

中沙群岛的现代有孔虫* I

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我国南海诸岛的中沙群岛位于西沙群岛的东南侧,由许多隐伏于海面以下的大小珊瑚礁组成。中沙群岛的有孔虫,过去尚无报道。

本文是根据1975年采自中沙群岛的三份珊瑚砂样品进行研究的。尽管现有样品数量不多,但其所含有孔虫种类却相当丰富。经鉴定,共212种(包括亚种),分隶于43科122属。其中有1个新属、23个新种。在这212种中,除14种属于浮游种类外,其余198种均属底栖种类。在198种底栖有孔虫中,砂质胶结型种类约占14.6%(29种),钙质无孔型种类约占28.3%(56种),钙质有孔型种类约占57.1%(113种)。从种类组成看,中沙群岛的有孔虫区系与西沙群岛的大体相似。不过,中沙群岛有52种底栖有孔虫尚未在西沙群岛发现,且其中的一种大型有孔虫刺浆果拟白垩虫 *Baculogypsinoides spinosa* Yabe and Hanzawa 大量出现,由此看来,中沙群岛的有孔虫区系与西沙群岛的还是有一定差别的。

本文仅对作者等在“西沙群岛的现代有孔虫 I”和“西沙群岛的现代有孔虫 II”两文中尚未报道过的52种底栖有孔虫加以描述和图示,而对在上述两文中已报道过的种类不再重述。

所有新种的模式标本均保存于中国科学院海洋研究所。

中沙群岛有孔虫名录**

有孔虫目 FORAMINIFERIDA Eichwald, 1830

底栖有孔虫

- 编织虫亚目 Textulariina Delage and Herouard, 1896
 - 曲杖虫总科 Lituolacea de Blainville, 1825
 - 曲杖虫科 Lituolidae de Blainville, 1825
 - 拟单栏虫亚科 Haplophragmoidinae Maync, 1952
 - 拟筛口虫属 *Cribr stomoides* Cushman, 1910
 - 针壳拟筛口虫 *C. spiculotestus* Zheng
 - 平盘虫亚科 Placopsiliniinae Rhumbler, 1913
 - 蚕形虫属 *Haddonina* Chapman, 1898
 - 托雷斯蚕形虫 *H. torresiensis* Chapman

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** 名录中带*号的在“西沙群岛的现代有孔虫 I”和“西沙群岛的现代有孔虫 II”两文中,尚未报道过的种类。

- 编织虫科 Textulariidae Ehrenberg, 1838
 旋编虫亚科 Spiroplectamminae Cushman, 1927
 旋编虫属 *Spiroplectammina* Cushman, 1927
 佛罗里达旋编虫 *S. floridana* Cushman*
 槭编虫属 *Morulaeplecta* Høglund, 1947
 胖槭编虫(新种) *M. inflata*, n. sp.*
 编织虫亚科 Textulariinae Ehrenberg, 1838
 编织虫属 *Textularia* DeFrance in de Blainville, 1824
 胶结编织虫 *T. agglutinans* d'Orbigny
 圆锥编织虫 *T. conica* d'Orbigny
 叶编织虫 *T. foliacea* Heron-Allen and Earland
 新皱纹编织虫 *T. neorugosa* Thalmann
 大洋编织虫 *T. oceanica* Cushman
 圆面编织虫 *T. orbica* Lalicker and McCulloch
 假塔编织虫 *T. pseudotrochus* Cushman
 粗糙编织虫 *T. scrupula* Lalicker and McCulloch
 半翼编织虫 *T. semialata* Cushman
 多管编织虫(新种) *T. tubulosa*, n. sp.*
 假箭头虫亚科 Pseudobolivinae Wiesner, 1931
 假箭头虫属 *Pseudobolivina* Wiesner, 1931
 假箭头虫(未定种) *Pseudobolivina* sp.*
 管双属虫属 *Siphobigenerina* Zheng, 1979
 扁管双属虫 *S. compressa* Zheng
 砂轮虫科 Trochamminidae Schwager, 1877
 砂轮虫亚科 Trochammininae Schwager, 1877
 砂轮虫属 *Trochammina* Parker and Jones, 1859
 龙骨砂轮虫 *T. carinata* Cushman and McCulloch
 砂轮虫(未定种) *Trochammina* sp.*
 砂车轮虫属 *Rotaliammina* Cushman, 1927
 几丁砂车轮虫 *R. chitinsa* (Collins)
 瓣砂轮虫属 *Tiphotrocha* Saender, 1951
 皱瓣砂轮虫 *T. kellestae* (Thalmann)
 小砂轮虫属 *Trochamminula* Shchedrina, 1955
 长小砂轮虫 *T. elongata* Zheng
 崎间壁虫科 Ataxophragmiidae Schwager, 1877
 春虫亚科 Verneulininae Cushman, 1911
 锥头虫属 *Gaudryina* d'Orbigny, 1838
 扭锥头虫 *G. (Gaudryina) contorta* Høglund
 楔锥头虫 *G. (G.) trullisata* Todd
 矛锥头虫 *G. (Pseudogaudryina) hastata* Parr
 管锥头虫 *G. (Siphogaudryina) siphonifera* (Brady)
 横管锥头虫 *G. (S.) transversaria* (Brady)
 锥头虫(未定种) *Gaudryina (S.)* sp.*
 隔编织虫属 *Septotextularia* Cheng and Zheng, 1978
 皱隔编织虫 *S. rugulosa* (Cushman)
 球编织虫亚科 Globotextulariinae Cushman, 1927
 三属虫属 *Dorothia* Plummer, 1931
 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
- 旋圈虫亚科 Cyclogyrinae Loeblich and Tappan, 1961
- 旋圈虫属 *Cyclogyra* Wood, 1842
- 卷旋圈虫 *C. involvens* (Reuss)
- 云朵虫科 Nubeculariidae Jones, 1875
- 眼睛虫亚科 Ophthalmidiinae Wiesner, 1920
- 吸口虫属 *Wiesnerella* Cushman, 1933
- 耳吸口虫 *W. auriculata* (Egger)
- 抱环虫亚科 Spiroloculinae Wiesner, 1820
- 抱环虫属 *Spiroloculina* d'Orbigny, 1826
- 光亮抱环虫 *S. clara* Cushman
- 皱抱环虫 *S. corrugata* Cushman and Todd
- 截缘抱环虫 *S. excisa* Cushman and Todd
- 麻坑抱环虫 *S. foveolata* Egger
- 小节棒虫亚科 Nodobaculariinae Cushman, 1927
- 节眼虫属 *Nodophthalmidium* Macfayden, 1939
- 中沙节眼虫(新种) *N. zhongshaensis*, n. sp.*
- 小节棒虫属 *Nodobaculariella* Cushman and Hanzawa, 1937
- 乡小节棒虫 *N. rustica* Cushman and Todd,
- 椎骨虫属 *Vertebralina* d'Orbigny, 1826
- 纹椎骨虫 *V. striata* d'Orbigny
- 粟虫科 Miliolidae Ehrenberg, 1839
- 五块虫亚科 Quinqueloculinae Cushman, 1917
- 五块虫属 *Quinqueloculina* d'Orbigny, 1826
- 砂五块虫 *Q. arenata* Said
- 波脊五块虫 *Q. berthelotiana* d'Orbigny
- 清亮五块虫 *Q. candeiana* d'Orbigny*
- 昆士兰微纹五块虫 *Q. cuvieriana queenslandica* Collins
- 折半五块虫(相似种) *Q. cf. Q. dimidiata* Terquem*
- 粒肋五块虫 *Q. granulocostata* Germeraad
- 光滑五块虫 *Q. laevigata* d'Orbigny
- 长齿五块虫 *Q. longidentata* Terquem
- 新细纹五块虫 *Q. neostriatula* Thalmann
- 横波五块虫 *Q. parkeri* (Brady)
- 沟五块虫 *Q. sulcata* d'Orbigny
- 虾夷五块虫 *Q. yezoensis* Asano
- 块心虫属 *Massilina* Schlumberger, 1893
- 皱块心虫 *M. corrugata* Collins
- 八丈岛块心虫(?) *M. (?) hachijensis* (Uchio)*
- 中间块心虫 *M. intermedia* Cheng and Zheng
- 大块心虫 *M. magna* Zheng
- 假块心虫属 *Pseudomassilina* Lacroix, 1938
- 假块心虫(未定种) *Pseudomassilina* sp.*
- 双块虫属 *Pyrgo* Defrance, 1824
- 小齿双块虫 *P. denticulata* (Brady)
- 刺背双块虫(新种) *P. spinidorsa*, n. sp.*
- 小曲形虫属 *Sigmoilinella* Zheng, 1979
- 扭小曲形虫 *S. tortuosa* Zheng

- 环曲形虫属 *Spirosigmoilina* Parr, 1942
 丽环曲形虫 *S. pulchra* Zheng
- 三袂虫属 *Triloculina* d'Orbigny, 1826
 麻点三袂虫 *T. bertheliniana* (Brady)
 显纹三袂虫 *T. insignis* (Brady)
 基林巴三袂虫 *T. kerimbatica* (Heron-Allen and Earland)
 林奈三袂虫 *T. linneiana* d'Orbigny*
 亚粒三袂虫 *T. subgranulata* Cushman
 三棱三袂虫 *T. tricarinata* d'Orbigny
 三角三袂虫 *T. trigonula* (Lamarck)
- 小粟虫亚科 Miliolinellinae Vella, 1957
 小粟虫属 *Miliolinella* Wiesner, 1931
 澳大利亚小粟虫 *M. australis* (Parr)
 大洋小粟虫 *M. oceanica* (Cushman)
 假椭圆小粟虫(新种) *M. pseudooblunga*, n. sp.*
 纹小粟虫 *M. webbiana* (d'Orbigny)
- 粟虫亚科 Miliolinae Ehrenberg, 1839
 粟虫属 *Miliola* Lamarck, 1804
 膨鼓粟虫(新种) *M. inflata*, n. sp.*
- 扁袂虫属 *Hauerina* d'Orbigny, 1839
 包旋扁袂虫 *H. involuta* Cushman
- 曲扁袂虫属 *Sigmoihauerina* Zheng, 1979
 弱纹曲扁袂虫 *S. bradyi* (Cushman)
 脆曲扁袂虫 *S. fragillissima* (Brady)
- 包扁袂虫属 *Involvohauerina* Loeblich and Tappan, 1955
 筛口包扁袂虫 *I. cribrostoma* (Heron-Allen and Earland)
- 关节虫属 *Articulina* d'Orbigny, 1826
 太平洋关节虫 *A. pacifica* Cushman
 平行关节虫 *A. parallela* Zheng
- 小丘虫科 Soritidae Ehrenberg, 1839
- 马刀虫亚科 Penceroplineae Schultze, 1854
 马刀虫属 *Penceroplis* de Montfort, 1808
 穿孔马刀虫 *P. pertusus* (Forskål)
- 树口虫属 *Dendritina* d'Orbigny, 1826
 纹树口虫 *D. striata* Hofker
- 坑壁虫属 *Puteolina* Hofker, 1951•
 马来坑壁虫 *P. malayensis* Hofker
- 小丘虫属 *Sorites* Ehrenberg, 1839
 圆小丘虫 *S. orbiculus* (Forskål)
- 旋卷虫属 *Spirolina* Lamarck, 1804
 羊角旋卷虫 *S. arietina* (Batsch)
- 双丘虫属 *Amphisorus* Ehrenberg, 1839
 饼双丘虫 *A. hemprichii* Ehrenberg
- 蜂巢虫科 Alveolinidae Ehrenberg, 1839
 贪食虫属 *Borelis* de Montfort, 1808
 丽贪食虫 *B. pulchra* (d'Orbigny)
- 小蜂巢虫属 *Alveolinella* Douville, 1906
 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
 节房虫属 *Nodosaria* Lamarck, 1812
 节房虫(未定种) *Nodosaria* sp.*
 虾虫属 *Astaculus* de Montfort, 1808
 假平虾虫(新种) *A. pseudoplanulata*, n. sp.*
 透镜虫属 *Lenticulina* Lamarck, 1804
 凹面透镜虫(新种) *L. incavata* n. sp.*
 镶边透镜虫 *L. limbosa* (Reuss)
 扁吻透镜虫(新种) *L. platyrhinos*, n. sp.*
 亚凸圆透镜虫 *L. subgibba* Parr*
 亚圆透镜虫 *L. suborbicularis* Parr*
 透镜虫(未定种) *Lenticulina* sp.*
 掌虫属 *Palmmla* Lea, 1833
 宽叶掌虫 *P. latifolia* Zheng
 拟鞘虫属 *Vaginulinopsis* Silvestre, 1904
 曲拟鞘虫 *V. sinuata* Zheng
 扁叶虫亚科 *Plectofrondiculariinae* Cushman, 1927
 小箭头虫属 *Bolivinella* Cushman, 1927
 基肋小箭头虫(新种) *B. basicostata*, n. sp.*
 舌虫亚科 *Lingulininae* Loeblich and Tappan, 1961
 舌虫属 *Lingulina* d'Orbigny, 1826
 多形舌虫 *L. polymorpha* Costa*
 舌虫(未定种) *Lingulina* sp.*
 拟舌虫属 *Lingulinopsis* Reuss, 1860
 基肋拟舌虫(新种) *L. basicostatum*, n. sp.*
 多变拟舌虫 *L. carlofortensis* Bornemann*
 叶拟舌虫(新种) *L. folium*, n. sp.*
 多形虫科 *Polymorphinidae* d'Orbigny, 1839
 多形虫亚科 *Polymorphininae* d'Orbigny, 1839
 球虫属 *Globulina* d'Orbigny in de la Sagra, 1839
 三角球虫(新种) *G. trigona*, n. sp.*
 反称虫属 *Sigmomorphina* Cushman and Ozawa, 1928
 基纹反称虫 *S. basistriata* Zheng
 亚圆反称虫(新种) *S. subcircularis*, n. sp.*
 腺虫科 *Glandulinidae* Reuss, 1860
 卵虫亚科 *Oolininae* Loeblich and Tappan, 1961
 卵虫属 *Oolina* d'Orbigny, 1839
 六角卵虫 *O. hexagona* (Williamson)*
 泡虫总科 *Buliminacea* Jones, 1875
 塔虫科 *Turrilinidae* Cushman, 1927
 塔虫亚科 *Turrilininae* Cushman, 1927
 拟泡虫属 *Buliminoides* Cushman, 1911
 美丽拟泡虫 *B. milleti* (Cushman)
 扭拟泡虫 *B. williamsonianus* (Brady)
 箭头虫科 *Bolivinitidae* Cushman, 1927
 箭头虫属 *Bolivina* d'Orbigny, 1839
 多变箭头虫 *B. variabilis* (Williamson)
 点头虫属 *Brizalina* Costa, 1856
 短小点头虫 *B. abbreviata* (Heron-Allen and Earland)

- 亚头点头虫 *B. subcapitata* Zheng
 亚细点头虫 *B. subtennis* (Cushman)
 桑给巴尔点头虫 *B. zanzibarica* (Cushman)
 侧口虫属 *Laterostomella* de Klsasz and Rerat, 1962
 刺侧口虫(新种) *L. spinosa*, n. sp.*
 直箭头虫属 *Rectobolivina* Cushman, 1927
 针直箭头虫(新种) *R. aculeata*, n. sp.*
 光滑直箭头虫(新种) *R. laevis*, n. sp.*
 萝卜直箭头虫 *R. raphanus* (Parker and Jones)
 幼芽直箭头虫 *R. virgula* (Brady)*
 始葡萄虫科 Eouvirgerinidae Cushman, 1927
 隔壁虫属 *Millettia* Schubert, 1911
 网隔壁虫 *M. tessellata* (Brady)
 泡虫科 Buliminidae Jones, 1875
 孔雀虫亚科 Pavonininae Eimer and Fickert, 1899
 小丽虫属 *Chrysalidinella* Schubert, 1908
 三棱小丽虫 *C. earlandi* Cushman
 斐济小丽虫 *C. fijiensis* Cushman*
 斐济虫属 *Fijiella* Loeblich and Tappan, 1962
 筒斐济虫 *F. simplex* (Cushman)
 三棱虫属 *Reussella* Galloway, 1933
 小肋三棱虫(新种) *R. costulata*, n. sp.*
 丽三棱虫 *R. pulchra* Cushman*
 刺三棱虫(新种) *R. spinosa*, n. sp.*
 葡萄虫科 Uvirgerinidae Haeckel, 1894
 管葡萄虫属 *Siphovirgerina* Parr, 1950
 长管葡萄虫 *S. porrecta* (Brady)
 假坛管葡萄虫 *S. pseudoampullacea* (Asano)*
 圆盘虫总科 Discorbacea Ehrenberg, 1838
 圆盘虫科 Discorbidae Ehrenberg, 1838
 圆盘虫亚科 Discorbininae Ehrenberg, 1838
 圆盘虫属 *Discorbis* Lamarck, 1804
 皱圆盘虫 *D. rugosus* (d'Orbigny)
 小上口虫属 *Epistominella* Husezima and Maruhasi, 1944
 丽小上口虫 *E. pulchra* (Cushman)
 管小上口虫 *E. tubulifera* (Heron-Allen and Earland)
 脐塞虫属 *Gavelinopsis* Hofker, 1951
 秀丽脐塞虫 *G. praegeri* (Heron-Allen and Earland)*
 小帽贝虫属 *Patellinella* Cushman, 1928
 荫路小帽贝虫 *P. ambulacrata* (Moebius)
 刺小帽贝虫 *P. spinosa* Zheng
 玫瑰虫属 *Rosalina* d'Orbigny, 1826
 韧硬玫瑰虫 *R. crustata* (Cushman)
 小玫瑰虫 *R. opima* (Cushman)
 太平洋玫瑰虫 *R. pacifica* (Hofker)
 圆顶玫瑰虫 *R. terquemi* (Rzehak)
 瘤头玫瑰虫 *R. tubero-capitata* (Chapman)
 闪烁玫瑰虫 *R. williamsoni* (Chapman and Parr)
 脐管虫属 *Tretomphalus* Moebius, 1880
 扁平脐管虫 *T. planus* Cushman

- 婆口虫亚科 *Bagginiinae* Cushman, 1927
 婆口虫属 *Baggina* Cushman, 1926
 印度婆口虫 *B. indica* (Cushman)*
 粗皱虫属 *Rugidia* Heron-Allen and Earland, 1928
 软木粗皱虫 *R. corticata* (Heron-Allen and Earland)
 平滑虫科 *Glabratellidae* Loeblich and Tappan, 1964
 平滑虫属 *Glabratella* Dorreen, 1948
 镶边平滑虫 *G. limbata* Zheng
 帽贝平滑虫 *G. patelliformis* (Brady)
 吸管虫科 *Siphoninidae* Cushman, 1927
 吸管虫属 *Siphonina* Reuss, 1850
 丽吸管虫 *S. pulchra* Cushman
 拟吸管虫属 *Siphoninoides* Cushman, 1927
 棘拟吸管虫 *S. echinata* (Brady)
 缝裂虫科 *Epistomariidae* Hofker, 1954
 拟缝裂虫属 *Epistomaroides* Uchio, 1952
 多口拟缝裂虫 *E. polystomelloides* (Parker and Jones)
 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
 中刺旋虫(新种) *S. mediospinosa*, n. sp.*
 平凹旋虫 *S. planoconcava* Zheng
 母株旋虫 *S. vivipara* Ehrenberg
 平旋虫属 *Planispirillina* Bermudez, 1952
 齿平旋虫 *P. denticulata* (Brady)
 帽贝虫亚科 *Patellininae* Rhumbler, 1906
 帽贝虫属 *Patellina* Williamson, 1858
 皱帽贝虫 *P. corrugata* Williamson*
 高形帽贝虫 *P. altiformis* Cushman
 假帽贝虫属(新属) *Pseudopatellina*, n. gen.
 扁假帽贝虫(新属新种) *P. compressa*, n. gen., n. 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
 嗜温转轮虫 *A. tepida* (Cushman)
 坚实虫亚科 *Pegidiinae* Heron-Allen and Earland, 1928
 坚实虫属 *Pegidia* Heron-Allen and Earland, 1928
 疑坚实虫 *P. dubia* (d'Orbigny)
 瘤球虫属 *Sphaeridia* Heron-Allen and Earland, 1928
 乳突瘤球虫 *S. papillata* Heron-Allen and Earland
 距轮虫科 *Calcarinidae* Schwager, 1876
 距轮虫属 *Calcarina* d'Orbigny, 1826
 葶刺距轮虫 *C. hispida* Brady
 浆果拟白垩虫属 *Baculogypsinoides* Yabe and Hanzawa, 1930
 刺浆果拟白垩虫 *B. spinosus* Yabe and Hanzawa*
 企虫科 *Elphidiidae* Galloway, 1933
 企虫亚科 *Elphidiinae* Galloway, 1933
 企虫属 *Elphidium* de Montfort, 1808

- 卷曲企虫 *E. crispum* (Linnaeus)
 太平洋企虫 *E. pacificum* Collins
 小企虫(新种) *E. parvum*, n. sp.*
 花篮虫属 *Cellanthus* de Montfort, 1808
 柳条花篮虫 *C. craticulatum* (Fichtel and Moll)
 货币虫科 Nummulitidae de Blainville, 1825
 货币虫亚科 Nummulitinae de Blainville, 1825
 货币虫属 *Nummulites* Lamarck, 1801
 拟日货币虫 *N. ammonoides* (Gronovius)
 圆盾虫亚科 Cyclocypeinae Butschli, 1880
 圆盾虫属 *Cyclocypeus* W. B. Carpenter, 1856
 凸心圆盾虫 *C. carpenteri* Brady
 异盖虫属 *Heterostegina* d'Orbigny, 1826
 扁异盖虫 *H. depressa* d'Orbigny
 亚圆异盖虫 *H. longisepta* Zheng
 长隔板异盖虫 *H. suborbicularis* d'Orbigny
 圆形虫总科 Orbitoidacea Schwager, 1876
 穹背虫科 Eponididae Hofker, 1951
 孔穹背虫属 *Poroeponides* Cushman, 1944
 筛状孔穹背虫 *P. cribroropandus* Asano and Uchio
 双盖虫科 Amphisteginidae Cushman, 1927
 双盖虫属 *Amphistegina* d'Orbigny, 1826
 马达加斯加双盖虫 *A. madagascariensis* d'Orbigny
 辐射双盖虫 *A. radiata* (Fichtel and Moll)
 乳突双盖虫 *A. radiata* var. *papillosa* Said*
 脉双盖虫 *A. venosa* (Fichtel and Moll)
 面包虫科 Cibicididae Cushman, 1927
 平坦虫亚科 Planulininae Bermudez, 1952
 微面包虫属 *Cibicidina* Bandy, 1949
 小微面包虫(新种) *C. minuta*, n. sp.*
 面包虫亚科 Cibicidinae Cushman, 1927
 面包虫属 *Cibicides* de Montfort, 1808
 裂瓣面包虫 *C. lobatulus* (Cushman)
 鳞片面包虫 *C. mayori* (Cushman)
 围带面包虫 *C. praecinctus* (Karrer)
 双凸面包虫 *C. subhaidingeri* Parr
 扁圆虫科 Planorbulinidae Schwager, 1877
 小扁圆虫属 *Planorbulinella* Cushman, 1927
 面具小扁圆虫 *P. larvata* (Parker and Jones)
 堆室虫科 Acervulinidae Schultze, 1854
 堆室虫属 *Acervulina* Schultze, 1854
 粘附堆室虫 *A. inhaerens* Schultze
 白垩虫属 *Gypsina* Carter, 1877
 球白垩虫 *G. globula* (Reuss)
 扁白垩虫属 *Planogypsina* Bermudez, 1952
 鳞形扁白垩虫 *P. squamiformis* (Chapman)
 铄铍虫科 Cymbaloporidae Cushman, 1927
 平铍虫属 *Cymbaloporella* Cushman, 1927
 台平铍虫 *C. tabellaeformis* (Brady)
 小铄铍虫属 *Cymbaloporetta* Cushman, 1928

- 鳞甲小铈铈虫 *C. squamosa* (d'Orbigny)
- 梨冠虫属 *Pyropilus* Cushman, 1934
- 圆梨冠虫 *P. rotundatus* Cushman
- 匀孔虫科 Homotrematidae Cushman, 1927
- 小浆果虫属 *Miniacina* Galloway, 1933
- 小浆果虫 *M. miniacea* (Pallas)
- 盔形虫总科 Cassidulinacea d'Orbigny, 1839
- 高加索虫科 Caucasinidae N. K. Bykova, 1959
- 扭基虫亚科 Fursenkoininae Loeblich and Tappan, 1957
- 扭芽虫属 *Sigmavirgulina* Loeblich and Tappan, 1957
- 绞扭芽虫 *S. tortuosa* (Brady)
- 斜口虫科 Loxostomidae Loeblich and Tappan, 1962
- 斜口虫属 *Loxostomum* Ehrenberg, 1854
- 细肋镶边斜口虫 *L. limbatum costulatum* (Cushman)
- 盔形虫科 Cassidulinidae d'Orbigny, 1837
- 盔形虫属 *Cassidulina* d'Orbigny, 1826
- 口纹盔形虫 *C. striatostoma* Zheng
- 球盔虫属 *Globocassidulina* Voloshinova, 1960
- 冷球盔虫 *G. algida* (Cushman)
- 九字虫科 Nonionidae Schultze, 1854
- 九字虫亚科 Nonioninae Schultze, 1854
- 九字虫属 *Nonion* de Montfort, 1808
- 日本九字虫 *N. japonicum* Asano*
- 假九字虫属 *Pseudononion* Asano, 1936
- 粒脐假九字虫 *P. granulumbilicatum* Zheng
- 异常虫科 Anomalinidae Cushman, 1927
- 异常虫亚科 Anomalininae Cushman, 1927
- 异常虫属 *Anomalina* d'Orbigny, 1826
- 颈异常虫 *A. colligera* Chapman and Parr
- 半洋虫属 *Hanzawaia* Asano, 1944
- 丽半洋虫 *H. boueana* (d'Orbigny)*
- 密饼虫属 *Melonis* de Montfort, 1808
- 小密饼虫 *M. minuta* Zheng
- 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
- 针壳锤针虫 *C. spiculotesta* (Carter)
- 弓虫总科 Robertinacea Reuss, 1850
- 角小泡虫科 Ceratobuliminidae Cushman, 1927
- 角小泡虫亚科 Ceratobulimininae Cushman, 1927
- 驼背虫属 *Lamarckina* Berthelin, 1881
- 粗糙驼背虫 *L. scabra* (Brady)
- 上口虫亚科 Epistomininae Wedekind, 1937
- 密西西比虫属 *Mississippina* Howe, 1930
- 同心密西西比虫 *M. concentrica* (Parker and Jones)
- 弓虫科 Robertinidae Reuss, 1850
- 重旋虫属 *Geminospira* Makiyama and Nakagawa, 1941
- 超美重旋虫 *G. bradyi* Bermudez

浮 游 有 孔 虫

- 抱球虫总科 Globigerinacea Carpenter, Parker and Jones, 1862
- 管棘虫科 Hantkeninidae Cushman, 1927
- 矛棘虫亚科 Hastigerininae Bolli, Loeblich and Tappan, 1957
- 矛棘虫属 *Hastigerina* Thomson in Murray, 1876
- 管矛棘虫 *H. siphonifera* (d'Orbigny)
- 圆辐虫科 Globorotaliidae Cushman, 1927
- 圆辐虫亚科 Globorotaliinae Cushman, 1927
- 圆辐虫属 *Globorotalia* Cushman, 1927
- 镶边圆辐虫 *G. menardii* (d'Orbigny)
- 抱球虫科 Globigerinidae Carpenter, Parker and Jones, 1862
- 抱球虫亚科 Globigerininae Carpenter, Parker and Jones, 1862
- 抱球虫属 *Globigerina* d'Orbigny, 1826
- 多室抱球虫 *G. eggeri* Rhumbler
- 拟抱球虫属 *Globigerinoides* Cushman, 1927
- 共球拟抱球虫 *G. conglobata* (Brady)
- 红拟抱球虫 *G. rubra* (d'Orbigny)
- 袋拟抱球虫 *G. sacculifera* (Brady)
- 中华拟抱球虫 *G. sinensis* Cheng and Cheng*
- 三叶拟抱球虫 *G. triloba* (Reuss)
- 三室拟抱球虫 *G. trilocularis* (d'Orbigny)*
- 小矛棘虫属 *Hastigerinella* Cushman, 1927
- 指状小矛棘虫 *H. digitata* Rhumbler
- 扭球虫属 *Pulleniatina* Cushman, 1927
- 斜室扭球虫 *P. obliqueloculata* (Parker and Jones)
- 小球虫亚科 Sphaeroidinellinae Banner and Blow, 1957
- 小球虫属 *Sphaeroidinella* Cushman, 1927
- 果裂小球虫 *S. dehiscens* (Parker and Jones)*
- 圆球虫亚科 Orbulininae Schultze, 1854
- 圆球虫属 *Orbulina* d'Orbigny, 1839
- 普通圆球虫 *O. universa* d'Orbigny
- 下泡虫亚科 Catapsydracinae Bolli, Loeblich and Tappan, 1957
- 展泡虫属 *Tinophodella* Loeblich and Tappan, 1957
- 眉口展泡虫 *T. ambitacrena* Loeblich and Tappan*

种 类 记 述

底栖有孔虫

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

编织虫科 Textulariidae Ehrenberg, 1838

旋编虫亚科 Spiroplectamminae Cushman, 1927

旋编虫属 *Spiroplectammina* Cushman, 1927

壳早期几个房室平旋, 随后房室双列。壳壁胶结型。壳口位于房室基部。(石炭纪至现代)

佛罗里达旋编虫 *Spiroplectammina floridana* (Cushman) (图版 I:1,2)

Textularia floridana Cushman, 1922, p. 24, pl. 1, fig. 7.

Spiroplectammina floridana (Cushman). Parker, 1954, p. 490, pl. 2, fig. 9; Boltovskoy, 1959, p. 40, pl. 1, fig. 8.

壳较扁, 始端窄圆, 向口端迅速增宽, 中线部位最厚, 向壳缘削薄; 壳缘锐, 具自房室横伸出的单行迅速削尖的管状刺。房室多, 低而宽。缝合线略呈镶边状, 后成部分的稍凹、近于横直。壳壁薄, 主要由细砂粒组成, 壳面较平整。壳口裂缝状, 位于终室口面基部, 宽度约为口面基部宽度的 $1/3$ 。

测量 (毫米) IOAS-F1007 壳长 0.60 壳宽 0.48 壳厚 0.29

本种与 *Spiroplectammina fistulosa* (Brady) 不同在于, 个体较小, 壳缘刺始终为单行 (后者可自单行至多行)、横伸 (后者向始端斜伸)。

分布 美国 (佛罗里达州 Dry Tortugas 群岛)、墨西哥、巴西。

椴编虫属 *Morulaepecta* Höglund, 1947

壳初成部分扭旋, 完全包围初室, 随后房室双列。壳壁胶结型, 初室可系假几丁质。壳口拱形, 位于终室口面基部。(现代)

胖椴编虫 (新种) *Morulaepecta inflata*, n. sp. (图版 I:7)

壳较长, 始端较细, 向口端迅速增宽和增厚, 扭旋部分甚小。双列部分房室 9 对左右, 早期几对甚小、不甚分明; 随后房室迅速增宽和增厚, 较分明, 低而宽, 最后一、二个尤膨大。初成部分缝合线不甚清楚, 后成部分的较为清楚、凹下、近横直。壳壁由较粗砂粒组成, 壳面甚粗糙。终室口面圆凸; 壳口小, 缝状, 宽度约为口面基部宽度的 $1/5$ 。

测量 (毫米) 正模标本 IOAS-F1008 壳长 0.55 壳宽 0.33 壳厚 0.28

新种初室壳壁不是假几丁质的。它与 *Morulaepecta bulbosa* Höglund, 1947 主要区

别在于,早期房室甚小,随后房室迅速增大、低而宽。

编织虫亚科 *Textulariinae* Ehrenberg, 1838

编织虫属 *Textularia* Defrance, 1824

多管编织虫 (新种) *Textularia tubulosa*, n. sp. (图版 I:3, 4)

壳侧面观呈长三角形,向口端逐渐增宽,中线部位最厚,近壳缘处迅速削薄。壳缘具自房室横伸出的粗短管突。房室分明,甚低而宽,10对左右,逐渐增大。缝合线清楚,稍向上弯,后成部分的稍凹下。壳壁厚,由细砂粒组成,壳面较平整。终室口面鼓凸,壳口拱缝状,位于终室口面基部,宽度约为终室口面宽度的1/3。

测量(毫米) 正模标本 IOAS-F1009 壳长0.70 壳宽0.60 壳厚0.38

本种与记载于古巴始新统的 *Textularia mariclensis* Lalicker and Bermudez, 1938 有些相似,但后者壳缘具刺而不是管突,房室较高,前房室上缘稍叠覆其后一房室下缘,壳口较宽。

假箭头虫亚科 *Pseudobolivinae* Wiesner, 1931

假箭头虫属 *Pseudobolivina* Wiesner, 1931

假箭头虫 (未定种) *Pseudobolivina* sp. (图版 I:5)

壳长,向口端迅速增宽;壳缘宽圆,后成部分呈瓣状。房室多,早期的小、低而宽,后期的迅速增高、膨鼓。缝合线弯斜,初成部分的不甚清楚,后成部分的较清楚、凹下。壳壁由细砂粒组成,壳面较平整。壳口缝状,具突唇。

测量(毫米) IOAS-F1010 壳长0.48 壳宽0.28 壳厚0.18

仅获一口端已破损的标本,它与 Lalicker and McCulloch (1940) 图示的 *Textularia saulcyana* d'Orbigny, 1839 有些相似,但壳体较厚,房室较膨鼓。

砂轮虫科 *Trochamminidae* Schwager, 1877

砂轮虫亚科 *Trochammininae* Schwager, 1877

砂轮虫属 *Trochammina* Parker and Jones, 1859

砂轮虫 (未定种) *Trochammina* sp. (图版 I:6)

壳甚小,近圆形,呈鳞片状,壳缘周围具形状不甚规则的宽片状物。房室3圈多,终圈8室,依次渐增大。缝合线清楚,背面初成部分的稍弯至近辐射,后成部分的弯曲;腹面的呈“S”形弯曲。壳壁由假几丁质膜胶结少量粉砂,壳面平滑。壳口不明显。

测量(毫米) IOAS-F1011 壳径(不包括片状物)0.23

本种与 *Trochammina carinata* Cushman and McCulloch, 1939 不同在于,壳体甚扁薄,房室多,不膨鼓。此外,本种壳缘周围的片状物甚薄,用水润湿后,质地柔软。

畸间壁虫科 Ataxophragmiidae Schwager, 1877

回春虫亚科 Verneuulininae Cushman, 1911

锥头虫属 *Gaudryina* d'Orbigny, 1838

锥头虫 (未定种) *Gaudryina* (*Siphogaudryina*) sp. (图版 I: 8)

壳呈楔形。三列部分约占全壳长 1/4, 侧面平坦, 壳缘锐; 双列部分略呈梯形, 两侧面平至稍凸, 不等宽。壳缘截形, 中央稍凹, 缘角具较锐龙骨。房室不甚分明, 低而宽。缝合线不甚清楚。壳壁由较粗和较细砂粒胶结而成, 壳面稍粗糙。口面稍鼓, 壳呈低拱缝状, 宽度约为终室口面基部宽度的 1/3。

测量 (毫米) IOAS-F1012 壳长 0.45 壳宽 0.30 壳厚 0.18

本种与 *Gaudryina* (*Siphogaudryina*) *wrightiana* Millett, 1900 有些相似, 但后者的两侧面为一平一凹, 缝合线清楚, 壳面平滑。

粟虫亚目 Miliolina Delage and Herouard, 1896

粟虫总科 Miliolacea Ehrenberg, 1839

云朵虫科 Nubeculariidae Jones, 1875

小节棒虫亚科 Nodobaculariinae Cushman, 1927

节眼虫属 *Nodophthalmidium* Macfayden, 1939

中沙节眼虫 (新种) *Nodophthalmidium zhongshaensis*, n. sp. (图版 I: 9, 10)

壳细长, 直或弯, 稍扁。初室由 1—2 个将近一圈长的房室所环绕; 随后房室直列, 稍压扁, 长度依次逐渐增大, 约为宽度的 2—3 倍。缝合线清楚, 缢缩。壳壁薄, 平旋部分壳面光滑, 直列房室全长具连续锐隆脊。口端缢缩, 壳口椭圆形, 口缘厚而外翻。

测量 (毫米)		壳长	壳宽	壳厚
正模标本	IOAS-F1013	0.63	0.08	0.06
副模标本	IOAS-F1014	0.93	0.10	0.09

新种与 *Nodophthalmidium antillarum* (Cushman) 不同在于, 壳体较小 (后者壳长可达 2.50 毫米), 房室稍压扁而不是圆筒形, 壳口椭圆形而不是圆形, 壳面隆脊锐而不是钝圆。

粟虫科 Miliolidae Ehrenberg, 1839

五块虫亚科 Quinqueloculininae Cushman, 1917

五块虫属 *Quinqueloculina* d'Orbigny, 1826

清亮五块虫 *Quinqueloculina candeiana* d'Orbigny (图版 I: 13)

Quinqueloculina candeiana d'Orbigny, 1839, p. 170, pl. 12, figs. 24—26; Cushman, 1922, p. 65, pl. 13, fig. 1; 1929, p. 27, pl. 3, figs. 1a—c; Cushman and Parker, 1931, p. 4, pl. 1, figs. 10a—c;

Boltovskoy, 1959, p. 46, pl. 3, fig. 3.

壳小, 纺锤形, 基部窄圆; 壳缘锐, 呈隆脊状。房室分明, 四室面甚凸, 三室面稍凸, 中间房室露现甚小。缝合线清楚, 不凹下。壳面光滑, 室面中部呈半透明, 壳缘部分不透明, 白色。口端具短颈; 壳口圆, 具简单齿。

测量 (毫米) IOAS-F1015 壳长 0.45 壳宽 0.23 壳厚 0.15

本种与 *Quinqueloculina venusta* Karrer, 1868 有些相似, 但后者壳体大 (Karrer 的标本, 壳长可达 1.5 毫米)、椭圆形。

分布 古巴、波多黎各岛、牙买加、巴西。

折半五块虫 (相似种) *Quinqueloculina* cf. *Q. dimidiata* Terquem (图版 I: 11)

Quinqueloculina dimidiata Terquem, 1877, p. 172, pl. 11, fig. 5a—c.

壳呈宽椭圆形, 口面观略呈平凸, 壳缘钝圆, 口端平截。房室分明, 稍膨鼓, 弯斜。缝合线清楚, 微凹。壳面光滑。壳口宽卵形, 具分叉短齿。

测量 (毫米) IOAS-F1016 壳长 0.53 壳宽 0.35 壳厚 0.23

中沙的标本口端平截, 壳口具分叉齿, 与典型种较为相似, 但壳体远较典型种为小, 少室面微露中间房室而不是只见 2 个房室。

分布 法国。

虾夷五块虫 *Quinqueloculina yezoensis* Asano (图版 I: 12)

Quinqueloculina yezoensis Asano, 1936, p. 620, pl. 32, fig. 3a—c.

壳长约为壳宽 $1\frac{1}{2}$ 倍, 壳缘圆或稍具缘角, 口端斜。房室分明, 背缘面鼓凸, 具明显纵隆脊, 侧面平或稍凹, 隐约可见微细条纹。壳口卵形, 具简单长齿。

测量 (毫米) IOAS-F1017 壳长 0.56 壳宽 0.43 壳厚 0.28

中沙的标本与典型种很相似, 惟壳体较小 (后者长约 1 毫米)。

分布 日本新第三系。

块心虫属 *Massilina* Schlumberger, 1893

八丈岛块心虫 (?) *Massilina*(?) *hachijensis* (Uchio) (图版 II: 1, 2)

Pyrgo hachijensis Uchio, 1952, p. 151, pl. 6, fig. 1.

壳略呈纺锤形, 厚, 一侧面稍凹至平, 另一侧面平至稍凸。壳缘截形, 缘角锐突, 基端突, 口端斜截, 具粗短颈。房室分明, 一般外露 2 室 (有时外露 3 室), 早期房室呈五块虫式排列, 最后几个房室趋于平旋, 房室两侧面内缘展伸包掩前部房室, 致使外观仅露最后 2 个房室 (或最后 3 个房室)。缝合线清楚, 稍凹下。壳面光滑。壳口宽椭圆形至近圆形, 口缘稍外翻; 口齿突出, 呈羊角状, 具对向小齿。

测量 (毫米)	壳长	壳宽	壳厚
IOAS-F 1018	0.98	0.55	0.38
IOAS-F 1019	0.88	0.55	0.25

中沙的标本与 Uchio (1952) 记载于日本八丈岛的 *Pyrgo hachijensis* 完全一致。它一般外露 2 个房室,个别标本外露 3 个房室(图版 II:1); 本种的壳口特征很稳定:壳口宽椭圆形至近圆形,口缘稍外翻,口齿呈羊角形。

Uchio 将本种置于 *Pyrgo* 属。我们认为 *Pyrgo* 属下的种都是背腹压扁,而本种壳体两侧压扁、早期房室呈五块虫式排列、后成房室倾向于平旋、口齿对向尚有一小齿,这些特征比较接近于 *Massilina* 属;不过,它与 *Massilina* 属不同在于最后两个房室一般包掩其前成房室。为此,我们暂以存疑将其置于 *Massilina* 属。

分布 日本(八丈岛)。

假块心虫属 *Pseudomassilina* Lacroix, 1938

假块心虫 (未定种) *Pseudomassilina* sp. (图版 I: 14)

壳甚扁,壳缘锐薄。房室分明,早期五块虫式部分甚小,两侧面稍微突出,随后的平旋部分房室较多。缝合线清楚,稍凹下。壳壁薄,壳面不光滑,最后几室壳面具几乎横向排列、形状不甚规则的疣状凸粒,终室的凸粒较为明显。壳口细长,口缘厚而稍外翻。

测量(毫米) IOAS-F 1020 壳径 0.85 壳厚 0.08

本种与 *Pseudomassilina australis* (Cushman) 不同在于,壳壁似呈砂质状,壳面具疣状凸粒。

双块虫属 *Pyrgo* Defrance, 1824

刺背双块虫(新种) *Pyrgo spinidorsa*, n. sp. (图版 II: 6)

壳甚膨鼓,前面观略呈长方形。房室分明,下半部最为膨鼓,向口端迅速削扁。缝合线清楚。壳壁厚,壳面具许多纵向、有时分叉的显著隆脊,在房室下半部呈现为棘刺状。壳口宽大,宽度稍小于壳宽,两侧缘外翻尤为显著;口齿宽,呈羊角形或宽“T”形。

测量(毫米) 正模标本 IOAS-F 1021 壳长 0.75 壳宽 0.60 壳厚 0.65

本种与 *Pyrgo striolata* (Brady) 不同在于,隆脊甚发达,伸延全壳面,在终室下半部呈现棘刺状。

三块虫属 *Triloculina* d'Orbigny, 1826

林奈三块虫 *Triloculina linneiana* d'Orbigny (图版 II: 3)

Triloculina linneiana d'Orbigny, 1839, p. 172, pl. 9, figs. 11—13; Cushman, 1917, p. 72, pl. 27, figs. 4a—b; 1921, p. 70, pl. 17, figs. 3—4; 1929, p. 61, pl. 16, figs. 1—2; Graham and Militante, 1959, p. 55, pl. 8, figs. 7a—c; Brooks, 1973, p. 408, pl. 7, figs. 3—4.

壳长卵形,稍扁,最大宽度在壳体中部,向两端迅速收窄,基端窄圆,口端斜截,壳缘圆。房室分明,较膨鼓。缝合线清楚,凹下。壳面具少数顺壳缘弯曲的明显隆脊。壳口卵形,口缘厚,具稍突出于口缘的分叉长齿。

测量(毫米) IOAS-F1022 壳长 0.58 壳宽 0.35 壳厚 0.28

分布 古巴、牙买加、夏威夷群岛、中途岛、菲律宾。

小粟虫亚科 Miliolinellinae Vella, 1957

小粟虫属 *Miliolinella* Wiesner, 1931假椭圆小粟虫 (新种) *Miliolinella pseudoobloma*, n. sp. (图版 II: 5)

Miliolinella oblonga Asano, 1951 (not Montagu), p. 10, figs. 68, 69; Matoba, 1970, p. 56, pl. 3, fig. 6a—b; Lankford and Phleger, 1973, p. 123, pl. 2, fig. 9.

壳长卵形,壳缘圆。房室膨鼓,弯,近基部最宽。缝合线清楚,稍凹。壳面光滑。壳口具新月形或半月形口齿。

测量(毫米) 正模标本 IOAS-F1023 壳长 0.33 壳宽 0.23 壳厚 0.18

本种被一些作者定为 *Triloculina oblonga* (Montagu) 或 *Miliolinella oblonga* (Montagu)。据 Montagu (1803) 记载, *Vermiculum* (= *Miliolinella*) *oblongum* 口端突出,壳口卵形(未曾提及口齿的情况)。本种与 *M. oblonga* 的特征差异很大。

本种与 *M. chukchiensis* Loeblich and Tappan, 1953 较为相似,但后者壳体较大,呈宽卵形。

粟虫亚科 Miliolinae Ehrenberg, 1839

粟虫属 *Miliola* Lamarck, 1804膨鼓粟虫 (新种) *Miliola inflata*, n. sp. (图版 II: 4)

壳近圆形,横切面呈圆三角形,四室面尤为鼓凸。房室甚膨鼓,横切面略呈半月形,两侧缘显著展伸,部分叠覆其邻近房室。缝合线清楚,稍凹。壳面具微细条纹。壳口筛状,无颈部。

测量(毫米) 正模标本 IOAS-F 1024 壳长 0.48 壳宽 0.38 壳厚 0.35

新种与 *Miliola sublineata* (Brady) 不同在于,壳体甚膨鼓。

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

节房虫属 *Nodosaria* Lamarck, 1812

壳多室直列,横切面圆形。缝合线一般略与壳轴相交成直角。壳面光滑或具纹饰。壳口辐射状,位于房室末端。(二迭纪至现代)

节房虫 (未定种) *Nodosaria* sp. (图版 II: 7)

壳长,横切面圆形,基端圆。房室分明,低而宽,不膨鼓,依次逐渐增大。缝合线呈窄

镶边状,透明,不缢缩。壳壁厚,房室中部半透明。壳口辐射状。

测量(毫米) IOAS-F1025 壳长 1.53 壳径 0.33

仅获一标本,最后两房室的直径较前几个房室为小,可能是个畸形个体。

虾虫属 *Astacolus* de Montfort, 1808

假平虾虫(新种) *Astacolus pseudoplanulata*, n. sp. (图版 II: 8)

Astacolus planulata Cushman, Todd and Post, 1954 (not Galloway and Wissler, 1927), p. 343, pl. 86, fig. 7.

壳扁长,稍弯,早期房室旋卷、壳缘较锐,随后房室直列,壳缘窄圆。房室分明,稍重叠,12个;旋卷部分的依次迅速增宽,不膨鼓;直列部分的依次逐渐增宽和增高,稍膨鼓。缝合线清楚,稍弯,初成部分的与壳面齐平,后成部分的稍凹。壳壁半透明,壳面光滑。壳口稍突,呈辐射状。

测量(毫米) 正模标本 IOAS-F 1026 壳长 1.68 壳宽 0.73 壳厚 0.38

新种的形状与 *Astacolus pediacus* Tappan, 1955 有些相似,但后者房室较长,缝合线斜度较大。

Cushman, Todd and Post (1954) 记载于马绍尔群岛的 *A. planulata* 与 Galloway and Wissler (1927) 记载于美国加利福尼亚更新统的 *A. planulata* 的特征差异很大,不应为同一个种。后者壳体小而扁薄,房室较少(8个),后成房室下端仍未脱离壳体初成部分。

透镜虫属 *Lenticulina* Lamarck, 1804

凹面透镜虫(新种) *Lenticulina incavata*, n. sp. (图版 III: 1)

壳大而厚,近圆形,完全包旋,两面中部甚鼓凸,向壳缘迅速削薄;壳缘具粗圆脊状龙骨;脐栓约为壳径的 1/3 多。房室不甚分明,不甚膨鼓,终圈10室。缝合线不甚清楚,呈窄镶边状,直或稍弯,与脐栓相切;初成部分的稍凸,后成部分的不凸。壳壁厚,壳面光滑。终室口面甚低,呈箭簇状,显著内凹,两侧缘呈脊状。壳口微突,辐射状,具短腹缝。

测量(毫米) 正模标本 IOAS-F 1027 壳径 2.03 壳厚 1.25.

新种与美国加利福尼亚始新统的 *Robulus supralodoensis* Israelsky, 1955 有些相似,但后者壳体较小(最大壳长为 1.40 毫米),壳口不是辐射状而是具口唇的椭圆形开口。新种与 *Cristellaria duracina* Stache, 1865 亦较相似,但后者壳体小(最大壳径为 1.05 毫米),终圈房室较少。

扁吻透镜虫(新种) *Lenticulina platyrhinos*, n. sp. (图版 III: 2; 图 1)

壳扁,亚圆形,脐区透明,透显初室及前圈房室脐端;壳缘稍钝,具窄龙骨。房室分明,依次渐增大,终圈 7 室。缝合线清楚,稍弯至近辐射,呈窄镶边状;初成部分的与壳面齐平,微凹。壳壁半透明,透显前些房室的壳口,壳面光滑。壳口面无侧缘脊。房室壳缘角具一近圆形壳口,外面由一侧扁、透明壳质吻突所罩盖;吻突的顶部具两条短辐射沟,下部为一甚长而发达的腹缝,辐射沟与腹缝之间具一小圆孔,通向吻突内部。

测量(毫米) 正模标本 IOAS-F 1028 壳径 1.20 壳厚 0.45

新种的壳口特征与同属其他种明显不同,除内部具一圆形壳口外,外部尚有一个具略呈辐射状壳口的侧扁吻突。

新种与 Cushman (1933) 记载于热带太平洋的 *Robulus larvus* (Stache) 较为相似,但后者壳体露旋,缝合线呈宽镶边状。

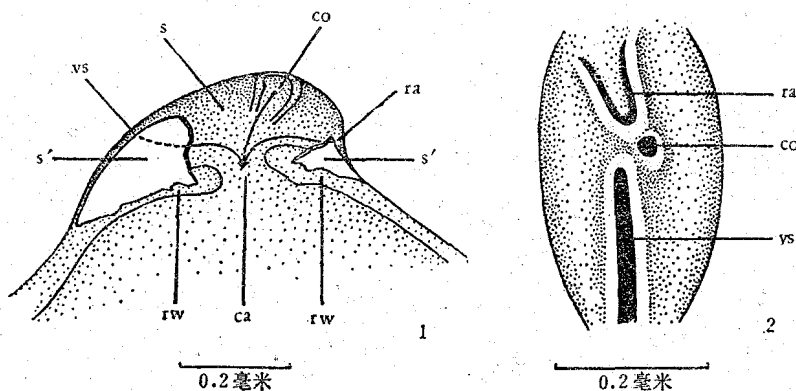


图1 扁吻透镜虫(新种) *Lenticulina platyrhinos*, n. sp.

1. 剖开终室口端, 示壳口与吻突的关系, 侧视。2. 吻突顶视。

ca——终室壳口; rw——终室顶壁; s——吻突的完整一侧; s'——吻突另一侧被剖开后所留下的部分;
vs——吻突腹缝; ra——吻突辐射沟; co——吻突孔

亚凸圆透镜虫 *Lenticulina subgibba* Parr (图版 II: 9)

Lenticulina subgibba Parr, 1950, p. 321, pl. 11, figs. 1—2.

壳扁, 宽卵形, 不完全包旋; 壳缘稍锐, 具窄钝龙骨。房室分明, 终圈 7 室左右, 依次迅速增宽, 终室稍膨鼓, 基部稍展伸并稍遮掩终圈的前几个房室。缝合线清楚, 较弯; 初成部分的略呈镶边状, 后成部分的不呈镶边状、稍凹。壳壁半透明, 壳面光滑。终室口面稍凸, 无侧缘脊, 壳口稍突, 辐射状, 腹缝短。

测量(毫米) IOAS-F 1029 壳长 1.28 壳宽 0.88 壳厚 0.45

本种的形状与 *Lenticulina gibba* (d'Orbigny) 有些相似, 但后者壳体较长, 口面内凹, 两侧缘较凸, 具侧缘脊。

分布 澳大利亚(塔斯马尼亚岛)。

亚圆透镜虫 *Lenticulina suborbicularis* Parr (图版 II: 10, 11)

Lenticulina (Robulus) suborbicularis Parr, 1950, p. 321, pl. 11, figs. 5—6.

壳近圆形, 中央部分甚厚, 向壳缘迅速削薄, 脐部透显初室及前圈房室脐端, 壳缘具稍锐龙骨。房室长, 向壳缘逐渐增宽, 终圈 8 室。缝合线显著向后弯曲, 呈透明镶边状, 一般与壳面齐平, 后成部分的有时微凸。壳面光滑, 室壁不透明, 脐区及缝合线较透明。口面低而内凹, 具侧缘脊, 壳口辐射状, 腹缝较短。

测量 (毫米)	壳径	壳厚
IOAS-F 1030	0.90	0.58
IOAS-F 1031	1.15	0.58

中沙的标本与典型种十分相似, 惟壳体较厚, 壳口的腹缝较短。本种与 *Lenticulina orbicularis* (d'Orbigny), 1826 主要区别在于, 后者房室甚低而宽, 向后弯曲的程度较大, 同一房室近脐端与近壳缘端的宽度变化不明显。

分布 澳大利亚(塔斯马尼亚岛)。

透镜虫 (未定种) *Lenticulina* sp. (图版 III:3)

壳大, 近圆形, 不完全包旋, 脐部有时隐约透显初室, 壳缘具钝龙骨。房室不膨鼓, 终圈 9 室, 依次渐增大。缝合线清楚, 窄镶边状, 微凸, 弯斜。壳壁厚, 壳面光滑。壳口辐射状, 腹缝长。

测量 (毫米) IOAS-F1032 壳径 1.90 壳厚 0.95

扁叶虫亚科 Plectofrondiculariinae Cushman, 1927

小箭头虫属 *Bolivinella* Cushman, 1927

基肋小箭头虫 (新种) *Bolivinella basicostata*, n. sp. (图版 III:4)

壳小, 壳长大于壳宽, 向口端逐渐增宽, 壳体中线部位最厚, 向壳缘缓慢削薄, 壳缘窄圆, 有时有几个短钝刺, 始端有短刺。房室分明, 低而宽, 逐渐增大。缝合线宽镶边状, 稍弯, 与壳面齐平或稍凸。壳壁不透明, 壁孔细密, 壳面较粗糙, 初室具三条纵龙骨。口面鼓凸, 具微细颗粒物。

测量 (毫米) 正模标本 IOAS-F 1033 壳长 0.18 壳宽 0.13 壳厚 0.08

新种与 *Bolivinella elegans* Parr, 1932 不同在于, 壳体较厚, 逐渐增宽而不是迅速增宽, 壳缘不锐, 初室具 2—3 条纵肋。

新种与 Cushman (1942) 记载于斐济群岛的 *B. folia* (Parker and Jones) var. *ornata* Cushman (Pl. 2, fig. 8) 有些相似, 但后者初室无隆肋。

舌虫亚科 Lingulininae Loeblich and Tappan, 1961

舌虫属 *Lingulina* d'Orbigny, 1826

多形舌虫 *Lingulina polymorpha* Costa (图版 III:6)

Lingulina polymorpha Costa, 1861, p. 46, pl. 8, figs. 3—6, 8.

壳大, 扁长, 横切面略呈透镜形, 壳体中线部位最厚, 向壳缘逐渐削薄, 壳缘亚锐, 具窄龙骨。房室分明, 10 个左右, 低而宽, 依次迅速增宽, 后一房室叠覆其前一房室约 1/2 左右。缝合线清楚, 近壳缘处稍向下弯, 初成部分的不凹下, 后成部分的凹下。壳壁厚, 壳面光滑。口端圆突, 壳口裂缝状, 长度约为壳宽一半多, 口缘甚窄。

测量(毫米) IOAS-F 1034 壳长 3.52 壳宽 2.38 壳厚 0.95

本种与 *Lingulina grandis* Cushman, 1917 不同在于, 壳体自始端向口端缓慢而不是迅速增宽, 个体较小(后者壳长可达 6 毫米)。

分布 地中海、非洲北岸。

舌虫(未定种) *Lingulina* sp. (图版 III: 5)

壳长而扁, 横切面透镜形; 壳缘稍钝, 无龙骨。房室分明, 后一房室约叠覆其前一房室一半左右, 早期几个房室甚低而宽, 迅速增宽, 随后房室逐渐增高, 两侧缘近平行。缝合线清楚, 稍弯, 初成部分的不凹下, 后成部分的稍凹下。壳壁稍透明, 壳面光滑。口端圆凸, 口区透明, 壳口缝状。

测量(毫米) IOAS-F 1035 壳长 1.50 壳宽 1.05 壳厚 0.50

本种的形状与 *Lingulina grandis* Cushman, 1917 较为相似, 但壳缘无龙骨, 壳体厚度自中线部位向壳缘缓慢削薄, 个体较小(后者壳长可达 6 毫米)。

拟舌虫属 *Lingulinopsis* Reuss, 1860

早期房室平旋, 随后房室直列, 横切面椭圆形至卵圆形。壳口位于房室末端, 缝状, 与口面长轴相平行。(现代)

基肋拟舌虫(新种) *Lingulinopsis basicostatum*, n. sp. (图版 III: 7)

壳长而稍扁, 略呈圆长方形, 横切面呈厚透镜形, 全壳长厚度约相等, 壳缘窄圆。房室分明, 早期 4 个房室旋卷, 随后几个房室低而宽, 后一房室约叠覆其前一房室一半左右。缝合线清楚, 初成部分的稍弯, 不凹下; 后成部分的近横直, 近壳缘处稍下弯, 稍凹。壳壁厚, 稍透明, 壳面光滑, 基部具几条与壳缘平行的明显隆脊。口区透明; 壳口缝状, 长度约为口面宽度的一半。

测量(毫米) 正模标本 IOAS-F 1036 壳长 2.13 壳宽 1.28 壳厚 0.78

新种壳体基部具龙骨, 这与 *Lingulina tricrenata* Coryell and Rivero, 1940 有些相似, 但后者壳体较短小而厚, 房室少, 厚度迅速增大。

多变拟舌虫 *Lingulinopsis carlofortensis* Bornemann (图版 III: 8)

Lingulinopsis carlofortensis Bornemann, 1884, p. 24, pl. 6, figs. 1—7; Loeblich and Tappan, 1964, p. C528, fig. 412, 5.

壳扁长, 横切面透镜形, 壳缘稍钝, 初成部分具窄龙骨, 后成部分无龙骨。房室分明, 早期 4—5 个房室旋卷, 随后房室低而宽, 缓慢增宽, 后一房室约叠覆其前一房室一半左右。缝合线清楚, 稍弯, 初成部分的不凹下, 后成部分的稍凹下。壳壁厚, 稍透明, 壳面光滑。口区透明, 口面观呈透镜形; 壳口缝状, 长度约为口面宽度一半多。

测量(毫米) IOAS-F 1037 壳长 1.75 壳宽 1.05 壳厚 0.63

分布 意大利。

叶拟舌虫 (新种) *Lingulinopsis folium*, n. sp. (图版 III:9)

壳呈宽叶状,壳体中部最厚,向壳缘迅速削薄,壳缘较锐,具透明脊状龙骨;壳体中段最宽,向两端迅速收窄。房室分明,早期旋卷房室 5 个左右、甚小,随后房室甚低而宽,依次迅速增宽,后一房室叠覆其前一房室一半左右。缝合线清楚,近横直,近壳缘处下弯,初成部分的不凹下,后成部分的稍凹。壳壁厚,壳面光滑。壳口缝状,长度约为房室宽度 1/3 左右。

测量(毫米) 正模标本 IOAS-F 1038 壳长 1.52 壳宽 1.45 壳厚 0.76

新种外形与 *Lingulinopsis acutimargo* Halkyard, 1919 有些相似,但后者壳体较小,壳缘龙骨宽而锐薄。

多形虫科 Polymorphinidae d'Orbigny, 1839

多形虫亚科 Polymorphininae d'Orbigny, 1839

球虫属 *Globulina* d'Orbigny, 1839

三角球虫 (新种) *Globulina trigona*, n. sp. (图版 III: 10)

壳长卵形,横切面略呈圆三角形。房室分明,共 5 个,依次迅速增大,不膨鼓。缝合线清楚,不凹下。壳壁半透明,壳面光滑。口端窄圆,壳口辐射状。

测量(毫米) 正模标本 IOAS-F 1039 壳长 0.43 壳厚 0.28

新种的显著特征是壳体具三个侧面,横切面观呈圆三角形。

反称虫属 *Sigmomorphina* Cushman and Ozawa, 1928

亚圆反称虫 (新种) *Sigmomorphina subcircularis*, n. sp. (图版 IV: 1)

壳扁,亚圆形,横切面呈长卵形,基部窄圆、较突,终室壳缘宽圆,倒数第二房室壳缘窄圆。房室分明,稍膨鼓,成“S”形排列,房室几乎伸至壳体基部,最后两个较大。缝合线弯,稍凹。壳壁半透明,壳面光滑。壳口辐射状。

测量(毫米) 正模标本 IOAS-F 1040 壳长 0.43 壳宽 0.33 壳厚 0.23

新种与 *Sigmomorphina semitecta* (Reuss) 不同在于,壳体较宽短和较厚,基部窄圆、较突。

腺虫科 Glandulinidae Reuss, 1860

卵虫亚科 Oolininae Loeblich and Tappan, 1961

卵虫属 *Oolina* d'Orbigny, 1839

六角卵虫 *Oolina hexagona* (Williamson) (图版 IV:2)

Entosolenia squamosa var. *hexagona* Williamson, 1848, p. 20, pl. 25. fig. 23; 1858, p. 13, pl. 1, fig. 31.

Lagena hexagona (Williamson). Brady, 1884, p. 472, pl. 58, figs. 32, 33; Cushman, 1923, p.

51, pl. 10, fig. 4. — Sidebottom, 1910, p. 17, pl. 2, fig. 3; Buchner, 1940, pl. 5, figs. 73—77.

Oolina hexagona (Williamson). Loeblich and Tappan, 1953, p. 69, pl. 14, fig. 1, 2; Boltovskoy, 1959, p. 69, pl. 9, fig. 20.

壳宽卵形,壳面具六角形凸纹。口端圆突,壳口圆形。

测量(毫米) IOAS-F 1041 壳长 0.16 壳径 0.13

分布 世界广布种。

箭头虫科 Bolivinitidae Cushman, 1927

侧口虫属 *Laterostomella* de Klasz and Rerat, 1962

壳长,双列。房室膨鼓。缝合线凹下。壳壁钙质有孔型,壳面粗糙或具纹饰。壳口长,位于口面一侧凹陷处,具口唇,口唇稍外翻,内折成齿板。(中新世至现代)

刺侧口虫(新种) *Laterostomella spinosa*, n. sp. (图版 IV:3, 4)

壳小,长,始端窄圆,向口端迅速增宽;壳缘圆,略呈瓣状。房室 6—7 对,低而宽,依次渐增大,最后几对较膨鼓。缝合线稍弯斜,凹下,初成部分的不甚清楚,后成部分的清楚。壁孔较粗,壳面粗糙,具刺状突起,初成部分突刺较多。壳口长椭圆形,竖立,偏于终室口面一侧;壳口外侧缘稍外翻,内侧缘内弯,具齿板;齿板与前室壳口相接;口面具几个大小不一的小圆孔。

测量(毫米)		壳长	壳宽	壳厚
正模标本	IOAS-F 1042	0.28	0.18	0.10
副模标本	IOAS-F 1043	0.18	0.15	0.10

新种与记载于非洲下中新统的 *Laterostomella guembeliniformis* de Klasz and Rerat, 1962 颇为相似,但后者房室较高而较膨鼓,壳体自始端向口端逐渐增宽,壳面具粗糙突起。

直箭头虫属 *Rectobolivina* Cushman, 1927

针直箭头虫(新种) *Rectobolivina aculeata*, n. sp. (图版 IV: 6)

Rectobolivina virgula Hofker (not Brady, 1884), 1951, pp. 93—94, fig. 52.

壳长;早期双列部分很短,稍扁;随后单列部分长,房室近球形至梨形,逐渐增大,由短或较长颈部相连接。壳面具分布稀疏的粗壮棘刺。壳口大,近圆形,口缘厚而外翻。

测量(毫米) 正模标本 IOAS-F 1044 壳长 0.55 壳径 0.10

新种与 *Rectobolivina virgula* (Brady) 不同在于,壳面突刺粗壮而稀疏,颈部较长而明显。

Hofker (1951) 提供了本种壳口特征的较详细描述及其形态解剖图,他曾提到单列部分的房室壳口具一个贴在壳口一侧、与前房室不相连接的短齿板,相继房室的齿板位置以 180°角交替转换。Hofker 通过对本种微球型标本的解剖,发现其双列部分房室具真正的(不是被再吸收或退化的)齿板,为此,他将本种置于 *Rectobolivina* 属。

分布 印度尼西亚 (巽他海峡)。

光滑直箭头虫 (新种) *Rectobolivina laevis*, n. sp. (图版 IV: 7)

壳长, 稍扁, 早期双列部分约为壳长 $1/4$ 左右。早期房室不甚分明, 单列部分房室低而宽, 不膨鼓。缝合线呈窄镶边状, 与壳面齐平。壁孔细, 壳面光滑。壳口椭圆形, 口缘厚。

测量 (毫米) 正模标本 IOAS-F 1045 壳长 1.03 壳宽 0.23 壳厚 0.20

新种与 *Rectobolivina glabra* Bermudez, 1949 不同在于, 壳体较大 (后者壳长为 0.48 毫米), 缝合线不凹下, 壳口椭圆形而非圆形。

幼芽直箭头虫 *Rectobolivina virgula* (Brady) (图版 IV: 5)

Sagrina virgula Brady, 1879, p. 275, pl. 8, fig. 21; 1884, p. 583, pl. 76, figs. 4—7; Millett, 1903, p. 271; Heron-Allen and Earland, 1915, p. 676, pl. 51, figs. 4—5.

Siphogenerina virgula (Brady). Cushman, 1924, p. 29, pl. 6, figs. 3—4; 1942, p. 52, pl. 15, figs. 2—3; Said, 1949, p. 34, pl. 3, fig. 25.

Siphogenerina (?) *virgula* (Brady) Graham and Militante, 1959, p. 88, pl. 13, fig. 9.

Rectobolivina (?) *virgula* (Brady). Barker, 1960, p. 158.

Rectobolivina virgula (Brady). Hofker, 1951, pp. 93—94, fig. 52.

壳长, 早期双列部分很短, 3—4 室, 稍扁; 单列部分长, 房室近球形至卵形, 逐渐增大, 由短颈部相连接。壳面满布茸刺状突起, 口缘亦具少数向下斜伸的细长刺。壳口大, 近圆形, 口缘外翻。

测量 (毫米) IOAS-F 1046 壳长 0.38 壳径 0.10

分布 马来群岛、澳大利亚、萨摩亚群岛、菲律宾、基林巴群岛、红海。

孔雀虫亚科 Pavonininae Eimer and Fickert, 1899

小丽虫属 *Chrysalidinella* Schupert, 1908

斐济小丽虫 *Chrysalidinella fijiensis* Cushman (图版 IV: 9)

Chrysalidinella dimorpha Cushman (not Brady) 1942, p. 46, pl. 13, fig. 1.

C. fijiensis Cushman, 1945, p. 53, pl. 8, fig. 24a, b. — Cushman, Todd and Post, 1954, p. 335, pl. 88, fig. 12.

壳呈三角锥形, 壳长约为壳宽 $1\frac{1}{2}$ 倍, 横切面三角形。始端稍锐, 向口端迅速增宽, 壳缘锐, 具窄龙骨, 侧面平坦至稍凹。房室分明, 早期三列部分房室少, 随后单列部分房室 8—10 个, 低而宽, 高度约相等, 不膨鼓。缝合线清楚, 呈窄镶边状, 不凹下, 稍弯。壳面光滑, 壁孔较粗而密。口面具许多形状不甚规则的小孔。

测量 (毫米) IOAS-F 1047 壳长 0.73 壳宽 0.45

分布 斐济群岛、马绍尔群岛。

三棱虫属 *Reussella* Galloway, 1933

小肋三棱虫 (新种) *Reussella costulata*, n. sp. (图版 IV: 10)

壳粗大, 呈三角锥形, 壳长约为壳宽 $1\frac{1}{2}$ 倍, 横切面呈三角形, 侧面较平, 壳缘钝圆、

无刺。房室分明,不膨鼓。缝合线较弯,呈宽镶边状,平或微凸。壁孔粗而密,壳面具许多断续纵凸肋。口面凹陷,壳口位于房室口面基部,拱形,具上唇。

测量(毫米) 正模标本 IOAS-F 1048 壳长 0.73 壳径 0.58

新种壳体粗壮,壳面具许多断续纵凸肋,易于与其他种相区分。

丽三棱虫 *Reussella pulchra* Cushman (图版 IV: 12, 13)

Reussella pulchra Cushman, 1945, p. 21, p. 34, pl. 6, figs. 11, 12.

壳呈三角锥形,壳长小于壳宽 $1\frac{1}{2}$ 倍,横切面呈三角形,侧面平至稍凹,壳缘锐,具下垂缘刺。房室分明,不膨鼓。缝合线弯曲,呈凸镶边状。壁孔粗而密,壳体侧面下半部缝合线处具少数后伸锐刺。口面稍凸,光滑;壳口位于房室口面基部,稍弯曲。

测量(毫米)	壳 长	壳 宽
IOAS-F 1049	0.65	0.48
IOAS-F 1050	0.55	0.43

分布 本种首次记载于维也纳中新统。菲律宾、萨摩亚、新加坡等亦有现代分布记录。

刺三棱虫(新种) *Reussella spinosa*, n. sp. (图版 IV: 11)

Reussella spinulosa Graham and Militante, 1959 (not Reuss) 1959, p. 86, pl. 13, figs. 3a, b.

壳呈长三角锥形,始端较钝,向口端缓慢增宽,横切面呈三角形,侧面稍凹;壳缘略呈锯齿状,缘角亚锐。房室分明,不甚膨鼓。缝合线清楚,较弯斜,呈镶边状,不凸。壳壁透明,壁孔粗而稀疏,始端具小刺。口面甚凹。壳口低拱形,位于房室口面基部。

测量(毫米) 正模标本 IOAS-F 1051 壳长 0.53 壳宽 0.33

新种与 *Reussella spinulosa* (Reuss, 1850) 不同在于,壳体较窄长,基部较钝并具许多小刺。

葡萄虫科 Uvigerinidae Haeckel, 1894

管葡萄虫属 *Siphouvigerina* Parr, 1950

假坛管葡萄虫 *Siphouvigerina pseudoampullacea* (Asano) (图版 IV: 8)

Uvigerina pseudoampullacea Asano, 1938, p. 613, pl. 17, figs. 28, 29; 1958, p. 37, pl. 7, figs. 1, 2.

壳长。房室分明,稍扁,膨鼓,最后两个房室趋于单列。缝合线清楚,缢缩。壳面满布稍粗的茸刺状突起。终室具长颈部,具瓶口唇。

测量(毫米) IOAS-F 1052 壳长 0.35 壳径 0.13

本种与 *Siphouvigerina ampullacea* (Brady, 1884) 不同在于,壳体下半部逐渐收细,有时具基刺。

分布 日本太平洋岸、夏威夷群岛。

圆盘虫总科 Discorbacea Ehrenberg, 1838

圆盘虫科 Discorbidae Ehrenberg, 1838

圆盘虫亚科 Discorbinæ Ehrenberg, 1838

脐塞虫属 *Gavelinopsis* Hofker, 1951

壳游离，螺旋，平凸或双凸，壳缘呈镶边状，脐部具脐塞。壳壁钙质有孔型，壁孔细。壳口位于终室腹面基部，稍离壳缘，具小上唇。（现代）

秀丽脐塞虫 *Gavelinopsis praegeri* Heron-Allen and Earland) (图版 V: 1)

Discorbina praegeri Heron-Allen and Earland, 1913, p. 122, pl. 10, figs. 8—10.

Discorbis (?) *praegeri* (Heron-Allen and Earland) Cushman, 1931, p. 30, pl. 6, fig. 4.

Gavelinopsis praegeri (Heron-Allen and Earland). Hofker, 1951, p. 486, text figs. 332—334; Parker, 1958, p. 264, pl. 3, figs. 24, 25; Todd, 1965, p. 18, pl. 8, fig. 1; Murray, 1970, p. 482, pl. 2, figs. 17—18.

Rosalina praegeri (Heron-Allen and Earland). Haynes, 1973, p. 159, pl. 17, figs. 6—9; pl. 19, fig. 4; pl. 30, fig. 3; text fig. 30, nos. 4—9.

壳小，螺旋，低圆锥形，3—4圈，壳缘亚锐，窄镶边状，周缘一般不呈瓣状，腹面脐部具明显脐塞。终圈5—7室，房室背面不膨鼓，腹面稍膨鼓。缝合线呈镶边状，稍弯，背面初成部分的与壳面齐平，终圈的和腹面的均稍凹下。壳壁厚，背面初成部分由一层厚透明壳物质覆盖；房室背面壁孔稀少或无，腹面壁孔亦较稀疏，近脐端常无壁孔。壳口位于终室腹面基部，未伸达壳缘。

测量（毫米） IOAS-F 1053 壳径 0.18 壳厚 0.09

分布 英国、地中海、非洲东南岸、太平洋、南极。

婆口虫亚科 Baggininae Cushman, 1927

婆口虫属 *Baggina* Cushman, 1927

壳游离，螺旋，近球形。房室少，迅速增大，腹面脐部封闭。壳壁钙质有孔型，显微结构辐射状。壳口即终室脐部的开口。终室口面具一无壁孔透明区。（白垩纪至现代）

印度婆口虫 *Baggina indica* (Cushman) (图版 IV: 14)

Pulvinulina hauerii Brady (not d'Orbigny) 1884, p. 690, pl. 106, fig. 6 (not 7).

P. indica Cushman, 1921, p. 332.

Cancris indicus (Cushman) Asano, 1951, p. 20, figs. 146—147; Cushman and Todd, 1942, p. 91, pl. 23, fig. 7; pl. 24, figs. 1, 2.

Baggina indica Graham and Militante, 1959, p. 91, pl. 13, fig. 17; Boltovskoy and Lena, 1966, p. 284, pl. 1, fig. 12.

壳卵形，双凸，壳缘圆，房室膨鼓，终圈6—7室。缝合线清楚，稍凹。壁孔粗而密，壳面光滑，终室口面下方有一卵圆形透明无壁孔区。壳口拱形，位于终室腹面脐端。

测量（毫米） IOAS-F 1054 壳长 0.65 壳宽 0.40 壳厚 0.33

分布 菲律宾、热带太平洋诸岛、新几内亚、澳大利亚（新南威尔斯）、巴西；日本更新统。

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中刺旋虫 (新种) *Spirillina mediospinosa*, n. sp. (图版 V: 2)

壳小, 3 圈; 背腹面直径约相等, 扁平。管室壳缘中线部位具钝刺, 背侧缘展伸成片状旋壁, 旋壁不甚完整, 呈不规则缺刻状, 似具竖管; 背面旋缝合线处不同程度显露部分旋壁。管室腹面具明显横肋纹。管室末端呈檐状探伸, 壳口位于管室末端。

测量 (毫米) 正模标本 IOAS-F 1055 壳径 0.20 壳厚 0.23

新种与 *Spirillina spinigera* Chapman, 1900 有些相似, 但后者壳体两面不相等, 钝刺位于背侧缘而不是在壳缘中线部位, 管室腹面无横肋。

帽贝虫亚科 Patellininae Rhumbler, 1906

帽贝虫属 *Patellina* Williamson, 1858皱帽贝虫 *Patellina corrugata* Williamson (图版 V: 3)

Patellina corrugata Williamson, 1858, p. 46, pl. 3, figs. 86—89; Brady, 1884, p. 634, pl. 86, figs. 1—7; Cushman, 1915, p. 9, text figs. 8a—c, pl. 7, figs. 1a—b; 1921, p. 303; 1931, p. 11, pl. 2, figs. 6—7; 1948, p. 67, pl. 7, figs. 11a—c; Said, 1949, p. 35, pl. 3, fig. 32; Parker, 1952, p. 420, pl. 6, figs. 16, 17; Phleger, Parker and Peirson, 1953, p. 39, pl. 8, fig. 14; Haynes, 1973, p. 142, pl. 16, figs. 7—9.

壳小, 低圆锥形。房室不甚分明, 呈新月形, 内具不达脐部的辐射隔板。缝合线不甚清楚。壳壁透明, 壁孔细。壳口不甚明显。

测量 (毫米) IOAS-F 1056 壳径 0.20 壳厚 0.08

分布 本种一般记载于大西洋、北极、地中海, 北太平洋亦有出现。

假帽贝虫属 (新属) *Pseudopatellina*, n. gen.模式种 扁假帽贝虫 *Pseudopatellina compressa*, n. sp.

本属与 *Patellina* 属很相似, 惟终圈是由三个房室组成。(现代)

扁假帽贝虫 (新属新种) *Pseudopatellina compressa*, n. gen., n. sp. (图版 V: 4)

壳扁, 低圆锥形, 腹面稍凹陷。房室稍分明, 较长, 呈新月形, 三个组成一圈, 甚重叠, 内具自壳缘横伸、未伸达脐部的辐射隔板; 终室尤大, 占壳体腹面一半多。缝合线稍清楚, 弯曲。壳壁薄, 壁孔细, 背面不透明, 腹面较透明。壳口位于房室腹面脐端。

测量 (毫米) 正模标本 IOAS-F 1057 壳径 0.30 壳厚 0.05

Graham and Militante (1959) 记载于菲律宾的 *Patellina corrugata* Williamson, 1858 也许是本种。

车轮虫总科 Rotaliacea Ehrenberg, 1839

距轮虫科 Calcarinidae Schwager, 1876

浆果拟白垩虫属 *Baculogypsinoides* Yabe and Hanzawa, 1930

早期房室螺旋, 后期房室堆积; 房室侧壁致密, 缘壁具粗穿孔。壳壁钙质有孔型, 壁孔粗; 壳表一般具 3—4 个钝刺, 钝刺具始源靠近初室并向外伸的分叉管道系。壳内具许多壳质柱, 在壳表则呈现为疣状突起。(始新世至现代)

刺浆果拟白垩虫 *Baculogypsinoides spinosus* Yabe and Hanzawa

(图版 VI: 1—5; 图版 VII: 1—6; 图版 VIII: 1—6)

Calcarina tetraedra Guembel, 1870, p. 656, pl. 2, fig. 97.

Siderolites tetraedra (Guembel) Cushman, 1919, pl. 44, fig. 5; pl. 45, figs. 1—5; 1921, p. 358, pl. 75, fig. 5, pl. 76, figs. 1—5.

Baculogypsina tetraedra (Guembel). Hofker, 1927, p. 48, pl. 23, pl. 24, figs. 2—7, 9.

Baculogypsinoides spinosus Yabe and Hanzawa, new name, 1930, p. 45, pl. 2, fig. 7; pl. 19, fig. 13; Graham and Militante, 1959, p. 106, pl. 17, figs. 2—4

壳大, 一般具 3—4 个始源于初圈房室的粗壮钝刺。早期房室螺旋, 初圈 7 室左右; 后期房室膨鼓, 不规则垒叠, 有时呈辐射行列。壁孔较粗, 壳面具疣状突起。无总壳口, 早期螺旋房室壳口在基部。

测量 (毫米)	壳 径
IOAS-F 1058	1.63
IOAS-F 1059	2.00
IOAS-F 1060	1.75
IOAS-F 1061	2.08
IOAS-F 1062	2.13

本种的形状变异较大。三角形、四角形、球形或多角形的都有; 壳体两面等凸或一面比另一面更凸; 从外表一般分不出背腹面。

本种壳表一般具 3—4 个钝刺, 极少数标本具 2 个或 5 个钝刺; 钝刺表面具许多小刺状物, 但一般都被磨损; 钝刺排列在同一平面或不同平面上, 其间距相等或不相等; 钝刺有的很长, 有的较短, 有的甚至被房室完全覆盖; 钝刺内部具复杂的树枝状管道系。

本种壳内具长短不一的壳质柱, 其末端突出于壳表呈现为疣状突起; 壳质柱不是起源于初室, 一般在螺旋房室之后开始出现; 壳质柱内部有时亦有树枝状管道系, 但不如壳表钝刺内的发达。

本种的早期螺旋房室的缘壁甚厚, 一般为后期垒叠房室室壁厚度的几倍; 初室的直径一般为 130—150 微米, 我们所测量的最小的一个为 80 微米, 看来都是显球型标本, 尚未找到微球型标本。

分布 我国台湾省南部、日本、菲律宾、马来群岛；琉球群岛更新统至现代、德国始新统。

企虫科 Elphidiidae Galloway, 1933

企虫亚科 Elphidiinae Galloway, 1933

企虫属 *Elphidium* de Montfort, 1808

小企虫 (新种) *Elphidium parvum*, n. sp. (图版 V: 5)

壳较扁,壳长稍大于壳宽;壳缘窄圆,无龙骨;脐部凹陷,具小圆脐盾。房室分明,稍膨鼓,终圈 8—12 室。缝合线清楚,凹下,壁间桥较短。壳壁半透明,壁孔细。壳口为位于终室口面基部的数个小圆孔。

测量 (毫米) 正模标本 IOAS-F 1063 壳长 0.70 壳宽 0.50 壳厚 0.25

中沙的标本与 Graham and Militante (1959) 记载于菲律宾的 *Elphidium advena* (Cushman, 1922) 最为相似。新种与典型的 *E. advenum* (Cushman) 不同在于,壳缘无龙骨、不锐,壁间桥较短。

圆形虫总科 Orbitoidacea Schwager, 1876

双盖虫科 Amphisteginidae Cushman, 1927

双盖虫属 *Amphistegina* d'Orbigny, 1826

乳突双盖虫 *Amphistegina radiata* var. *papillosa* Said (图版 V: 9)

Amphistegina radiata Cushman (part) (not Fichtel and Moll), 1924, p. 49, pl. 17, fig. 2 (not fig. 1).

A. radiata (Fichtel and Moll) var. *papillosa* Said, 1949, p. 39, pl. 4, fig. 12; Cushman, Todd and Post, 1954, p. 362, pl. 90, figs. 506; Graham and Militante, 1959, p. 105, pl. 16, figs. 14a—e.

A. lessonii Dakin (not d'Orbigny) 1906, p. 240, pl. 1, fig. 13.

变种与典型种不同在于,壳面具许多辐射排列的有时连成脊状的突粒。

测量 (毫米) IOAS-F 1064 壳径 1.00 壳厚 0.38

分布 红海、萨摩亚群岛、马绍尔群岛、菲律宾。

面包虫科 Cibicididae Cushman, 1927

平坦虫亚科 Planulininae Bermudez, 1952

微面包虫属 *Cibicidina* Bandy, 1949

壳游离,螺旋,平凸,壳缘具龙骨;一面平坦至稍凹,不完全包旋,另一面凸,完全包旋。缝合线稍凹。壳壁钙质有孔型,壁孔细。壳口低拱形,横跨壳缘并伸到露旋面。(始新世至现代)

小微面包虫 (新种) *Cibicidina minuta*, n. sp. (图版 V: 6, 7)

壳宽卵形至近圆形, 2 圈; 一面凸, 包旋, 另一面平或稍凸, 露旋或不完全露旋。壳缘具窄龙骨。房室分明, 包旋面仅露终圈, 6—7 室, 依次逐渐增大。缝合线清楚, 弯曲, 稍凹; 包旋面初成部分的略呈镶边状, 后成部分的不呈镶边状, 露旋面的呈镶边状。壳壁半透明, 壁孔较细; 包旋面的较密, 露旋面的较稀疏。壳口横跨壳缘。

测量 (毫米)	壳 长	壳 厚
正模标本 IOAS-F 1065	0.33	0.10
副模标本 IOAS-F 1066	0.25	0.08

新种与 Brady (1884) 的 *Discorbina bertheloti* var. *baconica* Hantken 最为相似, 但后者个体较大 (Hantken 的标本直径可达 1—1.2 毫米)。

九字虫科 Nonionidae Schultze, 1854

九字虫亚科 Nonioninae Schultze, 1854

九字虫属 *Nonion* de Montfort, 1808

日本九字虫 *Nonion japonicum* Asano (图版 V: 8)

Nonion subturgidum Cushman (not Cushman, 1924), 1942, p. 43, pl. 10, figs. 4—7.

N. japonicum Asano, 1938, p. 593, pl. 15, figs. 1—2; 1950, p. 2, figs. 5—6; 1960, p. 190, pl. 21, figs. 1a, b.

壳卵形, 两侧对称, 壳缘窄圆, 周缘不呈瓣状。房室分明, 终圈 10—13 室。缝合线清楚稍弯, 镶边状。壳面光滑, 脐部满布壳质突粒。壳口位于终室口面基部, 低拱形。

测量 (毫米) IOAS-F 1067 壳长 0.60 壳宽 0.43 壳厚 0.24

分布 菲律宾、热带太平洋; 日本上新统至现代。

异常虫科 Anomalinidae Cushman, 1927

异常虫亚科 Anomalininae Cushman, 1927

半泽虫属 *Hanzawaia* Asano, 1944

壳游离, 螺旋, 平凸, 壳缘具龙骨, 平坦面不完全包旋, 房室下缘具瓣状物, 通常愈合为一圈, 部分或完全叠覆前圈房室; 凸面脐部封闭, 具中央栓。缝合线甚弯, 呈凸镶边状。壁孔粗, 房室脐瓣、缝合线及壳缘无壁孔。壳口横跨壳缘并伸至平坦露旋面, 与房室基部开口相连, 房室脐瓣内、外缘具附加壳口。(中新世至现代)

丽半泽虫 *Hanzawaia boueana* (d'Orbigny) (图版 V: 10)

Truncatulina boueana d'Orbigny, 1846, p. 169, pl. 9, figs. 24—26.

Cibicides boueana (d'Orbigny). Marks, 1951, p. 72, pl. 8, fig. 9a—b; Voorthuysen, 1958, p. 22, pl. 7, fig. 79a, b. Graham and Militante, 1959, p. 116, pl. 19, fig. 11a—c.

C. bertheloti (d'Orbigny) forma *boueana* (d'Orbigny) Boltovskoy, 1959, p. 106, pl. 17, figs. 5a—b.

Hanzawaia boueana (d'Orbigny) Batjes, 1958, p. 154, pl. 8, fig. 5.

壳扁,近圆形,平凸;凸面包旋,中央具小圆盾,平坦面不完全包旋;壳缘具龙骨,亚锐,后成部分呈瓣状。房室分明,终圈7—8室,最后几室迅速增大,房室脐端呈瓣状。缝合线甚弯,凸面的呈平至稍凹镶边状,平坦面初成部分的呈凸镶边状,后成部分的不呈镶边状,较凹下。凸面壁孔较粗而密,平坦面呈半透明,壁孔较细而稀疏。壳口缝状,自壳缘伸延至平坦面房室基部。

测量(毫米) IOAS-F 1068 壳径0.45 壳厚0.13

分布 菲律宾,巴西;维也纳盆地、苏伊士湾中新统,比利时渐新统。

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勘 误 表

本刊 1979 年 8 月第 15 集第 230—232 页“底栖有孔虫种名索引”中,每个种名后的页码均应顺延 4 号。

THE RECENT FORAMINIFERA OF THE ZHONGSHA ISLANDS, GUANGDONG PROVINCE, CHINA* I

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ABSTRACT

A qualitative analysis of the foraminiferal content of three underwater samples from the Zhongsha Islands yielded a total of 212 species, of which 198 species are benthonic and 14 species are planktonic. Of the benthonic species, the calcareous perforate forms constitute 57.1% (113 species), the calcareous imperforate forms, 28.3% (56 species) and the arenaceous agglutinate forms, 14.6% (29 species). They belong to 40 families and 113 genera, of which 1 genus and 23 species are new. Of the 14 planktonic species belonging to 3 families and 9 genera, none are different from those previously reported by us from the East China Sea and the South China Sea.

Descriptions of the New Genus and New Species

Family Textulariidae Ehrenberg, 1838

Genus *Morulaepecta* Höglund, 1947

Morulaepecta inflata, n. sp. (Pl. I: 7)

Test elongate, initial end narrowly rounded, rapidly widening and thickening towards the apertural end. Streptospirally coiled initial portion very small, the biserial portion with about 9 pairs of low and broad chambers, rapidly increasing in size as added, the last one or two pairs very inflated. Sutures of the early portion not very distinct, those of the later portion distinct, depressed, nearly horizontal. Wall made up of rather coarse sand grains, surface rough. Apertural face of final chamber convexly rounded, aperture a small arched slit about 1/5 the width of the base of final chamber.

Dimensions: Holotype. IOAS-F 1008, length, 0.55 mm; width, 0.33 mm; thickness, 0.28 mm.

This new species differs from *Morulaepecta bulbosa* Höglund, 1947 in the very small initial portion and in the later chambers being low and broad and increasing rapidly in size as added.

Genus *Textularia* DeFrance, 1824

Textularia tubulosa, n. sp. (Pl. I: 3, 4)

Test elongate triangular in side view, increasing gradually in width towards the

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apertural end, thickest in the median line, rapidly thinning towards the periphery which has short transverse tubular projections from each chamber. Chambers distinct, low and broad, about 10 pairs, increasing gradually in size as added. Sutures distinct, slightly curving upwards, depressed in the later portion of the test. Wall thick, composed of fine sand grains, surface rather smoothly finished. Apertural face convex, aperture a low arched slit, about $\frac{1}{3}$ the width of the base of the final chamber.

Dimensions: Holotype, IOAS-F 1009, length, 0.70 mm; width, 0.60 mm; thickness, 0.38 mm.

This species resembles *Textularia marielensis* Lalicke and Bermudez, 1938 to some extent, but differs from it in having a fistulose instead of spinose periphery and in having a narrower aperture.

Family Nubeculariidae Jones, 1875

Genus *Nodophthalmidium* Macfayden, 1939

Nodophthalmidium zhongshaensis, n. sp. (Pl. I: 9, 10)

Test elongate slender, straight or arcuate, slightly compressed. Proloculus surrounded by one or two chambers nearly a coil in length, the following chambers rectilinear, slightly compressed, about 2—3 times as long as broad, increasing gradually in size as added. Sutures distinct, constricted. Wall thin, planispiral portion smooth, the rectilinear portion with continuous longitudinal acute costae. Apertural end constricted, aperture oblong, with flaring thick rim.

Dimensions: Holotype, IOAS-F 1013, length, 0.63 mm; width, 0.08 mm; thickness, 0.06 mm. Paratype, IOAS-F 1014, length, 0.93 mm; width, 0.10 mm; thickness, 0.09 mm.

This species differs from *Nodophthalmidium antillarum* (Cushman) in the smaller size of the test (the length of the latter may reach 2.50 mm.), in the chambers being slightly compressed instead of cylindrical, in the oblong instead of round shape of the aperture and in the longitudinal costae being acute instead of bluntly rounded.

Family Miliolidae Ehrenberg, 1839

Genus *Pyrgo* Defrance, 1824

Pyrgo spinidorsa, n. sp. (Pl. II: 6)

Test very inflated, in front view roundly quadrangular. Chambers distinct, the lower half very inflated, rapidly becoming compressed towards the apertural end. Sutures distinct. Wall thick, surface with very prominent, sometimes bifurcating, coarse longitudinal costae, in the lower half of the final chamber ending as acute spines. Aperture large, only slightly narrower than the entire width of the test, the lateral margins markedly flaring, toothplate broad T-shaped or horn-shaped.

Dimensions: Holotype, IOAS-F 1021, length, 0.75 mm; width, 0.60 mm; thickness, 0.65 mm.

This species differs from *Pyrgo striolata* (Brady) in the longitudinal costae being more prominent and extending the entire length of the test, in the lower half of the final chamber ending as acute stout spines.

Genus *Miliolinella* Wiesner, 1931***Miliolinella pseudooblonga*, n. sp. (Pl. II: 5)**

Test elongate oval, periphery rounded. Chambers inflated, arcuate, broadest near the base. Sutures distinct, slightly depressed. Wall smooth. Aperture with a crescentiform or semilunate toothplate.

Dimensions: Holotype, IOAS-F 1023, length, 0.33 mm; width, 0.23 mm; thickness, 0.18 mm.

This species differs from *Miliolinella oblonga* (Montagu) in having an aperture corresponding to the shape of the tooth plate which is crescentiform or semilunate. Montagu described the aperture of the former as oval, without mentioning the presence of toothplate.

Genus *Miliola* Lamarck, 1804***Miliola inflata*, n. sp. (Pl. II: 4)**

Test subglobular, rounded triangular in section, the four-chambered side much more inflated than the three-chambered side. Chambers very inflated, semilunate in section, with broad lateral extensions which partly overlap adjacent chambers. Sutures distinct, slightly depressed. Wall longitudinally, finely striated. Aperture cribrate, without neck.

Dimensions: Holotype, IOAS-F 1024, length, 0.48 mm.; width, 0.38 mm; thickness, 0.35 mm.

This species differs from *Miliola sublineata* (Brady) in the much more inflated test.

Family Nodosariidae Ehrenberg, 1838**Genus *Astacolus* de Montfort, 1808*****Astacolus pseudoplanulata*, n. sp. (Pl. II: 8)**

Test elongate, compressed, slightly arcuate, early chambers coiled, with acute periphery, later chambers rectilinear, with narrowly rounded periphery. Chambers distinct, slightly overlapping, twelve, those of the early coiled portion increasing rapidly in width as added, not inflated, of the rectilinear portion increasing gradually in width and height, slightly inflated. Sutures distinct, slightly curved, those of the early portion flush with the surface, of the later portion slightly depressed. Wall semi-transparent, smooth. Aperture slightly projecting, radiate.

Dimensions: Holotype, IOAS-F 1026, length, 1.68 mm; width, 0.73 mm; thickness, 0.38 mm.

This species differs from *Astacolus planulata* Galloway and Wissler, 1927 in the much larger and thicker test, in the greater number of chambers and in the later chambers not reaching back to the early portion of the test.

Genus *Lenticulina* Lamarck, 1804***Lenticulina incavata*, n. sp. (Pl. III: 1)**

Test large and thick, subcircular, completely involute, umbonal region about 1/3

the diameter of the test, very convex, rapidly thinning out towards the periphery which has a thick, rounded ridge. Chambers not very distinct, not inflated, 10 in the final whorl. Sutures not very distinct, narrowly limbate, straight or slightly curved, tangential to the umbo, those of the early portion slightly raised, those of the later portion not raised. Wall thick, surface smooth, Apertural face of final chamber very low, arrow-shaped, conspicuously concave, the lateral sides ridged. Aperture slightly protruding, radiate, ventral slit short.

Dimensions: Holotype, IOAS-F 1027, diameter, 2.03 mm; thickness, 1.25 mm.

This species somewhat resembles *Robulus supralodoensis* Israelsky, 1955, but differs from it in the much larger test and in having a radiate instead of oblong aperture.

***Lenticulina platyrhinos*. n. sp.** (Pl. III: 2; fig. 1)

Test compressed, subcircular, umbilical region transparent, showing the proloculus; periphery obtuse, with a narrow ridge. Chambers distinct, increasing gradually in size as added, seven in the final whorl. Sutures distinct, narrowly limbate, slightly curved to radial, those of the early portion flush, of the later portion slightly depressed. Wall semi-transparent, smooth; the apertures of previous chambers showing through. Apertural face without lateral ridge. Aperture at the dorsal peripheral angle, round, externally with a compressed, hyaline snout-like extension with two short grooves at the top, imparting a radiate appearance, the ventral margin opening as an elongate ventral slit; between the grooves and the ventral slit is a small circular opening which opens into the aperture.

Dimensions: Holotype, IOAS-F 1028, diameter, 1.20 mm; thickness, 0.45 mm.

The peculiar features of the aperture of this species easily distinguish it from the other species of the genus. It somewhat resembles *Robulus larvus* (Stache) as reported and described by Cushman (1933) from the tropical Pacific, but differs from it in the involute instead of slightly evolute test and in the narrowly instead of broadly limbate sutures.

Genus *Bolivinella* Cushman, 1927

***Bolivinella basicostata*, n. sp.** (Pl. III: 4)

Test small, longer than broad, gradually widening towards the apertural end, thickest in the median line, gradually thinning out towards the periphery which is narrowly rounded, and has a few short blunt spines. Sutures broadly limbate, slightly curved, flush or slightly raised. Wall finely perforate, not transparent, surface rough, the proloculus with 2—3 longitudinal costae. Apertural face convex, minutely granular.

Dimensions: Holotype, IOAS-F 1033, length, 0.18 mm; width, 0.13 mm; thickness, 0.08 mm.

This species differs from *Bolivinella elegans* Parr, 1932 in being thicker, in the gradually instead of rapidly widening test, in the narrowly rounded instead of acute periphery and in the proloculus being longitudinally costate.

Genus *Lingulinopsis* Reuss, 1860

***Lingulinopsis basicostata*, n. sp.** (Pl. III: 7)

Test elongate, slightly compressed, roundly quadrangular, broadly lenticular in

section, nearly of equal thickness throughout its length, periphery narrowly rounded. Chambers distinct, the first four chambers coiled, the following chambers low and broad, the succeeding chamber overlapping about $1/2$ the surface of the preceding chamber. Sutures distinct, those of the early portion slightly curved, not depressed, of the later portion nearly horizontal, curving backward near the periphery, slightly depressed. Wall thick, slightly transparent, smooth, the base of the test with a few prominent costae arranged parallel to the periphery. Apertural region hyaline aperture an elongate slit about $1/2$ the width of the test.

Dimensions: Holotype, IOAS-F 1036, length, 2.13 mm; width, 1.28 mm. thickness, 0.78 mm.

The costate basal end of the test of this species makes it resemble somewhat *Lingulina tricerenata* Coryell and Rivero, 1940, but differs from it in the elongate, roundly quadrangular instead of broadly ovoid shape of the test, in the much larger size and in the greater number of chambers. Furthermore, in section it is broadly lenticular instead of broadly elliptical in shape.

***Lingulinopsis folium*, n. sp. (Pl. III: 9)**

Test broad leaf-shaped, widest and thickest in the middle portion, rapidly narrowing towards both ends and rapidly thinning out towards the periphery which is more or less acute, with a narrow hyaline ridge. Chambers distinct, the first five small, coiled, the following ones very low and broad, rapidly increasing in size as added, the final chamber overlapping about $1/2$ the surface of the preceding chamber. Sutures distinct, nearly horizontal, curving backwards near the periphery, those of the early portion not depressed, of the later portion slightly depressed. Wall thick, smooth. Aperture an elongate slit about $1/3$ the width of the test.

Dimensions: Holotype, IOAS-F 1038, length, 1.52 mm; width, 1.45 mm; thickness, 0.76 mm.

This species resembles *Lingulinopsis acutimargo* Halkyard 1919 in the general outline of the test, but differs from it in the greater size of the test and in the periphery having a narrow ridge instead of a broad, thin, platelike carina.

Family Polymorphinidae d'Orbigny, 1839

Genus *Globulina* d'Orbigny, 1826

***Globulina trigona*, n. sp. (Pl. III: 10)**

Test elongate oval, rounded triangular in section. Chambers distinct, 5, increasing rapidly in size as added, not inflated. Sutures distinct, not depressed. Wall semi-transparent, smooth. Apertural end narrowly rounded, aperture radiate.

Dimensions: Holotype, IOAS-F 1039, length, 0.43 mm; thickness, 0.28 mm.

The most distinguishing characteristic of this species is the trigonal shape of the test.

Genus *Sigmomorphina* Cushman and Ozawa, 1928

***Sigmomorphina subcircularis*, n. sp. (Pl. IV: 1)**

Test compressed, subcircular, elongate oval in section, basal end protruding, periphery of final chamber broadly rounded, of the penultimate chamber narrowly rounded.

ded. Chambers distinct, slightly inflated, arranged in a sigmoid series, the chambers almost reaching back to the base, the last two very large. Sutures curved, slightly depressed. Wall semi-transparent, surface smooth. Aperture radiate.

Dimensions: Holotype, IOAS-F 1040, length, 0.43 mm; width, 0.33 mm; thickness, 0.23 mm.

This species differs from *Sigmomorphina semitecta* (Reuss) in the broader and thicker test and in the narrowly rounded, projecting base.

Family Bolivinitidae Cushman, 1927

Genus *Laterostomella* de Klasz and Rerat, 1962

Laterostomella spinosa, n. sp. (Pl. IV: 3, 4)

Test small, elongate, initial end narrowly rounded, increasing rapidly in width towards the apertural end, periphery round, lobulate. Chambers low and broad, 6—7 pairs, increasing gradually in size as added, the last few pairs very inflated. Sutures distinct, slightly curved, depressed, those of the early portion not very distinct. Wall coarsely perforate, surface rough, with spiny projections, in the early portion more numerous. Aperture elongate, located at one side of the apertural face; the outer lateral margin slightly incurved, the inner lateral margin curved inward, with toothplate connecting with the aperture of the preceding chamber; apertural face with a few rounded openings of various sizes.

Dimensions: Holotype, IOAS-F 1042, length, 0.28 mm; width, 0.18 mm; thickness, 0.10 mm. Paratype IOAS-F 1043, length, 0.18 mm; width, 0.15 mm; thickness, 0.10 mm.

This new species somewhat resembles *Laterostomella guembeliniformis* de Klasz and Rerat, 1962, from the Lower Miocene of Africa, but the latter has more inflated and higher chambers, the test increases gradually in width towards the apertural end and the surface of the test is beset with granular instead of spiny projections.

Genus *Rectobolivina* Cushman, 1927

Rectobolivina aculeata, n. sp. (Pl. IV: 6)

Test elongate. Early biserial portion very short, slightly compressed, the later uniserial portion very long, chambers subglobular to pyriform, increasing gradually in size as added, with short to long neck. Wall with sparsely distributed stout spines. Aperture large, nearly circular, lip thickened and flaring.

Dimensions: Holotype, IOAS-F 1044, length, 0.55 mm; diameter, 0.10 mm.

This species differs from *Rectobolivina virgula* (Brady) in the stouter and more sparsely distributed spines and in the more distinct neck of the chambers.

Rectobolivina laevis, n. sp. (Pl. IV: 7)

Test elongate, slightly compressed, early biserial portion about 1/4 the entire length of the test. Early chambers not very distinct, chambers of the uniserial portion low and broad, not inflated. Sutures narrowly limbate, flush with the surface. Wall finely perforate, surface smooth. Aperture oblong, rim thickened.

Dimensions: Holotype, IOAS-F 1405, length, 1.03 mm; width, 0.23 mm; thickness, 0.20 mm.

This species differs from *Rectobolivina glabra* Bermudez, 1949 in the much larger test (the length of the latter is 0.48 mm), in the flush instead of depressed sutures and in the oblong instead of round aperture.

Genus *Reussella* Galloway, 1933

Reussella costulata, n. sp. (Pl. IV: 10)

Test stout, trihedral, about $1\frac{1}{3}$ times as long as broad, triangular in section, the sides flattened, peripheral angles obtuse, without spines. Chambers distinct, not inflated. Sutures rather curved, broadly limbate, flush or slightly raised. Wall coarsely and densely perforate, surface with numerous interrupted longitudinal costae. Apertural face depressed, aperture at the base of the final chamber, arched, with upper lip.

Dimensions: Holotype, IOAS-F 1048, length, 0.73 mm; diameter, 0.58 mm;

The stout test and the presence of longitudinal costae easily distinguish this species from the other species of the genus.

Reussella spinosa, n. sp. (Pl. IV: 11)

Test elongate triangular, initial end obtuse, gradually increasing in width towards the apertural end, triangular in section, the sides depressed, periphery serrate, peripheral angles subacute. Chambers distinct, slightly if at all inflated. Sutures distinct, obliquely curved, limbate, flush. Wall transparent, coarsely and sparsely perforate, initial end spinose. Apertural face very depressed, aperture a low arch at the base of the final chamber.

Dimensions: Holotype, IOAS-F 1051, length, 0.53 mm; diameter, 0.33 mm.

This species differs from *Reussella spinulosa* (Reuss) in the narrower test and in the presence of spines in the initial end.

Genus *Spirillina* Ehrenberg, 1843

Spirillina mediospinosa, n. sp. (Pl. V: 2)

Test small, consisting of three whorls, dorsal and ventral sides of nearly equal width. Median line of the periphery of the tubular chamber with numerous blunt spines, the latero-dorsal periphery with raised spiral wall, appearing tubulated and at some portions incised, projecting out from the spiral sutures. Ventral side of tubular chamber with distinct transverse markings. Aperture at the end of the hood-like projection of the tube.

Dimensions: Holotype, IOAS-F 1055, diameter, 0.20 mm; thickness, 0.23 mm.

This species resembles *Spirillina spinigera* Chapman, 1900 to some extent but in the latter, the dorsal and ventral sides are of unequal width, the tubular chamber is provided with only a single row of spines located at the dorsal peripheral angle and the ventral side is without transverse markings.

Genus *Pseudopatellina*, n. gen.

Type species: *Pseudopatellina compressa*, n. sp.

This genus differs from *Patellina* in having three chambers to the final whorl.

***Pseudopatellina compressa*, n. gen., n. sp. (Pl. V: 4)**

Test compressed, lowly conical, ventral side slightly depressed. Chambers slightly distinct, elongate crescentiform, three making up the final whorl, much overlapping, with radiating septa not reaching the umbilical end of the chamber; final chamber large, occupying more than $1/2$ the ventral surface. Sutures slightly distinct, curved. Wall thin, dorsal side not transparent, ventral side rather transparent, finely perforate. Aperture at the umbilical end of the chamber.

Dimensions: Holotype, IOAS-F 1057, diameter, 0.30 mm; thickness, 0.05 mm.

The species figures as *Patellina corrugata* Williamson by Graham and Militante (1959) from the Philippines may be this species.

Family Elphidiidae Galloway, 1933**Genus *Elphidium* de Montfort, 1808*****Elphidium parvum*, n. sp. (Pl. V: 5)**

Test compressed, slightly longer than broad, periphery narrowly rounded, without keel, umbilical region depressed, with a small central boss. Chambers distinct, slightly inflated, final whorl with 8—12 chambers. Sutures distinct, depressed, septal bridges short. Wall translucent, finely perforate. Aperture consisting of a few rounded openings at the base of the apertural face.

Dimensions: Holotype, IOAS-F 1063, length, 0.70 mm; width, 0.50 mm; thickness, 0.25 mm.

This species is very similar to the species figured by Graham and Militante as *Elphidium advena* (Cushman) from the Philippines. This species differs from *E. advenum* (Cushman) in the keelless periphery which is not acute and in the shorter septal bridges.

Family Cibicididae Cushman, 1927**Genus *Cibicidina* Bandy, 1949*****Cibicidina minuta*, n. sp. (Pl. V: 6, 7)**

Test broadly oval to subcircular, of two whorls, the convex side involute, the flattened to slightly convex side evolute or incompletely evolute, periphery narrowly limbate. Chambers distinct, final whorl of involute side with 6—7, gradually increasing in size as added. Sutures distinct, curved, slightly depressed, those of the early portion of the involute side limbate, of the later portion, not limbate; those of the evolute side limbate. Wall semi-transparent, distinctly perforate, more densely perforate on the involute side. Aperture at the base of the chamber on the evolute side and extending to the periphery.

Dimensions: Holotype, IOAS-F 1065, diameter, 0.33 mm; thickness, 0.10 mm. Paratype, IOAS-F 1066, diameter, 0.25 mm; thickness, 0.08 mm.

This species is very similar to *Discorbina bertheloti* var. *baconica* Hantken as figured by Brady (1884) but differs from it in the much smaller size.

图 版 说 明

图版 (Plate) I

- 图 1, 2. 佛罗里达旋编虫 *Spiroplectammina floridana* Cushman. $\times 65$
1a. 侧视 1b. 壳缘视 1c. 口视 2. 纵切面。
- 图 3, 4. 多管编织虫 (新种) *Textularia tubulosa*, n. sp. $\times 32.5$
3. 正模标本 a. 侧视 b. 口视; 4. 纵切面。
- 图 5. 假箭头虫 (未定种) *Pseudobolivina* sp. $\times 65$
a. 侧视 b. 壳缘视。
- 图 6. 砂轮虫 (未定种) *Trochammina* sp. $\times 100$
a. 背视 b. 腹视。
- 图 7. 胖槌编虫 (新种) *Morulaeplecta inflata*, n. sp. $\times 100$
a. 侧视 b. 壳缘视 c. 口视。
- 图 8. 锥头虫 (未定种) *Gaudryina* (*Siphogaudryina*) sp. $\times 100$
a, b. 侧视 c. 口视。
- 图 9, 10. 中沙节眼虫 (新种) *Nodophthalmidium zhongshaensis*, n. sp. $\times 65$
9. 正模标本 a. 侧视 b. 口视 10. 副模标本侧视。
- 图 11. 折半五块虫 (相似种) *Quinqueloculina* cf. *Q. dimidiata* Terquem. $\times 65$
a, b. 侧视 c. 口视。
- 图 12. 虾夷五块虫 *Quinqueloculina yezoensis* Asano. $\times 50$
a, b. 侧视 c. 口视。
- 图 13. 清亮五块虫 *Quinqueloculina candeiana* d'Orbigny. $\times 65$
a, b. 侧视 c. 口视。
- 图 14. 假块心虫 (未定种) *Pseudomassilina* sp. $\times 50$
a. 侧视 b. 口视。

图版 (Plate) II

- 图 1, 2. 八丈岛块心虫(?) *Massilina* (?) *hachijensis* (Uchio).
1. 外露 3 室标本 a, b. 侧视 c. 口视 $\times 32.5$
2. 外露 2 室标本 a, b. 侧视 c. 口视 $\times 32.5$
d, e. 壳口部分, 示齿形。 $\times 65$
- 图 3. 林奈三块虫 *Triloculina linneiana* d'Orbigny. $\times 50$
a, b. 侧视 c. 口视
- 图 4. 膨鼓粟虫 (新种) *Miliola inflata*, n. sp.
a, b. 侧视 c. 口视 $\times 50$ d. 横切面 $\times 90$
- 图 5. 假椭圆小粟虫 (新种) *Miliolinella pseudooblonga*, n. sp. $\times 100$
a, b. 侧视 c. 口视。
- 图 6. 刺背双块虫 (新种) *Pyrgo spinidorsa*, n. sp. $\times 32.5$
a. 前视 b. 侧视 c. 口视。
- 图 7. 节房虫 (未定种) *Nodosaria* sp. $\times 32.5$
- 图 8. 假平虾虫 (新种) *Astacolus pseudoplanulata*, n. sp. $\times 25$
a. 侧视 b. 壳缘视。
- 图 9. 亚凸圆透镜虫 *Lenticulina subgibba* Parr. $\times 32.5$
a. 侧视 b. 壳缘视。
- 图 10, 11. 亚圆透镜虫 *Lenticulina suborbicularis* Parr. $\times 32.5$
a. 侧视 b. 壳缘视。

图版 (Plate) III

- 图 1. 凹面透镜虫 (新种) *Lenticulina incavata*, n. sp. $\times 17.5$
a. 侧视 b. 壳缘视。
- 图 2. 扁吻透镜虫 (新种) *Lenticulina platyrhinos*, n. sp. $\times 32.5$
a. 侧视 b. 壳缘视。
- 图 3. 透镜虫 (未定种) *Lenticulina* sp. $\times 17.5$
a. 侧视 b. 壳缘视。
- 图 4. 基肋小箭头虫 (新种) *Bolivinella basicostata*, n. sp. $\times 110$
a, b. 侧视 c. 口视。
- 图 5. 舌虫 (未定种) *Lingulina* sp. $\times 17.5$
a. 侧视 b. 壳缘视 c. 口视。
- 图 6. 多形舌虫 *Lingulina polymorpha* Costa. $\times 17.5$
a. 侧视 b. 壳缘视 c. 口视。
- 图 7. 基肋拟舌虫 (新种) *Lingulinopsis basicostum*, n. sp. $\times 17.5$
a, b. 侧视 c. 口视 d. 壳缘视。
- 图 8. 多变拟舌虫 *Lingulinopsis carlofortensis* Bornemann. $\times 17.5$
a, b. 侧视 c. 壳缘视 d. 口视。
- 图 9. 叶拟舌虫 (新种) *Lingulinopsis folium*, n. sp. $\times 17.5$
a. 侧视 b. 壳缘视 c. 口视。
- 图 10. 三角球虫 (新种) *Globulina trigona*, n. sp. $\times 65$
a—c. 侧视 d. 底视。

图版 (Plate) IV

- 图 1. 亚圆反称虫 (新种) *Sigmomorphina subcircularis*, n. sp. $\times 65$
a, b. 侧视 c. 底视。
- 图 2. 六角卵虫 *Oolina hexagona* (Williamson). $\times 135$
a. 侧视 b. 口视。
- 图 3, 4. 刺侧口虫 (新种) *Laterostomella spinosa*, n. sp. $\times 100$
3. 正模标本 a. 侧视 b, c. 壳缘视 d. 口视;
4. 副模标本 a. 侧视 b. 壳缘视 c. 口视。
- 图 5. 幼芽直箭头虫 *Rectobolivina virgula* (Brady).
a. 侧视 b. 口视 $\times 100$ c. 口端 $\times 135$
- 图 6. 针直箭头虫 (新种) *Rectobolivina aculeata*, n. sp. $\times 110$
a. 侧视 b. 口视
- 图 7. 光滑直箭头虫 (新种) *Rectobolivina laevis*, n. sp. $\times 32.5$
a. 侧视 b. 壳缘视 c. 口视。
- 图 8. 假坛管葡萄虫 *Siphonigerina pseudoampullacea* (Asano). $\times 100$
- 图 9. 斐济小丽虫 *Chrysalidinella fijiensis* Cushman. $\times 50$
a, b. 侧视 c. 口视。
- 图 10. 小肋三棱虫 (新种) *Reussella costulata*, n. sp. $\times 50$
a, b. 侧视 c. 口视。
- 图 11. 刺三棱虫 *Reussella spinosa*, n. sp. $\times 65$
a. 侧视 b. 口视。
- 图 12, 13. 丽三棱虫 *Reussella pulchra* Cushman. $\times 50$
12a. 侧视 12b. 口视; 13a, b. 侧视 13c. 口视。
- 图 14. 印度婆口虫 *Baggina indica* (Cushman). $\times 50$
a. 背视 b. 腹视 c. 壳缘视。

图版 (Plate)V

- 图1. 秀丽脐塞虫 *Gavelinopsis praegeri* (Heron-Allen and Earland). $\times 150$
a. 背视 b. 腹视 c. 壳缘视。
- 图2. 中刺旋虫 (新种) *Spirillina mediospinosa*, n. sp. $\times 150$
a. 背视 b. 腹视 c. 壳缘视。
- 图3. 皱帽贝虫 *Patellina corrugata* Williamson. $\times 150$
a. 背视 b. 腹视 c. 壳缘视。
- 图4. 扁假帽贝虫 (新属新种) *Pseudopatellina compressa*, n. gen., n. sp. $\times 100$
a. 背视 b. 腹视 c. 壳缘视。
- 图5. 小企虫 (新种) *Elphidium parvum*, n. sp. $\times 65$
a. 侧视 b. 壳缘视。
- 图6, 7. 小微面包虫 (新种) *Cibicidina minuta*, n. sp. $\times 65$
a. 背视 b. 腹视 c. 口视。
- 图8. 日本九字虫 *Nonion japonicum* Asano. $\times 50$
a. 侧视 b. 壳缘视。
- 图9. 乳突双盖虫 *Amphistegina radiata* var. *papillosa* Said. $\times 100$
a, b. 侧视 c. 壳缘视。
- 图10. 丽半泽虫 *Hanzawaia boueana* (d'Orbigny). $\times 65$
a. 背视 b. 腹视 c. 壳缘视。
- 图11. 冷球盔虫 *Globocassidulina algida* (Cushman). $\times 65$
a, b. 侧视 c, d. 壳缘视。

图版 (Plate)VI

- 图1—5. 刺浆果拟白垩虫 *Baculogypsinoides spinosus* Yabe and Hanzawa. $\times 18$
图6. 凸心圆盾虫 *Cycloclypeus carpenteri* Brady. $\times 6$

图版 (Plate) VII

- 图1—6. 刺浆果拟白垩虫 *Baculogypsinoides spinosus* Yabe and Hanzawa. $\times 21$
1—5. 水平切面
6. 水平切面树胶塑模, 示钝刺内具管道系。

图版 (Plate)VIII

- 图1—6. 刺浆果拟白垩虫 *Baculogypsinoides spinosus* Yabe and Hanzawa.
垂直切面。
1. $\times 23.5$; 2. $\times 26$; 3. $\times 23$; 4. $\times 26$; 5, 6. $\times 21$

