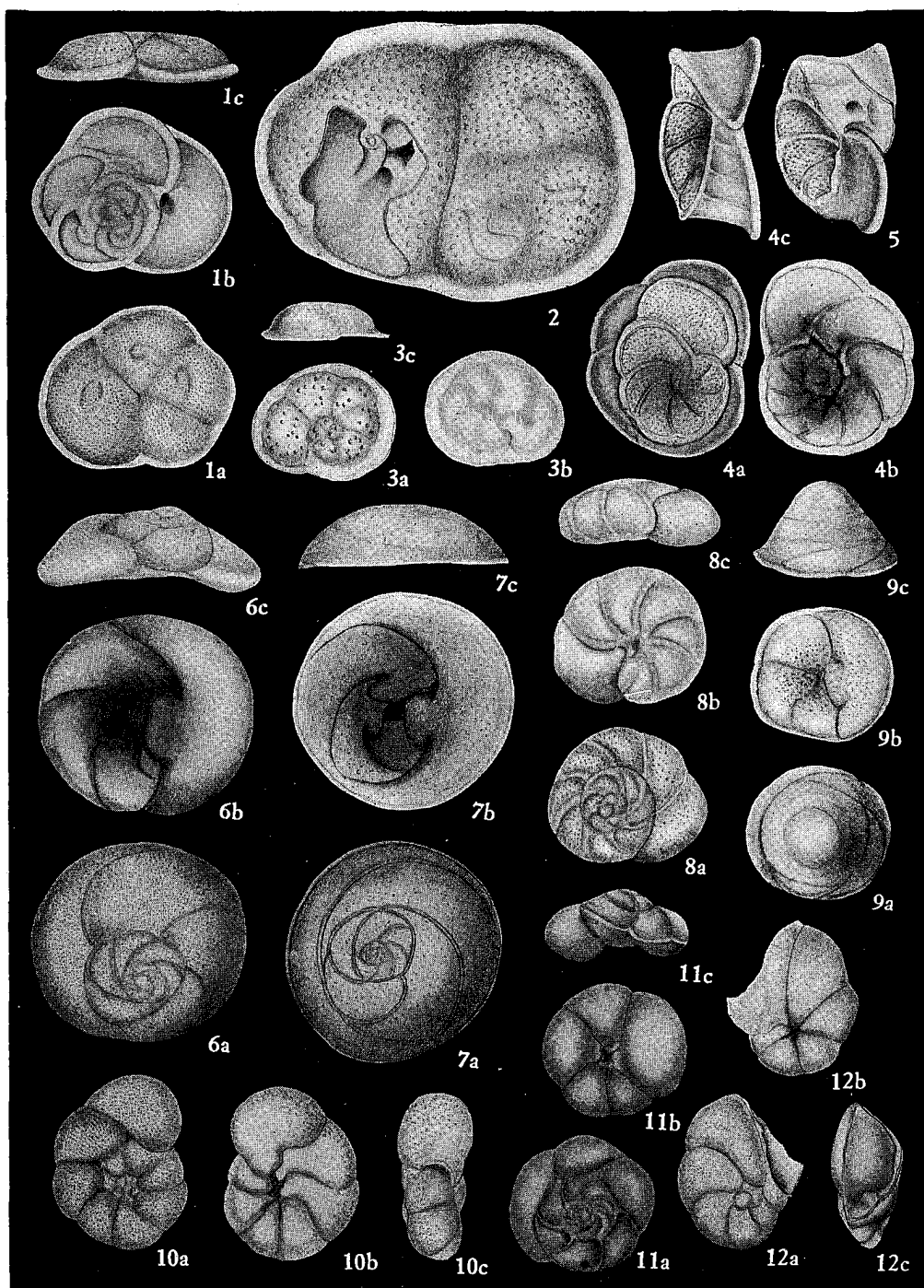
1, 2. 多变假箭头虫 *Bolivina variabilis* (Williamson). 1a. 侧视; 1b. 口视。(×100) 2. 口端侧视, 示内齿板。(×200) 3. 矛箭头虫 *Bolivina goesi* Cushman. (×100) a. 侧视; b. 口视。4—6. 短小箭头虫 *Brizalina abbreviata* (Heron-Allen and Earland). 4a. 侧视; 4b. 口视。(×100) 5. 剖去终室局部壳壁, 示内齿板, 口端侧视图。(×135) 6a, b. 侧视; 6c. 壳缘视。(×100) 7. 菱形点头虫 *Brizalina rhomboidalis* (Millett). (×100) a, b. 侧视; c. 壳缘视; d. 口视。8. 少孔点头虫 *Brizalina doniezi* (Cushman and Wickenden). (×100) a. 侧视; b. 口视。9. 停顿点头虫 *Brizalina paula* (Cushman and Cahill). (×100) a. 侧视; b. 口视。10. 不列颠点头虫 *Brizalina britannica* Macfadyen. (×100) a. 侧视; b. 口视。11, 12. 细纹点头虫 *Brizalina striatula* (Cushman). 11a. 侧视; 11b. 口视。(×100) 12. 口端侧视(浸于甘油中绘)。(×200) 13, 14. 亚细纹点头虫(新种) *Brizalina substriatula*, n. sp. (×200) 13. 正模标本: a. 侧视; b. 口视。(×135) 14. 口端侧视(浸于甘油中绘), 示内齿板。(×200) 15. 亚头点头虫(新种) *Brizalina subcapitata*, n. sp. (×100) 正模标本: a, b. 侧视; c. 壳缘视; d. 口视。16. 亚网点头虫 *Brizalina subreticulata* Parr. (×100) a. 侧视; b. 口视。17. 假半裸点头虫(新种) *Brizalina pseudoseminuda*, n. sp. (×135) 正模标本: a. 侧视; b. 口视。18. 亚细点头虫 *Brizalina subtenuis* (Cushman). (×100) a, b. 侧视; c. 口视。



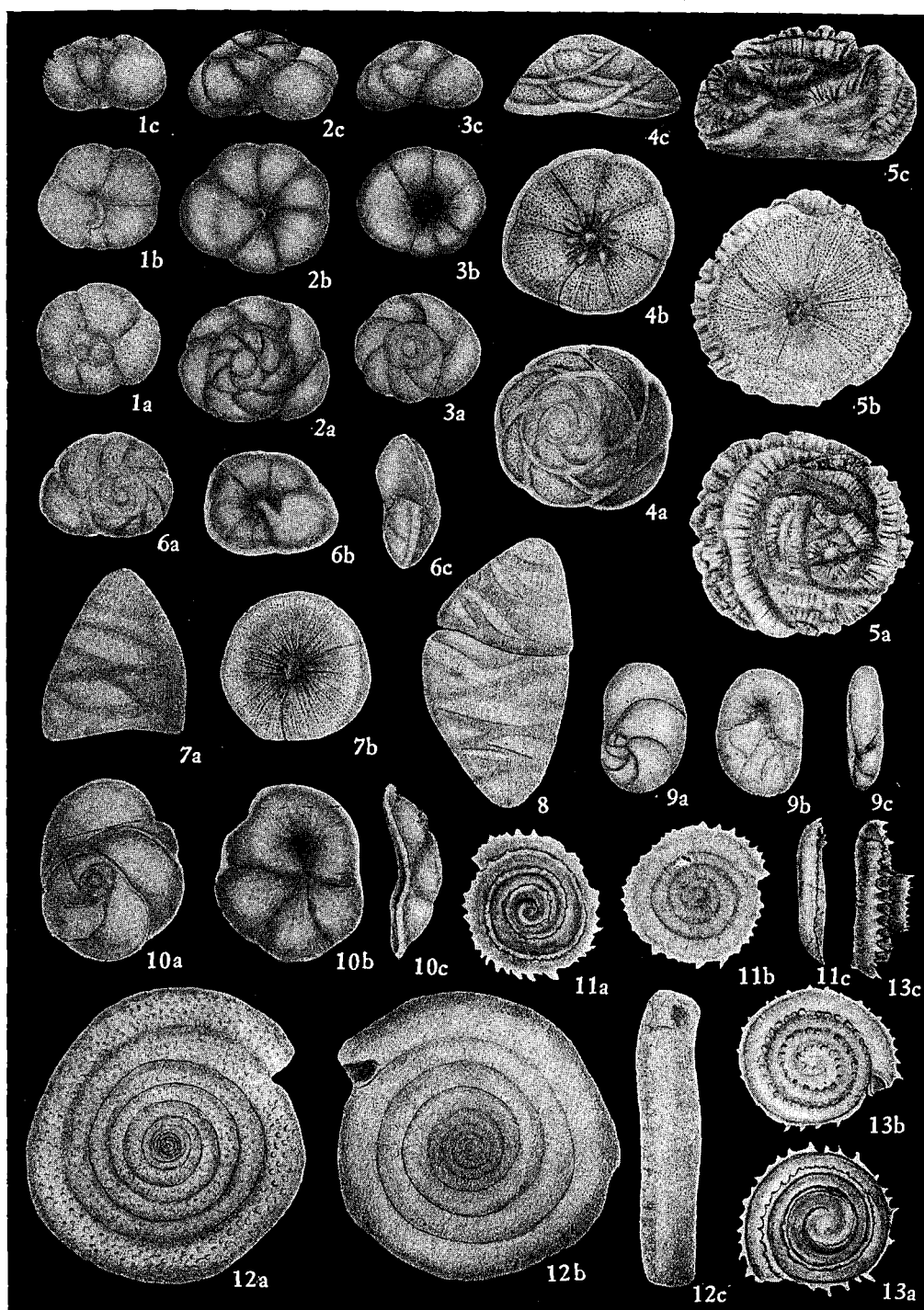
1. 棘刺点头虫 *Brizalina spinescens* (Cushman). ($\times 135$) a, b. 侧视; c. 壳缘视; d. 口视。 2. 蓑衣点头虫? *Brizalina? durrandii* (Millett). ($\times 100$) a. 侧视; b. 壳缘视; c. 口视。 3, 4. 高室直箭头虫(新种) *Rectobolivina altilocula*, n. sp. ($\times 100$) 3. 正模标本: a. 侧视; b. 壳缘视; c. 口视。 4. 副模标本: a. 侧视; b. 口视。 5. 亚罗卜直箭头虫(新种) *Rectobolivina subraphanus*, n. sp. ($\times 46$) 正模标本: a. 侧视; b. 口视。 6—8. 亚双叉直箭头虫(新种) *Rectobolivina subbifrons*, n. sp. 6. 正模标本: a. 侧视; b. 壳缘视; c. 口视。 ($\times 65$) 7. 副模标本: a. 侧视; b. 壳缘视; c. 口视。 ($\times 65$) 8. 剖去最后两个房室局部壳壁示内齿板。 ($\times 135$) 9. 小拟盔虫 *Cassidulinoides chapmani* Parr. ($\times 100$) a, b. 侧视。 10. 网格隔室虫 *Milletia tessellata* (Brady). ($\times 135$) 侧视。 11. 东方仿虫 *Mimosina orientalis* (Cushman). ($\times 135$) a—c. 侧视。 12. 棘仿虫 *Mimosina sidebottomi* Dollfus. ($\times 100$) a. 侧视; b. 壳缘视; c. 口视。 13, 14. 鳞三列虫 *Trifarina lepida* (Brady). ($\times 100$) a. 侧视; b. 口视。 15. 长管葡萄虫 *Siphonigerina porrecta* (Brady). ($\times 100$) 侧视。 16. 三棱虫(未定种) *Reussella* sp. ($\times 100$) a. 侧视; b. 口视。 17. 琉球孔雀虫 *Pavonina ryukyuensis* Cushman and Hanzawa. ($\times 90$) a. 侧视; b. 口视。



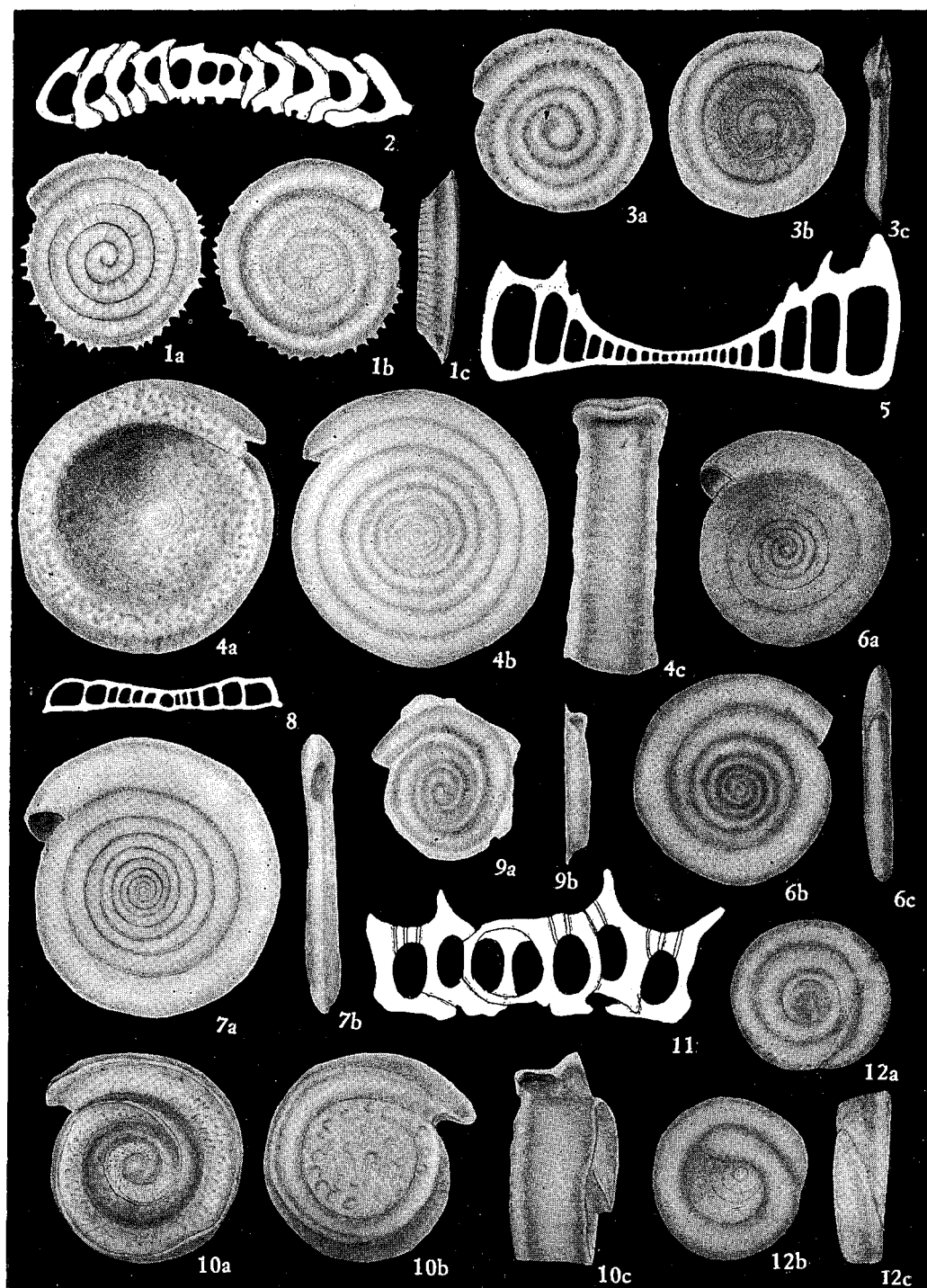
1—3. 隐口圆盘虫 (新种) *Discorbis latestoma*, n. sp. ($\times 65$) 1. 正模标本: a. 背视; b. 腹视; c. 壳缘视。 2. 副模标本 a. 背视; b. 腹视; c. 壳缘视。 3. 另一标本, 剖去终室壁示室内壳口。 4. 奇异圆盘虫 *Discorbis mira* Cushman ($\times 46$) a. 背视; b. 腹视; c. 壳缘视。 5. 韧硬玫瑰虫 *Rosalina crustata* Cushman. ($\times 65$) a. 背视; b. 腹视; c. 壳缘视。 6. 闪烁玫瑰虫 *Rosalina williamsoni* (Chapman and Parr). ($\times 100$) a. 背视; b. 腹视; c. 壳缘视。 7. 小圆盘虫 *Discorbis minuta* Schubert. ($\times 100$) a. 背视; b. 腹视; c. 壳缘视。 8. 管小上口虫 *Epistominella tubulifera* (Heron-Allen and Earland). ($\times 100$) a. 背视; b. 腹视; c. 壳缘视。 9. 荫路小帽贝虫 *Patellinella ambulacrata* (Moebius). ($\times 100$) a. 侧视; b. 口视; c. 背视; d. 偏口视。 10—12. 刺小帽贝虫 (新种) *Patellinella spinosa*, n. sp. ($\times 100$) 10. 正模标本: a. 侧视; b. 口视。 11. 另一标本, 剖去终室壁示室内壳口。 12. 副模标本: a. 侧视; b. 口视。



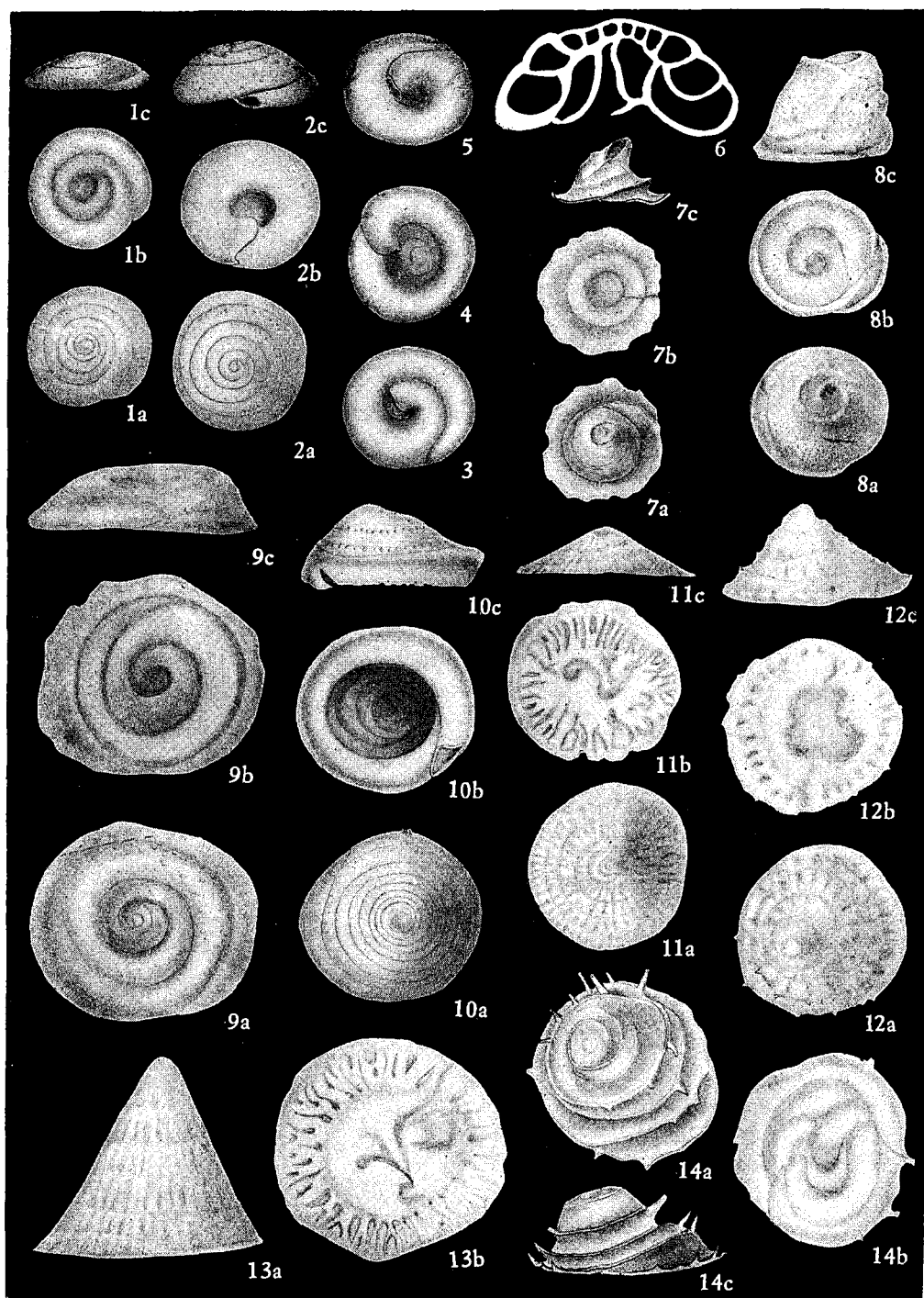
1, 2. 粗孔平盘虫 *Planodiscorbis grossepunctatus* (Parr). 1a. 背视; 1b. 腹视; 1c. 壳缘视. ($\times 65$)
 2. 另一标本, 剖去局部终室壁示内齿板自腹面竖伸至背面. ($\times 135$) 3. 基林巴小圆盘虫 (新种) *Discorbinella kerimbatica*, n. sp. ($\times 135$) 正模标本: a. 背视; b. 腹视; c. 壳缘视. 4, 5. 平凹拟平虫 *Planulinoides planoconcaus* (Chapman, Parr and Collins). 4a. 背视; 4b. 腹视; 4c. 壳缘视. ($\times 65$) 5. 另一标本, 剖去局部终室壁示室间壳口. ($\times 100$) 6. 小玫瑰虫 *Rosalina opima* (Cushman). ($\times 65$) a. 背视; b. 腹视; c. 壳缘视. 7. 圆顶玫瑰虫 *Rosalina terquemi* (Rzehak). ($\times 100$) a. 背视; b. 腹视; c. 壳缘视. 8. 亚扁玫瑰虫 *Rosalina subcomplanata* (Parr). ($\times 100$) a. 背视; b. 腹视; c. 壳缘视. 9. 瘤头玫瑰虫 *Rosalina tuberocapitata* (Chapman). ($\times 65$) a. 背视; b. 腹视; c. 壳缘视. 10. 简单玫瑰虫 (相似种) *Rosalina* cf. *R. simplex* d'Orbigny. ($\times 65$) a. 背视; b. 腹视; c. 壳缘视. 11. 清晰玫瑰虫 *Rosalina vilardeboana* d'Orbigny. ($\times 46$) a. 背视; b. 腹视; c. 壳缘视. 12. 耳蟹虫 *Cancris auriculus* (Fichtel and Moll). ($\times 100$) a. 背视; b. 腹视; c. 壳缘视.



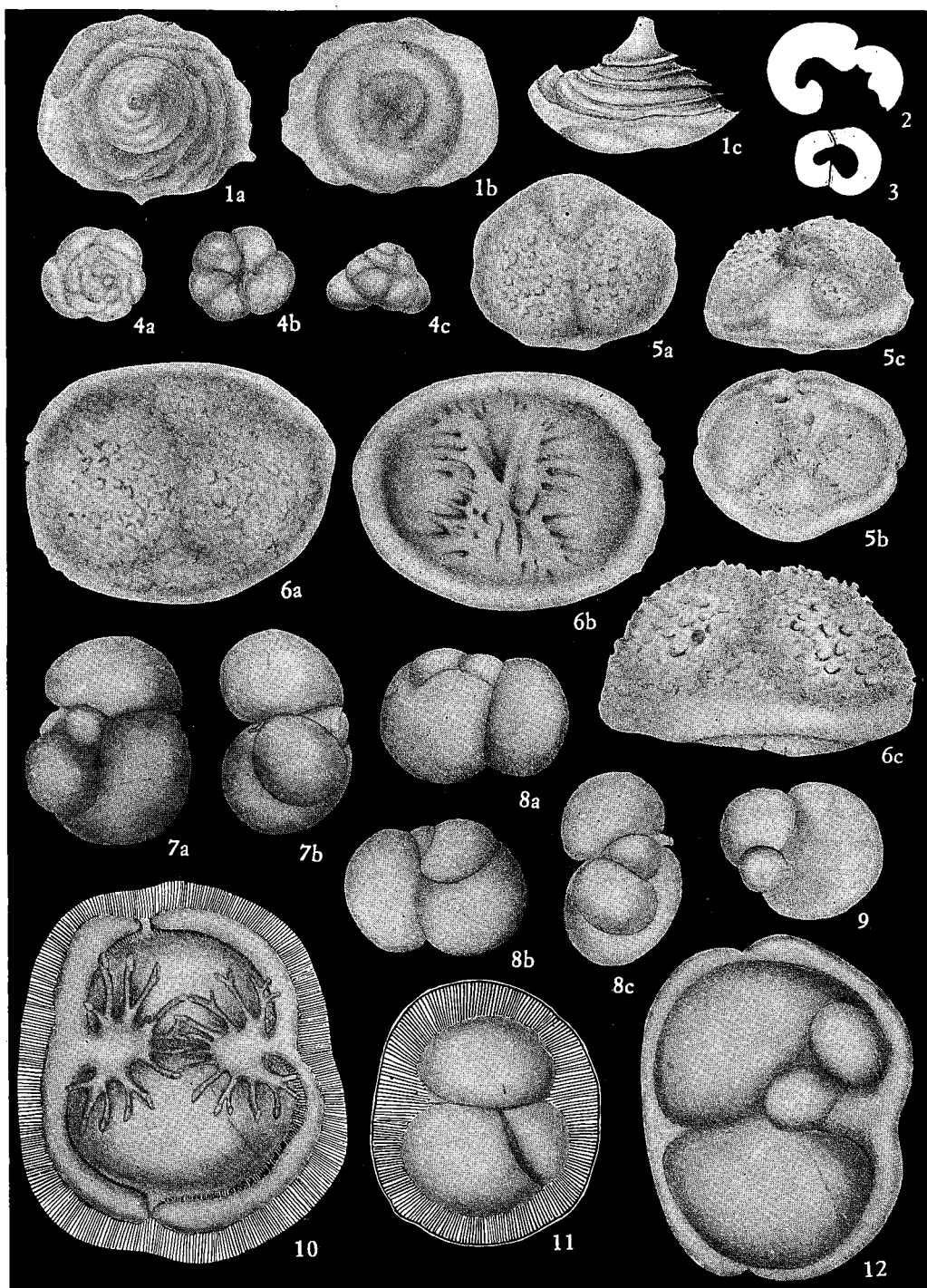
1. 厚平滑虫 *Glabratella crassa* Dörre. ($\times 100$) a. 背视; b. 腹视; c. 壳缘视。2. 精致平滑虫 (新种) *Glabratella elegans*, n. sp. ($\times 100$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。3. 粗糙平滑虫 (新种) *Glabratella scabra*, n. sp. ($\times 135$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。4. 镶边平滑虫 (新种) *Glabratella limbata*, n. sp. ($\times 100$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。5. 隆褶平滑虫 *Glabratella makinoi* Uchio. ($\times 100$) a. 背视; b. 腹视; c. 壳缘视。6. 美丽平滑虫 (新种) *Glabratella pulchella*, n. sp. ($\times 135$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。7, 8. 帐篷平滑虫 *Glabratella tabernacularis* (Brady). ($\times 100$) 7a. 侧视; 7b. 腹视。8. 胞质配合个体。9. 光滑凹口虫 *Heronallenia laevis* Parr. ($\times 135$) a. 背视; b. 腹视; c. 壳缘视。10. 小凹口虫 *Heronallenia parva* Parr. ($\times 90$) a. 背视; b. 腹视; c. 壳缘视。11. 扁旋虫 (新种) *Spirillina compressa*, n. sp. ($\times 135$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。12. 粗孔旋虫 (新种) *Spirillina grosseperforata*, n. sp. ($\times 135$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。13. 梯旋虫 (新种) *Spirillina scalaris*, n. sp. ($\times 135$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。



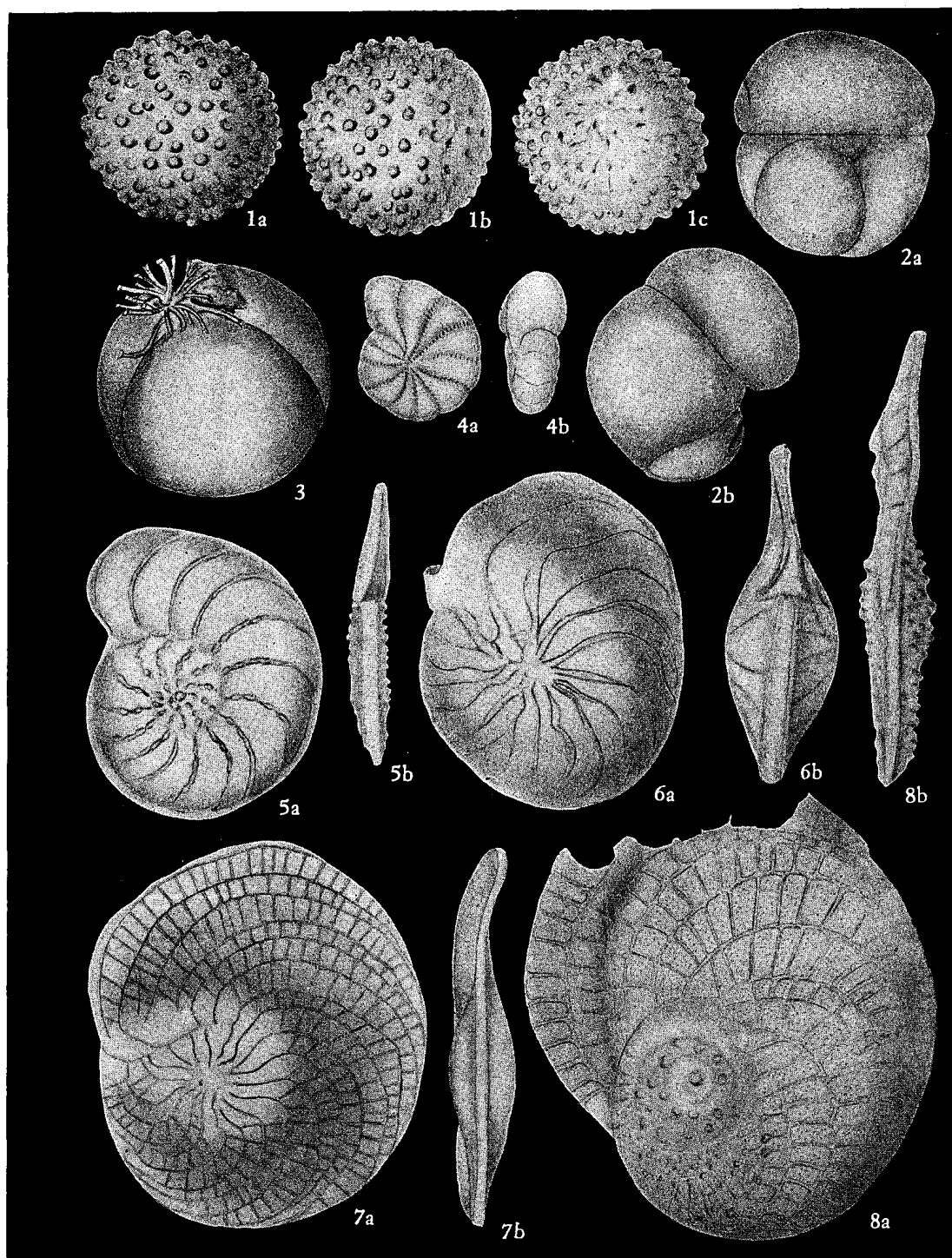
1, 2. 梳缘旋虫 *Spirillina pectinimarginata* Chapman, Parr and Collins. 1a. 背视; 1b. 腹视; 1c. 壳缘视。(×135) 2. 横切面。(×200) 3. 孔缝旋虫(新种) *Spirillina porisuturalis*, n. sp. (×135) 正模标本: a. 背视; b. 腹视; c. 壳缘视。4, 5. 平凹旋虫(新种) *Spirillina planoconcava*, n. sp. 4. 正模标本: a. 背视; b. 腹视; c. 壳缘视。(×135) 5. 横切面。(×200) 6. 母株旋虫 *Spirillina vivipara* Ehrenberg. (×135) a, b. 侧视; c. 壳缘视。7, 8. 旋虫(未定种) *Spirillina* sp. 7a. 侧视; 7b. 壳缘视。(×135) 8. 横切面。(×200) 9. 侧龙骨间管虫(新种) *Sejunctella laticarinina*, n. sp. (×135) 正模标本: a. 背视; b. 壳缘视。10, 11. 少旋平旋虫(新种) *Planispirillina paucispira*, n. sp. 10. 正模标本: a. 背视; b. 腹视; c. 壳缘视。(×135) 11. 横切面。(×200) 12. 缘孔内口虫(新种) *Mychostomina peripora*, n. sp. (×135) 正模标本: a. 背视; b. 腹视; c. 壳缘视。



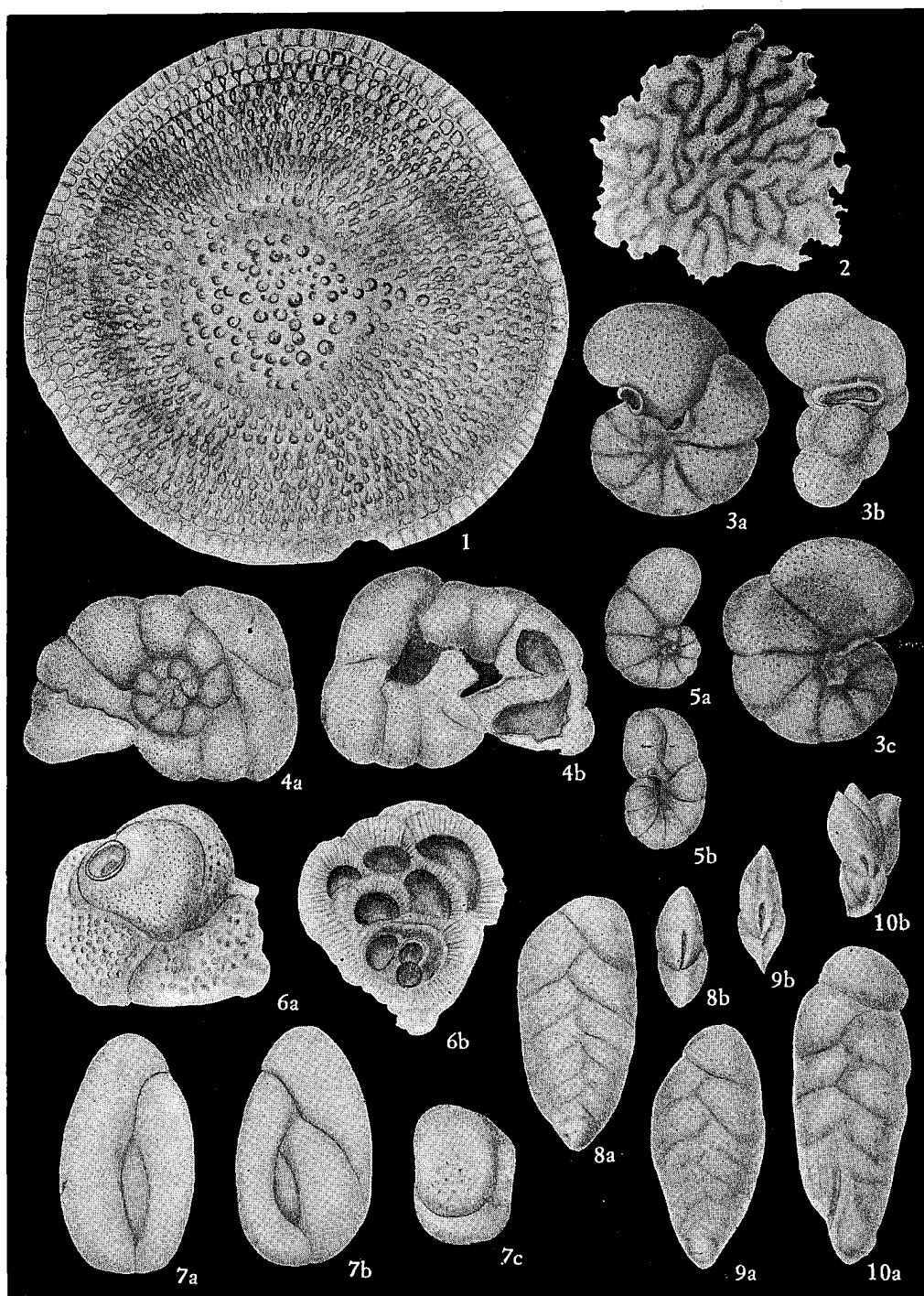
1—6. 回转内口虫 *Mychostomina revertens* (Rhumbler). 1a, 2a. 背视; 1b, 2b. 腹视; 1c, 2c. 壳缘视。(×135) 3—5. 不同标本腹视; 示壳口在腹面不同部位。(×135) 6. 横切面。(×200) 7. 拟蹄虫 (未定种) *Ungulatelloides* sp. (×135) a. 背视; b. 腹视; c. 壳缘视。8. 截锥内口虫 (新种) *Mychostomina truncata*, n. sp. (×135) 正模标本: a. 背视; b. 腹视; c. 壳缘视。9. 龙骨内口虫 (新种) *Mychostomina carinata*, n. sp. (×135) 正模标本: a. 背视; b. 腹视; c. 壳缘视。10. 高旋塔旋虫 (新种) *Mychostomina altispira*, n. sp. (×135) 正模标本: a. 背视; b. 腹视; c. 壳缘视。11. 异地帽贝虫 *Patellina advena* Cushman. (×135) a. 背视; b. 腹视; c. 壳缘视。12. 刺帽贝虫 (新种) *Patellina spinosa*, n. sp. (×135) 正模标本: a. 背视; b. 腹视; c. 壳缘视。13. 高形帽贝虫 *Patellina altiformis* Cushman. (×135) a. 壳缘视; b. 腹视。14. 堂皇拟蹄虫 *Ungulatelloides imperialis* Seiglie. (×135) a. 背视; b. 腹视; c. 壳缘视。



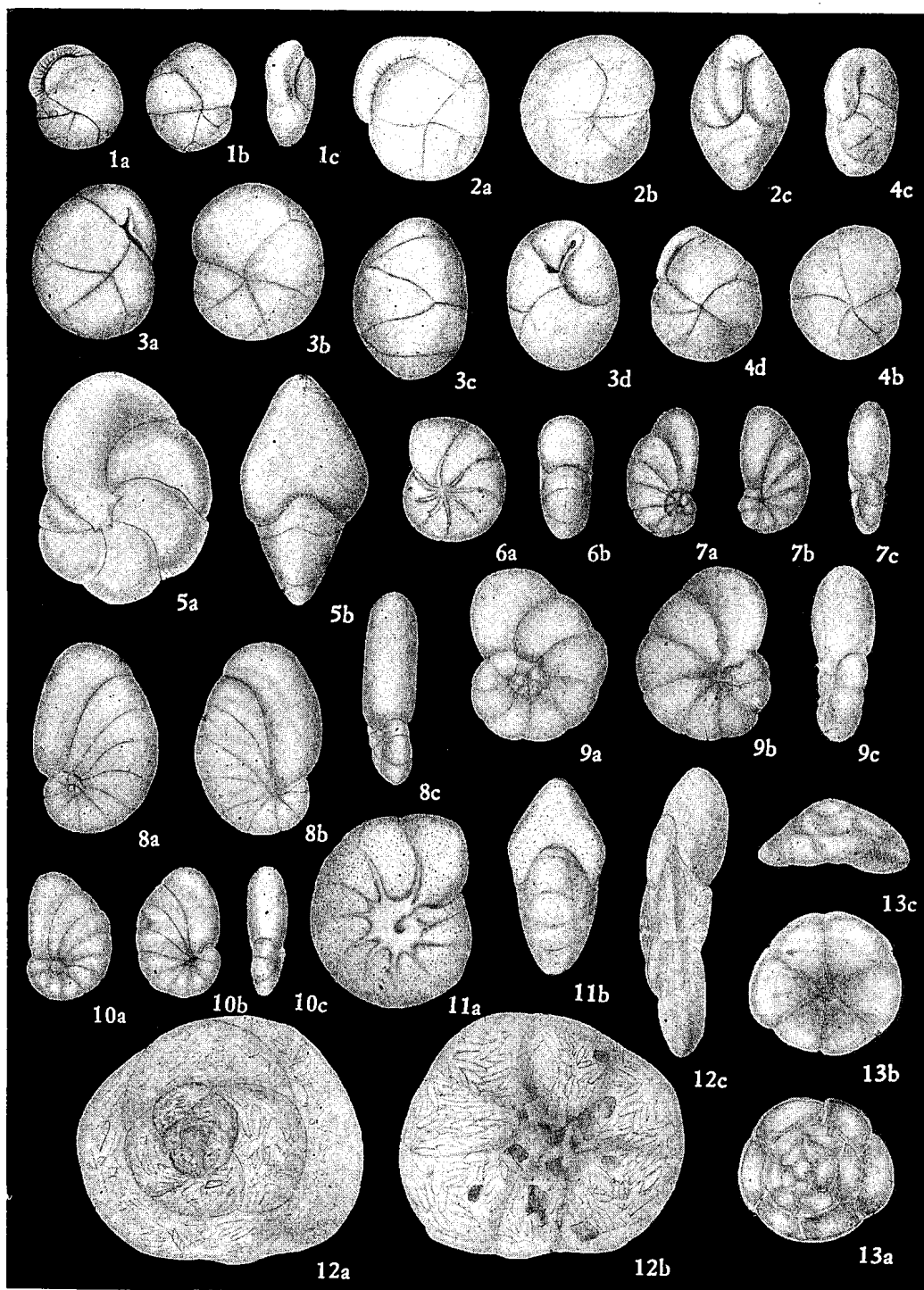
1—3. 塔拟蹄虫 (新种) *Ungulatelloides pagoda*, n. sp. ($\times 135$) 1. 正模标本: a. 背视; b. 腹视; c. 壳缘视。2, 3. 后成房室的胶蜡塑模, 示两个房室组成一壳圈(图 3 中的一个房室断掉一半)。4. 少孔转轮虫 (新种) *Ammonia paucipora*, n. sp. ($\times 100$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。5—12. 疑坚实虫 *Pegidia dubia* (d'Orbigny). 5a, 6a. 背视; 5b, 6b. 腹视; 5c, 6c. 壳缘视。($\times 32.5$) 7—9. 整体标本的胶蜡塑模(表面的壁孔道塑模及围管塑模均已除掉)。($\times 65$) 7a. 背视; 7b. 壳缘视。8a. 背视; 8b. 腹视; 8c. 壳缘视。9. 腹视(终室已除掉)。10. 整体标本的胶蜡塑模腹视, 示围管、横伸管及其树枝状支管。($\times 65$) 11. 整体标本的胶蜡塑模(围管塑模已除掉)腹视。($\times 46$) 12. 整体标本的胶蜡塑模(表面的壁孔道塑模已刷掉)背视, 示围管及其横伸管。($\times 65$)



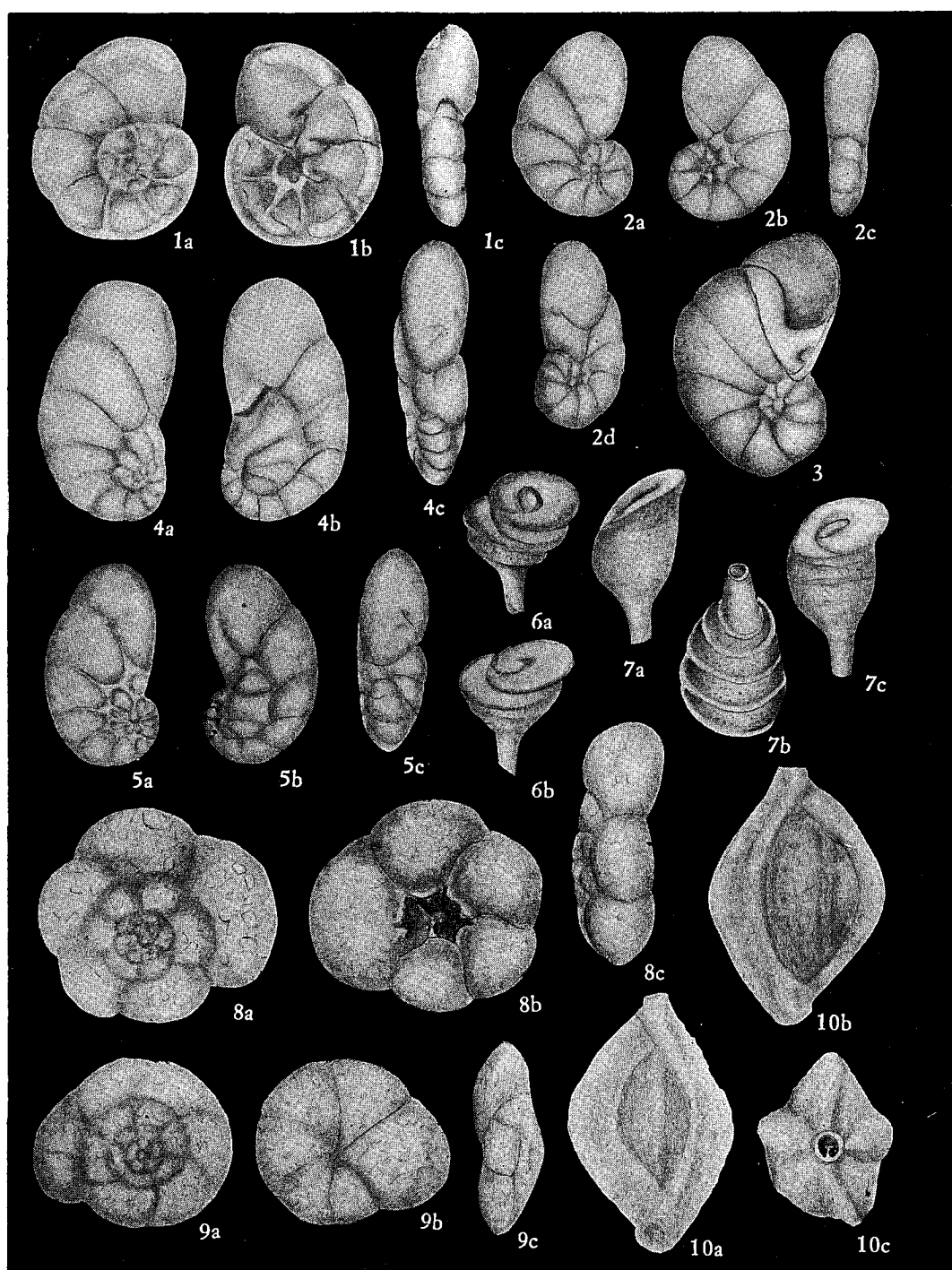
1—3. 乳突瘤球虫 *Sphaeridia papillata* Heron-Allen and Earland. 1a. 侧视 (口区在后面); 1b. 侧视 (口区在右侧); 1c. 口区视。($\times 32.5$) 2a, 2b. 整体标本的胶蜡塑模(表面的壁孔道塑模及树枝状内管塑模均已除掉), 示房室排列。($\times 65$) 3. 整体标本的胶蜡塑模(表面的壁孔道塑模已刷掉), 示口区的树枝状内管。($\times 65$) 4. 大洋企虫 *Elphidium oceanicum* Cushman. ($\times 100$) a. 侧视; b. 壳缘视。5. 拟日货币虫 *Nummulites ammonoides* (Gronovius). ($\times 32.5$) a. 侧视; b. 壳缘视。6. 脉货币虫 *Nummulites venosa* (Fichtel and Moll). ($\times 22.5$) a. 侧视; b. 壳缘视。7. 扁异盖虫 *Heterostegina depressa* d'Orbigny. ($\times 16$) a. 侧视; b. 壳缘视。8. 长隔板异盖虫 (新种) *Heterostegina longisepta*, n. sp. ($\times 32.5$) 正模标本: a. 侧视; b. 壳缘视。



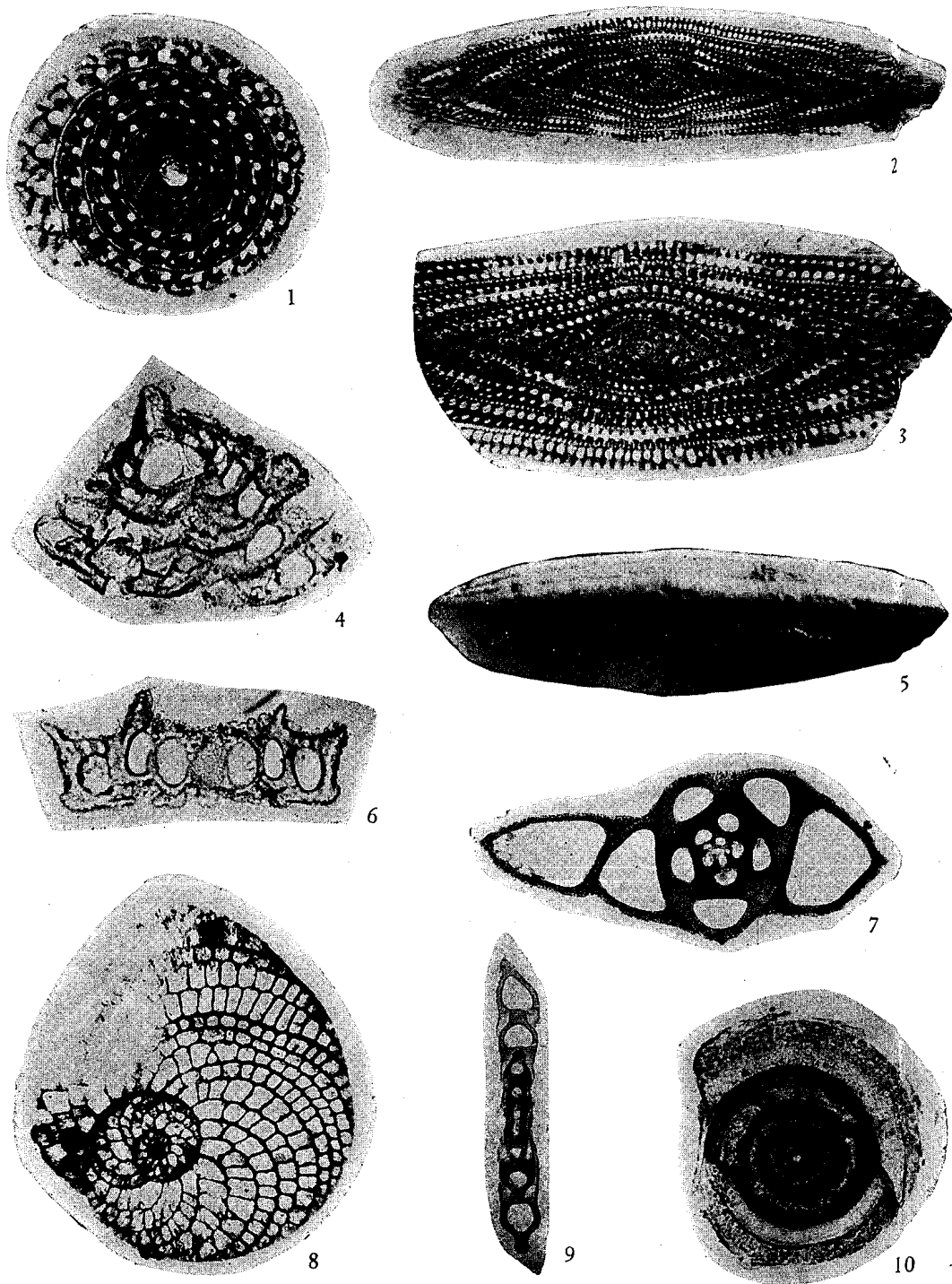
1. 凸心圆盾虫 *Cycloclypeus carpenteri* Brady. ($\times 16$) 侧视。2. 鳞形扁白垩虫 *Planogypsina squamiformis* (Chapman). ($\times 46$) 背视。3. 多变小面包虫 *Cibicidella variabilis* (d'Orbigny). ($\times 46$) a. 背视; b. 壳缘视; c. 腹视。4, 5. 长拟梨冠虫 (新属新种) *Pyropiloides elongatus*, n. gen. n. sp. ($\times 46$) 4. 正模标本: a. 背视; b. 腹视。5. 副模标本 (幼期规则螺旋个体): a. 背视; b. 偏腹视。6. 小囊藤壶虫 *Carpenteria utricularis* (Carter). ($\times 16$) a. 背视; b. 腹视。7. 扁提诺斯虫 *Delosina complanata* Earland. ($\times 135$) a, b. 侧视; c. 口视。8. 矛扭芽虫 (新种) *Sigmavirgulina lanceolata*, n. sp. ($\times 100$) a. 侧视; b. 口视。9, 10. 基纹扭芽虫 (新种) *Sigmavirgulina basistriata*, n. sp. ($\times 100$) 9. 副模标本: a. 侧视; b. 口视。10. 正模标本: a. 侧视; b. 口视。



1. 娇柔盔形虫 *Cassidulina delicata* Cushman. ($\times 65$) a, b. 侧视; c. 壳缘视。 2. 口纹盔形虫(新种) *Cassidulina striatostoma*, n. sp. ($\times 100$) 正模标本: a, b. 侧视; c. 壳缘视。 3. 冷球盔虫 *Globocassidulina algida* (Cushman). ($\times 65$) a, b. 侧视; c, d. 壳缘视。 4. 扁球盔虫 *Globocassidulina complanata* (Ujiie and Kusakawa). ($\times 100$) a, b. 侧视; c. 壳缘视。 5. 亚鼓九字虫(新种) *Nonion subdilatum*, n. sp. ($\times 65$) 正模标本: a. 侧视; b. 壳缘视。 6. 小星九字虫(新种) *Astrononion minimum*, n. sp. ($\times 100$) 正模标本: a. 侧视; b. 壳缘视。 7, 8, 10. 嵌线假九字虫 *Pseudononion limbatostriatum* (Cushman). ($\times 100$) a. 背视; b. 腹视; c. 壳缘视。 9. 粒脐假九字虫(新种) *Pseudononion granulumbilicatum*, n. sp. ($\times 100$) 正模标本: a. 背视; b. 腹视; c. 壳缘视。 11. 小蜜饼虫(新种) *Melonis minutus*, n. sp. ($\times 135$) 正模标本: a. 侧视; b. 壳缘视。 12. 针壳锤针虫 *Carterina spiculotesta* (Carter). ($\times 65$) a. 背视; b. 腹视; c. 壳缘视。 13. 缘口虫(未定种) *Stomatorbina* sp. ($\times 135$) a. 背视; b. 腹视; c. 壳缘视。



1. 同心密西西比虫 *Mississippina concentrica* (Parker and Jones). (×65) a. 背视; b. 腹视; c. 壳缘视。
 2, 3. 闪烁双附室虫 *Alliatina nitida* (Millett). 2a. 背视; 2b. 腹视; 2c. 壳缘视; 2d. 偏腹视。 (×100) 3. 另一标本, 剖去终室背壁示内齿板, 背视。 (×135)
 4, 5. 超美重旋虫 *Geminospira bradyi* Bermudez. 4a. 背视; 4b. 腹视; 4c. 壳缘视。 (×90) 5a. 背视; 5b. 腹视; 5c. 壳缘视。 (×100)
 6, 7. 拟锥蹄虫 *Ungulatella conoides* Cushman. (×135) 6a, b. 侧视。 7a—c. 侧视。
 8. 南方砂轮虫 *Trochammina wiesneri* Parr. (×90) a. 背视; b. 腹视; c. 壳缘视。
 9. 斜方砂轮虫 (新种) *Trochammina trapeziformis*, n. sp. (×135) 正模标本: a. 背视; b. 腹视; c. 壳缘视。
 10. 粗糙五块虫 (新种) *Quinqueloculina inculta*, n. sp. (×65) 正模标本: a, b. 侧视; c. 口视。



1—3, 5. 现存小蜂巢虫 *Alveolinella quoyi* (d'Orbigny). 1. 横切面 ($\times 32$) 2. 纵切面 ($\times 19$) 3. 纵切面 ($\times 32$) 5. 侧视 ($\times 18$). 4. 塔拟蹄虫(新种) *Ungulatelloides pagoda*, n. sp. ($\times 200$) 纵切面。 6. 少旋平旋虫(新种) *Planispirillina paucispira*, n. sp. ($\times 172$) 垂直切面。 7. 网纹假块心虫 *Pseudomassilina reticulata* (Heron-Allen and Earland) ($\times 66$) 横切面。 8. 长隔板异盖虫(新种) *Heterostegina longisepia*, n. sp. ($\times 23$) 水平切面。 9, 10. 龙骨小平旋虫(新种) *Planispirinella carinata*, n. sp. 9. 垂直切面 ($\times 100$) 10. 水平切面 ($\times 123$)。