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ON THE STATUS OF SOME GENERA OF THE SUBFAMILIES STOMACHICOLINAE YAMAGUTI, 1958, DINURINAE LOOSS, 1907 AND PROLECITHINAE YAMAGUTI, 1971 (DIGENEA : HEMIURIDAE)

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ABSTRACT

Three genera, *Cameronia, Segmentatum* and *Cestodera,* have been merged with *Stomachicola* Yamaguti, 1934. However, *Indostomachicola* Gupta and Sharma, 1973 is being tentatively retained till confirmation of the reported presence of a ventral pit below the caecal bifurcation, otherwise its type species, I. *Kinnei* Gupta and Sharma, 1873, is not at all different from *S. muraenesocis. Allostomachicola* Yamaguti, 1958 is revalidated and considered quite distinct from *Stomachicola* Yamaguti, 1934 as against the view of Verma (1973). Illustrations have been furnished to show generic differences between the two genera. *Magnapharyngium* Bilquees, 1971 has been considered congeneric with *Lecithocladium* Luhe, 1901 (Subfamily Dinurinae). *Follicovitellosum indicum* Gupta and Sharma, 1972 in the family Zoogonidae Odhner, 1911 is nothing but *Prolecitha obesa* Manter, 1961 in the family Hemiuridae. It also follows that Follicovitellotrematinae Gupta and Sharma, 1972 becomes synonymous with Prolecithinae Yamaguti, 1971. Moreover, reasons have been provided to disagree with Manter (1969), and to agree with Yamaguti (1971) that *Prolecitha* Manter, 1961 is distinct from *Dichadena* Linton, 1910.

While the author was studying digenean specimens collected from the marine fishes *Muraenesox cinereus, Stromateus argenteus, S. sinensis, Parastromateus niger, Belone strongylura, B. crocodila* and *Chirocentrus dorab,* he came across some recent literature on new hemiurid trematodes belonging to the subfamilies Stomachicolinae Yamaguti, 1951, Dinurinae Looss, 1907, and Prolecithinae Yamaguti, 1971 described from India and Pakistan. Jahan (1970) erected the genus *Acerointestinecola* (Type species : *A. karachiensis*) from a marine fish *Cybium* sp. from Karachi Coast, which is reported to be distinct from *Stomachicola* Yamaguti, 1934 and *Allostomachicola* Yamaguti, 1958 mainly in having no cirrus sac but having a long and coiled hermaphroditic duct in the preacetabular area. Bilqees (1971) proposed *Cameronia* (Type species : *C. octovitellarii* : Other species : *C. pakistani*), *Segmentatum* (Type species : *S. karachiensis* ; Other species : *S. qadrii, S. cinereusis, S. magnaesophagustum*) from the marine eel, *Muraenesox cinereus,* and *Cestodera* (Type species : *C. gastrocecus* ; Other species : *C. uniceus*) from the marine catfish, *Arius serratus* Day. Gupta and Sharma (1973) erected *Indostomachicola* (Type species : *I. kinnei*) from

the stomach of a marine eel, *Leptocephalus conger* (Linn.), from the coast of Ratnagiri, India. These genera belong to the Stomachicolinae. Bilqees (1971) has also proposed another genus *Magnapharyngium* (Type species: *M. hexavitellarii* ; Other species : *M. anteroporus, M. microcaudum. M. tetravitellarii, M. microductus, M. arabiana, M. octovitellarii*) belonging to the subfamily Dinurinae. Gupta and Sharma (1972) have also proposed a new genus, *Follicovitellosum* (Type species : *F. indicum*) in the family Zoogonidae from the marine fish, *Belone belone* (Linn.) from Ratnagiri, India. A careful study of these genera (viz. *Cameronia* Bilqees, 1971, *Segmentatum* Bilqees, 1971, *Cestodera* Bilqees, 1971, *Indostomachicola* Gupta and Sharma, 1973, *Magnapharyngium* Bilqees, 1971 and *Follicivitellosum* Gupta and Sharma, 1972) together with the relevant specimens in the author's collection revealed that distorted, doubtful, variable and insignificant characters have been used in proposing new genera. Even, at places, observational errors are involved, and some important papers were not consulted leading to erroneous judgements. In view of such errors, misjudgements and confused literature on the above genera, a reconsideration of them was necessitated. *Acerointestinecola* Jahan, 1970 has been excluded from considerations because its diagrams are not available. In the present communication an attempt has been made to set right the things in the light of the study of the collection of specimens of the genera in question.

The diagrams have been made with the aid of a camera lucida. The specimens have been deposited with the National Collection in Zoological Survey of India at Calcutta.

Subfamily STOMACHICOLINAE Yamaguti, 1958

Genus **Stomachicola** Yamaguti, 1934

Syn. *Cameronia* Bilqees, 1972 (Syn. Nov.)
Segmentatum Bilqees, 1972 (Syn. Nov.)
Cestodera Bilqees, 1972 (Syn. Nov.)

Stomachicola muraenesocis Yamaguti, 1934
(Fig. 1A & B)

Host : *Muraenesox cinereus* (Forskal), Silver conger eel, (Muraenidae)

Location : Stomach

Localities and Number of specimens : Chandipur (Orissa), 3 ; Machilipatnam (Andhra Pradesh), 2 ; Kakinada (Andhra Pradesh), 8 ; Yanam (Pondicherry), 2 ; Bakkhali (W. Bengal), 3 ; Bombay (Maharashtra), 3 ; Veraval (Gujarat), 4.

This is a very common fluke parasitising the stomach of the marine eel, *Muraenesox cinereus*, occurring along the sea coasts of Japan and India. When seen *in situ* after opening the stomach of the fish, they are red to dark red long worms which take some time to get detached from the walls of the stomach. After its recovery from the site of infection, it poses a problem to the worker in handling and processing for permanent preparation. This is predominantly due to the highly developed longitudinal muscles beneath the cuticular layer of body proper and powerful retractors of ecsoma or tail, and secondly, due to the contraction of the body as soon as fixative is applied to it during processing. The worker feels compelled to apply pressure for stretching the material properly for making microscopical studies. But, when pressure is applied during contraction, the normal configuration of the

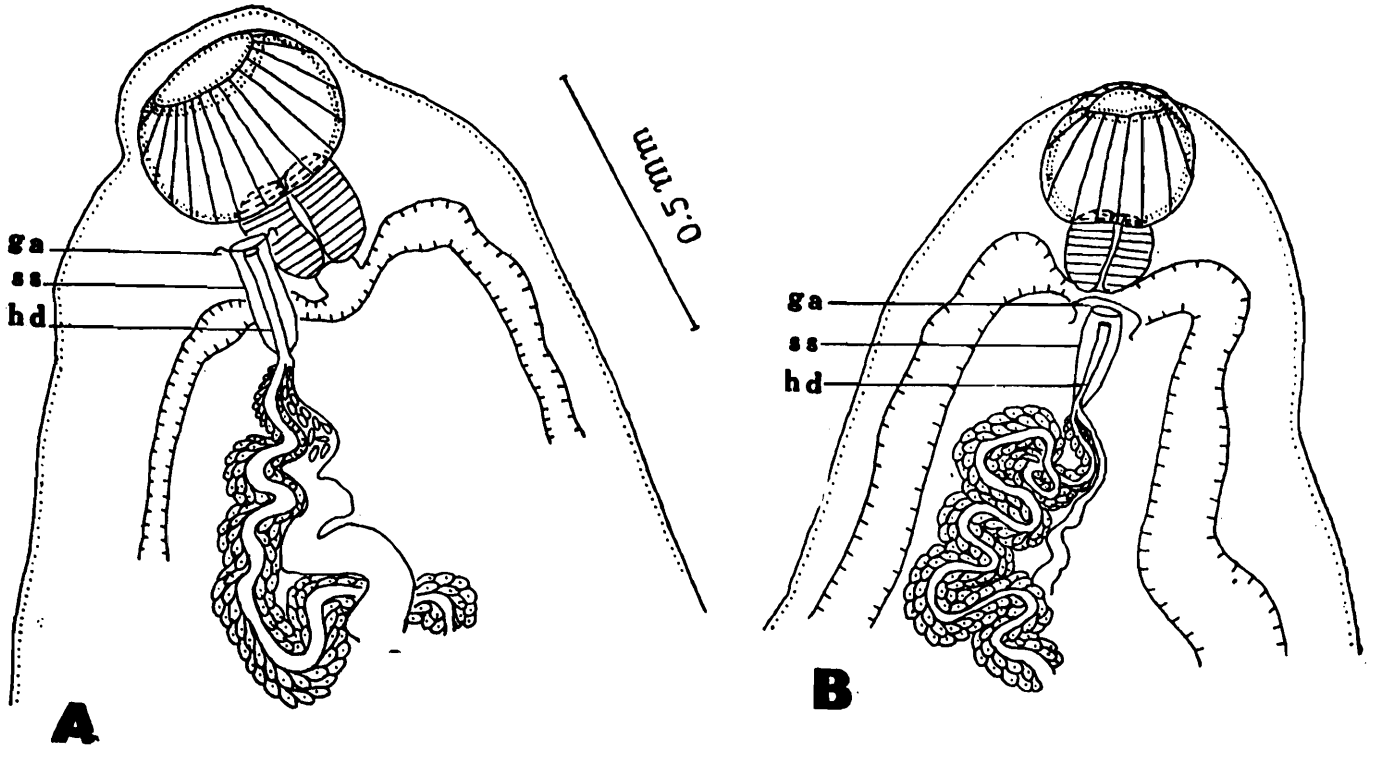

Fig. 1. (A-B) *Stomachicola muraenesocis* Yamaguti, 1934. A—Preacetabular part of a specimen showing position of genital pore at pharyngeal level, B—Precetabular part of another specimen of the same population showing position of genital pore at cecal bifurcation.

internal organs of the specimen gets disturbed, some structures get crushed and deshaped while in others distortions creep in the permanent preparation. As a result, the worker notices differences or variations in the specimens thus processed. By using the fixing and killing agent, the body proper as well as ecsoma get contracted to varying degrees so much so that cuticular transverse folds in the form of annulations appear. Sometimes they become deep, giving the appearance of segmentations. These so-called cuticular annulations or segmentations are not real, and appear as distortions due to contructions of body during processing. They are not seen in the living specimens. In some specimens, the short œsophagus becomes indistinct due to contraction. The position of the genital pore may vary from near the base of oral sucker to any position behind it. The separate male and female openings and absence of hermaphroditic duct (as reported in *Cameronia octovitellarii* Bilqees, 1971) appear to be erroneous observations. The number of long, winding and sometimes intertwining vitelline tubes varies to a great range as reported by Bhalerao (1943 : pp. 119—120). *Segmentatum magnaesophagustum* Bilqees, 1971 has been described probably from bad and decayed specimens. The presence of "Oral cuticular spines, cuticular modification at ventral margins of acetabulum, large esophagus, postacetabular union of ceca, and its union in the middle of tail in addition to the posterior union" are obviously the results of bad handling and processing of the specimens, or are due to distortions or erroneous microscopical observations. Therefore,

they cannot be regarded as normal characters of the specimens collected from the stomach of *Muraenesox cinereus*. The observation that the ceca in *Cestodera unicecus* Bilqees, 1971 are "united by a transversely branch just above the ovary" does not seem to be correct. What has happened in her specimen which has been illustrated for the species is that the ceca above the ovary tended to form deep loops which due to excess pressure applied during processing got more elongated inwardly, and in some specimens they just touched each other and look like a transverse commissure connecting the two ceca. So far as the union and non-union of the excretory crurae dorsal to the pharyngo-oral region is concerned, the worker is prone to make faulty observations because the anterior region is highly muscular.

In view of the above account and the variations noted by Yamaguti (1934) and Bhalerao (1943), it becomes clear that the species described under the genera *Cameronia* Bilqees, 1971, *Segmentatum* Bilqees 1971 and *Cestodera* Bilqees, 1971 all conform to the original descriptions of *Stomachicola muraenesocis* Yamaguti, 1934, and Bilqees' genera become untenable and invalid. Therefore, *Cameronia Segmentatum* and *Cestodera* are presumed to be considered here as congeneric with *Stomachicola* Yamaguti, 1934. Author's attempts to get at the type material through correspondence, did not yield the desired results and hence the remarks on the status of the genera are made presumptively. Bilqees' (1971) histological studies in support of her observations in toto mounts are required to be confirmed.

Again, *Indostomachicola* Gupta and Sharma, 1973 also does not seem to be different from *Stomachicola* Yamaguti, 1934 except in the "presence of a ventral pit in the post bifurcal region", which requires rechecking and confirmation. A request to the authors of the genus was made to obtain the material on loan for rechecking and comparison but it was not received. The muscular bulgings with curved muscle fibres on either side of oral sucker are also found in *S. muraenesocis*. In some of the specimens in the author's collection such cases are found. Siddiqi and Hafeezullah (1975) reported a new species, *Stomachicola bayagbonai*, from Logos, Nigeria in which these bulgings are discernible.

Allostomachicola secundus (Srivastava, 1939) Yamaguti, 1958 (Fig. 2)

Host : *Chirocentrus dorab*, wolf herring, (Chirocentridae)

Location : Stomach

Locality : Ennore (Madras), Bay of Bengal

Number of Specimens : One

Verma (1973) considers the differences between *Allostomachicola* Yamaguti, 1958 and *Stomachicola* Yamaguti, 1934 as specific only and as a result she synonymised the former with the latter. Additionally, she described a new species, *Stomachicola mastacembeli*, from a freshwater eel, *Mastacembelus armatus*, from Bokaro, Bihar State. She characterises the new species mainly to have no hermaphroditic duct and no hermaphroditic pouch. Text-Figures, 1, 2 and 3 illustrate the terminal genitalia of *S. muraenesocis* and *A. secundus* respectively. In the opinion of the author the differences between the two sets of terminal genital ducts are such that the latter suggests a genus different from the former. Thus,

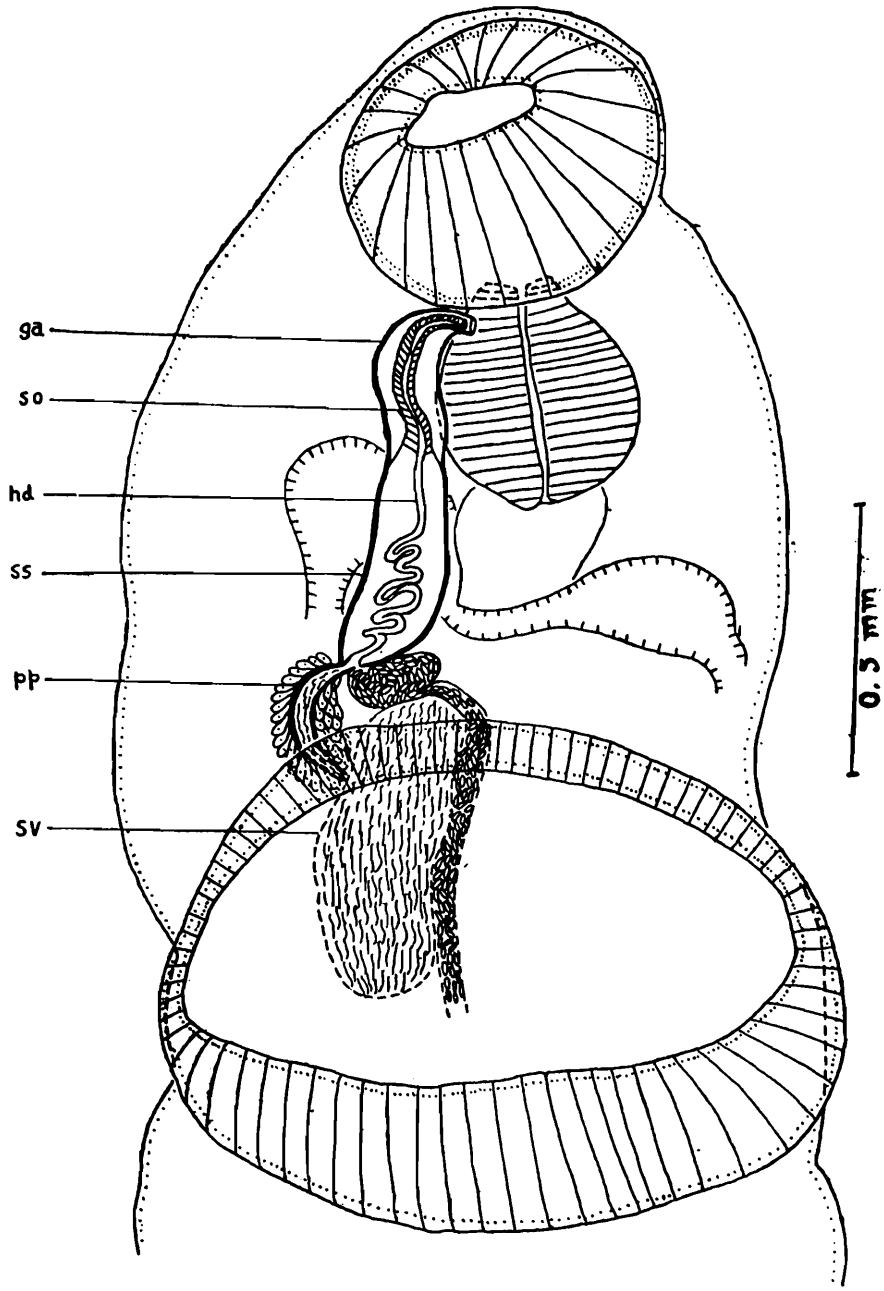

Fig. 2. *Allostomachicola secundus* Yamaguti, 1958. Anterior part showing details of terminal genitalia.

Allostomachicola Yamaguti, 1958 is revalidated as different from *Stomachicola* Yamaguti, 1934. If the reported absence of hermaphroditic duct and hermaphroditic pouch in *S. mastacembeli* Verma, 1973 is correct then, these two characters suggest a new genus different from *Stomachicola* and *Allostomachicola* which possess a hermaphroditic duct as well as a hermaphroditic pouch. However, in a population of specimens of *S. muraenesocis*, after processing these two characters are rendered indiscernible in some contracted ones leading to erroneous conclusions. In the light of this observation, the types and paratypes of *S. mastacembeli*

require to be rechecked and the two main characters confirmed. Its occurrence in a freshwater eel which does not descend into sea is interesting.

Subfamily DINURINAE Looss, 1907

Genus **Lecithocladium** Luhe, 1901

Syn. *Magnapharyngium* Bilqees, 1971 (syn. Nov.)

Bilqees (1971) proposed the genus *Magnapharyngium* to distinguish it from *Lecithocladium* on the basis of a pharynx as long as or longer than oral sucker, funnel-shaped oral sucker, number of vitelline tubes, etc. etc. She described seven species under it as mentioned earlier in this paper. It may be pointed out that species in *Lecithocladium* mostly possess cylindrical pharynx which may be as long as or longer than oral sucker; the oral sucker is cup-shaped or funnel-shaped; the number of vitelline tubes is typically seven but may vary in some cases; and the sinus sac or hermaphroditic sac may be short or long. In short, all the species described under *Magnapharyngium* Bilqees, 1971 come well within the concept of the genus *Lecithocladium* Luhe, 1901. *Magnapharyngium* is therefore unnecessary. It is considered here as congeneric with *Lecithocladium*. There is a need to examine the validity of the seven species described by Bilqees under the genus described by her, but the scope of this paper is limited to generic considerations only.

Subfamily PROLECITHINAE Yamaguti, 1971

Syn. Follicovitellotrematinae Gupta and Sharma, 1971 (syn. nov.)

Genus **Prolecitha** Manter, 1961

Syn. *Follicovitellosum* Gupta and Sharma, 1972 (syn. nov.)

Prolecitha obesa Manter, 1961
(Fig. 3)

Syn. *P. beloni* Nagaty and Abdal Aal, 1962
P. indicum Gupta and Sharma, 1972 (syn. nov.)

Host: *Belone strongylura* and *B. crocodila*, needle-fish, (Belonidae)

Location: Stomach

Localities: Rameswaram (Palk Bay) and Tuticorin (Gulf of Mannar)

Number of specimens: 8 + 1

Eight specimens of this species were collected by Dr. T. D. Soota and party from the marine fish *Belone strongylura* from Rameswaram in March, 1975 and one specimen was collected by the author from *Belone crocodila* from Tuticorin in November, 1975. All the nine specimens fully conform to the original description of the type species *Prolecitha obesa* Manter, 1961 and correction to it as provided by Manter (1969).

Gupta and Sharma (1972) proposed a new genus *Follicovitellosum* (type species: *F. indicum*) from the marine fish *Belone belone* (Linn.) from Ratnagiri (Arabian Sea) and placed it in the family Zoogonidae Odhner, 1911 creating a new subfamily Follicovitellotrematinae for its reception. The description of the type species fully conforms to the original description of *P. obesa* Manter, 1961. Manter (1969) provided amendments to his species to include the presence of a seminal receptacle and formation of a cyclocoel posteriorly. This is also the condition of the ceca in the specimens with the author. It is presumed that Gupta and Sharma (1972) errorneously reported the condition of the cecal ends in their specimens,

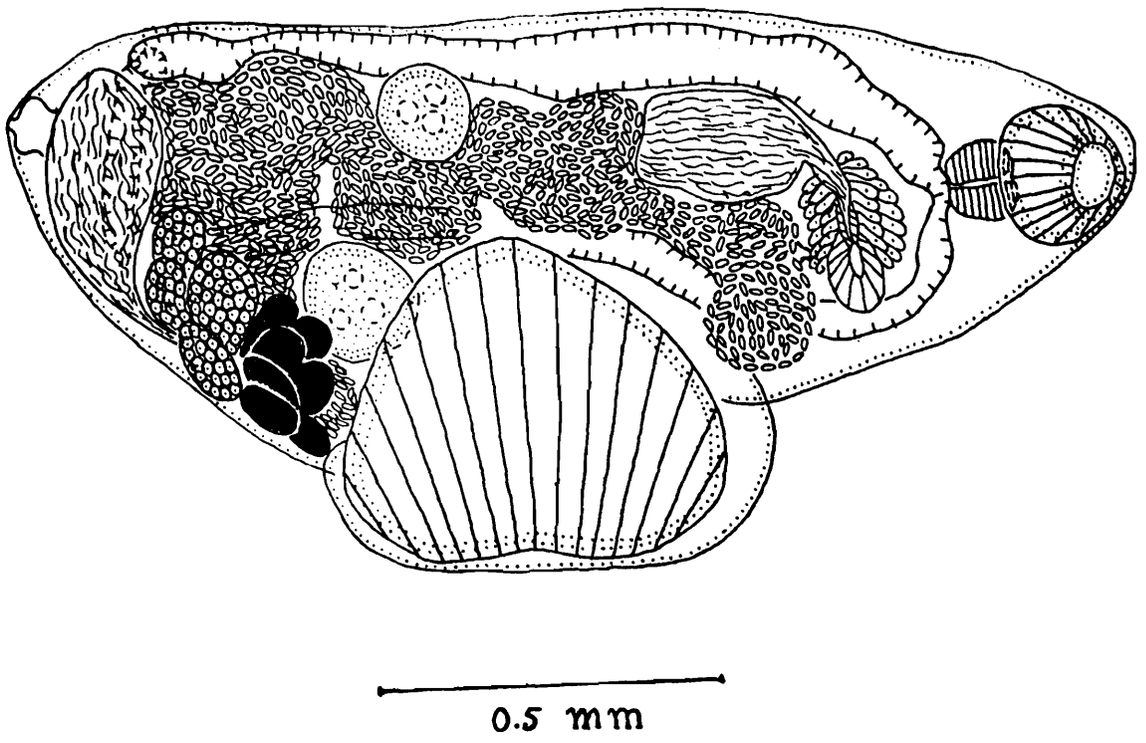

Fig. 3. *Prolecitha obesa Manter,* 1961. Lateral view.
Abbreviations :
ga—genital atrium ; hd—hermaphroditic duct ; pp—pars prostatica ; so—sinus organ ; ss—sinus sac ; sv—seminal

as Manter (1961) also had originally done, and their genus was also wrongly associated in the family Zoogonidae. The type species of their genus also agrees with the type species of Manter's genus. As a corollary to this, *Follicovitellosum* and Follicovitellotrematinae fall into synonymy with *Prolecitha* and Prolecithinae respectively.

Manter (1961) had described his Fijian specimens under a new genus and new species viz. *Prolecitha obesa,* but after studying his specimens from New Caledonia, he (1969) transferred his species to the genus *Dichadena* Linton, 1910. Yamaguti (1971 : p. 317 foot note) examined the holotypes of the genera *Prolecitha* and *Dichadena.* In addition to other differences in the terminal genitalia of both type species, he found the presence of a short hermaphroditic duct also in the type species *Dichadena acuta* Linton, 1910 whereas this structure is not formed in *P. obesa* Manter, 1961. The author fully agrees with Yamaguti (1971) in holding *Prolecitha* Manter, 1961 distinct from *Dichadena* Linton, 1910, and subfamily Prolecithinae Yamaguti, 1971 is accepted for the reception of Manter's genus.

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