

FAUNA OF RAJASTHAN (INDIA):
CRUSTACEA—OSTRACODA

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(With 13 Text-figures)

INTRODUCTION

The present paper deals with the ostracod crustaceans collected from several localities in Rajasthan by various parties from the Zoological Survey of India during the course of faunistic survey of the Rajasthan desert 1957-1963. The material is rich, not only in number of individuals, but also in the number of genera and species.

In spite of the preponderance of ostracods in the Indian waters, their systematics have received surprisingly little attention in India. The records are patchy, both from the geographical point of view as well as from the time lag between one record and the other. Among the earliest account of Indian ostracods is that of Baird (1859) who recorded four species from Nagpur of which two were new. Other important references are those of Gurney (1906 and 1907), Klie (1927), Arora (1931) and Brehm (1950).

So far seventeen species belonging to ten genera of ostracods have been reported from scattered localities in Maharashtra and Madhya Pradesh, Uttar Pradesh, Bengal, Bihar, Orissa, Assam, Punjab and Simla Hills. There have so far been no records of ostracods from Rajasthan, although this arid tract, abounding in temporary rainwater ponds and tanks, is fairly rich in this group. As a result of the present study twenty species belonging to eight genera have been found to occur in Rajasthan, and seventeen of these are new records for India. Total number of species occurring in India thus becomes 34.

The species reported here were collected mostly from temporary rain-water puddles, ponds and tanks which remain full with water only in rainy season and part or whole of winter. In summer all these dry up, to be filled once again during the following rainy season.

Most of the specimens of ostracods were collected from the benthic habitat in the bottom of the ponds, or from among the aquatic weeds the underside of whose leaves forms an important habitat for the ostracods.

Most of the species reported in this paper also occur in Africa and the South East Asian waters. The Indian examples are, however, somewhat smaller in size than the African ones.

The author is greatly indebted to Dr. M. L. Roonwal, former Director and Dr. A. P. Kapur, Director of Zoological Survey of India for their encouragement and to Dr. K. K. Tiwari, Shri S. Biswas and Dr. A. N. P. Ummerkutty for their help in preparation of this paper.

LIST OF SPECIES OF OSTRACODA FROM RAJASTHAN
DEALT WITH IN THIS PAPER

Class	CRUSTACEA
Subclass	OSTRACODA
Order	PODOCOPA
Family	CYPRIDAE
Subfamily	1. <i>ILYOCYPRINAE</i>

1. *Ilyocypris biplicata* (Koch)
2. *Physocypria armata* (G. W Müller)
3. *Physocypria crenulata* (Sars)

Subfamily 2. *CYPRINAE*

4. *Cyprinotus megalops* (Sars)
5. *C. ovatus* (Sars)
6. *C. makua* Tressler
7. *C. giesbrechtii* G. W Müller
8. *C. salinus* (Brady)
9. *C. gunningi* (Methuen)
10. *C. incongruens* (Ramdohr)
11. *C. aureus* Sars
12. *Cypris subglobosa* Sowerby
13. *Cypricercus mollis* Furtos
14. *Stenocypris malcolmsoni* (Brady)
15. *S. derupta* Vavra
16. *S. fasciculata* Daday
17. *S. fulleborni* Daday
18. *S. spinosa* Tressler

19. *Cyprretta turgida* (Sars)20. *Cypridopsis newtoni* Brady & Robertson

KEY TO GENERA AND SPECIES OF OSTRACODA

Subfamily 1. *ILYOCYPRINAE*

Swimming setae of 2nd antenna extended much beyond the tips of terminal claws. Masticatory process of maxilla short and thick. Tip of 2nd leg with 3 setae, 2 short and one reflexed. Dorsal seta of furca on 2/3 of its length.

- | | | | |
|--|-----|--|-------|
| 1.(a) Shell quadrangular | ... | <i>Ilyocypris</i>
<i>I. biplicata</i>
(only one species) | |
| (b) Shell oblong, oval | ... | <i>Physocypris</i> | ... 2 |
| 2.(a) Left valve bigger than the right | ... | <i>P. armata</i> | |
| (b) Left valve smaller than the right | ... | <i>P. crenulata</i> | |

Subfamily 2. *CYPRINAE*

Swimming setae of 2nd antenna do not extend much beyond the tips of terminal claws. Masticatory process of maxilla long and narrow. Tip of 2nd leg with a beak like claw and 1 long seta. Furca with 2 claws and 2 setae or reduced into a flagellum.

- | | | | |
|--|-----|---|-------|
| 1.(a) Shell tumid, margin of one valve tuberculated | ... | <i>Cyprinotus</i> | ... 2 |
| (b) Shell tumid; margin of valve entire | ... | <i>Cypris</i>
<i>C. subglobosa</i>
(only one species) | |
| 2.(a) Left valve of shell tuberculated | ... | | ... 3 |
| (b) Right valve of shell tuberculated | ... | | ... 4 |
| 3.(a) Tip of 2nd leg with a short, thick, curved claw | ... | <i>C. magalops</i> | |
| (b) Tip of 2nd leg with a long, thin, claw | | <i>C. ovatus</i> | |
| 4.(a) 3rd maxillary process dentate | ... | | ... 5 |
| (b) 3rd maxillary process entire | ... | | ... 6 |
| 5.(a) Both ends of shell acute in dorsal view | | <i>C. makua</i> | |
| (b) Both ends of shell obtuse in dorsal view | ... | | ... 7 |
| 6.(a) Furca stout and curved in the middle | | <i>C. giesbrechtii</i> | |
| (b) Furca narrow and curved proximally | | <i>C. salinus</i> | |
| 7.(a) Anterior end of shell in dorsal view narrow and straight | ... | | ... 8 |

- (b) Anterior end of shell in dorsal view
narrow and curved like a beak ... *C. aureus*
- 8.(a) Branchial plate of maxilliped 5-6
rayed ... *C. gunnigi*
- (b) Branchial plate of maxilliped 2 rayed ... *C. incongruens*
- 1.(a) Shell moderately tumid; furca long,
narrow, symmetrical, with 2 claws
and 2 setae ... *Cypricercus*
C. mollis
(only one species)
- (b) Shell compressed, oblong; furca
broad, asymmetrical, with 2 claw and
1 seta, dorsal seta absent. ... *Stenocypris* ... 2
- 2.(a) Margin of valves with a broad band
of pore canals ... 3
- (b) Margin of valves without a broad
band of pore canals ... 4
- 3(a) Posterior end of shell rounded in side
view ... *S. malcolmsoni*
- (b) Posterior end of the shell conical ... *S. derupta*
- 4.(a) Fine hairs on dorsal edge of furca
are not in groups ... 5
- (b) Fine hairs on dorsal edge of furca
are in groups ... *S. fasciculata*
- 5.(a) Serrations of the furcal claw in
single succession ... *S. fulleborni*
- (b) Serrations of the furcal claw in two
successions ... *S. spinosa*
- 1.(a) Shell tumid, anterior margin of each
valve with a row of radiating septa;
furca reduced to some extent ... *Cypretta*
C. turgida
(only one species)
- (b) Shell tumid; furca reduced to a
whip like flagellum ... *Cypridopsis*
C. newtoni
(only one species)

SYSTEMATIC ACCOUNT

1 *Ilyocypris biplicata* (Koch)

1838. *Cypris biplicata* Koch, *Deutschland Crusteen*, 21, pl. 16.

1928. *Ilyocypris biplicata*: Sars, *Crustacea of Norway*, 9: 106.

Material.—3 vials, (i) 25 exs. ♂♂ & ♀♀, ditch adjacent to main Lake Gudha, 6.xi.58. (ii) 2 exs., Sta. 13, ditch near Rly. Line, Nawa, 28.ix.58, (Nagaur District); all S. Biswas Coll.

(iii) 3 exs., Sta. 13, Ramgarh, Biprasar Tank (Jaisalmer Dist.), 4.i.58 ; K. K. Tiwari & S. Biswas Coll.

Length : 0.7 mm.—1 mm. Width : 0.28 mm.—0.37 mm.
Height : 0.39 mm.—0.50 mm. ♂ ♀.

Description.—Shell in lateral view roughly rectangular, anterior half broader than posterior half in dorsal view anterior end pointed, posterior end rounded, two folds present on the side wall. Valve margin beset with hairs and denticles. Furcal ramus strongly curved.

Distribution.—India : Rajasthan (First record) as above ; elsewhere : Europe, Algeria, N. America.

Remarks.—Two folds on the side wall of the carapace, are well marked. Males are common. Specimens are slightly smaller in size than Sars' (1928) specimens from Norway. Opaque white in colour.

2. *Physocypria armata* (Müller)

1897. *Cypria armata* Müller, *Abh. Senckenb. naturforsch. Ges.*, 21 : 261.

Material.—6 exs., Sta. 1, Devdani tank, near Sambhar Lake, (Jaipur Dist.) 2.x.1963 ; K. K. Mahajan Coll.

Length : 0.5 mm.—0.53 mm. Width : 0.3 mm.—0.32 mm.
Height : 0.25 mm.—0.35 mm. ♀♀.

Description.—Shell compressed, in profile anterior end more narrowly rounded than the posterior end. In dorsal view it is oblong, surface of shell finely hairy. Swimming setae of 2nd antenna more than twice as long as the last segment. Furca stout with two stout claws and two setae. Dorsal seta on the middle of the dorsal edge of ramus and twice as long as the ventral one.

Distribution.—India : Rajasthan (First Record) ; elsewhere : Madagascar and Natal.

Remarks.—Present specimens are slightly smaller in size and somewhat different in shape, but are otherwise quite identical with Müller's specimens. Brown in colour.

3. *Physocypria crenulata* (Sars)

1903. *Cypria crenulata* Sars, *Arch. Math. Naturv.*, 25 : 32.

Material.—25 exs. Sta. 1. Devdani Tank near Sambhar Lake (Jaipur Dist.) ; 2.x.63 ; K. K. Mahajan Coll.

Length : 0.55 mm.—0.62 mm. Width : 0.3 mm.—0.35 mm
Height : 0.35 mm.—0.40 mm. ♀♀.

Description.—Shell compressed, surface finely hairy. In side view anterior half of the shell narrower than the posterior. Oblong in dorsal view. Right valve slightly bigger in size, margin tuberculate. Furca as in the previous species.

Distribution.—India : Rajasthan (First record) ; elsewhere : Paraguay, Sumatra.

Remarks.—Male not known. Specimens brown in colour. Right valve overlaps the left. Right valve margin is finely tuberculate. Shape of the shell is slightly different from that of the previous species.

Genus *Cyprinotus* Brady

Brady (1885) described the genus *Cyprinotus* from Ceylon for the first time. Sars (1903) while describing *Cyprinotus* from Sumatra created a new genus *Hemicypris* to accommodate two species viz. *C. megalops* and *C. ovatus*, in which the left valve of the shell is smaller and with tuberculate margin. Müller (1912) however, did not consider this to be a character of generic importance, and synonymised *Hemicypris* with *Cyprinotus*.

4. *Cyprinotus megalops* (Sars)

(Text-fig. 1, A-I)

1903. *Hemicypris megalops* Sars, *Arch. Math. naturv.*, 25(8): 27.

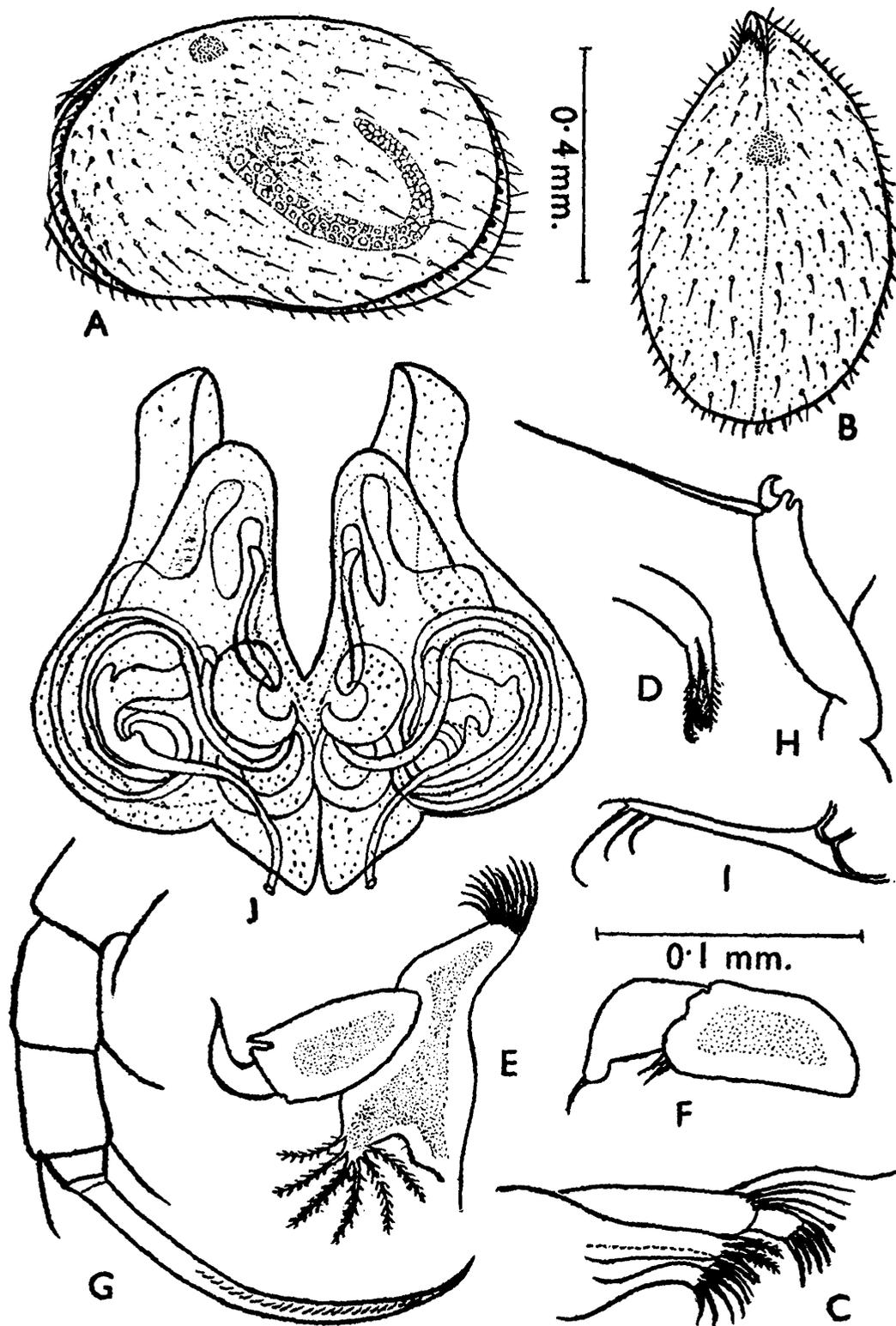
1912. *Cyprinotus megalops*: Müller, *Das Tierreich*, 31: 167.

Material.—9 vials, (i-vi) 6 vials, 10-500 exs., ditches by the side of Railway Line, Gudha, 4.x.58, (vii) 25 exs., ditches near Lake Gudha, 13.x.58, (viii) 6 exs., cemented tank in front of Kyar office, Gudha, 13.x.58 ; all from Nagaur Dist., (ix) 10 exs., Ratan Talao, 2 miles S. W of Japog (Jaipur Dist.) 22.ix.58 ; all *S. Biswas* Coll.

Length : 0.85 mm.—1.25 mm. Width : 0.44 mm.—0.50 mm. Height : 0.56 mm.—0.75 mm. ♂ ♀.

Description.—Shell of female tumid. Under high magnification valves made up of pentagonal tiles and each tile with a central pore canal with a hair. Left valve smaller with margin tuberculate. Third maxillary process with two dentate setae (Text-fig. 1, C & D). Maxilliped with a distinct branchial plate.

Some male shell slightly smaller than the female, shell surface finely hairy. In dorsal view left valve smaller, margin tuberculate, anteriorly compressed, beak like.



Text-fig. 1. *Cyprinotus megalops* (Sars.), (A). Shell, side view; (B). Same, dorsal view; (C). Maxillary process; (A—C). Same scale; (D). 3rd maxillary process; (E). Maxilliped with clasper; (F). Left clasper; (G). 1st leg; (H). 2nd leg; (I). Furca; (J). Copulatory appendage of ♂; (D—J). Same scale.

Maxillary palp prominent. Terminal segment of 2nd leg with a small curved hook and a long seta.

Distribution.—India : Rajasthan (First Record) ; elsewhere : Sumatra.

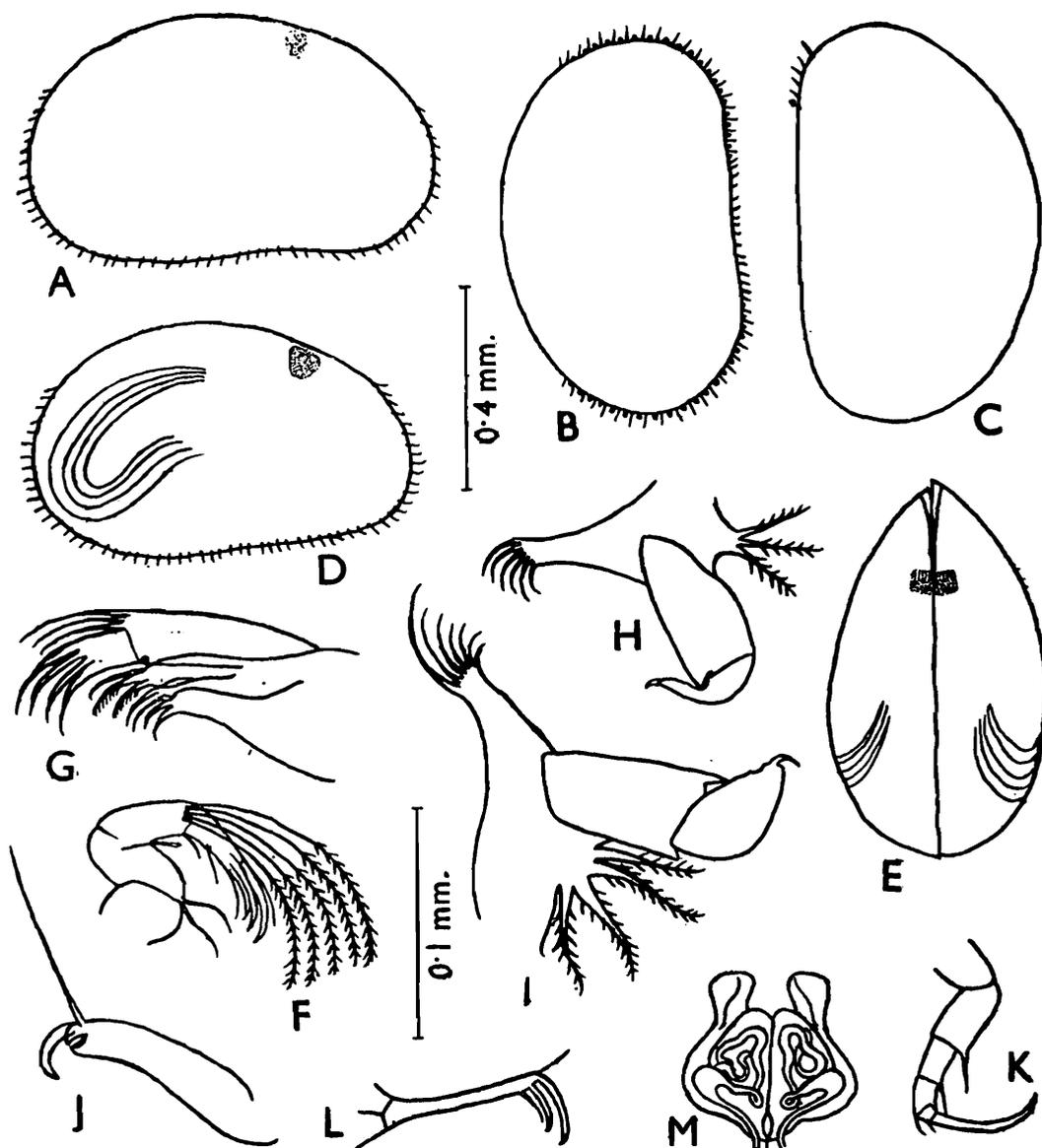
Remarks.—Males of this species are recorded for the first time. Left valve of *C. megalops* small and margin tuberculate.

5. *Cyprinotus ovatus* (Sars)

(Text-fig. 2, A-M)

1903. *Hemicypris ovatus* Sars, *Arch. Math. naturv.*, 25(8): 26.

1912. *Cyprinotus ovatus*: Müller, *Das Tierreich*, 31: 167.



Text-fig. 2. *Cyprinotus ovatus* (Sars), (A). Shell, side view; (B) Left (C) Right valve; (D). Same of ♂ side view; (E). same ♂ dorsal view; (F). 2nd antenna; (A—F). Same Scale; (G). ♂ dorsal view; (F). 2nd antenna; (A—F). Same Scale; (G). Maxilla; (H) & (I). Right and left Maxilliped with clasper; (J) 2nd leg; (G—J). Same scale; (K). 1st leg; (L). Furca; (M). Copulatory appendage of ♂; (K—M). Same scale.

Material.—125 exs., water pool near railway line, Gudha (Nagaur Dist.) ; 2.x.58 ; S. Biswas Coll.

Length : 0.77 mm.—1 mm. Width : 0.45 mm.—0.50 mm.
Height : 0.49 mm.—0.62 mm. ♂♂

Length : 0.84 mm.—1 mm. Width : 0.49 mm.—0.50 mm.
Height : 0.5 mm.—0.62 mm. ♀♀.

Description.—Shell oblong, surface hairy. In profile anterior end more narrowly rounded than the posterior. Left valve smaller than the right, with margin tuberculate. Swimming setae of 2nd antenna (Text-fig. 2, F) much longer than the terminal claws. Third maxillary process dentate. Maxilliped with 3-5 rayed branchial plate.

Males slightly smaller than females, palp of maxilla prominent.

Distribution.—India : Rajasthan (First Record) ; elsewhere : Sumatra.

Remarks.—*C. ovatus* differs from the *C. megalops* in following respects (i) hook-like claw of the 2nd abdominal leg is more prominent in the former, (ii) shape and size of the right and left clasper and copulatory appendage are also different. When seen under high magnification shell sculpture appears to be composed of pentagonal tiles as in *C. megalops*.

6. *Cyprinotus makua* Tressler

(Text-fig. 3, A-M)

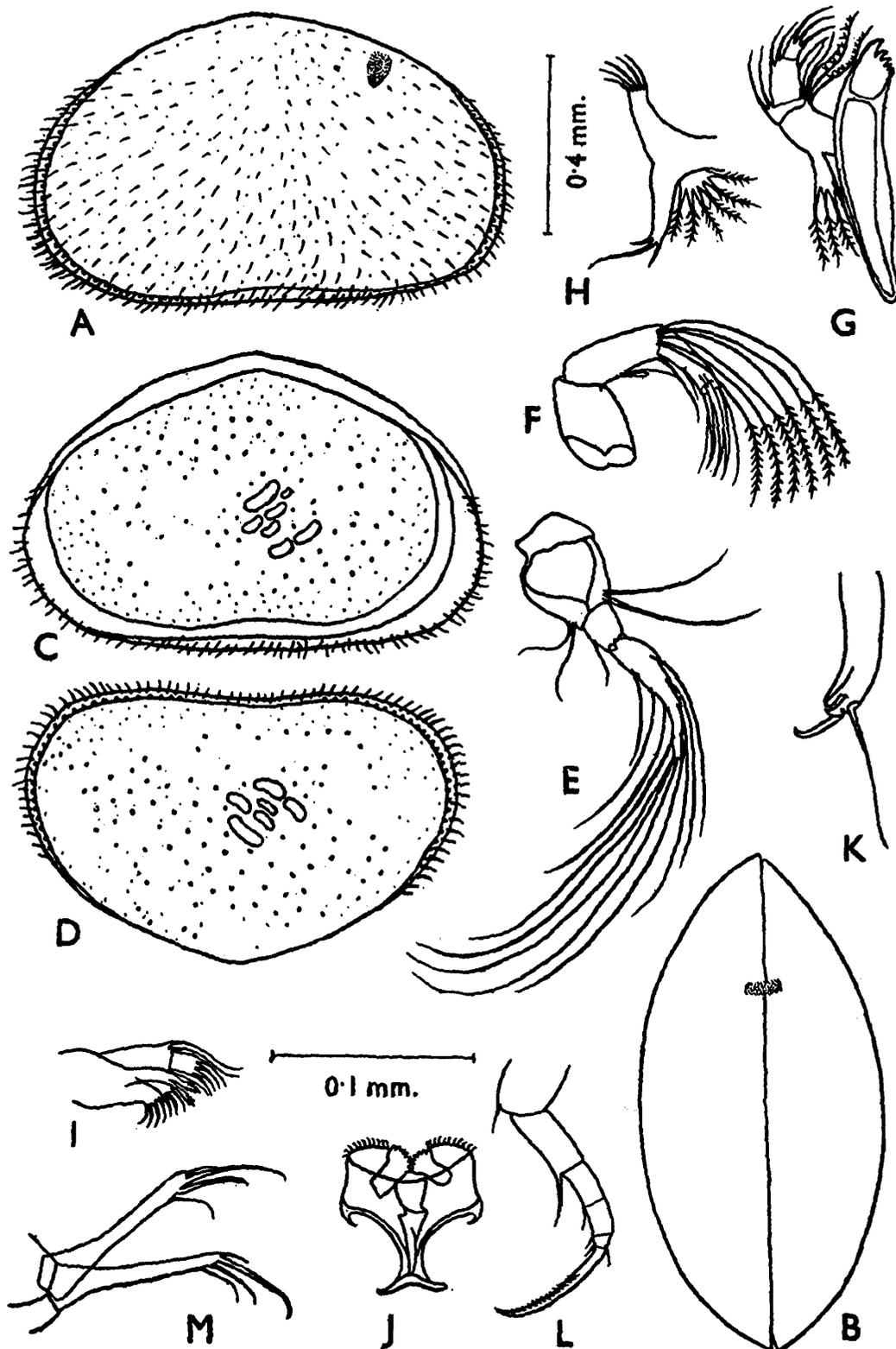
1937. *Cyprinotus makua* Tressler, *Inter. Revue. Ges. Hydrobiol. Hydrogr.*, 34 : 192.

Material.—2 vials (i) 500 exs., Sta. 7 rain-water in a cemented tank, 15.x.58. (ii) 30 exs. Sta. 7, cemented water tank. Gudha Kyar 4.x.58 : (Nagaur Dist.) : all S. Biswas Coll.

Length : 1.13 mm.—1.25 mm. Width : 0.56 mm.—0.62 mm.
Height : 0.68 mm.—0.87 mm. ♀♀.

Description.—Shell oblong in dorsal view (Text-fig. 3 B) both the ends pointed. Right valve slightly smaller, margin tuberculate, oval in profile (Text-fig. 3, A) Valves very thin, delicate transparent with scattered pore canals and hairs. Swimming setae of 2nd antenna longer than the terminal claws (Text-fig. 3 F). Third maxillary process with dentate setae.

Distribution.—India : Rajasthan, (First record) ; elsewhere : Island of Oahu, Hawaii.



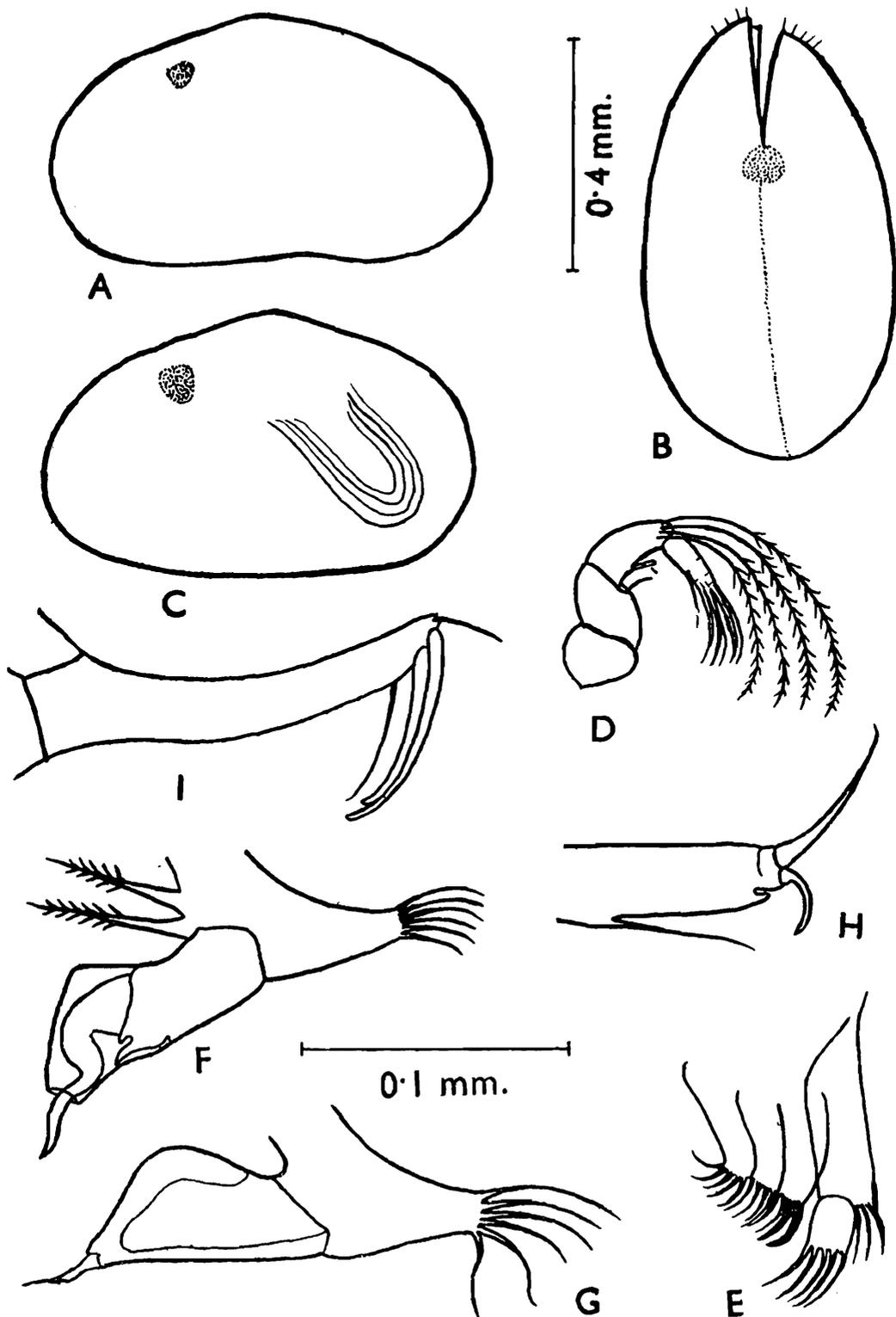
Text-fig. 3. *Cyprinotus makua* Tressler, (A). Shell, side view; (B). Same, dorsal view; (C) & (D). Left and right valve; (A—D). Same scale; (E). 1st antenna; (F). 2nd antenna; (G). Mandible; (H). Maxilliped; (I). Maxilla; (J) Lower lip, (E—J). Same scale; (K). 2nd leg; (L). 1st leg; (M). Furca, (K—M). Same scale.

Remarks.—Present specimens are slightly smaller than the Hawaiian specimens. Valves are very thin, delicate and transparent.

7 *Cyprinotus giesbrechtii* Müller

(Text-fig. 4, A-I)

1898. *Cyprinotus giesbrechtii* Müller, *Abh. Senckahb. naturforsch. Ges.*, 21 : 277.



Text-fig. 4. *Cyprinotus giesbrechtii* Müller, (A). Shell, side view; (B). Same dorsal view; (C). Same ♂, side view; (A—C). Same scale; (D). 2nd antenna; (E). Maxilla; (F & G). Left & right Maxilliped; (H). 2nd leg; (I). Furca; (D—I). Same scale.

Material.—8 ♂♂, 15 ♀♀ & 4 ♂♂ 25 ♀♀ in 2 vials, Sta. 13. Kuchaman Road (Nagaur Dist.) ; 5.ix.58 ; S. Biswas Coll.

Length : 0.79 mm.—1.20 mm. Width : 0.4 mm.—0.62 mm.
Height : 0.42 mm.—0.68 mm. ♂♂

Length : 0.82 mm.—1.2 mm. Width : 0.41 mm.—0.62 mm.
Height : 0.44 mm.—0.68 mm. ♀♀.

Description.—Shell oblong, both ends rounded in side view. Right valve smaller and margin tuberculate. Third maxillary process with two thick setae (Text-fig. 4 E). Furca (Text-fig. 4, I) broad and bent with two claws and two setae.

Distribution.—India : Rajasthan (First record) ; elsewhere : Aldabra (Madagascar).

Remarks.—Most of the specimens seems to be very young. In males formation of claspers and copulatory appendages are not yet completed. In young specimens furca are bent and broad, in adult they are straight and rather narrow.

8. *Cyprinotus salinus* (Brady)

(Text-fig. 5, A-H)

1868. *Cypris salina* Brady, *Trans. Linn. Soc.*, 26 : 368.

1891. *Cyprinotus salina* : Sars. *Forh. norske med. Selk.*, 1890, Nr. 1 ; 56.

1900. *Cyprinotus salinus* : Müller, *Zoologica*, 30 : 76.

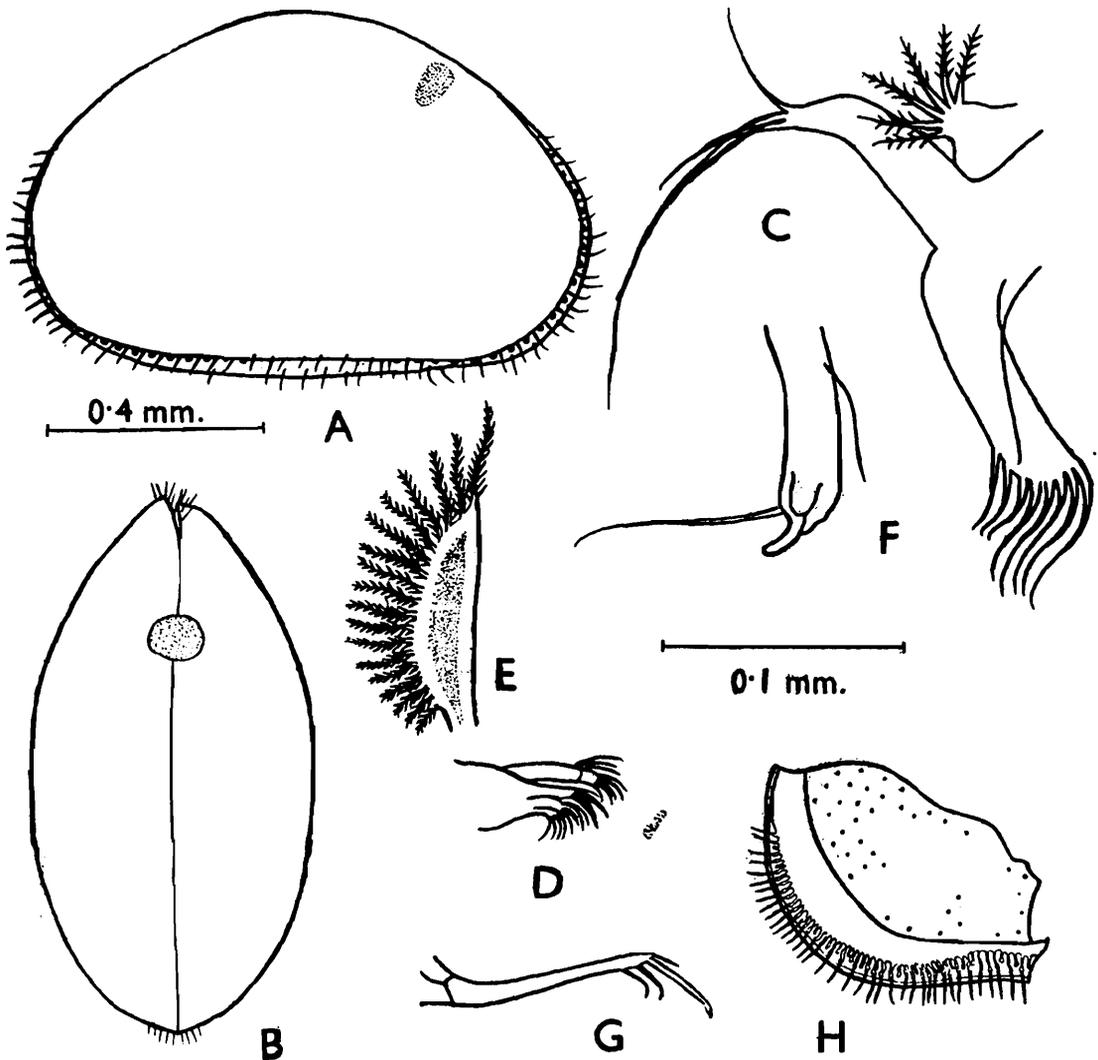
Material.—3 vials, (i) 4 exs. Sta. 7 Stagnant water in a cement tank, Gudha, 1.x.58 ; (ii) 20 exs. Sta. 7, pumping enclosure, Gudha Kyar, 11.x.58, (iii) 15 exs., Sta. 13, rain-water pool near Nawa Kyar., 28.ix.58 ; (Nagaur Dist.) ; all S. Biswas Coll.

Length : 1.19 mm.—1.25 mm. Width : 0.59 mm.—0.62 mm.
Height : 0.75 mm.—0.87 mm. ♀♀.

Description.—Shell tumid. In side view both the end broadly rounded, dorsal margin strongly curved. Seen dorsally, shell oval, right valve smaller, margin tuberculate. Pore canals of valve margin distinct and give passage to a hair (Text-fig. 5, H). Third maxillary process with two thick setae but not dentate.

Distribution.—India : Rajasthan (First record) ; elsewhere : Brackish waters of Europe.

Remarks.—In dorsal view shell oblong, anterior and posterior end not acutely pointed. Shape of the shell is different



Text-fig. 5. *Cyprinotus salinus* (Brady), (A). Shell, side view; (B). Same, dorsal view; (A—B). Same scale; (C). Maxilliped; (D). Maxilla; (E). Branchial plate of Maxilla; (F). 2nd leg; (G). Furca; (H). A portion of valve; (C—H). Same scale.

from the other species of the genus. This is a common species occurring in brackish water of Europe. In Rajasthan also all its records are from the Sambhar Lake or confluent areas, where water is brackish during early part of the rainy season, but becomes highly saline later on in dry season, when most of the organisms disappear.

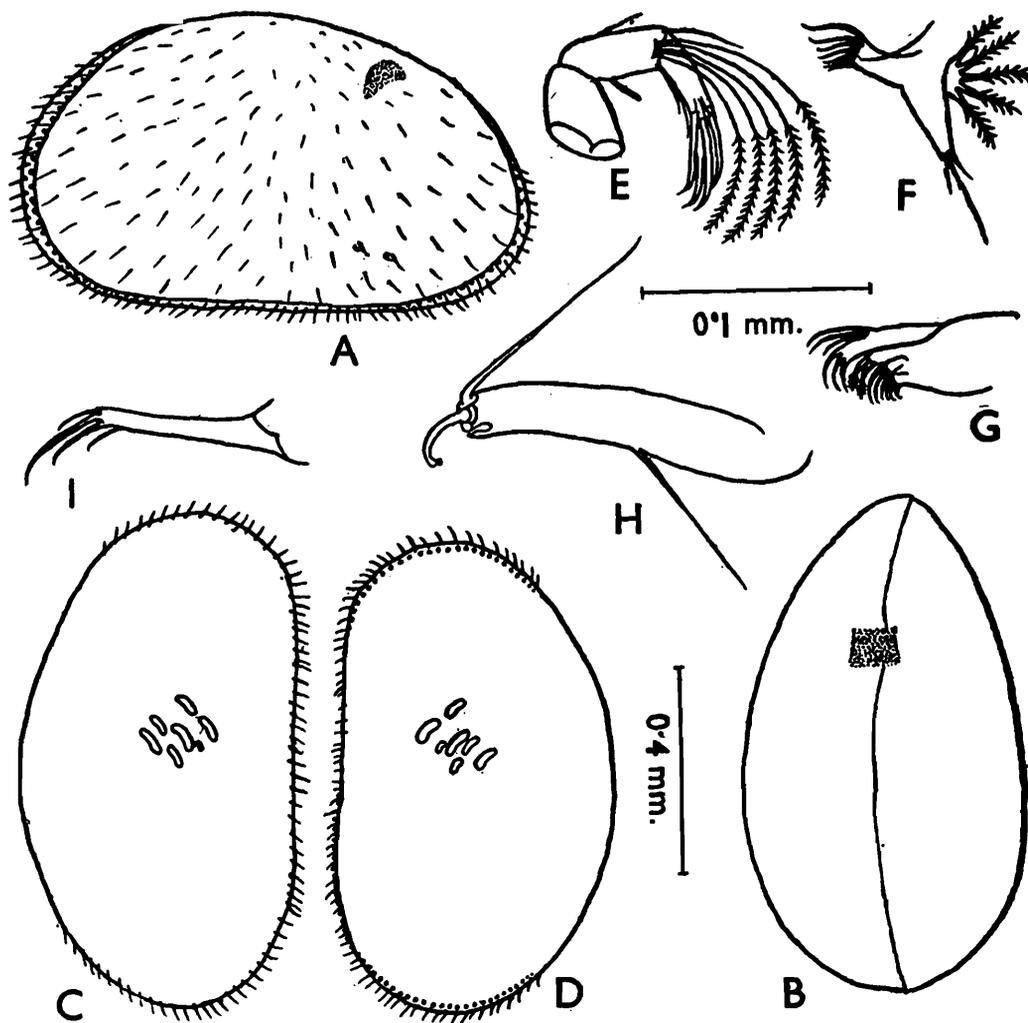
9. *Cyprinotus gunningi* (Methuen)

(Text-fig. 6, A-I)

1910. *Cypris gunningi* Methuen, *Proc. zool. Soc.*, 1: 153.

Material.—2 vials, (i) 10 exs. Sta. 13. Nawa, in an area separated from Main Lake by Kyar bund. 26.ix.58. (ii) 25 exs.,

Sta. 13, ditch near railway line, 29.ix.58; (Nagaur Dist.);
S. Biswas Coll.



Text-fig. 6. *Cyprinotus gunningi* (Methuen), (A). Shell, side view; (B). Same, dorsal view; (C & D). Left & right valve; (E). 2nd antenna; (F). Maxilliped; (G). Maxilla; (A—G). Same scale; (H). 2nd leg; (I). Furca; (H & I). Same scale.

Length: 1.1 mm.—1.37 mm. Width: 0.6 mm.—0.75 mm.
Height: 0.6 mm.—0.87 mm. ♂ ♀.

Description.—Shell tumid. In lateral view (Text-fig. 6, A) oblong oval in shape, anterior end narrowly rounded. Right valve smaller with margin tuberculate. In dorsal view (Text-fig. 6, B) anterior end narrowly rounded, posterior end quite broad. Shell thin, surface hairy. Swimming setae of 2nd antenna longer than the terminal claws. Third maxillary process with two dentate setae. Furca stout and straight with two claws and two setae.

Distribution.—India: Rajasthan (First Record): elsewhere: Transvaal.

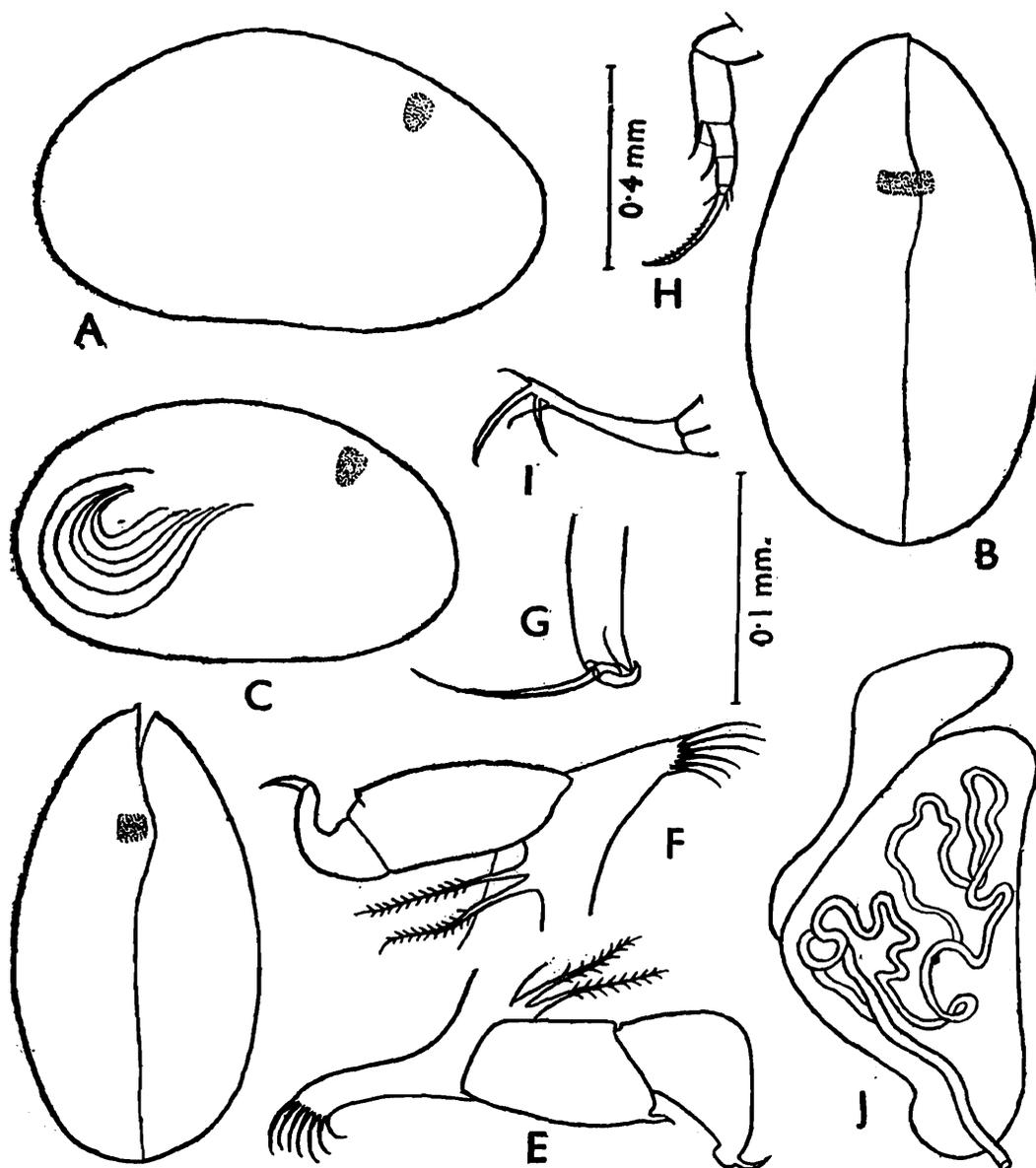
Remarks.—Some males are slightly smaller than the females; present specimens are slightly smaller in size than those from Transvaal. Shape and structure of the copulatory appendage in case of male are, however, quite identical in African and Indian specimens.

10. *Cyprinotus incongruens* (Ramdohr)

(Text-fig. 7, A-J)

1808. *Cypris incongruens* Ramdohr, *Mag. Ges. Fr.*, 21, 86.

1821. *Cypris fusca* Straus, *Mem. Mus. Paris*, 7: 59.



Text-fig. 7. *Cypris incongruens* (Ramdohr), (A). Shell, side view; (B). Same, dorsal view; (C) & (D). Same ♂, side view; (E) (A—D). Same scale; Left Maxilliped; (F). Right Maxilliped; (G). 2nd leg, (H). 1st leg; (I). Furca, (E—I). Same scale.

1903. *Eucypris incongruens*: Daday, *Zool. Jb. Syst.*, **19**: 81.

Material.—45 exs., Sta. 13. Kuchaman Road, Nagaur Dist., 5.ix.58; S. Biswas Coll.

Length: 1.05 mm.—1.25 mm. Width: 0.6 mm.—0.68 mm.
Height: 0.62 mm.—0.72 mm. ♂♂

Length: 0.93 mm.—2.15 mm. Width: 0.5 mm.—0.80 mm.
Height: 0.54 mm.—1.25 mm. ♀♀.

Description.—Shell oblong in dorsal view. Right valve slightly smaller and margin tuberculate. Males slightly smaller in size. Right and left claspers of maxilliped in male dissimilar (Text-fig. 7, E & F).

Distribution.—India: Rajasthan (First Record); Elsewhere: Central Asia, Europe, N. America, Brazil, N. & S. Africa.

11. *Cyprinotus aureus* (Sars)

(Text-fig. 8, A-K)

1895. *Cypris aureus* Sars, *Skr. Vidensk. Selsk.*, (8): 34.

1896. *Cyprinotus aureus*: Sars, *Arch. Math. Naturv.*, **19**(1): 25.

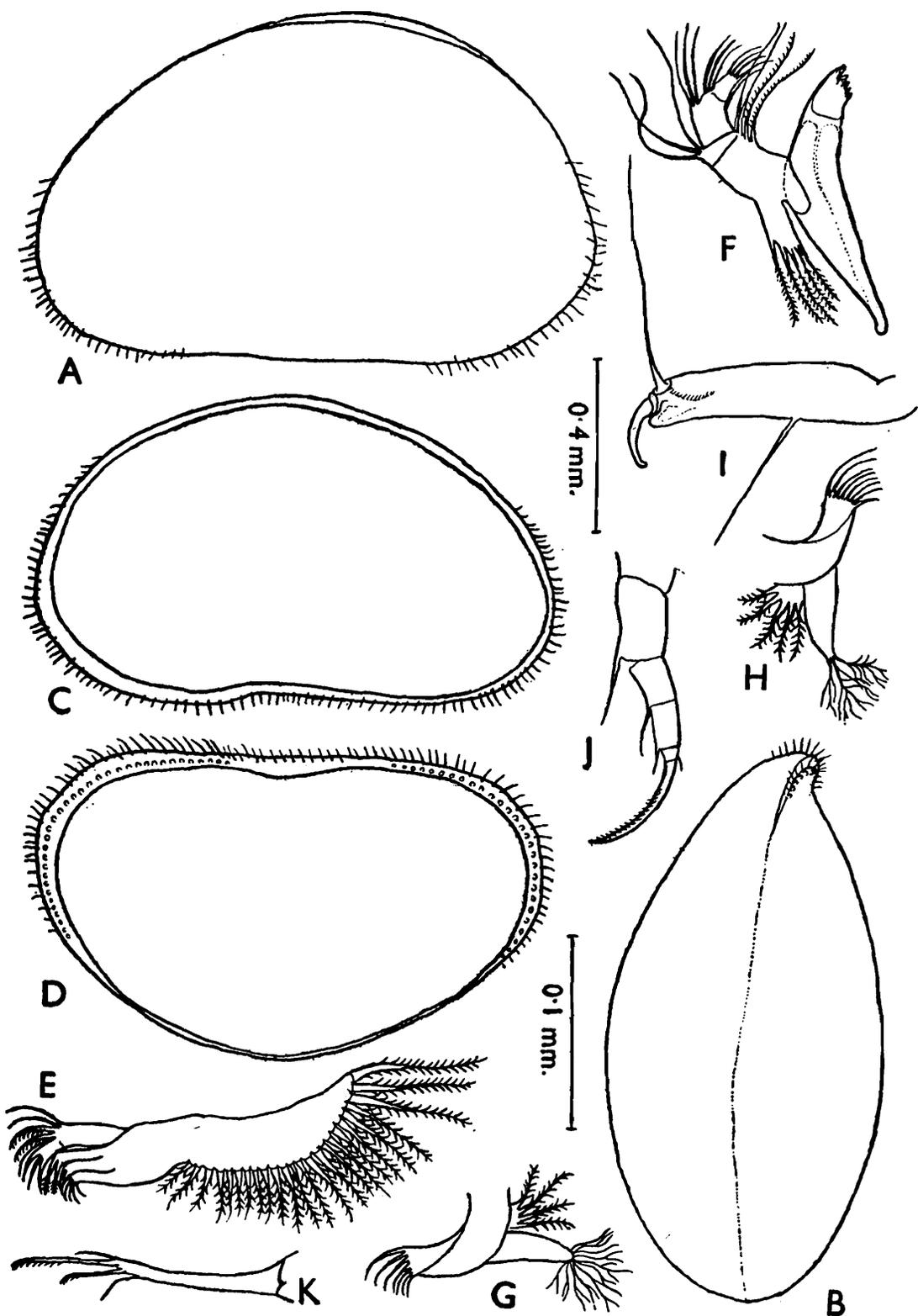
Material.—3 vials, (i) & (ii) 10. & 6 exs. from a ditch near railway station, Gudha, 1957, 8.xi.58. (iii) 10 exs. freshwater ditch at Gudha, (Nagaur Dist.); S. Biswas Coll.

Length: 1.40 mm.—1.68 mm. Width: 0.7 mm.—0.75 mm.
Height: 0.9 mm.—1 mm. ♀♀.

Description.—Shell tumid. Anterior half of the shell narrower than the posterior half in side view. Right valve smaller and margin tuberculate. In dorsal view posterior end broadly rounded, anterior end beak like, narrow. (Text-fig. 8, B) and curved towards the right side.

Distribution.—India: Rajasthan (First Record); elsewhere: Africa.

Remarks.—Shell is opaque white in colour, and roughly semi-circular in side view. Shape of the shell different from that in other species of the genus. Unlike the other species the palp of maxilliped has a bunch of fine hairs on its head.



Text-fig. 8. *Cyprinotus aureus* Sars, (A). Shell, side view; (B). Same, dorsal view; (C & D). Left & right valve; (A—D). Same scale; (E). Maxilla; (F). Mandible; (G & H). Maxillipeds; (I). 2nd leg; (J). 1st leg; (K) Furca; (E—K). Same scale.

12. *Cypris subglobosa* Sowerby

1840. *Cypris subglobosa* Sowerby: Malcolmson: *Tr. geol. Soc. Lond.* Ser. 2, 5: 47.

1859. *Cypris subglobosa*: Baird, *Proc. zool. Soc.*, 27: 232.

1885. *Chlamydotheca subglobosa*: Brady, *J. Linn. Soc. Zool.*, 19: 300.

1906. *Eurycypris subglobosa*: Vavra, *Zool. Zb. Syst.*, 23: 420.

Material.—4 vials contains 8-40 exs. of ♀♀; (i) Sta. Narayana, Canal water of Dhobola Talao, 29.x.58, (ii) Narayana Talao, 2.xi.58. (iii) Sta. Dudu Talao, $\frac{1}{2}$ mile S. of Rest House (Jaipur Dist.) (iv) Bala Talao ca. 3 miles S. E. of Julga Lake (Jaipur dist.) 24.xi.58; all S. Biswas Coll.

Length: 1.75 mm.—1.87 mm. Width: 1.4 mm.—1.47 mm. Height: 1.2 mm.—1.28 mm. ♀♀.

Description.—Shell sculptured uniformly with blunt, teethlike projections. In dorsal view anterior end narrower than posterior. Valves dissimilar, right valve with a lamellar flap anteriorly, posterior end narrow. Valve margin hairy.

Distribution.—India: Rajasthan (First Record) as above; Nagpur; elsewhere: Ceylon, Java, Europe and America.

Remarks.—Males of this species are not known so far. The shell is ivory white to greenish in colour. The author considers *C. granulata* Daday (1898) from Ceylon as conspecific with the present species. Müller (1912) also doubted the correctness of the identity of *granulata* and treated it as a doubtful species.

13. *Cypricercus mollis* Furtos

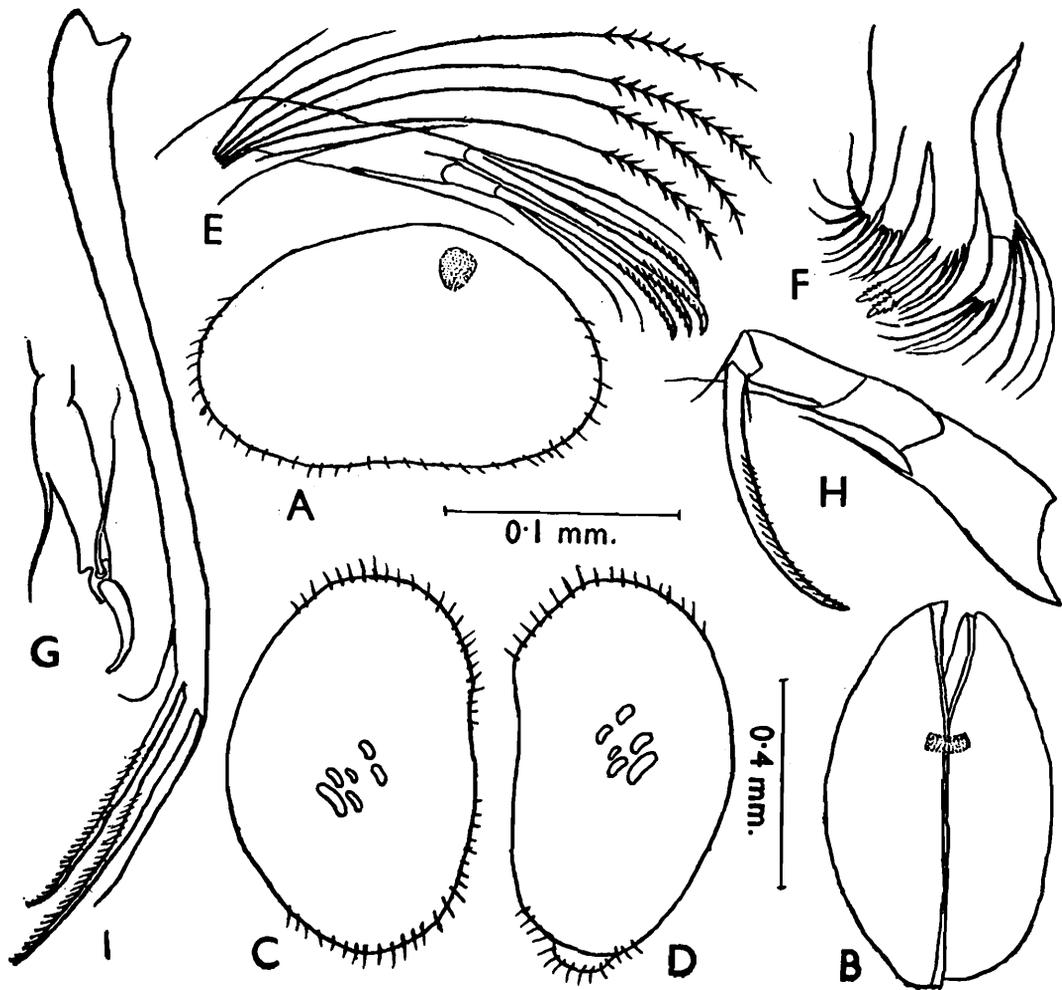
(Text-fig. 9, A-I)

1936. *Cypricercus mollis* Furtos, *Amer. Midl. Nat.*, 17: 491.

Material.—25 exs. in a vial; Sta. 6, around the University compound (Jaipur Dist.); 26.ix.63; K. K. Mahajan Coll.

Length: 0.75 mm.—1 mm. Width: 0.45 mm.—0.62 mm. Height: 0.44 mm.—0.60 mm. ♀♀.

Description.—Shell oblong (Text-fig. 9, A), surface smooth, sparsely hairy. In dorsal view right valve smaller and overlapped by the left, its greatest width in the middle. Valve margins entire, with broad marginal fringes. An extra flap or posterior flange attached to the posterior margin of the right valve. Swimming setae of the 2nd antenna, extended up to the tips of terminal claws. Terminal segment of the maxillary palp longer than broad, 3rd maxillary process with two dentate processes.



Text-fig. 9. *Cypricercus mollis* Furtos, (A). Shell, side view; (B). Same dorsal view; (C & D). Left & right valve, (A--D). Same scale; (E). 2nd antenna; (F). Maxilla; (G). 2nd leg; (H). 1st leg; (I). Furca; (E—I). Same scale.

(Text-fig. 9, F). Furca long and narrow (Text-fig. 9, I) and weakly 'S' shaped, with two claws and 2 setae (Text-fig. 9, F).

Distribution.—India: Rajasthan (First Record); elsewhere: N. America.

Remarks.—Females of this species were unknown so far. They are being reported for the first time. Present specimens are slightly bigger in size than the males described by Furtos (1936). There are slight difference in the shape of carapace also when seen in profile. In other respect present material agrees with Furtos' description.

14. *Stenocypris malcolmsoni* (Brady)

1859. *Cypris cylindrica*, var. *major* Baird, *Proc. zool. Soc.*, 27: 233.

1886. *Cypris malcolmsoni* Brady, *J. Linn. Soc. Zool.*, 19: 297.

1890. *Stenocypris malcolmsoni*: Sars, *For. Med. Selsk.*, (8); 28.

Material.—3 vials; (i) 10 exs., Sta. Narayana, canal water of Dhobole Talao. 29.x.58, (ii) 5 exs., Sta. 7, temporary rain-water in a cemented tank 15.x.58 (Jaipur Dist.). *S. Biswas* Coll. (iii) 2 exs., Gadisar, eastern side of Dak Bunglow (Jaisalmer Dist.); 28.xii.57; *K. K. Tiwari* and *S. Biswas* Coll.

Length: 1.7 mm.—1.88 mm. Width: 0.54 mm.—0.62 mm. Height: 0.74 mm.—0.87 mm. ♀♀.

Description.—Shell compressed, oblong both the ends rounded, in side view. A broad band of pore canals present throughout the margin except on dorsal side, each pore canal allowing passage to one hair. Scattered pores present on the surface of the valves. Furcal ramii dissimilar, ventral seta of furca as long as the ventral claw.

Distribution.—India: Rajasthan (First Record); Simla, Gharwal, Mirzapur; elsewhere: Ceylon, Australia, Sumatra, Celebes, & E. Africa.

15. *Stenocypris derupta* Vavra

(Text-fig. 10, A-L)

1906. *Stenocypris derupta* Vavra, *Zool. Jb. Syst.*, 23: 426.

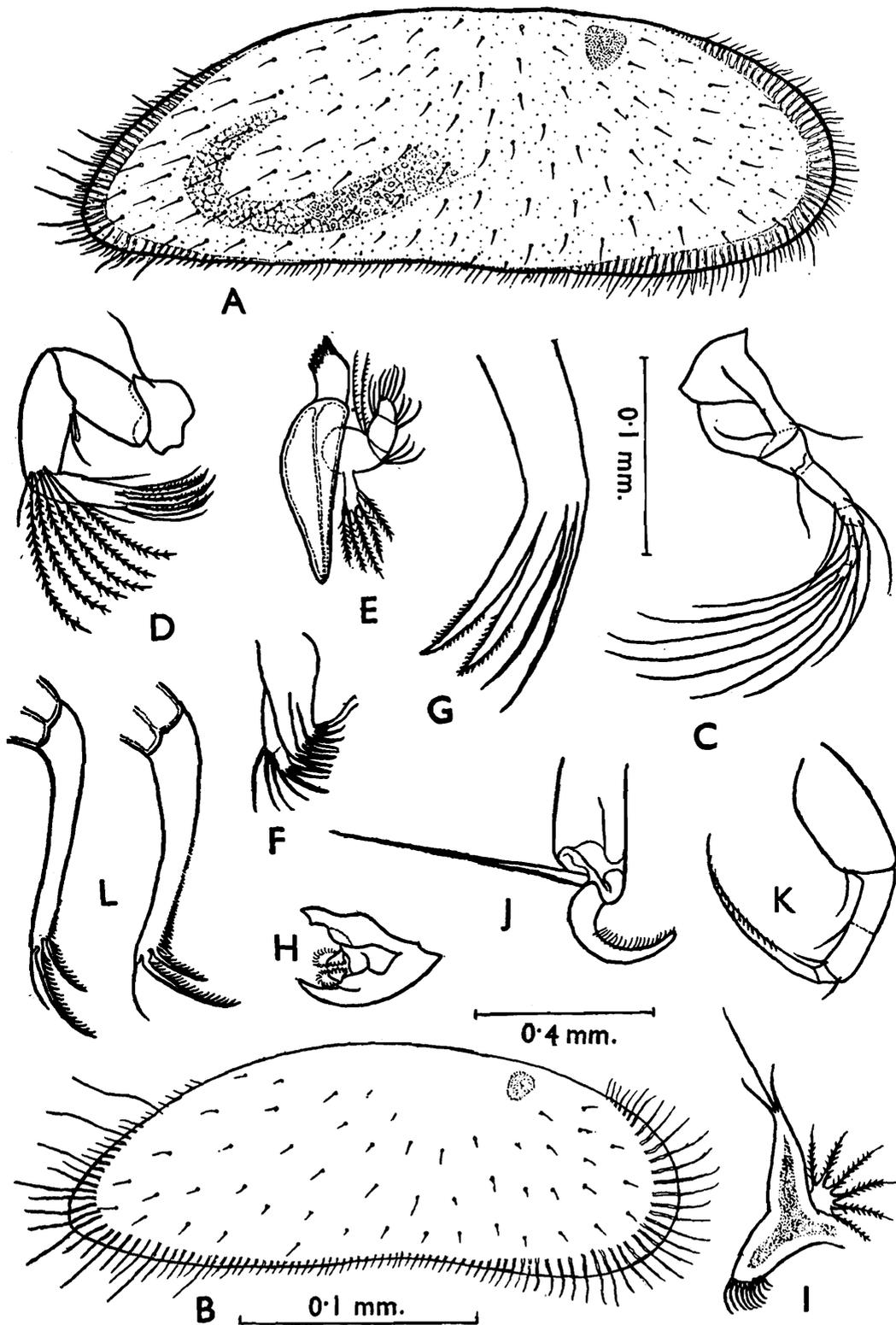
Material.—2 exs., Sta. Narayana, canal water of Dhobla Talao (Jaipur Dist.); 29.x.58; *S. Biswas* Coll.

Length: 2.37 mm.—2.50 mm. Width: 0.62 mm.—0.68 mm. Height: 1 mm.—1.12 mm. ♀♀.

Description.—Shell oblong, anterior end broadly rounded, posterior end rounded narrowly in side view. Broad band of pore canal present on the valve margin. Furcal ramii stout and dissimilar (Text-fig. 10 K).

Distribution.—India: Rajasthan (First Record); elsewhere: Western Java.

Remarks.—Unlike Vavra's (1906) specimens, stumpy angular projection on the ocular region of shell is not so prominent in the present specimens and seta of the 3rd maxillary process is not smooth but dentate. The specimens are light brown in colour.



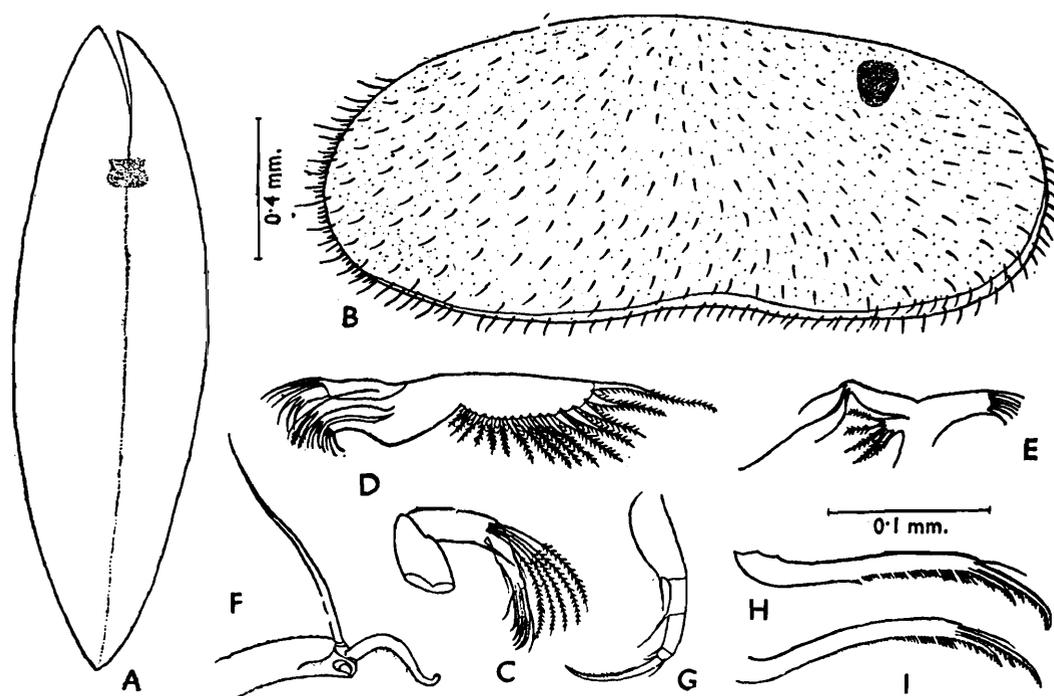
Text-fig. 10. *Stenocypris derupta* Vavra, (A). Shell, side view of young; (B). Same, adult side view; (C). 1st antenna; (D). 2nd antenna; (E). Mandible; (F). Maxilla, (A, C, D, E, F). Same scale; (G). 3rd Maxillary process; (H). Lips; (I). Maxilliped; (J). 2nd leg; (K). 1st leg; (L). Furcal ramii; (G—L). Same scale.

16. *Stenocypris fasciculata* Daday

(Text-fig. 11, A-I)

1910-11. *Stenocypris fasciculata* Daday, *Zoologica*, 23: 190.

Material.—3 vials. (i) 15 exs., Sta. Dudu Talao, $\frac{1}{2}$ mile south of Rest House, 8.i.59, (ii) 30 exs., Bala Talao, ca. 3 miles S. E. of Julga Lake, 4.ii.58 both from Jaipur dist., all S. Biswas Coll., (iii) 20 exs., Tank in village Agolai (Jodhpur Dist.), 2.xii.63., K. N. Nair and R. N. Mukherjee Coll.



Text-fig. 11. *Stenocypris fasciculata* Daday, (A). Shell, dorsal view; (B). Same side view; (A & B). Same scale; (C). 2nd antenna; (D). Maxilla; (E). Maxilliped; (F). 2nd leg; (G). 1st leg; (H) & (I). Furcal ramii; (C-I). Same scale.

Length: 2.1 mm.—2.50 mm. Width: 0.55 mm.—0.62 mm. Height: 0.9 mm.—1 mm. ♀♀.

Description.—Shell oblong in side view, both ends broadly rounded, valve margin hairy; scattered pores and hairs present throughout the whole surface (Text-fig. 11, B). Right valve slightly smaller. Furcal ramii (Text-fig. 11, H, I) dissimilar, hairs in groups on the dorsal edge of the ramus.

Distribution.—India: Rajasthan (First Record); elsewhere: E. Africa.

Remarks.—Swimming setae of the 2nd antenna not extended beyond the tips of terminal claws. The specimens are greyish to greenish in colour.

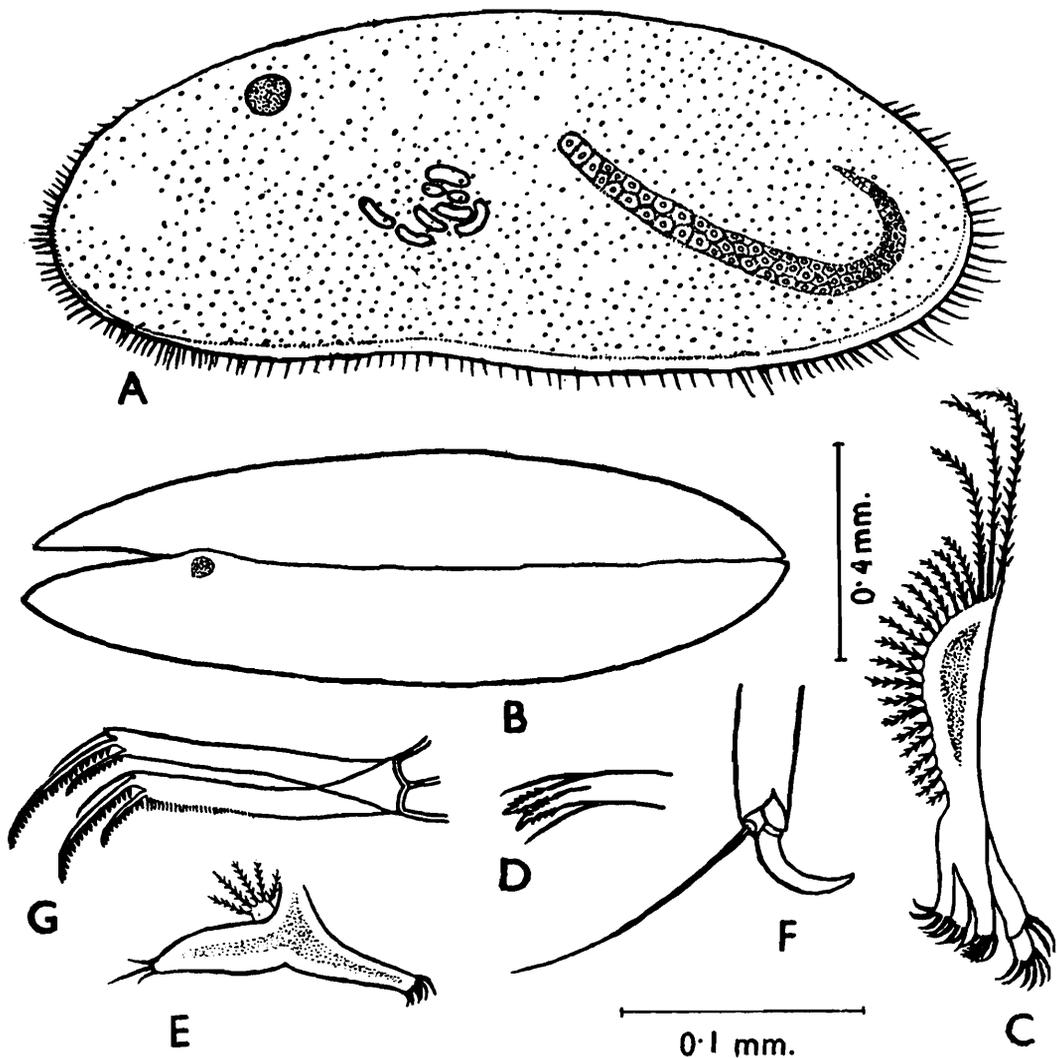
17 *Stenocypris fulleborni* Daday

(Text-fig. 12, A-G)

1910-11. *Stenocypris fulleborni* Daday, *Zoologica*, 23: 59.

Length : 1.7 mm.—2 mm. Width : 0.46 mm.—0.50 mm. Height : 0.73 mm.—0.87 mm. ♀♀.

Material.—Lot (A & B) consists of 8 vials. (i) 10 exs., Sta. 7, pool near Kyar bund, Gudha, (ii) 3 exs., a ditch near railway station, Gudha, (iii) 8 exs., ditch in Gudha, (iv) 2 exs., Sta. 13. rainwater pool near Nawa Kyar, (v) 9 exs., Sta. 6. Main Lake Gudha (Nagaur Dist.), S. Biswas Coll., 1957-1958. Lot. B. (vi) 10 exs., Sta. Narayana, ditches at Barbaryan, (vii) 6 exs., Chapparwara Bund Reservoir, 30.ix.58, S. Biswas Coll. (viii) 25 exs., Devdani Tank, K. K. Mahajan Coll. 2.x.63 (Jaipur Dist.).



Text-fig. 12. *Stenocypris fulleborni* Daday, (A). Shell, side view; (B). Same, dorsal view; (A—B). Same scale; (C). Maxilla; (D). 3rd maxillary process; (E). Maxilliped; (F). 2nd leg; (G). Furca; (C—G). Same scale.

Description.—Shell oblong, both ends broadly rounded in side view. Right valve slightly smaller than the left. Furcal ramii (Text-fig. 12, G) stout and dissimilar, one straight and the other bent, with fine hairs on dorsal edge.

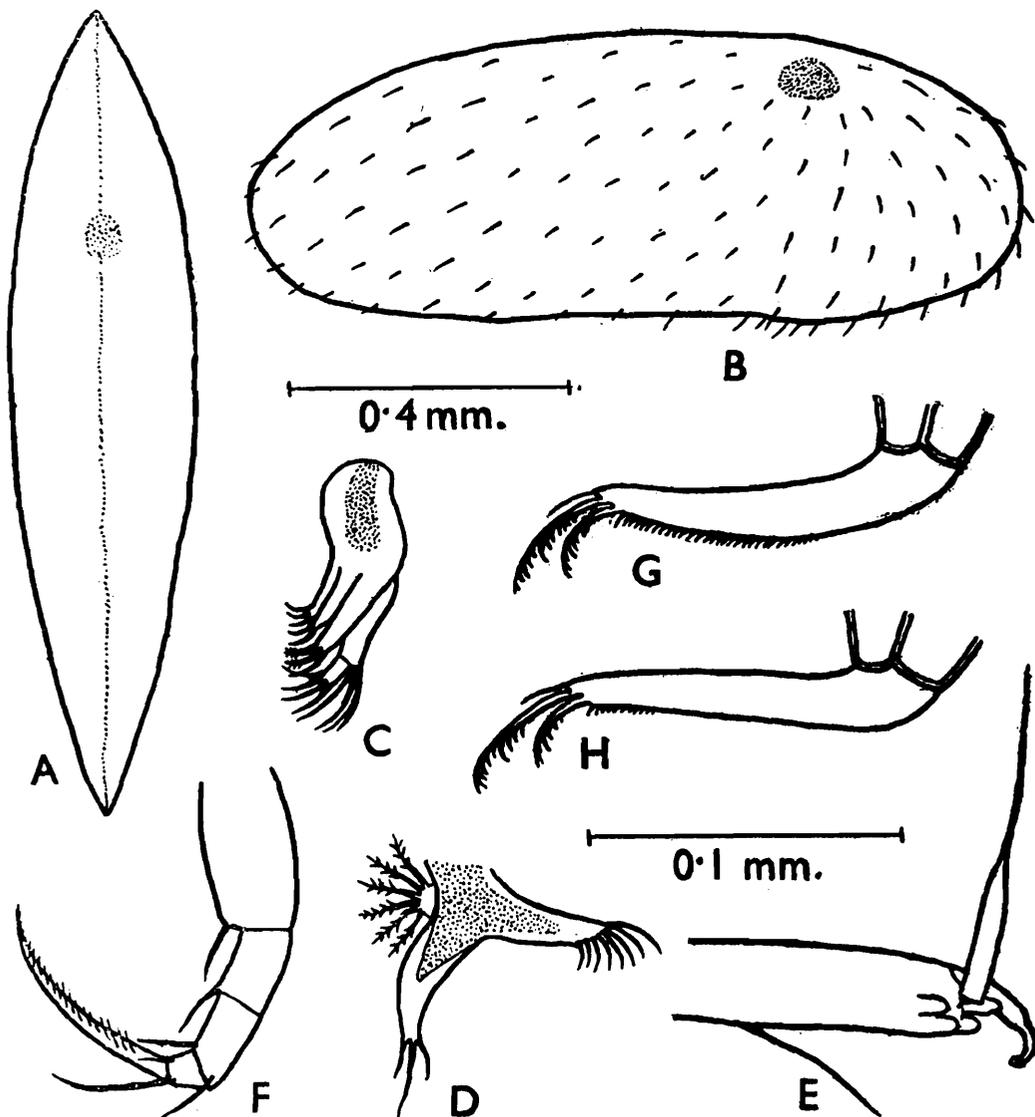
Distribution.—India: Rajasthan (First Record); elsewhere: E. Africa.

Remarks.—Specimens are greyish to yellowish brown in colour. They are almost identical with the African specimens. The figures given by Daday (1910) seems to be not accurate.

18. *Stenocypris spinosa* Tressler

(Text-fig. 13, A-N)

1937. *Stenocypris spinosa* Tressler, *Inter. Revue, Ges. Hydrobiol. Hydrogr.*, 34: 202.



Text-fig. 13. *Stenocypris spinosa* Tressler, (A). Shell, dorsal view; (B). Same, side view; (A—B). Same scale; (C). Maxilla; (D). Maxilliped; (E). 2nd leg; (F). 1st leg; (G). & (H). Furca; (C—H). Same scale.

Material.—2 vials, (i) 10 exs., Bala Talao, 3 miles S. E. of Julga Lake, 24.xi.58, S. Biswas Coll. (ii) 1 ex., Sta. Ramgarh, Biprasar (Jaisalmer Dist.), 7.i.58, K. K. Tiwari and S. Biswas Coll.

Length : 1.1 mm.—1.75 mm. Width : 0.3 mm.—0.37 mm. Height : 0.42 mm.—0.50 mm. ♀♀.

Description.—Shell oblong, transparent, very soft and delicate. Anterior and posterior ends broadly rounded in the side view. Fine scanty hairs present on the surface of the shell. Spindle shaped, in dorsal view with both ends pointed. Furcal ramii dissimilar (Text-fig. 13, G & H), and prominent in size.

Distribution.—India : Rajasthan (First Record) : elsewhere : Camaguin Island, Philippines.

Remarks.—This species was established on a single female specimen. The present material also consists of females only and agrees, in all respects, with the original description. Specimens are grey in colour and slightly smaller in size than the holotype.

19. *Cypretta turgida* (Sars)

1896. *Cypridopsis turgida* Sars, *Arch. Math. Naturv.*, 18 : 62.

1924. *Cypretta turgida* : Sars, *Ann. S. Afri. Mus.*, 20 : 147.

Material.—9 exs., Sta. Narayana, ditch at Barbaryan, (Jaipur Dist.), 1.xi.58, S. Biswas Coll.

Length : 0.75 mm.—0.87 mm. Width : 0.60 mm.—0.62 mm. Height : 0.55 mm.—0.58 mm. ♀♀.

Description.—Shell small tumid, anterior end obtusely pointed and posterior end broadly rounded in dorsal view. Valve margins beset with a broad band of pore canals anteriorly. Surface of the valves marked with deep brownish patches. Furca with two long whip like setae and a fine dorsal seta.

Distribution.—India : Rajasthan (First Record) ; elsewhere ; China, New Zealand, Australia, Madagascar and Africa.

Remarks.—Male not so far recorded in this species. The Indian specimens are light brown in colour.

20. *Cypridopsis newtoni* Brady & Robertson

1870. *Cypridopsis newtoni* Brady & Robertson, *Ann. Mag. nat. Hist.*, Sr(4) 6 : 14.

1898. *Cypridopsis aldabrae* Müller, *Abh. Sencekenb. naturforsch. Ges.*, 21: 281.

Material.—6 vials, (i) 25 exs., ditch near main Lake Gudha, 19.ix.58. (ii) 30 exs., cemented water tank Gudha Kyar, 4.x.58. (Nagaur Dist.) S. Biswas Coll. (iii) 15 exs., Sta. 4. Ramgarh, Biprasar Tank, 4.i.58, (iv) 5 exs., Sta. 3. Gadisar, eastern side of Dak Bunglow, 28.xi.57 (v) 4 exs., Sta. 1. Phalodi, Sivsar, (Jodhpur Dist.). 16.xii.57, K. K. Tiwari and S. Biswas Coll. (vi) 500 exs. Sta. 1. Devdani Tank (Jaipur Dist.), 2.x.63, K. K. Mahajan Coll.

Length : 0.76 mm.—0.87 mm. Width : 0.36 mm.—0.45 mm. Height : 0.46 mm.—0.50 mm. ♀♀.

Length : 0.63 mm.—0.75 mm. Width : 0.31 mm.—0.37 mm. Height : 0.41 mm.—0.45 mm. ♂♂

Description.—Shell tumid, bean like, egg shaped in dorsal view, anterior end broader in profile. Valves thin, delicate, margin and surface of the shell finely hairy. Furca modified into long whip like structure.

Distribution.—India : Rajasthan (First Record) ; elsewhere : Ceylon, N. America and Europe.

Remarks.—Specimens are ivory white to light brown in colour. Furca are modified into a flageller structure.

SUMMARY

Twenty species of ostracods, belonging to 8 genera, collected from Rajasthan between 1957 and 1963, are described in the present paper. Of these, seventeen species are new records from Indian sub-continent and all the twenty are newly recorded from Rajasthan. Except for seven species the remaining ones are represented by females only.

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