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武汉几种外附生纤毛虫新种的记述*

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缘毛类纤毛虫的很多种类借助于柄和鞘广泛地附生在水生动植物和其它基质上，是营自由生活的周丛生物。Nenninger (1948)[9] 曾将固着生活的缘毛类纤毛虫分为3个类群：第一类群包括既能在水生植物体上着生、也可在动物体上着生的种类；第二类群是在目 (Order) 水平上的各类水生动物体上着生的种类；第三类群是从科到种的水平上的各类水生动物体上的种类。我们沿用 epizoon 一词，是指第二、三类的营自由生活的周丛种类，它们对着生的基质有一定的选择性，反映了这些虫体的生态特性，在分类上是有意义的。王家楫、倪达书 (1933)[14]、倪达书、贺云鹭 (1943)[10] 对我国缘毛类外附生种类有过报道。近来国外有关这方面的报道颇多[2,5-8,1-13]。

关于缘毛类纤毛虫的分类，除进行活体的显微观察外，也有借助于银染技术进行形态研究的报道[3,4]。

武汉东湖的缘毛类的新种已有报道[1]。本文的种类主要采自该湖及其附近水体的水生动物（昆虫幼虫及其成虫、甲壳动物、环节动物、软体动物和两栖类幼体）的体外附生的缘毛类，经活体观察，上述动物体外附生的种类很多，初步鉴定，计有6新种及2新亚种，隶属于累枝科和钟形科。

累 枝 科 (Epistylidae)

1. 刷累枝虫(新种) *Epistylis penicullata* Gong, sp. nov. (图 1: 1 a-e)

虫体近似圆锥形或钟形，略有变态。体长约为体宽的2—3倍。虫体前半部略宽，后半部有些缩细。口围薄，十分宽阔，明显地突出体缘之外。口围盘较窄，约为口围直径的2/3，倾斜，超出口围之上，盘顶中央有乳状突起；有时乳突消失，顶盘显得平坦。口围盘纤毛长。伸缩泡一个，位于口围和口围盘上。口前庭和胞咽均发达。大核横位于前，很靠近口前庭，核的两端弯转。表膜有细的横纹；胞质呈乳白色，具若干小的圆形食泡。柄光滑，无纵纹和横纹；基柄不长，柄为不规则的二分叉型式，在同一群体上体柄的长短相差很大，长的可超过体长，短的只及体长的1/10。群体不大，由2—10个虫体组成。收缩时，后端无褶皱，口端平突或微拱，口围和口围盘缩入体内，有一束长的纤毛，像毛刷一样伸出(约 20 μm)，故名。

虫体着生在黑斑蛙 (*Rana nigromaculata*) 蝌蚪的体表上，以尾部为多。蝌蚪在室内放置1—2天后，整个尾部为这种累枝虫的群体所围裹，成灰白色的絮状物。

* 蒙倪达书教授热情指导，沈韫芬副教授提出宝贵意见，郑英同志协助复墨，一并致谢。
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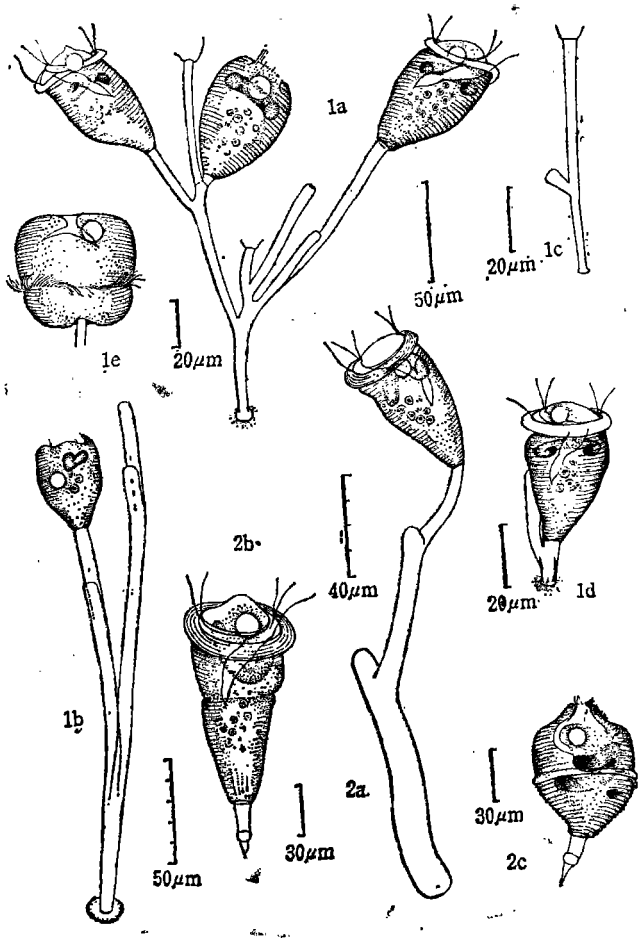

图 1 Fig. 1

1a-e. 刷累枝虫(新种) *Epistylis penicullata* sp. nov.
1a-d. 群体及柄的不规则二分叉型式 (the colony and its stalk of irregular dichotomous; type);
1e. 游泳体的形成 (formation of telotroch)
2a-c. 珠蚌累枝虫(新种) *Epistylis unioi* sp. nov.
2a. 群体及柄的特征 (the colony and its stalk);
2b. 游泳体的形成 (formation of telotroch);
2c. 虫体收缩的形状 (the contracted zooid)

采集记录

日期	地　点	体长 μm	体宽 μm	口围直径 μm	体柄长 μm	群体高 μm	群体上个体数(个)	着生基质
1965.5	武汉珞珈山水沟	34—54	17—24	29—34	9—10	196—206	2—5	黑斑蛙蝌蚪
1981.3	武汉东湖茶叶港小池	31—66	21—32	24—31	8—27	75—510	2—10	同上

Nenninger (1948)[9] 在欧洲的一种蛙的幼体上看到的小褶累枝虫 (*Epistylis plicatilis* var. *minor*) 其形状、大小、伸缩泡及大核的位置与本种比较相似，二者的主要区别在于虫体收缩时口围形成的特点显著不同。前者口围在前端形成一典型的喙突，后者不形成任

何喙突，而是十分平坦或浑圆，有一束长毛，刷状地向前伸出，收缩的虫体后端亦无任何褶皱产生。群体的柄呈不规则的二分叉型式，体柄的长短亦不规则，因此不宜作为褶累枝虫的亚种，而是与小褶累枝虫完全不同的种类。

2. 珠蚌累枝虫(新种) *Epistylis unioi* Gong, sp. nov. (图 1: 2 a-c)

虫体近似圆锥形，体长与体宽之比为 $2\frac{1}{2}$—3:1。体缘一侧平弧形，另一侧接近口围处向内收缩，因而中部或 $\frac{2}{3}$ 的前端略向外突出。口围厚，有细的环纹可见，口围直径大，

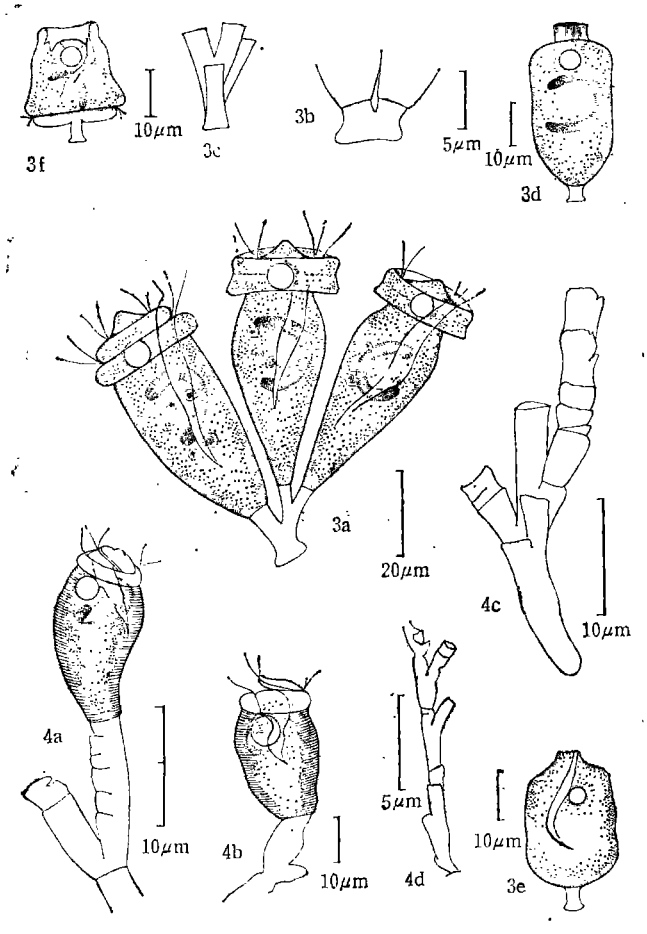

图 2 Fig. 2

3a-f. 舌蛭累枝虫(新种) *Epistylis glossiphoniae* sp. nov.
3a. 群体; (colony);
3b, c. 柄的二分叉型式。(the stalk of regular dichotomous type)
3d, e. 虫体收缩的形状 (the contracted zooid)
3f 游泳体的形成。formation of telotroch.
4a-d. 粗钝卵形累枝虫(新亚种) *Epistylis ovata obtusa* ssp. nov.
4a. 正常形状的虫体 (the zooid in normal shape);
4b. 收缩变形的虫体 (the contracted zooid);
4c, d. 柄的不规则二分叉型式 (the stalk of irregular dichotomous type)

明显地超出体缘之外。口围盘约为口围直径的 $\frac{2}{3}$，口围盘顶呈圆锥形突出，超出口围之外，有时平坦不向上拱起。伸缩泡一个，紧靠口围下缘。口前庭宽阔，胞咽发达。虫体中部有许多圆形食泡，胞质无色，表膜具细密的横纹。大核粗，不十分长，呈不规则的“C”形弯曲，位于虫体的前半部，接近口围，也可移到虫体的中部。虫体收缩时，前端形成一宽的吻突，后半部有细密的褶皱，中部有一明显的褶皱带围绕。游泳体形成时，系在虫体中部紧缢并开始出现纤毛带。群体分枝少，为不对称的二分叉型式。体柄细，有些弯曲，虫体与柄不在一条直线上，而总是倾斜地着生在柄上。从体柄到基柄，其直径逐渐增大，柄光滑、较柔软。单个虫体的体柄总是较短，不超过本体的长度，柄的末端呈图钉形。

采集记录

时　间	地　点	体　长 μm	体　宽 μm	口围直径 μm	群体高 μm	群体上个体数(个)	着生基质
1965.5	武汉东湖	55—74	22—36	39—47	100—220	1—2	圆顶珠蚌的鳃叶 (*Unio douglasiae*)

珠蚌累枝虫与瓶累枝虫（*Epistylis urceolata* Stiller）有些相似，前者着生在圆顶珠蚌的鳃片上，口围直径大，尤其是柄的形状构造和群体的分枝型式都与瓶累枝虫有较大的区别。

3. 舌蛭累枝虫（新种）*Epistylis glossiphoniae* Gong, sp. nov.（图 2：3a-f）

虫体呈瓶形或桶形，体长与体宽之比为 2:1。体形有些变异。刚分裂后的虫体呈瓶形，以 2/3 的虫体前端最宽，从最宽处向后逐渐细削。口围厚而宽，明显地突出体缘之外。在口围的中央有一横沟将口围平分为上下两层，口围纤毛亦分两层。幼体的口围亦相当厚，中部凹陷，随即从该处将口围隔成两半。口围盘顶端呈圆锥形突起，口围盘的纤毛长而有力的伸展。伸缩泡一个，位于口围的中央。口前庭长而狭窄，胞咽可达虫体的中部或更下一些。大核位于虫体的中部，呈“C”形弯曲。胞质呈乳白色，表膜无横纹可见，体内有若干大的圆形食泡以及细小的颗粒物质。群体矮小，体柄及基柄均很短。柄为二分叉型式。虫体收缩时形似长方形，前端中央有一较粗的柱状突起，突起上有细的纵褶。后端呈不同角度的漏斗形。

采集记录

日期	地点	体长 μm	体宽 μm	口围直径 μm	体柄长 μm	体柄宽 μm	群体高 μm	群体上个体数(个)	着生基质
1964.3	水生所鱼池	55—63	24—29	26—29	5—10	4.0	68—78	2—4	舌蛭 (*Glossiphonia*)
1974.5	武汉东湖	50—62	22—29	25—32	4—8	4.0	65—80	2—4	同上

此种着生在一种舌蛭的背部，它与厚盘累枝虫（*Epistylis balatonica* Stiller）相似，后者体大，是瓶累枝虫柄上常见到的种类，它的柄细长而柔软，可形成很高的群体，表膜上有清晰的横纹，借此可与舌蛭累枝虫区别开来。Sommer (1951)[12] 在缩腿甲科 (Monommati-

dae）的虫体上发现的束带累枝虫（*Epistylis cincta*）虽与舌蛭累枝虫相似，但口围比体宽要窄，表膜有清晰的横纹，柄有清晰的纵纹。群体大，一个群体上多达70个虫体，均与本新种有很大的区别。

4. 粗钝卵形累枝虫（新亚种）*Epistylis ovata obtusa* Gong, sp. nov.

（图 2：4 a-d）

虫体粗钝，近似卵形，体长与体宽之比为 1.8—2.0:1。虫体两侧不十分对称，前半部宽阔，后半部略缩细。口围厚，其直径不及体宽，口围盘窄，约为口围直径的 5/7，倾斜，突出口围之上，顶端呈圆锥形突起。口前庭及胞咽发达，胞咽可及虫体中部。一个大的伸缩泡，位于前端口围之下，可以看到有一管道与口前庭相连通。大核位于前半部，弯曲。表膜有细密的横纹。体内有少数圆形食泡。柄相当粗，为体宽的 0.4—0.5 倍。群体的柄为不规则的二分叉型式，形似昆虫的附肢，呈节状。从所观察的许多群体看，体柄以下的各级枝柄不仅很短，且无虫体存在，只有一个虫体着生在群体顶端的体柄上。该种附着在摇蚊幼虫的体表上。

采集记录

日 期	地 点	体长 μm	体宽 μm	口围直径 μm	体柄宽 μm	群体高 μm	群体上个体数(个)	着生基质
1965.5	武汉东湖	61—68	29—37	25—27	14—15	244—294	1	*Glyptotendipes*
1978.6	武汉东湖茶叶港	66—69	30—36	26—28	15	180—240	1	*Chironomus*

Nenninger (1948)[9] 在 *Chironomus* 幼虫体上发现的卵形累枝虫与本种相近似，不同之处是前者伸缩泡位于口前庭的末端，离口围较远，后者的伸缩泡位于口前庭的中部，并有一明显管道与口前庭相通，离口围很近，虫体两侧也不对称，最宽处不在虫体的中部。

5. 粗柄累枝虫(新种) *Epistylis macrostyla* Gong, sp. nov.（图 3：5 a-d）

虫体粗短，呈圆筒形，两侧接近平行。体长与体宽之比为 1.3—2:1。虫体末端平坦而宽大。口围直径等于虫体的宽度，因口围下缘的虫体略变窄，口围显得较宽。口围盘的纤毛很长，盘的直径约为口围直径的 2/3，平坦，稍向上突出。口前庭十分宽阔，胞咽发达，可达虫体中部。伸缩泡一个，位于口围之下和口前庭中部。大核粗，腊肠形，纵位，偏于一侧，略弯曲。在一些尚未形成群体的个体中，大核粗短而显得弯曲。胞质粗糙，表膜具有清晰的横纹，体缘可呈锯齿状。收缩时，口围在前端形成一钝的吻突。虫体无明显的褶皱。体柄短而粗。柄柔软，末端有一圆形基盘。群体的柄系规则的二分叉型式，有纵纹，并有横皱。

本种着生在米虾的附肢上，它与 Sommer (1951)[12] 在 *Gammarus pulex* 体上所见到的宽阔累枝虫（*Epistylis vasta*）相近似，如体形宽大，体柄粗及表膜具横纹等。但粗柄累枝虫虫体总是呈圆筒形，从前到后几乎一样宽，不呈卵形，口围总是相当于体宽，柄粗，特别是基柄十分膨大，这是本新种的一个主要特征。

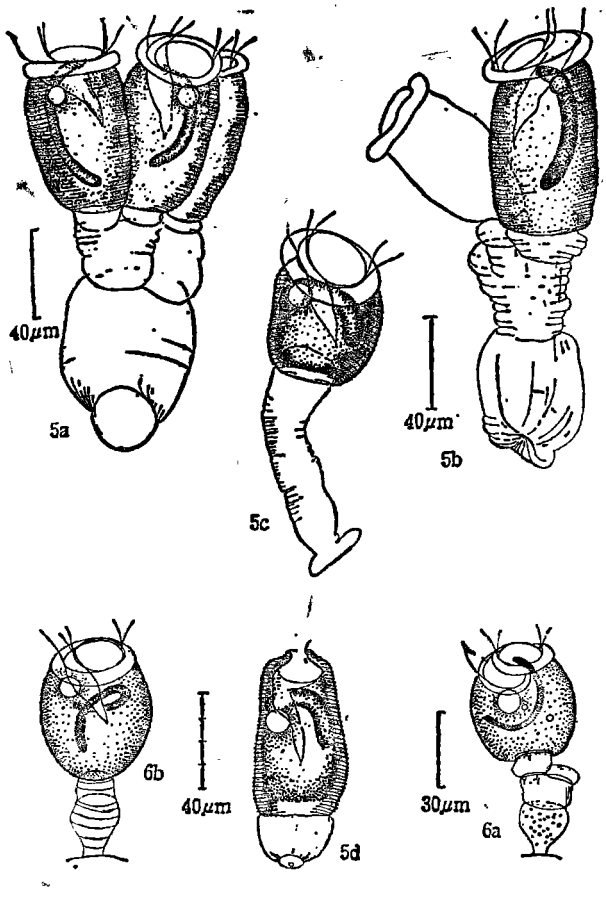

图 3 Fig. 3

5a-d. 粗柄累枝虫(新种) *Epistylis macrostyla* sp. nov.
5a, b. 群体及柄的二分叉型式 (the colony and its stalk of regular dichotomous type).
5c. 具长柄的单个虫体 (zooid with long stalk).
5d. 具短柄的单个虫体,虫体已收缩(zooid with short stalk).
6a, b 米虾累枝虫(新种) *Epistylis caridinae* sp. nov.
6a. 群体,柄具细密纵纹,基柄具小的颗粒 the colony and its stalk with longitudinal striation. on surface and fine granules at base.
6b. 群体,柄具细密的横纹 (the colony and its stalk with transverse striation)

采集记录

日期	地点	体长 μm	体宽 μm	口围直径 μm	体柄		基柄		群体高 μm	群体上个体数(个)	着生基质
					长 μm	宽 μm	长 μm	宽 μm			
1965.9	武汉小洪山水沟	55—66	36—39	36—39	13—15	21—25	57—83	26—29	130—171	2—4	米虾 (*Caridina*)
1967.9	武汉珞珈山水沟	48—58	36—40	35—39	12	20—26	66—69	40—48	147	4	同上
1980.11	武汉东湖	85	41—42	40—42	10	19—25	56—60	42—46	160—180	4	同上

6. 米虾累枝虫（新种）*Epistylis caridinae* Gong, sp. nov.（图 3：6 a-b）

虫体接近卵圆形，两侧对称，体长相当于体宽或稍长一些。后端浑圆或平直。口围直径略小于体宽。口围盘窄，为口围直径的 2/3，比较平坦。口前庭宽，胞咽亦发达。伸缩泡一个，紧靠口围和口前庭的中部。大核纵位，十分弯曲。胞质乳白色，有若干小的食泡。表膜光滑，无横纹。体柄粗而短，枝柄亦很粗短，基柄或多或少地在上半部膨大成球形，下半部尖突，柄具很细的纵纹或宽的横纹。在基柄上有时能看到小的质体。群体的柄为二分叉型式，但群体十分矮小。

采集记录

日期	地点	体长 μm	体宽 μm	口围直径 μm	体柄长 μm	体柄宽 μm	群体高 μm	群体上个体数(个)	着生基质
1965.9	武汉珞珈山水沟	42—50	42—50	33—40	7.5—12	12—16	80—87	2—4	米虾 (*Caridina*)
1980.10	武汉东湖	45—50	45—48	33—35	8	10—12	84—90	2—4	青虾 (*Macrobrachium*)

本新种着生在米虾和青虾附肢上，它与 Nenninger（1948）在 *Asellus aquaticus* 上发现的斯氏累枝虫（*Epistylis stammeri*）相似，但据 Nenninger[9] 的记载，该种存在两个伸缩泡，一个位于虫体中部，恰在大核的内弯处，另一个伸缩泡位于大核的外弯处，故二者有显著的区别。

钟 形 科 (Vorticellidae)

7.后断钟虫(新种) *Vorticella opisintermissa* Gong, sp. nov.(图 4：7 a-e)

虫体呈圆锥形或近似卵形，略可变形，体长与体宽之比为 1.5—1.6:1。口围直径大于体宽，明显地突出于体缘之外，口围盘平坦而宽，略高于口围，伸缩泡一个，很靠近口围，当虫体倾斜时，伸缩泡似在口围上。口前庭及胞咽一般大，胞咽达虫体 1/3 的前端。大核横置于前，两端向上弯曲。表膜具细而密的横纹。柄长为虫体长的 4—8 倍。柄内肌丝轴鞘发育不全，总是在柄的后面一段空着，从虫体末端向柄后延伸，只及整个柄鞘长的 2/5—3/5。在伞形聚钟虫（*Campanella umbellaria* Linné）及亨氏累枝虫（*Epistylis hentscheli*

采集记录

日期	地点	体长 μm	体宽 μm	口围直径 μm	柄长 μm	肌丝轴鞘长 μm	着生基质
1964.8	武汉东湖	31—32	19—22	22—24	239	96	伞形聚钟虫
1965.9	武汉东湖	36—41	21—26	23—31	180—225	120—182	亨氏累枝虫
1980.11	武汉东湖茶叶港	31—36	19—24	24—26	210—240	60—140	伞形聚钟虫

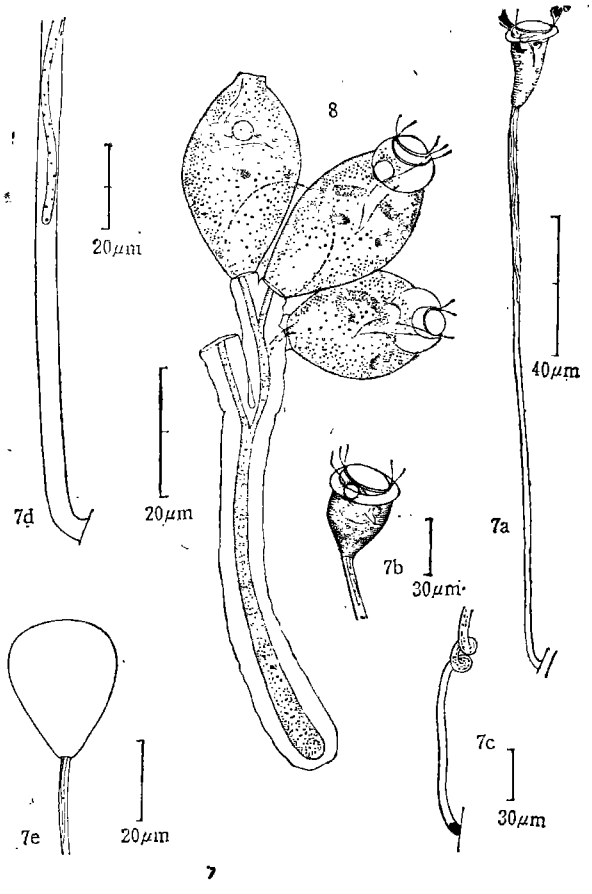

图 4 Fig. 4

7a-c. 后断钟虫(新种) *Vorticella opisintermissa* sp. nov.
7a. 虫体整体观 (total view of the zooid)
7b. 虫体略有变形 (the zooid in varied shape)
7c. 柄后段无肌丝轴鞘 (the posterior portion of stalk without spasmonema)
7d. 柄放大 (the much enlarged stalk)
7e. 虫体收缩 (the contracted zooid).
8 窄口卵形聚缩虫(新亚种) *Zoothamnium oviforme stenostomatum* ssp. nov.
群体的整体观。(total view of the colony).

Hentschel) 的柄上均可见到。当柄收缩时，仅上段具肌丝轴鞘的柄呈螺旋状盘曲，无肌丝轴鞘的一段柄光滑而柔韧。柄的基端弯曲，紧贴在基质上。

Nenninger (1948)[9] 在 *Dyiscus marginalis* 的幼体的附肢上发现的前断钟虫 (*Vorticella intermissa*)，其柄内肌丝轴鞘也发育不全，在虫体与柄鞘相连处有一段空隙，即肌丝轴鞘不与虫体相连，这一特征适与本新种相反。

8. 窄口卵形聚缩虫 (新亚种) *Zoothamnium oviforme stenostomatum* Gong, ssp. nov. (图 4:8)

虫体呈纺锤形或梭形，中部宽阔，两端均称缩细。体长与体宽之比为 1.5:1。口围十分厚 (约 12 μm)，口围直径为体宽的 0.5—0.7 倍，十分狭窄。口围盘小而圆突。伸缩泡一

个，在口围上。口前庭较狭长，胞咽达虫体中部。大核带形，横位于虫体1/2的前部，两端向下弯曲。胞质粗糙，表膜横纹极细微而不易观察。虫体收缩时，口围在前端形成一突起，突起的前缘平截，体形无大变化。柄粗，从体柄到基柄逐渐增粗，肌丝轴鞘亦相应地增粗。体柄短，基柄长，呈二分叉的型式。

采集记录

日期	地点	体长 μm	体宽 μm	口围直径 μm	体柄		基柄		群体高 μm	群体上个体数(个)	着生基质
					长 μm	宽 μm	长 μm	宽 μm			
1963.11	武汉珞珈山水沟	79	48	26	14	12	48	21	204	6	*Asellus*
1980.12	同上	75—84	44—51	22—51	10—14	13—14	42—60	20—23	120—250	2—8	

本种着生在 *Asellus* 的附肢上，它与 Sommer (1951)[12] 在 *Asellus aquaticus* 上发现的卵圆聚缩虫 (*Zoothamnium oviforme*) 相近似，如口围厚，伸缩泡及大核的位置均相一致。但本种的口围更窄，虫体中部并不十分膨大，后端不是陡然缩细呈柄状，表膜的横纹十分微细而不易看清，这些皆与卵圆聚缩虫有很大的差别。

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NOTES ON SOME SPECIES OF EPIZOIC CILIATES (PERITRICHANS) FROM THE DONGHU LAKE, WUHAN

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Abstract

The present paper deals with some epizoic ciliates on various aquatic animals, such as larvae and adults of insects, crustaceans, molluscs and amphibians (tadpole). Specimens were collected from the Lake Donghu of Wuhan and its neighbouring regions. 6 new species and 2 new subspecies belonging to Epistylidae and Vorticellidae are described.

1. Family Epistylidae

1) *Epistylis penicullata* Gong, sp. nov. (Fig. 1:1a-e)

Body conical or campanulate, about two to three times as long as wide, anterior half wider than posterior. Peristome-border thin and broad, exceeding body edge distinctly. Peristomal disc furnished with two circles of cilia, and sometimes a nipple-like projection can be seen at the central of the disc. Contractile vacuole single, located between peristome and peristomal disc. Vestibule and cytopharynx well developed. Macronucleus short-band-like, located close to the wall of the vestibule. Cuticular surface finely striated transversely. Stalk smooth, dichotomously branched. When zooid retracted, a tuft of long cilia protruding out from the contracted rim of body. Usually found on the tadpoles of *Rana nigromaculata*.

Length of body: 34—66 μm; width of body: 17—32 μm; diameter of peristome: 29—34 μm; length of primary stalk: 8—30 μm; length of colony: 75—510 μm. zooid number of colony: 2—10.

This new species is more closely related to *Epistylis plicatilis* var. *minor* Nenninger, but differs from the latter in the respect that the peristome-border is not highly contracted, and, instead of a snout-like process there is a tuft of long, brush-like cilia protruding out.

2) *Epistylis unioi* Gong, sp. nov. (Fig. 1: 2a-c)

Body nearly conical, ratio of length to width of body 2.5—3; usually asymmetric when fully extended. Peristome-border thick and broad. Ciliated disc small, protruded above the peristome-border. Contractile vacuole single, located just below peristome. Vestibule and cytopharynx well developed. Cuticular surface obvious, finely striated transversely. Macronucleus curved at both ends, situated at the neighborhood of peristome or in body middle.

Length of body:55—74 μm; width of body: 22—36 μm; length of colong: 100—220 μm.

This new species attached on the gills of *Unio douglasiae*.

3) *Epistylis glossiphoniae* Gong, sp. nov. (Fig. 2: 3a-f)

Body flaskor barrel-shaped, ratio of length to width of body is 2. Diameter of peristome-border large and considerably projected beyond margin of body. Peristome-border usually equally divided by a transverse furrow. Cilia of disc rather long, strongly extended, Centractile vacuole single, in middle of peristome-border. Vestibule rather long and narrow, cytopharynx extending to middle part of body or further back. Macronucleus C-shaped, transversely located in middle of body. Cuticular smooth. Stalks rather short, branched dichotomously. Attached on the dorsal surface of *Glossiphonia*.

Length of body: 5—65 μm; width of body: 22—29 μm; diameter of peristome: 25—32 μm; length of colony: 65—80 μm. Zooid number of colony: 2—4.

Judging from the shape of peristome-border and of the body, the new species generally resembles *Epistylis balatonica* and *E, cincta,* but differs from the latter two by having smooth cuticular surface, broad peristome-border and taller colony.

4) *Epistylis ovata obtusa* Gong, ssp. nov. (Fig. 2: 4a-d)

Body thick, somewhat ovoid. Ratio of length to width 1.8 to 2. Body not completely symmetrical. Diameter of thick peristome smaller than width of body. Ciliated disc about 5/7 as wide as peristome, and raised obliquely above the peristome-border, a conical-like projection sometimes present on the top of peristome. Vestibule and cytopharynx well-developed. A big contractile vacuole situated below the peristome. Macronucleus horse-shoe shaped, located at anterior half of the body. Cuticular soft, finely striated transversely. Stalk rather thick. Branch of colony unequally dichotomous. Attached on larvae of *Glyptotendipes* and *Chironomus*.

Length of body: 66—69 μm; width of body: 29—37 μm; diameter of peristome: 14—15 μm; length of colony: 180—284 μm.

The new subspecies appears similar to *Epistylis ovata* Nenninger, but the contractile vacuole of the latter is located near the end of the vestibule, far from the peristome-border, while the former has contractile vocuole located at the middle of vestibule, much closer to the peristome-border.

5) *Epistylis macrostyla* Gong, sp. nov. (Fig. 3: 5a-d)

Body thick and short, sides nearly parallel, ratio of length to width of zooid 1.3—2. Diameter of peristome-border equal to or slightly greater than width of body. Vestibule very broad. Cytopharynx extending backwards to middle portion of the body. A single contractile vacuole, usually located at middle of vestibule. Macronucleus thick, sausage-like, almost extending from the anterior extremity to the posterior end of zooid. Margin of body showing serrations owing to the presence of distinct transverse striations on cuticular surface of body. Stalk flexible, with distinct folds, and the portion that attaching substratum very expanded. Branch of colony dichotomous regularly. At-

tached on *Caridina*.

Length of body: 48—85 μm; width of body: 36—42 μm; diameter of peristome: 35—42 μm. length of primary stalk: 10—15 μm: width of final stalk: 26—48 μm; length of colony: 130—180 μm; zooid number of colony: 2—8.

The new species resembles *Epistylis vasta* Sommer in the broad body, thickened stalk as well as the striated cuticular surface. However, as indicated by its specific name, this new species has a cylindrical body. Its especially expanded final stalk is also remarkable.

6) *Epistylis caridinae* Gong, sp. nov. (Fig. 3: 6a-b)

Body ovoid, length approximately equal to width of body. Ciliated disc plain and rather narrow, about two-thirds of the peristome. Vestibule and cytopharynx well developed. Contractile vacuole single, located close to peristome and middle of vestibule, Macronucleus elongate, usually curved. Cuticular smooth. Joinings of stalks more or less expanded and globular. Colony dichotomously branched.

Length of body: 42—50 μm; width of body: 42—48 μm; diameter of peristome: 35—40 μm; length of primary stalk: 7—12 μm; width of primary stalk: 10—16 μm; length of colony: 80—90 μm; zooid number of colony: 2—4.

The new species attached on *Caridina* and *Macrobrachium*. Its is similar to *Epistylis stemmeri* Nenninger on *Asellus aquatious* in shape and size of body, but the latter has two contractile vacuoles.

II. Family Vorticellidae

7) *Vorticella opisintermissa* Gong, sp. nov. (Fig. 4: 7a-e)

Body conical or ovoid, ratio of length to width of body 1.5—1.6. Peristome wider than body, distinctly projected beyond themargin of body. Ciliated disc plain and broad. Contractile vacuole single, located clese to peristome. Vestibule and cytopharynx well developed. Macronucleus shortband-like, curved upwards at both end, located at the anterior part of body. Cuticular surface with dense and fine transverse striations. Spasmoneme incompletely developed, and stalk being hollow at 2/5—3/5 posteriorly. Attached on the stalk of *Campanella hentscheli*.

Length of body: 31—42 μm; width of body: 19—26 μm; diameter of peristome: 23—31 μm; length of stalk: 180—250 μm; length of spasmoneme: 60—180 μm.

Spasmoneme of the stalk of *Vorticella intermissa* Nenninger has also been described to be incomplete. However, the new species lacks the spasmoneme on posterial portion of the stalk, while that of *V. intermissa* lacks it anteriorly.

8) *Zoothamnium oviforme stenostomatum* Gong, ssp. nov. (Fig. 4:8)

Body spindle-shaped, rather widened at middle, with anterior and posterior ends narrowed. Ratio of length to width 1.5. Peristome narrow, with very thick (about 12 μm) border. Ciliated disc small, arch-shape and slightly elevated upwards. Contractile vacuole single, located at the peristome. Vestibule rather narrow. Cytopharynx extend-

ed to middle of body. Macronucleus band-like, strongly curved, more or less transversely placed at the anterior half. Cuticular surface smooth. Stalk and spasmoneme all gradually thickened from anterior to posterior part. Branching dichotomous. Attached on *Asellus*.

Length of body: 75—84 μm; width of body: 44—51 μm; length of primary stalk: 10—14 μm; width of primary stalk; 12—14 μm; diameter of peristome: 22—35 μm; length of final stalk: 42—60 μm; width of final: 20—23 μm; length of colony: 120—250 μm; zooid number of colony: 2—8.

The new subspecies is more closely related to *Zoothamnium oviforme* Sommer described on *Asellus aquatious* in the situation of contractile vacuole and macronucleus, but differs from the latter by the narrower peristome.

Key words Peritrichans, peristome-border, primary stalk, peristomal disc, diameter of peristome, zooid number of colony