AN ACCOUNT

OF THE

CRUSTACEA

OF

NORWAY

WITH SHORT DESCRIPTIONS AND FIGURES OF ALL THE SPECIES

BY

G. O. SARS

VOL. IX

OSTRACODA

PARTS III & IV

POLYCOPIDÆ (concluded), CYTHERELLIDÆ, CYPRIDÆ (part)

WITH 16 AUTOTYPIC PLATES

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PUBLISHED BY THE BERGEN MUSEUM

SOLD BY

ALB. CAMMERMEYERS FORLAG, CHRISTIANIA

1923

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all produced, and the marginal claws comparatively thinner than in female; anterior upturned process slender, falciform, and terminating in a thin setiform point. Chief piece of the copulatory apparatus short and thick, almost globular in shape, and clothed all over with small spikes.

Colour whitish gray, variegated with a light yellowish green pigment forming irregular patches radiating, as in *P. orbicularis*, from the centre of each valve to the margins.

Length of adult female amounting to 0.78 mm.

Remarks.—The above-described form is nearly allied to the typical species, but of somewhat larger size, and moreover easily recognised by the closely punctate sculpture of the valves and the wholly absence of any reticulation on the same. In the fresh state it also distinguishes itself by a rather different colour.

Occurrence.—I have only met with this form in a single locality of the Norwegian coast, viz., off the Lofoten islands, where it occurred at the considerable depth of 120—250 fathoms.

Distribution.—? British Isles (Brady).

3. **Polycope areolata**, G. O. Sars, n. sp.

(Pl. XVI, fig. 1).

Specific Characters.—Female. Shell far less tumid than in the 2 preceding species, seen laterally, of a somewhat irregular rounded shape, with the greatest height a little behind the middle and not attaining the lenght, dorsal margin abruptly arched beyond the middle, ventral margin forming a more even and rather bold curve, anterior extremity conspicuously bowed in the middle, posterior bluntly truncated, with no trace of angle below;—seen dorsally, regularly oval in outline, with the lateral edges quite evenly curved, the greatest width scarcely exceeding half the length. Surface of valves conspicuously sculptured, exhibiting a very sharply marked areolation into comparatively wide polygonal meshes, ventral edges in the greater part of their length fringed with delicate spinules; right valve armed, just above the most prominent part of the frontal margin, with a well marked, though rather small dentiform process. Structure of the several limbs not exhibiting any pronounced difference from that in the type species. Caudal lamellæ somewhat resembling in shape those in *P. punctata*, but having the anterior corner far less produced, whereas the marginal processes between the claws are rather more fully developed.

Male having the shell somewhat less high than in female, but otherwise rather similar both in shape and sculpture. Left caudal lamella with the foremost claw very small and rudimentary, and the anterior corner not at all pro-

duced; upturned process not much elongated, simply spiniform, and sharply defined at the base. Chief piece of the copulatory apparatus of a somewhat similar shape to that in the male of *P. orbicularis*, but less elongated.

Colour not yet ascertained.

Length of adult female 0.53 mm., of male 0.48 mm.

Remarks.—The present species may be at once distinguished from either of the 2 preceding ones by the far less tumid shell, and more particularly by the very sharply marked areolation of the valves. Another rather conspicuous difference is found in the frontal armature of the right valve.

Occurrence.—Some few specimens of this form were picked up from samples collected at Korshavn, south coast of Norway, and taken at moderate depths. I have not met with this form in any other place on the Norwegian coast.

4. Polycope clathrata, G. O. Sars, n. sp.

(Pl. XVI, fig. 2)

Specific Characters.—Female. Shell very similar in shape to that in the preceding species, but of smaller size and somewhat less high in proportion to the length. Surface of valves very coarsely sculptured, exhibitin gan exceedingly dense reticulation, the meshes being much smaller and more crowded than in the preceding species, ventral edges nearly in their whole length fringed with delicate spinules; right valve armed in front with a similar dentiform process to that found in *P. areolata*, though of somewhat larger size. Caudal lamellæ not much different in shape from those in that species.

Male rather smaller than female, but resembling it very much both in its general appearance and in the characteristic sculpture of the valves. Left caudal lamella with the anterior corner blunted, and the 3 foremost claws (in the specimen examined) wholly absent, upturned process rather slender and almost straight, terminating in a somewhat tortuous point. Chief piece of the copulatory apparatus comparatively large and lamellarly dilated at the end.

Colour not yet ascertained.

Length of female 0.47 mm, of male 0.42 mm.

Remarks.—The present form is closely allied to the preceding species, but of rather smaller size, and moreover at once distinguished by te much denser reticulation of the valves. The transformed left caudal ramus of the male and the chief piece of the copulatory apparatus also exhibit well marked differences from those parts in *P. areolata.*

Occurrence.—Two specimens only of this form have as yet come under my notice. The male specimen was obtained from the same sample in which

the preceding species occurred; the female was found among some specimens of *P. orbicularis* collected, many years ago, of the west coast of Norway, the exact locality not being noted.

5. **Polycope pustulata**, G. O. Sars.

(Pl. XVI, fig. 3)

Polycope pustulata, G. O. Sars. Oversigt af Norges Crustaceer, Part II, Chr. Vid. Selsk. Forh. 1890, p. 53.

Specific Characters.—Female. Shell, seen laterally, of the usual short rounded shape, with the anterior extremity slightly bowed in the middle, the posterior blunted and exhibiting above trace of an angle;—seen dorsally, of a rather peculiar shape, being narrowed in front and much dilated behind, with a very conspicuous pustuliform prominence on each side. Valves smooth, without any obvious sculpture, and quite unarmed in front. Caudal rami resembling in shape those in *P. orbicularis*, the triangular processes of the margin between the claws being rather produced.

Colour about as in *P. orbicularis*.

Length of shell 0.56 mm.

Male unknown.

Remarks.—The present form may at once be distinguished from any of the other known species of the present genus by the peculiar pustuliform expansions of the hinder part of the shell, best seen in the dorsal or ventral aspect. Otherwise it seems to be closely allied to the type species.

Occurrence.—A solitary female specimen only of this form has as yet come under my notice. It was found, many years ago, off the west coast of Norway, the exact locality not being noted. Out of Norway this form has not yet been recorded.

6. **Polycope sublævis**, G. O. Sars, n. sp.

(Pl. XVII, fig. 1)

Specific Characters.—Female. Shell, seen laterally, resembling in shape that of the type species, though having the anterior extremity a little more bowed in the middle;—seen dorsally, regularly oval in outline, with the lateral contours quite evenly curved, and the greatest width only slightly exceeding half the length. Surface of valves nearly smooth, though in some cases a very faint reticulation may be discerned; anterior edges unarmed. Caudal lamellæ resembling in structure those in *P. orbicularis*, though comparatively somewhat narrower, with the anterior corner more produced and the claws shorter.

Male, as usual, very like the female in its general appearance. Left caudal lamella produced in front to a comparatively short and stout, almost

straight prominence clothed at the somewhat obtuse point with small spikes. Chief piece of the copulatory apparatus abruptly curved upwards, with the outer part narrow cylindric in shape and obtusely blunted at the tip.

Colour not yet ascertained.

Length of adult female 0.50 mm.

Remarks.—The above-described form so closely resembles young specimens of *P. orbicularis*, as easily at the first sight to be confounded with that species. On a closer examination, however, it may at once be distinguished by the far less tumid shell, its dorsal or ventral aspects being indeed very different in the 2 species (compare the figures here given). Moreover well marked differences are found in the shape of the transformed left caudal lamella in the male, as also in that of the chief piece of the copulatory apparatus.

Occurrence.—It is only recently that I have been aware of this species, which may be not uncommon, at least on the south coast of Norway, as I have succeeded in finding several specimens, both males and females, among material collected partly at Risör, partly at Korshavn.

Gen. 2. **Polycopsis,** G. W. Müller, 1894.

Generic Characters.—Shell of a somewhat similar shape to that in *Polycope,* though more compressed, and having the anterior part of the ventral edges distinctly serrate. Anterior antennæ of a rather deviating structure, being composed of a greater number of joints than in *Polycope,* amounting to 6 in all, the first 2 of which are rather large and expanded, the 4 remaining joints abruptly much smaller; 2nd joint much the largest and divided in front into 2 remarkable deflexed lappets, the distal one triangular in shape and highly chitinised curving over the terminal part of the antenna. Posterior antennæ with the inner ramus in male distinctly prehensile, being armed at the end, in front of the setæ, with a slender recurved claw. Mandibles with the masticatory part very narrow and imperfectly dentated at the end; distal joint of the palp somewhat differing in shape from that in *Polycope*, and having one of the apical setæ much stronger than the others, almost claw-shaped. Maxillipeds with the terminal joint imperfectly defined. Caudal lamellæ with the anterior corner bidentate.

Remarks.—This genus was established in the year 1894 by G. W. Müller, to comprise the *Polycope compressa* of Brady & Robertson and an additional Mediterranean species, *P. serrata.* It is especially distinguished by the peculiar structure of the anterior antennæ, and exhibits also some other well-marked differences, as mentioned in the above diagnosis. Of the 2 as yet known species, the one only is represented in the Fauna of Norway.

7. Polycopsis compressa (Brady & Robertson).

(Pl. XVII, fig. 2)

Polycope compressa, Brady & Robertson, Ann. Mag. Nat. Hist. ser. IV, Vol. III, p. 20, Pl. XXI, figs. 5—11.

Specific Characters.—Female. Shell rather compressed, seen laterally, of a somewhat obliquely rounded shape, greatest height in the middle and only little inferior to the length, dorsal and ventral margins evenly curved, anterior extremity broadly rounded and only very slightly bowed in the middle, posterior narrower and quite evenly rounded at the end, without any trace of an angle above;—seen dorsally, narrow oblong in outline, with the lateral edges nearly straight in the middle, greatest width somewhat behind the middle and not nearly attaining half the length, anterior extremity more narrowed than the posterior. Surface of valves smooth, of a dull appearance, not exhibiting any obvious sculpture; anterior part of the ventral edges with about 16 well-marked serratures, smaller however than in *P. serrata.* Anterior antennæ with both lappets of the 2nd joint well defined, the proximal one however much narrower than the distal one, both tipped with a single seta; 2 other well-developed ciliated setæ, not found in *Polycope,* present, the one issuing from the upper distal corner of the 1st joint, the other on the posterior edge of the 2nd joint near its end; terminal part of the antenna distinctly 4-articulate and tipped with 5 natatory setæ. Caudal lamellæ each armed, as in *Polycope,* with 7 claws, intercurrent processes of the margin comparatively small.

Colour opaque whitish.

Length of the specimen examined 0.61 mm.

Remarks.—This form was at first described by Brady and Robertson as a species of the genus *Polycope,* but was subsequently by G. W. Müller justly removed as the type of a distinct genus. The latter author had also an opportunity of examining male specimens, and has stated the presence in them of a well-developed apical claw on the inner ramus of the posterior antennæ, a feature not found in the species of *Polycope.* The present form may, also without dissection, be easily recognised from any of the species of that genus described in the preceding pages, by the much more compressed shell and by the rather conspicuous serratures of the anterior part of the ventral edges.

Occurrence.—A solitary female specimen only of this form has as yet come under my notice. It was taken at Korshavn, south coast of Norway in comparatively shallow water.

Distribution.—British Isles (Brady), Mediterranean (G. W. Müller).

Suborder 3.

Platycopa.

General Characters.—Shell strongly calcareous, without any persistent aperture in front, and in general appearance not very unlike that in some of the *Podocopa.* Enclosed animal, however, built on a very different type. Both pairs of antennæ very powerfully developed and allowing to be extruded from the shell in front, being however scarcely at all natatory, the anterior ones multiarticulate and abruptly geniculate at the base, the posterior ones exhibiting a structure totally different from that in any other known Ostracoda, being broad and flattened, biramous, and in their general appearance somewhat recalling the legs of Copepoda. All the other appendages of rather weak structure and wholly concealed within the shell. 3 pairs only of postoral limbs present, none of them pediform; last pair in female quite rudimentary. Caudal rami rather feeble, and differing conspicuously both in shape and armature from those in the other known Ostracoda. No frontal tentacle present, nor any distinctly developed visual organs or heart.

Remarks.—This suborder also was founded by the present author in the year 1865 on a single genus, viz., *Cytherella,* the species of which at that time were only known in a fossil condition, and which of course only could be determined from the characters of the shell, the genus being considered as nearly allied to *Cythere.* By the discovery of a recent species occurring off the Norwegian coast, I had an opportunity of examining also the enclosed body, and found it to my great astonishment so totally different in structure from that in any of the other Ostracoda known to me, that I could not hesitate in establishing for the reception of this genus not only a particular family, *Cytherellidæ,* but even a distinct group of higher systematic rank, named as above in allusion to the peculiar structure of the posterior antennæ. The statements about the remarkable structural details in this genus given by me at that time, though unfortunately without any accompanying figures, have since partly been confirmed by 2 other authors, Brady and G. W. Müller, who has given figures of the limbs in 2 nearly allied recent species. The latter author,

however, did not consider the differences great ennough to justify the establishment of a distinct suborder, and proposed to include the family Cytherellidæ within the suborder *Podocopa*, placing it near the family *Darwinulidæ*. I am quite unable to consent with G. W. Müller in this view, and the most recent author, Dr. Skogsberg, also rejects it decidedly, fully admitting the present suborder, though designing it with a new name, viz., *Cytherelliformes*.

Fam. Cytherellidæ.

Remarks.—As this family at present only comprises a single genus, it may suffice to give the characters of that genus. I am however by no means convinced that all the fossil forms referred to it are in reality congeneric.

Gen. **Cytherella,** Bosquet, 1852.

Generic Characters.—Shell of very firm consistency, highly calcareous and quite opaque, being more or less compressed and, seen laterally, of oval or elliptical shape. Valves very unequal, the right one being much the larger and overlapping the left around all the margins; muscular spots densely crowded and arranged in a double vertical row near the centre of each valve; inner duplicatures very narrow, almost obsolete. Anterior antennæ strongly built, 7-articulate, all the joints sharply defined and more or less produced in front, carrying tufts of comparatively short spiniform setæ, the first 2 joints the largest and forming together an abrupt geniculate bend. Posterior antennæ with the basal part divided into 2 sharply defined segments forming together a very movable articulation, rami however apparently firmly connected to the end of the basal part and of somewhat unequal size, the inner one the longer and 3-articulate, the outer biarticulate, both rami carrying numerous strong spiniform setæ. Anterior lip large, and somewhat bell-shaped. Mandibles rather small, with the masticatory part obliquely truncated at the end and fringed with a dense row of delicate spinules; palp sub-cylindricat in shape, almost straight, and only composed of 2 joints, the distal one small, bisetose, the proximal one provided at the base anteriorly with a small setiferous lamella and clothed along the inner face with a dense comb-like row of delicate recurved setæ. Maxillæ carrying at the base a very largely developed vibratory plate, and

exhibiting inside the basal part 3 well defined masticatory lobes; palp slender and somewhat resembling in shape and armature the mandibular palp, though without any setose lamella at the base. Penultimate pair of limbs (maxillipeds) only composed of 2 lamellar segments, the proximal one the larger and provided outside with a well developed vibratory plate, though rather smaller than that on the maxillæ, wanting however any trace of masticatory lobes, distal joint narrow oblong in shape and clothed with a few irregularly arranged setæ, some of which are densely plumose. Last pair of limbs in female each only represented by a simple rounded lamellæ carrying a few setæ on the end. This and the preceding pair in male, however, provided with a strongly developed prehensile appendage, that of the maxillipeds being of a very peculiar appearance, somewhat hatchet-shaped, that of the last pair of limbs more resembling in shape the prehensile palp of the maxillipeds usually met with in male Cypridæ. Posterior part of body in both sexes divided by transverse chitinous stripes, as it were, into numerous short segments, some of which carry dorsally long diverging setæ. Caudal rami of rather delicate structure, forming 2 thin juxtaposed lamellæ extending forwards below the body and fringed around the somewhat dilated extremity with a number of peculiar flattened spines, each terminating in a thin setiform lash. Copulatory appendages of male large, symmetrical, forming 2 slender and attenuated pieces curving upwards. Ripe ova received within the shell-cavity for farther development.

Remarks.—This genus was established in the year 1852 by Bosquet to include some fossil Ostracoda found in the tertiary deposits of France and Belgium. The genus was placed by him in the family *Cytheridæ,* near to *Cythere.* The true systematic relation was first settled in the year 1865 by the present author.

Several recent species have in the latter years been added to that observed by me, all of them being found in considerable depths of the oceans; but in almost every case the examination of these species has been limited to the shell. The only additional informations about the structural details have, as far as I know, been given by Brady for a species, *C. serrulata,* taken off the coast of Marocco, and by G. W. Müller for a Mediterranean species, *C. sordida.* The genus is represented in the Fauna of Norway by a single species only, to be described below.

Cytherella abyssorum, G. O. Sars.

(Pl. XVIII & XI[X])

Cytherella abyssorum, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 127.

Syn: *Cytherella Beyrichi*, Brady.

„ — *scotica*, Brady.

Specific Characters.—Female. Shell much compressed, seen laterally, of a rather regular oval or elliptical shape, with the height somewhat exceeding half the length, dorsal margin straight, ventral very slightly sinuated, both extremities rounded off and nearly equal;—seen dorsally, very narrow, almost cuneiform in outline, with the lateral margins scarcely at all bowed, anterior extremity narrowly truncated, posterior abruptly dilated near the end and blunted behind. Left valve much smaller than the right and fringed at its free edges with a thin hyaline border, which fits closely in a groove of the right valve, when the shell is closed. Surface of shell smooth, though exhibiting a somewhat dull appearance by numerous well-marked impressed pits, and in fresh specimens clothed with scattered rigid hairs especially at the hind extremity. Anterior antennæ with the 1st joint rather massive and provided in front with a number of somewhat unequal bristles, behind with a considerably longer seta, 2nd joint abruptly bent upon the 1st ventrally and carrying in front 3 stout distinctly ciliated setæ arising close together from a slight prominence of the edge; 3rd joint comparatively simple, being quite unarmed in front and only provided at the end behind with a thin bristle; 4th joint with 2 such bristles and, like the 2nd, carrying in front 3 subequal stout setæ attached to a well-marked blunt prominence; 5th joint of a similar structure, though without any bristles behind; 6th joint with only 2 setæ in front, but provided at the end behind with a small bristle; terminal joint much narrower than the others and somewhat obliquely truncated at the end, carrying 4 unequal setæ, one of them rather small and attached to the anterior edge. Posterior antennæ with the 2 segments of the basal part forming together generally an abrupt genicular bend, 2nd segment somewhat smaller than the 1st, but slightly widening distally and exerted behind to a somewhat projecting corner tipped with 3 slender setæ, anterior edge of the segment clothed with tufts of fine hairs; outer ramus about equal in length to that segment and having the proximal joint rather large, quadrangular in shape, distal joint however very small, lamelliform; inner ramus

with its 3 joints gradually diminishing in size, the 1st being provided near the base posteriorly with a bundle of small sensory filaments; setæ of both rami very coarse and more or less recurved. Caudal lamellæ somewhat constricted in the middle, and having the outer part slightly expanded, each with 9—10 marginal spines densely crowded around the blunted extremity, the middle spines being the longest, the others gradually diminishing in length.

Male somewhat smaller than female and having the shell conspicuously more compressed, with the posterior extremity far less abruptly dilated. Prehensile appendage of maxillipeds with the basal part elongate subfusiform in shape, exhibiting inside 2 successive, but rather remote bisetose prominences and projecting at the end outside in a sharp corner; terminal mobile part much shorter than the basal one, but somewhat dilated at the base which is exerted in front to an angular corner followed by a number of well marked serratures of the edge. Prehensile appendage of last pair of limbs rather different in shape, forming a slender, distinctly 3-articulate stem bent in the middle in an elbow-like manner, and provided outside the 1st (basal) joint with a dense series of delicate finely ciliated setæ. Copulatory appendages somewhat thickened at the base, but terminating in a very narrow cylindrical extremity.

Colour in both sexes opaque whitish.

Length of adult female amounting to 0.95 mm., of male to 0.90 mm.

Remarks.—It may be that the above-described form in reality is identical with one or other of the numerous fossil species recorded; but as I find it impossible at present to decide this with certainty, I prefer to record the species under the specific name given to it in 1865 and admitted by all subsequent authors. The 2 forms named by Brady as *C. Beyrichi* and *C. scotica* are quoted here as synonyms on the authority of that author.

Occurrence.—Of this remarkable form at first only a few empty shells were found off the Lofoten islands in depths ranging from 100 to 300 fathoms. Subsequently, however, my late father succeeded in picking up a considerable number of specimens from dried mud taken partly from the deeps off the Lofoten islands, partly from several other places of the west coast off Norway. Some of these specimens had still their 2 valves in situ, and on a closer examination I found the enclosed body in a few of them sufficiently well preserved to allow a detailed investigation of the several limbs.

As to the habits of the animal, very little can be said, as I have not yet had an opportunity of observing it in the living state. It may however be inferred from the heavy condition of the shell and the peculiar structure of the

antennæ, that the animal is quite incapable to move freely in the water, and of course is always bound to the bottom, dragging itself slowly through the loose mud chiefly by the aid of its powerful posterior antennæ which may act as a sort of shoving-implements for throwing away the mud in its route.

Destribution.—British Isles (Brady), Mediterranean at Nice (Marquis de Folin), Atlantic Ocean down to 410 fathoms (Valorous Expedition).

Suborder 4.

Podocopa.

General Characters.—Shell without any persistent aperture in front, and of very varying shape and sculpture, but always somewhat flattened below, with the ventral edges of the valves in the oral region conspicuously bent inwards and somewhat bowed, so as to overlap each other, when the shell is closed. Both pairs of antennæ well developed and partaking in the movements of the animal, being in some cases adapted for swimming, in other case only for crawling; the posterior ones very unlike those in the 3 preceding suborders, being pronouncedly pediform, geniculate in front, and clawed at the tip. Mandibles, as a rule, well developed and provided with a deflexed 4-articulate palp of moderate size and provided at the base with a movable setiferous lamella. 4 pairs of postoral limbs always present, the anterior ones (maxillæ) provided at the base with a large vibratory plate and terminating in 4 densely crowded and more or less digitiform setiferous lobes, the outermost of which represents the palp. The next pair of limbs in some cases subservient to mastication and having the palp (endopodite) imperfectly developed, thus more properly termed maxillipeds, in other cases however pronouncedly pediform, like the 2 succeeding pairs. Caudal rami, when perfectly developed, forming 2 slender and very mobile pieces armed at the tip with 2 claws only, in many cases however much reduced in size and apparently immobile. Compound eyes wanting, but in most cases an ocellus, simple or bipartite, may be found to exist. No frontal tentacle nor any trace of a heart present. Intestine divided by a mediate constriction into 2 well defined compartiments, the anterior of which may be provided with 2 more or less developed lateral coeca. Genital organs of rather varying structure. Copulative appendages of male symmetrical and often very complex.

Remarks.—This suborder proposed by the present author in 1865, is a very natural one, exhibiting a number of well marked distinguishing characters derived both from the shell and from the enclosed body. It has also been approved by all subsequent authors, though its limits were somewhat altered

by G. W. Müller by the reception within it of the family *Cytherellidæ*. As above shown, this family cannot however by any means find its place within the present suborder. The name, as here given, alludes to the pronouncedly pediform structure of the posterior antennæ, the general appearance of which is not unlike that of the mandibular palps in the Myodocopa. As to the shell, the peculiar closure of the valves in the oral region is very characteristic, no trace of such a closure being found in any of the forms belonging to the 3 preceding suborders, whereas in all the known Podocopa its existence may easily be demonstrated.

The present suborder comprises the far greater bulk of the known Ostracoda, and is represented both in the sea and in fresh water. We may distinguish within it 2 well defined families, viz., the *Cypridæ* and the *Cytheridæ*, both established as early as the year 1852 by Baird and founded on the 2 old genera *Cypris* and *Cythere*. True, in recent times several other families have been added; but in my opinion these new families only deserve the systematic rank of subfamilies, to be classed under the head of the one or the other of the 2 above-mentioned families. In the sequel a short characteristic of these subfamilies will be given in addition to the diagnoses of the chief families.

Fam. 1. Cypridæ.

Characters of the family.—Shell in most cases thin, corneous, only seldom of a more solid consistency, surface smooth, never roughly sculptured, hing simple, without any closing teeth. Ocellus, when present, generally simple, not divided. Anterior antennæ scarcely at all geniculate, basal part more or less dilated and divided into 2 or 3 segments, terminal part attenuated, 4- or 5-articulate, and clothed with numerous more or less slender setæ forming together a dense apical brush. Posterior antennæ originating by a short and somewhat imperfectly defined root-joint followed by a much larger joint, which constitutes the main part of the basal portion, the latter provided at the end outside with a small scale-like appendage carrying a slender anteriorly curved seta accompanied by one or two very small bristles; terminal part abruptly curved downwards and composed of 3 or 4 somewhat unequal joints, the 1st of which is generally the largest and provided behind with a more or less developed sensory appendage, at the end inside with 4 or 5 densely

crowded setæ, which may attain a considerable length, rendering those limbs well adapted for assisting the anterior antennæ in the swiming motion of the animal, these setæ being however in some instances much reduced in size or even wholly wanting; apical claws more or less slender, and generally 4 or 5 in number. Maxillipeds with the basal part produced in front to a well defined masticatory lobe armed on the tip with curved spines or setæ, and in most cases carrying behind a more or less developed vibratory plate; palp, as a rule, in female of inconsiderable size and in male transformed to a grasping organ. Legs more or less dissimilar, the posterior one being as a rule, not ambulatory, but upturned within the cavity of the shell. Caudal rami in some cases much reduced, but in the great majority of the forms well developed and very mobile. Germinal part of the genital organs in both sexes generally lodged between the lamellæ of the valves. A pair of more or less complicated ejaculatory tubes added to the genital apparatus in male.

Remarks.—In the sense in which the family is here taken, it comprises a considerable number of genera, both marine and freshwater, the former deviating more or less conspicuously from the usual type prevailing in the freshwater genera, though retaining most of the characteristic features distinguishing the present family from the *Cytheridæ*. Yet a grouping of the genera within subfamilies would seem to be fully justified. 5 such subfamilies will be treated of in the sequel.

Subfam. 1. Pontocyprinæ.

Characters of the subfamily.—Shell of somewhat varying shape, with the valves nearly equal and more or less hairy. Antennæ in some cases rather slender and distinctly natatory, in other cases very short and stout and scarcely adapted for swimming; the posterior ones 6-articulate; with the sensory appendage of 3rd joint very fully developed. Mandibles with the bristle attached outside the masticatory part remarkably strong and distinctly pectinate; cutting teeth simple, claw-like; palp comparatively large. Maxillæ with the masticatory lobes short and stout; palp however rather prominent and bowed in front. Maxillipeds without any trace of a vibratory plate at the base; palp in female distinctly 3-articulate, sub-pediform, in male transformed in the usual manner. Anterior

legs of normal appearance, 5-articulate, and tipped with one or 2 slender claws. Posterior legs rather unlike the anterior, though composed of the same number of joints, last joint very small, and provided with 3 more or less unequal setæ, one of which is generally pectinated; none of the setæ recurved. Caudal rami well developed, but of somewhat different shape in the several genera; in all of them, however, a very conspicuous triangular unpair prominence occurs just behind their base, tipped with a thickish densely hairy seta. Ovaria and testicles extending between the lamellæ of the valves behind. Ejaculatory tubes comparatively simple, wholly wanting the whorls of radiating spikes found in other Cyprids; eferent ducts not convoluted.

Remarks.—The most characteristic feature of the present subfamily is perhaps the comparatively simple structure of the ejaculatory tubes in the male. Another character, which this subfamily shares with the next one, the *Macrocyprinæ*, may also here be named, viz., the sub-pediform structure of the palps of the maxillipeds in the female. An attempt to a similar structure is however also found in one of the genera belonging to the typical Cypridæ, viz., *Ilyocypris*. Nor can the want of vibratory plates on these limbs be regarded as a decisive character, as these plates in some of the typical Cypridæ (Cypridopsis, Potamocypris) are found to be nearly quite obsolete. In all other respects the Cyprid type is pretty well manifested, and the present group cannot therefore be considered to be so decidedly different from the other Cypridæ as suggested by G. W. Müller.

3 genera referable to this subfamily will be treated of in the succeeding pages, and a 4th genus, Pontocypria, has also been added by G. W. Müller.

Gen. 1. **Pontocypris,** G. O. Sars, 1865.

Generic Characters.—Shell comparatively thin and pellucid, of a more or less trigonal shape, with the valves unarmed on the edges, but rather densely hairy. Eye well developed. Both pairs of antennæ slender and distinctly natatory; the anterior ones with the first 2 segments of the basal part imperfectly defined, terminal part distinctly 5-articulate and clothed with rather long setæ. Posterior antennæ with the first 2 joints of the terminal part long and narrow, penultimate joint, on the other hand, quite short and, as usual, produced at the end anteriorly to a claw-bearing prominence, last joint so very minute, as easily to escape attention, though armed in the usual manner; sensory appendage of 1st joint comparatively large, club-shaped, its extremity being bladder-like dilated; natatory setæ of same joint well developed; apical

claws long and slender, 4 in number, the foremost one being somewhat shorter than the others. Mandibular palp with the branchial appendage well defined, though not of very large size. Palps of maxillipeds in female rather slender, with the middle joint narrow linear, last joint small and tipped with a slender claw-like spine accompanied by 2 small bristles; those in male of moderate size and nearly equal. Anterior legs with a single slender claw on the tip. Posterior legs with the penultimate joint very movably articulated to the preceding joint, both distinctly serrate on the outer edge, last joint very small, with the apical setæ rather unequal, one of them being much more slender than the others and exceeding considerably in length the pectinate seta. Caudal rami well developed and somewhat exerted at the end, dorsal edge of each ramus provided wit 3 slender setæ, 2 of them placed close together in about the middle, the 3rd in close approximation to the apical claws. Ovarial tubes forming in the posterior part of the valves a sigmoid curve. Spermatic vessels extending more or less forwards along the ventral side of the valves, in some cases (according to G. W. Müller) forming a dense spiral coil in their anterior part.

Remarks.—This genus was established in the year 1865 by the present anthor, to include 3 species found off the Norwegian coast. 2 of these species have however subsequently been removed by G. W. Müller and placed within a new nearly-allied genus, *Erythrocypris*, the species recorded by me as *P. trigonella* being considered by him as the type of the present genus. No less than 12 Mediterranean species referable to this genus have been recorded by G. W. Müller, all of them closely related to the northern form described below.

1. Pontocypris trigonella, G. O. Sars.

(Pl. XX).

Pontocypris trigonella, G. O. Sars, Oversigt av Norges marine Ostracoder, p. 16.

Specific Characters.—Female. Shell, seen laterally. pronouncedly trigonal in shape and somewhat narrowed behind, greatest height a little in front of the middle and nearly attaining half the length, dorsal margin gibbously arched in front of the middle and sloping rather steeply behind, ventral margin scarcely at all sinuated, anterior extremity evenly rounded, posterior gradually tapered and obtuse at the tip;—seen dorsally, oblong oval in outline, with the greatest width in front of the middle and about equal to $^2/_5$ of the length. Surface of shell smooth and polished and rather densely covered with fine, mostly recurved

hairs. Eye comparatively large and very conspicuous in fresh specimens. Caudal rami slightly tapered distally, and exerted at the end, in front of the apical claws, to a digitiform process carrying a short deflexed bristle, distal seta of the dorsal edge rather coarse, fully attaining the length of the apical claws, the latter subequal in size.

Male of somewhat smaller size than female, and slightly differing in the shape of the shell, which appears comparatively shorter and stouter. Prehensile palps of maxillipeds with the propodus oblong oval in form and provided near the end inside with a short spine accompanied by 2 unequal bristles, dactylus much curved and somewhat narrower on the left than on the right palp. Copulatory appendages of moderate size, oblong oval in shape and blunted at the end, without any, lateral lappets, but giving origin on the inner face to a freely projecting highly chitinised apparently tubular string, abruptly bent near the base and somewhat surpassing the terminal edge of the appendage.

Colour whitish, with a rather conspicuous dark brownish pigmentary patch extending along each valve below its centre, and generally also with some patches of the same colour at each extremity.

Length of adult female 0.70 mm, of male 0.62 mm.

Remarks.—It is very probable that one or other of the Mediterranean species recorded by G. W. Müller may prove to be identical with the present form; but as these species have chiefly been characterised only by some slight differences in the form and extension of the spermatic vessels of the male, and these differences cannot be asserted except in quite fresh and still living specimens, I am at present unable to decide the identity with full certainty. In the shape of the shell the form named *P. mediterranea* seems to come nearest to the present species and may perhaps in fact be identical with it.

Occurrence.—I have met with this little beautiful Ostracod in several places, both on the south and west coasts of Norway, and northwards up to the Lofoten islands. It is found in moderate depths on a muddy bottom, but nowhere in any considerable number. The animal is a very habile swimmer, moving about through the water rather speedily in the manner of the typical Cypridæ, though scarcely leaving the bottom for any longer distance. Male specimens are very rarely met with. I have hitherto only come across 2 such specimens, the one of which is figured on the accompanying plate.

Distribution.— British Isles (Brady), Mediterranean (Norman), Cape Verde Islands (Brady).

Fossil in postglacial beds of Scotland.

Gen. 2. **Erythrocypris,** G. W. Müller, 1894.

Syn: *Pontocypris,* G. O. Sars (part).

Generic Charachters.—Shell of a more or less deep reddish or brownish colour and rather more elongate than the in preceding genus, almost cuneiform in shape, with the posterior extremity considerably exerted and terminating in an obtuse point. Valves only slightly pellucid and more or less densely hairy, the right one distinctly serrated at the hind corner below. Eye wholly wanting. Both pairs of antennæ comparatively shorter and stouter than in *Pontocypris,* but otherwise of a very similar structure. The other limbs likewise built on the very same type as in that genus. Prehensile palps of the maxillipeds in male, however, considerably more powerfully developed and conspicuously unequal. Posterior legs in both sexes with the pectinate apical seta much larger than the other 2, which are very thin and subequal. Caudal rami rather stronger than in *Pontocypris* and of more equal width throughout, distal seta of the dorsal edge very small. Copulatory appendages in male of rather varying shape in the several species. Spermatic vessels densely coiled within the posterior extremity of the valves. Ovarial tubes forming a simple bend, their extremity extending forwards along the ventral edge.

Remarks.—This genus, established by G. W. Müller in 1894, is closely related to *Pontocypris,* and indeed 2 of its species were formerly referred by the present author to that genus. Yet, on a closer comparison, some well marked differences, mentioned in the above diagnosis, between the 2 genera are found, which would seem to corroborate the distinction of them. G. W. Müller records 7 species of this genus found by him in the gulf of Naples, one of them being however identical with the form described below as *E. mytiloides.* 2 other species belonging to the Fauna of Norway will also be treated of in the sequel.

2. **Erythrocypris mytiloides,** (Norman).

(Pl. XXI & XXII)

Cythere mytiloides Norman, Species of Ostracoda new to Britain. Ann. Mag. Nat. Hist. Vol. IX, p. 50, Pl. III, figs. 1—3.

Syn: *Cypris serrulata,* G. O. Sars.
„ *Cythere avena,* Norman.
„ *Pontocypris serrulata* G. O. Sars.
„ *Erythrocypris serrata* G. W. Müller.

Specific Characters.—Female. Shell much compressed, seen laterally, elongate triangular or somewhat cuneiform in shape, highest in front and gradually tapered behind, greatest height in the anterior third part and not nearly attaining

half the length, dorsal margin gibbously produced anteriorly and sloping rather steeply both in front and behind, ventral margin almost straight, anterior extremity rounded off, posterior tapering to an obtuse point;—seen dorsally, narrow lanceolate in outline, with the greatest width not nearly attaining $^1/_3$ of the length and occurring in front of the middle, both extremities pointed. Valves very little pellucid and all over clothed with comparatively short hairs, right valve armed at the posterior extremity below with 8 well marked and somewhat recurved denticles. Caudal rami comparatively large and only slightly attenuated distally, apical claws somewhat unequal, the proximal one being conspicuously stronger than the distal one, which is rather thin and also a little shorter.

Male of about same size as female and scarcely differing in the shape of the shell. Prehensile palps of maxillipeds very powerfully developed and conspicuously dissimilar, dactylus of the right palp remarkably short and broad, subtriangular in form, that of left palp much thinner, falciform attenuated and terminating in a fine point; propodus in both palps considerably dilated and provided at the end inside with a peculiar thumb-like process of somewhat different shape in the 2 palps. Caudal rami with a very conspicuous bulge of the upper (ventral) edge in the middle not found in female. Copulative appendages of large size and peculiar shape, exhibiting in the middle a prominent lanceolate lappet and having the extremity triangularly produced or somewhat helmet-shaped.

Colour in both sexes bright purplish brown.

Length of adult female amounting to about 1 mm.

Remarks.—This form was shortly characterised by the present author as early as in the year 1863 under the name of *Cypris serrulata,* and was subsequently (1865) referred by him to his genus *Pontocypris.* As pointed out by Brady, this form had however been recorded at a still earlier date (1862) by Norman under the name *Cythere mytiloides,* and though this name was afterwards withdrawn by that author, on account of it having been preoccupied for another species of the same genus, I think that Brady was quite right in restoring the specific name originally proposed by Norman, since the present form has turned out to be not a Cythere at all. The Mediterranean form recorded by G. W. Müller as *Erythrocypris serrata* is unquestionably the same species, as clearly seen from the figures given by that author. It may be regarded as the type of the present genus.

Occurrence.—At first only some few specimens of this form were observed, taken partly at Christiansund, partly at Flekkefjord. More recently I have met

with it rather frequently in 2 other localities, viz., at Korshavn and Risör. Especially in the first-named locality it occurred very abundantly on a sandy bottom in the laminarian region. The animal is not nearly so agile as the species of the preceding genus, though by no means devoid of swimming power. The swimming movement is however rather slow, and look merely as a soft gliding through the water generally close over the bottom. The bright purplish colour of the shell renders this Ostracod easily discernible, and is even partly retained in specimens preserved for a longer time in alcohol.

Distribution.—British Isles (Brady), coast of France (Fischer), Mediterranean (G. W. Müller). *Fossil* in the postglacial deposits of Norway and Scotland.

3. **Erythrocypris hispida**, G. O. Sars.

(Pl. XXIII, fig. 1)

Pontocypris hispida, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 16.

Specific Characters.—Female. Shell rather more tumid than in the preceding species; but, seen laterally, of a much similar elongate triangular shape, though scarcely so much exerted behind;—seen dorsally, broadly lanceolate in outline, with the greatest width in the anterior part, and considerably exceeding $^1/_3$ of the length. Surface of shell densely covered with unusually long recurved hairs, giving it a very hirsute appearance; right valve with only 5 serratures below the posterior extremity. Structure of the several limbs very like that in the preceding species. Caudal rami, however, comparatively less strong and scarcely at all attenuated distally; apical claws less unequal and rather thin.

Male with the palps of the maxillipeds transformed in an analogous manner to those in the type species, though scarcely as large, and having the thumb-like process of the propodus far less prominent. Copulative appendages rather unlike those in the preceding species, being of much smaller size and more simple structure, without any lateral lappet, and with the extremity simply rounded off; chitinous string of the inner face curved almost in a circle. Caudal rami exactly as in female.

Colour yellowish brown.

Length of adult female scarcely exceeding 0.80 mm.

Remarks.—The above-described form is nearly allied to the preceding one, but may at once be distinguished by the less compressed shape of the shell and by its very coarse clothing of hairs, the latter character having given rise to the specific name proposed. In the living state it is also readily distinguished by the different colour of the shell.

Occurrence.—I have met with this form not unfrequently in the upper part of the Christiania Fjord in depths ranging from 10 to 20 fathoms, muddy bottom. It also occurs occassionally at Risör, south coast of Norway in about the same depth.

Distribution.—British Isles (Brady).

4. **Erythrocypris pallida**, G. W. Müller.

(Pl. XXIII, fig. 2)

Erythrocypris pallida, G. W. Müller, Die Ostracoden des Golfes von Neapel, p. 259, Pl. 11, figs. 12, 13, 43—45.

Specific Characters.—Female. Shell of a very similar shape to that in the preceding species, but of rather smaller size, and with the surface far less hirsute, the hairs clothing it being rather short and delicate. Right valve, as in *E. hispida,* with only 5 serratures below the posterior extremity. Caudal rami comparatively more slender than in that species, with the extremity somewhat produced in front of the apical claws, the latter moderately strong, but scarcely exceeding half the length of the corresponding ramus.

Male with the palps of the maxillipeds of a similar structure to that in *E. hispida.* Copulative appendages, however, somewhat differing in shape, their outer part being conspicuously more expanded and forming inside a well marked obtuse angle.

Colour much paler than in either of the 2 preceding species.

Length of adult female scarcely exceeding 0.70 mm.

Remarks.—The above-described form is unquestionably identical with the Mediterranean species recorded by G. W. Müller, agreeing, as it does, pretty well with the description and figures given by that author. Though closely allied to the 2 preceding species, it may be readily distinguished by its smaller size and much paler colour, the latter character having given rise to the specific name proposed by G. W. Müller.

Occurrence.—I have taken this form not unfrequently at Korshavn in the same places where *E. mytiloides* occurred, occasionally also at Risör.

Distribution.—Mediterranean (G. W. Müller).

Gen. 3. **Argilloecia,** G. O. Sars, 1865.

Generic Characters.—Shell more or less elongate, and of firmer consistency than in the 2 preceding genera, though scarcely calcareous, surface smooth and almost bare of hairs. Valves subequal, each provided at the post-

erior extremity with a single excessively prolonged hair, and along the frontal edge with a dense fringe of peculiarly transformed and very delicate capillary appendages. Eye wholly wanting. Both pairs of antennæ short and stout, not adapted for swimming (at least in female), the anterior ones with the basal part very massive and sharply defined from the terminal part, the posterior ones with the sensory appendage peculiarly transformed, pedicellate; some of the setæ on both pairs of antennæ in male excessively prolonged and recurved. The other limbs on the whole built on the same type as in the 2 preceding genera, except that the branchial appendage of the mandibular palps is imperfectly developed, and that the anterior legs are armed on the tip with 2 subequal claws. Caudal rami comparatively small, conically tapered, with the apical claws short and much curved.

Remarks.—This is a very distinct genus, differing in some respects conspicuously from the 2 preceding ones, though evidently referable to the same subfamily. The genus was originally only founded on a single species described by the present author in 1865; but in recent times several other species, more or less agreeing with the typical one, have been added. Thus no less than 5 species, referable to this genus, have been recorded by G. W. Müller from the gulf of Naples, and I have myself had an opportunity of examining a 2nd Norwegian species very distinct from that at first described.

5. **Argilloecia cylindrica,** G. O. Sars.

(Pl. XXIV)

Argilloecia cylindrica, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 18.

Specific Characters.—Female. Shell very narrow, almost cylindrical in shape, with the greatest height not nearly attaining half the length; seen laterally, elongate oval or somewhat elliptical in outline, and scarcely broader in front than behind, dorsal margin very little arched, ventral slightly sinuated in the middle, anterior extremity rounded off, posterior abruptly blunted;—seen dorsally, narrow oblong, with the side-edges almost straight in the middle, and the greatest width about equal to $^2/_5$ of the length, both extremities obtusely pointed. Valves only little pellucid, with the surface smooth and polished; inner duplicatures not very broad and of quite normal appearance. Anterior antennæ with the terminal part about the length of the basal one and distinctly 5-articulate. Posterior antennæ with the outer part of the sensory appendage disciform and sharply defined from the narrow attaching stalk; natatory setæ very small and rudimentary, though present in the usual number. Branchial

appendage of the mandibular palps replaced by a single strong seta. Palps of maxillipeds short and stout, with the 2 outer joints very small. Posterior legs with 3 apical setæ, one of them very coarse, almost spiniform, and evenly curved. Caudal rami rather broad at the base, but rapidly tapering to an obtuse point carrying the very short, hamiform curved apical claws, and apparently wanting the usual small bristle in front of the claws,

Male much smaller than female, and having the shell still narrower, with the posterior extremity more exerted. 4 of the setæ attached to the anterior antennæ in the middle of the terminal part much produced and generally re-curved along the back of the shell. Natatory setæ of the posterior antennæ prolonged in a similar manner. Palps of maxillipeds rather powerfully developed, with the propodus considerably dilated at the base and the dactylus short and stout, unguiform. Copulative appendages narrow oblong in form and obtusely rounded at the tip.

Colour in both sexes a pure white.

Length of adult female amounting to 0.69 mm., that of male scarcely exceeding 0.60 mm.

Remarks.—This form, being that at first described, ought of course to be regarded as the type of the present genus. It may be easily recognised from any of the other species by the almost cylindrical shape of the shell in the female, this character having indeed given rise to the specific name proposed. Of the 5 Mediterranean species recorded by G. W. Müller, *A. caudata* seems, in the shape of the shell, to come nearest to the present species.

Occurrence.—I have met with this Ostracod occasionally in several places on the Norwegian coast, from the Christiania Fjord to Trondhjem, and Norman also records it from Finmark (Hammerfest). It is generally found in moderate depths ranging from 10 to 30 fathoms, on a muddy bottom, and, in spite of its small size, may be easily detected by the pure white colour of the shell and by a peculiarity which it has in common with some other Ostracoda, viz., that, on coming in contact with the air, it remains floating on the surface of the water. The females are quite devoid of swimming power, crawling slowly on the bottom, like the Cytheridæ. The males, however, may perhaps lead a more free existence, as could be inferred from the peculiar prolongation of some of the setæ attached to the antennæ.

Distribution.—British Isles (Brady).

Fossil in the postglacial beds of Scotland.

6. **Argilloecia conoidea**, G. O. Sars, n. sp.

(Pl. XXV)

Specific Characters.—Female. Shell, seen laterally, very narrow, oblong conoid in shape, greatest height in the middle and scarcely exceeding $^2/_5$ of the length, dorsal margin gently arched and sloping with a quite even curve to the hind produced corner, ventral margin distinctly sinuated in the middle, anterior extremity broadly rounded, posterior conically tapering to an obtuse point lying below the longitudinal axis;—seen dorsally, oblong ovate in outline, with the greatest width behind the middle and ouly little exceeding $^1/_3$ of the length, anterior extremity more pointed than the posterior. Valves rather pellucid, with the surface smooth and glabrous; inner duplicatures remarkably broad and exhibiting a somewhat irregular highly chitinised marginal zone, which in front projects in 2 opposit sharp corners, between which the inner edge of the duplicature is suspended. Structure of the several limbs very like that in the typical species. Posterior legs, however, only provided at the tip with 2 setæ of unequal length, the shorter one distinctly pectinate. Caudal rami comparatively narrower than in the preceding species and somewhat curved.

Male resembling in general appearance that of the type species, but of considerably smaller size, and having the shell comparatively still narrower, with the posterior extremity more produced. Some of the setæ attached to the 2 pairs of antennæ, as in that species excessively prolonged and recurved in the very same manner. Prehensile palps of maxillipeds with the propodus almost quadrate in form and armed at the end inside with a short spine accompanied by 2 small bristles, dactylus of moderate size and slightly curved. Copulative appendages rather slender and somewhat irregularly expanded at the end.

Colour not yet ascertained.

Length of adult female 0.59 mm, of male 0.50 mm.

Remarks.—Though agreeing pretty well in the essential structural details, the present species may readily be distinguished from the preceding one by the rather different shape of the shell, especially in the female. It is also of rather inferior size. In its general appearance it looks rather like some of the Mediterranean species recorded by G. W. Müller; but I have been unable to ascertain its identity with any of them.

Occurrence.—3 specimens only of this form, an adult female and 2 males, have as yet come under my notice. They were picked up from a gathering taken at Risör, south coast of Norway, from moderate deeps.

Subfam. 2. Macrocyprinæ.

Characters of the subfamily.—Shell more or less elongate, tapered behind, and of rather firm consistency, apparently calcareous, with the surface smooth and almost bare of hairs. Valves pronouncedly unequal, the right one overlapping the left in the middle of the dorsal face; their closure in the oral region very thorough, the edges being conspicuously expanded in that place. Antennæ not adapted for swimming; the anterior ones with the 3 segments of the basal part very distinctly defined, terminal part less sharply marked of from the basal one, and having the setæ comparatively short. Posterior antennæ, as in the *Pontocyprinæ,* distinctly 6-articulate and armed at the tip with the usual number of claws, sensory appendage of 3rd joint replaced by a bundle of delicate filaments; natatory setæ wholly absent. Mandibles and maxillæ on the whole normally developed. Maxillipeds without any vibratory plate, masticatory lobe narrowly produced and sharply defined from the basal part, palp in female sub-pediform, in male transformed in the usual manner. Both pairs of legs slender, 5-articulate, but rather dissimilar, the posterior ones being, as in the typical Cypridæ abruptly bent upwards and concealed within the shell, last joint of these legs well developed and carrying, in addition to 2 comparatively short setæ, a remarkably elongate claw-shaped spine abruptly reflexed along the leg. Caudal rami more or less imperfectly developed. Ovaria and testicles not entering between the lamellæ of the valves. Ejaculatory tubes in male largely developed, but rather differing in structure from those in the typical Cypridæ, their efferent ducts also dissimilar.

Remarks.—The most prominent characters distinguishing the present subfamily are derived from the genital apparatus. In the structure of the maxillipeds some resemblance to the *Pontocyprinæ* is found; but the posterior legs are rather dissimilar, and the caudal rami exhibit an appearance even different from that in all other known Cypridæ. Yet, in most of the structural details the Cyprid type may be found to be well manifested. 2 closely allied genera referable to the present subfamily will be treated of below, and I am of opinion, that the Mediterranean form recorded by G. W. Müller as *Macrocypris succinea* should more properly be regarded as the type of a 3rd genus.

Gen. 4. **Macrocypris,** Brady, 1866.

Generic Characters.—Shell very solid, moderately elongate, and acutely produced behind. Inner duplicatures of the valves rather broad, with a narrow transversely striated marginal zone; muscular spots numerous and arranged so as to form together a circular area. Eye wanting. Both pairs of antennæ short and robust, the anterior ones 7-articulate and gradually tapering distally, without any sharp demarcation between the basal and terminal parts, setæ of the latter part short and stout. Posterior antennæ with the terminal part scarcely longer than the basal one, joints rapidly diminishing in size, apical claws slender and elongate. Anterior lip forming in front a rather prominent compressed expansion. Mandibles with the masticatory part rather expanded and coarsely dentate at the edge, palp of moderate size, 4-articulate, and provided at the base with a well developed branchial appendage. Maxillæ with both the palp and the masticatory lobes narrowly produced, vibratory plate of smaller size than usual. Maxillipeds with the masticatory lobe very narrow, conical in shape; palp in female distinctly 4-articulate and armed with 3 slender spines, 2 apical and 1 lateral. Anterior legs with the terminal joint unusually produced and carrying on the tip 2 unequal claws accompanied by a thin bristle. Posterior legs with the outer apical seta rather slender and elongated, recurved spine almost extending to the base of the leg. Caudal rami very small and rudimentary, in the form of 2 thin lappets hinging down from the end of the body, and scarcely at all movable, each lappet provided with a limited number of thin bristles. Copulative appendages of male lamellar, and of comparatively simple structure. Ejaculatory tubes very long and narrow, extending along the dorsal face of the body to beyond the middle of its length, each tube provided with numerous short radiating spikes, which however do not form distinctly defined whorls, proximal extremity of the tube bulbously dilated; efferent duct very long, being immediately on its exit from the tube curled up in a dense spiral coil with highly chitinised walls.

Remarks.—This genus was established in the year 1866 by Brady, to include the form originally recorded by Baird as *Cythere minna* and subsequently (1865) redescribed by the present author, but erroneously referred to the genus *Bairdia* Mc Coy. As pointed out by Brady, the present Ostracod differs in reality very decidedly from the species of that genus, and on the whole approaches much closer to the typical Cypridæ, than does the above-named genus. Only a single species, strictly referable to the present genus, has as yet come under my notice.

7. Macrocypris minna (Baird).

(Pl. XXIV & XXV)

Cythere minna, Baird, British Entomostraca, p. 171, Pl. 20, figs. 4, 4 a—d.

Syn: *Bairdia minna*, G. O. Sars.

Specific Characters.—Female. Shell moderately tumid, seen laterally, of a somewhat irregular oblong trigonal shape, greatest height a little in front of the middle and about equal to $^2/_5$ of the length, dorsal margin forming a bold and quite even curve sloping gradually behind to the posterior corner of the shell, ventral margin nearly straight and horizontal, though exhibiting a slight concavity in front of the middle, anterior extremity rounded off, posterior tapering to an acuminate corner;—seen dorsally or ventrally, oblong fusiform in outline, greatest width in front of the middle and somewhat exceeding $^1/_3$ of the length, anterior extremity obtusely pointed, posterior gradually tapered to an acute point; hing-line somewhat flexuous. Valves very little pellucid, with the surface smooth and polished, being almost bare, except at the anterior extremity, where a fringe of extremely fine and delicate hairs may be discerned. Caudal rami sublinear in form, slightly tapered distally, and somewhat curved, each carrying on the tip a slender, somewhat flexuous seta, and in the middle of the doral edge a bundle of very small hair-like bristles.

Male of rather smaller size than female, but resembling it in the shape of the shell. Prehensile palps of maxillipeds of moderate size and not much dissimilar, propodus oval in form and armed at the end inside with 2 short spines, dactylus somewhat broader on the right than on the left palp. Caudal rami still more rudimentary than in female, and scarcely more than twice as long as they are broad, each ramus tipped with 3 very small bristles. Copulative appendages oblong triangular in outline and terminating in a thin lamella rounded off at the end and somewhat bowed in front.

Colour of shell in both sexes milk-white, limbs more or less deeply tinged with chestnut-brown.

Length of adult female amounting to about 3 millimeters; that of male scarcely exceeding 2.50 mm.

Remarks.—This is by far the largest and finest of the marine Cypridæ, and is moreover easily recognisable by the characteristic shape of the shell and its milk-white colour. It is the type of the present genus, in the restriction here adopted.

Occurrence.—The present Ostracod is by no means rare on the Norwegian coast. I have met with it not unfrequently in many places, from the Christiania Fjord up to the Lofoten islands, but always only in greater deeps, from 50 to

300 fathoms. As could be inferred from the structure of the antennæ, the animal is quite devoid of swimming power, being only enabled to crawl slowly on the bottom, at times burrying itself more or less deeply within the loose mud. Male specimens are rather seldom to be found and may easily escape attention, as they do not differ in the shape of the shell from young female specimens.

Distribution.—Shetland Isles (Baird).

Fossil in posttertiary deposits of Calabria.

Gen. 5. **Macrocypria,** G. O. Sars, n.

Generic Characters.—Shell very narrow and elongated, acutely produced both in front and behind, with the marginal zone of the valves highly chitinised. Eye absent. Both pairs of antennæ much more slender than in the preceding genus, but, as in it, unadapted for swimming. Oral parts of nearly same structure as in that genus. Maxillipeds with the palps in female less robust, scarcely exceeding the basal part in length and distinctly 4-articulate. Anterior legs very much elongated, with the terminal joint comparatively small and tipped with a single exceedingly long and slender claw accompanied by 2 small bristles. Posterior legs with the 2 apical setæ very small, recurved spine however well developed. Caudal rami movably articulated to the body, and very unlike those in *Macrocypris*, being conspicuously asymmetrical, left ramus much smaller than the right, which is produced in the shape of a highly chitinised mucroniform piece without any armature whatever. Ejaculatory tubes and their eferent ducts of essentially same structure as in *Macrocypris*. Copulative appendages, however, rather dissimilar, not being lamellar, but of very compact structure, and clavate in shape. A pair of scopiform processes present in male, issuing from the ventral face of the body between the bases of the posterior legs.

Remarks.—This new genus is established, to include a species formerly referred by the present author to the genus *Macrocypris*. On a closer examination I have however found this species to differ in some respects so decidedly from the type of that genus that I now am of opinion that it more properly ought to be separated generically. The generic name here proposed alludes to the near relationship of this genus to *Macrocypris*.

8. **Macrocypria angusta**, G. O. Sars.

(Pl. XXVIII).

Bairdia angusta, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 22.
Syn: *Macrocypris angusta*, G. O. Sars.

Specific Characters.—Female. Shell, seen laterally, of a very narrow and elongated form, almost lanceolate in outline, greatest height a little in front of the middle and scarcely exceeding 1/3 of the length, dorsal margin evenly arched, though exhibiting near the posterior corner of the shell a slight concavity, ventral margin distinctly sinuated in front of the middle and exhibiting a slight tendency to convexity behind, anterior extremity obliquely produced and terminating below in a sharp dentiform corner, posterior extremity rather more exerted and produced to a narrow somewhat cultrate prominence; —seen dorsally, narrow fusiform in outline, greatest width about in the middle and not attaining 1/3 of the length, both extremities sharply pointed. Valves, as in *Macrocypris*, conspicuously unequal, rendering the hing-line somewhat flexuous, surface smooth and polished, only clothed with scattered fine hairs, marginal chitinised zone rather broad at each extremity and crossed by fine striæ. Anterior antennæ with the basal part only slightly dilated, 1st joint of terminal part unusually prolonged, attaining the length of the 3 remaining joints combined, apical setæ rather slender. Posterior antennæ with the terminal part almost twice the length of the basal one, and having the 2nd joint considerably longer than the 1st; apical claws comparatively short. Left caudal ramus simply lanceolate and scarcely more than 1/3 as long as the right, which is considerably produced and terminates in a sharp somewhat hamate point.

Male, as usual, of somewhat smaller size than female, but resembling it closely in the shape of the shell. Prehensile palps of maxillipeds with the propodus rather narrow, oblong in shape and armed at the end inside with 2 short spines, dactylus abruptly bent at the base. Copulative appendages pronouncedly club-shaped, being attached to the body by a narrow neck, and almost globularly dilated in their outer part, each appendage sending off inside 2 apparently mobile beak-like processes, which give the appendage a certain resemblance to a birds head.

Colour in both sexes pure white.

Length of adult female amounting to 1.80 mm.

Remarks.—The above-described form cannot be confounded with any of the other Cypridæ, exhibiting, as it does, a very characteristic outward appearance. The peculiar asymmetry of the caudal rami, at first overlooked, is a quite unique character not found, a far as I know, in any other Ostracoda.

Occurrence.—I have met with this form not unfrequently in several places on the Norwegian coast, from the Christiania Fjord to Trondhjem, in moderate depths ranging from 20 to 100 fathoms muddy bottom. In its behaviour the animal agrees with *Macrocypris minna*, being, like it, quite incapable to move freely in the water.

Out of Norway this form has not yet been recorded.

Subfam. 3. Bairdiinæ.

Characters of the subfamily.—Shell of somewhat varying shape and rather firm in consistency, with the valves conspicuously unequal, the left one being the larger. Antennæ not adapted for swimming; the anterior ones with the 3 segments of the basal part well defined, terminal part short, 4 articulate, but sharply marked off from the basal one, and densely setiferous. Posterior antennæ, as in the 2 preceding subfamilies, distinctly 6-articulate, penultimate joint however firmly connected with the preceding joint and more or less prolonged; apical claws only 2 in number, both issuing from the terminal joint. Mandibles and maxillæ on the whole of normal structure. Maxillipeds pronouncedly pediform and, like the 2 succeeding pairs of limbs, ambulatory, though differing from them in the presence of a well developed vibratory plate attached to their base posteriorly. Caudal rami of small size, though well mobile, and built quite on the type of most other Cypridæ. Ovaria and testicles not entering between the lamellæ of the valves. Ejaculatory tubes wholly absent.

Remarks.—This is perhaps the most anomalous of the 5 subfamilies comprised within the family *Cypridæ*, and, indeed, on a closer examination of a Mediterranean species belonging to the typical genus *Bairdia,* I found this genus to differ so decidedly from the other known genera, that it appeared to me requirable to establish for its reception a distinct family, *Bairdiidæ*, intermediate between the 2 other families of the Podocopa[1]). Although this family has been generally accepted by recent authors, I am now of opinion, that the systematic rank of a subfamily would be more appropriate, and that this subfamily should be classed under the head of the *Cypridæ*. Indeed, on a closer examination, it may be recognised, that both in the structure of the shell and in that of the appendages, the *Cyprid* type is more apparent than the *Cytherid*

[1]) Cfr. G. O. Sars, "Ostracoda mediterranea" Arch. f Math. & Naturvid. f. 1887.

one. True, the presence of 3 pairs of apparently similarly constructed ambulatory legs would seem to approach the *Bairdiinæ* closer to the Cytheridæ than to the *Cypridæ*, in which, as a rule, only a single pair of true ambulatory legs are found. On a closer comparison with the Cyprids treated of in the preceding pages, it is however easily understood that the 1st of those pairs answer to the maxillipeds in these Cypridæ, and that their pediform appearance is only due to an access of growth of the palps, rendering them adapted for locomotion. These legs moreover exhibit a true Cyprid character in the presence, at their base, of a well developed vibratory plate, never found in any of the Cytheridæ. Nor can the perfect similarity of the 2 last pairs of legs be regarded as decisive for a classing of the present subfamily within the Cytheridæ. For in the genus *Paracypris*, which unquestionably is referable to the typical Cypridæ, the posterior legs only very little differ in structure form the anterior ones and may indeed assist them in the crawling movements of the animal[1]). Another character may here be named, which seems to remove this subfamily from the *Cypridæ*, viz., the absence of ejaculatory tubes in the male. In the *Pontocyprinæ* however, as stated above, these tubes are so imperfectly developed, as to be nearly said to be obsolete. After all, I think that the arrangement here proposed may be found to be acceptable.

The present subfamily as yet only comprises 3 nearly-allied genera, 2 of which are represented in the Fauna of Norway.

Gen. 6. **Bythocypris** Brady, 1888.

Generic Characters.—Shell more or less compressed, of oval or reniform shape, and almost bare of hairs, edges unarmed. Both pairs of antennæ comparatively shorter and stouter than in the type genus; the anterior ones with the apical setæ far less prolonged. Posterior antennæ with the penultimate joint moderately prolonged; apical claws very slender, but unequal in length. Anterior lip only sligthly prominent and obtuse at the end. Mandibles with the masticatory part not much expanded, but coarsely dentate; branchial appendage of palp comparatively small, with only 3 setæ, one of which is much elongated. Maxillæ with the masticatory lobes narrowly produced, palp scarcely larger than these lobes and uniarticulate; vibratory plate exhibiting at the base a well marked expansion edged with numerous very thin and

[1]) Cfr. the description of this genus farther on.

slender setæ. Legs of nearly equal length, each terminating in a very slender claw and having the penultimate joint scarcely longer than the preceding joint; vibratory plate of the 1st pair (maxillipeds) somewhat resembling in shape that of the maxillæ, though of smaller size. Caudal rami narrow sublinear in form, and armed on the tip with 2 thin claws, the distal of which is the longer, dorsal edge with a slender seta about i the middle.

Remarks.—This genus, established by Brady in 1888, is closely allied to *Bairdia* M'Coy, and its species were indeed formerly referred to that genus. Yet, the shape of the shell is rather different in the 2 genera, and as also some slight differences are found in the structural details, I think that the genus ought to be supported. 2 well defined species referable to this genus will be described below.

9. **Bythocypris bosquetiana** (Brady).

(Pl. XXIX).

Bairdia bosquetiana, Brady. On new or imperfectly known species of marine Ostracoda. Trans. Zool. Soc. Vol. 5, p. 364, Pl. LVII, figs. 5, a—c,

Syn: *Bairdia complanata,* Brady.
„ *Bythocypris reniformis,* Brady.

Specific Characters.—Female. Shell much compressed, seen laterally, oval reniform in shape, greatest height in the middle and about equal to half the length, dorsal margin forming a bold and quite even curve sloping rather steeply to the hind corner of the shell, ventral margin distinctly sinuated in the middle, anterior extremity broadly rounded, posterior much narrower and exerted to an obtuse corner;—seen dorsally, narrow lanceolate in outline, greatest width about in the middle and scarcely attaining $^1/_8$ of the length, both extremities obtusely pointed. Valves but very little pellucid, the left one overlapping the right along the greater part of the dorsal face. Caudal rami comparatively slender, with the apical claws abruptly curved in the middle, dorsal margin provided, in addition to the slender mediate seta, with a group of 2—4 very small hair-like bristles between it and the base.

Colour pure whithe.

Length of adult female 1.30 mm.

Male unknown.

Remarks.—This form was originally recorded in the year 1865 by Brady as a species of the genus *Bairdia,* and was subsequently redescribed as the type of his genus *Bythocypris,* though with a different specific name, viz., *reniformis.* I am also of opinion that the form described by that author in

his well-known monograph as *Bairdia complanata*, and subsequently recorded by the present author under this name, is the very same species.

Occurrence.—Only a few female specimens of this form have as yet come under my notice. They were taken, many years ago, at Bekkervig, west coast of Norway, from the considerable depth of 150 fathoms. Norman has however recorded it from 3 other localities of the same coast.

Distribution.—Shetland Isles (Brady), Atlantic Ocean, down to 470 fathoms (Brady), Mediterranean (G. W. Müller).

10. **Bythocypris obtusata**, G. O. Sars.

(Pl. XXX, fig. 1).

Bairdia obtusata, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 24.

Specific Characters.—Female. Shell somewhat less compressed than in the preceding species, seen laterally, irregularly oval in outline, greatest height in the middle and slightly exceeding half the length, dorsal margin evenly arched throughout, ventral only very slightly sinuated, anterior extremity somewhat obliquely blunted below, with indication to an angle above, posterior extremity with the lower corner only very slightly exerted;—seen dorsally, oblong fusiform in outline, greatest width in the middle and about equal to $^2/_5$ of the length, both extremities obtusely pointed. Valves rather thin, but only little pellucid, the left one overlapping the right almost along the whole dorsal face. Structure of the several limbs very like that in the preceding species. Apical setæ of the anterior antennæ, however, comparatively shorter, and the vibratory plate on the 1st pair of legs (maxillipeds) of smaller size. Caudal rami somewhat less produced, and having the apical claws almost straight, seta of dorsal edge accompanied above by a short bristle.

Colour whitish, with a slight pale yellow tinge.

Length of adult female 1.13 mm.

Male unknown.

Remarks.—The above-described form is evidently congeneric with the preceding one, though easily distinguishable by the somewhat different shape of the shell. It is also rather inferior in size.

Occurrence.—At first I had at my disposal only an empty shell of this form picked up by my late father from shell-sand taken up by the aid of the dredge from a depth of 80—90 fathoms at Abelsnæs, south coast of Norway. Subsequently however I succeeded in obtaining some perfect specimens in the same locality where the preceding species occurred, and have thereby been enabled

to examine more closely the structural details. This species has also been recorded by Norman from some localities on our western coast.

Distribution.—British Isles (Brady).

Fossil — Calabria (Seguenza).

Gen. 7. **Bairdia,** M'Coy, 1844.

Syn: *Nesidea*, Costa.

Generic Characters.—Shell short and tumid, more or less pronouncedly rhomboid in shape, with the edges of the valves in most cases denticulate at one or both extremities; surface in fresh specimens more or less densely clothed with coarse recurved hairs. Both pairs of antennæ considerably more slender than in the preceding genus, the anterior ones carrying on the end a dense fascicle of exceedingly long and slender setæ; penultimate joint of the posterior ones remarkably long and narrow. Mandibles and maxillæ of essentially same structure as in *Bythocypris.* Legs however still more slender, with the penultimate joint very long and narrow. Vibratory plate attached to the 1st pair of legs (maxillipeds) rather larger than in that genus. Caudal rami with several additional setæ on the dorsal edge, apical claws very unequal in size, the proximal one being much the longer and almost setiform. None of the legs in male transformed; copulative appendages short and compact.

Remarks.—This genus was established as early as the year 1844 by M'Coy, to comprise a number of fossil Ostracoda from the carboniferous limestone of Ireland. Some of the forms included by him in that genus are however apparently not congeneric, and for this raison most recent authors have found it advisable to substitute the name *Bairdia* with that of *Nesidea,* proposed by Costa for a species unquestionably belonging to the present genus. As however the former name is the elder one, it ought certainly to be retained, though the genus must be taken in a more restricted sense than done by M'Coy.

A single species only, referable to the present genus, is represented in the Fauna of Norway.

11. **Bairdia inflata** (Norman).

(Pl. XXX, fig. 2)

Cythere inflata, Norman, Species of Ostracoda new to Britain. Ann. Mag. Nat. Hist. Vol. IX, p. 49, Pl. III, figs. 6—8.

Syn: *Bairdia obliquata,* G. O. Sars.
„ — *subdeltoidea,* White (not Münster).

Specific Characters.—Female. Shell very tumid, seen laterally, oval rhomboid in outline, greatest height about in the middle and somewhat exceeding half the length, dorsal margin boldly arched and sloping rather steeply to the hind corner of the shell, ventral margin nearly straight, anterior extremity obliquely truncated, projecting above in an obtuse corner, posterior extremity somewhat exerted below, but obtuse at the end;—seen dorsally, broadly ovate in outline, greatest width about in the middle and considerably exceeding half the length, both extremities sharply pointed. Valves conspicuously unequal, the left one overlapping the right considerably in the middle of the dorsal face, hind edge of each valve irregularly dentated below; surface smooth, but of a somewhat dull appearance from numerous small impressed pits.

Colour not yet ascertained.

Length of adult female 1.12 mm,

Male unknown.

Remarks.—This form was originally described in the year 1862 by Norman as a species of the genus *Cythere,* and was subsequently erroneously identified by White with the fossil species, *B. subdeltoidea* (Münster). Nor can the Mediterranean form described in detail by the present author under the latter name be adduced to that species, but may more probably be identical with one of the 10 closely allied species recorded by G. W. Müller from the gulf of Naples. As pointed out by Brady, the *B. obliqvata* of the present author is identical with Norman's species.

Occurrence.— My knowledge to this form is confined to the examination of 2 empty valves probably of the same specimen, found by my late father in shell-sand from Øxfjord, on the Finmark coast. Norman has however recorded this form from 3 localities on the west coast of Norway, and I have had an opportunity of seing some of his specimens.

Distribution.—British Isles (Brady), Fosse de Cap Breton (Marquis de Folin).

Fossil in post-tertiary deposits of Scotland.

Subfam. 4. Cyprinæ.

Characters of the subfamily.—Shell of very varying shape, and generally thin, never calcareous. Antennæ in some cases not serviceable for swimming, but in the greater number of forms well adapted for this purpose; the anterior ones with the first 2 segments of the basal part imperfectly defined and more or less dilated, terminal part well marked off from the basal one, rather slender, and generally 5-articulate. Posterior antennæ with the terminal part, as a rule, only composed of 3 joints, the 1st of which is much the largest and provided behind with a comparatively small sensory appendage; apical claws 5 in number, 3 of them issuing from the penultimate joint. Mandibles and maxillæ normally developed. Maxillipeds with the masticatory lobe well defined and clothed at the end with curved spines or setæ, in most cases also provided at the base behind with a more or less distinctly developed vibratory lamella; palp in female poorly developed, not pediform, and forming, as a rule, a simple inarticulate, and immobile lappet tipped with 3 unequal bristles, that in male, as usual, transformed to a grasping organ. Anterior legs in some cases rather slender, but more generally shorter and stouter than in the Cypridæ treated of in the preceding pages. Posterior legs more or less dissimilar, and generally upturned within the shell. Caudal rami rarely rudimentary, being in most cases well developed and very mobile, rod-like in shape, and armed at the tip with 2 more or less slender claws, dorsal edge generally provided with only a single small bristle. Germinal part of ovaria and testicles, as also the coecal tubes of the intestine, lodged between the lamellæ of the valves. Ejaculatory tubes always distinctly developed, and provided with numerous radiating chitinous spikes arranged in well-defined whorls; eferent ducts simple, not convoluted, as in the *Macrocyprinæ.*

Remarks.—This subfamily comprises the more typical Cypridæ, nearly all of which are confined to fresh waters, only 2 genera, *Paracypris* and *Aglaia,* being as yet known as strictly marine.

Owing to the great number of genera referable to this subfamily, a systematic grouping of them would seem to be desirable, and has indeed been attempted by several authors, thoug in a rather different manner. In any case these groups cannot deserve the systematic rank of subfamilies, but only that of subordinate sections. In way of distinction from the true subfamilies, they are here spelt with the termination "ides" instead of "inæ". 6 such groups will be recorded in the sequel, and to each of them a few short remarks will be added; but I have not found it necessary to give full diagnoses of them.

Group 1. Paracyprides.

Remarks.—To this group I provisionally refer the 4 following genera: *Paracypris* G. O. Sars, *Aglaia* Brady, *Paracypria* G. O. Sars, and *Phlyctenophora* Brady. These 4 genera seem to agree pretty well in the structure of the genital apparatus, as also on the whole in that of the limbs, and exhibit some relations to the next 2 groups, *Candonides* and *Cyclocyprides,* though being scarcely referable to either of them. Only the 1st of these genera is represented in the Fauna of Norway.

Gen. 8. **Paracypris,** G. O. Sars, 1865

Generic Characters.—Shell elongate compressed, narrowly produced behind, and of rather firm consistency, with the edges highly chitinised. Eye well developed. Antennæ not adapted for swimming; the anterior ones slender, but with the setæ of the terminal part comparatively short. Posterior antennæ without any trace of natatory setæ, sensory appendage of the 1st terminal joint pronouncedly club-shaped; apical claws moderately slender. Anterior lip only slightly prominent. Mandibles of quite normal structure. Maxillæ with the masticatory lobes narrowly produced, palp likewise narrow, with the apical joint longer than broad. Maxillipeds provided at the base with a small, but well defined vibratory lamella, palp (in female) simple; sub-linear in shape. Both pairs of legs much elongated and only slightly differing in structure, each carrying on the tip a long curved claw; the posterior ones, however, more recurved, and having on the tip 2 unequal bristles in addition to the claw, the one abruptly reflexed. Caudal rami rather fully developed, and resembling somewhat in shape those in the genus *Candona,* though having 2 setæ on the dorsal edge.

Remarks.—This genus was established in the year 1865 by the present author, to include a Cyprid, which, on a closer examination, was found to approach the typical freshwater forms more closely than any of the other marine Cypridæ observed; hence the generic name proposed. Indeed, the structure of the posterior antennæ and in particular that of the maxillipeds clearly proves it to be referable to the subfamily *Cyprinæ,* as here defined. The genus *Aglaia* of Brady seems to be very nearly related to the one here in question, though differing rather conspicuously in the shape of the shell. A single species only of the present genus is as yet known to me.

12. **Paracypris polita**, G. O. Sars.

(Pl. XXXI)

Paracypris polita, G. O. Sars, Oversigt af Norges marine Ostracoder, p. 12.

Specific Characters.—Female. Shell much compressed, seen laterally, of a very narrow, almost cuneiform shape, being gradually attenuated behind, greatest height far in front of the middle and only slightly exceding $^1/_3$ of the length, dorsal margin abruptly arched in front and sloping steeply behind, ventral margin distinctly sinuated, anterior extremity well rounded, posterior much exerted and tapering to an obtuse point;—seen dorsally, narrow lanceolate in outline, greatest width somewhat in front of the middle and not nearly attaining $^1/_3$ of the length, both extremities obtusely pointed. Valves nearly equal, with the surface smooth and polished and almost devoid of any hairy clothing; inner duplicatures rather broad, marginal zone highly chitinised and crossed by fine arborescent stripes, being particularly broad ventrally. Caudal rami somewhat curved and slightly tapering distally, apical claws rather strong, dorsal setæ subequal, somewhat recurved, and attached at a short distance from the end.

Colour of shell pale yellow, with an irregular flexuous band of a reddish brown hue along the ventral side of the valves.

Length of adult female amounting to 1.30 mm.

Male unknown.

Remarks.—In the outward appearance this form bears a certain resemblance to some of the *Pontocyprinæ*, particularly to the species of the genus *Erythrocypris*, but may be readily distinguished from these species by the perfectly smooth and polished surface of the shell and by the want of any obvious hairy clothing. In the structure of the limbs it differs very decidedly from any forms of that subfamily, and it is only in the shape of the sensory appendage of the posterior antennæ that some agreement with those forms is found.

Occurrence.—I have met with this handsome Ostracod in several localities on the south and west coasts of Norway, at moderate depths, but nowhere in any abundance. All the specimens obtained were of the female sex. The animal is quite devoid of swimming power, but crawls rather dexterely along the bottom, at times burrowing more or less deeply into the loose mud.

Distribution.—British Isles (Brady), Bay of Biskaye, Mediterranean (Norman).

Fossil in postglacial beds of Norway, Scotland and Sicily.

Group. 2. Candonides.

Remarks.—The type of this group is the well-known freshwater genus *Candona,* to which in recent time several other genera have been added, exhibiting a more or less close relationship to that genus, and thus, together with it, forming a well defined group of the subfamily Cyprinæ. All the forms referable to this group agree in their entire lack of swimming power, being only found at the bottom of lakes or swamps. 3 genera of this group are represented in the Fauna of Norway.

Gen. 9. **Candona,** Baird, 1850.

Generic Characters.—Shell oval or reniform in shape, with the surface smooth, of whitish colour, and often exhibiting a pearly lustre. Eye imperfectly developed. Anterior antennæ moderately slender, with the terminal part not very sharply marked off from the basal one, and distinctly 5-articulate. Posterior antennæ without any trace of natatory setæ, penultimate joint in male subdivided and provided at the junction with 2 peculiar rod-like spines, apparently of sensorial nature. Anterior lip evenly rounded in front. Mandibles quite normally developed. Maxillæ with the masticatory lobes short and stout, palp rather prominent, with the apical joint broader than long and obliquely truncated at the end. Maxillipeds whithout any distinctly defined vibratory lamella at the base, palp in female simple, lash-shaped, in male, as usual, transformed and prehensile, but with the dactylus and propodus confluent. Anterior legs moderately slender and of normal structure; posterior ones rather dissimilar, being of smaller size and upturned within the shell-cavity, last joint provided with 3 setæ, one of which is generally much smaller than the other 2, which are not much different in length and extend in opposite directions. Caudal rami slightly differing in shape in the different species, but armed in the usual manner. Copulative appendages in male rather compact, exhibiting, as a rule, one or two irregularly rounded lappets at the end. Ejaculatory tubes comparatively large, but only provided with 7 whorls of radiating spikes; proximal extremity of the tubes funnel-shaped.

Remarks.—This genus was established as early as the year 1850 by Baird, to include 4 species, one of them *(C. lucens,)* being apparently identical with *Cypris candida,* O. Fr. Müller. Subsequently many other species have been added by different authors, and this genus has indeed proved to be one

of the most comprehensive of the Cypridæ. On this raison a grouping of the numerous species has been attempted by some recent authors; but it appears to me that the limits of these groups are very difficult to define precisely.

All the species of the present genus seem to be confined to the northern hemisphere. I have no knowledge of any true Candona being found south of the line.

13. **Candona candida.** (O. Fr. Müller).

(Pl XXXII & XXXIII).

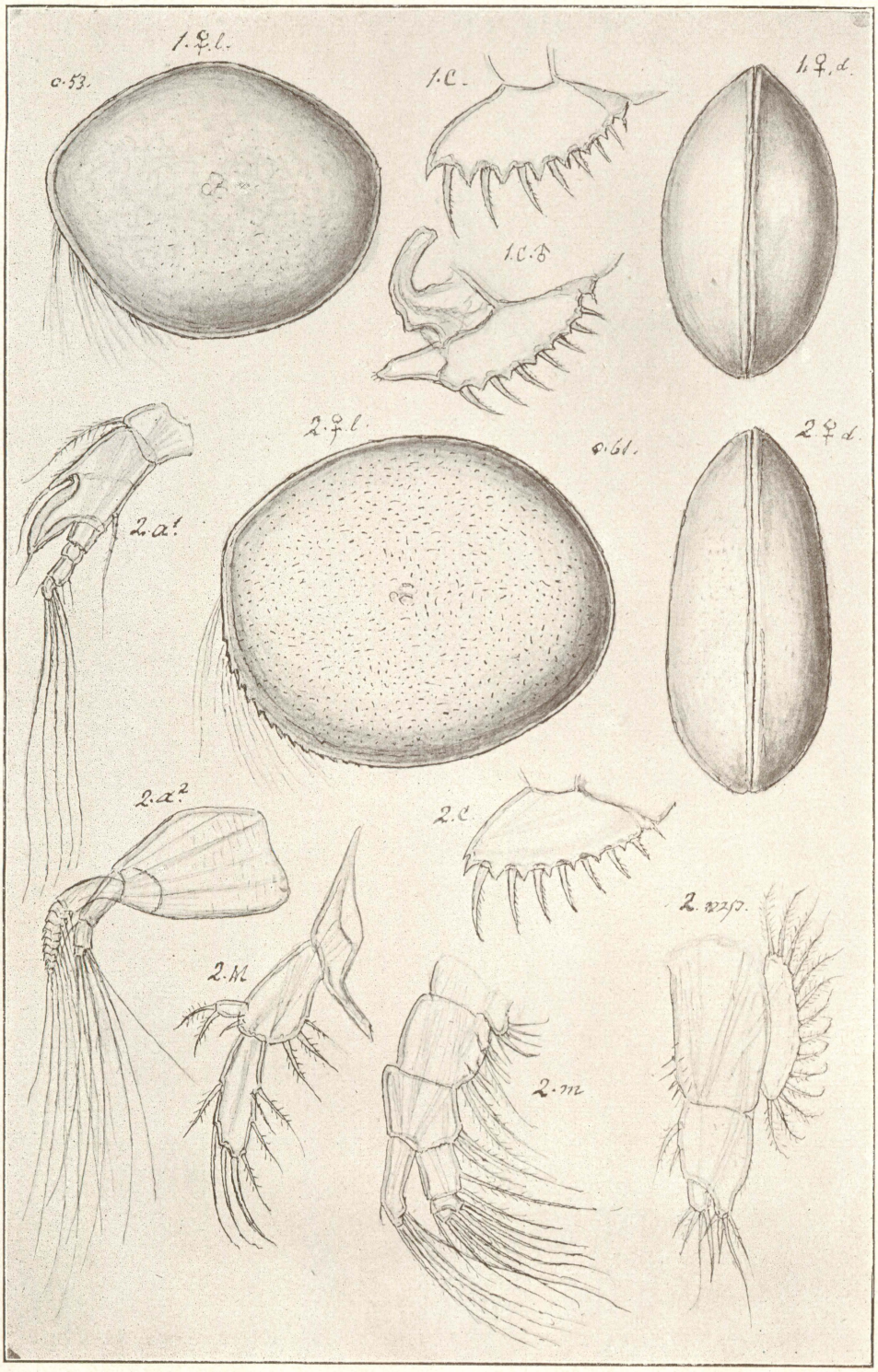
Cypris candida, O. Fr. Müller, Entomostraca, p. 62, Pl. VI, figs. 7—9.
Syn: *Monoculus candidus* Jurine.
„ *Candona lucens,* Baird.

Specific Characters.—Female. Shell moderately tumid, seen laterally, irregularly oval or sub-triangular in outline, higher behind than in front, greatest height considerably exceeding half the length, dorsal margin evenly arched, sloping very steeply behind, but rather slowly in front, ventral margin slightly sinuated, anterior extremity narrowly rounded, posterior obliquely deflexed and terminating below in an obtuse corner; — seen dorsally, oblong oval in outline, greatest width in the middle and nearly attaining half the length, both extremities obtusely pointed. Valves only slightly pellucid and of rather firm consistency, surface smooth and shining, with distant small pits, and only sparingly hairy at each extremity; inner duplicatures moderately broad. Vibratory plate of maxillipeds replaced by a single seta. Posterior legs only 4-articulate, the penultimate joint not being subdivided, all 3 apical setæ well developed, though of somewhat different length. Caudal rami conspicuously curved and slightly attenuated, apical claws rather strong, the distal one about half the length of the ramus, dorsal seta well developed and attached at a distance from the tip about equal to $^1/_3$ of the length of the ramus. Genital lobes of moderate size and produced behind to a subtriangular corner.

Male slightly larger than female, but scarcely differing in the shape of the shell, except by the somewhat deeper ventral sinus. Prehensile palps of maxillipeds not much dissimilar, both being subfusiform in shape, with 2 thickish setæ inside the middle and the dactylar part somewhat thickened at the end; right palp however a little broader than the left and more curved. Caudal rami scarcely at all curved, but otherwise of same structure as in female. Copulative appendages with one of the terminal lappets extending upwards at almost right angle to the axis of the appendage.

Colour in both sexes pure white, with the dark contenta of the intestine only faintly traced through the shell.

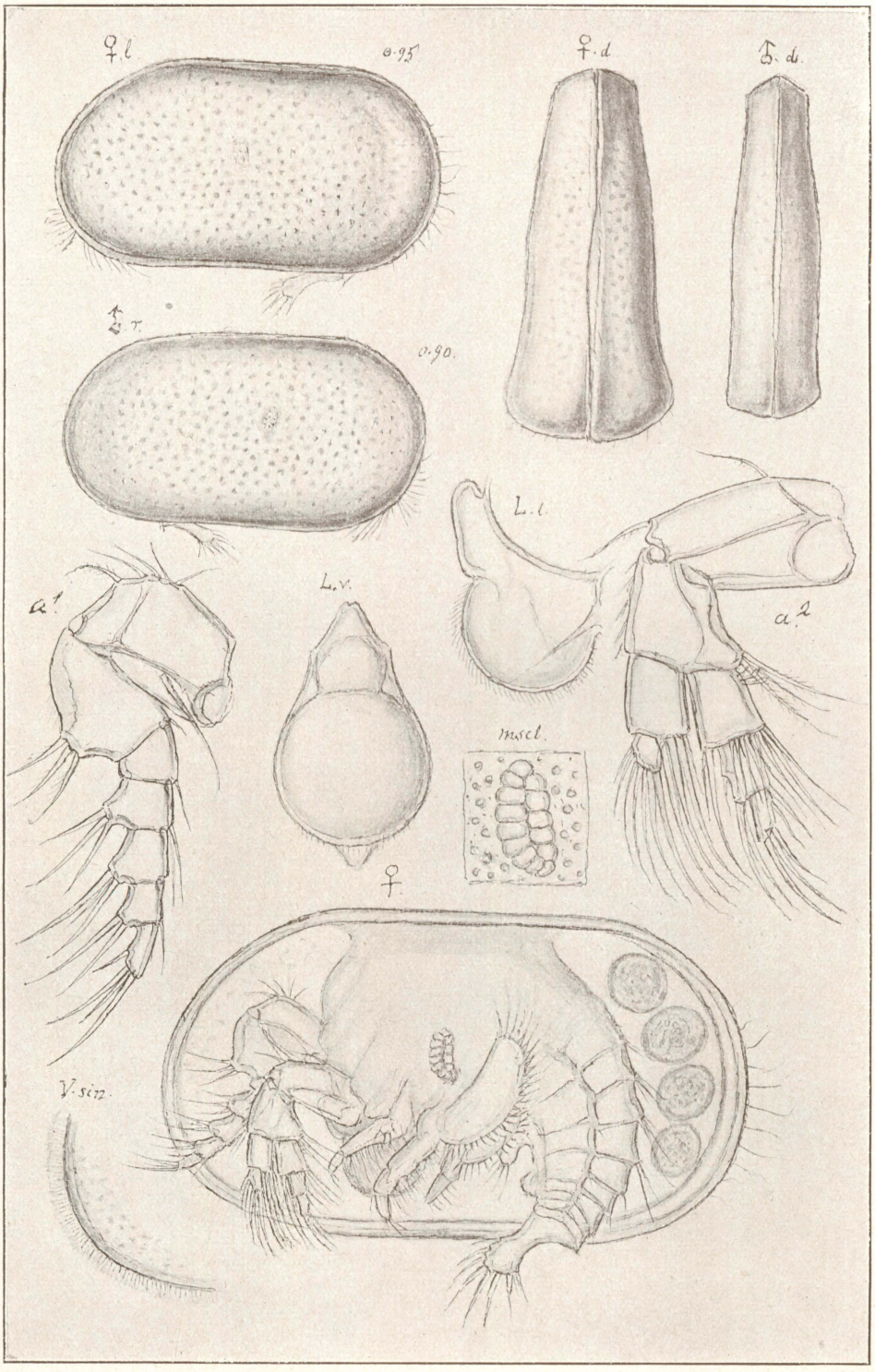
Ostracoda



G. O. Sars del.

1. Polycope sublævis, G. O. Sars
2. Polycopsis compressa (Brady & Rob.)

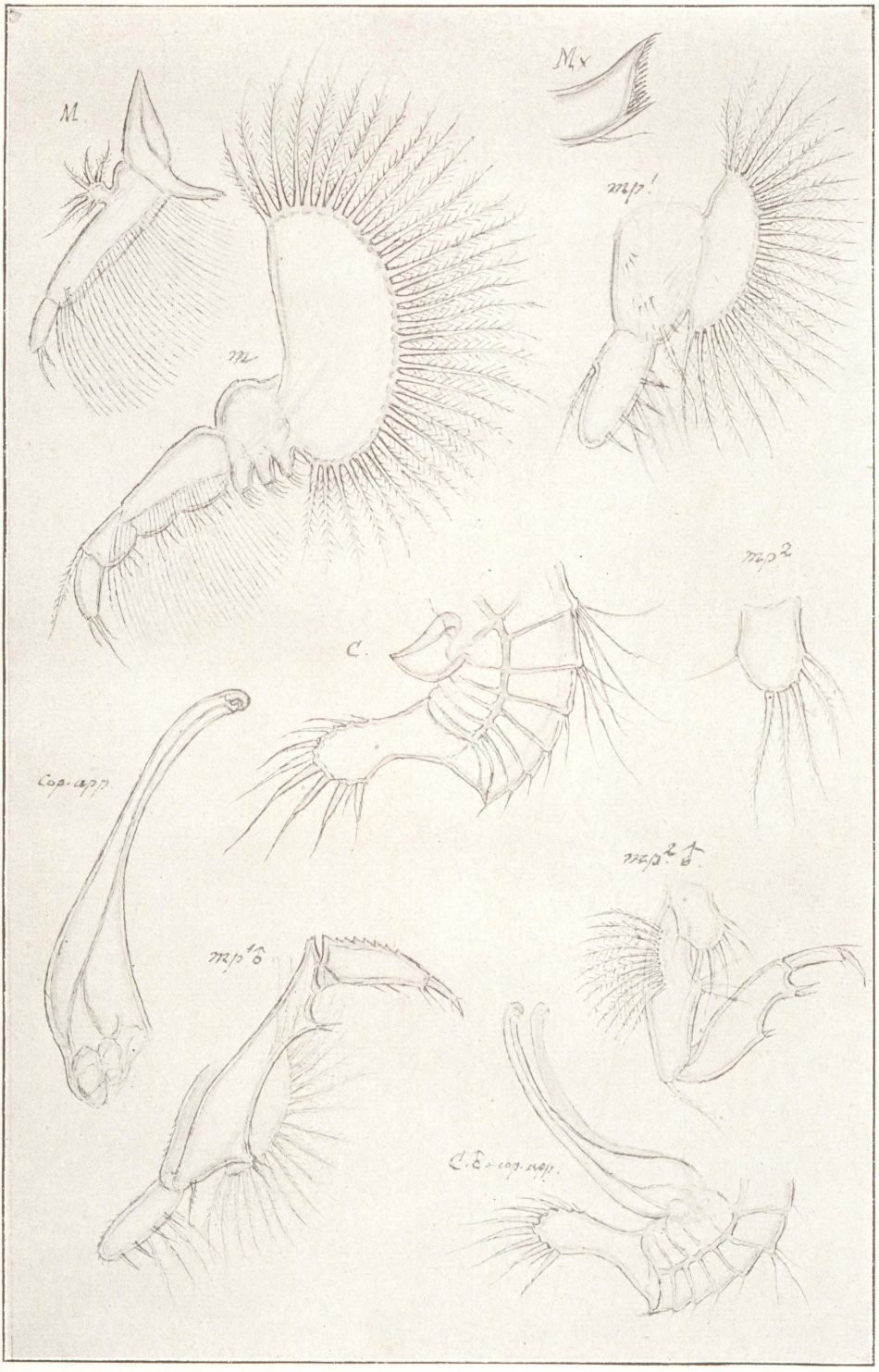
Ostracoda



G. O. Sars del.

Cytherella abyssorum, G. O. Sars

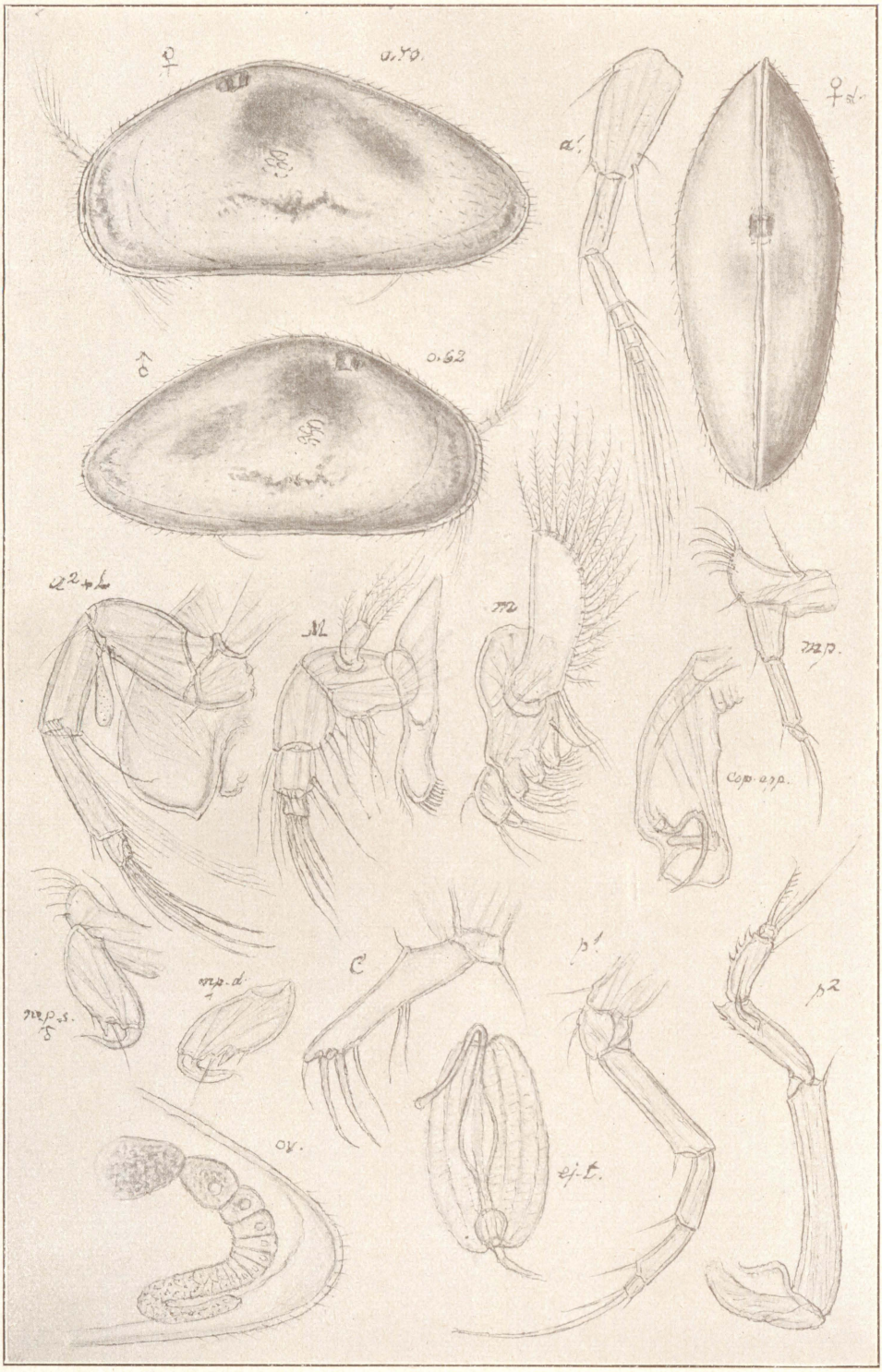
Ostracoda



G. O. Sars del.

Cytherella abyssorum, G. O. Sars
(continued)

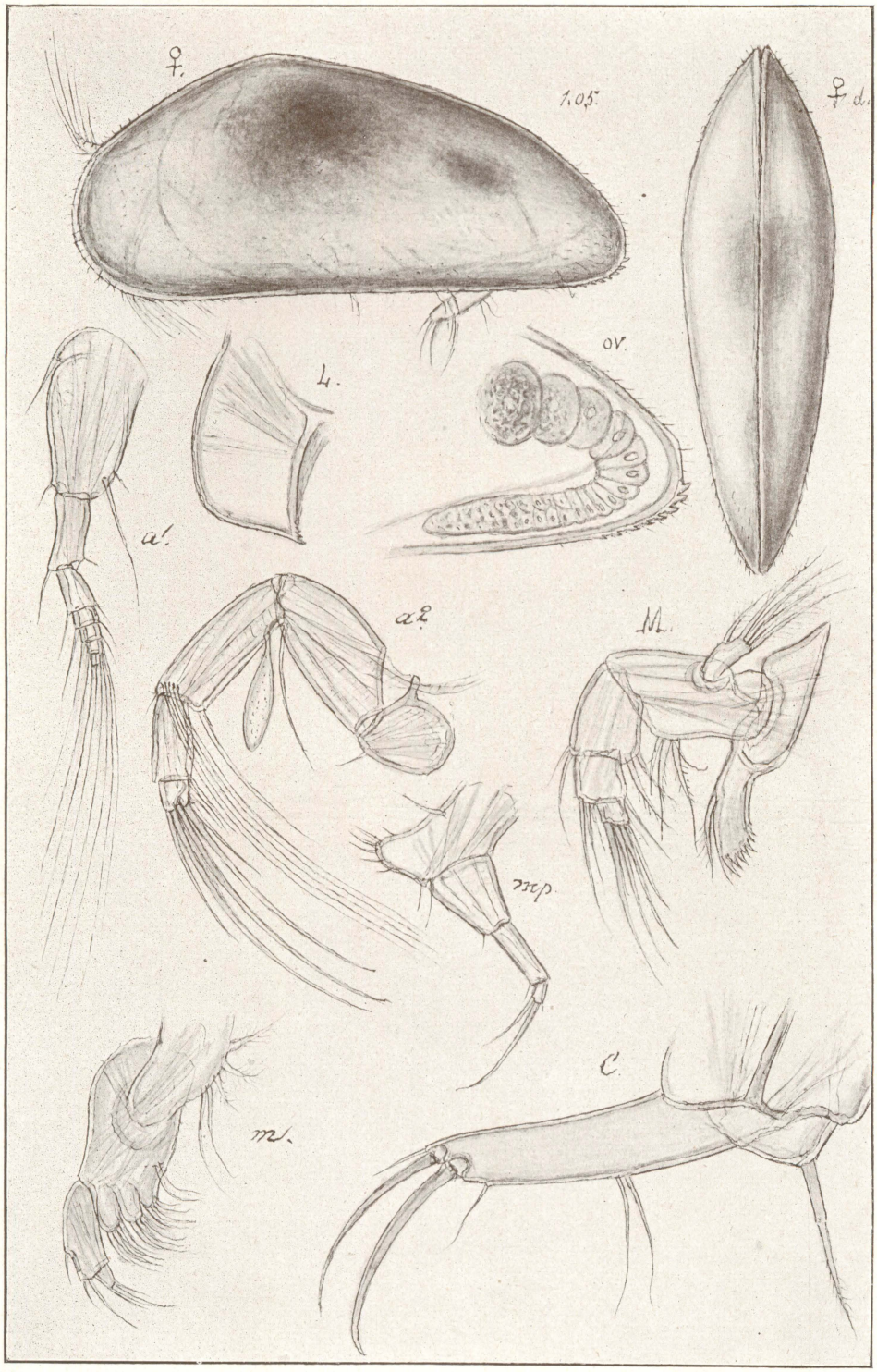
Ostracoda



G. O. Sars del.

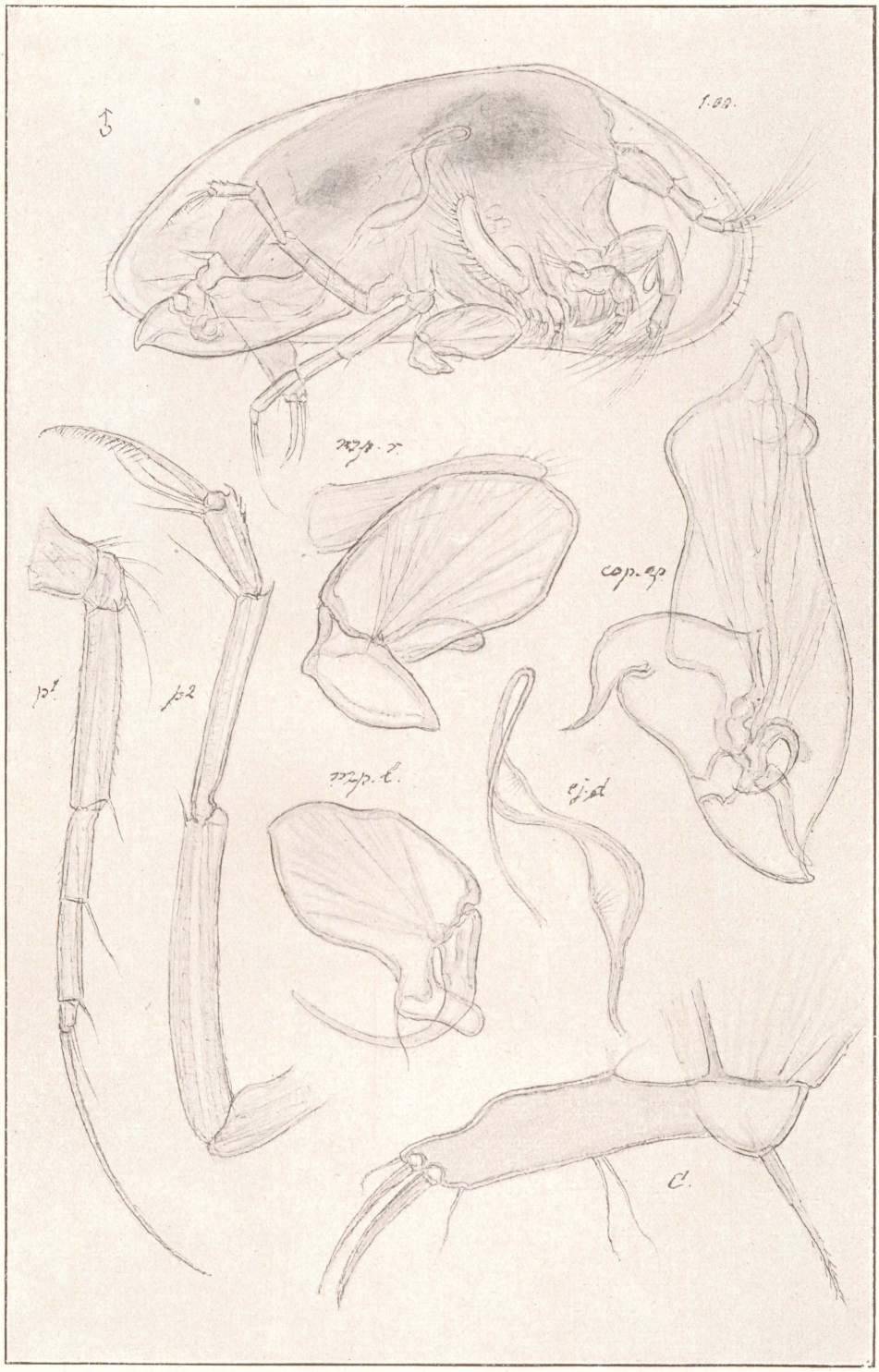
Pontocypris trigonella, G. O. Sars

Ostracoda



G. O. Sars del.

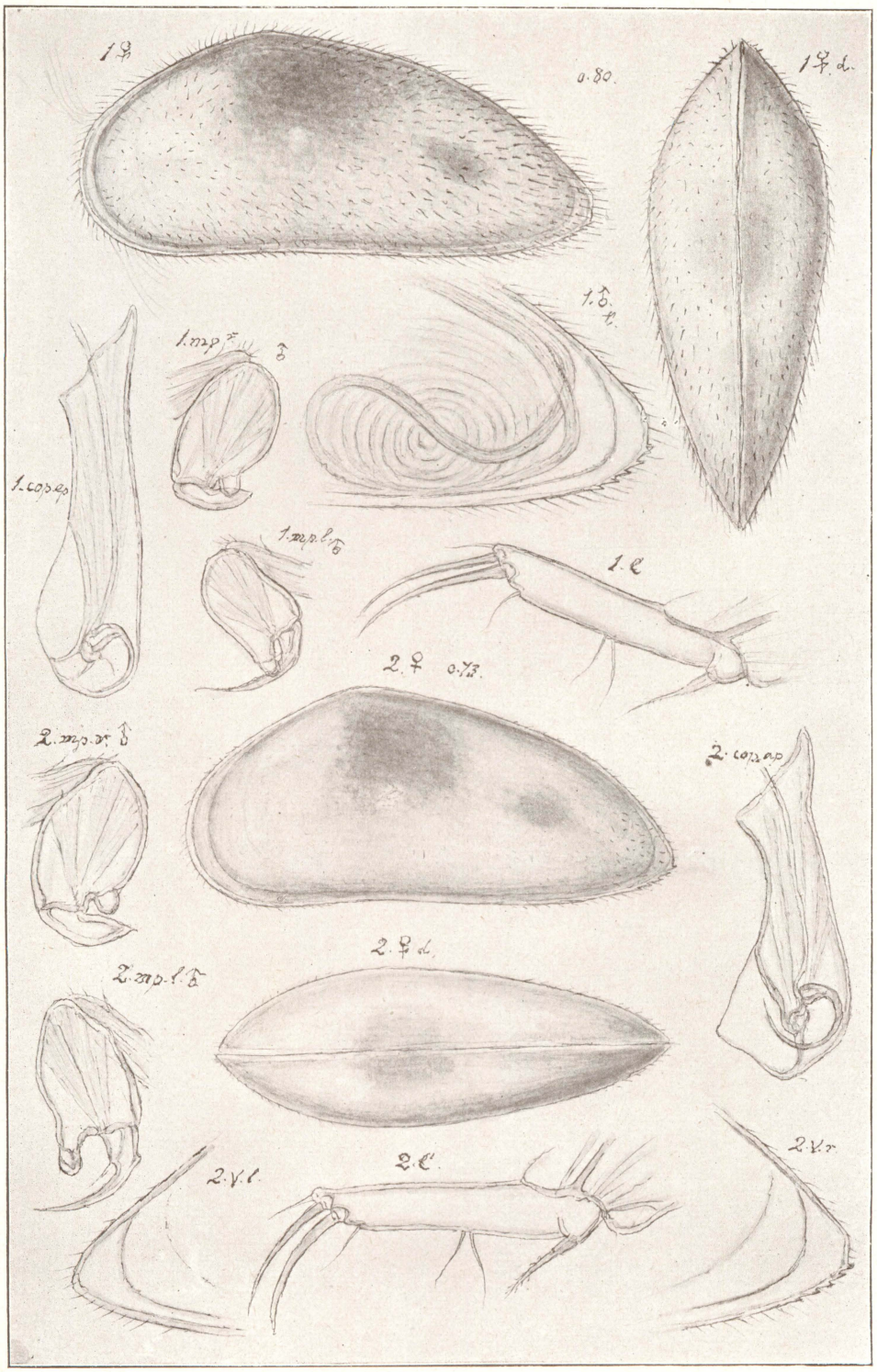
Erythrocypris mytiloides (Brady)



G. O. Sars del.

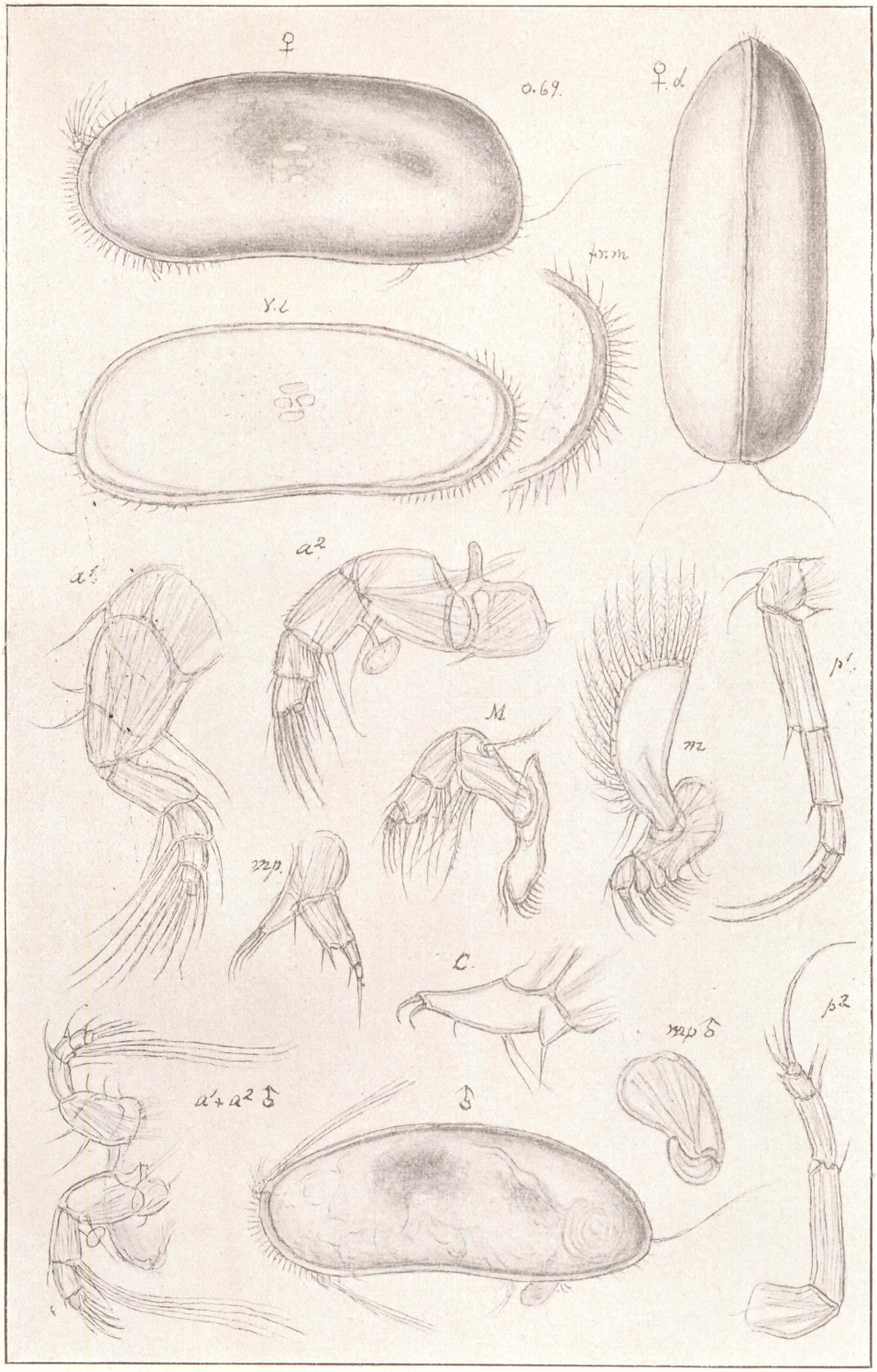
Erythrocypris mytiloides (Brady)
(Male)

Ostracoda



G. O. Sars del.

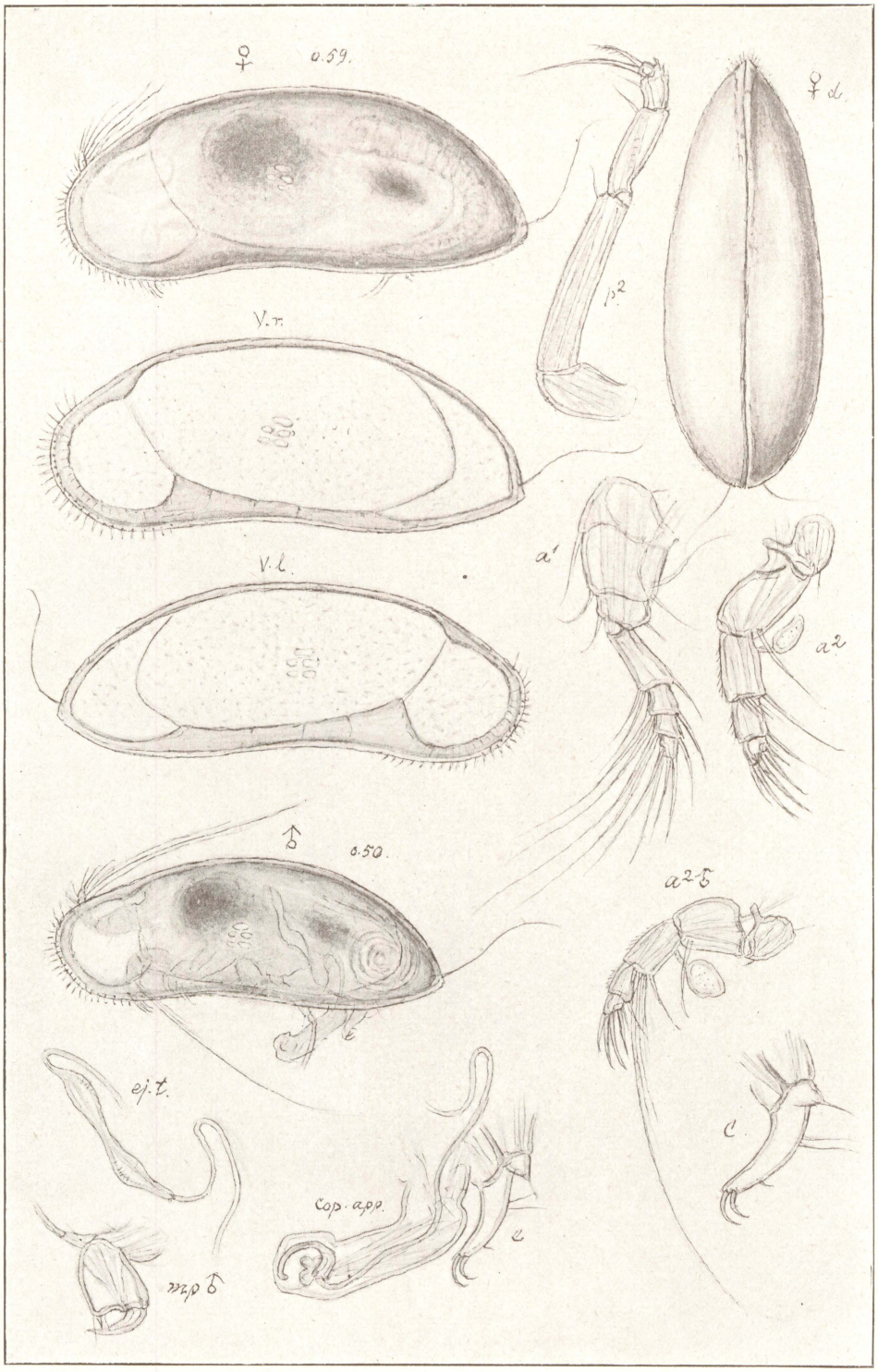
1. Erythrocypris hispida, G. O. Sars
2. ,, pallida, G. W. Müller



G. O. Sars del.

Argillœcia cylindrica, G. O. Sars

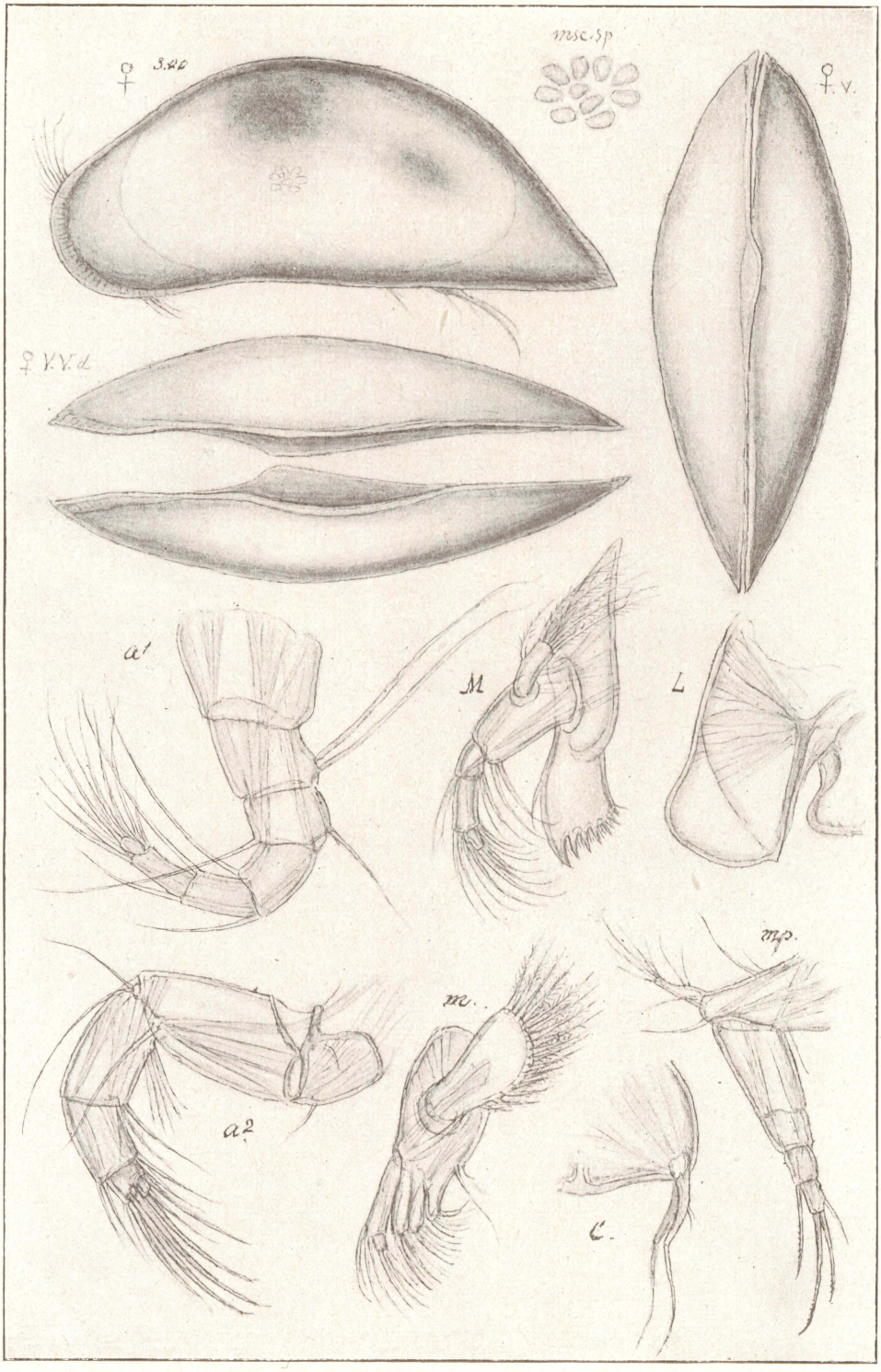
Ostracoda



G. O. Sars del.

Argillœcia conoidea, G. O. Sars

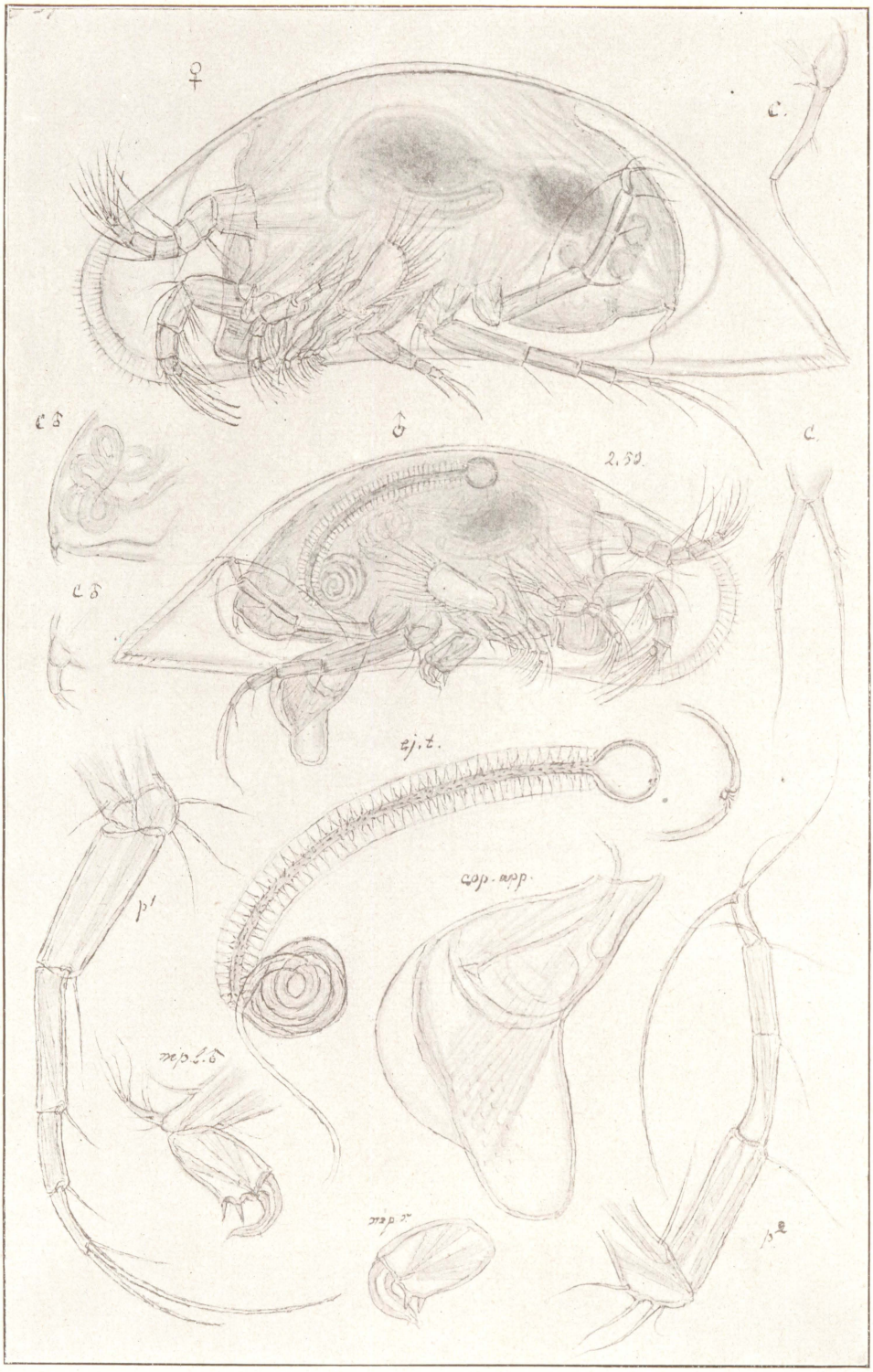
Ostracoda



G. O. Sars del.

Macrocypris minna (Baird)

Ostracoda



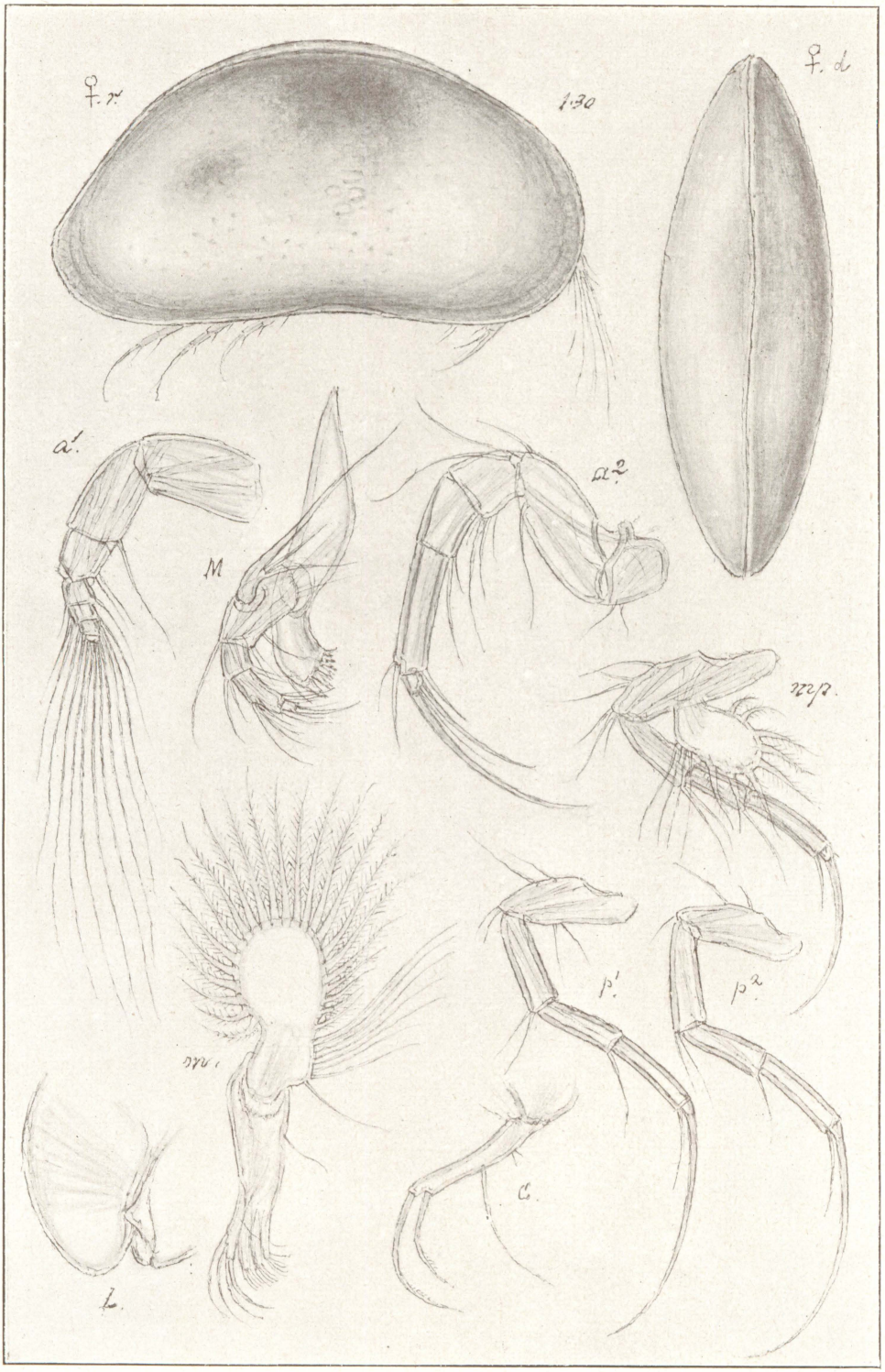
G. O. Sars del.

Macrocypris minna (Baird)
(continued)

G. O. Sars del.

Macrocypria angusta, G. O. Sars

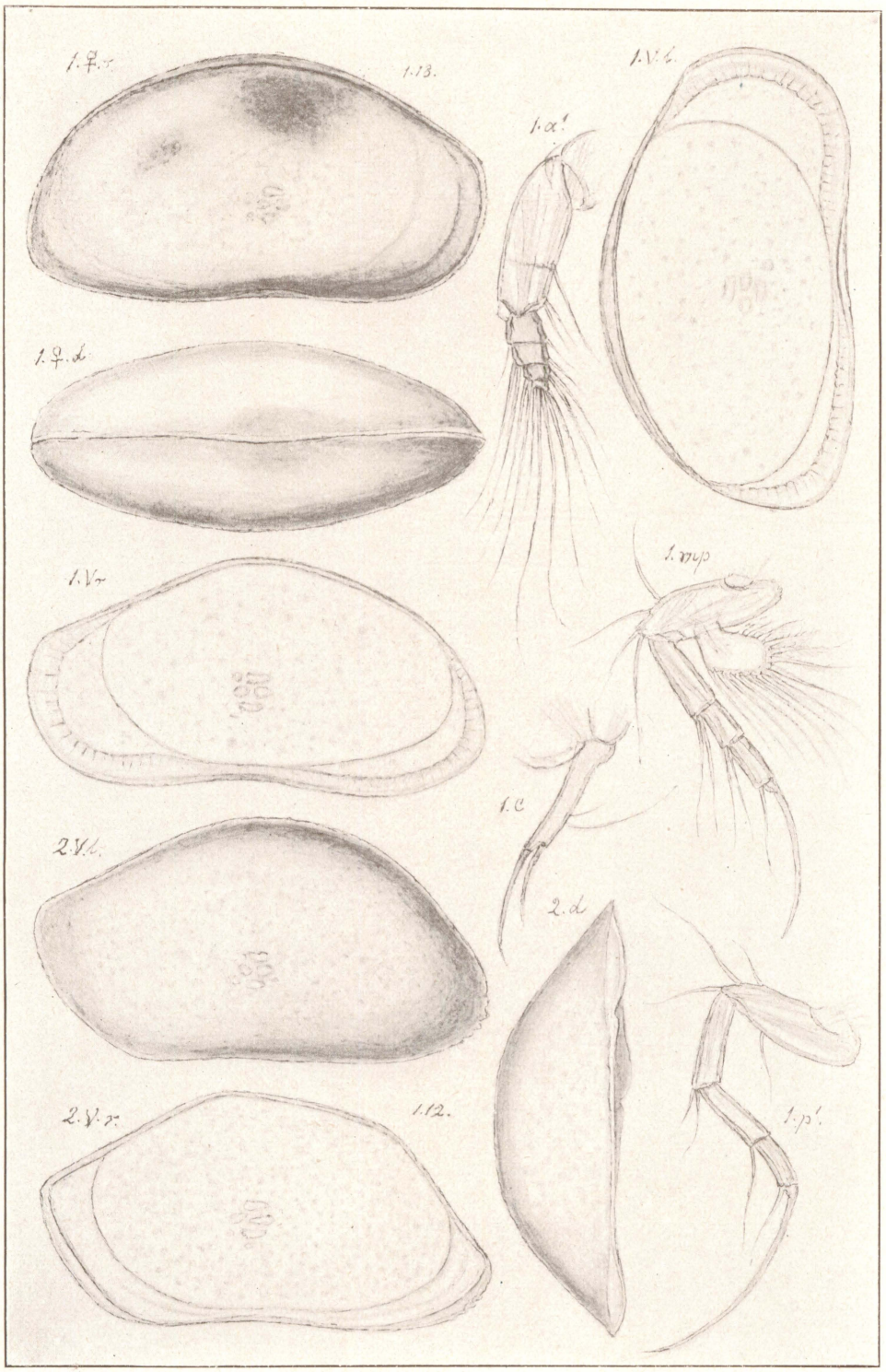
Ostracoda



G. O. Sars del.

Bythocypris bosquetiana, Brady

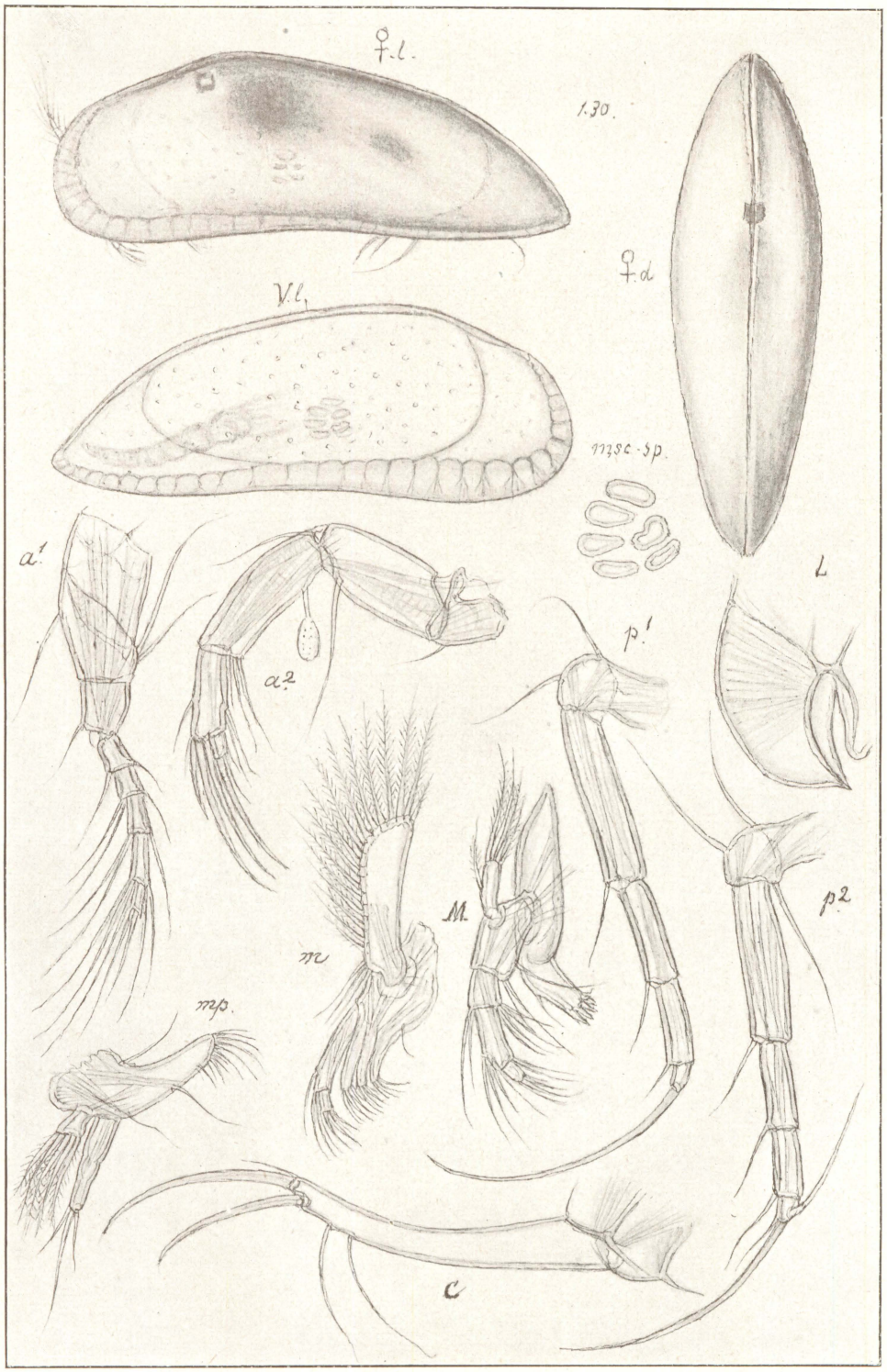
Ostracoda



G. O. Sars del.

1. Bythocypris obtusata, G. O. Sars
2. Bairdia inflata (Norman)

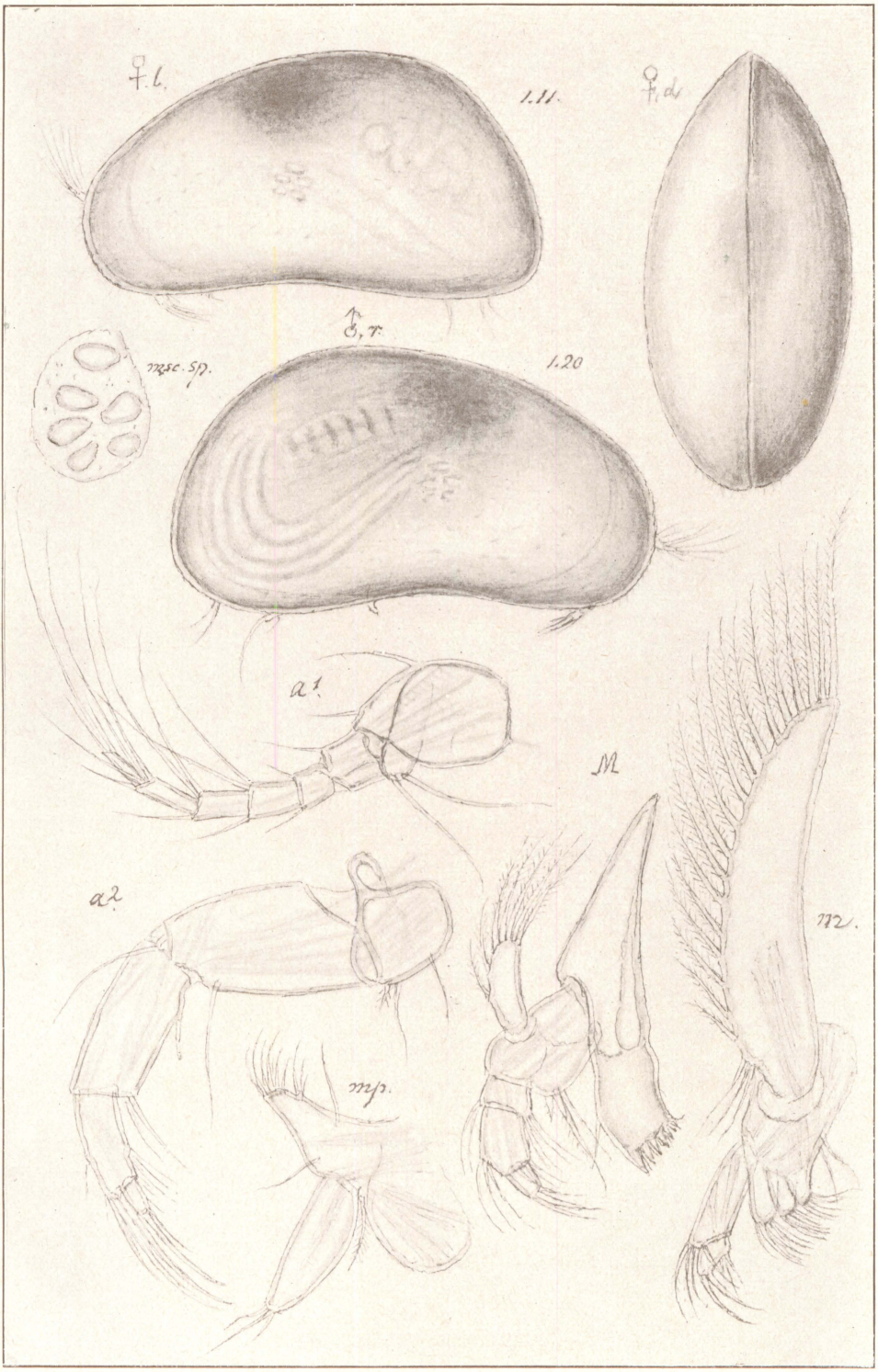
Ostracoda



G. O. Sars del.

Paracypris polita, G. O. Sars

Ostracoda



G. O. Sars del.

Candona candida (O. Fr. Müller)