AN ACCOUNT

OF THE

CRUSTACEA

OF

NORWAY

WITH SHORT DESCRIPTIONS AND FIGURES OF ALL THE SPECIES

BY

G. O. SARS

VOL. V

COPEPODA

HARPACTICOIDA

PARTS XXIX & XXX

TACHIDIIDÆ (concluded), METIDÆ, BALÆNOPHILIDÆ, SUPPLEMENT (part)

WITH 16 AUTOGRAPHIC PLATES

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segment (exclusive of the rostrum) about equal in length to the 3 succeeding segments combined; rostral plate rather prominent, narrow quadrangular in shape, and obtusely truncated at the end. Epimeral plates of the 3 succeeding segments acutely produced at the hind corner. Last pedigerous segment very short. Urosome a little exceeding half the length of the anterior divison, and having the hind edge of the segments coarsely spinulose, genital segment about the length of the 2 succeeding segments combined. Caudal rami scarcely as long as they are broad at the base, and partly spinulose at the edges, middle apical setæ rather slender, the inner one exceeding half the length of the body. Eye of quite unusual size, and very conspicuous in the living animal. Anterior antennæ rather small and feeble, being of nearly equal width throughout, and composed of only 4 joints, the last one, representing the terminal part, carrying several strong spinulose setæ pointing in different directions. Posterior antennæ with a coarse curved seta issuing from the middle of the proximal joint in front; outer ramus a little shorter than the distal joint, and carrying 5 setæ, one of the 2 apical ones rather elongated. Posterior maxillipeds with the hand rather narrow and very finely ciliated inside. 1st pair of legs with the inner ramus projecting somewhat beyond the outer, distal joint linear in form, and more than twice the length of the proximal one, carrying on the tip 3 coarse spiniform setæ; inner ramus of 2nd pair likewise extending a little beyond the outer, that of the 2 succeeding pairs successively somewhat shorter, tip of the ramus in these pairs armed in a manner similar to that in the 1st pair. Last pair of legs with the distal joint comparatively small and cordiform in shape, carrying 5 rather short setæ, that issuing from the tip very thin, hair-like; proximal joint exhibiting at the junction with the distal joint a transverse row of slender spinules, inner expansion comparatively large, linguiform in shape, and extending far beyond the distal joint, marginal setæ 5 in number, the outermost but one considerably elongated.

Male considerably smaller than female and of somewhat more slender form of body. Anterior antennæ much more strongly built and 5-articulate, 4th joint globularly inflated, terminal joint unguiform. Inner ramus of 2nd pair of legs with the middle joint produced at the end outside to an exceedingly strong deflexed mucroniform process of about the length of the whole ramus, the terminal

[illegible]

Body of a light bluish grey colour, with a faint rosy tinge.

Length of adult female 0.58 mm.

Remarks.—This is the form originally recorded by Boeck as the type of his genus *Danielssenia*. The *Jonesiella spinulosa* is unquestionably identical with Boeck's species.

Occurrence.—I have met with this form occasionally in several places on the Norwegian coast up to the Lofoten Islands, and Th. Scott also records it from East Finmark. It occurs in depths ranging from 12 to 30 fathoms, muddy bottom.

Distribution.—British Isles (Brady), Arctic Ocean off Novaja Semlja and Franz Josef Land (Scott).

216. Danielssenia fusiformis (Brady).

(Pl. CCXXIV).

Jonesiella fusiformis, Brady, Monogr. Brit. Copepoda, Vol. II, p. 39, Pl. XLVIII, figs. 1—13.

Specific Characters.—*Female.* Very like the preceding species, but of much larger size and somewhat more slender form of body. Anterior antennæ distinctly 5-articulate, the terminal part being divided into 2 well-defined joints. Posterior antennæ scarcely differing in structure from those in the type species. Posterior maxillipeds with the hand coarsely ciliated inside, one of the setæ issuing from the basal joint very strong and coarsely ciliated. Natatory legs differing only very little in structure from those in the type species, though on the whole more strongly built. Last pair of legs likewise of a very similar shape and armature, inner expansion of proximal joint, however, comparatively larger and more rounded at the extremity.

Male with the anterior antennæ comparatively more strongly built than in *D. typica*. Inner ramus of 2nd pair of legs transformed in a manner very similar to that in the type species, the mucroniform process, however, being comparatively shorter and stouter.

Colour about as in the preceding species.

Length of adult female 0·90 mm.

Remarks.—The present form is very closely allied to the preceding species, and it is rather difficult to derive from the structural details a sufficient number of good distinctive characters; but the difference in size is so pronounced that this alone must prove the present form to be specifically distinct, the more so as both species in some cases are found living together in the very same places and under altogether similar conditions.

Occurrence.—I have found this form in considerable abundance in one locality, at Skutesnæs, in a depth of about 12 fathoms, muddy bottom. It also occurs occasionally in other places on the west coast of Norway.

Distribution.—British Isles (Brady).

Gen. 79. **Psammis,**[1]) G. O. Sars, n.

Body sub-cylindric in form, with no sharp demarcation between the anterior and posterior divisions, and with all the segments closely crowded together, being not separated by any conspicuous constrictions. Cephalic segment produced in front to a prominent rostral projection. Genital segment in female imperfectly subdivided. Caudal rami of moderate size, with the apical setæ unusually prolonged. Anterior antennæ short and thick, hirsute, with the number of articulations much reduced. Posterior antennæ with the proximal joint not subdivided, outer ramus well developed, tri-articulate. Mandibles strong, with the basal part of the palp broad and expanded, rami, however, imperfectly developed. Maxillæ and maxillipeds about as in *Danielssenia*. Natatory legs powerfully developed, with some of the setæ unusually long and slender; inner ramus of 1st pair bi-articulate. Last pair of legs with the distal joint confluent with the proximal one.

Remarks.—This new genus is allied to *Danielssenia*, though the external appearance of the body more resembles that in the genus *Robertsonia*. It differs conspicuously from both these genera in the structure of the mandibular palp and of the last pair of legs. Moreover the extraordinary length of the caudal setæ and of the apical setæ of the natatory legs is rather characteristic. The genus only comprises as yet a single species, to be described below.

217. Psammis longisetosa, G. O. Sars, n. sp.

(Pl. CCXXV).

Specific Characters.—Female. Body comparatively short and compact, slightly tapering behind. Cephalic segment large, exceeding in length the 4 succeeding segments combined, and scarcely contracted in front, rostral projection well defined behind and somewhat lamellar, tip obtusely rounded. Epimeral plates of the succeeding segments well defined and obtusangular behind. Last pedigerous segment scarcely narrower than the preceding one. Urosome considerably exceeding half the length of the anterior division, and having the segments finely spinulose at the hind edge. Caudal rami about the length of the last segment and slightly divergent, apical setæ very strong and dark-coloured, the inner medial one almost attaining the length of the whole body. Eye inconspicuous in preserved specimens. Anterior antennæ of almost uniform width throughout and somewhat curved, being composed of 4 joints only, the last one representing the terminal part and carrying a number of strong plumose setæ.

[1]) Nomen proprium.

Posterior antennæ with the distal joint fully as long as the proximal one, apical spines comparatively short; outer ramus extending nearly to the end of the distal joint. Mandibular palp with the basal part obliquely expanded and provided with 3 strong plumose setæ, both rami very small and imperfectly defined at the base, each with only 3 short, thick setæ. Posterior maxillipeds comparatively short and stout, basal joint thick, with a strong plumose seta at the end anteriorly, hand oblong oval in form, with a similar though shorter seta beyond the middle of the palmar edge, dactylus thin and slender. 1st pair of legs with the inner ramus about the length of the outer, distal joint a little longer than the proximal one. Inner ramus in 2nd pair of legs extending considerably beyond the outer, in 3rd pair of about same length as this ramus, in 4th pair much shorter. Last pair of legs each forming an irregular lamella divided at the end by an angular incision into 2 unequal setiferous lappets, the outer one, representing the distal joint, short [illegible] length, the inner one much more prominent, linguiform in shape, and carrying likewise 5 setæ, 2 on the tip and 3 on the inner edge, inner apical seta much longer than the others.

Male unknown.

Colour not yet ascertained.

Length of adult female 0.55 mm.

Remarks.—In the compact appearance of the body, the prominent rostrum, the short, curved, densely hirsute anterior antennæ, and the very long, dark-coloured caudal setæ, this form somewhat reminds of the species of the genus *Longipedia* Claus. A closer examination proves it, however, to be in reality very different, and to be unquestionably referable to the present family as here defined.

Occurrence.—Only 2 female specimens of this form have hitherto come under my notice. They were found in a sample taken at Farsund, south coast of Norway, from a depth of about 30 fathoms, sandy mud.

Gen. 80. **Fultonia,** Scott, 1902.

Generic Characters.—Body subcylindrical in form, with all the segments sharply marked off from each other and edged with slender spinules. Rostrum almost obsolete. Genital segment in female distinctly subdivided; last segment comparatively large. Caudal rami of moderate size. Anterior antennæ rather fully developed, 7-articulate, and edged with short, thick ciliated setæ. Posterior antennæ comparatively small, with the proximal joint imperfectly subdivided; outer ramus

rudimentary. Mandibles with the cutting edge armed outside with a prominent tooth cleft at the tip, its inner part forming an undivided plate; palp comparatively small, but distinctly biramous. Maxillæ with the epipodal and exopodal lobes imperfectly developed. Anterior maxillipeds with 2 well-developed setiferous lobes, and a rudiment of a 3rd inside the claw-bearing joint. Posterior maxillipeds rather large, with the dactylus long and slender. 1st pair of legs with the inner ramus biarticulate and shorter than the outer. Inner ramus of the 3 succeeding pairs distinctly 3-articulate, but much smaller than the outer. Last pair of legs with the distal joint well defined and oblong in form; inner expansion of proximal joint obsolete.

Remarks.—This and the succeeding genus should perhaps more properly have been referred to the *Cletodidæ*, with which they agree both in general appearance and in the structure of most of the appendages. Yet they both differ very materially in the much fuller development of the inner ramus of the natatory legs, this ramus not being rudimentary, as in the *Cletodidæ*, but distinctly 3-articulate, like the outer. In the present genus, however, this ramus in the 1st pair of legs is composed of only 2 joints, as is also the case in several other genera of the present family. The genus comprises as yet only a single species, to be described below.

218. Fultonia hirsuta, Scott.

(Pl. CCXXVI).

Fultonia hirsuta, Th. Scott, Notes on gatherings of Crustacea, etc. 20th Annual Report of the Fishery Board for Scotland. Part. III, p. 466. Pl. XXIII, figs. 5—12.

Specific Characters.—Female. Body moderately slender, with the anterior division somewhat depressed and wider than the posterior. Cephalic segment rather large and slightly contracted in front; rostral projection extremely small. Urosome about the length of the anterior division and cylindric in form, all the segments densely fringed behind with slender spinules; last segment about as large as the 2 preceding ones combined, and provided below in the middle with a transverse row of spinules, anal opercle semilunar, smooth. Caudal rami longer than they are broad, sub-quadrangular in form and somewhat divergent, inner medial seta exceeding half the length of the body. Eye inconspicuous. Anterior antennæ attaining the length of the cephalic segment, 2nd joint the largest, terminal part about the length of the 3 preceding joints combined. Posterior antennæ with the distal joint shorter than the proximal one, outer ramus replaced by a simple seta. Posterior maxillipeds rather strong, hand oblong in form, with the inner edge straight, the outer angularly bent in the middle, dactylus exceeding

the hand in length. 1st pair of legs with the inner ramus much shorter than the outer, its proximal joint short, unarmed, the distal one oblong in form and carrying 3 setæ, and at the outer corner a strong spine. Inner ramus of the 3 succeeding pairs only slightly exceeding half the length of the outer. Last pair of legs with the distal joint narrow oblong in form and carrying 7 unequal setæ, proximal joint with a long setiferous process outside, inner part not expanded, and provided with only a single plumose seta.

Male unknown.

Colour whitish grey.

Length of adult female 0.49 mm.

Remarks.—This form was described in the year 1902 by Th. Scott as the type of a new genus, the external resemblance of which to some of the *Cletodidæ* (Mesocletodes irrasus) was also noted.

Occurrence.—Some specimens of this form, all of the female sex, were found at Farsund and Korshavn, south coast of Norway, in depths ranging from 20 to 50 fathoms.

Distribution.—Scottish coast (Scott).

Gen. 81. **Argestes,**[1]) G. O. Sars, n.

Generic Characters.—General form of body resembling that in the preceding genus. All integuments remarkably thin and soft. Genital segment in female imperfectly subdivided; anal segment rather large. Caudal rami very small. Anterior antennæ of a structure similar to that in *Fultonia*, but rather shorter. Posterior antennæ with the proximal joint distinctly subdivided; outer ramus small, but well defined. Mandibles with several teeth outside the inner lamella of the cutting edge, palp distinctly biramous. Maxillæ and posterior maxillipeds nearly as in *Fultonia*; anterior maxillipeds, however, less fully developed, with only a single setiferous lobe and a slight rudiment of a 2nd inside the claw-bearing joint. 1st pair of legs with both rami distinctly 3-articulate and subequal in size. The 3 succeeding pairs resembling in structure those in *Fultonia*, inner ramus, however, comparatively larger. Last pair of legs likewise built after the same type as in that genus.

[1]) Nomen proprium.

Remarks.—This new genus is closely allied to *Fultonia*, differing, however, rather materially in the structure of the anterior maxillipeds and the 1st pair of legs. It contains as yet only a single species, to be described below.

219. Argestes mollis, G. O. Sars, n. sp.

Specific Characters.—Female. Body of a remarkably soft consistency and in form rather like that in *Fultonia hirsuta*, the anterior division being conspicuously wider than the posterior, and somewhat depressed. Cephalic segment scarcely exceeding in length the 2 succeeding segments combined, and evenly rounded in front; rostral projection extremely small, nearly obsolete. Urosome about equalling in length the 4 preceding segments combined, and slightly tapering distally, its segments edged behind with delicate spinules; last segment rather large with the anal opercle semilunar in form and perfectly smooth. Caudal rami extremely small and scarcely at all divergent, apical setæ rather slender. Eye wholly absent. Anterior antennæ much shorter than the cephalic segment, and, as in *Fultonia*, distinctly 7-articulate, with comparatively short and thick setæ. Posterior antennæ with the outer ramus very small, but well defined at the base, and carrying one apical seta and a few small lateral bristles. Mandibular palp with both rami well developed and setiferous, the inner one the larger. 1st pair of legs with the inner ramus fully as large as the outer, its joints gradually diminishing in size distally. Inner ramus of the 3 succeeding pairs exceeding half the length of the outer. Last pair of legs rather small, distal joint narrow oblong in form, with both edges densely hairy, tip provided with 4 comparatively short setæ; inner part of proximal joint very slightly expanded, and carrying 3 short setæ.

Male unknown.

Body of a whitish grey colour, with dark intestine.

Length of adult female 1.40 mm.

Remarks.—This form, as noted above, strongly resembles *Fultonia hirsuta* in the general form of the body, but is very much (nearly 3 times) larger, and exhibits moreover a peculiar softness of body, this character, indeed, having given rise to the specific name here proposed.

Occurrence.—I have only met with this form in a single locality, viz., at Bukken, south-west coast of Norway. It occurred here in a depth of about 60 fathoms on a soft muddy bottom, together with *Cervinia* and *Eucanuella*. Only female specimens were found.

Fam. 18. Metidæ.

Characters.—Body compact, tapering behind, with the segments closely crowded together, the 1st one of very large size. Both pairs of antennæ coarsely built, the anterior ones with the basal joint very large, the posterior ones without any outer ramus. Oral parts very small and closely crowded together, exhibiting a rather anomalous structure. 1st pair of legs differing conspicuously in structure from the 3 succeeding ones and very coarsely built. Last pair of legs in both sexes imperfectly developed. A single ovisac present in female.

Remarks.—This family is established to include the peculiar genus *Metis* of Philippi (= Ilyopsyllus Brady), which differs in several respects materially from all other known Harpacticoida.

Gen. 82. **Metis**, Philippi, 1843.

Syn: *Ilyopsyllus*, Brady.

Generic Characters.—Body short and stout, gibbous, somewhat resembling that in the genus *Westwoodia*. Cephalic segment very large and tumid, produced in front to a deflexed rostral projection. Urosome short, tapered, with the genital segment in female imperfectly subdivided. Caudal rami short, truncated at the tip, with the apical setæ rather strong. Eye well developed. Anterior antennæ 6-articulate, 2nd joint firmly connected with the 1st, and produced at the end anteriorly to a hood-like projection; those in male distinctly hinged. Posterior antennæ with the proximal joint subdivided, distal joint armed with strong claw-like spines. Oral parts densely crowded and together forming an obtuse cone carrying on each side a bisetose appendage (mandibular palp) and behind a narrow median piece bifurcate at the end (posterior maxillipeds). 1st pair of legs very strongly built and armed with claw-like spines, outer ramus 3-articulate, inner shorter and biarticulate. The 3 succeeding pairs of normal structure, with both rami 3-articulate. Last pair of legs extremely small and rudimentary, of different shape in the two sexes.

Remarks.—This genus was established by Philippi as early as in the year 1843, but was not recognised by Brady, who describes it under another name, viz., *Ilyopsyllus*. Brady refers the genus to his sub-family *Harpacticina*

and records it next to *Westwoodia*, to which genus it certainly bears some resemblance as regards the external appearance of the body. The structural details, however, are very different, and forbid the union of these two genera into the same family. In addition to the typical form, another closely related species has been described by Th. Scott from the Gulf of Guinea.

220. Metis ignea, Philippi.

(Pl. CCXXVIII).

Metis ignea, Philippi, Fernere Beobachtungen über die Copepoden des Mittelmeeres; Archiv für Naturgeschichte 1843, s. 61, Pl. IV, fig. 7.

Syn: *Ilyopsyllus coriaceus*, Brady.

Specific Characters.—Female. Body sub-pyriform in shape, with the back more or less curved and with no sharply marked demarcation between the anterior and posterior divisions. Cephalic segment exceedingly large and vaulted, occupying almost half the length of the body; rostral projection not distinctly defined behind, linguiform, deflexed. The 4 succeeding segments densely crowded, with the epimeral plates small, but acutangular behind. Urosome scarcely exceeding $^1/_3$ of the length of the anterior division and rapidly tapered behind. Caudal rami quadrangular, being about as long as they are broad, inner apical seta nearly as long as the whole body, outer one much shorter. Eye large and conspicuous in the living animal. Anterior antennæ comparatively short and stout, hood-like projection of 2nd joint finely crenulated along the anterior edge; 3rd joint abruptly much narrower than the 2 preceding joints, and carrying at the end the usual sensory filament, joints of terminal part subequal in size. Posterior antennæ with the proximal part very strong, distal joint comparatively short, and armed with 6 unequal claw-like spines. 1st pair of legs with the basal part very thick and massive, carrying at the end on each side a strong spine, outer ramus somewhat incurved at the base, and without any setæ inside, last joint shorter than the preceding one, and armed at the tip with 2 strong unequal spines, and inside them with 2 slender setæ; inner ramus scarcely more than half as long as the outer, proximal joint short, unarmed, distal joint carrying on the tip 2 strong spines of unequal length. The 3 succeeding pairs of legs with the outer ramus a little longer than the inner, and having the spines of the outer edge rather slender; apical setæ of both rami much elongated. Last pair of legs represented by 2 extremely small juxtaposed lamellæ of triangular form and with only slight traces of marginal setæ.

Male somewhat smaller than female, but otherwise of a rather similar appearance. Anterior antennæ, however, distinctly prehensile and composed of 8

well-defined articulations, the penultimate one produced at the end anteriorly to a dentiform projection. Inner ramus of 1st pair of legs with the 2 apical spines sligtly transformed, the outer one claw-like and curved outwards, the inner setiform. The 3 succeeding pairs of exactly the same structure as in female. Last pair of legs each produced at the end into 2 small digitiform lappets.

Colour fiery red.

Length of adult female 0.55 mm.

Remarks.—There cannot, in my opinion, be any doubt that the above-described form is that originally recorded by Philippi as *Metis ignea*. The *Hyopsyllus coriaceus* of Brady is the same species, and this is in all probability also the case with the form recently recorded from the east coast of North America.

Occurrence.—I have met with this peculiar Copepod occasionally in several places on the west coast of Norway. It generally occurs in moderate depths on a muddy bottom covered with decaying algæ, and may at once be recognised by its vivid fiery red colour.

Distribution.—Mediterranean (Philippi), British Isles (Brady), Atlantic coast of North America.

Fam. 19. Balænophilidæ.

Characters.—Body slender, sub-linear in form, with no sharp demarcation between the anterior and posterior divisions. Anterior antennæ of moderate size, and the number of joints not reduced. Posterior antennæ with the outer ramus rudimentary. Oral parts small and to some extent imperfectly developed, except the posterior maxillipeds, which are rather powerful and strongly clawed. 1st pair of legs much larger than the others, and of rather different structure, being pronouncedly prehensile, with both rami strongly clawed at the end. The 3 succeeding pairs with the inner ramus imperfectly developed. Last pair of legs very small, lamellar.

Remarks.—This family, like the preceding one, contains as yet only a single genus, viz., *Balænophilus* Aurivillius, which in my opinion cannot be referred to any of the other Harpacticoid families, though in some respects it bears a remote resemblance to the genus *Harpacticus*.

Gen. 83. **Balænophilus,** Aurivillius, 1879.

Generic Characters.—Body narrow and elongated, with the segments sharply marked off from each other by distinct constrictions. Cephalic segment produced in front to a conical rostrum. The 3 succeeding segments without any distinct epimeral plates. Genital segment in female not subdivided. Caudal rami of moderate size, each with only a single apical seta. Anterior antennæ slender, 9-articulate, tapering distally, and only sparingly setous, 5th joint with a short sensory appendage; those in male comparatively larger and slightly prehensile. Posterior antennæ with the proximal joint undivided, outer ramus small, uniarticulate. Mandibles with the palp quite rudimentary, knob-like. Maxillæ without any distinct exopodal or epipodal lobes. Anterior maxillipeds comparatively small, with only 2 setiferous processes inside the claw-bearing joint. Posterior maxillipeds well developed, terminating in a strong clawed hand. 1st pair of legs with the basal part much prolonged, both rami 3-articulate, but rather unequal, the inner one being much the longer, each ramus armed at the tip with 2 curved claws of unequal size. The 3 succeeding pairs with the outer ramus well developed, 3-articulate, inner ramus much shorter and composed in the 2nd pair of 2 joints, in the 2 other pairs of a single joint only. Last pair of legs with the distal joint imperfectly defined from the proximal one. 2 ovisacs present in female.

Remarks.—This genus was established in the year 1879 by Dr. Aurivillius, to include a peculiar Copepod found by him on the baleen of the great blue whale (Balænoptera sibbaldi). Only the type species is as yet known.

221. Balænophilus unisetis, Auriv.

(Pl. CCXXIX & CCXXX).

Balænophilus unisetus, Aurivillius, Academical treatise with 3 plates.

Specific Characters.—Female. Body very slender and slightly constricted in the middle, with the anterior division scarcely wider than the posterior. Cephalic segment about the length of the 3 succeeding segments combined, and considerably vaulted dorsally, rostral projection of moderate size and obtusely pointed at the end. Urosome nearly as long as the anterior division and without any spinules at the posterior edge of the segments, genital segment comparatively large and somewhat tumid, last segment scarcely shorter than the preceding one, anal opercle small. Caudal rami about the length of the anal segment, and sub-linear in form, being about 3 times as long as they are broad, each carrying outside, near the end, 2 short spiniform bristles, and another more slender one

dorsally, apical seta exceeding half the length of the body, and distinctly jointed at the base. Anterior antennæ not nearly attaining the length of the cephalic segment, and gradually tapering, 1st joint much the largest and subdivided in the middle, terminal part shorter than the proximal one, and having its 4 joints nearly equal in size. Posterior antennæ with the distal joint much shorter than the proximal one, and armed with 4 claw-like spines and 3 slender geniculated setæ, outer ramus extremely small and attached close to the end of the proximal joint, carrying on the tip 3 minute bristles. Posterior maxillipeds with the hand oval in form, outer edge much curved, inner straight, dactylus strong and curved. 1st pair of legs with the 2 basal joints of about equal size, outer ramus scarcely more than half as long as the inner, middle joint much the largest and, like the 1st, armed outside with a short spine; inner ramus not attaining the length of the basal part, the outer 2 joints quite short, apical claws of both rami of same appearance, the inner one much larger than the outer. Natatory legs with the 1st joint of the outer ramus the largest, and without any seta inside, spines of outer edge of this and the 2 succeeding joints smooth. Inner ramus of 2nd pair of legs about the length of the 1st joint of the outer, and distinctly biarticulate, carrying on the tip 3 somewhat unequal setæ; that of the 2 succeeding pairs shorter and uniarticulate, with 2 slender setæ on the tip. Last pair of legs forming each a rather small plate divided at the end by a narrow incision into 2 setiferous lobes, the outer of which, answering to the distal joint, is rounded in shape and provided with 3 slender curved setæ, inner lobe a little more prominent and edged with 5 setæ, the 2 innermost of which are shorter than the others and spiniform. Ovisacs oval in form and only slightly divergent, each containing rather a large number of ova.

Male somewhat smaller than female, and of still more slender shape, the urosome being much narrower and, as usual, composed of 5 well-defined segments. Anterior antennæ comparatively larger, almost attaining the length of the cephalic segment, terminal part consisting of only 3 joints, the middle one somewhat tumefied and movably articulated to the 1st. Posterior maxillipeds somewhat more strongly built than in female. 2nd pair of legs with the setæ of the inner ramus shortened and spiniform. The 2 succeeding pairs with the spines outside the last 2 joints of the outer ramus coarsely denticulated. Last pair of legs very small, with the inner lobe less developed than in female and provided with only 2 unequal setæ. Genital lobes closely juxtaposed, each with a single spiniform seta.

Colour yellowish.

Length of adult female 2.40 mm.

Remarks.—This remarkable form was made the subject of a separate dissertation by Mr. Aurivillius for his doctor's degree, and in this dissertation not only the structure of the adult animal of both sexes, but also the development, was treated of. Dr. Aurivillius recognised in it the type of a very distinct genus, the systematic relation of which to the other known Harpacticoid genera was discussed in detail.

Occurrence.—As mentioned above, Dr. Aurivillius found this peculiar Copepod on the baleen of a blue-whale recently killed at the whaling-establishment of Mr. Foyn at Vadsö, east Finmark. On examining the baleen, his attention was directed to some yellowish patches scattered over their surface, and on a closer inspection he found these patches to be made up of innumerable specimens of this Copepod in all stages of development and densely crowded together. As justly remarked by that author, the present Copepod can scarcely be regarded as a true parasite, but is more properly speaking a commensal of the whale, subsisting on the remains of food adhering to the baleen after being sifted through it. In orders to kepp its place on the baleen and resist the strong current of water streaming through it, powerful grasping organs are needed, and such are indeed found not only in the adult animal, but, as shown by Dr. Aurivillius, even in the newly-hatched Nauplius, which of course, unlike what is generally the case, leads a rather sedentary existence. I have not myself come across this form, nor has it as yet been observed by any other naturalist. The figures here given are drawn from specimens kindly sent to me by Dr. Aurivillius.

Supplement.

Remarks.—During the progress of this work I have paid constant attention to the Norwegian Harpacticoida, spending some time every summer on the coast in suitable places for continued investigation of this group. I have in this way come across a number of additional forms, which make it necessary to annex to the work a supplement treating of these forms, and also giving some additional remarks and corrections as regards the species already described. The number of additional species observed in the last 2 or 3 years is rather large, and seems to prove that we are still far from having attained to a full knowledge of the existing forms. It is very probable that all the species described by Dr. Th. Scott from the Scottish coast will also prove to occur off the Norwegian coast, and moreover that a closer investigation of the greater deeps with suitable catching apparatus, will bring to light many interesting new forms of this extensive group.

Page 6.

Misophria pallida, Boeck.

Distribution.—Franz Josef Land (Scott), Polar Islands north of Grinnell Land (2nd Fram Exp.).

Page 12.

Longipedia minor, Scott.

Distribution.—Gulf of Guinea (Th. Scott), Ceylon (A. Scott).

Page 15.

Sunaristes paguri, Hesse.

Distribution.—Ceylon (A. Scott).

Page 17.

Canuella perplexa, Scott.

Distribution.—Ceylon (A. Scott).

Page 20.

For Cervinia Bradyi Norman read:

Cervinia synarthra, G. O. Sars, n. sp.

(see below).

Cervinia Bradyi, Norman.

(Suppl. Pl. 1)

Specific Characters.—Female. Very similar in its external appearance to *C. synarthra*, but of somewhat smaller size, and having the caudal rami comparatively shorter and more divergent; apical setæ curving abruptly outwards and densely ciliated in their outer part. Antennæ and oral parts almost exactly as in the said species. 1st pair of legs likewise very similar, though having the inner ramus fully as long as the outer. The 3 succeeding pairs of legs, however, differing conspicuously in the structure of the inner ramus, which is distinctly 3-articulate, with the last 2 joints not, as in *C. synarthra*, fused together, but well defined. Last pair of legs very small and of a structure similar to that in the said species.

Male differing very conspicuously from female in its external appearance, being on the whole of a more slender form, with the anterior division regularly oval in outline and marked off from the posterior by a distinct constriction. Cephalic segment much narrower than in female and produced in front to a very large and prominent rostral plate of triangular form. Epimeral plates of the 3 succeeding segments not, as in female, laterally expanded, but deflexed, each terminating behind in an angular corner. Urosome (including the caudal rami) about the length of the anterior division, and somewhat tumid in its anterior part, and being thickly covered with small spikes. Caudal rami much more prolonged than in female, attaining the length of the 3 last segments combined, apical setæ straight and very minutely ciliated. Anterior antennæ imperfectly hinged, but more strongly built than in female, with the joints more sharply marked off from each other, and also of a somewhat different shape, 2nd, 3rd and 4th joints each carrying an exceedingly large recurved sausage-shaped sensory appendage of a very delicate hyaline appearance. Posterior antennæ comparatively more feeble in structure than in female. Oral parts likewise considerably reduced in size. Natatory legs of essentially the same structure as in female, the inner ramus in all of them being distinctly 3-articulate. Last pair of legs, as in female, biarticulate and scarcely smaller in size. Genital lobes each with 2 spiniform setæ.

Body (in female) of a clear yellowish colour, variegated in front with light orange; urosome of a more or less vivid brimstone-yellow.

Length of adult female 1.40 mm., of male 1.20 mm.

Remarks.—The above-described species is unquestionably that originally recorded in Prof. Brady's Monograph under the name of *Cervinia Bradyi*, Norman, and is specifically distinct from the form described under that name on page 20 of the present work. For the latter I propose the name of *C. synarthra*, owing to the peculiar fusion of the outer 2 joints of the inner ramus in the 3 posterior pairs of natatory legs. In the present species this ramus is distinctly 3-articulate, as indicated in the figures given by Prof. Brady. The male is very remarkable for its prominent external dissimilarity from the female, and also for the peculiar structure of the anterior antennæ and the very large rostral projection.

Occurrence.—I have met with this species in 2 different places, viz., at Bukken, S W coast of Norway, and in the Lyngdal Fjord near Farsund. In both places it occurred on a muddy bottom in depths ranging from 30 to 60 fathoms, and in company with the other species, which in both localities was much the commoner. The specimens of the present species, though very much resembling the other in shape, could, when in a fresh state, at once be distinguished by the very different colour. In *C. synarthra* the colour is a uniform whitish grey, whereas in the present species the body exhibits a distinct yellowish hue, being moreover variegated with orange and brimstone-yellow. Only 2 male specimens have come under my notice. They both agree fairly well with the solitary specimen described by Dr. Giesbrecht from the Gulf of Naples. According to Dr. Th. Scott, this species also occurs off the Finmark coast.

Page 25.

Eucanuella spinifera, Scott.

(Suppl. Pl. 2, fig. 1).

Male.—Body considerably more slender than in female, with the cephalic segment more regularly contracted in front. Epimeral plates of 2nd segment each produced behind to a rather long mucroniform projection, those of 3rd segment only slightly produced; those of 4th segment about as in female. Urosome (including the caudal rami) fully as long as the anterior division, genital segment, as in female, armed on each side with a recurved spiniform projection. Caudal rami very narrow and much more prolonged than in female, being also more conspicuously asymmetrical, right ramus projecting considerably beyond the left, and about half the length of the urosome, apical setæ very slender. Anterior antennæ much larger than in female and distinctly prehensile, being composed of 8 well-defined joints, 4th, 5th and 6th joints forming together a dilated section, which contains a strong muscle acting upon the succeeding part, this last oc-

cupying about half the length of the antenna and being composed of 2 joints only, the 1st somewhat dilated and armed anteriorly with 3 successive short tuberculiform spines and at the end with a strong plumose seta, the second very narrow and terminating in a somewhat claw-like point. 2nd, 3rd and 4th joints of the antennæ, as in the male of *Cervinia*, provided with large recurved, sausage-shaped sensory appendages. Posterior antennæ and oral parts somewhat reduced in size. Natatory legs of exactly the same structure as in the female. Last pair of legs, however, rather different, and of quite an unusual appearance, each forming a slender 4-articulate stem, the 1st joint of which is produced outside to a digitiform process tipped with a thin bristle, the remaining 3 joints well defined and each armed outside with a slender spine, last joint carrying moreover at the end 3 denticulated spines, and the middle joint a single similar spine inside. Genital lobes each with a slender seta outside, followed inside by 2 shorter unequal spines.

Length of adult male 1.20 mm.

Remarks.—The female of this form has been described and figured in detail in the 1st part of this work, and I here only give on the annexed plate a new habitus-figure of a female specimen for comparison with the hitherto unknown male, of which a description has been given above. The sexual differences are also in this case very conspicuous, as regards both the external appearance and some of the structural details. The structure of the last pair of legs in the male in particular is highly remarkable, and the anterior antennæ also exhibit some peculiarities in their structure.

Occurrence.—This form, like the species of the genus *Cervinia*, is a true deep-water Copepod, scarcely occurring in depths of less than 40 fathoms. I have found it rather plentifully of late years in the 2 above-mentioned localities in which *Cervinia* occurred; but among the numerous specimens collected only 2 or 3 males were found.

Page 27.

Zosime typica, Boeck.

(Suppl. Pl. 2, fig. 2).

Male.—Body of much smaller size than in female and also rather different in shape, the anterior division being much broader than the posterior, which is narrow cylindrical in form, with none of the segments expanded laterally. Caudal rami comparatively more coarsely built than in female, with the apical setæ more prolonged. 3 dark pigmentary patches, arranged in a curved transversal row, constantly present in the ocular region. Anterior antennæ much larger than in female, and distinctly hinged, 8-articulate, 3rd joint the largest, 5th joint somewhat

dilated and carrying in front an extremely long and slender sensory filament, terminal part short, 3-articulate, last joint projecting at the end in a hook-like point. Posterior antennæ, oral parts and natatory legs of essentially the same structure as in female; inner ramus of 2nd pair of legs, however, slightly transformed, its terminal joint being oval in form and without any seta inside, but carrying on the tip a curved, clawlike spine and inside it a single seta. Last pair of legs very small, distal joint, as in female, not defined at the base, and provided with 4 setæ only, inner expansion of proximal joint very slight, and carrying 2 small diverging bristles.

Length of adult male 0.45 mm.

Remarks.—The male of this form has not yet been observed, for which reason the above short description of it has been given. On the annexed plate a figure of an adult female specimen is also given for comparison with the male.

Occurrence.—I have of late years met with this form, not only in the Christiania Fjord, but occasionally on the south coast of Norway, at Risør, Lillesand and Farsund. In samples from the last-named locality, some few male specimens were also found. Th. Scott records this form also from the Finmark coast.

Distribution.—Additional localities: Arctic Sea off Franz Josef Land and Novaja Semlja (Scott).

Page 28.

Add another species:

Zosime incrassata, G. O. Sars, n. sp.

(Suppl. Pl. 3).

Specific Characters.—Female. Body short and stout, with the anterior division strongly incrassated and much broader than the posterior. Cephalic segment large and deep, produced in front to a short rostral prominence, obtuse at the tip. Epimeral plates of the 3 succeeding segments sub-imbricate, and each terminating in an obtuse corner. Last pedigerous segment much narrower than the preceding ones, and without any epimeral plates. Urosome scarcely more than half as long as the anterior division, genital segment imperfectly subdivided, though exhibiting on each side in the middle a well-marked angular ledge. Caudal rami comparatively short, being scarcely longer than they are broad, apical setæ rather slender. Eye absent. Anterior antennæ short and thick, 7-articulate and densely clothed with bristles, some of which are spiniform, 3rd joint the largest, the 4 outer joints very short. Posterior antennæ resembling in structure those in the type species. Mandibular palp very small, with the rami imperfectly developed, the inner one lamelliform with only 2 small diverging bristles, the outer

one replaced by a simple short seta. Maxillæ and maxillipeds about as in *Z. typica*. Natatory legs, however, more strongly built, with the rami broader. Inner ramus of 1st pair, as in the type species, composed of only 2 joints, and about the length of the outer. Last pair of legs small, but with the distal joint well defined, rounded quadrangular in form, and provided with 4 comparatively short marginal setæ, proximal joint with the digitiform process short and stout, inner expansion only slightly produced and carrying 3 slender ciliated setæ, 2 on the tip and one inside.

Colour whitish grey.

Length of adult female 0.55 mm.

Remarks.—The above-described form is evidently referable to the genus *Zosime*, as defined by Boeck, though differing from the type species conspicuously both in its external appearance and in some of the structural details, especially the mandibular palp and the last pair of legs.

Occurrence.—Only a solitary female specimen of this form has hitherto come under my notice. It was found last summer in the Lyngdal Fjord, near Farsund, in a depth of about 40 fathoms.

Page 31.

Ectinosoma neglectum, G. O. Sars.

Distribution.—Polar islands north of Grinnell Land (2nd Fram Expedition).

Page 32.

Ectinosoma propinquum, Scott.

Distribution.—Franz Josef Land (Scott).

Page 34.

Ectinosoma melaniceps, Boeck.

Distribution.—Polar-islands north of Grinnell Land (2nd Fram Exp.).

Pag. 35.

Ectinosoma Normani, Scott.

Distribution.—Franz Josef Land (Scott).

Pag. 36.

Ectinosoma curticorne, Boeck.

Distribution.—Franz Josef Land and Novaja Semlja (Scott); mouth of Jana river, Siberia (the present author).

Page 37.

Ectinosoma gothiceps, Giesbrecht.

Distribution.—Franz Josef Land (Scott).

Page 41.

Pseudobradya minor (Scott).

Distribution.—Franz Josef Land (Scott).

Page 43.

Add the 4 following species:

Pseudobradya hirsuta (Scott).

(Suppl. Pl. 4, fig. 1).

Bradya hirsuta. Th. Scott, Revision of the species of *Bradya* and *Ectinosoma*, Transact. Linn. Soc. Vol. VI, Part. 5, p. 423, Pl. 35, figs. 2, 8, 17, 19, 23, 28, 34, 40, 47; Pl. 36, figs. 2 & 7.

Specific Characters.—Female. Body rather slender and of nearly equal width throughout. Cephalic segment scarcely longer than the 3 succeeding segments combined, and only slightly contracted in front, rostral projection comparatively short and broad, obtuse at the tip. Urosome about the length of the anterior division and very slightly tapering behind, surface of the segments more or less densely covered with small spikes; last segment scarcely more than half the size of the preceding one. Caudal rami considerably produced, being nearly 3 times as long as they are broad, and somewhat divergent, each projecting at the end into an acute lappet covering the bases of the apical setæ; the latter comparatively short. Anterior antennæ very small, 5-articulate, the 2nd and 3rd joints being fused together, and clothed with slender setæ, the first 2 joints much the largest and somewhat expanded anteriorly. Posterior antennæ with the outer ramus comparatively small, biarticulate, 1st joint very short, last narrow linear, with 2 apical bristles. Anterior maxillipeds small and feeble in structure, 1st basal joint somewhat expanded, 2nd of about same length, but much narrower. Posterior maxillipeds with the inner apical spine rather coarse. Natatory legs of the usual structure, the inner ramus being a little broader than the outer, but scarcely longer. Last pair of legs of moderate size, and exhibiting on the lower surface several transverse rows of spinules, marginal setæ not much elongated, distal joint oval in shape and somewhat unequally trilobate at the end, innermost seta transformed to a strong denticulated spine, the other 2 slightly unequal in length; inner expansion of proximal joint narrow linear in form and extending somewhat beyond the middle of the distal joint, outer apical seta rather short, inner of about same length as the middle apical seta of the distal joint;

appendicular bristle rather slender and issuing at the junction of the proximal with the distal joints.

Colour not yet ascertained.

Length of adult female 0.89 mm.

Remarks.—I have no doubt that the above-described form is that recorded by Th. Scott as *Bradya hirsuta*, though in the specimen examined by me the urosome did not exhibit nearly such a densely hirsute surface as indicated in the figure given by that author. In all structural details, however, a perfect agreement seems to exist. This species, like several others referred by Th. Scott to the genus *Bradya* of Boeck, ought to be included in the nearly-allied genus *Pseudobradya*, as defined by the present author.

Occurrence.—Only a solitary female specimen of this form has hitherto come under my notice. It was found in a sample taken at Farsund, south coast of Norway in a depth of about 30 fathoms.

Distribution.—Scottish coast (Scott).

Pseudobradya fusca (Scott).

(Suppl. Pl. 4, fig. 2).

Bradya fusca, Th. Scott, l.c. p. 424, Pl. 35, figs. 6, 12, 18, 20, 30, 37, 43, 45; Pl. 36, figs. 6 & 8.

Specific Characters.—Female. Body somewhat less slender than in the preceding species, and fusiform in shape. Cephalic segment gradually contracted in front, rostral projection of moderate size and narrowly rounded at the tip. Urosome shorter than the anterior division, with the segments spinulose only at the hind edge; last segment, as in the preceding species, rather short. Caudal rami of moderate size, being scarcely twice as long as they are broad, tip obtusely truncated, apical setæ of moderate length. Anterior antennæ small, 6-articulate. Posterior antennæ with the outer ramus narrow, 3-articulate, the first 2 joints very small. Posterior maxillipeds with none of the apical setæ spiniform. Natatory legs of normal structure. Last pair of legs somewhat resembling in shape those in the preceding species, but with the marginal setæ differing slightly in their mutual relation; innermost seta of distal joint scarcely spiniform and much shorter than the outermost, middle seta very much elongated; inner expansion of proximal joint extending almost as far as the distal joint, and having the 2 apical setæ less unequal, the inner one not nearly attaining the length of the middle apical seta of the distal joint; appendicular bristle issuing from the proximal joint at some distance from its junction with the distal one.

Colour, according to Scott, brown.

Length of adult female 0.69 mm.

Remarks.—This is another of the species referred by Th. Scott to the genus *Bradya* of Boeck, though scarcely corresponding to the diagnosis given by Boeck of that genus. In its external appearance the present form looks very like a true *Ectinosoma;* but the structure of the antennæ and oral parts proves it in reality to be a member of the intermediate genus *Pseudobradya.*

Occurrence.—Some few specimens of this form, all of the female sex, were found in samples taken at Farsund from moderate depths.

Distribution.—Scottish coast (Scott).

Pseudobradya robusta, G. O. Sars, n. sp.

(Supplm. Pl. 5).

Specific Characters.—Female. Body considerably more robust than in any of the other species, and somewhat fusiform in shape. Cephalic segment comparatively large, exceeding in length the 4 succeeding segments combined, and gradually contracted in front, rostral projection of moderate size and obtuse at the tip. Urosome not nearly attaining the length of the anterior division, and having the last segment not much shorter than the preceding one. Caudal rami comparatively short, being scarcely longer than they are broad, and each produced at the end above to a short triangular lappet, from which a distinct carina extends along the dorsal face of the ramus inside the middle; apical setæ rather slender, the inner medial one exceeding half the length of the body. Anterior antennæ very small, 6-articulate. Posterior antennæ with the distal joint comparatively short and stout, outer ramus of moderate size and 3-articulate, with the first 2 joints very small. Mandibles and maxillæ of normal structure. Anterior maxillipeds more fully developed than in the 2 preceding species, 2nd basal joint considerably prolonged, spines of terminal part claw-like. Posterior maxillipeds with the middle joint somewhat dilated, terminal joint, as usual, short and armed with 3 unequal spiniform setæ, the innermost of which is the shortest. Natatory legs on the whole of normal structure, inner ramus in 1st pair a little longer than outer, in the other pairs conspicuously shorter, terminal joint of outer ramus in the first 2 pairs with 3 spines outside, in the 2 posterior pairs with only 2 such spines. Last pair of legs very large, with all the marginal setæ long and slender, distal joint comparatively broad and somewhat spatulate in form, its end rather regularly trilobate, with the middle seta the longest, the other 2 of about equal length, inner expansion of proximal joint less narrow than in the 2 preceding species, and extending somewhat beyond the middle of the distal joint, its base crossed by an obliquely transverse row of spinules, apical setæ

slightly unequal in length; appendicular bristle issuing from the base of the distal joint.

Colour not yet ascertained.

Length of adult female 0.79.

Remarks.—This form, which, according to the structure of the antennæ and oral parts, is evidently referable to the genus *Pseudobradya*, as defined by the present author, may be easily distinguished from the other species by its comparatively robust body and the short and stout caudal rami, as also by the structure of some of the appendages, especially that of the last pair of legs.

Occurrence.—Only a single female specimen of this form has hitherto come under my notice. It was found in a sample taken last summer at Farsund from a moderate depth.

Pseudobradya elegans (Scott).

(Suppl. Pl. 6, fig. 1).

Bradya elegans, Th. Scott, l.c. p. 422, Pl. 35, figs. 4, 10, 15, 25, 28, 36, 38, 40; Pl. 36, figs. 4 & 11.

Specific Characters.—Female. Body narrow fusiform in shape, with the 2 chief divisions of nearly equal size. Cephalic segment conically tapered in front, rostral projection rather prominent and obtusely pointed at the tip. Epimeral plates of the 3 succeeding segments rather broad, sub-imbricate, those of 4th segment densely spinulose behind. Last pedigerous segment scarcely smaller than the preceding one, and likewise fringed behind with slender spinules. Urosome (including the caudal rami) scarcely shorter than the anterior division, genital segment rather large and, like the succeeding segment, fringed behind with unusually long and delicate spinules; last segment very short. Caudal rami of unusually large size, and somewhat resembling in shape those in *P. hirsuta*, each ramus being produced at the end to an acute lanceolate lappet; apical setæ comparatively short. Anterior antennæ small, 5-articulate. Posterior antennæ rather stout, with the spines of the terminal joint strong and clothed with unusually long lateral spikes, outer ramus biarticulate and of a somewhat unusual appearance, the distal joint being conspicuously dilated, with the apical setæ strong and densely plumose. Oral parts extremely small and difficult to examine, though on the whole, it would seem, built upon the type characteristic of the present genus. Natatory legs of normal structure. Last pair of legs, however, rather unlike those in the other species, distal joint very broad, spatulate in shape and irregularly indented along the terminal edge, the 3 marginal setæ comparatively short and spiniform, proximal joint with the digitiform process at the

outer corner apparently quite absent, or perhaps more properly forming an integrant part of the distal joint, a thin bristle, exactly resembling that usually issuing from the said process, being present at the outer corner of the distal joint itself; inner expansion rather large, extending considerably beyond the distal joint, and, like that joint, clothed on the lower face with an obliquely transverse row of small spinules, apical setæ resembling those on the distal joint and slightly unequal in length.

Colour not yet ascertained.

Length of the specimen examined 0.81 mm.

Remarks.—This is a rather anomalous species, and should perhaps more properly be regarded as the type of a separate genus, differing, as it does, rather conspicuously from the other species in some of the structural details. The antennæ and oral parts seem, however, on the whole to be built upon the type characteristic of the present genus.

Occurrence.—Of this form also only a solitary female specimen has come under my notice. It was found in a sample taken at Kopervik, SW coast of Norway, from a depth of about 30 fathoms.

Distribution.—Scottish coast (Scott).

Page 46.

Bradya typica, Boeck.

Distribution.—Polar islands north of Grinnel Land (2nd Fram Exp.).

Page 47.

Add the following species.

Bradya armifera (Scott).

(Suppl. Pl. 6, fig. 2).

Ectinosoma armiferum, Th. Scott, l.c. p. 434, Pl. 36, figs. 20, 43; Pl. 37, figs. 4, 17, 31, 53; Pl. 38, figs. 14, 19, 37, 43.

Specific Characters.—Female. Body moderately slender, with the anterior division less sharply marked off from the posterior than in the type species, though exceeding it somewhat in width. Cephalic segment comparatively large, being fully as long as the 4 succeeding segments combined, and gradually contracted in front, rostral projection of moderate size, and evenly rounded at the tip. Urosome scarcely more than half as long as the anterior division, and having the segments apparently quite smooth; last segment shorter than the preceding one. Caudal rami very small and far apart, being scarcely as long as they are broad, apical setæ very slender, the inner medial one almost attaining the length of the

whole body. Anterior antennæ short and thick, 6-articulate, and densely clothed with slender bristles, 2nd joint the largest, terminal part scarcely longer than the preceding joint. Posterior antennæ with the spines of the terminal joint very strong and fringed along one of their edges with unusually long spikes, outer ramus comparatively smaller than in the type species, but otherwise of a very similar structure. Oral parts well developed and on the whole agreeing in structure with those in the type species; 2nd basal joint of the anterior maxillipeds, however, rather shorter, and middle joint of the posterior maxillipeds narrower. Natatory legs with the inner ramus considerably longer than the outer, being in the 1st pair almost twice as long, and having the middle joint incised at the end in a peculiar manner. Last pair of legs rather small and resembling in structure those in the type species, distal joint short, quadrangular in form, with the middle seta much longer than the other 2, which are rather unequal in size; inner expansion of proximal joint somewhat curved, and scarcely extending beyond the distal joint, apical setæ rather strong, the inner one much the longer and equalling in size the middle seta of the distal joint; appendicular bristle quite short, and issuing from the lower face of the distal joint.

Colour not yet ascertained.

Length of adult female 0.90 mm.

Remarks.—This form ought in my opinion unquestionably to be referred to the genus *Bradya*, and not, as suggested by Th. Scott, to the genus *Ectinosoma*. With the former genus it agrees pretty well in most of the anatomical characters, the structure of the last pair of legs in particular being very like that in *Bradya typica*. The specific name proposed by Th. Scott is probably derived from the coarse armature of the apical spines of the posterior antennæ.

Occurrence.—Some few female specimens of this form were found in samples taken last summer at Farsund from moderate depth.

Distribution.—Scottish coast (Scott).

Page 47.

Add the following new genus:

Ectinosomella, G. O. Sars, n. gen.

Generic Characters. General form of body resembling that in *Ectinosoma*. Rostral projection forming a very thin, hyaline plate. Anterior antennæ small, 6-articulate, basal joint much the largest. Posterior antennæ with a spreading fascicle of strong unequal setæ issuing from the apex, no lateral spines being present; outer ramus comparatively short, but distinctly 3-articulate.

Mandibles with the masticatory part quite rudimentary, palp, however, rather large, with the basal part narrow and prolonged, both rami sub-terminal and having the appearance of long falciform setæ. Maxillæ with the masticatory lobe imperfectly developed, palp lamellar and edged with numerous slender plumose setæ. Anterior maxillipeds somewhat resembling in structure those in the genus *Pseudobradya*. Posterior maxillipeds very small, with the terminal joint imperfectly defined. Natatory legs of normal structure. Last pair of legs comparatively small, but with very long and slender marginal setæ.

Remarks.—This new genus is chiefly characterised by the very prominent hyaline rostral plate, and by the structure of the antennæ and oral parts, the latter especially being rather peculiar. It comprises as yet only a single species to be described below.

Ectinosomella nitidula, G. O. Sars, n. sp.

(Suppl. Pl. 7).

Specific Characters.—Female. Body moderately slender and somewhat compressed in its anterior parts, being of nearly equal width throughout. Surface of body remarkably smooth and shining. Cephalic segment large and deep, considerably exceeding in length the 4 succeeding segments combined, rostral plate prominent, very thin, narrow linguiform in shape, and slightly curved at the end. Epimeral plates of this and the 3 succeeding segments thin and pellucid, including between them the oral parts and the bases of the natatory legs. Urosome much shorter than the anterior division, and without any spinules at the hind edges of the segments. Caudal rami rather far apart and only slightly longer than they are broad, tip transversely truncated, apical setæ very slender. Anterior antennæ comparatively narrow and densely clothed with bristles in their outer part, basal joint occupying half the length of the antenna, terminal part short, 3-articulate. Posterior antennæ with 7 rather unequal spiniform setæ issuing from the truncated end of the terminal joint, outer ramus scarcely exceeding the middle joint in length, and carrying 5 comparatively short setæ. Mandibular palp with the basal part long and narrow, carrying in front 3 curved setæ, both rami of a similar appearance, though a little unequal in length, and issuing close together from the end of the basal part, each consisting of a narrow cylindrical scape split up at the end into 2 or 3 slender setæ. Posterior maxillipeds with 3 slender apical setæ gradually increasing in length inwards. Natatory legs with the rami subequal in length, middle joint of inner ramus in the 2nd and 3rd pairs provided inside with 2 setæ. Last pair of legs with the

distal joint oval in form and regularly trilobate at the end, setæ increasing in length inwards; inner expansion of proximal joint rather narrow and scarcely extending as far as the distal joint, apical setæ rather unequal, the inner one being much the longer; appendicular bristle of moderate length, and issuing at the junction between the proximal and distal joints. Ovisac oblong oval in form, enclosing comparatively large ova.

Colour yellowish grey.

Length of adult female 0.63 mm.

Remarks.—This form may be easily distinguished from the other members of the present family by the very prominent hyaline rostral plate, the remarkably smooth and shining surface of the body, and the structure of the several appendages.

Occurrence.—Some few specimens of this peculiar form, all of the female sex, were taken last summer at Farsund in depths ranging from 30 to 50 fathoms.

Page 49.

Harpacticus chelifer, (Müller).

Distribution.—West coast of Greenland (2nd Fram Exped.).

Page 51.

Harpacticus uniremis, (Krøyer)

Distribution.—Scottish coast (Scott), Polar island north of Grinnell Land (2nd Fram Exped.).

Page 54.

Add the following species:

Harpacticus littoralis, G. O. Sars, (new name).

(Suppl. Pl. 8).

Harpacticus chelifer, Brady, Monograph of British Copepoda, Vol. II, p. 146, Pl. LXV, figs. 1—15; Pl. LXIV, figs. 19 & 20 (not Müller).

Specific Characters.—Female. Body moderately slender, with the anterior division oblong oval in form and somewhat depressed. Cephalic segment about the length of the 3 succeeding segments combined, rostrum not very prominent, and obtusely rounded at the end. Urosome scarcely more than half as long as the anterior division and much narrower, hind edges of the segments finely spinulose ventrally and laterally; last segment rather small. Caudal rami very short, being broader than they are long, apical setæ slender and elongated, the inner

medial one almost attaining the length of the body. Anterior antennæ rather slender and attenuated, 9-articulate, 4th joint exceeding in length the 3rd, terminal part not attaining half the length of the proximal one. Posterior antennæ of the usual structure. Posterior maxillipeds not nearly so powerful as in *H. chelifer*, hand oval in form, with the palmar edge obtusely angular in front of the middle, dactylus rather slender. 1st pair of legs with the rami narrower than in *H. chelifer* and the apical claws less strong, distal joint of outer ramus shorter than the proximal one, inner ramus extending considerably beyond the latter. Natatory legs of the usual structure. Last pair of legs with the distal joint rounded oval in form, and somewhat constricted at the base, marginal setæ comparatively slender; inner expansion of proximal joint rather broad, extending somewhat beyond the middle of the distal joint, and almost tranversely truncated at the end, which carries 4 unequal setæ similar to those in *H. gracilis*. Ovisac comparatively small.

Male exhibiting the usual sexual differences from the female. Anterior antennæ distinctly hinged, though having the last joint of the proximal part far less tumefied than in the male of *H. chelifer*. Inner ramus of 2nd pair of legs with the mucronate process of the middle joint comparatively shorter than in that species. Outer ramus of 3rd pair less powerful and scarcely incurved, more resembling that in the male of *H. uniremis*. Last pair of legs with the distal joint oval in form, carrying 5 moderately slender setæ; inner expansion of proximal joint obsolete.

Colour yellowish brown.

Length of adult female 0·97 mm.

Remarks.—The above-described form is unquestionably that recorded in Prof. Brady's Monograph at *H. chelifer*. It is, however, not identical with Müller's species, which is described in the present work on page 49; but more nearly related to *H. gracilis* Claus, from which it is, however, at once distinguished by its much larger size.

Occurrence.—I have met with this form in several places, both on the south and west coasts of Norway. It is a pronouncedly littoral species, being generally found in very shallow water, especially in flat sandy creeks; and it is not seldom left in tidal pools together with other littoral species.

Distribution.—British Isles (Brady).

Page 57.

Zaus spinatus, Goodsir.

Distribution.—Polar islands north of Grinnell Land (2nd Fram Exp.).

Page 64.

For Alteutha depressa, Baird,
read: *Alteutha purpurocincta*, Norman.

Remarks.—According to the opinion of both Norman and Th. Scott, *Alteutha depressa* Baird is not the same as *A. purpurocincta* of Norman, but identical with the form described in Prof. Brady's Monograph as *Peltidium crenulatum*, a species not yet found off the Norwegian coast. For the species described in the present work as *Alteutha depressa* Baird, therefore, the specific name *purpurocincta*, proposed by Norman, should be retained.

Page 70.

For Tegastes longimanus (Claus),
read: *Tegastes Clausi*, G. O. Sars, n. sp.
(see below).

Page 72.

Add the 3 following species:

Tegastes harpacticoides (Claus).

(Suppl. Pl. 9, fig. 1).

Amymone harpactoides, Claus, Die freilebenden Copepoden, p. 114, Pl. 20, figs. 10 & 11.

Specific Characters.—Female. Cephalic segment without any chitinous stripe across the back, postero-lateral corners rather prominent and acuminate, rostral prominence very slight, almost obsolete. Genital segment very slightly protuberant below and without any armature. Distal part of urosome in some specimens distinctly prominent and exhibiting 3 well-defined segments, in others almost wholly retracted. Caudal rami of the usual appearance. Anterior antennæ rather slender, 8-articulate, with the first 2 joints much the largest and combined occupying almost half the length of the antenna. Posterior antennæ likewise unusually slender, with the outer ramus extremely small, uniarticulate. Posterior maxillipeds of comparatively feeble structure, hand very narrow, nearly linear in form, dactylus thin and slender. Natatory legs of the usual structure. Last pair of legs, however, less fully developed than in the other species, inner expansion of proximal joint rather narrow and of nearly uniform width throughout, carrying along the anterior edge 3 short setæ and at the obtusely truncated apex 2 minute bristles; distal joint very small, narrow linear in form, and extending only slightly beyond the middle of the inner expansion of the proximal joint.

Male of somewhat smaller size than female, and having the genital segment provided below with a roomy spermatophore-reservoir produced behind on each side to a mucroniform posteriorly-pointing process. Anterior antennæ, as usual, geniculate between the 5th and 6th joints. Last pair of legs with the proximal joint simple, not expanded inside.

Colour light yellowish red.

Length of adult female 0.28 mm.

Remarks.—I think I am right in identifying the above-described form with *Amymone harpactoides* of Claus, as it on the whole agrees rather well with the short description and figures given by that author. It is a very distinct species, easily recognisable by the non-produced genital segment in the female, and the poor development of the posterior maxillipeds and of the last pair of legs.

Occurrence.—Several specimens of this small Copepod were found some years ago at Skutesnæs, SW coast of Norway, in a depth of about 20 fathoms.

Distribution.—Mediterranean at Messina (Claus).

Tegastes calcaratus, G. O. Sars, n. sp.

(Suppl. Pl. 9, fig. 2).

Specific Characters.—*Female.* Cephalic segment with a well-marked chitinous stripe across the back, postero-lateral corners acutely produced; rostral prominence distinct, angular. Genital segment forming below 2 thin juxtaposed lamellæ, rectangular in front, and each produced behind into a narrow spur-like deflexed process. Distal part of urosome scarcely projecting. Anterior antennæ rather slender and distinctly 8-articulate. Posterior maxillipeds of moderate size, with the hand oblong oval in form, palmar edge slightly arched in front, dactylus moderately strong. Last pair of legs with the inner expansion of proximal joint normally developed, anterior edge curved and finely ciliated in its proximal half, carrying moreover the usual 3 short setæ, distal joint extending beyond the said expansion.

Colour not yet ascertained.

Length of adult female 0.30 mm.

Remarks.—This new species is easily distinguishable from the other known species by the peculiar spur-like processes issuing from the genital segment below, a character, which has given rise to the specific name here proposed.

Occurrence.—Only a single female specimen of this form has hitherto come under my notice. It was found in a sample taken at Bukken, SW coast of Norway, from a depth of about 20 fathoms.

Tegastes longimanus (Claus).

(Suppl. Pl. 9, fig. 3).

Amymone longimana, Claus, l.c. p. 115, Pl. 20, figs. 13 & 14.

Specific Characters.—Female. Cephalic segment without any chitinous stripe across the back, postero-lateral corners rather produced, though somewhat less acute than in the 2 preceding species; rostral prominence well marked. Genital segment slightly protuberant below and produced into 2 successive recurved blunt dentiform projections. Distal part of urosome scarcely prominent. Anterior antennæ unusually short and apparently composed only of 7 articulations. Posterior maxillipeds of a very characteristic appearance, being much elongated, with the basal part composed of 2 slender joints forming together an elbow-shaped bend, hand comparatively short, but much dilated at the base, almost triangular in shape, palmar edge concave behind, and forming in front a strong arcuate bulge armed with 4 slender spines, dactylus rather strong and curved. Legs apparently of normal structure.

Colour not yet ascertained.

Length of adult female 0.27 mm.

Remarks.—This is unquestionally the species originally recorded by Claus under the name of *Amymone longimana*. It is specifically distinct from the form described on page 70 of the present work as Claus's species, and I propose to name that species *Tegastes Clausi*. The very peculiar shape of the posterior maxillipeds will at once make the present species recognisable from any of the others.

Occurrence.—Of this form also only a single female specimen has come to my notice. It was found in a sample taken at Kopervik, SW coast of Norway, from a depth of about 15 fathoms.

Distribution.—Heligoland (Claus), ? British Isles (Brady).

Page 87.

For Idya, Philippi,

read: *Idyæa*, Philippi.

Remarks.—The above slight change of the Philippian name was proposed by the present author last year (Report on the Crustacea of the 2nd Fram Expedition), in order to keep it apart from *Idya* Fréminville (a genus of Acalephæ).

Page 90.

Idyæa ensifera (Fischer).

Distribution.—Polar islands north of Grinnell Land (2nd Fram Exp.).

Page 94.

Idyæa gracilis, Scott.

Distribution.—Polar islands north of Grinnell Land (2nd Fram Exp.).

Page 96.

Idyæa finmarchica, G. O. Sars.

Distribution.—Polar island north of Grinnell Land (2nd Fram Exp.).

Page 97.

Add the following species:

Idyæa tenella, G. O. Sars, n. sp.

(Suppl. Pl. 10).

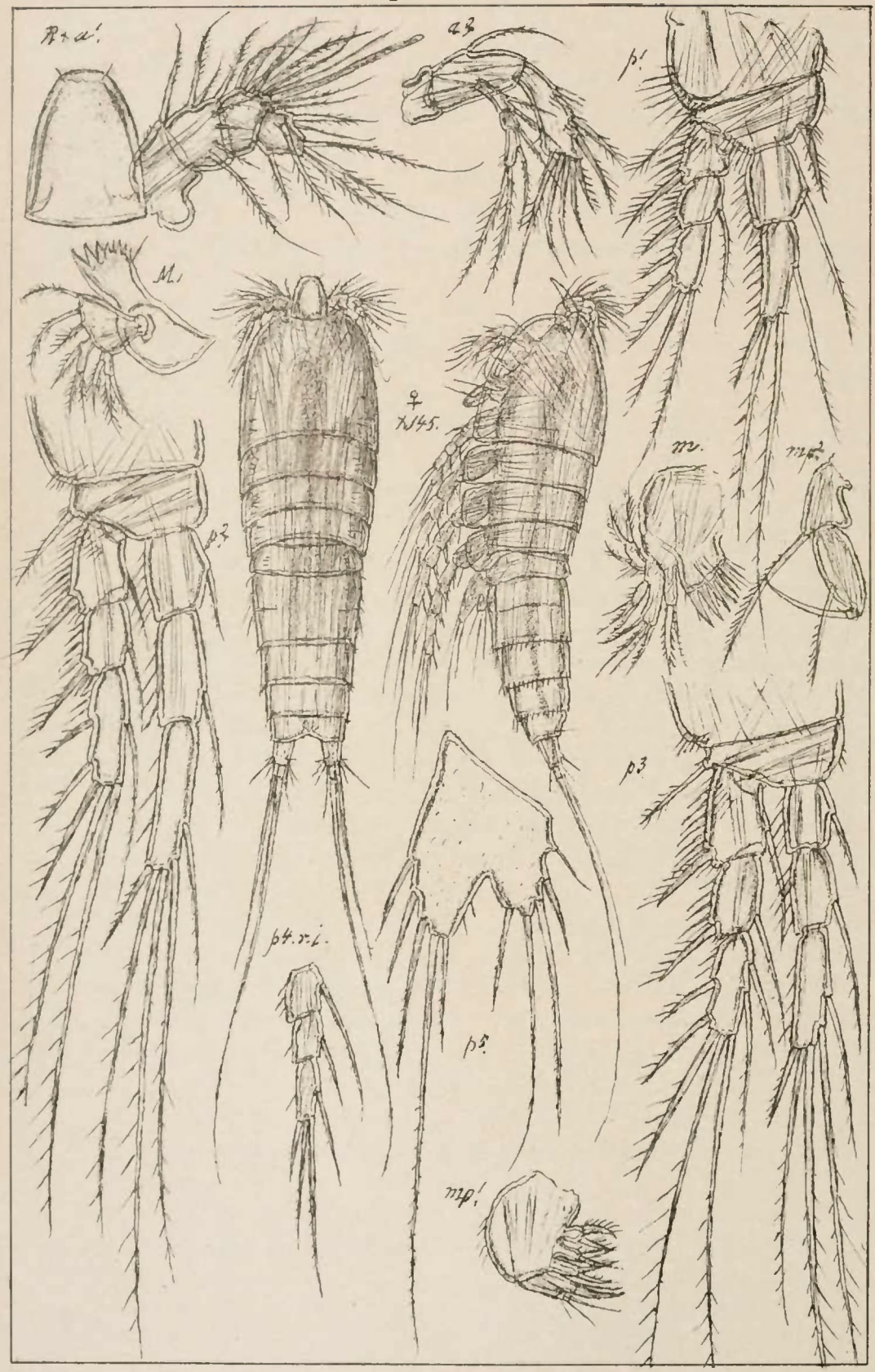
Specific Characters.—Female. Body very slender, though, as in the other species of this genus, having the anterior division somewhat expanded and much broader than the posterior. Cephalic segment about the length of the 3 succeeding segments combined, and produced in front to a rather small rostral prominence. Lateral parts of the 3 succeeding segments somewhat expanded and separated by narrow incisions. Last pedigerous segment considerably narrower than the preceding ones, and obtusely produced on each side. Urosome very slender and elongated, exceeding $^2/_3$ of the length of the anterior division, genital segment imperfectly subdivided in the middle, last segment very small. Caudal rami short and closely juxtaposed, being scarcely more than half as long as they are broad, apical setæ of rather peculiar appearance, the 2 middle ones having their proximal part remarkably dilated, the inner one attaining about half the length of the body. Anterior antennæ not very slender, scarcely attaining the length of the cephalic segment, and, as usual, composed of 8 articulations, 3rd joint the largest, 4th joint comparatively short, terminal part about half the length of those joints combined. Posterior antennæ and oral parts exhibiting on the whole the structure characteristic of the genus. 1st pair of legs with the outer ramus extending a little beyond the 1st joint of the inner, 2nd joint of the latter ramus scarcely longer than the 1st, and not much attenuated. The 3 succeeding pairs of legs powerfully developed, with the rami rather broad, the outer one being the longer. Last pair of legs with the distal joint lamelliform and broadly oval in outline.

Colour not yet ascertained.

Length of adult female 0.69 mm.

Copepoda

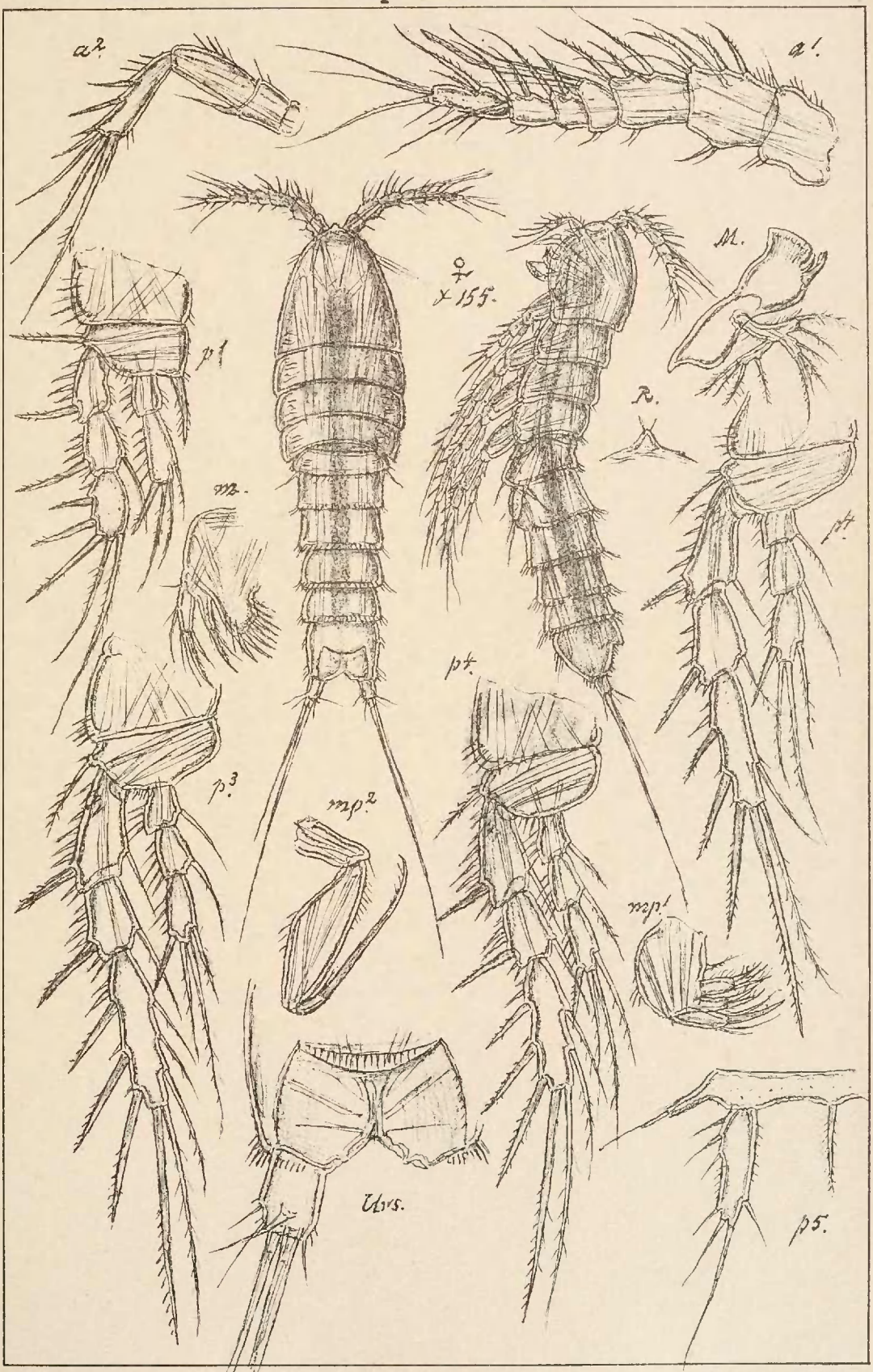
Tachidiidæ — Harpacticoida — Pl. CCXXV.



G.O.Sars autogr. — Norsk Lithgr. Officin

Psammis longisetosa, G.O.Sars.

Copepoda



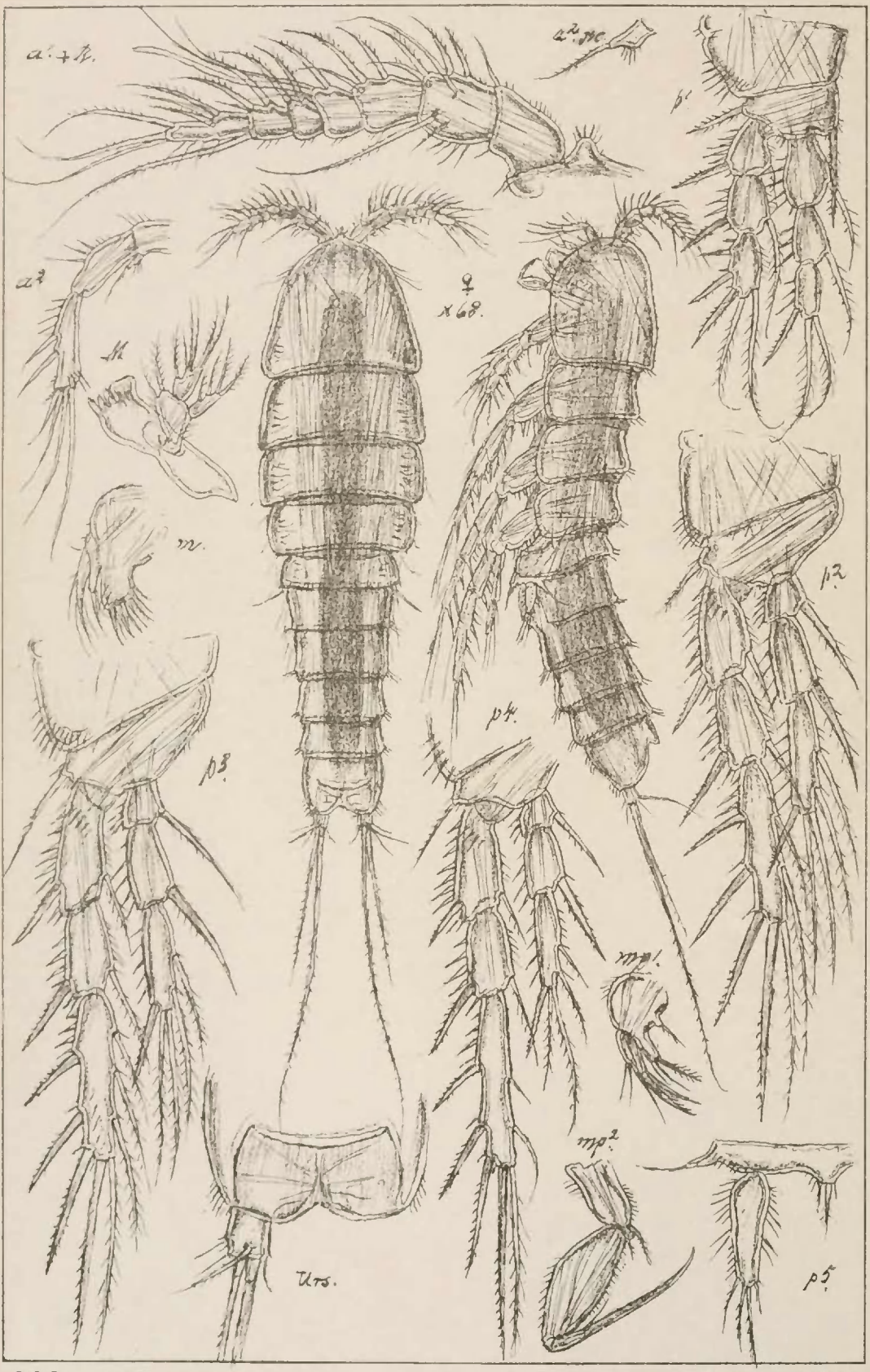
G.O. Sars, autopr

Norsk Lithgr. Officin

Fultonia hirsuta, Scott.

Copepoda

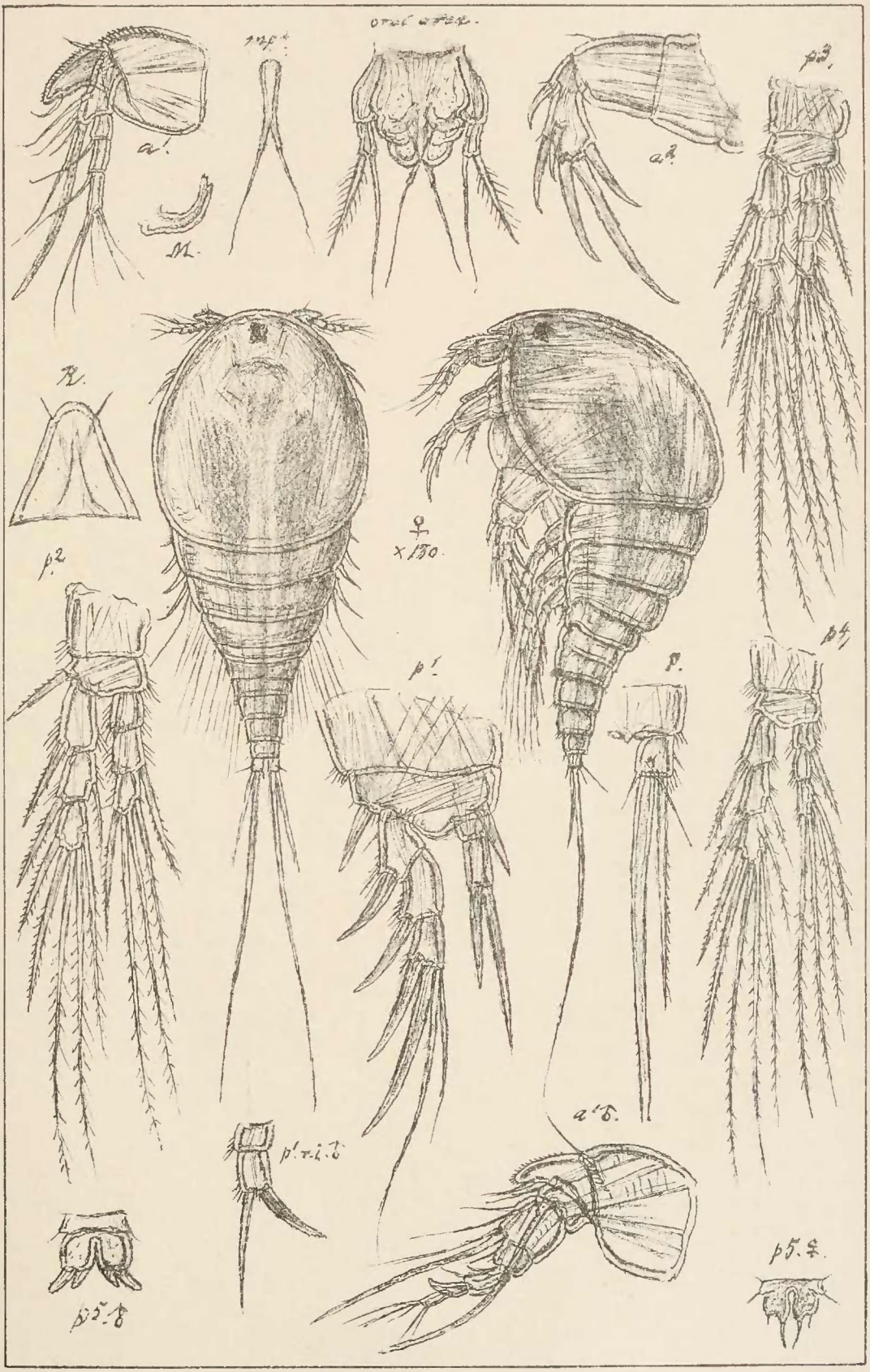
Tachidiidæ | Harpacticoida | Pl. CCXXVII.



G.O.Sars, autogr. Norsk Lithgr. Officin.

Argestes mollis, G.O.Sars.

Copepoda

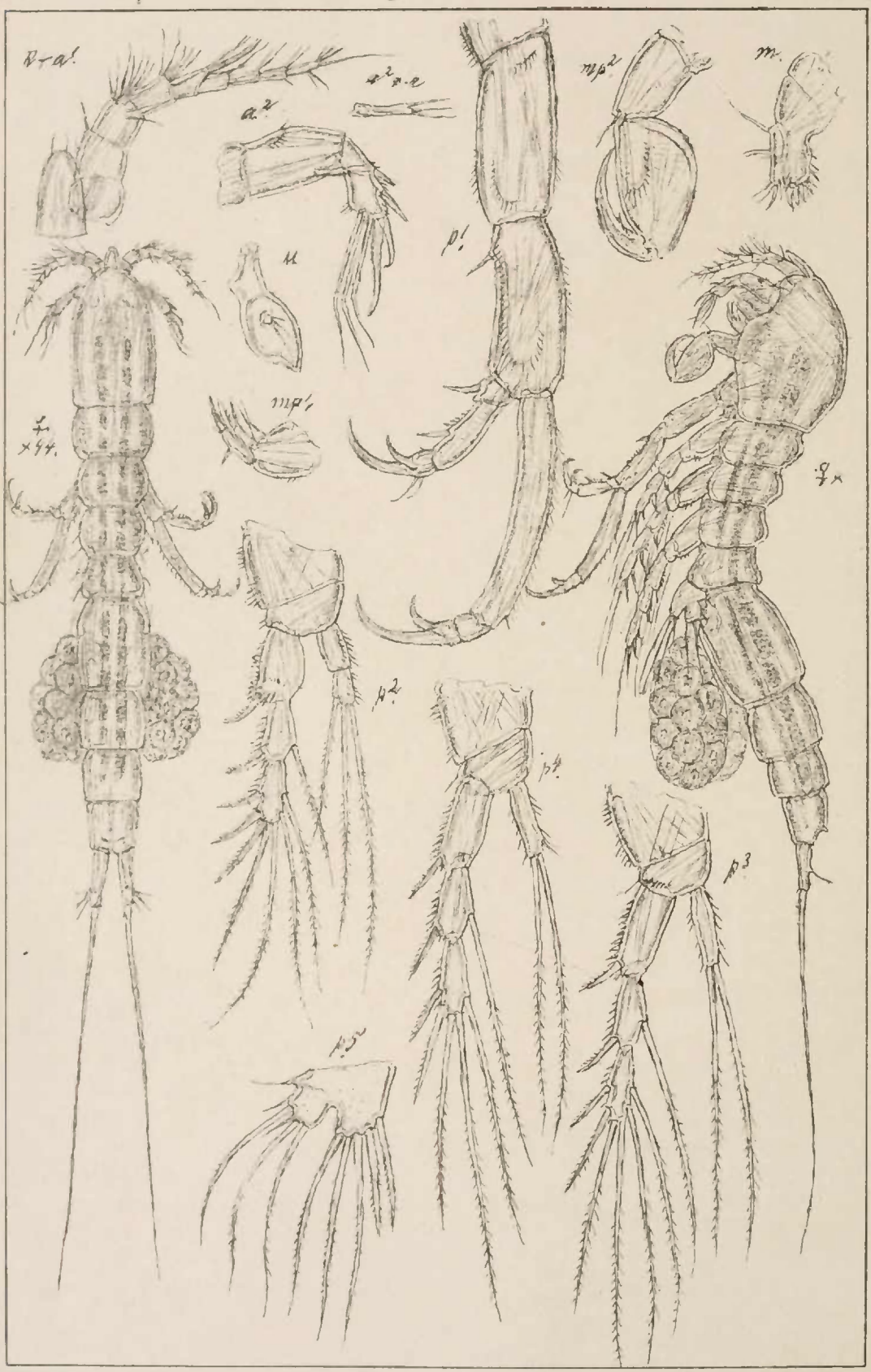


G.O.Sars, autogr. Norsk Lithgr. Officin

Metis ignea, Philippi.

Copepoda

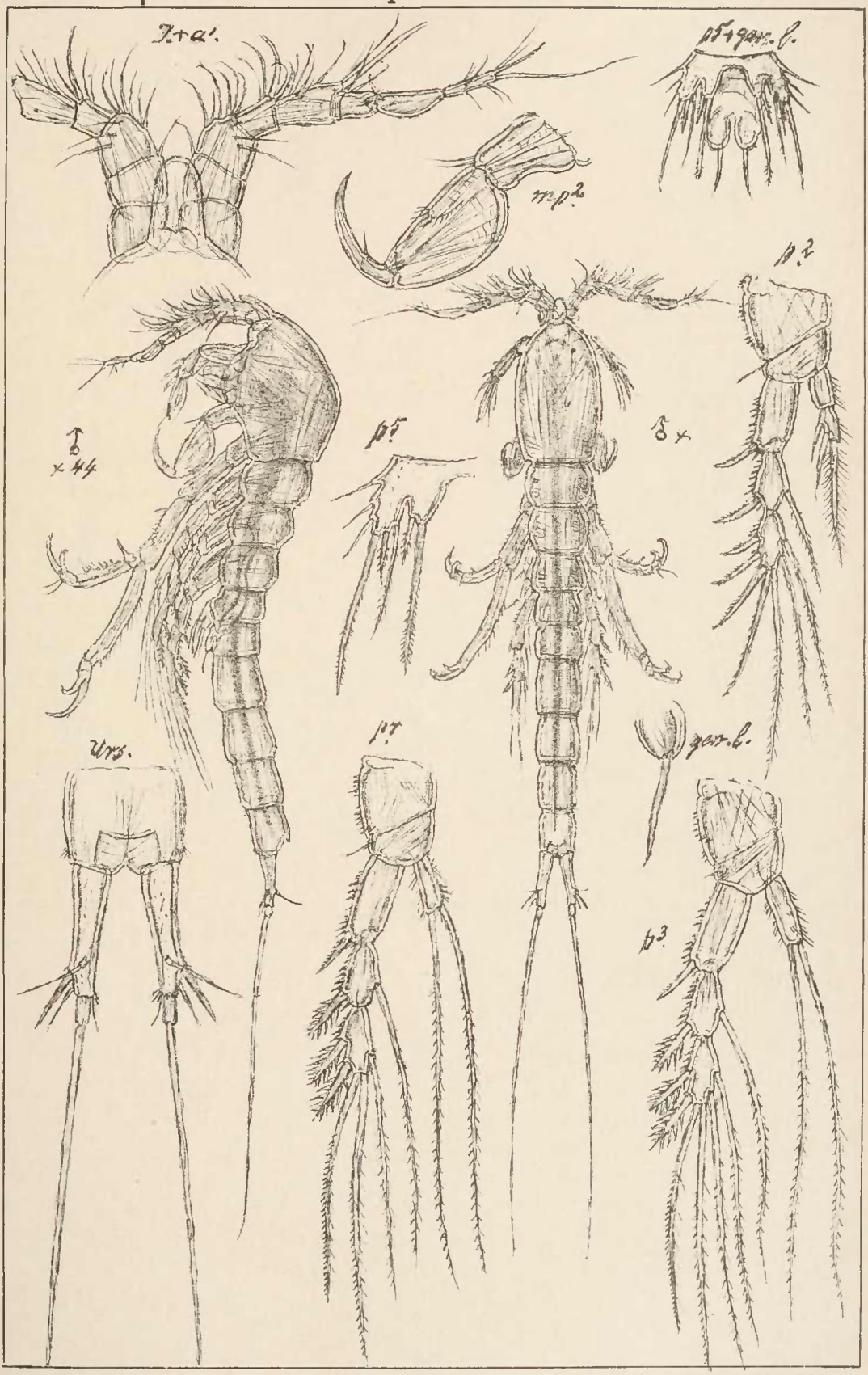
Balænophilidæ Harpacticoida Pl. CCXXIX.



G.O.Sars, autogr. Norsk Lithgr. Officin

Balænophilus unisetis, Auriv.

Copepoda



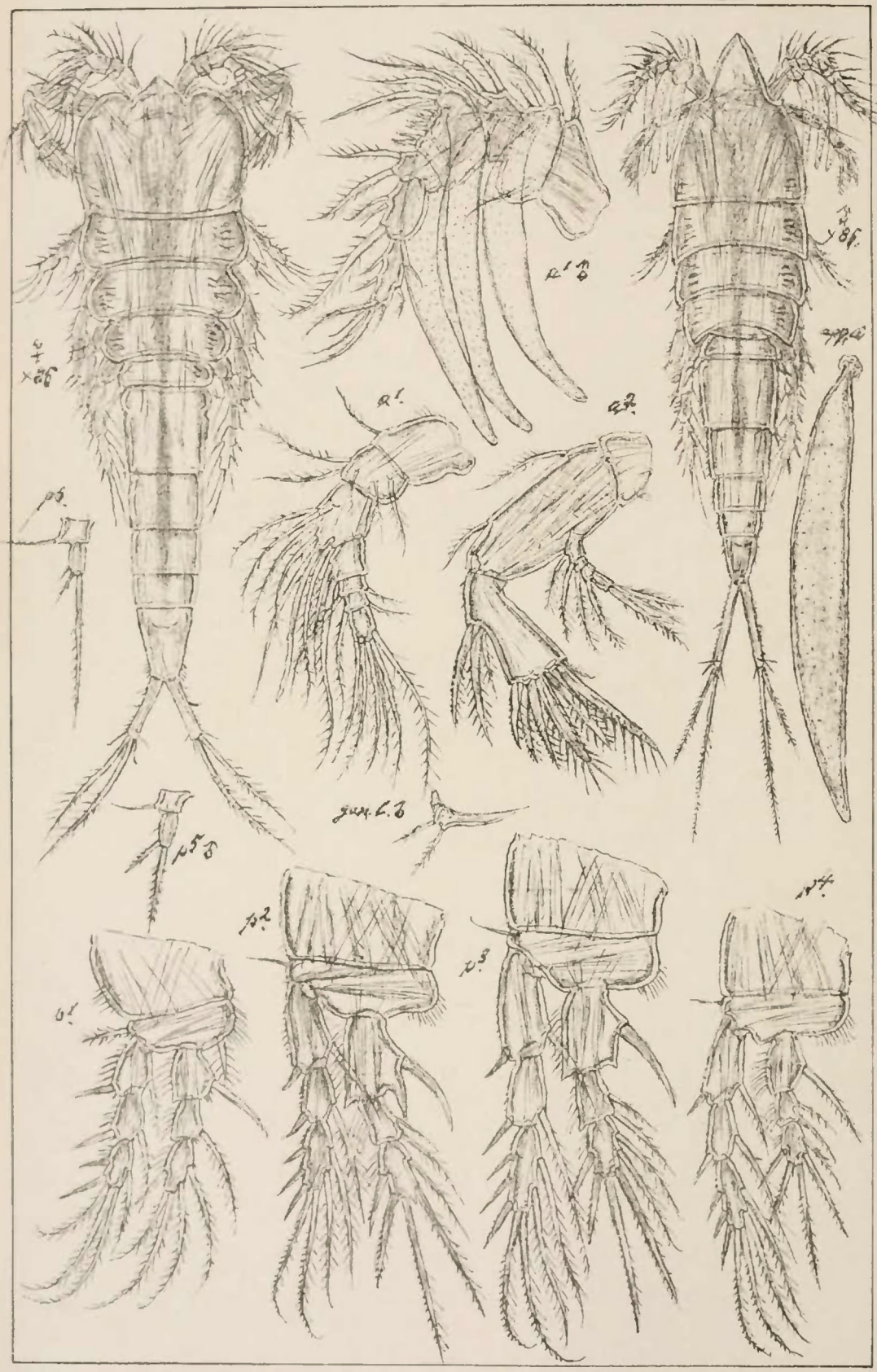
G.O. Sars, autogr

Norsk Lithgr. Officin

Balænophilus unisetis, Auriv.
(male)

Copepoda

Cerviniidæ — Harpacticoida — Supplm. Pl. 1

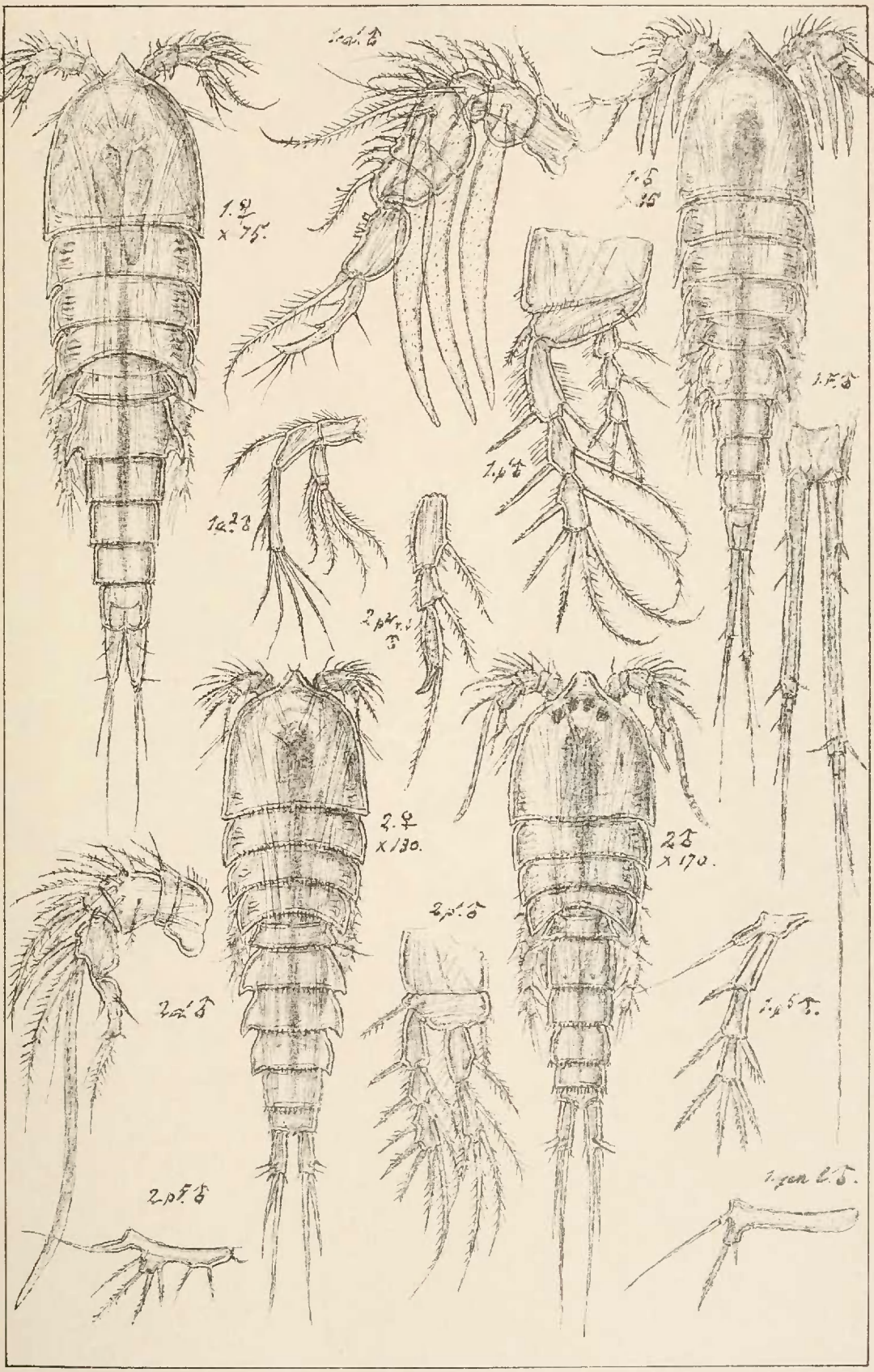


G.O.Sars, autogr. — Norsk Lithgr Officin.

Cervinia Bradyi, Norm.

Copepoda

Cerviniidæ — Harpacticoida — Supplm. Pl. 2



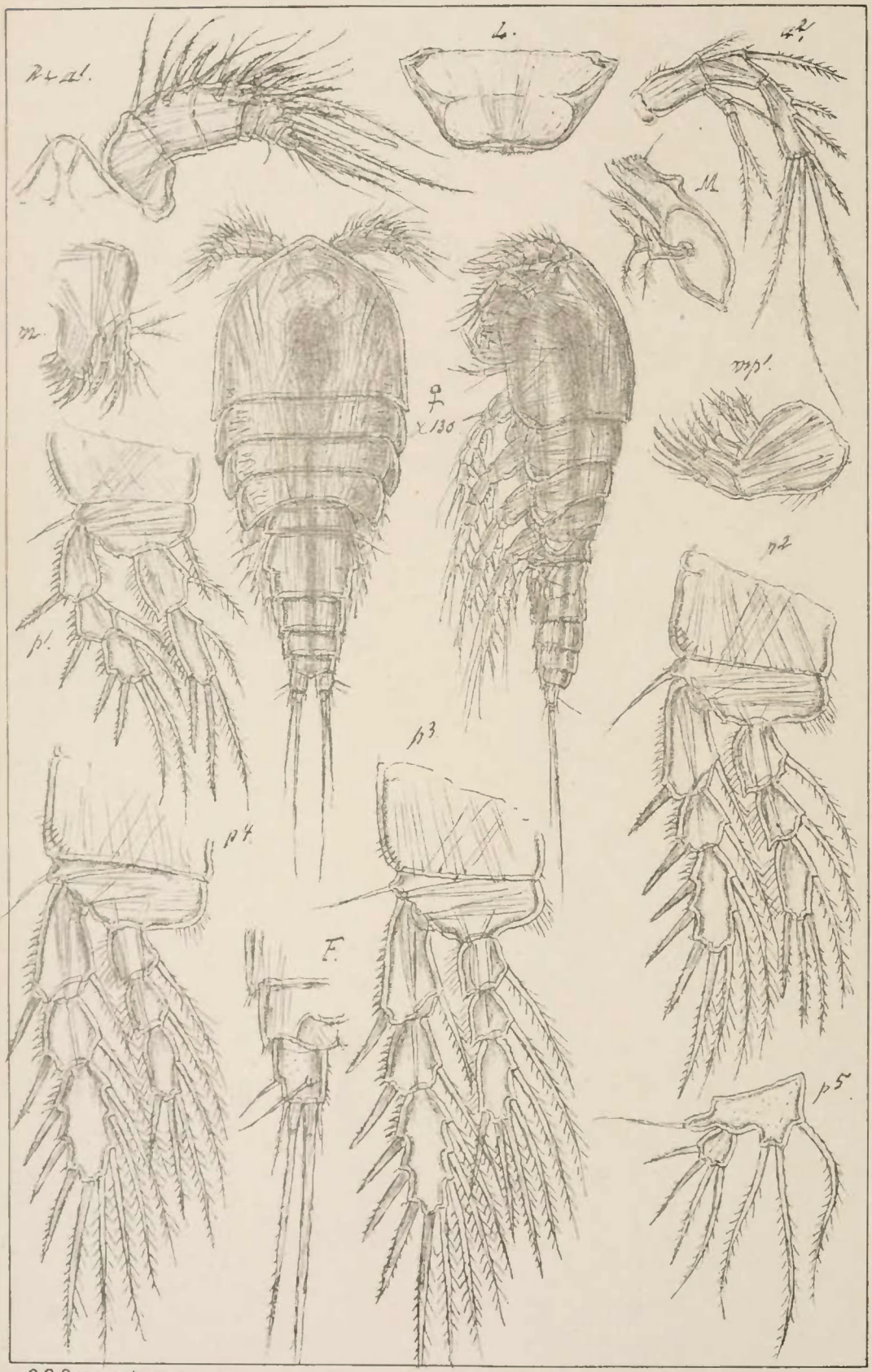
G.O. Sars, autogr. — Norsk Lithgr. Officin

1. Eucanuella spinifera, Scott.

2. Zosime typica, Boeck.

Copepoda

Cerviniidœ | Harpacticoida | Supplm. Pl. 3

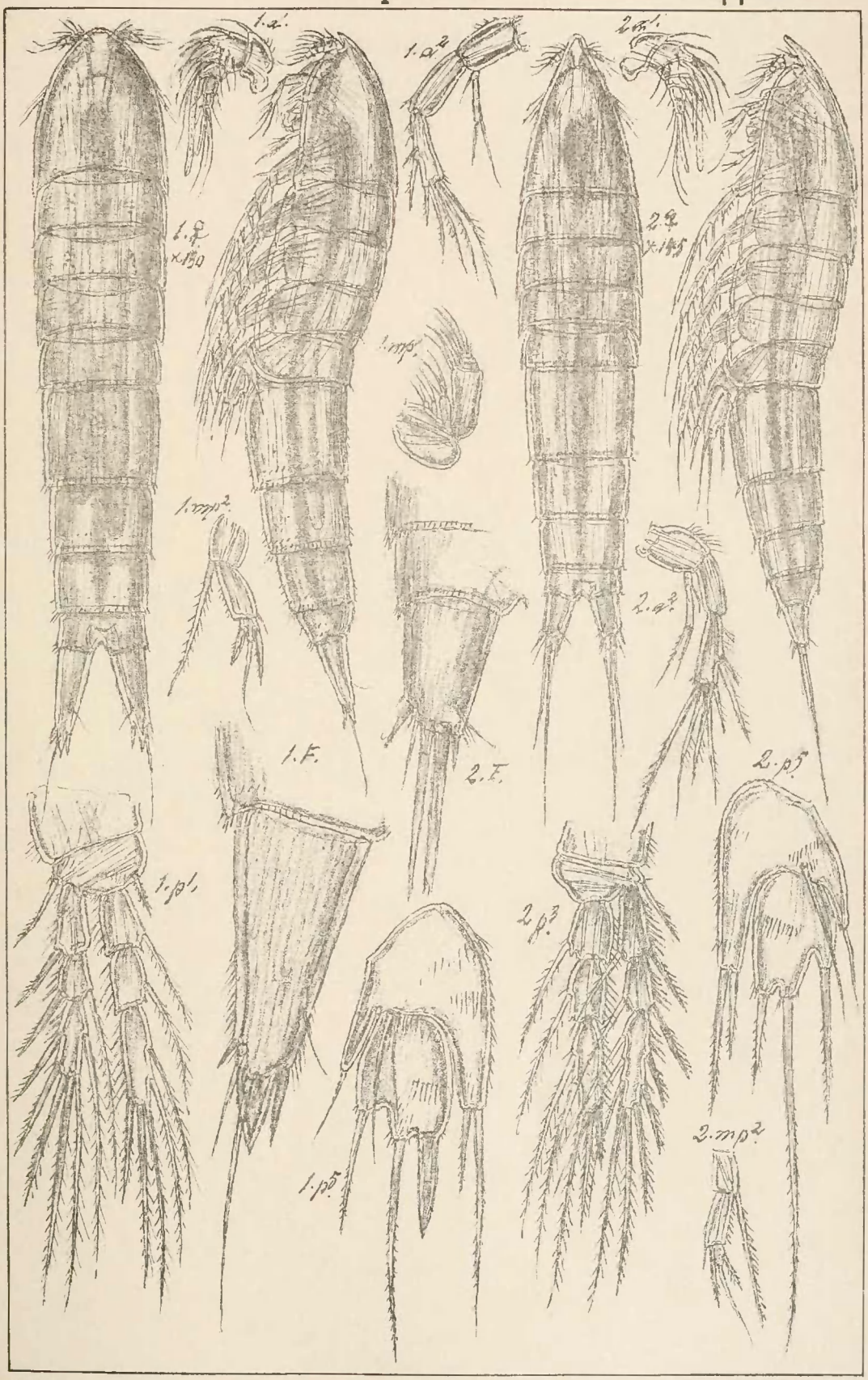


G.O.Sars, autogr.

Norsk Lithgr. Officin.

Zosime incrassata, G.O.Sars.

Copepoda

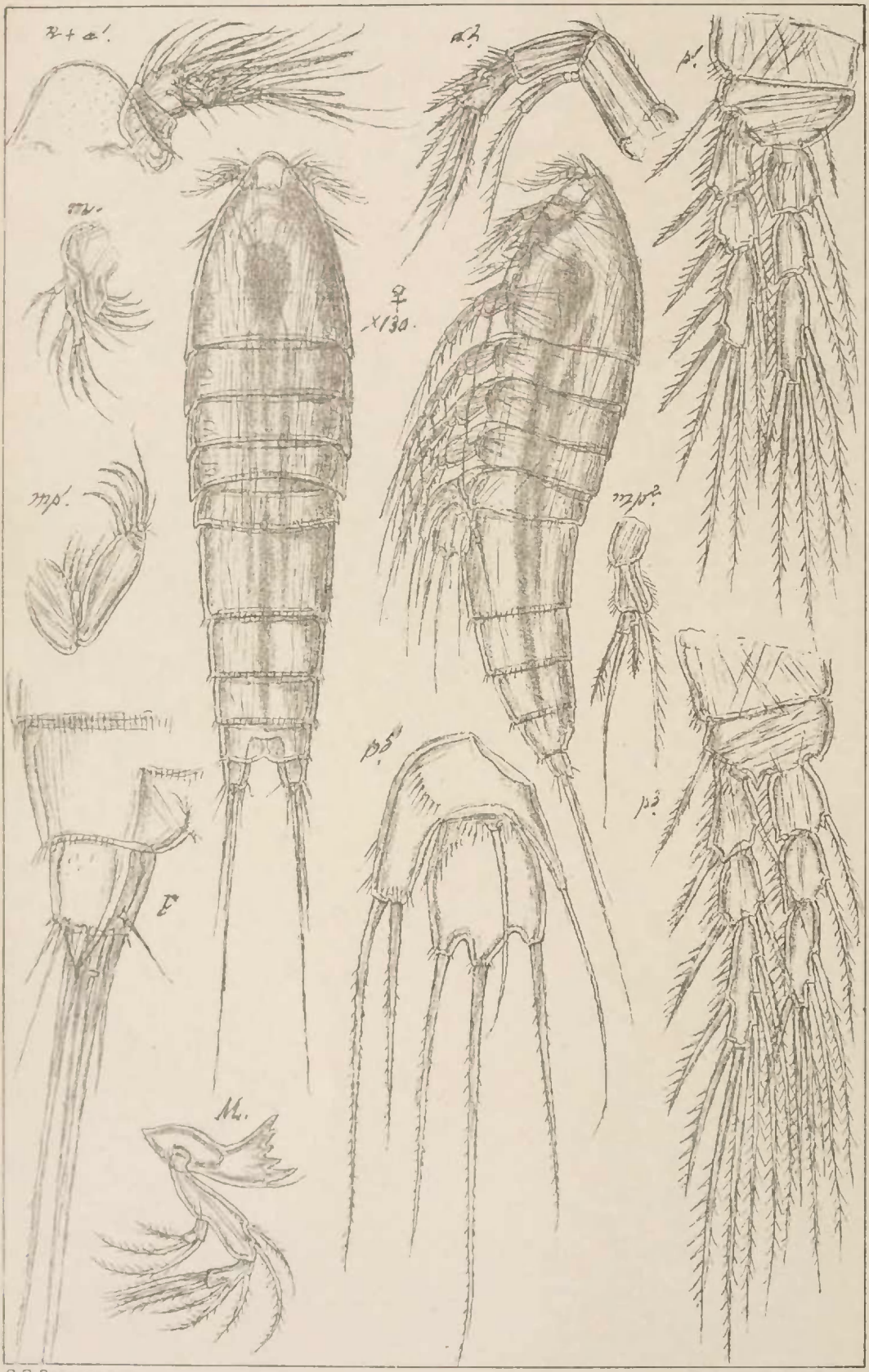


G.O.Sars, autogr. Norsk Lithgr. Officin.

1. Pseudobradya hirsuta (Scott)

Copepoda

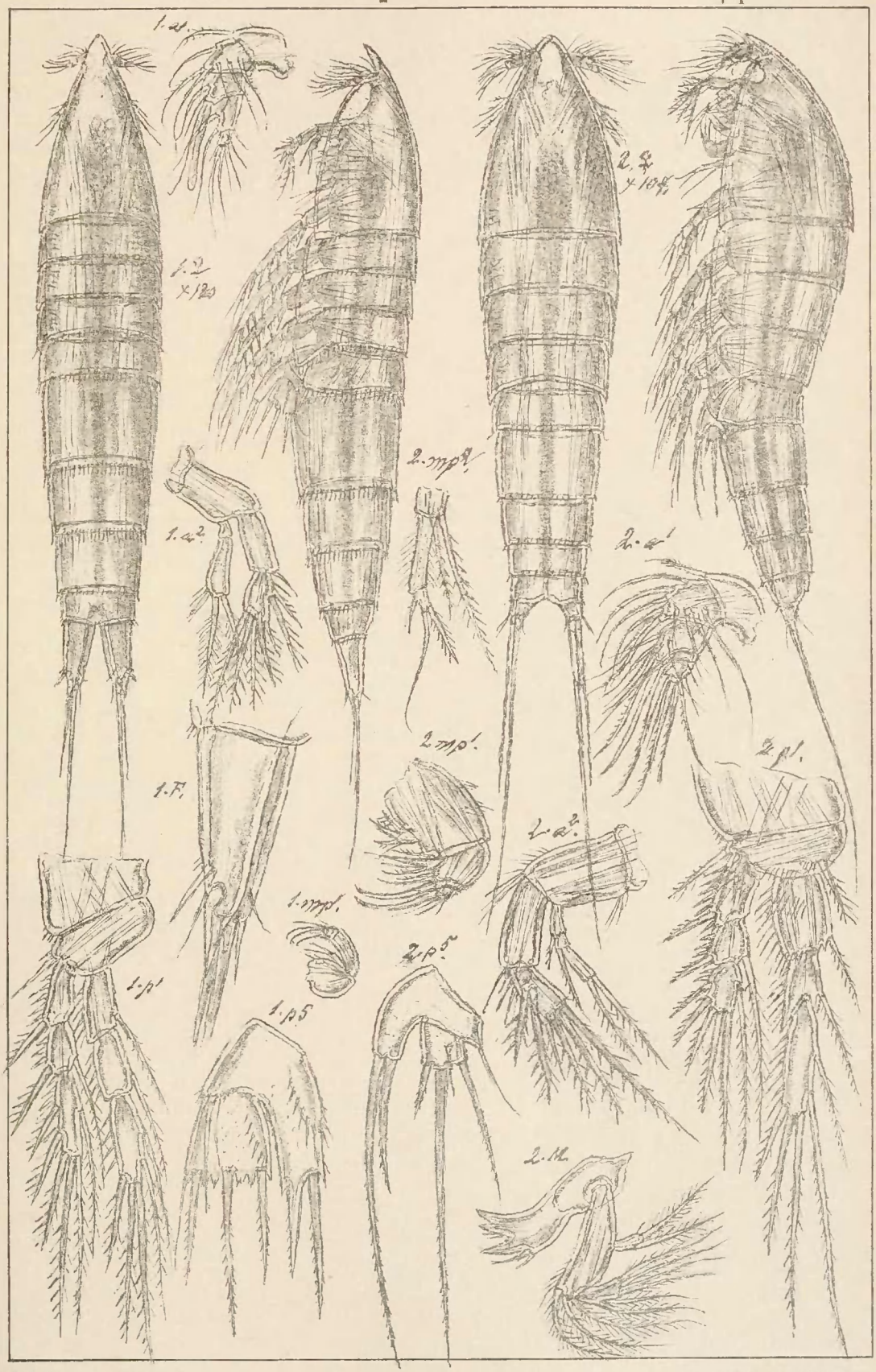
Ectinosomidæ Harpacticoida Supplm. Pl. 5



G.O.Sars, autogr. Norsk Lithgr. Officin.

Pseudobradya robusta, G.O.Sars.

Copepoda

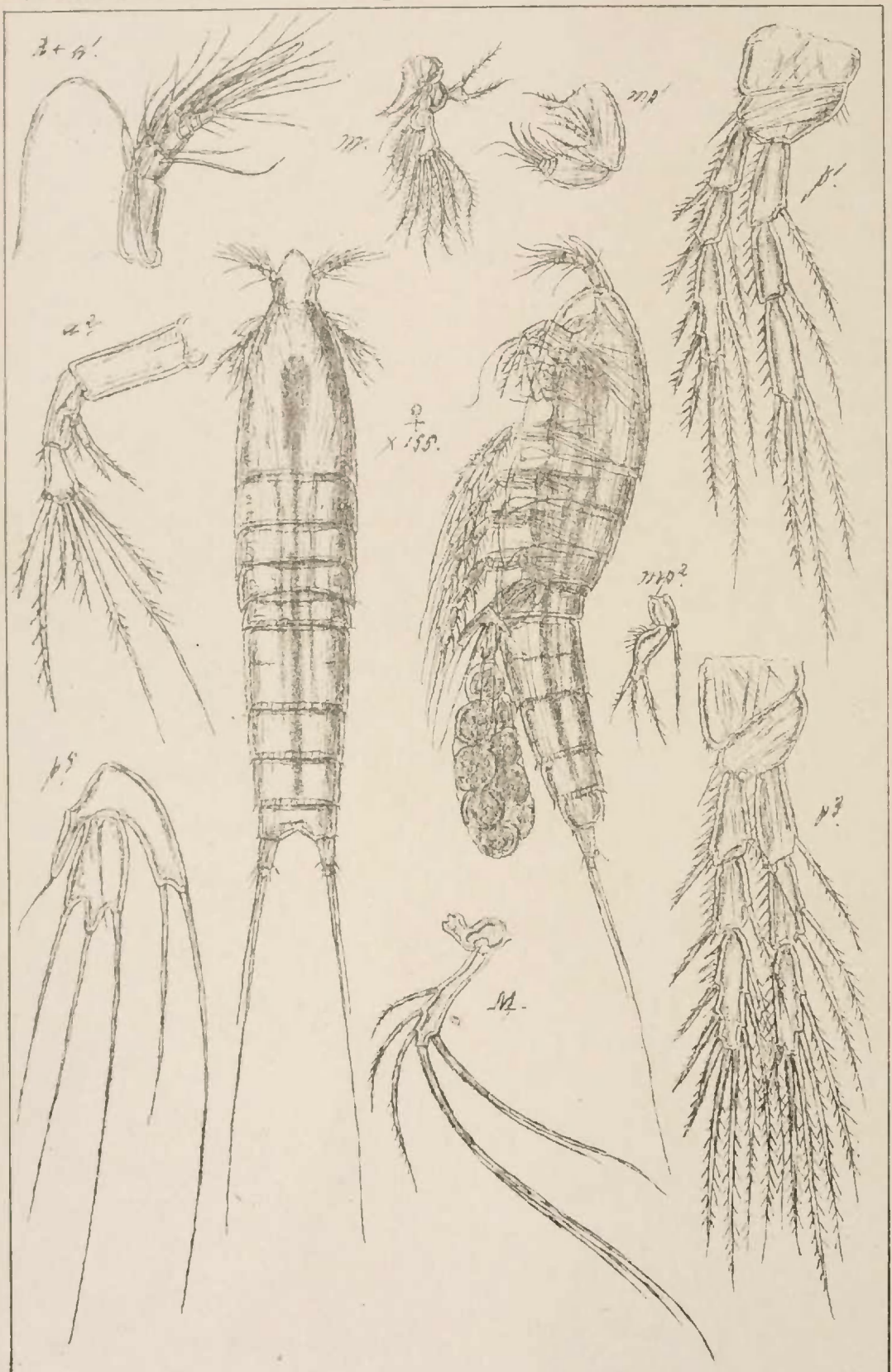


G.O.Sars, autogr. Norsk Lithgr. Officin.

1. Pseudobradya elegans (Scott)

Copepoda

Ectinosomidæ — Harpacticoida — Supplm. Pl. 7

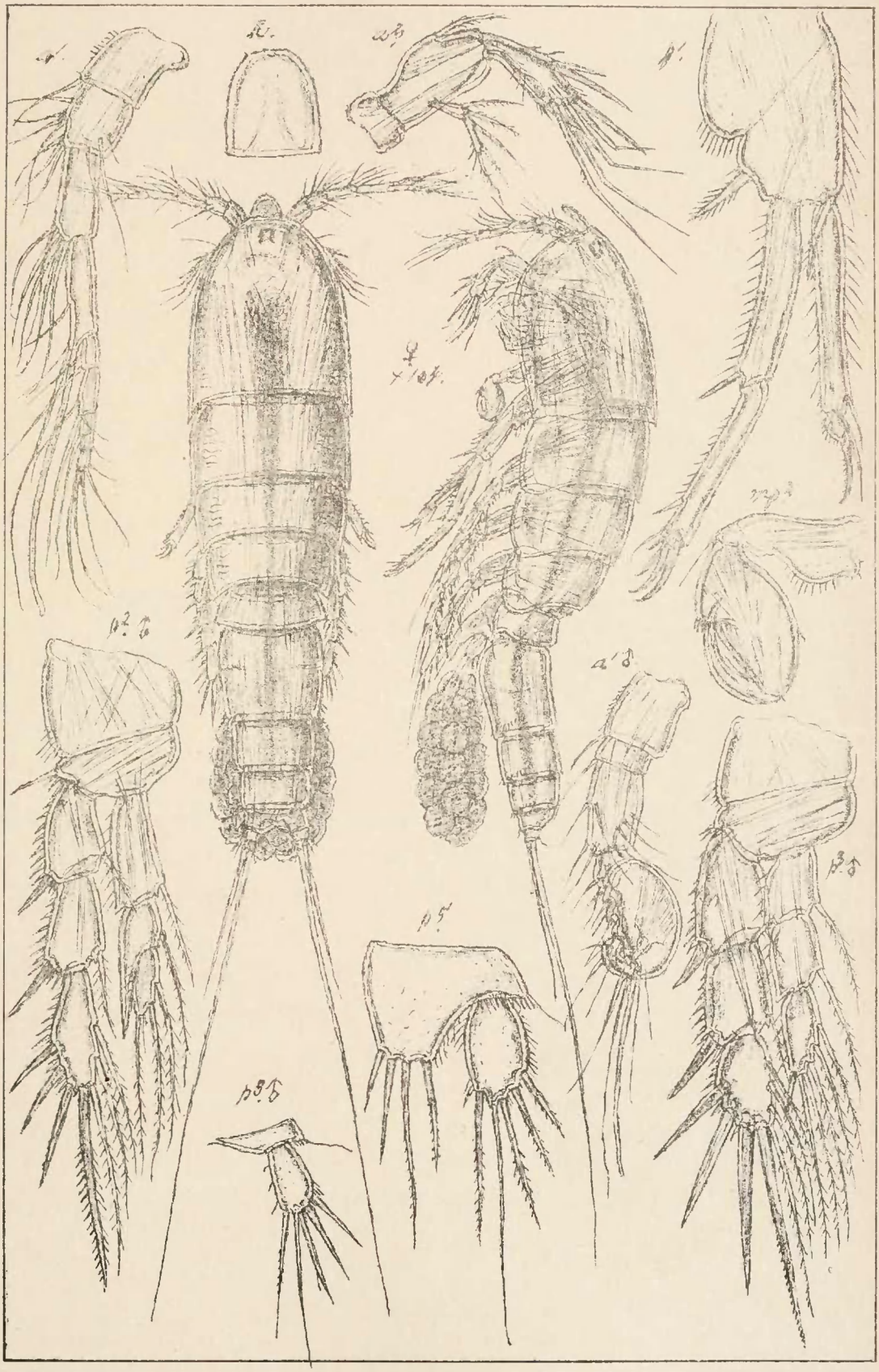


G.O.Sars, autogr. — Norsk Lithgr. Officin.

Ectinosomella nitidula G.O.Sars

Copepoda

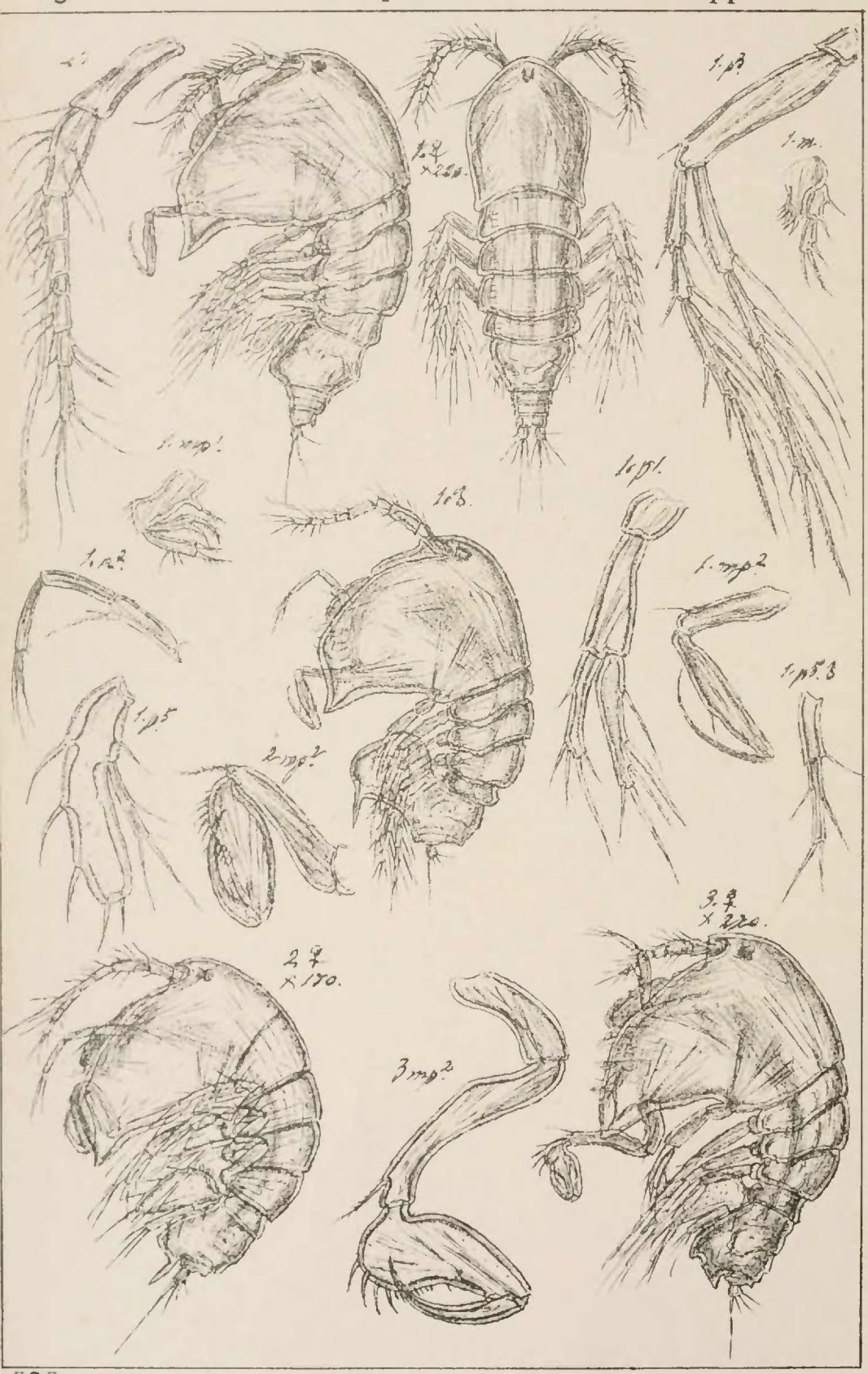
Harpacticidæ Harpacticoida Supplm. Pl. 8



G.O.Sars, autogr. Norsk Lithgr. Officin.

Harpacticus littoralis, G.O.Sars

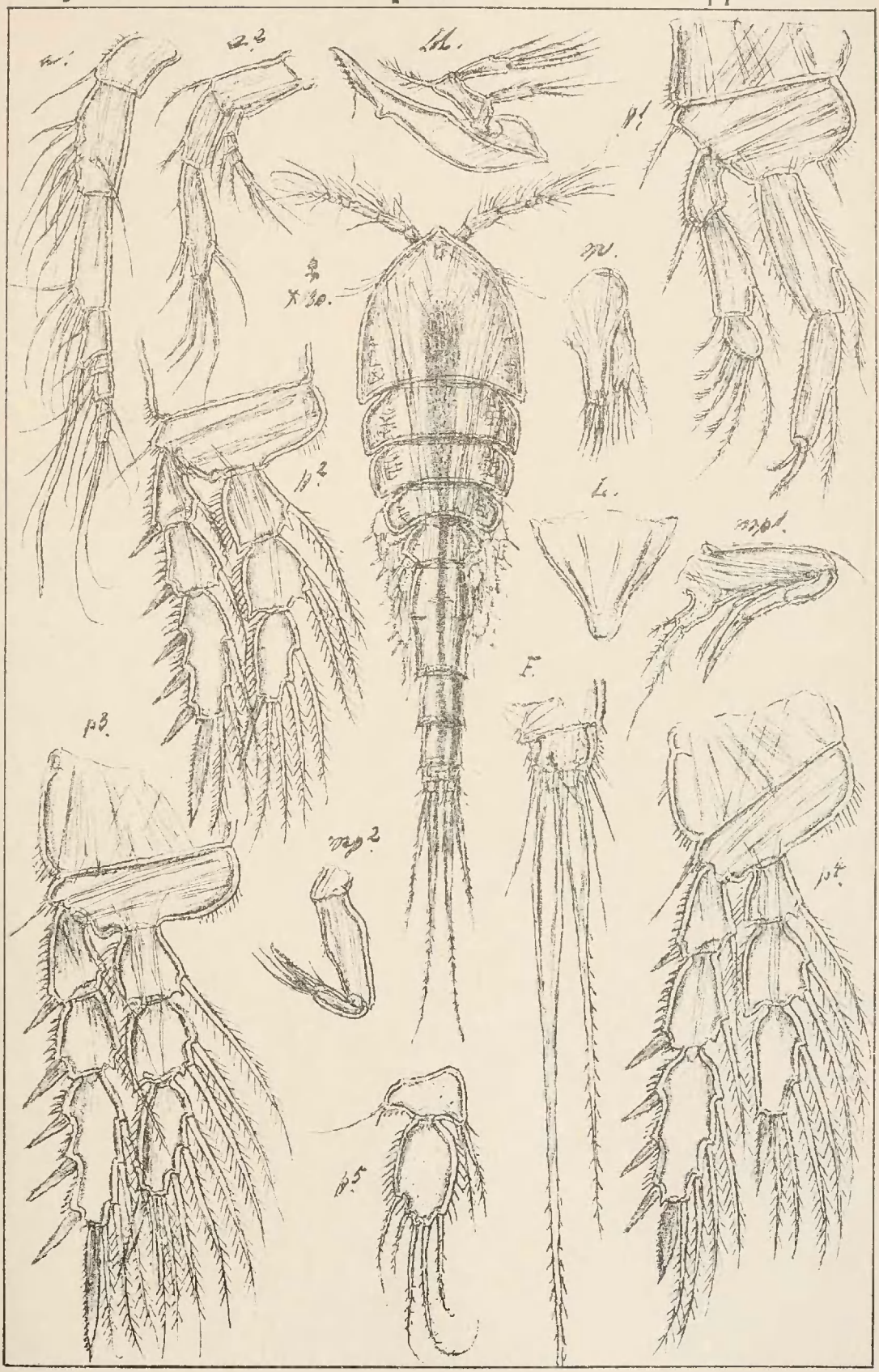
Copepoda



G.O.Sars, autogr. Norsk Lithgr. Officin.

1. Tegastes harpacticoides (Claus)
2. Tegastes calcaratus G.O.Sars

Copepoda



G.O.Sars, autogr.

Norsk Lithgr. Officin.

Idyœa tenella, G.O.Sars