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海南島桥虫类动物調查初步报告*

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1959 年底，中国科学院海洋研究所在海南島的海口、三亚港、东鑼島、东洲及西洲島、馬岭、鹿迴头、蒼头前、白每头、盐灶、崖城、北港等地，进行了普遍調查，采得桥虫类动物，計星虫 14 种、蠕虫 2 种，其中星虫有 6 新种，蠕虫有 1 新属新种。由于采集期短，地区不广，所得种类，仅可代表一部分区系，先作初步报告如次。

I. 星　虫　类

1. 裸体方格星虫 *Sipunculus nudus* L.

这种星虫，在我国沿海也普遍（著者 1958），在海南島海口、北港及盐灶等处，采得标本甚多（60 余条）。

2. 拟安氏方格星虫 *Sipunculus angasoides* Chen et Yeh, sp. n.

新种的描述　体大，外观似裸体方格星虫，躯干后部寬，末端鈍圓，前部較細。模式标本，躯干长 90 毫米（副模式 95，154 毫米），寬 15 毫米（副模式 14，21 毫米），吻长 30，寬 9 毫米。在口的周围，触手褶上生成长短不等的指状触手一圈，在背中央部者最为长大。触手褶后 8 毫米处起，有黃色三角形乳突，鱗片状，尖端朝向后方，这类乳突在前部較后部小且少，腹面較背面稀少。在吻部后背部者，高达 0.5—0.8 毫米。体色乳黃（酒精保存）。躯干表面，約可見 96 肌环，凡位在躯干中部者，均較前后二端狹細。末端仅可見縱肌痕。

体壁縱肌层具 30 或 31 条肌束，分枝牽連少見。收吻肌二对，腹对位置稍前（約在躯干前 1/3），自第 2—5 肌束开始，背对自第 9—13 肌束間始。紡錘肌纖細（图 1，*sm*），始自肛門前方。后端分枝，各固着在腸壁上。腸螺旋約有 22 轉。食道自背对收吻肌間向后，在腹神經索左側盘繞，約在身体中部（卽腸螺旋 11 轉处），向前形成后迴环（图 1，*p*），至收吻肌始端，重又折返，在腹神經索右側，轉繞成前迴环（*a*），并継續向后盘繞，至躯干末端再向前行，接直腸。直腸长 15—20 毫米，盲囊（*rd*）指状，在肛門后 9—12 毫米处。肛門位在吻后第 18/19 环沟。翼状肌（*wm*）各在背对收吻肌始端处发出，固着在直腸两側。脑在背对收吻肌前端愈合处，前緣有很多指状构造（图 1）。腎管长 15 毫米（副模式 19—

* 本文所用材料系中苏海洋生物考查队采集，由中国科学院海洋研究所供給，特此表示謝意；本文曾于 1962 年 6 月在青島由中国海洋湖沼学会和中国科学院海洋研究所共同召开的“海洋动植物区系学术論文討論会”上宣讀过摘要，会后又进行了全面地补充、整理。

26 毫米)，后 2/3 游离，前端有明显的盲囊，开口在肛門前 4—5 肌束間，在 6/7 或 7/8 肌环間。伸縮血管 (*c*)，附在食道前段背腹面，二支等长，缺乏細盲管。成熟卵球状，直径 0.19 毫米，卵膜上有整齐的斑点。

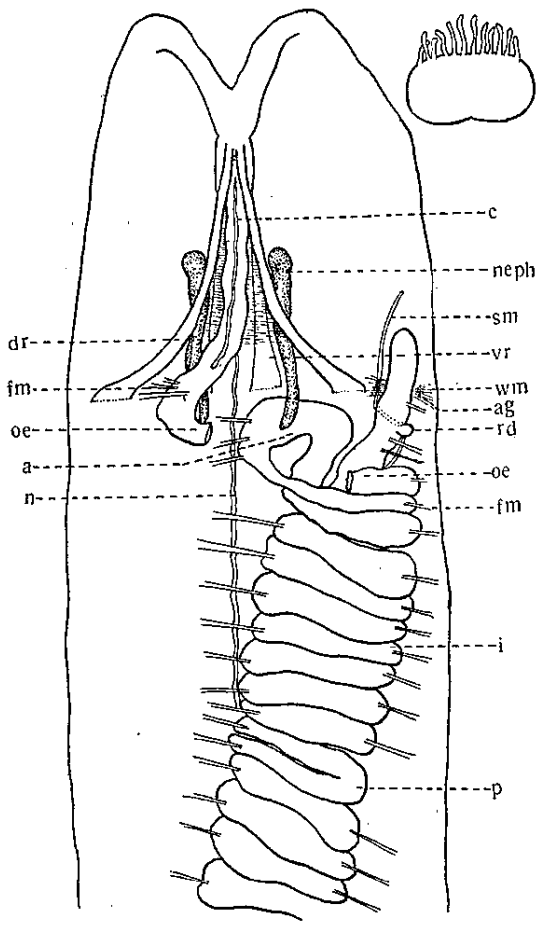

图 1 拟安氏方格星虫，背部剖开，示內部器官 (去肌束)及脑放大(右上角)。

Fig. 1. *Sipunculus angasoides*, sp. n. showing internal organs, dorsal view, and its brain enlarged.

产地 三亚港东鑼島(标本三个)。

討論 本种与 Baird (1868) 得自澳洲南部 Port Lincoln 訂名为 *S. angasi* 极相象。Baird 的原始記載簡略，但由 Edmonds (1955) 再度审核，重新描写(內附图 4 幅)。他們的种，有下列特点：(1)縱肌束 27—30 条，通常为 28 条；(2)二对收吻肌始源在同一水平上；(3)肛門在收吻肌始点附近(或較后)；(4)腎管仅达到收吻肌始点处；(5)背血管具細盲管。这些特点，可与本种区别。

3. 澳洲巨体星虫 *Siphonosoma australe* (Keferstein)

Phascolosoma australe Keferstein, 1865.
Sipunculus australe Quartrefage, 1865.
Siphonosoma australe Fisher, 1950.

躯体长 300—370 毫米，吻部为躯长的 1/5。吻具鈎 92—140 环。体壁縱肌 15—18束。收吻肌二对，腹对在 2—4 (1—4，2—3) 肌束間，背对較前，在 3—4 (3—5，4—6) 肌束間，均在肛門后 10—15 毫米处。腎管 60—65 毫米长，开孔在第 2 肌束肛門前 5 毫米处。伸縮血管具很多細盲管。

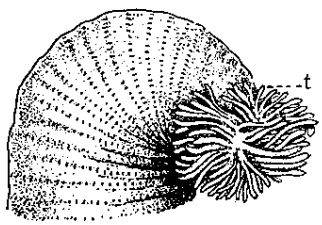

图 2　澳洲巨体星虫的前端，示触手和吻鈎。
Fig. 2. *Siphonosoma australe* Anterior end showing tentacles and hooks.

产地　盐灶、崖城、白每头、鹿迴头等地，采得大量标本。国外如澳洲、印度、菲律宾、斐济羣島等处，都有分布。

4. 可口革囊星虫 *Phascolosoma esculenta* (Chen et Yeh)

Phascolosoma scolops, Chin, 1947.
Physocosoma esculenta, Chen et Yeh, 1958.

从浙江温州和福建廈門二地所得标本，作者于 1958 年鉴定为这一种[1]，惟当时描写两对收吻肌时，应該說，腹对在背对前第 1—2 肌束間，背对較长，在 1—3 或 2—3 肌束間。金德祥(1947)鉴定廈門标本[2]为 *P. scolops*，如肌束 17—19 对，收吻肌始点远在后方，触手 6 条，腎孔位在第 4—5 肌束間，均为本种特征。

产地　崖城、盐灶、蒼前島。

5. 厥目革囊星虫 *Phascolosoma scolops* (Sel. et De Man)

Phymosoma scolops, Sel. et De Man, 1883—1884.
Phymosoma scolops, A. Shipley, 1898.

只有一个标本，躯干长 27 毫米，陷入吻为躯长的 1/2 弱。体壁厚，不透明。指状触手 25 条，吻鈎 17 环。吻鈎的副齿，有时不显(图 3, B)。

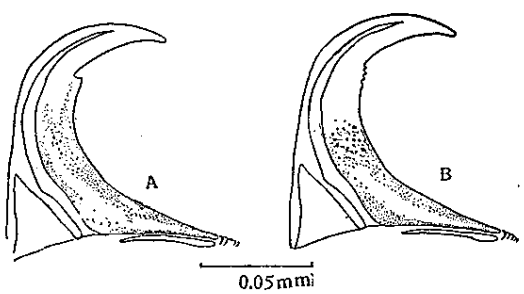

图 3　厥目革囊星虫，吻鈎，两型。
Fig. 3. *Phascolosoma scolops* Two types of hooks.

躯体中部縱肌束 23 条。收吻肌二对，位在躯干后 1/3 处第 3—8 肌束間，背对稍細，在躯干中部 6—7 肌束間。腸螺旋 23 轉。缺直腸盲囊。腎管为躯长的 1/3，腎孔在第 3—4 肌束間，与肛門同一水平。

产地　西洲島。

討論　本种具世界性分布，佐藤 (1939) 曾在台湾采到过。在大陆沿海除金氏可疑报告外，未有見过。在国外如日本、朝鮮、菲律宾、新加坡、馬来亚、印度尼西亚、紅海、印度

洋、澳洲、新西兰、新不列顛、法国、德国等处，均有过报告。該种分布虽广，种內变异却多。自 1883 年以来，学者曾在該种下，成立三个变种，卽 *P. scolops* var. *mossambicense* Sel. et De Man（皮肤不透明，吻鈎缺副齿），*P. s.* var. *adenticulatum* Herubel 1904（吻鈎基部有小疣突）和 *P. s.* var. *tasmaniense* Fisher 1914（乳突表面多角形小板的形态不同，吻鈎缺副齿）。佐藤(1930)研究日本沿岸的材料，发現种內确有上述变异，故主张取消其变种名称[20]。作者虽仅得一标本，亦发現吻鈎缺副齿，皮肤不透明等特点，亦証明种內多变异，不能分成亚种或变种。

6. 劳氏革囊星虫 *Phascolosoma rüpelli* (Grube)

整体长 15 毫米，陷入吻为整长的 2/5。体壁薄，不透明。触手 11 条，吻鈎 11 环，每鈎細尖，末端鈎轉(高 0.05 毫米)，缺副齿(图 4, A)。乳突：在鈎环間者最小，腺孔周围几丁質小板成环状（图 4, B），在吻基部者較大，小板大小相似（C），在躯干后部者最高大，稠密，腺孔周围的小板大，乳突成錐状隆起（D）。

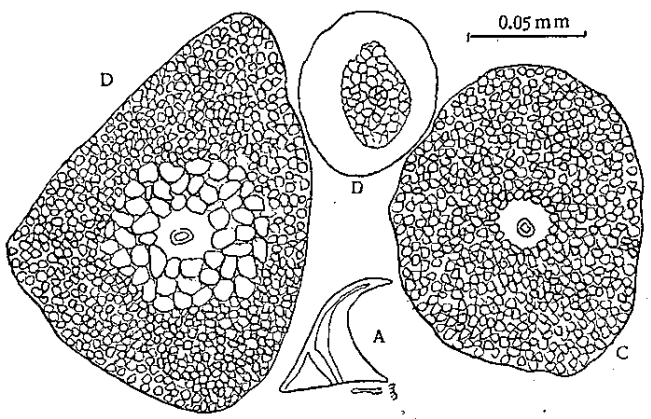

图 4 劳氏革囊星虫，A. 吻鈎；B. 吻鈎間乳突；C. D. 吻基部和躯干末端乳突。
Fig. 4 *Phascolosoma rüpelli* A. Hook, B—D. Papillae: B. between the hook rows, C. at the base of the introvert, D. on the posterior body.

产地 馬岭(雌性，在海藻中采得)。

7. 罗脫革囊星虫 *Phascolosoma rottnesti* Edmonds

躯干长 13 毫米，寬 2 毫米。陷入吻长 9 毫米。吻的背面有深棕色斑点。体壁薄，可見肌痕。触手 13 条。吻鈎 12 环，吻鈎小，主齿稍弯曲，有鈍副齿。

体壁肌在躯干中部 20 条。收吻肌二对，前 4/5 完全愈合。腹对在躯干后 1/3 处 2—6 肌束，背对稍前(約 1 毫米)在 4—5 肌束間。腎管开口在肛門前第 3—4 肌束間。

产地 馬岭(一标本)。

討論 1956 年，Edmonds 首次在澳洲西部得到很多标本。按其描述和分布于此間者比較，除二对收吻肌始源点距离稍短外，无大不同，故定为同一种。

8. 太平洋革囊星虫 *Phascolosoma pacificum* Keferstein.

躯干长 80 毫米，寬 8 毫米（半收縮状态）。陷入吻較躯干稍长。体壁厚，不透明。整体密布皮肤乳突，在吻基部及躯干后端者最大。触手 32 条。吻鈎 70 环（完整者 19 环）。鈎的形态和原种一致（图 5）。

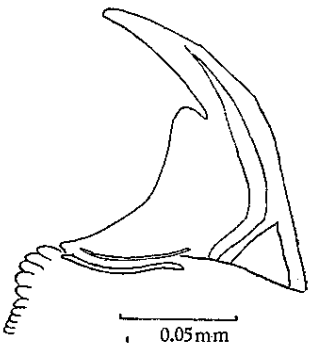

图 5　太平洋革囊星虫，吻鈎。
Fig. 5. *Phascolosoma pacificum* Hook.

产地　西洲島（一标本，珊瑚礁中采得）。

討論　本种自法国沿海、紅海至印度洋、太平洋区域，如馬尔加什、新西兰、菲律宾、馬来亚、日本和我国台湾，均有过报告。这是浅海热带常見种。

9. 爪突革囊星虫 *Phascolosoma uncatum* Chen et Yeh, sp. n.

新种的描述　躯干长 11 毫米，后部最寬处 5 毫米。陷入吻 9 毫米长。体色乳黃，吻背面有深棕色的横斑。吻端具 14 指状触手，单圈环列在口之背側。吻鈎 50 环，棕褐色；每鈎的主齿鈍而弯曲，副齿自腹緣上升形成。透明沟上部細，中腰較狹，下部寬，沿底后半段有一深色横带。角質杆細短，其后有一列八九个小疣突（图 6, A）。

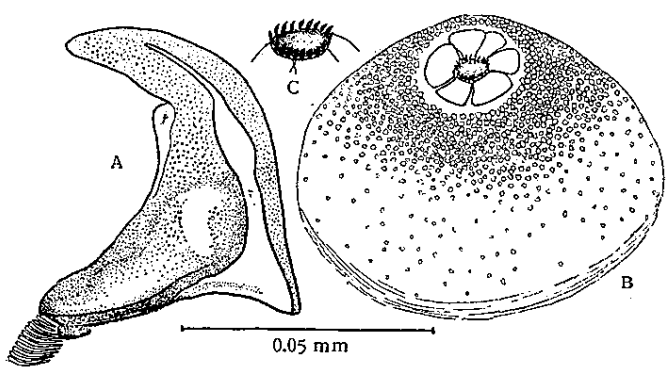

图 6　爪突革囊星虫，A. 吻鈎；B. 吻鈎間乳突；C. 示腺孔周围爪状构造。
Fig. 6. *Phascolosoma uncatum*, sp. n. A. Hook. B. Papilla between the hook rows. C. Its gland pore enlarged.

体面有不同乳突。分布在鈎环間者，前面的細小，后面的高 0.017—0.063 毫米，成圓錐状隆起，多由細小板拼成。在腺孔周围，有 4—8 大型板，內側約有 18 条小鈎棘，直立环抱（图 6, C）。分布吻基部或肛門前者背面的較大而密，高 0.13—0.15 毫米，寬 0.14—0.19 毫米，表面全由多角形小板形成。无鈎棘，亦无大型板。在躯干中部者低平，較小（图 7, A）。在躯干末端者，圓而大，基部有一圈透明区（B）。

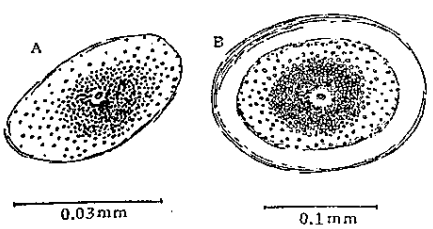

图 7　爪突革囊星虫，体中部（A）和后部（B）乳突。
Fig. 7. *Phascolosoma uncatum*, sp. n. Papillae on the middle (A) and the posterior body (B).

体壁薄，纵肌在腎孔后分离，不易分清，体中部約可

見到 39 条。收吻肌二对，腹对极粗寬，在躯干中部 3—11 肌束間始源，背对細，在腹对前 6—9 肌束間始源。两对在前半部愈合为一。紡錘肌 1 条，起源于肛門前，貫穿消化道，后端固着在躯干后端神經索右側。固腸肌 1 条，起源于背收吻肌前方神經索左側第一肌束处，远端分成二叉，分别固着在食道游离段和腸螺旋最末第二轉上。腸螺旋約 18 轉。直腸盲囊袋形，甚大，位在腸螺旋最后第三轉內方。腎管黑褐色，为躯长的 1/2，前端 1/3 固着。腎孔在肛門前第 3—4 肌束間。伸縮血管簡单。有眼点。

产地 鹿迴头(一标本，从珊瑚礁中采得)。

討論 本种乳突等构造与太平洋革囊星虫最象，但吻鈎缺三角区，显然不同，故鑒定为新种。

10. 海南革囊星虫 *Phascolosoma hainanicum* Chen et Yeh, sp. n.

新种的描述 躯干长 28 毫米，最寬处 5 毫米。陷入吻內縮，約长 24 毫米。体色土黃(酒精保存)，吻部較深，但其背面无横斑。躯干后部体壁較薄，半透明。触手指状，12 条，位在口之背側。吻鈎完整者 80 圈，在吻前 3/5 部分。每鈎甚小，金黃色，高 0.063 毫米，寬 0.067 毫米。主齿稍直，副齿較为突出。透明沟靠近背側，上端尖，在副齿处，放寬后縮小，基部稍寬。无三角区。鈎基部有一横沟紋，背側伸入鈎內。角質横杆和 4—5 小疣突明显 (图 8, A)。

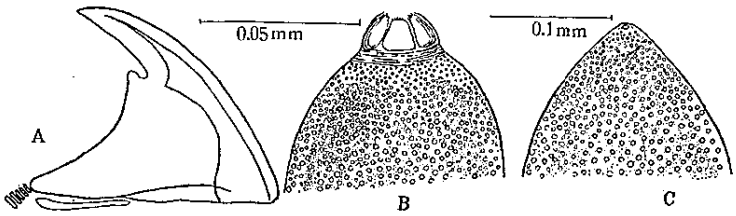

图 8 海南革囊星虫，A. 吻鈎；B. 吻鈎环間乳突，側面观；C. 躯干乳突，部分側面观。

Fig. 8. *Phascolosoma hainanicum*, sp. n. A. Hook. B. Papilla between the hook rows. C. Trunk papilla, side view.

体表皮肤乳突发达，作錐状隆起，分布在鈎环間者，透明。腺孔周围有 4—7 深黃色大板，內緣有小齿(图 8, B)，在肛門前者最密，躯干末端者較疏較少，均缺少上述大板 (C)。各部位乳突大小，見下表：

乳突所在部位	高 (毫 米)	寬 (毫 米)
在鈎环間者	0.059—0.076	0.057—0.074
在吻中部者	0.13	0.15
在吻基部者	0.17	0.19
在躯干中部者	0.02—0.24	0.16—0.23
在躯干后部者	0.08—0.32	0.11—0.24

体壁薄，中部可見縱肌 26 条，后部 21 条，常有分枝牽連。环肌层不分清。收吻肌二对，腹对較粗，起源于躯干中部 2—7 肌束間，背对位躯干前 1/4 处 5—8 肌束間。紡錘肌

始源于肛門前方，到躯干末端固着。消化道依紡錘肌轉繞 10 环。食道嵌于腹对收吻肌間。腸螺旋約 10 轉。直腸很长，盲囊小，指状，位最后一轉腸螺旋的內側。固腸肌 1 条，自躯干前 1/3 神經索左側发出，远端分成二叉，各固着在食道后第一轉腸螺旋和在直腸上。腎管深黃色，約为躯长的 2/5，前面 2/5 附着体壁，在肛門前第 3—4 肌束間开孔。伸縮血管簡单。眼点一对，显著。

产地　东洲島。

討論　本种与前一种相象，但躯体大、縱肌数目少，吻背面无横斑。吻鈎主齿較直，副齿显著，鈎环多，两者間有区别，鉴定为新种。

11. 中华革囊星虫 *Phascolosoma sinense* Chen et Yeh, sp. n.

新种的描述　躯干 32 毫米长，4 毫米寬（副模式标本 24—43 毫米和 5—6 毫米）。陷入吻內縮，約与躯干等长。体色深黃，吻背面有深棕色的横斑紋。躯干前后棕色，中部淡黃色。体壁薄，內部器官隱約可見。触手 14—20 条，指状，在口的背側作馬蹄形排列，其后襟状皮褶很厚。吻鈎 17—26 环。每鈎棕黃色，高度 0.11 毫米，主齿向后方弯曲，副齿鈍平不显。从側面看，有清晰的沟紋，背側有三角形透明区，中沟远端細尖，伸入主齿，中部以下变寬。角質横杆較粗、紧貼沟底，其后有一列小疣突（图 9，A）。

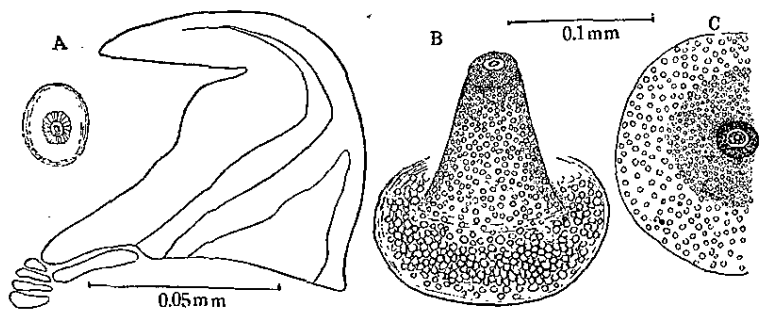

图 9　中华革囊星虫，A. 吻鈎；B. 肛門前乳突，側面观；C. 躯干后部乳突，正面观。

Fig. 9. *Phascolosoma sinense*, sp. n. A. Hook. B. Preanal papilla. C. Trunk papilla, frontal view.

皮肤乳突，分布于鈎环間者細小，无色透明，作环状排列。分布于吻部和躯干中部者較大，淡黃色，腺孔周围棕色。分布肛門前方者最高大（寬 0.19 毫米），棕色，錐状隆起，角質小板通常基部和頂部的同大，腺孔周围有角質环（图 9，B）。分布躯干后部者，彼此密接，錐状隆起較低（高 0.075 毫米，寬 0.25 毫米），基部角質小板較分散，近頂端逐漸增密，較小，腺孔周围，內亦有环（C）。

体壁縱肌分成束，束間常有分枝牽連。躯干中部有 24 条（副模式 21—28 条），后部 28 条。环肌連續。收吻肌二对，腹对粗，在体后 1/3 处第 3—7（2—6 或 2—7）肌束間，背对細，在腹对前方第 6—7（左）和 7—10（右）肌束間。紡錘肌前后二端均固着体壁。腸螺旋 23 轉。直腸盲囊大，指状，在最末腸螺旋內側。固腸肌 1 条，始自躯干中部左側第一

肌束，分二支，各固着在食道和直腸盲囊后方(或仅一支存在)。腎管粉紅色，为躯干长度的 1/2—1/3，末端一半游离，开孔于肛門后方第 3—4 肌束間。伸縮血管簡单。眼点一对。

产地 东洲島(副模式西洲島、鹿迴头、馬岭共三标本)。

討論 本种內从馬岭采得标本，仅有三条收吻肌，左側一条起源于体后 1/4 处 4—8 肌束間，前方一对，起源于 5—7 (左) 3—8 (右)肌束間同一水平上，作者訊为是变常的，因其他特点是相同的。

12. 微小革囊星虫 *Phascolosoma parvum* Chen et Yeh, sp. n.

新种的描述 躯干长 18 毫米(副模式 9—17 毫米)，最寬处 1.5 毫米(副模式 1.5—3.0 毫米)。陷入吻为躯干长度的 1/2—2/3。体色乳黃，吻部背面有深棕色的横斑，在肛門前后亦有。体壁薄，可看出縱肌痕。触手 11 (副模式 10—15) 条，指状。触手后襟状皮褶薄。吻鈎 15 (副模式 11—17) 环，黃色。每鈎高 0.021—0.054 毫米，基部寬 0.029—0.042 毫米，主齿尖，向后弯，无副齿。从側面看，背側三角形区小，中沟紋上端尖，深入主齿，下部較寬，有横杆和疣状突起 (图 10)。

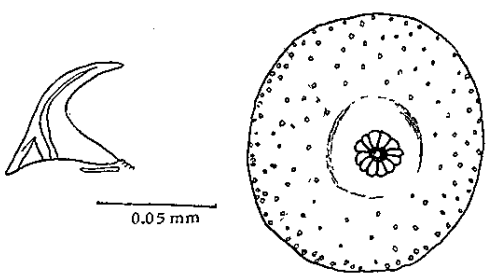

图 10 微小革囊星虫，吻鈎和吻背部斑內乳突。
Fig. 10. *Phascolosoma parvum*, sp. n. A hook and a papilla on posterior dorsal side of the introvert.

皮肤乳突細小，分布吻鈎环間者色白圓形，直径 0.034—0.063 毫米，腺孔周围，有一圈几丁質小板。吻背部乳突表面有稀疏小板(图 10)。吻腹面者，缺少小板，且在各个乳突之間，有网状构造联絡(图 11, A)。肛門前方的乳突，深黃色，在背面的，錐状隆起高达 0.13 毫米，腺孔周围有少数小的几丁質板，外围有大板，再向基部則变成小而疏的板，在基緣一圈密集(图 11, B)。在躯干中部和肛門后方乳突矮小，在体后端的高(0.16 毫米)且較密 (C)。

体壁縱肌，自腎孔前方到躯干末端，可分清 19 条。环肌不明。收吻肌二对，腹对比背

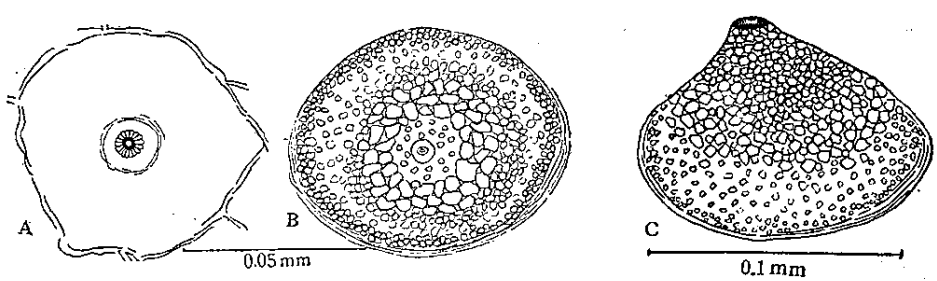

图 11 微小革囊星虫，A. 吻部腹面乳突；B. 肛門前方乳突；C. 躯干后部乳突。
Fig. 11. *Phascolosoma parvum*, sp. n. Papillae on the ventral side of the introvert (A), in front of anus (B) and on the posterior trunk.

对粗一倍許，起源于躯后 1/3，第 3—6 肌束上；背对較前，起源于体中部第 4—5 肌束上。紡錘肌 1 条，自肛門前发出，至体末附着体壁。腸螺旋 18 轉。直腸盲囊在最后一轉外側。固腸肌 1 条，自背对收吻肌始点发出，分成二支，小支固着在食道上，大支在直腸盲囊下方。腎管黃色，为躯干长的 1/3，后 1/4 游离，在肛門后第 3—4 肌束間开孔。生殖腺在腹收吻肌基部。成熟卵扁，呈卵圓形，大小为 0.14 × 0.1 毫米。伸縮血管簡单。眼点一对。

产地　馬岭（标本 11 条，采自藻类或牡蠣壳中）。

討論　就吻鈎、乳突形状和細小盲囊几点看，本种与 *P. rottnesti* 相象。但本种体甚小（*P. rottnesti* 4—5 毫米寬）、吻鈎无副齿、乳突有不同大小几丁質小板（*P. rottnesti* 几相等）、腎孔在肛門之后（*P. rottnesti* 在肛門之前），故有区别。

13. 棘管枝口星虫 *Dendrostomum spinulum* Chen et Yeh, sp. n.

新种的描述　体小，后部較寬，末端鈍圓形，长 22 毫米，最寬部 8 毫米（副模式长 17—20 毫米，寬 7—9 毫米）。吻細短，长 2 毫米，寬 2.5 毫米。无吻鈎（图 12）。体色灰棕，吻部灰白，与躯干交界有一圈深紫色带。体壁厚，不透明。围口触手分四主軸，各軸縱分二主支，每支又分裂成 2—3 支，支之末端有絲状触手，沿口緣四角各出一沟，延伸入各主軸及分支中，触手亦沿沟之二側对生。凡近口角者最长，自此向前逐漸減短，致触手远端长短一致（图 13，B、C）。

图 12　棘管枝口星虫整体，自然大。
Fig. 12. *Dendrostomum spinulum*, sp. n., Natural size.

皮肤乳突在吻部者扁平、透明，中央腺孔周围成星形裂（图13，D）。在躯干前后者分散，橢圓形，直径 0.025—0.042 毫米，頂端腺孔处延长成一条棘管，在躯干末端，这管长达 0.067 毫米，周围有分散几丁質小板，拼成块状，分布不規則（E）。

体壁縱肌不分清。只有腹对收吻肌发达（图 13，A，*rm*）。紡錘肌（*sm*）1 条，前端在直腸盲囊基部发出，貫穿腸螺旋，后面分散成細絲条，各各固着在腸上。腸螺旋（*ic*）約 27 轉，直腸盲囊小（*rd*），有翼状肌（*wm*）。固腸肌有 3 条：肌$_1$（图 13，fm_1）自左側收吻肌始点稍后导至食道伸縮血管处，粗短。肌$_2$（fm_2）自躯干背中部左側发出，通常固着在直腸上。肌$_3$（fm_3）也从体前背側左边发出，固着在直腸盲囊的后方。腎管一对，乳白色，前端棕褐色，漏斗体透明，为躯干长度的 1/2 或 3/4，全部游离，在肛門稍后开孔。伸縮血管粘着食道背側，成树枝状。有眼点。生殖腺（*g*）在收吻肌始源处。成熟卵圓形，直径 0.12 毫米。

产地　西洲島（标本三个）。

討論　就收吻肌、吻鈎、伸縮血管、肛門位置各点看，本种和分布澳洲的 *D. dehanata* Kesteven (1903) Edmonds (1956) 相近。但該种体特大（160—280 毫米长），收吻肌始源甚后，直腸特长，与本种有异。且本种乳突上具有棘状管，是一个重要特点。

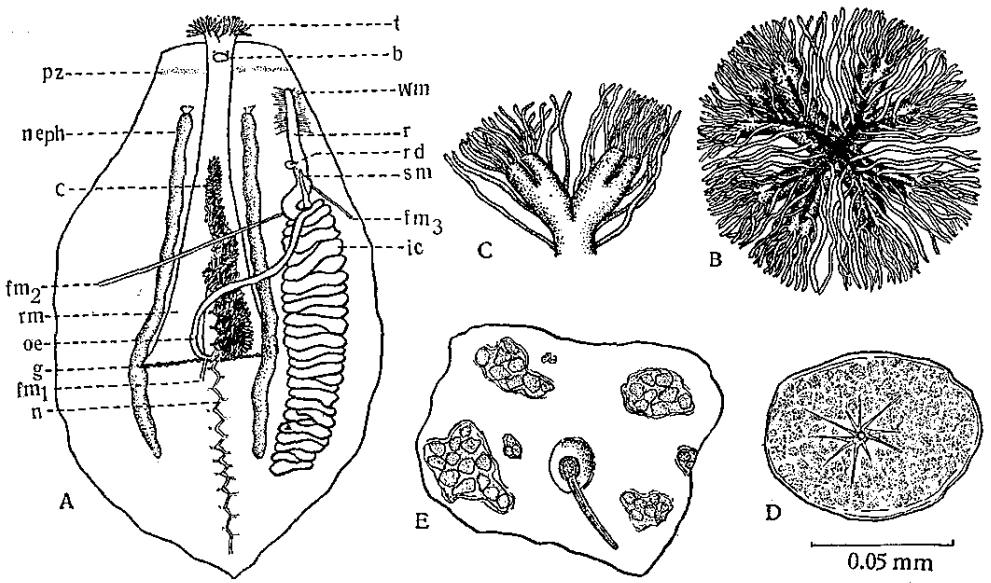

图 13 棘管枝口星虫，A. 內部解剖；B. 口端正面观；C. 一軸外側观；D. 吻部乳突；E. 躯干末一块皮，示棘管和几丁質团状。

Fig. 13. *Dendrostomum spinulum*, sp. n. A. Internal anatomy. B. Oral view showing the tentacles. C. Side view of a stem of tentacles. D. Papilla on introvert. E. Papilla on posterior trunk.

14. 雅丽被盾星虫 *Aspidosiphon elegans* Sel. et De Man

自鹿迴头采得一标本，躯干 23 毫米，吻仅 5 毫米长（較原种短）。吻鈎只 11 环（原种有 30 环以上）。但鈎和乳突的形态相同，故为同一种。

15. 拟无吻蠕属 *Para-arhynchite*, gen. n.

新属的特征 缺吻。体壁縱肌分离成束。腎管三对，腎口具螺旋狀附屬器。有直腸盲囊。循环系統發达，具心臟、环血管、腸血管和背腹血管。

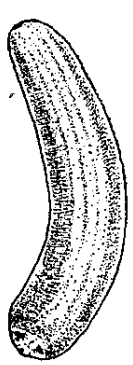

图 14 六腎拟无吻蠕，整体观。

Fig. 14. *Para-arhynchite hexorenale* gen. et sp. n., Natural size.

自佐藤氏于 1924 年从 *Thalassema* 属分出，成立此无吻蠕属（*Arhynchite*）至 1958 年止，該属共記載三种。此次在海南島又发現一种无吻蠕，共得六个标本（內一个系幼体），其形态介乎 *Listriolobus* 和 *Arhynchite* 二属之間，故立此新属。

六腎拟无吻蠕 *Para-arhynchite hexorenale* Chen et Yeh, sp. n.

新种的描述 整体圓筒狀，弯向腹面（图 14）。体长 39 毫米，寬 12 毫米（副模式长 14—55 毫米，寬 5—15 毫米）。无吻。体色肉紅（酒精保存）。体壁薄，自口端至肛門，可見 15 条縱肌（副模式 12—15 条）。每条寬 1 毫米，

靠近神經索二側各一条，其余肌束間，均有 2—3 毫米的距离。皮肤乳突肉紅色，分布在躯干前后端者粗大、稠密。在躯干中部者小而分散。腹刚毛一对，在口后 3 毫米处。毛长 2.5 毫米，末端鈎轉，扁，但毛干圓（图 15，C）。二毛間无基間膜。尾刚毛缺如。

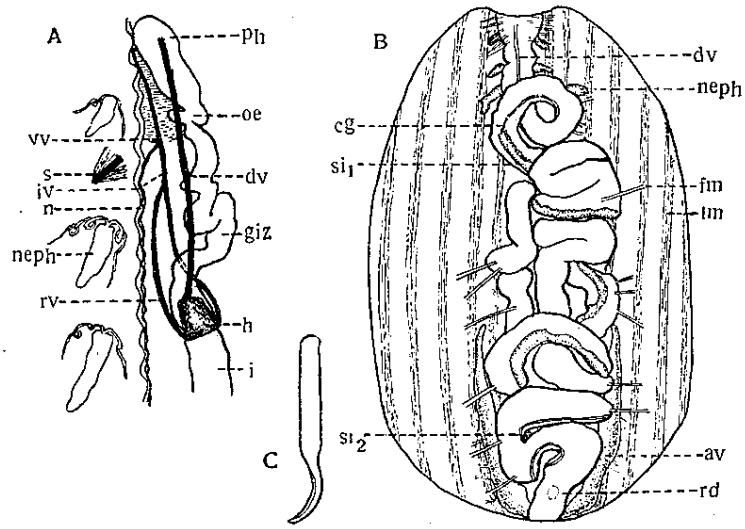

图 15　六腎拟无吻蛭，A. 消化道前端移开，示血管、腎等器官；
B. 內部解剖；C. 腹刚毛放大。

Fig. 15. *Para-arhynchite hexorenale*, gen. et sp. n. A. Anterior viscera showing blood vessels *etc.* B. internal anatomy. C. Ventral seta enlarged.

消化道全长 160 毫米，前腸的咽头（图 15，*ph*）粗，有肌絲固着；食道（*oe*）細短，下接砂囊（*gz*），成多个 S 形扭轉；胃短，下接中腸。中腸的前段，向前方右側繞一轉后，向后伸展，将近体末，又折向前行，再次向后行，末接直腸（*r*）。直腸盲囊（*rd*）圓形，长約 1 毫米，在肛門前 3 毫米处。肛門囊（*av*）一对，位直腸末端腹側，长 9—15 毫米，后半部有少数肌絲固着；囊壁薄，表面有分散的小漏斗。紆毛沟（*cg*）在中腸前端，长 7 毫米，后接副腸。副腸分二部：前部（si_1）粗寬，棕色，长約 50 毫米，前端两側收縮成盲囊状；后部（si_2）細长，乳白色，长約 96 毫米，末接直腸盲囊。

腎管三对。腹刚毛前有一对，其后二对，末对最长，全部游离。壁薄透明，前唇有一分叉的螺旋状附屬器。循环系統发达（图 15）。心脏（*h*）在胃后的背面，薄壁囊状。前端中央伸出一条粗的背血管（*dv*），沿前腸直达咽头。从心脏后面二側，各伸出一条环血管（*rv*），在胃下相遇成环，而后形成腸血管（*iv*），向前行至腹刚毛处，向前后各分出一条腹血管（*vv*）。前支較粗，直达咽头下方，后支細，沿神經索后行，終止于直腸盲囊上。

产地　鹿迴头（标本 6 个）。

討論　本新种的縱肌束，自前至后，条次分清，近似 *Listriolobus*，但无吻，又与 *Arhynchite* 同，立此新属，以收容这一类的种。

16. 絳体管口蛏 *Ochetostoma erythrogrammon* Leuckart et Rüpell

本种共得标本 8 个(內 3 个幼体)，躯干长 18—35 毫米，寬 7—15 毫米；吻长 6—8 毫米。体色粉紅，体壁薄，可分清肌束，縱肌为 13 条，背中央有一条(有时腹中央单条时，背中央便成一对)，各束間距离相等。从横切面看(图 16)，外面有較薄环肌层，中层为縱肌，肌束間常有空隙，內有一薄斜肌属，为本属的特征。

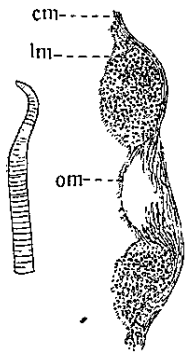

图 16 絳体管口蛏的腹刚毛及体壁部分切面。

Fig. 16. *Ochetostoma erythrogrammon* Ventral seta and part of body wall in section.

在 1946 年，Fisher 記載本属具三对腎管者計有六种，均由縱肌的条数来分，如：

縱肌束：14 条……*O. erythrogrammon* Leuck. et Rüp.

15 或 16 条 …*O. stuhlmanni* (Fisher)

15 — 17 条 …*O. leptodermon* (Fisher)

16 — 18 条 …*O. caudex* (Lampert)

17 或 18 条 …*O. kokotoniense* (Fisher)

17 或 18 条 …*O. griffini* Wharton

本种分布海南島的，縱肌数虽为 13，但形态上与分布琉球的 *O. erythrogrammon* 相象。若多得标本，知总縱肌数确无变异，可能是一个新种。目前标本不多，大小差别又少(分布琉球的标本长 65 毫米，寬 15 毫米)，定为同种，較为确当。

插圖縮寫字母說明

a 前迴环；*ag.* 肛門腺；*av.* 肛門囊；*b.* 脑；*c.* 伸縮血管；*cg.* 紆毛沟；*cm.* 环肌；*dr.* 背收吻肌；*dv.* 背血管；*fm.* 固腸肌；*g.* 生殖腺；*gz.* 砂囊；*h.* 心；*i.* 中腸；*ic.* 腸螺；*iv.* 腸血管；*lm.* 縱肌；*n.* 神經索；*neph.* 腎管；*oe.* 食道；*om.* 斜肌；*p* 后迴环；*ph.* 咽头；*pz.* 吻后带；*r.* 直腸；*rd.* 直腸盲囊；*rm.* 收吻肌；*rv.* 环血管；*s.* 腹刚毛；*si.* 腸虹管；*sm.* 紡錘肌；*t.* 触手；*vr.* 腹收吻肌；*vv.* 腹血管；*wm.* 翼状肌。

Explanations of the letters in the figures

a anterior loop, *ag.* anal gland, *av.* anal vesicle, *b.* brain, *c.* contractile vessel, *cg.* ciliated groove, *cm.* circular muscle, *dr.* dorsal retractor, *dv.* dorsal vessel, *fm.* fixing muscle, *g.* gonad, *gz.* gizzard, *h.* heart, *i.* mid-intestine, *ic.* intestinal spiral, *iv.* intestinal vessel, *lm.* longitudinal muscle, *n.* nerve cord, *neph.* nephridia, *oe.* oesophagus, *om.* oblique muscle, *p* posterior loop, *ph.* pharynx, *pz.* post-introvert zone, *r.* rectum, *rd.* rectal diverticulum, *rm.* retractor muscle, *rv.* ring vessel, *s.* ventral seta, *si.* intestinal siphon, *sm.* spindle muscle, *t.* tentacle, *vr.* ventral retractor, *vv.* ventral vessel, *wm.* wing muscle.

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A PRELIMINARY REPORT ON THE GEPHYREAN FAUNA OF HAI-NAN

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During the months of November and December, 1959, an extensive zoological collection of the gephyrean worms was made under the auspices of the Institute of Oceanology, *Academia Sinica,* along the coast of Hainan Island. Only a limited amount of work has been done either by the author or others in the past on the distribution of this group of animals in China, and there is no record ever placed with the material of this region. The present collection reveals many genuine species distributed therein. There are altogether 16 species, 6 in the order Sipunculida and 1 in Echiurida are new to science. The latter is a new genus and several others are new records in China. The result of this study is tabulated as follows:

SIPUNCULIDA

1. *Sipunculus nudus* L.
2. *Sipunculus angasoides* sp. n.
3. *Siphonosoma australe* (Keferstein)
4. *Phascolosoma esculenta* (Chen et Yeh)
5. *Phascolosoma scolops* (Sel. et De Man)
6. *Phascolosoma rüpelli* (Grube)
7. *Phascolosoma rottnesti* Edmonds
8. *Phascolosoma pacificum* Keferstein
9. *Phascolosoma uncatum* sp. n.
10. *Phascolosoma hainanicum* sp. n.
11. *Phascolosoma sinense* sp. n.
12. *Phascolosoma parvum* sp. n.
13. *Dendrostomum spinulum* sp. n.
14. *Aspidosiphon elegans* (Sel. et De Man)

ECHIURIDA

15. *Para-arhynchite hexorenale* gen. et sp. n.
16. *Ochetostoma erythrogrammon* Leuckart et Rüpell

1. ***Sipunculus nudus*** **L.**

About 60 specimens including the juveniles were collected.

Localities: Pei-kong, Hai-kou, Yan-tso.

2. ***Sipunculus angasoides*** Chen et Yeh, sp. n.

Description: The body measures 90 mm long, 15 mm wide (cotypes 95, 154 mm *vs.* 14, 21 mm), with a proboscis 30 mm long.

A row of digitate tentacles over the mouth is present, the dorsal ones being longer. Yellowish posteriorly directed triangular scale-like papillae appear about 8 mm behind the tentacular fold, smaller and scarce on the anterior part, generally closer dorsally. Those on the posterior part of the proboscis more prominent, 0.5—0.8 mm high.

The body shows a yellow-white color (in alcohol). The muscle annules are about

96, a little broader at extremities of the body than at middle. There are 30—31 well developed longitudinal muscles which rarely anastomose. Four retractors are present. The origin of the ventral pair (fig. 1, *vr.*) from the muscle bands 2—5 in anterior 1/3 of the trunk is slightly in advance of the dorsal (*dr.*), the origin of which is from 9—13. A slender spindle muscle (*sm.*) which springs in front of anus is not attached to the body wall but to the intestinal spirals posteriorly. There are 22 spirals, each of which is fastened to the body wall by several fixing muscles (*fm.*). The post-oesophageal intestine on the left side of the nerve cord forms the posterior loop (fig. 1, *p*) in the middle body and then forwards forms the anterior loop (*a*) on the right of the cord. It runs to the posterior side of the body and again turns forward to connect the rectum which is 15—20 mm long. The rectal diverticulum (*rd.*) is small, digitiform, situated 9—12 mm behind the anus. The anal aperture lies between muscle annules 18 & 19 from the base of the introvert.

The nephridia (fig. 1, *neph.*) which are 15 mm long (cotypes 19—26 mm) are buff in color, their posterior 2/3 remains free. Each opening is situated between the 4th and 5th longitudinal bundles in front of anus. The contractile vessel (*c.*) on the oesophagus lacks villi. The brain has many slender processes on its anterior side (fig. 1). Ripe eggs are transparent, *ca.* 0.19 mm in diameter.

Locality: Ton-lu in Sanya (3 specimens).

Remarks: This new species is close to *S. angasi* Baird 1868 from Port Lincoln, South Australia, which was suppemented by Edmonds (1955), but differs in the characters the original species possesses such as (1) the longitudinal muscles 27—30, usually 28; (2) the four retractors originate on the same level; (3) the anus near the origin of the retractors; (4) the nephridia reaching the point where the retractors originate and (5) the contractile vessel with villi.

3. ***Siphonosoma australe*** (Keferstein)

This large species measuring 300—370 mm long in our specimens appears to be widely distributed in the Indo-pacific regions. It is however the first time to record from our coast and is found fairly common.

Localities: Yen-tso, Ya-ching, Pai-mei-tou, Lu-wei-tao.

4. ***Phascolosoma esculenta*** (Chen et Yeh)

It is the commonest species found along our coast. From various places of this island over a dozen of specimens were collected. The origin of the ventral retractors is found on the 1—2 and that of the dorsal is on the 1—3 or 2—3 bundles further back (correcting author's statement of 1958). Chin's identification of the Amoy specimens as *P. scolops* was probably of this species since they possessed several features such as 17—19 bundles of longitudinal muscles, more posterior origin of the retractors, having 6 tentacles, nephridiopores on 4—5 muscle bundles, are characteristic of this species.

Localities: Ya-ching, Yan-tsao, Tsiang-chien-tao.

5. ***Phascolosoma scolops*** (Sel. et De Man)

Only a single specimen referable to this cosmopolitan species was collected. It measures 27 mm long. There are 17 rows of hooks, each with weak accessory tooth (fig. 3).

Locality: Sichow Island.

6. ***Phascolosoma rüpelli*** (Grube)

The whole body measures 15 mm with an introvert 2/5 as long. It has 11 rows

of hooks (fig. 4, A). The papillae among the hook rows are small, larger on the base of introvert and largest on the posterior part of the body (fig. 4, B—D).

This peculiar species possessing only single pair of ventral retractors and two pairs of eyes with anastomosing muscle bundles is known in Red Sea. Its occurrence on the coast of this island is rather unexpected.

Locality: Ma-ling.

7. ***Phascolosoma rottnesti*** Edmonds

A small specimen measuring 13 mm long (+introvert 9 mm) of this species was included in the collection. It has been known only in West Australia.

Locality: Ma-ling.

8. ***Phascolosoma pacificum*** Keferstein

The available specimen measures 80 mm long, excluding the introvert, with 70 rows of hooks (19 complete) (fig. 5) and 32 tentacles. The longitudinal musculature is anastomosing, about 40 bundles. The ventral pair of retractors originates from the middle body, broader, at 2—12 bundles and the dorsal pair more anterior, at 5—7 (left) and 3—9 (right).

Locality: Sichow Island.

9. ***Phascolosoma uncatum*** Chen et Yeh, sp. n.

Description: The trunk is cylindrical, broader posteriorly, 11 mm long, 5 mm at the widest part, with an introvert of 9 mm long. The body wall is somewhat transparent, light yellow, brown cross bars on the upper part of the neck. Overhanging the mouth there is a single row of 14 digitate tentacles behind which there are 50 complete rows of brown hooks. Each one, 0.038—0.059 mm high, has an apical tooth pointed and curved and a blunt accessory one. There is clear dorsal streak slender distally, swollen in the middle and broader at the base, with no triangular one. A clear area appears on its ventral side. A short bar and a row of 8—9 warts are found at the posterior corner of the hook (fig. 6, A).

The papillae between the hook rows are small, arranged in transverse circles, larger and higher more posteriorly on the dorsal side of the neck (0.063 mm high). Each papilla is beset with small plates and 4—8 larger ones around the gland pore. Internal to these, there is a circlet of about 18 spines (fig. 6, C). Those on the dorsal side at the base of the introvert and in front of anus are closer and largest (0.13—0.15 mm high, 0.14—0.19 mm wide) and those on the middle part of the body are slightly smaller and inconspicuous (fig. 7, A), and on the hind part larger and round (B).

The longitudinal musculature is anastomosing and may be divided into 39 bundles in the middle body. There are two pairs of retractors: the ventral pair is broader originated at 3—11 bundles in the middle part of the body, while the dorsal pair is slightly in front, at 6—9 bundles. The spindle muscle takes its origin in front of anus and runs through the intestinal coils to be inserted on the body wall posteriorly. The fixing muscle is present.

The intestinal convolution consists of 18 spirals, with a large sac-like rectal diverticulum. The nephridiopores are situated in front of anus at 3—4 bundles. Each nephridium is about half the length of the trunk, dark brown, its anterior 1/3 is fixed.

Locality: Lu-wei-tao (among the corals).

Remarks: The papillae and other structures are similar to *P. pacificum,* but the hook of the present species lacks a triangular streak. It is distinct.

10. ***Phascolosoma hainanicum*** Chen et Yeh, sp. n.

Description: It measures 28 mm long, widest part 5 mm, with an introvert 24 mm long. The body is dark yellowish, translucent generally. Surrounding the mouth there is a circle of 12 digitate short tentacles. Behind the tentacular crown there are 80 complete and a number of incomplete rows of dark colored hooks. Each hook measures 0.063 mm high. It has a moderately curved apical tooth and a very protrussive accessory one. The clear streak which runs through the dorsal side of the hook is swollen near the middle and lower part and the clear triangular streak is absent (fig. 8, A).

The papillae on the hook region of the introvert are large, bun-shaped, with 4—7 chitinous plates, serrated, around the gland pore (fig. 8, B), those on other part of the trunk are larger, darker and more prominent, with no large plates (C). The sizes of the papillae occurring in different parts of the body are shown as below:

Papillae occur	high in *mm*	wide in *mm*
between hook rows	0.059—0.076	0.057—0.074
middle of introvert	0.13	0.15
base of introvert	0.17	0.20
middle of trunk	0.02—0.24	0.16—0.23
posterior trunk	0.08—0.32	0.11—0.24

The longitudinal muscles are divisible into 26 bundles in the middle part of the body, only 21 in the posterior and indivisible in the anterior. There are 4 retractors: the ventral pair is thicker arising in the middle body at muscles 2—7 and the dorsal pair is more anterior, about 1/4 of the body, at muscles 5—8. A spindle muscle originates from the part in front of anus and is fixed at the posterior part of the body. The intestinal convolution consists of 10 spirals. The rectum is long, with a short digitate diverticulum. The fixing muscle is single arising from the left side of the nerve cord at level of the origin of the dorsal retractors and bifurcates with one branch attached to the oesophagus and another to the rectum. The nephridia are dark yellow, 2/5 of the trunk length, with anterior half attached, and open between muscles 3—4 in front of anus. The dorsal contractile vessel has no villi. There is a pair of eyes.

Locality: Tungchow Island.

Remarks: This new species resembles *P. uncatum* in the general structures, but its hook has a more straight apical and a very prominent accessory tooth, more hook rows, less longitudinal bundles *etc.* They are different species.

11. ***Phascolosoma sinense*** Chen et Yeh, sp. n.

Description: The trunk measures 32 mm long, maximum breadth 4 mm (cotypes 24—43 mm, 5—8 mm), with introvert 26 mm long (cotypes 30 mm). Color: numerous transverse dark brown bands are found on the dorsal side of the introvert, yellowish generally with deep brown papillae at both anterior and posterior sides of the trunk. The skin is more or less translucent. Above the mouth there are 20 (cotypes 17, 21) finger-like tentacles. There are 26 rows of hooks found behind the tentacular collar. Each hook is small (*ca.* 0.11 mm high) with a strongly curved apical tooth and a blunt accessory. The clear streak has distal slender and pointed end extending to apical tooth and broad proximally. There is a triangular streak on the dorsal side. The transverse bar and warts are present (fig. 9, A).

The papillae between the hook rows are small (0.008 mm in diameter) arranged in

transverse circles; those on the anterior part of the trunk are largest (0.17 mm high, 0.19 mm wide), dark in color, covered with numerous chitinous plates of uniform sizes (B); those on the middle part are smaller and more scarce, and those on the posterior part of the trunk are nearly as large as anterior ones, also closer and darker (C).

The longitudinal musculature of the body wall is divisible into many separate bundles, 24 in the middle and 28 in the posterior regions, anastomosing in parts. The circular layer is continuous. The ventral retractors are stouter arising from posterior 1/3 of the body at 3—7 bundles, while the dorsal ones are thinner arising in front of the ventral pair, at 6—8 (left), 7—10 (right) bundles. A spindle muscle arises from the body wall in front of anus and is fixed at the posterior end of the body. The intestine has 23 spirals. The fixing muscle is present. There is a large rectal diverticulum. The nephridia are reddish, about 1/2 as long as the trunk. Each is opened to the exterior between muscles 3—4 at the level of anus. Their anterior half is attached to the body wall. The contractile vessel is simple. A pair of eyes is present.

Localities: Tungchow Isl. (type), Lu-wei-tao and Ma-ling.

Remarks: A specimen from Ma-ling has only three retractors: posterior single one arising from the left side of the nerve cord, at 4—8 bundles, in posterior 1/4 of the body, while the anterior pair arising at 3—8 (right) and 5—7 (left) bundles. The writer considers it as an abnormal state.

12. ***Phascolosoma parvum*** Chen et Yeh, sp. n.

Description: The trunk measures 18 mm long (cotypes 9—17 mm), widest part 1.5 mm (cotypes 1.5—3.0 mm). The introvert is 1/2—2/3 of the trunk. Color: it is light yellow generally, with transverse bars of deep brown on the dorsal side of the introvert also on the part in front of anus. The body wall is thin. There are 11 tentacles (10—15 in cotypes), digitiform, and there are 15 (11—17 in cotypes) rows of hooks, yellowish. Each hook is comparatively large (0.021—0.054 mm high) with its apical tooth pointed and curved. There is no accessory tooth. From its side view, two clear streaks are visible: the dorsal triangular one small and the ventral long one with its distal pointed in apical tooth and broader proximally (fig. 10).

The papillae on the dorsal side between the hook rows are small with a few chitinous plates (fig. 10), those on the ventral side lack plates but have reticular structures connecting the neighboring ones (fig. 11, A), those on the dorsal side in front of anus are deep yellow, 0.13 mm high, with small plates around the center, larger ones in the middle zone and small ones at the base (B), and those on the posterior side of the body are closer and larger, 0.16 mm high, conical protuberance with larger and closer plates on the cone, small and scarce basally (C).

The longitudinal muscle bundles are clear, 19 in number, while the circular layer is continuous. The dorsal retractors arise from the middle body, at 4—5 bundles. The ventral ones about twice as thick arise from the posterior third, at 3—6 bundles. The spindle muscle is from the part before anus and is fixed at the posterior body. The intestine has 18 spirals, with its rectal diverticulum at the last coil. There is only one fixing muscle arising from the origin of dorsal retractors and dividing into two branches to connect the oesophagus and the rectal diverticulum respectively.

The nephridia are yellowish, about 1/3 of the trunk length, with posterior half free. Each one opens at 3—4 bundles behind anus. Gonads are associated with the ventral retractors. The ripe ovum is flat ovoid, 0.10 × 0.14 mm in size. The contractile ves-

sel is simple. There are 2 eyespots.

Locality: Ma-ling (11 specimens in shells and algae).

Remarks: In appearance of hooks, papillae, small diverticulum, the present species is similar to *P. rottnesti.* However, it is distinct in the characters: (1) The mature worms are very small (maximum width 4—5 mm in *P. rottnesti*), (2) each hook has no accessory tooth, (3) the papillae possess chitinous platelets of unequal sizes (approximately equal size in *P. rottnesti*), (4) the nephridiopores are located behind anus (in front of anus in fig. 1, not specified in descriptions), *etc.*

13. ***Dendrostomum spinulum*** Chen et Yeh, sp. n.

Description: It is small-sized, larger at posterior middle part, 22 mm long, 8 mm at the widest part (cotypes 17—20 mm, 7—9 mm). The introvert is short, 2 mm long, without hooks (fig. 12). Color: the body is grey brown, the introvert is whitish, with deep purplish rings at its base. The body wall is thick and opaque. There are 4 principal stems of tentacles. Each is divided into two and then subdivided, bearing filamentous tentacles which are blunt brush-like distally (fig. 13, B, C). The papillae on the introvert are flat, transparent, stellate around the central pore (D), those on the anterior and posterior parts of the trunk are elevated and scattered, their gland pore extending to form a tube which is longer at the posterior body (E).

The longitudinal musculature is continuous. There is only one pair of retractors arising from the middle body (fig. 13, *rm.*). The spindle muscle (*sm.*) arises from the rectal diverticulum and runs in the intestinal coils posteriorly. The intestine has 27 spirals, with small rectal diverticulum (*rd.*). The fixing muscles are three: fm_1 is from the left retractor extending to the oesophagus, fm_2 is from the left side of the middle trunk to fix on the rectum, and fm_3 is also from the same side of the anterior trunk to fix on the rectal diverticulum.

There is a pair of long nephridia, 1/2—3/4 as long as the trunk, all free, each with a transparent funnel. Their orifices are found behind anus. The contractile vessel is attached to the dorsal side of oesophagus, with many branches. There are 2 eyespots. The ripe ovum is 0.12 mm in diameter.

Locality: Sichow Island (3 specimens).

Remarks: According to the structures of the retractors, the hooks, the contractile vessel and the position of anus, the species resembles *D. dehanata* Kesteven (1903) distributed in Australia. But the latter species is of large habit (160—280 mm long), the origin of the retractors further back (posterior 1/3), with very long rectum. The most distinct feature of this new species is that each papilla possesses a tube in the centre.

14. ***Aspidosiphon elegans*** Sel. et De Man

A single specimen was collected in Lu-wei-tao, San-ya and the trunk measures 23 mm long. The introvert probably contracted (5 mm long) is short comparing with the typical form. Both the hooks and papillae are identical. Ours has only 11 complete hook rows. The intestine consists of 21 spirals. It is widely distributed in the Indo-pacific regions.

15. ***Para-arhynchite,*** gen. nov.

Diagnosis generis: *Proboscis nulla. Musculus longitudinalis corporis in fasciculos divisibilis. Nephridia in numero sex, omnia appendice spirali instructa. Diverticulum rectale praesens. Systema circulatorium multos explicatum, cum corde.*

With one exception of having no proboscis, the present genus stands closer to

Listriolobus than to *Arhynchite*. Therefore a new genus, *Para-arhynchite,* seems desirable to be created representing the status of the present species situated between the two genera just mentioned.

Para-arhynchite hexorenale Chen et Yeh, sp. n.

Description: The body is cylindrical, larger and more blunt posteriorly, 39 mm long, 12 mm thick (cotypes 14—55 mm *vs.* 5—15 mm) (fig. 14). The body wall is thin and translucent. The longitudinal musculature is divisible into 15 bundles (cotypes 12—13), each of which is whitish, *ca.* 1 mm in width, 2—3 mm at interval between every two bundles. The papillae are ovoid, larger and closer on the posterior part of the trunk, less so anteriorly. Those on the middle body are small and scattered. There is one pair of ventral setae situated 3 mm behind the mouth, weakly hooked, 2.5 mm long, with 0.8 mm exposed (fig. 15, C). The caudal ones are absent.

The alimentary canal measures 160 mm long, its anterior part consists of broad pharynx, slender oesophagus, gizzard and stomach. The mid-intestine is long with 2 or 3 loops, running posteriorly and then forward toward anterior end, and lastly turning posteriorly to connect the hind intestine. The rectal diverticulum is round, *ca.* 1 mm long, 3 mm in front of anus. There is one pair of anal vesicles, 9—15 mm long, anterior half free, with numerous ciliated funnels on surface. The ciliated groove is whitish at the anterior part of mid-intestine, 7 mm long, succeeded with co-lateral intestine (fig. 15, B, *si.*). The co-lateral intestine may be divided into broad and brownish anterior part, 50 mm long (si_1) and narrow posterior whitish part, 96 mm long (si_2). At last, it is connected with the rectum.

There are 3 pairs of nephridia situated at the anterior part of the body close to the nerve cord. The first pair in front of ventral setae are shorter and the following become longer one after another, the last pair about 6 mm long, all free from the body wall, transparent pinkish, each with a 2-branched spiral loop (fig. 15, A).

The circulatory system is well developed. The heart is sac-like on the posterior side of the stomach, with one anterior dorsal and two posterior recurrent vessels to unite beneath the intestine to become the intestinal vessel which gives rise to ventral vessel running the whole length of the body (fig. 15, A).

Locality: Lu-wei-tao in Sanya (6 specimens).

Remarks: This is a proboscis—less "*Listriolobus*" to represent the type species of this new genus.

16. ***Ochetostoma erythrogrammon*** Leuckart et Rüpell

There are 8 specimens included in the collection, 18—35 mm long, 7—15 mm thick, with a proboscis 6—8 mm long. The body wall is thin, pinkish. The longitudinal muscle bundles are always 13 in number (mostly the dorso-median is unpaired). The interval between every two bundles is about equal, with an internal space (fig. 16).

In 1946, Fisher recorded 6 species with 3 pairs of nephridia which are classified in accordance with the number of muscle bundles. Though our form which has 13 muscle bundles and is small-sized distinguishes itself from that which possesses 14 bundles and measures 65 mm long named *O. erythrogrammon,* distributed in the Riu-Kiu Islands, it is perhaps properly identified as the same species.