FRESH-WATER ENTOMOSTRACA

FROM

CHINA AND SUMATRA

BY

G. O. SARS

WITH 4 AUTOGRAPHIC PLATES

ALB. CAMMERMEYERS FORLAG

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INTRODUCTION.

The far greater number of the species recorded in this paper have been raised by the present author, many years ago, from dried mud, and accordingly have been examined in the living state, in most cases, moreover, during several successive generations. Some few additional forms have been picked up from a sample preserved in alcohol and taken by Mr. *Iversen*, preparator (at that time) off the zoological Museum, during his stay in the north-eastern part of Sumatra (territories of Deli and Langkat) in the year 1888. I am also indebted to him for a parcel of dried mud taken from some swamps in the same part of the country. Several interesting forms, to be mentioned in the present paper, have been reared in my aquaria from this mud during the summers of 1889 and 1890. The dried material from China consisted of several small parcels of a reddish clay taken partly from fish-ponds, partly from inundated rice-fields in the neighbourhood of Puching. From this material also,

which was procured through the kind intervention of my friend and colleague Prof. *R. Collett*, a number of Entomostraca, belonging to the 3 leading groups *Cladocera*, *Copepoda* and *Ostracoda*, have been successfully raised. These forms will likewise be mentioned in the present paper, because China and Sumatra, according to the the general assumption of zoologists, belong to a common zoogeographical region. As will be shown below, severals of the forms observed are apparently new to science, whereas others have turned out to be identical with forms, partly known from Europe, partly from other parts of the world. On the whole several additional instances of the extraordinary wide geographical distribution of certain fresh-water Entomostraca will be demonstrated in the present paper.

I give below separate lists of the several species observed from each locality.

I. SUMATRA.

PHYLLOPODA.

1. *Limnadia lenticularis* (Lin.).

CLADOCERA.

2. *Diaphanosoma Sarsi*, Rich.
3. *Daphnia longispina* (Müll.).
4. *Simocephalus exspinosus* (de Geer).
5. *Scapholeberis Kingi*, G. O. Sars, n. sp.
6. *Criodaphnia Rigaudi*, Rich.
7. *Moinodaphnia Macleayi* (King).
8. *Macrothrix spinosa*, King.
9. *Ilyocryptus longiremis*, G. O. Sars.
10. *Chydorus sphæricus* (Müll.).

11. *Leydigia propinqva,* G. O. Sars, n. sp.
12. *Alona tenuicaudis,* G. O. Sars.
13. — *guttata,* G. O. Sars.
14. — *acuticostata,* G. O. Sars, n. sp.
15. *Pseudalona longirostris* (Daday).

COPEPODA.

16. *Diaptomus orientalis,* Brady.
17. *Cyclops Leuckarti,* Claus.
18. — *hyalinus,* Rehberg.

OSTRACODA.

19. *Cypris purpurascens,* Baird.
20. *Hemicypris pyxidata* (Moniez).
21. — *ovata,* G. O. Sars, n. sp.
22. — *megalops,* G. O. Sars, n. sp.
23. *Leptocypris papyracea,* G. O. Sars, n. gen. & sp.
24. *Notodromas oculata,* G. O. Sars, n. sp.
25. *Cypria crenulata,* G. O. Sars, n. sp.
26. *Pionocypris turgida,* G. O. Sars.
27. *Cypridopsis exigua,* G. O. Sars, n. sp.
28. — *adusta,* G. O. Sars, n. sp.
29. — *dubia,* G. O. Sars, n. sp.
30. *Dolerocypris fasciata* (Müll.).
31. *Candonopsis tenuis,* Brady.

II. CHINA.

CLADOCERA.

1. *Moina brevicornis,* G. O. Sars, n. sp.
2. *Bosmina cornuta* (Jurine).
3. *Macrothrix laticornis* (Jurine).
4. *Ilyocryptus sordidus* (Lièvin).

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5. *Alona costata*, G. O. Sars.
6. *Chydorus sphæricus* (Müll.).

COPEPODA.

7. *Diaptomus Chaffonjoni*, Rich.
8. *Cyclops affinis*, G. O. Sars.

OSTRACODA.

9. *Cypris vittata*, G. O. Sars, n. sp.
10. — *decorata*, G. O. Sars, n. sp.
11. *Pionocypris turgida*, G. O. Sars.
12. *Cypridopsis vidua* (Müll.).
13. *Dolerocypris sinensis*, G. O. Sars, n. sp.
17. *Ilyocypris dentifera*, G. O. Sars, n. sp.
18. — *angulata*, G. O. Sars, n. sp.

By a comparison of the 2 above given lists, it will be found that only 2 species are common to both localities, viz., *Chydorus sphæricus* and *Pionocypris turgida;* otherwise the species from China are different from those from Sumatra. This apparent diversity may, however, in all probability be due to quite accidental circumstances.

PHYLLOPODA.

FAM. LIMNADIIDÆ.

1. **Limnadia lenticularis** (Lin.).

(Pl. I, figs. 1, 1 a).

Two specimens of a *Limnadia,* undistinguishable from the European form, developed in one of my aquaria prepared with mud from Sumatra, and both arrived to full

maturity. In order to show the identity, I give on the accompanying plate an habitus-figure (side-view) of one of the specimens drawn from life, and a figure of the caudal piece of the same specimen more highly magnified. It will be seen from the figure, that the lines of growth are very numerous, amounting to about 12 in each valve, indeed the greatest number I have ever met with in Norwegian specimens. Notwithstanding this, the size of the animal is rather inferior to that of the largest Norwegian specimens, the shell measuring in length only 8·60 mm by a height of 5·80 mm; but this may easily be accounted for by the fact, that the individual was reared in a comparatively small aquarium.

In my opinion, the Japonic form described by Prof. *Ishikawa* as *L. niponica* is likewise identical with the European species. The specimens examined by that author were all evidently quite young, having no egg-paquets and only 2 or 3 lines of growth on each valve, and, to judge from the figure given, they perfectly agreed in the shape of the shell with equal-sized specimens of *L. lenticularis* (see my account of this species in «Fauna Norvegiæ», Vol. I).

CLADOCERA.

FAM. SIDIDÆ.

1. **Diaphanosoma Sarsi**, Richard.

Occurrence.—Some few specimens of this form, first described by Dr. *Richard* from the lake Toba in Sumatra,

were picked up from the sample taken by Mr. *Iversen* in the north-eastern part of the country.

Distribution.—Brazil (the present author), New Guinea (Daday).

FAM. DAPHNIDÆ.

Daphnia longispina (Müller); forma typica.

Occurrence.—This well-known species developed rather abundantly in one of my aquaria prepared with mud from Sumatra, all the specimens being originally derived from 2 primitive individuals hatched from a single ephippium. The specimens on the whole agreed fairly well with the typical form, having the shell very pellucid and the shell-spine slender and more or less curved upwards.

Distribution.—Europe, Central Asia.

3. Simocephalus exspinosus (de Geer).

Occurrence.—A solitary, but fully developed female specimen of this form was secured from one of my aquaria prepared with mud from Sumatra.

Distribution.—Europe, Central Asia, Algeria, Cape of Good Hope (collection of Dr. *Purcell*).

4. Scapholeberis Kingi, G. O. Sars, n. sp.

(Pl. I, figs. 2 a—c).

Daphnia mucronata, King. 'On Australian Entomostracans'. Proceed of Roy. Soc. of Van Diemens Land, Vol. II, Part II, Pl. VI, E (not Müller).

Specific Characters.—Female. Head comparatively smaller than in *S. mucronata*, with the frontal part less prominent and more evenly rounded, ventral margin deeply concaved, dorsal nearly straight, rostral part obtusely

produced, cervical depression well marked. Carapace very tumid, seen laterally, oval quadrangular in outline, being transversely truncated behind, ventral edges of valves straight, slightly angular in front, and each produced behind to a spiniform projection of moderate length. Sculpture of shell rather coarse, consisting in the posterior part of very conspicuous curved transverse ridges running parallel to the hind edge, anterior part of valves likewise coarsely ridged, the ridges being partly crossed by wavy longitudinal striæ. Eye large, with very conspicuous crystalline bodies, and, seen dorsally or ventrally, exhibiting its original duplicity very distinctly. Ocellus small and occurring near to the tip of the rostrum. Antennulæ small, knob-like. Antennæ and legs of the usual structure. Caudal part comparatively short and broad, with only 4 pairs of anal denticles, terminal claws of moderate length and smooth. Ephippium of the usual appearance.

Male much smaller than female, and on the whole resembling that of *S. mucronata*.

Colour very dark brownish gray, in some places nearly black.

Length of adult female 0·76 mm, of male 0·40 mm.

Remarks.—The above-described species is unquestionably identical with the Australian form recorded by *King* as *Daphnia mucronata*. It is certainly very nearly allied to the European species, but apparently specifically distinct, differing, as it does, not only in the much smaller size, but also in the shape of the head and in the less sharply angulated anterior part of the valves. The sculpture of the shell is, moreover, much coarser than in the European species.

Occurrence and Habits.—This form developed rather abundantly in one of my aquaria prepared with mud from Sumatra, and was watched during several successive generations. The specimens kept themselves, as a rule, in the uppermost part of the aquarium, moving slowly about, the belly constantly turned upwards and generally in immediate contact with the surface. At the close of the season the greater number of the specimens became provided with ephippia, and at the same time the very small males were often observed. Some few specimen of the present form were also picked up from the sample taken by Mr. *Iversen*.

Distribution.—Australia (*King*), Cape of Good Hope (coll. of Dr. *Purcell*).

5. Ceriodaphnia Rigaudi, Rich.

Occurrence.—This form also was raised in considerable number from the same parcel of mud that yelded the preceeding species, and was also found occasionally in the above-mentioned sample.

Distribution.—Tonkin (*Richard*), Palestine (idem), Ceylon (*Daday*), Knysna, Cape Colony (the present author), Brazil (idem).

6. Moina brevicornis, G. O. Sars, n. sp.

(Pl. I, figs. 3, 3 a—b).

Specific Characters.—Female. Head comparatively large and somewhat procumbent, with a slight supraocular sinus, frontal part obtusely rounded, ventral margin evenly convex, cervical depression well marked. Carapace, seen laterally, rounded quadrangular in outline, with the hind edges distinctly insinuated above the middle, dorsal part in gravid specimens, as usual, more or less globularly

expanded. Sculpture of shell very delicate, inferior edges of valves fringed with small hairs. Eye rather large, with very conspicuous crystalline bodies. Antennulæ unusually short, when reflexed, scarcely extending to the base of the labrum, fusiform in shape, and clothed behind with delicate cilia. Antennæ and legs of the usual structure. Caudal part rather large, partly uncovered by the carapace, præ-anal portion scarcely attaining $\frac{1}{3}$ of the length of this part, and narrow conical in form; anal denticles 8 on each side, the outermost, as usual, bidentate; terminal claws without any denticles at the base. Ephippium with only a single egg-ampulla and very coarsely sculptured, surface partly tubercular.

Male much smaller than female and exhibiting the usual sexual characters, head somewhat less produced than in other species.

Colour.—Body in both sexes highly pellucid, with a more or less distinct bluish tinge; ephippial ovum brick-red.

Length of adult female about 1 mm, of male 0·68 mm.

Remarks.—This form looks rather like the European species *M. rectirostris,* Zaddach, having a much similar shape of the head. It is, however, at once distinguished both from this and all other known species by the unusually short antennulæ of the female, a character which has given rise to the specific name here proposed. Moreover the terminal claws of the caudal part is devoid of any denticles at the base, in which respect this form also differs from the nearly-allied Sumatrense species, *M. Weberi,* Richard.

Occurrence and Habits.—In one of my aquaria prepared with mud from China this *Moina* appeared at first only in some few specimens, which, however, rapidly

multiplied in the usual parthenogenetic manner until the close of the season, when the sexual propagation took place, the females becoming at that time provided with ephippia and males specimens appearing. In habits this form exactly agreed with the other species of the genus, the specimens being rather agile and keeping themself constantly suspended in the wather, through which they moved in a jerking manner, the head generally turned upwards.

7. Moinodaphnia Macleayi (King).

Occurrence.—Several specimens of this form were picked up from the sample taken by Mr. *Iversen* at the Helvetic Estate, Sumatra. It did not, however, appear in any of my aquaria.

Distribution.—Australia (*King*), Ceylon (*Brady*), Brazil (the present author).

FAM. BOSMINIDÆ.

8. Bosmina cornuta (Jurine).

Occurrence.—Two small, but adult ovigerous females of this form were secured from one of my aquaria prepared with mud from China.

Distribution.—Europe, Central Asia.

FAM. MACROTHRICIDÆ.

9. Macrothrix laticornis (Jurine).

Occurrence.—This form also easily recognizable by the minutely jagged dorsal margin of the carapace, appeared in some of my aquaria prepared with mud from China.

Distribution.—Europe.

10. Macrothrix spinosa, King.

Occurrence.—This form, previously raised by the present author from Australian mud, developed in considerable numbers in the aquaria prepared with mud from Sumatra. It was also found not unfrequently in the sample taken by Mr. *Iversen*.

Distribution.—Australia.

11. Ilyocryptus sordidus (Lièvin).

Occurrence.—At the bottom of some of my aquaria prepared with mud from China an *Ilyocryptus* of a dark blood-red colour was found, dragging itself slowly through the bottom-deposit, and never making even the slightest attempt to swim. On a closer examination of the specimens, I am unable to distinguish this form from the European species first described by *Lièvin* as *Acanthocercus sordidus*.

Distribution.—Europe, Australia, Brazil.

12. Ilyocryptus longiremis, G. O. Sars.

Occurrence.—This form, first described by the present author from Australia, developed rather abundantly in the aquaria prepared with mud from Sumatra, and was also found not unfrequently in the sample taken by Mr. *Iversen*.

Distribution.—Australia, Brazil.

FAM. CHYDORIDÆ.

13. Chydorus sphæricus (Müller).

Occurrence.—Found both in the aquaria prepared with mud from China and Sumatra, as also in the sample from the last-mentioned country.

Distribution.—Allmost all the world.

14. Leydigia propinqva, G. O. Sars, n. sp.

(Pl. I, figs. 4, 4 a).

Leydigia acanthocercoides, G. O. Sars. 'On some South African Entomostraca raised from dried mud.' Chr. Vid. Selsk. Forh. 1895, p. 18, Pl. 4, figs. 1—4 (not Fischer).

Remarks.—Having now, through the kindness of Prof. *Lilljeborg*, had an opportunity of examining Swedish specimens of the true *L. acanthocercoides* Fischer, I find that the South African form described by me under this name is in reality specifically distinct, for which reason I propose for it the above name. It differs not only in the shape and sculpture of the carapace, but also in the much smaller size of the ocellus, which scarcely exceeds that of the eye, whereas in *L. acanthocercoides* it is considerably larger. Moreover the caudal part is somewhat less broad, and the terminal claws have each at the base a very small denticle, omitted in my previous figure.

Occurrence.—Two well preserved female specimens, exactly agreeing with the South African form, were found in the sample taken in Sumatra by Mr. *Iversen*. To show the identity, I give on the accompanying plate an habitus-figure (side-view) of one of the specimens and a somewhat more strongly magnified figure of the caudal part from the same individual.

Distribution.—Knysna (Cape Colony).

15. Alona tenuicaudis, G. O. Sars.

Occurrence.—This form developed in several of my aquaria prepared with mud from Sumatra.

Distribution.—Europe, Central Asia, Algeria.

16. Alona costata, G. O. Sars.

Occurrence.—Found in some of my aquaria prepared with mud from China.

Distribution.—Europe, Central Asia.

17. Alona guttata, G. O. Sars.

Occurrence.—Specimens of both the tuberculated and smooth varieties occurred not unfrequently in the aquaria prepared with mud from Sumatra.

Distribution.—Europe, Central Asia, Algeria, Brazil.

18. Alona acuticostata, G. O. Sars, n. sp.

(Pl. I, figs. 5, 5 a—c).

Specific Characters.—Female. Carapace, seen laterally, oval quadrangular in form, greatest height in the middle, dorsal margin forming quite an even curve as far as the tip of the rostrum and terminating behind in an obtuse corner, ventral nearly straight, or very slightly prominent in front of the middle, hind edges somewhat curved below. Head rather procumbent, rostral projection of moderate size. Surface of shell very coarsely striated longitudinally, striæ rather prominent, ridge-like, about 15 on each side, lower edges of valves minutely setiferous, and each exhibiting at the posterior corner a small denticle. Ocellus smaller than the eye, and somewhat nearer to it than to the tip of the rostrum. Lip-plate of the usual shape. Caudal part comparatively small, not expanded distally, supra-anal angle rather slight and occurring somewhat above the middle, lower corner obtusely rounded, denticles of the marginal rows rather small, about 10 on each side, those of the lateral rows extremely delicate, terminal claws rather strong, each with an unusually long denticle at the base.

Male much smaller than female, and having the dorsal face less vaulted. Caudal part gradually tapered distally, with the supra-anal angle obsolete and the terminal claws much reduced in size.

Colour.—Body pellucid, with a fainte yellowish tinge.

Length of adult female 0·36 mm, of male 0·28 mm.

Remarks.—This new species is chiefly characterised by the very coarse, ridge-like longitudinal striæ of the carapace, which are more prominent than in any other species known to me. Otherwise it comes very near to *A. rectangula* G. O. Sars and some other species grouping themselves around this form.

Occurrence.—Raised in considerable number in some of my aquaria prepared with mud from Sumatra.

19. Pseudalona longirostris (Daday).

Occurrence.—Some few specimens of this form were picked up from the sample taken by Mr. *Iversen* at the Helvetic Estate, Sumatra.

Distribution.—Ceylon (*Daday*), Brazil (the present author).

COPEPODA.

FAM. DIAPTOMIDÆ.

1. Diaptomus orientalis, Brady.

Occurrence.—Some few specimens of this form, exactly agreeing with those raised by the present author from Australian mud, developed in one of my aquaria prepared

with mud from Sumatra. It was also found occasionally in the sample taken by Mr. *Iversen*.

Distribution.—Ceylon, Australia.

2. Diaptomus Chaffanjoni, Richard.

(Pl. II, figs. 1, 1 a—g).

Diaptomus Chaffanjoni, Richard, « Sur deux Entomostracés d'eau douce recéuillies par M. *Chaffanjon* en Mongolie. » Bull. d. Mus. d'hist. nat. 1887, p. 131.

Specific Characters.—Female. Form of body rather slender, with the anterior division, seen dorsally, oblong fusiform in shape, greatest width about in the middle, anterior extremity gradually narrowed, posterior but slightly attenuated. Cephalosome with a slight cervical depression, frontal appendages comparatively small and widely apart. Penultimate segment of metasome confluent with the last one, and exhibiting dorsally in the middle a very conspicuous spiniform protuberance pointing obliquely behind; lateral lobes of last segment of moderate size, bifurcate, and somewhat asymmetrical, left lobe the larger. Urosome rather robust, with the genital segment comparatively large and broad, forming on each side anteriorly an obtuse protuberance tipped with a short denticle, left protuberance the more prominent. Distal part of urosome very movably articulated to the genital segment and generally turned out of the axis of the body to left side, its 2 segments imperfectly defined. Caudal rami of moderate size and obliquely truncated at the tip, setæ normal. Anterior antennæ rather slender, reaching, when reflexed, to the base of the caudal rami. Last pair of legs with a well-marked dentiform lobe on the hind face of 1st basal joint, unguiform

projection of outer ramus denticulated on both edges, terminal joint extremely small, knob-like, with the inner apical spine well developed, outer rudimentary; inner ramus very short, not even extending to the middle of the 1st joint of the outer. Ovisac very large, cordiform.

Male, as usual, more slender than female, and entirely wanting the dorsal projection of the penultimate segment of metasome, lateral lobes of last segment very small, urosome slender, 5 articulate. Right anterior antenna with the middle section rather much tumefied, and carrying anteriorly coarse spines on its 3 first joints; antepenultimate joint of terminal section forming at the end anteriorly a slight expansion fringed with coarse denticles in a pectinate manner. Last pair of legs rather largely developed, 2nd basal joint exhibiting inside on right leg a small rounded lamella, on left leg a still smaller dentiform projection, penultimate joint of right leg produced outside to a quite short spiniform projection, last joint large, klub-shaped, with the outer spine very short and occurring beyond the middle, apical claw but slightly curved; inner ramus of this leg very small. Left leg scarcely extending beyond the penultimate joint of the right, terminal joint produced at the tip to an obtuse digitiform process finely serrated inside, and having at its base a small setiform appendage; inner ramus somewhat longer than that of right leg, and acuminate at the tip.

Colour.—Body pellucid, with a faint greenish tinge.

Length of adult female 1·85 mm, of male about the same.

Remarks.—This form was described by Dr. *Richard* in the above-quoted paper from preserved specimens, and some detail-figures were added to the description. No habitus-figures have, however, hitherto been given, nor has this

form been observed by any other zoologists. It is a very distinct species, being especially highly distinguished by the peculiar spiniform dorsal protuberance of the penultimate segment of the metasome in the female.

Occurrence.—Some specimens of this form developed in one of my aquaria prepared with mud from China, and were watched for several time. They were extremely rapid in their movements, so as only with great difficulty to be catched by the ordinary implements.

Distribution.—Mongolia (*Richard*).

FAM. CYCLOPIDÆ.

3. Cyclops Leuckarti, Claus.

Occurrence.—This form occurred rather abundantly in the sample taken by Mr. *Iversen* at the Helvetic Estate, Sumatra. I have carefully compared it with Norwegian specimens and can find no difference whatever.

Distribution.—Europe, Central Asia, Ceylon, Algeria, Australia, North America.

4. Cyclops hyalinus, Rehberg.

Remarks.—Dr. *Schmeil* regards this form as only a variety of *C. oithonoides* G. O. Sars. In this view I am by no means prepared to consent. It seems to me to be in reality a well defined species.

Occurrence.—Found together with the preceding species, but not nearly in such numbers.

Distribution.—Europe, Cape of Good Hope (coll. of Dr. *Purcell*).

6. Cyclops affinis, G. O. Sars.

Occurrence.—Several specimens of this form developed in the aquaria prepared with mud from China. This is the first instance of a *Cyclops* being raised from dried material.

Distribution.—Europe, Australia.

OSTRACODA.

FAM. CYPRIDIDÆ.

1. Cypris purpurascens, Baird.

(Pl. II, figs. 2, 2 a—d).

Cypris purpurascens, Baird, 'Description of some new recent Entomostraca from Nagpur'. Proceed. Zool. Soc. London 1859.

Specific Characters.—Female. Shell moderately tumid, seen laterally, oblong oval in form, greatest height scarcely attaining half the length and occurring a little in front of the middle, dorsal margin somewhat angularly curved, ventral with a very slight sinus in front of the middle, anterior extremity broader than posterior, both evenly rounded at the tip;—seen dorsally, oblong fusiform in outline, greatest width about in the middle and equalling half the length, both extremities obtusely acuminate. Valves somewhat unequal, the left one overlapping the right along the anterior extremity by a hyaline rim, surface smooth, with scattered delicate hairs at each extremity. Immature specimens having, as usual, the anterior part of the shell considerably higher than the posterior, and moreover dis-

tinguished by a very conspicuous spiniform process issuing from each valve in about the middle of the posterior edge and pointing straight behind. Natatory setæ of inferior antennæ extending somewhat beyond the terminal claws. Caudal rami narrow and elongated, slightly curved in their distal part, and very finely ciliated along the dorsal margin, outer apical claw not attaining half the length of the ramus, inner considerably shorter, apical seta very slender, dorsal seta small and occurring near to the inner claw.

Colour.—Shell semipellucid, with a fine violaceous tinge, and variegated with irregular dark bluish patches, each valve exhibiting along the free edge a narrow stripe of same colour.

Length of shell 1·03 mm, height 0·57 mm, width 0·52 mm.

Remarks.—I think I am right in identifying the above described form with that briefly recorded by *Baird* under the above name. As shown by the structure of the several appendages, it undoubtedly ought to be referred to the genus *Cypris* (sensu strictiore), exhibiting, as it does, the characteristic slender and narrow form of the caudal rami and of the digitiform lobes of the anterior maxillæ. It may be easily recognized from the other species by the peculiar colouring of the shell, well indicated by the specific name proposed by *Baird*.

Occurrence and Habits.—This beautiful form developed rather abundantly in some of my aquaria prepared with mud from Sumatra, and was watched during 2 successive seasons. In habits it agrees with the other species of the genus, being enabled to swim rather quickly through the water by the aid of the antennæ, both pairs of which are provided with well-developed natatory setæ. The pro-

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pagation, as could be stated by 2 years continued investigation, is exclusively parthenogenetical, and this is probably also the case with all other species of the true genus *Cypris*.

Distribution.—India (*Baird*).

2. Cypris vittata, G. O. Sars, n. sp.

(Pl. II, figs. 3, 3 a—c).

Specific Characters.—Female. Shell shorter and more tumid than in the preceding species, seen laterally, oval in form, greatest height about equalling $\frac{3}{5}$ of the length, and occurring somewhat in front of the middle, dorsal margin well arched, ventral scarcely at all sinuated, both extremities nearly equal and evenly rounded at the tip:—seen dorsally, oblong oval, greatest width somewhat exceeding half the length, both extremities obtusely acuminate;—end-view remarkably oblique, left valve having its greatest convexity at a much lower level than right, which latter, as in the preceding species, is overlapped by the left along the anterior extremity by a hyaline rim. Surface of shell smooth and rather densely hairy at both extremities. Caudal rami resembling in structure those in the preceeding species, though somewhat more curved in their distal part.

Colour.—Shell semipellucid, with a slight greenish tinge, and provided on each side with 4 successive dark patches, forming as many interrupted transverse bands.

Length of shell 0·86 mm, height 0·51 mm, width 0·50 mm.

Remarks.—This new species is at once distinguished from the preceding one by the shorter and more tumid shell, as also somewhat in colour. It is also rather inferior in size, and moreover exhibits a remarkably oblique end-

view (see fig. 3 b), much at in the European species *Cypris obliqa* Brady.

Occurrence.—Several specimens of this form, all of the female sex, developed in one of my aquaria prepared with mud from China.

3. Cypris decorata, G. O. Sars, n. sp.

(Pl. II, figs. 4, 4 a–b).

Specific Characters.—Female. Shell rather tumid, seen laterally, oval triangular in form, greatest height scarcely attaining $\frac{3}{5}$ of the length and occurring in front of the middle, dorsal margin angularly curved in front, ventral almost straight in the middle, both extremities somewhat obliquely truncated below and narrowly rounded at the tip, the anterior one the broader;—seen dorsally, broadly oval in form, greatest width about equalling $\frac{2}{3}$ of the length, both extremities blunted;—end-view normal. Valves slightly unequal, the left one overlapping the right along the lower part of the anterior extremity by an hyaline rime; surface smooth and finely hairy at both extremities. Caudal rami very narrow, sublinear, outer apical claw about half the length of the ramus and nearly straight, inner scarcely more than half as long.

Colour.—Shell semipellucid, with a faint yellowish green tinge, and ornamented with a number of irregular angular patches of a very dark colour, not forming any distinct transversal bands.

Length of shell 0·70 mm, height 0·40 mm, width 0·44 mm.

Remarks.—This species is nearly allied to the preceding one, differing, however, somewhat in the shape of the shell, as also in the greater number and more irregular

arrangement of the dark patches, with which it is ornamented. It is also rather inferior in size.

Occurrence.—Found in the same aquaria, in which *C. vittata* developed.

Gen. **Hemicypris**, G. O. Sars, n.

Generic Characters.—Shell rounded or oval in form, moderately tumid, somewhat resembling that in the genus *Cyprinotus*. Right valve, however, the larger and overlapping the left to a more or less extent. Free edges of left valve minutely tubercular throughout. Eye comparatively large. Natatory setæ of inferior antennæ well developed, reaching beyond the apical claws. Masticatory lobes of 1st pair of maxillæ very short, palp robust, with the distal joint quadrate in form, and armed at the tip with 5 comparatively short and curved claw-like spines. Second pair of maxillæ without any trace of a vibratory plate. Caudal rami comparatively small, sublinear in form, seta of dorsal edge longer than the apical one. Propagation exclusively parthenogenetical.

Remarks.—This new genus, it is true, in some respects recalls that of *Cyprinotus* Brady. On a closer comparison, however, it is found to differ very essentially in the fact, that the unequality of the valves is entirely the reverse of that characteristic of the said genus. Moreover the 2nd pair of maxillæ are devoid of the vibratory plate present in most other *Cyprididæ*. Another distinguishing character, as compared with *Cyprinotus*, is the exclusively parthenogenetical propagation, no males existing at all, whereas in the species of *Cyprinotus* males are almost as frequent as

females. Three different species of the present genus have been reared in my aquaria, one of which has been previously observed.

4. Hemicypris pyxidata (Moniez).

(Pl. III, figs. 1, 1 a—f).

Cyprinotus pyxidatus, Moniez, « Entomostracés d'eau douce de Sumatra et de Celebes. » II. *Ostracoda*, p. 134, Pl. X, figs. 23—27.

Specific Characters.—Female. Shell somewhat compressed, seen laterally, rounded oval in form, greatest height exceeding $\frac{2}{3}$ of the length and occurring in the middle, dorsal margin boldly arched, ventral convex in the middle, both extremities evenly rounded; the anterior one slightly broader than the posterior;—seen dorsally, oblong oval in form, greatest width not attaining half the length and occurring behind the middle, anterior extremity attenuated and acuminate at the tip, posterior more obtuse. Valves very unequal, the right one much the larger and overlapping the left nearly along the whole circumference; surface conspicuously dotted or areolated and rather densely hairy, especially at both extremities. Eye of moderate size. Caudal rami very small, slightly attenuated distally, outer apical claw exceeding half the length of the ramus, dorsal seta more than twice the length of the apical one and occurring at some distance from the claws.

Colour.—Shell rather opaque, of a dark yellow colour, with 3 successive chestnut-brown patches on each side.

Length of shell 1·02 mm, height 0·70 mm, width 0·52 mm.

Remarks.—This form was first described and figured, though in a somewhat imperfect manner, by Prof. *Moniez*

from preserved specimens, and was erroneously referred to the genus *Cyprinotus*, the author having apparently not been aware of the inverse structure of the valves. It is an easily recognizable species, being distinguished by the unusually short and high, almost orbicular shell and the great unequalness of the valves.

Occurrence and Habits.—In some of my aquaria prepared with mud from Sumatra this form developed rather plentifully, and was watched during 2 successive seasons. The individuals were rather agile, swimming about rather quickly, now and then affixing themselves to the walls of the aquarium or to the plants growing in it. All the specimens were of the female sex. This form was also found occasionally in the sample taken by Mr. *Iversen*.

Distribution.—Celebes (*Moniez*).

5. **Hemicypris ovata,** G. O. Sars, n. sp.

(Pl. III, figs. 2, 2 a—b).

Specific Characters.—Female. Shell, seen laterally, oval in form, greatest height not attaining $\frac{3}{5}$ of the length and occurring about in the middle, dorsal margin but slightly arched, ventral almost straight, anterior extremity evenly rounded, posterior obtusely truncated and somewhat broader; seen dorsally, oblong ovate in form, greatest width slightly exceeding half the length and occurring behind the middle, anterior extremity gradually tapered and acuminate at the tip, posterior blunted. Valves rather unequal, the right one overlapping the left considerably along the anterior extremity, as also somewhat behind and below; surface smooth and slightly hairy at both extremities. Eye very conspic-

uous. Caudal rami of a similar structure to that in the preceding species, though a little larger.

Colour.—Shell semipellucid, with a yellowish tinge, and without any true pigmentary patches, though exhibiting in the middle a dark shadow caused by the translucent anterior dilatation of the intestine; coecal appendages likewise very conspicuous and dark-coloured.

Length of the shell 1·03 mm, height 0·58 mm, widt 0·50 mm.

Remarks.—This species is at once distinguished from the preceding one by the rather different shape of the shell. It is, however, evidently congeneric with it, exhibiting the same characteristic structure of the valves and of the several appendages.

Occurrence.—This form also developed rather abundantly in some of my aquaria prepared with mud from Sumatra, and was likewise found not unfrequently in the sample taken by Mr. *Iversen*. As with the preceding species, only female specimens occurred.

6. **Hemicypris megalops**, G. O. Sars, n. sp.

(Pl. III, figs. 3, 3 a—b).

Specific Characters.—Female. Shell comparatively shorter and higher than in *H. ovata*, seen laterally, regularly oval in form, greatest height about equalling $\frac{3}{5}$ of the length and occurring in the middle, dorsal margin evenly arched, ventral nearly straight, anterior extremity obliquely rounded, posterior somewhat broader and obtusely truncated;—seen dorsally, ovate in form, greatest width exceeding half the length, anterior extremity more attenuated than posterior. Valves less unequal than in the 2 preceding species, right

valve, however, slightly overlapping the left along the anterior extremity and the lower part of the posterior, free edge of left valve, as in the 2 preceding species, minutely tubercular; surface smooth and finely hairy at both extremities. Eye of quite unusual size and highly refractive, occurring more in front than in the 2 preceding species. Caudal rami comparatively narrower than in *H. ovata*, otherwise of a very similar structure.

Colour.—Shell semipellucid, of a fine straw-colour, and exhibiting near the dorsal face 2 irregular, somewhat band-like patches of a light chest-nut hue, centre of shell bluish green on account of the translucent anterior dilatation of the intestine; coecal appendage of same colour.

Length of shell 0·86 mm, height 0·54 mm, width 0·48 mm.

Remarks.—This species is closely allied to *H. ovata*, but of smaller size, and having the shell comparatively shorter and more regularly oval in form. It is also easily distinguished by the colouring of the shell and by the unusually large size of the eye, a character which has given rise to the specific name here proposed.

Occurrence.—Some specimens of this form were found in the same aquaria in which the 2 preceding species developed. It did not, however, occur in the sample taken by Mr. *Iversen*.

Gen. **Leptocypris**, G. O. Sars, n.

Generic Characters.—Shell very thin and highly compressed, oblong in form, with the valves subequal; surface closely striated longitudinally, inner duplicatures very narrow. Eye comparatively small. Natatory setæ of inferior

antennæ well-developed, extending to the tip of the terminal claws. Masticatory lobes and palp of 1st pair of maxillæ narrow linear in form; 2nd pair of maxillæ with a well-developed vibratory plate. Caudal rami exceedingly large and powerful, dorsal edge divided into a limited number of coarse serrations, apical claws very strong and coarsely dentated along the concave edge, apical seta slender, that of the dorsal edge very small.

Remarks.—This new genus is chiefly characterised by the very delicate structure of the valves, and by the unusual development of the caudal rami. It contains at yet only a single species, to be described below.

7. **Leptocypris papyracea**, G. O. Sars, n. sp.

(Pl. III, figs. 4, 4 a—c).

Specific Characters.—Female. Shell very much compressed, seen laterally, oblong in form, greatest height scarcely attaining half the length and occurring about in the middle, dorsal margin evenly arched, ventral distinctly sinuated in front of the middle, anterior extremity bluntly rounded, posterior somewhat narrower and transversely truncated;—seen dorsally, narrow fusiform, greatest width scarcely exceeding $\frac{1}{4}$ of the length, both extremities acuminate. Valves perfectly equal very thin and pellucid, surface densely striolate and provided at each extremity with scattered hairs; muscular impressions far in front of the middle. Eye somewhat remote from the dorsal face, pigment light yellowish. Caudal rami equalling in length half the shell and highly chitinized, almost straight, dorsal edge divided into 6 to 7 strong serrations, outer apical claw not attaining half the

length of the ramus, apical seta very slender, almost reaching to the tip of the claw, seta of dorsal edge scarcely $\frac{1}{3}$ as long.

Colour.—Shell highly pellucid, with a slight yellowish tinge.

Length of shell 1·84 mm, height 0·90 mm, width 0·42 mm.

Remarks.—This is a very distinct and easily recognizable form, which cannot properly be confounded with any other known *Ostracod*, though in the sculpturing of the shell it somewhat recalls certain species of the otherwise very different genus *Ilyodromus* G. O. Sars.

Occurrence and Habits.—Some few specimens of this peculiar form, all of the female sex, developed in one of my aquaria prepared with mud from Sumatra, and were watched for some time. The specimens were not particularly agile, though at times they moved quite freely through the water in the usual manner, a case never found in any of the species of the genus *Ilyodromus*, all of which are quite devoid of swimming power. More frequently, however, the specimens were seen kreeping slowly up the walls of the aquarium or along the aquatic plants growing in it. When disturbed, they started away in a most abrupt manner, the body being propelled by an energetic extension of the powerful and very movable caudal rami.

8. Notodromas oculata, G. O. Sars. n. sp.

(Pl. IV, figs. 1, 1 a—c).

Specific Characters.—Female. Shell moderately tumid, seen laterally, rounded oval in form, greatest height somewhat exceeding $\frac{2}{3}$ of the length and occurring in the middle, dorsal margin considerably arched, ventral almost

straight, anterior extremity broadly rounded and angular below, posterior somewhat narrower and blunted at the tip; —seen dorsally, ovate in form, greatest width somewhat exceeding half the length and occurring behind the middle, anterior extremity more attenuated than posterior. Valves perfectly equal, each with a broad hyaline rim in front, buth without any trace of the denticle at the infero-posteal corner present in *N. monacha*, lower edges abruptly inflexed in front, so as to form together a flattened lozeng-shaped ventral area; surface smooth and shining, with scattered hairs at each extremity. Eye exceedingly large and conspicuous, consisting of a large distinctly bilobed pigmentary mass carrying on each side a highly refractive lens. Caudal rami of moderate size, slightly tapering distally, apical claws very slender and minutely denticulate, the outer one equalling about $\frac{2}{3}$ of the length of the ramus, seta of dorsal edge well developed, apical one obsolete.

Colour.—Shell semipellucid, of a whitish colour, with a very dark shadow on each side below the muscular impressions, expanding in front to a large patch, behind to a narrow band-like stripe.

Length of shell 0·59 mm, height 0·42 mm, width 0·32 mm.

Remarks.—This form differs conspicuously from the European species, *N. monacha* (Müll.), by the absolute absence of the dentiform projection of the valves at the infero-posteal corner, as also by the extraordinary development of the eye. Nor can it properly be referred to the Ceylon species described by Dr. *Daday* as *N. Entzii*, differing, as it does, both in the shape and colour of the shell. It is also much inferior in size to any of the 2 above-mentioned species.

Occurrence.—Some few specimens of this form developed in one of my aquaria prepared with mud from Sumatra, 2 of which were secured for further examination. They were both of the female sex and apparently fully grown, to judge from the well developed ovarial tubes.

9. Cypria crenulata, G. O. Sars, n. sp.

(Pl. IV, figs. 2, 2 a—b).

Specific Characters.—Female. Shell much compressed, seen laterally, rounded oval in form, greatest height about equalling $\frac{2}{3}$ of the length and occurring behind the middle, dorsal margin well arched and sloping gently in front, more abruptly behind, ventral somewhat convex in the middle, anterior extremity narrowly rounded and somewhat deflexed, posterior much broader and bluntly truncated;—seen dorsally, narrow oblong, greatest width not attaining half the length, anterior extremity narrower than posterior. Valves rather unequal, left one overlapping the right both in front and behind, as also somewhat ventrally, whereas it is overlapped by the right for some extent dorsally, anterior edge of right valve minutely tubercular; surface smooth, clothed at each extremity by scattered delicate hairs. Eye very large and conspicuous. Caudal rami slightly arcuate and gradually tapering distally, apical claws comparatively short, but rather strong and slightly curved, the outer one not attaining half the length of the ramus, seta of dorsal edge rather slender and recurved, occurring about in the middle, apical seta very small.

Colour.—Shell rather pellucid, of a light yellowish hue, without any pigmentary dots.

Length of shell 0·57 mm, height 0·39 mm, width 0·26 mm.

Remarks.—The above-described form unquestionably belongs to the genus *Cypria* of Zencker, and is chiefly distinguished from the other known species of this genus by the distinctly tuberculated anterior edge of the right valve and by the want of any pigmentary dots on the shell.

Occurrence.—Some few specimens of this form were picked up from the sample taken by Mr. *Iversen* at the Helvetic Estate, Sumatra. Among them was also a male specimen easily recognizable as such by the large translucent ejaculatory apparatus, but exactly agreeing with the female in the shape of the shell.

10. Pionocypris turgida, G. O. Sars.

Occurrence.—This form developed rather abundantly both in the aquaria prepared with mud from Sumatra and in those prepared with mud from China.

Distribution.—New Zealand, Australia, Madagaskar.

11. Cypridopsis vidua (Müller).

Occurrence.—In one of my aquaria prepared with mud from China, a *Cypridopsis*, undistinguishable from the common European species, was found in considerable numbers.

Distribution.—Europe, North America.

12. Cypridopsis exigua, G. O. Sars, n. sp.

(Pl. IV, figs. 3, 3 a—b).

Specific Characters.—Female. Shell very tumid, seen laterally, rounded triangular in form, greatest height considerably exceeding $\frac{2}{3}$ of the length and occurring in

the middle, dorsal margin gibbously arched, ventral but very slightly sinuated, both extremities obliquely rounded and nearly equal;—seen dorsally, almost globular in form, greatest width considerably exceeding the height, both extremities obtuse. Valves but slightly unequal, smooth, with only small and scattered hairs at each extremity. Caudal rami exhibiting the rudimentary structure characteristic of the genus.

Colour.—Shell of a light yellowish green colour, with a number of comparatively small dark patches, partly forming on each side 3 interrupted transversal bands.

Length of shell 0·46 mm, height 0·33 mm, width 0·35 mm.

Remarks.—This form at the first sight somewhat resembles the Australian species *Pionocypris globulus* G. O. Sars. It is, however, a true *Cypridopsis*, as shown by the structure of the caudal rami.

Occurrence.—Several specimens of this form were found in one of my aquaria prepared with mud from Sumatra. It was also found occasionally in the sample taken by Mr. *Iversen*.

13. Cypridopsis adusta, G. O. Sars, n. sp.

(Pl. IV, figs. 4, 4 a—b).

Specific Characters.—Female. Shell rather tumid, seen laterally, oval triangular in form, greatest height somewhat exceeding $\frac{3}{5}$ of the length and occurring about in the middle, dorsal margin well arched, ventral nearly straight, anterior extremity obliquely rounded, posterior somewhat narrower and obtuse at the tip;—seen dorsally, broadly ovate in form, greatest width about equalling the height,

anterior extremity somewhat narrower than posterior. Valves but slightly unequal, smooth and rather densely hairy at both extremities. Caudal rami of the usual structure.

Colour.—Shell of a light yellowish colour, with a number of dark brown or purplish patches not arranged in distinct transversal bands, each extremity tinged with reddish brown.

Length of shell 0·63 mm, height 0·39 mm, width 0·40 mm.

Remarks.—This form is at once distinguished from any of the other known species of this genus by the peculiar and beautiful colour of the shell. It is also of rather large size, as compared with the other species.

Occurrence.—Numerous specimens of this beautiful species, all of the female sex, developed in some of my aquaria prepared with mud from Sumatra.

14. Cypridopsis dubia, G. O. Sars, n. sp.

(Pl. IV, figs. 5, 5 a—b).

Specific Characters.—Female. Shell less tumid than usual, seen laterally, oval in form, greatest height scarcely exceeding $\frac{2}{3}$ of the length and occurring in the middle, dorsal margin quite evenly arched, ventral almost straight, anterior extremity obliquely rounded, posterior somewhat broader and obtuse at the tip;—seen dorsally, oblong oval in form, greatest width but slightly exceeding half the length, anterior extremity somewhat narrower than posterior. Valves slightly unequal, the right one overlapping the left along the anterior extremity by a hyaline rim; surface smooth, with scattered hairs at each extremity. Caudal rami very small, exhibiting the structure characteristic of the genus.

Colour.—Shell rather pellucid, of an uniform pale yellowish hue, without any pigmentary patches.

Length of shell 0·46 mm, height 0·28 mm, width 0·26 mm.

Remarks.—In the shape of the shell and its absolute want of any pigmentary patches, this form conspicuously differs from the other known species of the genus, and, indeed, at first I was more inclined to refer it to the genus *Cyclocypris*. On a closer examination, however, the caudal rami were found to exhibit the rudimentary structure characteristic of the genera *Cypridopsis* and *Cypridopsella*. It still remains somewhat doubtful, to which of these 2 genera it should properly be referred.

Occurrence.—Only some few female specimens of this dwarfed form have come to my notice. They were found in one of my aquaria prepared with mud from Sumatra.

15. Dolerocypris fasciata (Müller).

(Pl. IV, figs. 6, 6 a).

Remarks.—I fully agree with Dr. *Kaufmann*, that this characteristic form, which I formerly referred to the genus *Stenocypris*, ought more properly to be considered as the type of a separate genus. The correctness of such a view becomes now still more evident by the discovery of another nearly-allied species, to be described in the sequel. For comparison with this species, and to show the identity of the Sumatrense form with the European species, I give on the accompanying plate an habitus-figure (lateral view) of one of the specimens reared in my aquaria, together with a more highly magnified figure of one of the caudal rami.

Occurrence.—This form developed very abundantly in the greater number of my aquaria prepared with mud from Sumatra. All the specimens were of the female sex and exhibited across the back the characteristic dark transversal band, from which the specific name has been derived.

Distribution.—Europe.

16. Dolerocypris sinensis, G. O. Sars, n. sp.

(Pl. IV, figs. 7, 7 a—b).

Specific Characters.—Female. Shell, seen laterally, narrow oblong in form, greatest height scarcely exceeding $\frac{1}{3}$ of the length and occurring somewhat behind the middle, dorsal margin but slightly arched, nearly straight in the middle, ventral evenly concaved, anterior extremity obliquely rounded, posterior not much attenuated and obtuse at the tip;—seen dorsally, narrow fusiform in outline, greatest width about equalling $\frac{1}{4}$ of the length, both extremities acuminate. Valves slightly unequal, the right one overlapping the left somewhat both in front and behind; inner duplicatures comparatively narrower than in *D. fasciata;* surface smooth, with scattered hairs at each extremity. Caudal rami rather strong, almost straight, and slightly attenuated distally, apical claws coarsely dentate, the outer one almost twice the length of the inner, and equalling half the length of the ramus, seta of dorsal edge very small, and occurring close to the base of the inner claw, apical seta about half the length of the outer claw.

Colour.—Shell of an uniform light greenish colour, without any distinct dark band across the back.

Length of shell 1·93 mm, height 0·66 mm, width 0·50 mm.

Trykt 2. Juli 1903.

Remarks.—This form is closely allied to *D. fasciata,* and undoubtedly belongs to the same genus. It is, however, at once distinguished by the absolute absence of the dark transverse band across the back so characteristic of *D. fasciata.* On a closer comparison also the shape of the shell is found to be somewhat different, the posterior extremity being far less tapered. It moreover reaches to a considerably larger size than does *D. fasciata.*

Occurrence.—I have only had the opportunity of examining a solitary specimen of this form, which was found in one of my aquaria prepared with mud from China.

17. Ilyocypris dentifera, G. O. Sars, n. sp.

(Pl. IV, figs. 8, 8 a—c).

Specific Characters.—Female. Shell rather compressed, seen laterally, oval quadrangular in form, greatest height somewhat exceeding half the length and occurring quite in front, dorsal margin straight, forming above the eye an angular bend, ventral deeply sinuated, both extremities obtusely truncated, the anterior one considerably broader than the posterior;—seen dorsally, narrow oblong in form, somewhat constricted in front of the middle and slightly dilated behind, anterior extremity acuminate, posterior more obtuse. Valves subequal, each exhibiting behind a thin hyaline rim, inside which a series of about 12 strong, posteriorly-pointing denticles occurs, anterior edge very minutely spinulose throughout; surface of shell coarsely granular or minutely areolated, and clothed on each extremity with scattered hairs. Eye rather small and distant from the dorsal margin. Caudal rami comparatively small and

but slightly curved, apical claws subequal, seta of dorsal edge well developed, and occurring at some distance from the claws, apical seta small.

Male considerably smaller than female, and having the posterior part of the shell more dilated.

Colour.—Shell rather opaque, of a whitish colour, sometimes tinged with light reddish brown.

Length of shell in female 0·90 mm, height 0·50 mm, width 0·34 mm.

Remarks.—This form is nearly allied to the Australian species, *I. australiensis* G. O. Sars, differing, however, in the strong armature of the posterior part of the shell.

Occurrence.—Numerous specimens of this form developed in some of my aquaria prepared with mud from China.

18. Ilyocypris angulata, G. O. Sars, n. sp.

(Pl. IV, figs. 9, 9 a).

Specific Characters.—Female. Very like the preceding species, but of somewhat larger size, and with the surface of the shell very uneven, projecting on each side to several nodular protuberances, one of which, occurring behind the middle, is remarkably large and angular in form. Both the anterior and posterior edges of the valves, as also the adjacent part of the shell, armed with strong denticles, each tipped with a stiff bristle.

Colour.—Shell semipellucid, of a whitish colour, with greenish translucent intestine.

Length of shell 0·98 mm, height 0·50 mm, width 0·48 mm.

Remarks.—This form may perhaps more properly be regarded as only a variety of the preceding species. I have, however, not seen any distinct transition between the two.

Occurrence.—Some few specimens of this form, all of the female sex, were found together with the preceding one.

19. **Candonopsis tenuis**, Brady.

Occurrence.—Found occasionally in the sample taken by Mr. *Iversen* at the Helvetic Estate, Sumatra.

Distribution.—Australia.

EXPLANATION OF THE PLATES.

Pl. I.

Limnadia lenticularis (Lin.).

Fig. 1. Adult ovigerous female, viewed from left side; magnified 12 diameters.

— 1 a. Same, caudal part, more highly magnified.

Scapholeberis Kingi, G. O. Sars.

Fig. 2. Adult gravid female, viewed from left side; magnified 98 diameters.

— 2 a. Same, dorsal view.

— 2 b. Same, caudal part, more highly magnified.

Moina brevicornis, G. O. Sars.

Fig. 3. Adult ephippial female, viewed from right side; magnified 64 diameters.

— 3 a. Same, dorsal view.

— 3 b. Same, caudal part, more highly magnified.

Leydigia propinqva, G. O. Sars.

Fig. 4. Adult gravid female, viewed from left side; magnified 85 diameters.

— 4 a. Same, caudal part, more highly magnified.

Alona acuticostata, G. O. Sars.

Fig. 5. Adult female, viewed from left side; magnified 170 diameters.

— 5 a. Same, caudal part, more highly magnified.

— 5 b. Adult male, viewed from left side.

Pl. II.

Diaptomus Chaffanjoni, Richard.

Fig. 1. Adult ovigerous female, dorsal view; magnified 62 diameters.
— 1 a. Same, without the ovisac, viewed from left side.
— 1 b. Same, urosome together with the posterior part of metasome, viewed from the dorsal face: more highly magnified.
— 1 c. Same, last pair of legs.
— 1 d. Extremity of left leg, more highly magnified.
— 1 e. Adult male, dorsal view.
— 1 f. Same, outer part of right anterior antenna, more highly magnified.
— 1 g. Same, last pair of legs.

Cypris purpurascens, Baird.

Fig. 2. Adult female, viewed from right side; magnified 68 diameters.
— 2 a. Same, dorsal view.
— 2 b. Same, anterior maxilla, without the vibratory plate, more highly magnified.
— 2 c. Same, right caudal ramus.
— 2 d. Immature specimen of the same species, viewed from right side.

Cypris vittata, G. O. Sars.

Fig. 3. Adult female, viewed from right side; magnified 68 diameters.
— 3 a. Same, dorsal view.
— 3 b. Same, end-view.
— 3 c. Right caudal ramus, more highly magnified.

Cypris decorata, G. O. Sars.

Fig. 4. Adult female, viewed from right side; magnified 68 diameters.
— 4 a. Same, dorsal view.
— 4 b. Same, right caudal ramus, more highly magnified.

Pl. III.

Hemicypris pyxidata (Moniez).

Fig. 1. Adult female, viewed from left side; magnified 68 diameters.
— 1 a. Same, dorsal view.
— 1 b. Another specimen, in which the left valve has been removed, in order to show the enclosed animal; more highly magnified.

Fig. 1 c. Left valve of same specimen, viewed from the inner face, and exhibiting the corresponding coecal appendage of intestine and ovarial tube.
— 1 d. Left anterior maxilla.
— 1 e. Left posterior maxilla.
— 1 f. Left caudal ramus.

Hemicypris ovata, G. O. Sars.

Fig. 2. Adult female, viewed from left side; magnified 68 diameters.
— 2 a. Same, dorsal view.
— 2 b. Left caudal ramus.

Hemicypris megalops, G. O, Sars.

Fig. 3. Adult female, viewed from left side; magnified 68 diameters.
— 3 a. Same, dorsal view.
— 3 b. Left caudal ramus.

Leptocypris papyracea, G. O. Sars.

Fig. 4. Adult female, viewed from left side; magnified 58 diameters.
— 4 a. Same, dorsal view.
— 4 b. Left anterior maxilla.
— 4 c. Left caudal ramus.

Pl. IV.

Notodromas oculata, G. O. Sars.

Fig. 1. Adult female, viewed from left side; magnified 80 diameters.
— 1 a. Same, dorsal view.
— 1 b. Same, ventral view.
— 1 c. Left caudal ramus.

Cypria crenulata, G. O. Sars.

Fig. 2. Adult female, viewed from right side; magnified 80 diameters.
— 2 a. Same, dorsal view.
— 2 b. Right caudal ramus.

Cypridopsis exigua, G. O. Sars.

Fig. 3. Adult female, viewed from left side; magnified 80 diameters.
— 3 a. Same, dorsal view.
— 3 b. Caudal rami.

Cypridopsis adusta, G. O. Sars.

Fig. 4. Adult female, viewed from left side; magnified 80 diameters.
— 4 a. Same, dorsal view.
— 4 b. Left caudal ramus.

Cypridopsis dubia, G. O. Sars.

Fig. 5. Adult female, viewed from left side; magnified 80 diameters.
— 5 a. Same, dorsal view.
— 5 b. Right caudal ramus.

Dolerocypris fasciata (Müller).

Fig. 6. Adult female, viewed from left side; magnified 56 diameters.
— 6 a. Left caudal ramus.

Dolerocypris sinensis, G. O. Sars.

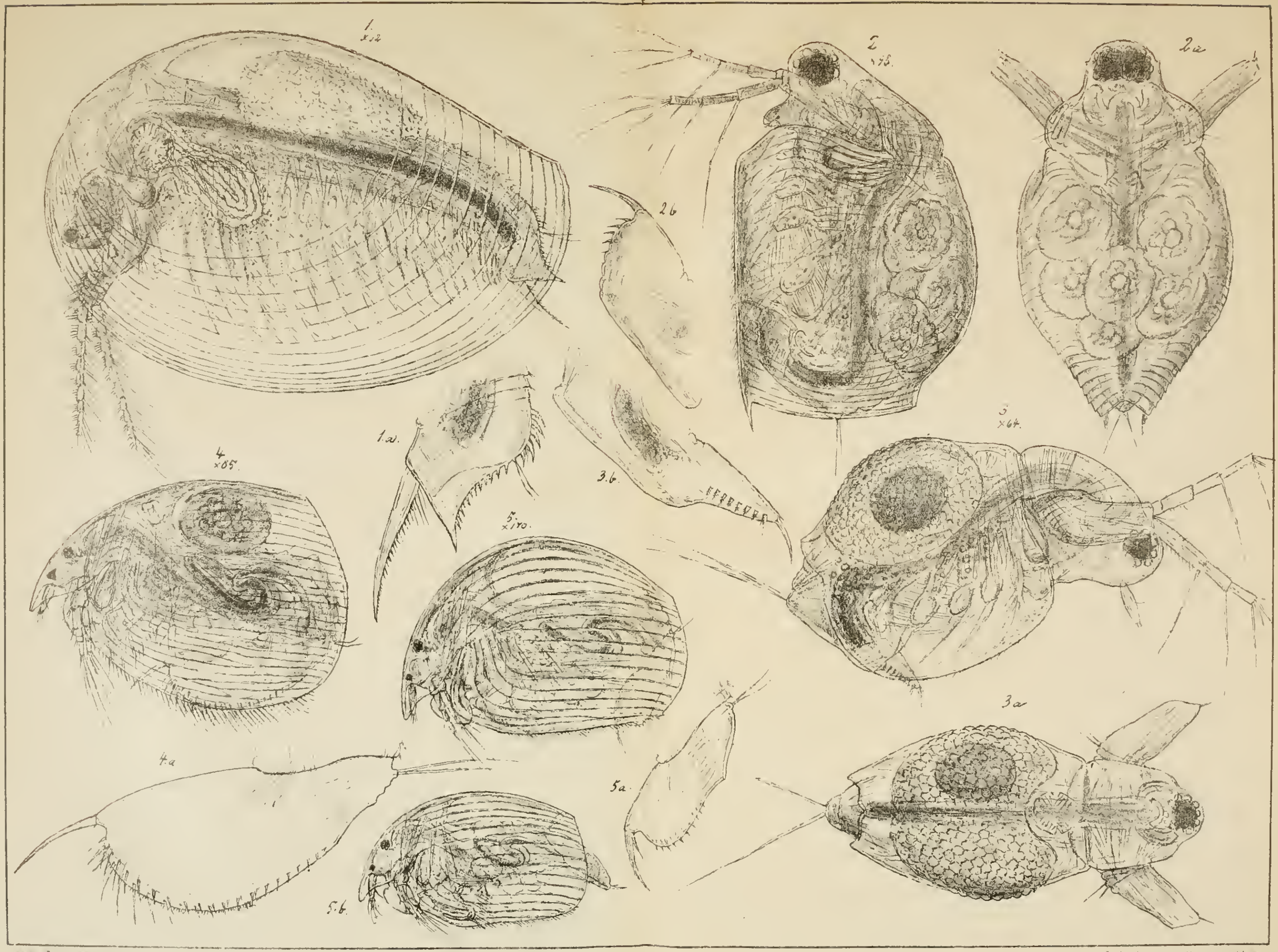
Fig. 7. Adult female, viewed from left side; magnified 56 diameters.
— 7 a. Same, dorsal view.
— 7 b. Left caudal ramus.

Ilyocypris dentata, G. O. Sars.

Fig. 8. Adult female, viewed from left side; magnified 68 diameters.
— 8 a. Same, dorsal view.
— 8 b. Adult male, viewed from left side.
— 8 c. Left caudal ramus of female.

Ilyocypris angulata, G. O. Sars.

Fig. 9. Adult female, viewed from left side; magnified 68 diameters.
— 9 a. Same, dorsal view.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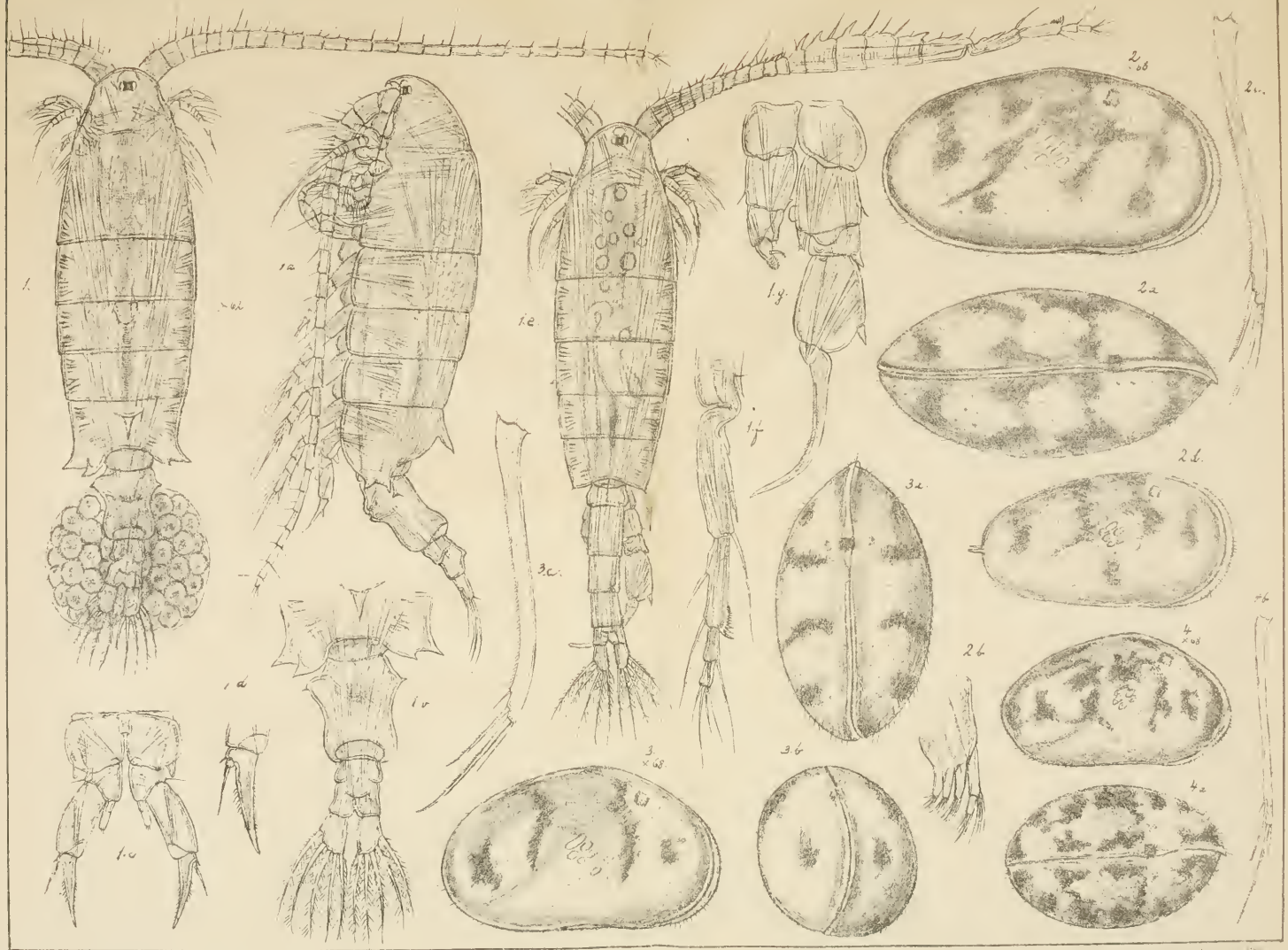

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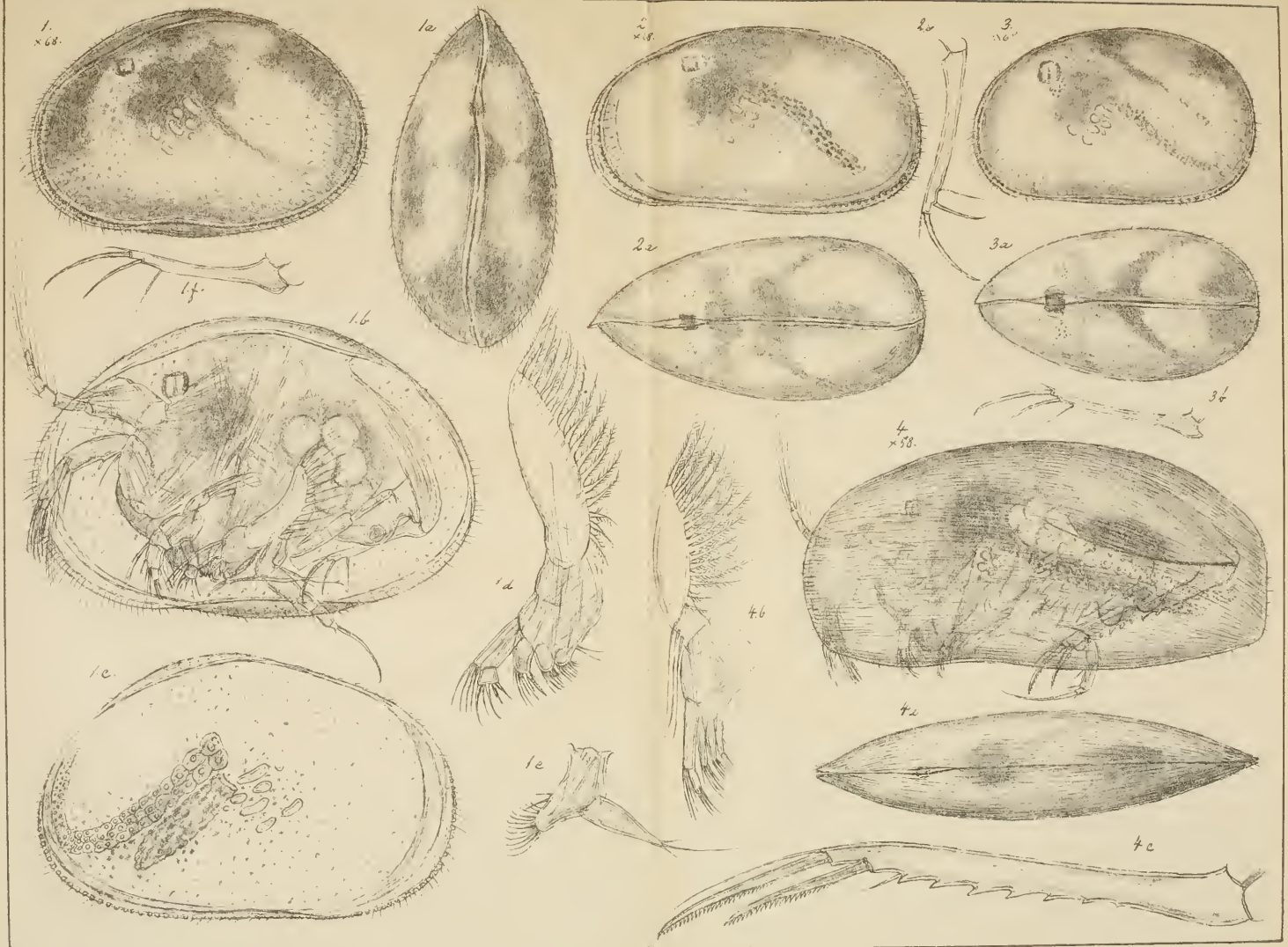
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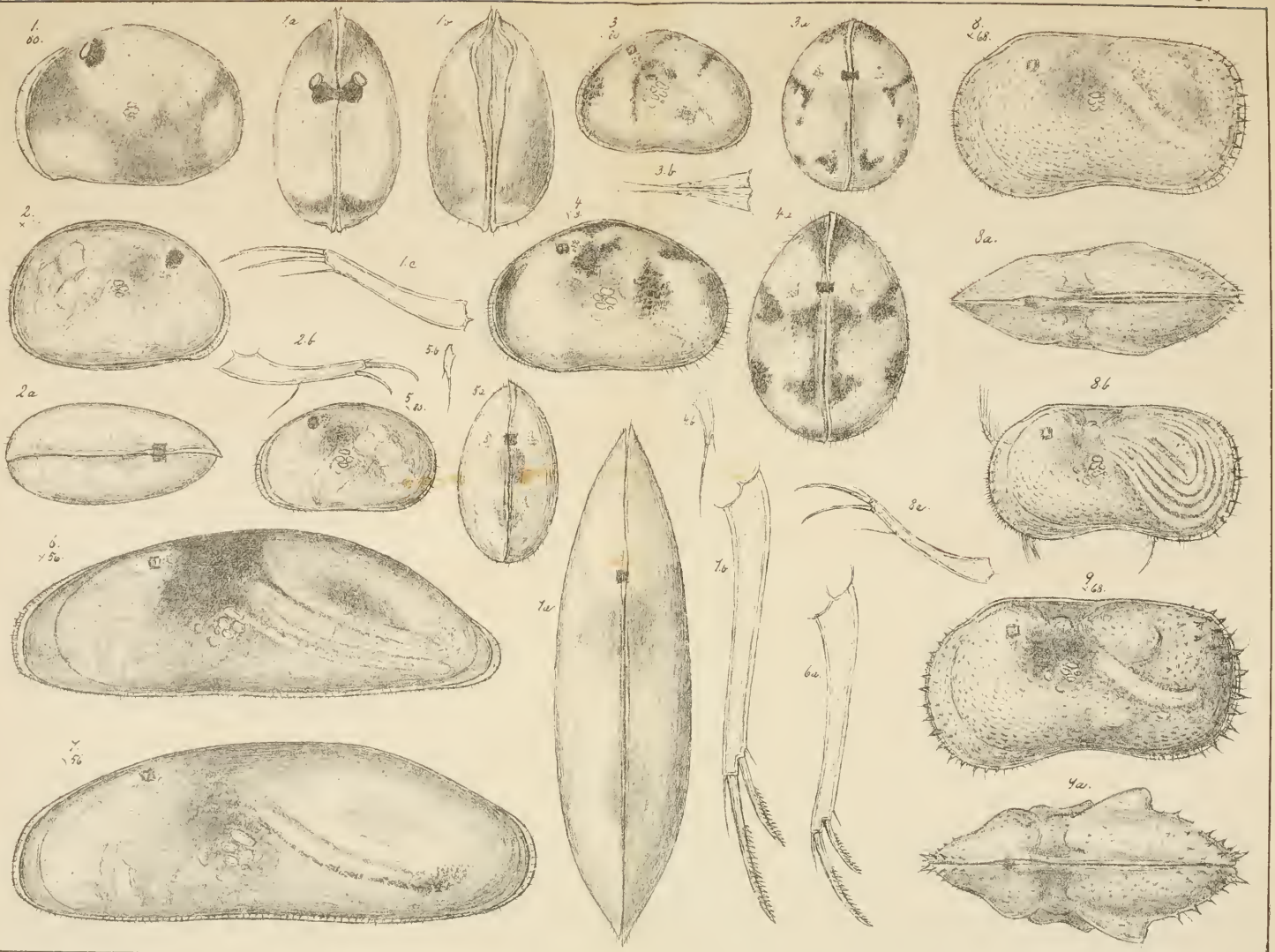

G. O. Sars autogr.

Trykt den private Opmaaling Chra