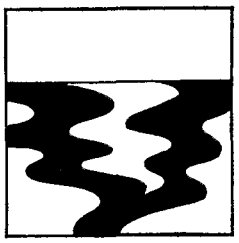

On the taxonomic status of some cladoceran taxa (Crustacea: Cladocera) from Central India

B. K. SHARMA (1) and S. SHARMA (2)

ABSTRACT

Taxonomic status and nomenclatural validity of twelve new species and one new subspecies of freshwater cladocerans, described by RANE (1983-87) from the state of Madhya Pradesh in Central India, are examined and discussed. Remarks are also made on their distribution in this country.

KEY WORDS: Cladocera — Freshwaters — Central India — Taxonomy — Distribution.

RÉSUMÉ

LA TAXINOMIE DE CERTAINS CLADOCÈRES (CRUSTACEA : CLADOCERA) DE L'INDE CENTRALE

La taxinomie et la validité de douze nouvelles espèces et d'une sous-espèce de Cladocères d'eau douce, décrites par RANE (1983-87) de l'état de Madhya Pradesh en Inde centrale, sont examinées et discutées. Leur distribution géographique est présentée.

MOTS-CLÉS : Cladocera — Eaux douces — Taxinomie — Répartition géographique — Inde Centrale.

INTRODUCTION

During a period of about five years, RANE (1983a, 83b, 83c, 84a, 84b, 85a, 85b, 85c, 85d, 86a, 86b and 1987) described twelve new species and one new subspecies of freshwater cladocerans in his collections from Madhya Pradesh State in Central India. The diagnosis of these taxa indicated notable anomalies which were subsequently conformed by the detailed examination of their 'type-specimens'. This paper, therefore, deals with the comments on the taxonomic status and nomenclatural validity of these new species and subspecies. In addition, remarks are made on their distribution elsewhere in India.

MATERIAL AND METHODS

The present observations are based on the detailed study of type-specimens deposited in the National collections in Crustacea Division, Zoological Survey of India, Calcutta. The drawings are made using a

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camera lucida and the measurements are given in millimeters(mm).

TAXONOMIC COMMENTS

1. *Latonopsis fernandoi* Rane, 1983a, p. 82-84, Figs. 1-5:

KOROVCHINSKY (1985, p. 423) allocated *L. fernandoi* Rane to his new genus *Sarsilatona* but could not ascertain its specific status because of insufficient details in the original description.

Our observations indicated that RANE's specimens (Fig. 1) resembled *Sarsilatona serricauda* in their general morphology. Dorsal margin of postabdomen (Fig. 2) showed 4-5 characteristic prominences; anal denticles comprised of 14-16 clusters, with 3-5 lancet-shaped spines in each cluster. Relatively large number of anal denticles, however, was attributed to large size of these specimens (KOROVCHINSKY, *loc. cit.*). In addition, posterior edge of each valve indicated (Figs. 3 & 4) a few cluster of spinules arranged in a single row instead of two rows of spinules (refer: RANE, 1983a). Inner side of each claw showed a row of only 7-9 fine spines near its base (Fig. 5). In view of the observed features, *Latonopsis fernandoi* Rane is proposed to be designated as a synonym of *Sarsilatona serricauda* Sars.

S. serricauda is so far documented in this country only from Central India (RANE's report).

2. *Simocephalus vidyae* Rane, 1983b, p. 154-156, Figs. 1-4:

This species is presently assigned as a synonym of *Simocephalus acutirostratus* (King) because of: a distinct ventrally directed beak-like projection of head (Fig. 6), rhomboid ocellus, pointed rostrum, posterior protuberance of valves, post-abdomen with 6-7 curved anal spines (Fig. 7), produced supra-anal angle and distinctly pectinate claws. RANE (1983b), however, gave no differential diagnosis of his new taxon with the stated species.

Simocephalus acutirostratus is previously reported in India from Kodaikanal (BREHM, 1953), Tamil Nadu (MICHAEL and SHARMA, 1989), Madhya Pradesh (RANE, *loc. cit.*) and Karnataka (PATIL and GOUDER, 1988, as *S. elisabethae*).

3. *Indialona jabalpurensis* Rane, 1983c, p. 194-195, Figs. 1-4:

RAJAPAKSA & FERNANDO (1987), while commenting on the distribution of *Alona macronyx* (Daday), examined material from Bhiloda tank Jabalpur (Maydhya Pradesh) which was identical with RANE's description. Hence, they proposed *I. jabalpurensis* Rane to be a junior synonym of the former.

The present observations also ascertain the identity of RANE's specimens (Fig. 8) as *Alona macronyx*. Certain querries (RAJAPAKSA & FERNANDO, *loc. cit.*) regarding this material are clarified as: (i) setules on claws being very fine were not visible at lower magnifications; (ii) arrangement of anal denticles (Fig. 9) was typical of *Alona macronyx* rather than as illustrated by RANE (1983c); (iii) posteroventral corner of each valve (Fig. 10) with 6-8 groups of fine spines, posteriormost spine being longest in each group; (iv) antennal setae extended beyond apex of rostrum.

Though known to be widely distributed in the Oriental region, *A. macronyx* is reported so far in this country only from Madhya Pradesh (RANE, 1983c; RAJAPAKSA and FERNANDO, 1987).

4. *Oxyurella sangramsagari* Rane, 1984a, p. 665-667, Figs. 1-6:

These specimens are characterised (Fig. 11) by concentric rows of dots parallel to ventral margin of valves, anal denticles increasing gradually in size distally (Fig. 12), each claw with a large basal spine and small accessory spines (Fig. 13). We, therefore, designate *O. sangramsagari* Rane as a synonym of *O. singalensis* (Daday). The males (Figs. 14 & 15) also conform to all the essential details of the latter species.

O. singalensis is so far reported in India from West Bengal (SHARMA, 1978) and Madhya Pradesh (RANE, 1984a).

5. *Bosminopsis devendrai* Rane, 1984b, p. 668-669, Figs. 1-3:

'Type-specimens' of this member of the family Bosminidae were not deposited in Zoological Survey of India though indicated so by RANE (1984b). As per ZSI records, Regd. Nos. (Holotype C 3115/2, Paratype C 3116/2) given for this species, in fact, refer to *Camptocercus latikae* Rane, 1985a.

From the details (Fig. 16-18) given by RANE (1984b), *B. devendrai* is proposed to be a synonym of *B. deitersi* Richard; the indicated differences are of routine nature and not sufficient to warrant the allocation of these specimens to a distinct species. Recently, VENKATARAMAN (1988) also examined forms identical to RANE's material.

Bosminopsis deitersi is previously reported in this country from Madhya Pradesh (RANE, *loc. cit.*), Rajasthan (VENKATARAMAN, *loc. cit.*) and Kerala (MICHAEL and SHARMA, 1989).

6. *Camptocercus latikae* Rane, 1985a, p. 113-116, Figs. 1-8:

Identical with *Camptocercus rectirostris* in general features (Figs. 19-21) and particularly in having

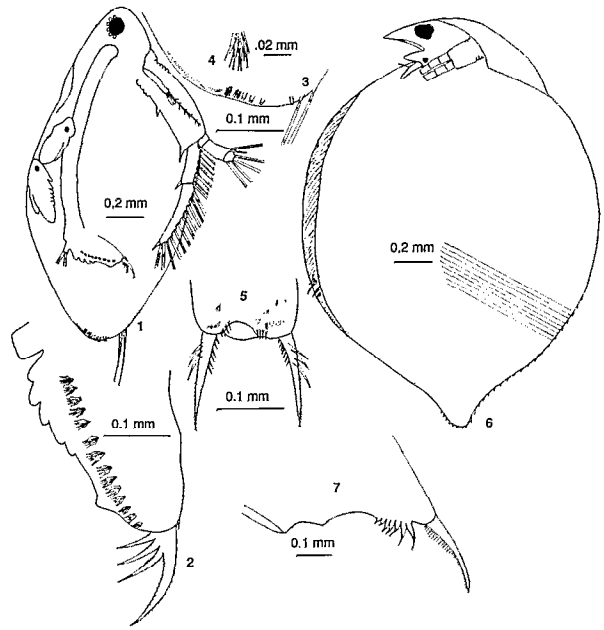

FIG. 1 à 7. — *Sarsilatona serricauda* (Sars, 1901) (= *Latonopsis fernandoi* Rane, 1983a): Fig. 1 — parthenogenetic female; Fig. 2 — postabdomen; Fig. 3 — postero-ventral margin of valve; Fig. 4 — cluster of spinules (enlarged); Fig. 5 — claws (dorsal view); *Simocephalus acutirostratus* (King, 1853) (= *Simocephalus vidyae* Rane, 1983b): Fig. 6 — parthenogenetic female; Fig. 7 — postabdomen (part).

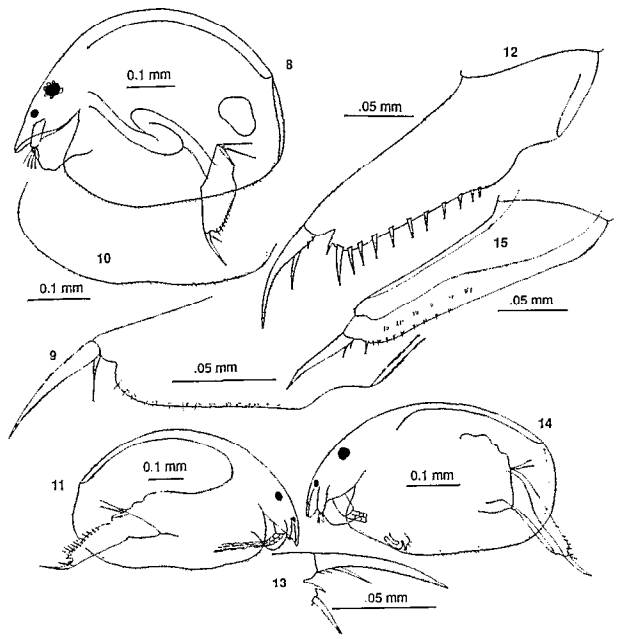

FIG. 8 à 15. — *Alona macronyx* (Daday, 1898) (= *Indialona jabalpurensis* Rane, 1983c): Fig. 8 — parthenogenetic female; Fig. 9 — postabdomen; Fig. 10 — ventral margin of valve;
Oxyurella singalensis (Daday, 1898) (= *Oxyurella sangramsagari* Rane, 1984a): Fig. 11 — parthenogenetic female; Fig. 12 — postabdomen; Fig. 13 — claw; Fig. 14 — male; Fig. 15 — postabdomen (male).

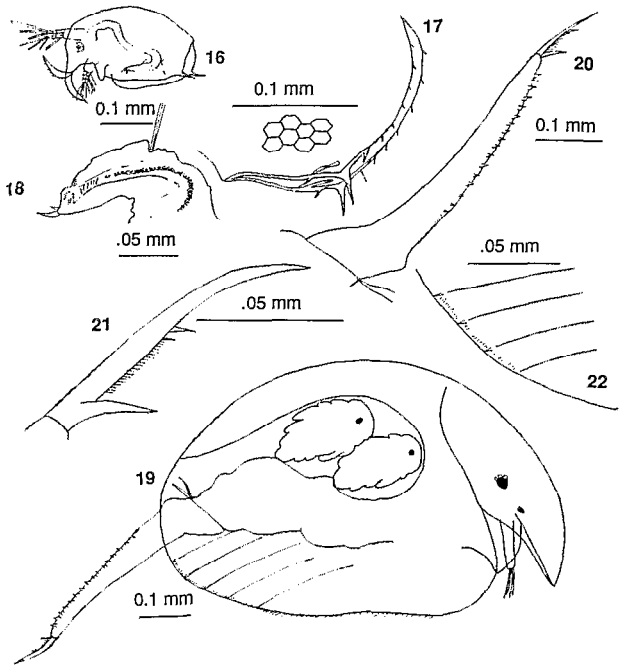

FIG. 16 à 22. — *Bosminopsis deitersi* Richard, 1895 (= *Bosminopsis devendrai* Rane, 1984b): Fig. 16 — parthenogenetic female; Fig. 17 — part of valves; Fig. 18 — postabdomen (figures *after* RANE, 1984b).
Camptocercus rectirostris Schoedler, 1862 *sensu lato* (= *Camptocercus latikae* Rane, 1985a): Fig. 19 — parthenogenetic female; Fig. 20 — postabdomen; Fig. 21 — claw; Fig. 22 — posteroventral corner of valve.

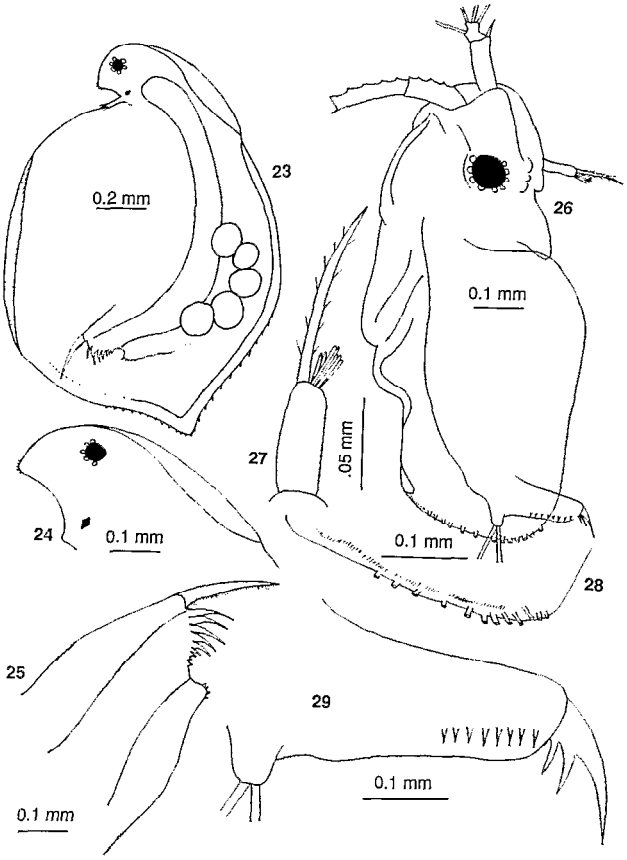

FIG. 23 à 29. — *Simocephalus serrulatus* (Koch, 1841) (= *Simocephalus surekhae* Rane, 1985b): Fig. 23 — parthenogenetic female; Fig. 24 — head (enlarged); Fig. 25 — postabdomen;
? *Latonopsis australis* (Sars, 1888) (= *Latona narendrai* Rane, 1985C): Fig. 26 — parthenogenetic female; Fig. 27 — antennule; Fig. 28 — posterior margin of valve; Fig. 29 — postabdomen.

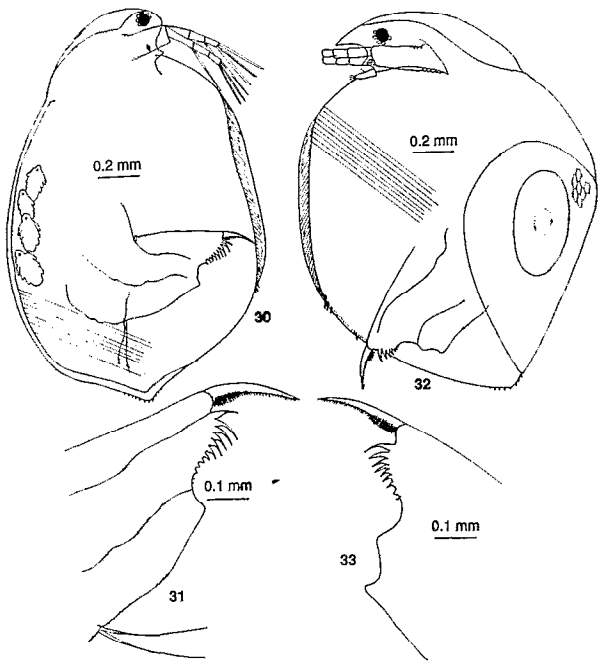

FIG. 30 à 33. — *Simocephalus exspinosus* (Koch, 1841) (= *Simocephalus vamanai* Rane, 1985d): Fig. 30 — parthenogenetic female; Fig. 31 — postabdomen;
Simocephalus acutirostratus (King, 1853) (= *Simocephalus vidyae gajareae* Rane, 1986a): Fig. 32 — ephippial female; Fig. 33 — postabdomen (part).

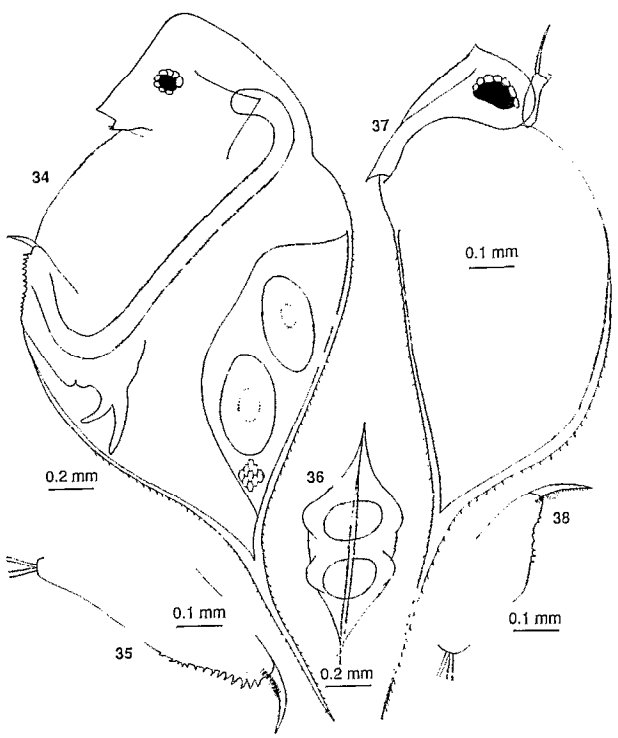

FIG. 34 à 38. — *Daphnia lumholtzi* Sars, 1885 (= *Daphniopsis sumanae* Rane, 1986b): Fig. 34 — ephippial female; Fig. 35 — postabdomen; Fig. 36 — ephippium; Fig. 37 — male; Fig. 38 — postabdomen (male):

sharply pointed rostrum and a distinct head keel. However, three small denticles at the postero-ventral corner of valves are separated by fine setules (Fig. 22). SMIRNOV (1971, p. 443) listed such identical examples in the earlier literature. The authors agree with Prof. MICHAEL (personal communication) that pending detailed examination of more material, *C. latikae* Rane be presently treated as *C. rectirostris s. lato*.

7. *Simocephalus surekhae* Rane, 1985b, p. 159-161, Figs. 1-5:

Based on the characteristic small frontal projection of head (Figs. 23-24) with fine serrulations (evidently overlooked by RANE, 1985b), *S. surekhae* is designated as a synonym of *Simocephalus serrulatus* (Koch). Various other features conforming to the latter species included rhomboid ocellus, posterior protuberance of valves and relatively less broad postabdomen with produced supra-anal corner (Fig. 25).

S. serrulatus is reported in this country from Assam (BISWAS, 1980), Madhya Pradesh (RANE, *loc. cit.*) and from Tamil Nadu and Meghalaya (MICHAEL and SHARMA, 1989).

8. *Latona narendrai* Rane, 1985c, p. 387-389, Figs. 1-3:

The deposited three specimens were relatively distorted but broadly resembled *Latonopsis australis* Sars in having large head without separation from trunk (Fig. 26), shape of antennule (Fig. 27) and posterior margin (Figs. 28) of valves (setae lost in this material), claw with two basal spines and solitary anal denticles (Fig. 29). RANE (1985c) compared his species with *Latona tiwari* Biswas which is already synonymised (MICHAEL and SHARMA, 1989) with *Pseudosida bidentata* Herrick.

Though *Latona narendrai* Rane is identical with *Latonopsis australis* (as per above details), more material is needed to ascertain exact taxonomic status of the former species.

9. *Simocephalus vamani* Rane, 1985d, p. 225-229, Figs. A-G:

RANE's material distinctly refers to *Simocephalus exspinosus* (Koch) because of its general morphology (Fig. 30), shape of head, rhomboid ocellus, shape of postabdomen and characteristic pectinate claws (Fig. 31). Variations in the number of teeth comprising pecten may be attributed to large size of these specimens.

S. exspinosus is so far reported in India from Meghalaya (PATIL, 1976), West Bengal (SHARMA, 1978) and Rajasthan, Meghalaya and West Bengal (MICHAEL and SHARMA, 1989).

10. *Simocephalus vidyae gajareae* Rane, 1986a, p. 168-170, Figs. 1-6:

As the diagnostic features of this subspecies (Figs. 32 & 33) clearly conform to *Simocephalus acutirostratus*, it is proposed to be treated as a synonym of the latter. The differences indicated by RANE (1986a) merely represented age-linked morphological variations in this population.

11. *Daphniopsis sumanae* Rane, 1986b, p. 638-640, Fig. 1 (1-12):

This species (Figs. 34-38) undoubtedly belongs to *Daphnia lumholtzi* Sars. RANE (1986b) not only lacked knowledge about the diagnostic features of *Daphniopsis* but was also misled by the reduced size of helmet of his specimens.

Daphnia lumholtzi is apparently widely distributed in India; it has been reported from Uttar Pradesh, West Bengal and Orissa (BREHM, 1950), Andhra Pradesh (BREHM, 1953), Rajasthan (BISWAS, 1971; NAYAR, 1971), Tamil Nadu (MICHAEL, 1973), Bihar (NASAR, 1977) and West Bengal (SHARMA, 1978). In addition, MICHAEL and SHARMA (1989) also examined material from Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Uttar Pradesh, Punjab, Haryana, West Bengal and Meghalaya.

12. *Daphnia sarojae* Rane, 1986b, p. 640-642, Fig. 2 (1-10):

These specimens (Figs. 39-42) distinctly belong to *Daphnia carinata* King. However, some illustrations (refer RANE, 1986b, Fig. 2(3), Fig. 2(4) referred to juvenile female and male of *Daphnia lumholtzi* respectively.

Daphnia carinata King is also widely distributed in this country; this daphniid is previously documented from Himachal Pradesh (BREHM, 1950; BISWAS, 1964), Karnataka, Uttar Pradesh and Madhya Pradesh (BREHM, 1953), Rajasthan (BISWAS, 1971; NAYAR, 1971) and West Bengal (SHARMA, 1978). MICHAEL and SHARMA (1989) also examined the specimens from Tamil Nadu, Uttar Pradesh, West Bengal, Karnataka, Madhya Pradesh, Rajasthan, Himachal Pradesh, Punjab, Haryana and Manipur.

13. *Moina dodhui* Rane, 1987, p. 245-250, Figs. 1-22:

Based on the description given by RANE (1987), this species could be confused with *Moina macrocopa* in certains aspects eventhough it lacked the characteristic hairs on head and carapace. However, on closer scrutiny, the present authors prefer to assign these specimens (Figs. 43-46) to *Moina micrura* (Kurz). Supra-ocular depression, evidently overlooked by RANE, was noticed though not very distinct in some specimens. Besides other regular variations,

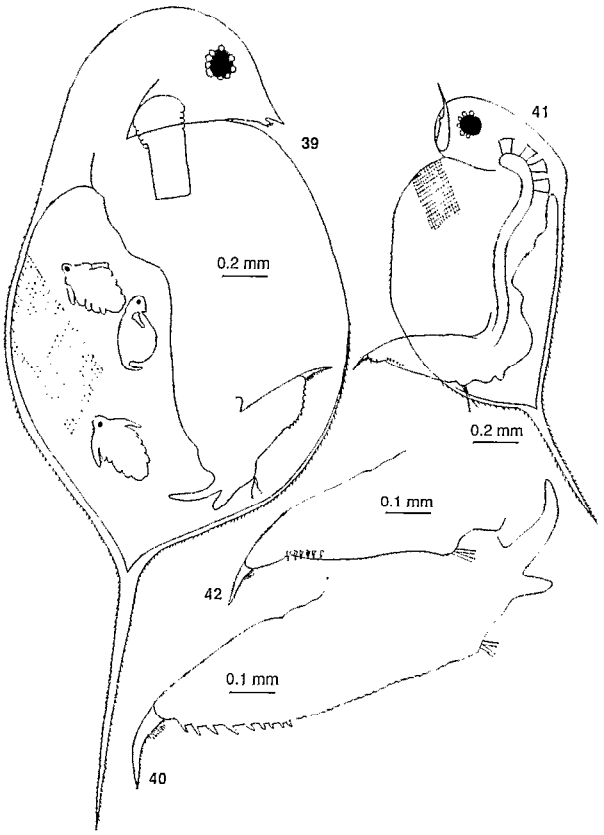

FIG. 39 à 42. — *Daphnia carinata* King, 1853 (= *Daphnia sarojae* Rane, 1986b): Fig. 39 — parthenogenetic female; Fig. 40 — postabdomen; Fig. 41 — male; Fig. 42 — postabdomen (male).

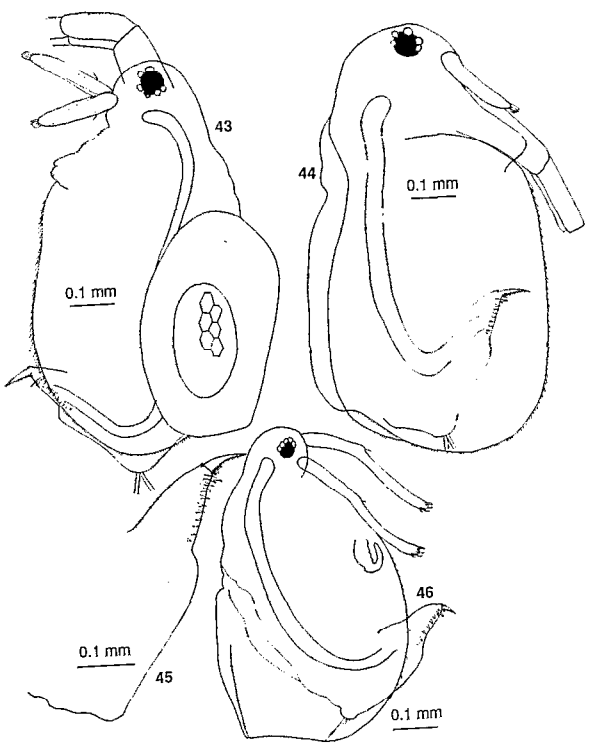

FIG. 43 à 46. — *Moina micrura* (Kurz, 1874) (= *Moina dodhui* Rane, 1987): Fig. 43 — ephippial female; Fig. 44 — parthenogenetic female; Fig. 45 — postabdomen; Fig. 46 — male.

this material indicated only one 'basaldorn' at the base of ventral side of each claw.

Moina micrura is often the most abundant cladoceran in asiatic water bodies and eutrophic ponds and tanks particularly in peninsular India.

CONCLUSION

From the foregoing observations and comments, various cladoceran taxa described from Madhya Pradesh are presently treated as below:

Latonopsis fernandoi Rane, 1983a = *Sarsilatona sericauda* (Sars, 1901)

Simocephalus vidyae Rane, 1983b = *Simocephalus acutirostratus* (King, 1853)

Indialona jabalpurensis Rane, 1983c = *Alona macronyx* (Daday, 1898)

Oxyurella sangramsagari Rane, 1984a = *Oxyurella singalensis* (Daday, 1898)

Bosminopsis devendrai Rane, 1984b = *Bosminopsis deitersi* Richard, 1895

Camptocercus latikae Rane, 1985a = *Camptocercus rectirostris* Schoedler, 1862 *sensu lato*

Simocephalus surekhae Rane, 1985b = *Simocephalus serrulatus* (Koch, 1841)

Latona narendrai Rane, 1985c = ? *Latonopsis australis* (Sars, 1888)

Simocephalus vamani Rane, 1985d = *Simocephalus exspinosus* (Koch, 1841)

Simocephalus vidyae gajareae Rane, 1986a = *S. acutirostratus* (King, 1853)

Daphniopsis sumanae Rane, 1986b = *Daphnia lumholtzi* Sars, 1885

Daphnia sarojae Rane, 1986b = *Daphnia carinata* (King, 1853)

Moina dodhui Rane, 1987 = *Moina micrura* (Kurz, 1874)

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