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 XV & XVI

DIOSACCIDÆ (concluded), CANTHOCAMPTIDÆ (part)

WITH 16 AUTOGRAPHIC PLATES

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Male with the 2nd basal joint of 1st pair of legs armed inside with a second small spine in addition to that occurring in the female. Inner ramus of 2nd pair of legs only slightly transformed, biarticulate, distal joint lamellar, with a small dentiform projection at about the middle of the outer edge, and beyond it a comparatively small spine, tip armed with a slightly curved spine and a slender seta outside the latter, inner edge with 3 ciliated setæ. Last pair of legs much smaller than in female, distal joint of insignificant size, and having only 4 partly spiniform setæ; inner expansion of proximal joint very slight, with a slender seta and a very small spinule at the tip.

Colour not yet ascertained.

Length of adult female 0.74 mm.

Remarks.—This new species is nearly related to *A. similis* Claus, and *A. nasutus* Boeck, and somewhat intermediate between these 2 species. It is however easily distinguished from either of them by the much shorter and stouter form of the body. In the structure of the anterior antennæ it agrees with *A. similis*, whereas that of the 1st pair of legs more resembles that in *A. nasutus*. The last pair of legs are built upon the same type as in these 2 species, but are of still larger size and pronouncedly foliaceous, whence the specific name here proposed. In the male, the inner ramus of the 2nd pair of legs is very unlike that in the 2 above-named species, and is far less conspicuously transformed.

Occurrence.—Some few specimens of this form were found in a sample taken last summer at Risör, on the south coast of Norway.

113. Amphiascus nanus, G. O. Sars, n. sp.

(Pl. CXIV, fig. 1).

Specific Characters.—Female. Body comparatively short and stout, slightly tapering behind, with the cephalic segment very large. Rostrum of moderate size and usual form. Urosome much shorter than the anterior division. Caudal rami very short, being about twice as broad as they are long, middle apical setæ of moderate length and slightly thickened at the base. Anterior antennæ rather elongated, 8-articulate, 4th joint somewhat longer than 3rd, terminal part considerably exceeding half the length of the proximal one. Posterior antennæ with the outer ramus shorter than the terminal joint of the inner, middle joint very small and without any seta. 1st pair of legs rather slender, outer ramus scarcely exceeding half the length of the inner, middle joint without the seta on the inner edge, last joint somewhat smaller and carrying on the tip 2 spines and 2

geniculated setæ; 1st joint of inner ramus very long and narrow, being more than 3 times as long as the other 2 combined, last joint only slightly longer than the 2nd, and carrying at the tip a slender claw and a somewhat longer geniculated seta. Natatory legs with the rami rather narrow, the inner one considerably shorter than the outer, setæ exhibiting a similar reduction in number to that found in *A. debilis*. Last pair of legs of moderate size, distal joint oval in form and somewhat tapered towards the end, with 5 rather short marginal setæ; inner expansion of proximal joint comparatively short, triangular in form, and extending scarcely beyond the middle of the distal joint, marginal setæ 5 in number. Ovisacs small and only slightly divergent, each containing, as a rule, only 3 ova arranged in a single row.

Colour not yet ascertained.

Length of adult female 0.36 mm.

Remarks.—This is one of the smallest of the species of the present genus, and exhibits, in the structural details, some resemblance to *A. debilis* (Claus). It is however easily distinguished from that species by its much shorter and stouter body; and on a closer comparison, some well-marked differences are also found in the structure of the several appendages.

Occurrence.—Some few specimens of this dwarfed form, all of the female sex, were found in the same sample in which *A. phyllopus* occurred.

114. Amphiascus exiguus, G. O. Sars, n. sp.

(Pl. CXIV, fig. 2).

Specific Characters.—Female. Body very narrow, sublinear in form, scarcely tapering at all behind. Cephalic segment of moderate size and narrowly rounded in front; rostrum rather produced, lanceolate. Urosome almost as long as the anterior division, segments coarsely spinulose at the hind edge ventrally and laterally. Caudal rami comparatively small, about as long as they are broad, apical setæ of normal appearance. Eye not visible in the living animal. Anterior antennæ comparatively short, 8-articulate, 2nd joint much the largest, fully as long as the 2 succeeding ones combined, terminal part not nearly half as long as the proximal part, and having the 3 first joints very small, and combined scarcely longer than the last joint. Posterior antennæ about as in the preceding species. 1st pair of legs with the outer ramus considerably exceeding half the length of the inner, middle joint without any seta inside, last joint of about the same size, and armed with 2 spines and 2 geniculated setæ; inner ramus with the 1st

joint comparatively short, not attaining the length of the 2 remaining joints combined, last joint linear and longer than the preceding one. Natatory legs moderately slender, and having the number of setæ somewhat reduced, inner ramus in the 2 anterior pairs considerably longer than the outer, with the last joint very narrow, and only provided inside with a single seta, 1st and last joints of the outer ramus in these pairs quite smooth inside. Last pair of legs comparatively small, distal joint oblong in form, scarcely contracted at the base, and carrying 6 marginal setæ, the 2 apical ones hair-like; inner expansion of proximal joint short, triangular, with 4 setæ, the 2 innermost very strong, spiniform. Ovisacs small, each with only 3 ova arranged in a single row.

Male unknown.

Colour whitish.

Length of adult female 0.32 mm.

Remarks.—This form is still smaller than the preceding one, and indeed one of the smallest Harpacticoida known. It is moreover easily recognized by its very narrow body, comparatively short anterior antennæ, and by the structure of the legs.

Occurrence.—Only a solitary specimen, an ovigerous female, has hitherto come under my notice. It was taken last summer at Farsund, south coast of Norway, from a depth of about 30 fathoms, muddy sand.

115. Amphiascus productus, G. O. Sars, n. sp.

(Pl. CXV).

Specific Characters.—Female. Body exceedingly slender and elongated, linear in form, being everywhere of uniform width. Rostrum much produced, narrow lanceolate. Urosome nearly as long as the anterior division, segments apparently without the usual circlets of spinules. Caudal rami very much produced, being considerably longer than the anal segment and about 4 times as long as they are broad, apical setæ normal. Eye wholly absent. Anterior antennæ rather elongated, 8-articulate, with the first 2 joints of unusual size and combined exceeding half the length of the antenna, 3rd and 4th joints of about equal size, terminal part scarcely exceeding in length $^1/_3$ of the proximal part. Posterior antennæ without the usual seta on the anterior edge of the proximal part, outer ramus rather elongated, with the middle joint very small and without any seta. 1st pair of legs slender, outer ramus about the length of the 1st joint of the inner, middle joint with a well-developed seta inside, last joint somewhat

longer, oblong oval in form, carrying 4 spines, and inside them a slender seta; inner ramus with the last joint very slender and narrow, being more than 3 times as long as the preceding joint, the two combined a little shorter than the 1st. Natatory legs with the rami rather narrow, the inner one in the 2 anterior pairs slightly exceeding in length the outer, in 4th pair considerably shorter, number of setæ less reduced than in the 2 preceding species. Last pair of legs of moderate size and highly chitinized, distal joint narrow oblong in form, terminating in a hook-like, outwards-curving projection, inside which 2 small hair-like bristles are attached, outer edge irregularly indented and provided with only a single seta, inner edge with 2 setæ near the end, the distal one very slender and elongated; inner expansion of proximal joint narrow linguiform, extending beyond the middle of the distal joint, and carrying 5 marginal setæ, the 2 apical ones rather small and somewhat unequal, the 2 innermost spiniform. Ovisacs comparatively small, and containing a very limited number of ova.

Male somewhat smaller than female and exhibiting the usual sexual differences. 2nd basal joint of 1st pair of legs with 2 obtuse projections inside in addition to the spine. Inner ramus of 2nd pair of legs transformed in the usual manner. Last pair of legs smaller than in female, but with the distal joint of a very similar shape, inner expansion of proximal joint less developed, and provided with only 2 unequal spines bifid at the tip.

Colour whitish.

Length of adult female 1.14 mm.

Remarks.—This is a very distinct and easily recognizable species. In the total absence of eye, and the unusually produced caudal rami, it somewhat recalls the above-described *A. typhlops*. It is however of still more slender form of body, and moreover differs in the much more elongated anterior antennæ, as also in the peculiar structure of the last pair of legs in both sexes.

Occurrence.—Several specimens of this remarkable form were taken last summer at Farsund, south coast of Norway, from a depth of from 30—50 fathoms, muddy sand.

116. Amphiascus tenellus, G. O. Sars, n. sp.

(Pl. CXVI).

Specific Characters.—Female. Body rather slender, though not to such a degree as in the preceding species, being slightly attenuated behind. Integuments very thin and pellucid. Rostrum narrow, lanceolate. Urosome shorter than the

anterior division, and having the segments finely spinulose at the hind edge ventrally and laterally. Caudal rami short, being considerably broader than they are long, apical setæ normal. Eye inconspicuous. Anterior antennæ very slender and attenuated, 8-articulate, 2nd joint much the largest, 4th joint very narrow and twice as long as 3rd, terminal part not quite attaining half the length of the proximal one. Posterior antennæ with the outer ramus about as long as the terminal joint of the inner, middle joint well defined and setiferous. 1st pair of legs with the outer ramus shorter than the 1st joint of the inner, middle joint with a well-developed seta inside, last joint scarcely larger, and armed with 3 spines and 2 geniculated setæ; inner ramus with the 1st joint very narrow, last joint more than twice as long as the preceding one, the two together about half the length of the 1st. Natatory legs with the rami nearly equal-sized, and having the normal number of setæ. Last pair of legs very delicate, distal joint regularly oval in form, with the tip obtusely blunted, marginal setæ rather small and 6 in number; inner expansion of proximal joint triangular, extending considerably beyond the middle of the distal joint, and produced at the end outside to a small tooth-like projection, inside which a row of 5 setæ occur. Ovisacs narrow oblong, with a very limited number of ova.

Male having the 2nd basal joint of 1st pair of legs armed inside with 2 closely-set spines, in front of which is a small knob-like prominence. Inner ramus of 2nd pair of legs transformed in the usual manner. Last pair of legs very small, with the distal joint short and broad, and the inner expansion of the proximal joint very slight, tipped with 3 unequal spines.

Colour whitish.

Length of adult female 0.54 mm.

Remarks.—This form is chiefly characterised by the very thin and pellucid integuments, the unusually slender anterior antennæ, and the structure of the 1st and last pairs of legs. No eye could be detected in the living animal.

Occurrence.—Some few specimens of this handsome species were taken last summer in the same locality in which *A. productus* occurred.

117. Amphiascus linearis, G. O. Sars, n. sp.

(Pl. CXVII).

Specific Characters.—Female. Body very slender and elongated, linear in form, being of equal width almost throughout. Rostrum less produced than in most other species, narrow lanceolate in shape. Urosome almost attaining the

length of the anterior division. Caudal rami very small, somewhat narrowed distally, apical setæ normal. Eye small, but distinct. Anterior antennæ rather slender and attenuated, 8-articulate, 2nd joint the largest, 4th joint scarcely twice as long as 3rd, terminal part about half the length of the proximal one. Posterior antennæ with the outer ramus very small, being much shorter than the last joint of the inner, middle joint without any seta. 1st pair of legs with the outer ramus about as long as the 1st joint of the inner, middle joint without any seta inside, last joint considerably longer, and armed with 2 spines and 2 geniculated setæ; inner ramus with the last joint more than twice as long as the preceding one, both together somewhat exceeding half the length of the 1st. Natatory legs with the rami almost equal-sized, number of setæ much reduced. Last pair of legs with the distal joint oblong, narrowly exserted at the tip, and carrying 5 somewhat unequal marginal setæ, that issuing from the tip being the longest; inner expansion of proximal joint narrow linguiform, and extending somewhat beyond the middle of the distal joint, marginal setæ 5 in number, the 2 innermost comparatively short and spiniform. Ovisacs rather narrow and only slightly divergent.

Male with the 2nd basal joint of 1st pair of legs produced inside to 2 coarse diverging projections. Inner ramus of 2nd pair of legs large, and of a structure similar to that in the male of *A. debilis*, the distal joint being exserted at the end in a long mucroniform projection. Last pair of legs resembling in structure that in the male of *A. tenellus*, but having the distal joint more exserted at the tip.

Colour whitish.

Length of adult female 0.63 mm.

Remarks.—In its external appearance this species somewhat resembles *A. imus* (Brady), exhibiting a similar very slender form of body. It is however of much inferior size, and moreover differs in its less prominent rostrum and in the structure of the natatory legs, which latter are built on the very same type as in *A. debilis*.

Occurrence.—Some specimens of this form were found last summer together with the 2 preceding species at Farsund, south coast of Norway.

118. Amphiascus sinuatus, G. O. Sars, n. sp.

(Pl. CXVIII).

Specific Characters.—Female. Body moderately slender, resembling in shape that of *A. longirostris*, though perhaps somewhat less robust. Cephalic

segment comparatively large, being fully as long as the 4 succeeding segments combined, epimeral parts exhibiting in front of the middle a very conspicuous sinus. Rostrum very prominent, lanceolate. Urosome almost as long as the anterior division, and slightly attenuated behind, anal segment scarcely shorter than the preceding segment. Caudal rami short, quadrangular, broader than they are long, apical setæ only slightly thickened at the base. Eye well developed. Anterior antennæ rather slender, 8-articulate, 4th joint almost twice as long as 3rd, terminal part half the length of the proximal part. Posterior antennæ with the outer ramus about as long as the terminal joint of the inner, and distinctly 3-articulate, middle joint well defined and setiferous. 1st pair of legs comparatively slender, outer ramus considerably shorter than the 1st joint of the inner, middle joint with a well-developed seta inside, last joint of about the same length, and armed with 3 spines and 2 geniculated setæ; inner ramus with the 1st joint very slender, more than twice as long as the other 2 combined, last joint about twice as long as the preceding one. Natatory legs with the inner ramus in the 2 anterior pairs scarcely shorter than the outer, last joint of outer ramus in these pairs with only a single seta inside. Last pair of legs with the distal joint rather large, broadly oval in form, and provided with 6 marginal setæ, the 2 apical ones very thin, hair-like; inner expansion of proximal joint narrow triangular, extending beyond the middle of the distal joint, and carrying 5 spiniform marginal setæ of nearly equal size. Ovisacs of moderate size.

Male with the inner ramus of 2nd pair of legs transformed in the usual manner. Last pair of legs much smaller than in female, with the distal joint of far inferior size, and only provided with 5 setæ; inner expansion of proximal joint conically produced, and carrying 2 subequal setæ on the tip.

Colour not yet ascertained.

Length of adult female 0.80 mm.

Remarks.—This form, both in size and general appearance, bears a perplexing resemblance to *A. longirostris* Claus. It may, however, be at once distinguished from this form, in its lateral aspect, by the shallower cephalic segment, and still more by the very conspicuous sinus which the epimeral parts form in front of the middle, a character which has given rise to the specific name here proposed. Moreover the structure of the outer ramus of the posterior antennæ, and that of the legs, is somewhat different. Finally, the innermost but one of the caudal setæ does not exhibit any trace of the peculiar bulging at the base found in *A. longirostris*.

Occurrence.—This species was also found last summer occasionally in the same locality in which the 3 preceding new species occurred.

Gen. 40. **Stenhelia**, Boeck, 1864 (not Brady).

Syn: *Delavalia*, Brady.
„ *Beatricella*, Scott.

Generic Characters.—Body more or less pyriform in shape, with the cephalic segment very large and tumid. Rostrum quite immobile, though distinctly defined at the base, forming a broad triangular plate slightly indented on each side of the tip, and provided ventrally with a projecting carina. Epimeral plates of the 3 succeeding segments small, rounded. Urosome comparatively short and gradually tapered behind. Caudal rami more or less produced, with the normal number of setæ. Eye well developed. Anterior antennæ comparatively short and densely setiferous, 8-articulate, with the joints of the proximal part very sharply defined and gradually diminishing in size; those of male transformed in the usual manner. Posterior antennæ with the terminal joint rather large, apical spines scarcely geniculated, outer ramus well developed, triarticulate. Mandibles very strong, palp large, with the basal part much produced, inner ramus bent abruptly backwards, and carrying on the tip a very strong, elongated falciform seta, accompanied by one or two smaller ones, outer ramus very delicate, forming a thin setiferous lamella. Maxillæ and anterior maxillipeds of normal structure. Posterior maxillipeds very small, in some cases not prehensile. 1st pair of legs of exactly the same structure in the two sexes, outer ramus triarticulate, inner in some cases distinctly 3-articulate and prehensile, in other cases composed of only 2 joints. Natatory legs strongly built, with both rami triarticulate and nearly equal in size, except in the 4th pair; inner ramus of 2nd pair in male transformed. Last pair of legs with the distal joint very mobile, forming a more or less broad lamella generally extended laterally; inner expansion of proximal joint short and broad; those in male much smaller than in female, in some cases quite rudimentary. Ovisacs more or less divergent, sub-lateral.

Remarks.—This genus was established in the year 1864 by Boeck, to comprise 2 Norwegian species, viz., *S. gibba* and *S. longicaudata*. Brady wrongly referred to this genus 2 species belonging to the genus *Amphiascus*, as here defined, whereas 3 other species, which undoubtedly belong to Boeck's genus, were referred by him to the new genus *Delavalia*, and all subsequent British authors have followed Brady in this respect. Dr. Giesbrecht also described a species of *Amphiascus* as a *Stenhelia*, though he seems to have been aware of the disagreement of Boeck's definition of the genus with that given by Brady. The genus *Beatricella* recently established by Th. Scott is also unquestionably identical with Boeck's genus, being indeed founded upon the type of the latter genus. The most pro-

minent character of the present genus is the very peculiar structure of the mandibular palp, to which also Boeck has called attention. Moreover the feeble development of the posterior maxillipeds, and the peculiar shape of the last pair of legs, are characteristic features of this genus. Finally the rostrum is quite immobile, and in form also differs from that in the 2 preceding genera. We know at present of 8 species belonging to this genus, 7 of which occur off the Norwegian coast, and will be described below.

119. Stenhelia gibba, Boeck.

(Pl. CXIX & CXX, fig. 1).

Stenhelia gibba, Boeck, Oversigt over de ved Norges Kyster iagttagne Copepoder. Chr. Vid. Selsk. Forhandlinger f. 1864, p. 271.

Syn: *Delavalia mimica*, Scott.
„ *Beatricella mimica*, Scott.

Specific Characters.—Female. Body rather robust, pyriform, with the cephalic segment very large and tumid, being gibbously vaulted above. Rostrum triangular, about as long as it is broad at the base, tip obtusely blunted and defined on each side by a distinct ledge carrying a small hair. Urosome much shorter than the anterior division, and rapidly tapered distally, genital segment scarcely constricted in the middle, though much broader in front than behind. Caudal rami scarcely divergent, being about twice as long as they are broad, and transversely truncated at the tip, apical setæ rather slender. Anterior antennæ much shorter than the cephalic segment, and somewhat curved, 1st joint much the largest, being about as long as the 2 succeeding joints combined, terminal part somewhat exceeding half the length of the proximal part. Posterior antennæ with the outer ramus about the length of the last joint of the inner, and carrying 6 setæ, 3 apical and 3 lateral, middle joint short, the other 2 of about equal size. Posterior maxillipeds small, with the hand somewhat lamellar, dactylus short but distinctly biarticulate. 1st pair of legs with the outer ramus shorter than the 1st joint of the inner, middle joint without any seta inside, last joint somewhat smaller and obliquely truncated at the end, carrying 3 slender spines and a still more slender seta inside them; inner ramus distinctly triarticulate and sub-prehensile, 1st joint very large, being about 3 times as long as the other 2 combined, the latter subequal in size and bent at an angle to the 1st, last joint armed on the tip with a slender claw-like spine, an elongated seta, and a small hair-like bristle. Inner ramus of the 2 succeeding pairs about the length of the outer, that of 4th pair much shorter, not extending beyond the 2nd joint of the outer.

Last pair of legs with the distal joint oval in form and carrying 6 marginal setæ, 2 on the outer edge, 2 on the inner, and 2 on the somewhat exserted tip, proximal seta of outer edge rather coarse, spiniform; inner expansion of proximal joint rather broad, but only slightly prominent, and armed with 5 rather short and somewhat unequal marginal spines, the innermost but one much thicker than the others and provided on each side of the short triangular point with a single small hair. Ovisacs rather large and widely divergent.

Male somewhat smaller than female, and easily recognizable by the prehensile character of the anterior antennæ. Inner ramus of 2nd pair of legs biarticulate, distal joint rather dilated at the base and exserted at the end in a slender setiform appendage having in the middle a somewhat oblique row of very delicate cilia, inner edge provided with 3 setæ, the distal one much elongated. Last pair of legs with the distal joint very small and quite immobile, marginal setæ only 4 in number and spiniform; inner expansion of proximal joint very slight, and armed with a single thick spine of the same appearance as the innermost but one in the female, and accompanied outside by an extremely minute spinule. Genital lobes with 2 hair-like bristles, inside which is an outward-curving spine.

Body in both sexes of a more or less distinct reddish colour.

Length of adult female 0.62 mm.

Remarks.—This is the form at first recorded by Boeck as the type of his genus *Stenhelia*. The *Delavalia mimica* of Scot is unquestionably identical with Boeck's species. The said author has recently established a new genus, *Beatricella*, for this species, on account of the prehensile character of the inner ramus of the 1st pair of legs; but as the present form in all other respects agrees perfectly with the other species referred by that author to the genus *Delavalia* of Brady, I cannot find any reasonable support for such a generic distinction. It will also be shown below, that in one of the species, described by Th. Scott as *Delavalia æmula*, the inner ramus of the 1st pair of legs, though distinctly triarticulate, has wholly lost its prehensility, as in most other species of the present genus.

Occurrence.—This form is rather common in the upper part of the Christiania Fjord in depths ranging from 6 to 20 fathoms, muddy bottom. It also occurs along the whole south and west coasts of Norway, as also in the Trondhjem Fjord (Levanger).

Distribution.– Scottish coast (Scott).

120. Stenhelia proxima, G. O. Sars, n. sp.

(Pl. CXX, fig. 2).

Specific Characters.—Female. Very like the preceding species, but of somewhat smaller size and more robust form of body. Rostrum resembling in shape that in *S. gibba*, though having the tip slightly emarginated. Caudal rami somewhat more divergent, otherwise of a very similar appearance. Antennæ and oral parts almost exactly as in *S. gibba*. 1st pair of legs with the outer ramus longer than the 1st joint of the inner, last joint somewhat longer than the middle one; inner ramus, as in *S. gibba*, triarticulate and prehensile, the 2 outer joints short and bent at an angle to the 1st, which is more than twice as long as those joints combined. Natatory legs of much the same structure as in the typical species, inner ramus, however, a little shorter. Last pair of legs with the distal joint broader, sub-spatulate in form, innermost seta considerably longer than the other, inner expansion of proximal joint less broad than in *S. gibba*, all the marginal setæ much longer than in that species, the innermost but one stronger than the others, and terminating in a slender ciliated lash. Ovisacs comparatively smaller and less divergent, with a more limited number of ova.

Male resembling that of *S. gibba*. Inner ramus of 2nd pair of legs transformed in a very similar manner, terminal appendage however comparatively shorter, and having in the middle a whorl of a few rather coarse denticles. Last pair of legs resembling those in the male of *S. gibba*, the 2 spines attached to the proximal joint inside, however, more elongated, the larger one terminating in a slender lash. Genital lobes, as in the male of *S. gibba*, provided with 2 hair-like bristles, and within them with a somewhat hooked spine.

Colour pale reddish.

Length of adult female 0.49 mm.

Remarks.—This form is closely allied to *S. gibba*, and may easily be confounded with it. It is however of far inferior size, and moreover differs somewhat in the structure of the 1st and last pairs of legs.

Occurrence.—I have met with this form not unfrequently off the south coast of Norway, at Flekkerö and Farsund, in depths ranging from 10 to 30 fathoms.

121. Stenhelia æmula (Scott).

(Pl. CXXI).

Delavalia æmula, Scott, Additions to the Fauna of the Firth of Forth; Eleventh Report of the Fishery Board for Scotland, p. 204, Pl. IV, figs. 36—47.

Specific Characters.—Female. Body of the usual short pyriform shape, being perhaps still more robust than in the 2 preceding species. Rostrum somewhat more attenuated, with the tip transversely truncated. Caudal rami a little longer than the anal segment, and slightly tapered distally. Antennæ and oral parts scarcely different from those in the typical species. 1st pair of legs with the outer ramus about as in that species, the last joint being somewhat shorter than the middle one, which is without any seta inside; inner ramus longer than the outer, and distinctly 3-articulate, 1st joint, however, much shorter than in the 2 preceding species, being scarcely longer than the other 2 combined, the latter not bent upon the former, and of about equal size. Natatory legs very strongly built, with the 1st joint of the inner ramus considerably dilated, and in 4th pair carrying inside an unusually strong deflexed seta. Last pair of legs with the distal joint spatulate in form, the tip being obtusely blunted, marginal setæ rather slender, none of them spiniform; inner expansion of proximal joint very slight, and carrying 4 slender ciliated setæ, the outermost shorter than the other 3. Ovisacs not very large, and containing a limited number of ova.

Colour not yet ascertained.

Length of adult female 0.50 mm.

Remarks.—The above-described form is unquestionably that recorded by Th. Scott as *Delavalia æmula*, though somewhat inferior in size. It is chiefly characterised by the structure of the inner ramus of the 1st pair of legs, which, though distinctly triarticulate, as in the 2 preceding species, is scarcely at all prehensile, a character which gives it a place between those two and the succeeding species. Th. Scott has also examined the male of this species, and gives a figure of the 2nd pair of legs, the inner ramus of which appears to be transformed in much the same manner as in the 2 preceding species.

Occurrence.—Only some few specimens of this form, all of the female sex, have hitherto come under my notice. They were taken last summer off the south coast of Norway, at Flekkerö and Farsund.

Distribution.—Scottish coast (Scott).

122. Stenhelia palustris (Brady).

(Pl. CXXII).

Delavalia palustris, Brady, Monogr. Brit. Copepoda, Vol. II, p. 43, Pl. 4, figs. 1—8.

Specific Characters.—Female. Body, as in the 3 preceding species gradually tapered behind, but somewhat less robust, with the segments more sharply marked of from each other. Rostrum with the apical part less sharply defined and somewhat retuse at the tip. Urosome much shorter than the anterior division, anal segment coarsely spinulose at the hind edge ventrally and laterally. Caudal rami exceeding in length the anal segment, and somewhat constricted at the base, apical setæ comparatively shorter than in the other species and more divergent. Anterior antennæ with the last 3 joints imperfectly defined, otherwise of the usual structure. Posterior antennæ, mandibles, maxillæ and anterior maxillipeds scarcely different from those parts in the 3 preceding species. Posterior maxillipeds very delicate and not at all prehensile, the propodal joint being lamelliform, and the dactylus replaced by a simple seta. 1st pair of legs with the outer ramus coarsely spinulose outside, middle joint with a well-developed seta inside, last joint a little longer and obliquely truncated at the tip, carrying 2 strong spines and 2 unequal setæ, neither of which is geniculated; inner ramus scarcely as long as the outer, and consisting of only 2 joints, the 1st provided inside, as in the other species, with a strong plumose seta, last joint longer and narrower than the 1st, and without any seta inside, outer edge clothed with 2 oblique rows of spinules, tip produced outside to a short dentiform point, inside which a slender denticulated spine and a somewhat shorter seta are attached. Natatory legs strongly built and of normal structure. Last pair of legs with the distal joint almost quadrangular in shape, tip obtusely rounded, and carrying 6 not much elongated setæ, proximal joint not expanded inside, and confluent with that of the other side, the posterior edge carrying 2 unequal setæ at a short distance from the insertion of the distal joint, and farther inwards an extremely small hooked spinule and a short bristle. Ovisacs very large and divergent.

Male with the inner ramus of 2nd pair of legs biarticulate, distal joint oblong oval in form, scarcely tapering behind, and terminating in a short dentiform point, outside which quite a short curved seta is attached, coarsely ciliated in the middle, inner edge carrying in front of the middle 2 unequal setæ and near the end a very coarse deflexed spine, bifid at the tip, and having inside a few spinules. Last pair of legs quite rudimentary, being reduced to a narrow transverse plate carrying on each side a strong spine and 3 simple setæ. Genital lobes somewhat unequal, each with 3 hair-like bristles.

Colour whitish, with a slight yellowish tinge.

Length of adult female 0.80 mm.

Remarks.—This form was recorded by Prof. Brady as early as the year 1868, and was subsequently described and figured by the same author in his well-known Monograph as the type of the genus *Delavalia*. Though differing in some points from the 3 preceding species, it ought, in my opinion, to be considered as congeneric with them, the differences being of only specific value. It is much the largest of the Norwegian species.

Occurrence.—I have only met with this form in a single locality not far from Christiania. It occurred there not unfrequently at a depth of about 3 fathoms, muddy bottom.

Distribution.—British Isles (Brady).

123. Stenhelia reflexa (Brady).

(Pl. CXXIII).

Delavalia reflexa, Brady, Monogr. British Copepoda, Vol. II, p. 45, Pl. LI, figs. 1—8, 11, 13 (not figs. 9, 10, 12, 14).

Specific Characters.—Female. Body short and robust, with the anterior division considerably dilated, the posterior much narrower and slightly tapered behind. Rostrum rather prominent and rapidly attenuated, with the apical part narrowly linguiform in shape. Urosome not much shorter than the anterior division, genital segment conspicuously dilated in front, anal segment larger than the preceding segment. Caudal rami about the length of the anal segment, and slightly tapered distally, apical setæ slender, the outermost one of unusual length. Anterior antennæ somewhat more slender than in the preceding species, otherwise of the usual structure, all the joints well defined. Posterior antennæ with the outer ramus much shorter than the last joint of the inner, terminal joint not attaining the length of the 1st. Mandibular palp with the basal part somewhat dilated in the middle, inner ramus very narrow and abruptly reflexed, carrying on the tip only 2 setæ, the one, as usual, much elongated and falciform. Maxillæ and maxillipeds about as in *S. gibba*. 1st pair of legs with the outer ramus about the length of the inner, middle joint with a well-developed seta inside, last joint of about the same size, and carrying 3 slender spines and 2 somewhat unequal setæ; inner ramus, as in *S. palustris*, consisting of only 2 joints, the last one equal in length to the 1st, and carrying near the base inside a ciliated seta, tip armed with a slender spine and 2 somewhat longer setæ. Natatory legs rather strongly

built, with some of the setæ spiniform. Last pair of legs, with the distal joint spatulate in form, being conspicuously constricted at the base and broadly blunted at the tip, which carries 5 setæ, 2 of which are very small, hair-like; inner expansion of proximal joint broadly rounded, and provided with 4 slender, nearly equal ciliated setæ. Ovisacs of moderate size. Spermatophore, attached to the genital opening, unusually large, pyriform.

Male, as usual, smaller than female, but having the caudal rami of exactly the same shape. Inner ramus of 2nd pair of legs rather slender, biarticulate, distal joint gradually tapered and exserted at the end in a comparatively short denticulated spiniform projection, outside which is a still shorter outward-curving spine, inner edge carrying 4 somewhat unequal setæ. Last pair of legs with the distal joint very small and imperfectly defined at the base, proximal joint forming inside, at some distance from the insertion of the distal joint, a short conical lobe tipped with a slender seta.

Colour pale yellowish.

Length of adult female 0.52 mm.

Remarks.—It seems to me beyond doubt, that Prof. Brady under the name of *Delavalia reflexa* has confounded two distinct species, some of the figures given, especially those representing the 1st pair of legs and the male caudal rami, being unquestionably referable to a very different form, viz., *Stenhelia longicaudata* Boeck, to be described farther on. The name *reflexa* proposed by Prof. Brady for the present form is somewhat inappropriate, referring as it does to a pecularity common to all the species of this genus, as also to some other Copepoda, viz., that in preserved specimens the posterior part of the body is often found abruptly bent dorsally upon the anterior. The present species is especially characterised by the form of the rostrum and the structure of the 1st and last pairs of legs. In the living state it is moreover easily recognized by the pale yellow colour of the body, for which reason, before recognizing its identity with Brady's species, I had noted it under the provisional name *S. flavida.*

Occurrence.—I have met with this species in 3 different localities of the Norwegian coast, viz., in the upper part of the Christiania Fjord, at Farsund, south coast of Norway, and at Bejan, entrance to the Trondhjem Fjord. In all 3 localities it occurred very sparingly at a depth of about 20 fathoms.

Distribution.—British Isles (Brady).

124. Stenhelia Giesbrechti (Scott).

(Pl. CXXIV. fig. 1).

Dencalia Giesbrechti, Th. Scott, On some new and rare Copepoda from the Clyde; Annals of Scottish Nat. Hist. 1896, p. 225, Pl. IV, figs. 1—10.

Specific Characters.— Female. Body of the usual short pyriform shape, though scarcely as robust as in the preceding species, the anterior division being less dilated in front. Rostrum broadly triangular, with the apical part well defined and slightly bifid at the tip. Urosome considerably shorter than the anterior division and somewhat attenuated distally, genital segment conspicuously dilated at the base, anal segment shorter than the preceding one. Caudal rami not much produced, being scarcely twice as long as they are broad and rather approximate, innermost but one of the apical setæ slender and elongated, and conspicuously ciliated in the middle, the adjacent seta on the outer side very peculiarly transformed, being remarkably dilated throughout the greater part of its length, almost sausage-shaped, and terminating in a very thin and slender hair-like lash, the dilated part coarsely ciliated on both edges distally. Anterior antennæ comparatively short and of the usual structure. Posterior antennæ with the outer ramus very slender, exceeding in length the last joint of the inner. Oral parts of the usual structure. 1st pair of legs with the outer ramus about the length of the inner, middle joint provided inside with a distinct, though rather small seta, last joint a little longer and armed with 2 slender spines and 2 still longer setæ; inner ramus biarticulate, distal joint longer and narrower than the proximal one, and provided at the tip with a slender spine and a ciliated seta, inside with 2 similar setæ. Natatory legs moderately strong and of the usual structure. Last pair of legs with the distal joint oblong quadrangular in form, carrying on the somewhat obliquely truncated end 5 setæ, the middle one being very small, hair-like; inner expansion of proximal joint rather slight and subangular inside, carrying 4 slender ciliated setæ, the 2 outermost ones smaller than the other 2, and arranged close together. Ovisacs comparatively small and but slightly divergent, containing a very limited number of ova.

Male unknown.

Colour whitish.

Length of adult female 0.44 mm.

Remarks.—This is a very small form, and at once recognizable from any of the other species of the genus by the peculiar transformation of the outer one of the 2 middle caudal setæ, as also by the comparatively small and appressed ovisacs.

Occurrence.—Several specimens of this form, all of the female sex, were found last summer at Farsund, south coast of Norway, at a depth of from 20—30 fathoms, muddy sand.

Distribution.—Scottish coast (Scott).

125. Stenhelia Normani (Scott).

(Pl. CXXIV, fig. 2).

Delavalia Normani, Th. Scott, Notes on British Copepoda, Ann. Mag. Nat. Hist. ser. 7, Vol. XVI, p. 569.

Specific Characters.—Female. Very like the preceding species both in size and general appearance. Genital segment however more abruptly constricted in the middle, and the remaining part of the urosome narrower and scarcely at all attenuated behind. Caudal rami more divergent and having the setæ of quite normal appearance. Anterior antennæ comparatively shorter and stouter than in *S. Giesbrechti*. Posterior antennæ with the outer ramus very slender, considerably exceeding in length the last joint of the inner. 1st pair of legs of almost exactly the same structure as in *S. Giesbrechti*. Natatory legs likewise very similar. Last pair of legs with the distal joint comparatively shorter and broader, and having the setæ more elongated; inner expansion of proximal joint carrying 4 slender setæ arranged in a manner similar to that in *S. Giesbrechti*. Ovisacs comparatively larger and more divergent.

Male with the inner ramus of 2nd pair of legs somewhat unlike that in the other species, distal joint rather large and slightly dilated in the middle, carrying on the tip 2 unequal straight spines, outer edge with a small dentiform projection beyond the middle, inner edge provided with 2 setæ in the middle and near the end with an elongated deflexed spine, coarsely denticulated in its outer part. Last pair of legs with the distal joint very small and imperfectly defined at the base, carrying 3 spines, the outermost of which is rather strong; proximal joint scarcely at all expanded inside, but provided with 2 unequal setæ in its innermost part.

Colour whitish.

Length of adult female 0.46 mm.

Remarks.—This form was at first regarded by Th. Scott as only a variety of *S. Giesbrechti*. Recently he has however vindicated its specific distinctness, and has proposed for it the above name. It is indeed closely allied to the said species, but on a closer comparison some differences are found to exist which

seem to be fairly constant, the most conspicuous of them being the structure of the caudal setæ and the form of the ovisacs.

Occurrence.—I have found this form not unfrequently off the south coast of Norway, at Risör and Lillesand, at moderate depths among algæ.

Distribution.—Scottish coast (Scott).

126. Stenhelia longicaudata, Boeck.

(Pl. CXXV, fig. 1).

Stenhelia longicaudata, Boeck, Nye Slægter og Arter af Saltvandscopepoder. Chr. Vid. Selsk. Forh. 1872, p. 49.

Syn: *Delavalia reflexa*, Brady (part).
„ — *minutissima*, Scott.

Specific Characters.—Female. Body rather short, and robust resembling somewhat that of *S. reflexa*. Rostrum rather prominent and attenuated distally, apical part very minute and transversely truncated at the end. Genital segment conspicuously dilated in its proximal half, remaining part of urosome only slightly attenuated, anal segment about the length of the preceding one. Caudal rami very narrow and elongated, exceeding in length the 2 preceding segments combined, and widely apart, apical setæ of moderate length and normal appearance. Anterior antennæ of the usual structure. Posterior antennæ with the outer ramus shorter than the last joint of the inner. Oral parts of quite normal structure. 1st pair of legs with the outer ramus considerably longer than the inner, middle joint provided inside with a short seta, last joint rather shorter and armed with 2 slender spines and 2 setæ; inner ramus biarticulate, distal joint quite short, scarcely half as long as the proximal one, and provided inside with a small seta, tip carrying 3 setæ, the middle one being much the largest and remarkably thickened at the base, terminating in a very delicate and finely ciliated lash. Natatory legs of the usual structure. Last pair of legs with the distal joint pronouncedly spatulate in form, and provided with 6 setæ, 2 of which issue from the outer edge, innermost seta very slender and elongated; inner expansion of proximal joint very slight and exhibiting near the insertion of the distal joint a small, but rather conspicuous incision, marginal setæ slender and 4 in number, the outermost issuing close to the next, and being smaller than the others. Ovisacs of moderate size and rather divergent.

Male with the inner ramus of 2nd pair of legs rather peculiar in shape, the proximal joint being strongly dilated and without any seta inside, distal joint

exhibiting inside in the middle a deep excavation and carrying on the tip a single slender spine, inner edge below the excavation provided with a similar spine, and in front of it with a simple seta. Inner ramus of 3rd pair of legs also somewhat transformed, though consisting of 3 well-defined joints, the last of which, however, is considerably larger than in female, and provided with an additional seta inside. Last pair of legs with the distal joint well defined, but very small, not dilated towards the end and only provided with 4 small setæ; inner expansion of proximal joint very slight and carrying 2 subequal setæ.

Colour more or less distinctly reddish.

Length of adult female 0.48 mm.

Remarks.—This form has been very imperfectly characterised by Boeck, and was therefore not recognised by Mr. Scott, who described it as a new species under the name of *Delavalia minutissima*. Some of the figures given by Prof. Brady of his species *Delavalia reflexa* (for instance figs. 9 and 14) undoubtedly refer to the present form. The most prominent feature of this species is unquestionably the very narrow and elongated caudal rami, a character which indeed has given rise to the specific name *longicaudata* proposed by Boeck. In the structure of the 1st pair of legs it somewhat resembles *Delavalia robusta* of Brady, a species which also may be referred to the Norwegian fauna, as it is recorded by Th. Scott from Finmark.

Occurrence.—I have met with this form occasionally in the upper part of the Christiania Fjord, as also at Flekkerö, south coast of Norway, in moderate depths among algæ.

Distribution.—British Isles (Brady, Scott).

Gen. 41. **Stenheliopsis**, G. O. Sars, n.

Generic Characters.—General form of the body somewhat resembling that in *Stenhelia*, being rather short and stout. Rostrum immobile, forming a thin linguiform plate, without any ventral carina. Urosome much narrower than the anterior division. Caudal rami long and narrow, divergent. Anterior antennæ short and much curved, with the number of articulations reduced. Posterior antennæ rather strongly built, but with the apical setæ comparatively small, outer ramus of moderate size, biarticulate. Mandibles with the palp of quite normal appearance. Maxillæ and anterior maxillipeds likewise of usual structure. Poste-

rior maxillipeds terminating in a well-developed prehensile hand. 1st pair of legs with the inner ramus biarticulate and not prehensile. Natatory legs not very different in structure from the 1st pair, all having the inner ramus biarticulate and much coarser than the outer. Last pair of legs very small, distal joint quite rudimentary and not defined at the base; proximal joint only slightly expanded inside. Ovisacs small, containing a very limited number of ova. *Male* unknown.

Remarks.—This new genus is somewhat allied to *Stenhelia*, but differs very materially in several of the anatomical characters. It contains as yet only a single species, to be described below.

127. Stenheliopsis divaricata, G. O. Sars, n. sp.

(Pl. CXXV, fig. 2).

Specific Characters.—Female. Body short and stout, with the anterior division considerably dilated, the posterior rather narrower. Cephalic segment very large and vaulted above. Rostrum rather prominent, forming a very thin linguiform plate, evenly rounded at the tip. Urosome almost as long as the anterior division, and only slightly attenuated behind, genital segment scarcely at all dilated in front. Caudal rami exceedingly slender and elongated, attaining about half the length of the urosome, and curving outwards, apical setæ extended laterally, the innermost but one rather coarse, with the distal part closely annulated and clothed with short cilia; outer edge of the rami carrying a short seta at some distance from the tip. Eye wholly absent. Anterior antennæ abruptly curved in their outer part and densely setiferous, 6-articulate, the first 2 joints much the largest, and together about twice as long as the remaining part, 4th and 5th joints very small, terminal joint long and narrow. Posterior antennæ with the distal joint fully as long as the proximal one, outer ramus scarcely more than half as long, and provided with 6 setæ, 4 of which belong to the distal joint. Mandibular palp with the basal part comparatively short and broad, rami a little unequal, the inner one being the larger, both clothed with simple setæ. 1st pair of legs with the 2nd basal joint produced at the end inside to a conical process carrying a strong deflexed spine, outer ramus narrow, with no seta inside the middle joint, last joint somewhat larger and armed with 3 spines and a slender seta; inner ramus about the length of the outer, but somewhat broader, proximal joint without any seta inside, distal joint a little longer and narrower, and provided inside in front of the middle with a small seta, tip carrying 2 unequal

spines and a slender seta. Natatory legs all of the same structure, though slightly differing in size, the 4th pair being considerably smaller than the other 2; outer ramus in all of them rather narrow, with no seta inside the 1st and last joints; inner ramus much coarser than the outer, proximal joint with a strong seta inside, distal joint considerably larger, with 2 thickish setæ inside, 2 others at the tip, and a short spine outside near the end. Last pair of legs having outside a small knob-like prominence carrying a slender hair-like bristle, and immediately inside it another knob-like prominence tipped with 2 spines and representing the rudimentary distal joint, innermost part of each leg forming a short lamellar expansion carrying 3 subequal ciliated setæ. Ovisacs very small and extended laterally, each containing only one or two ova.

Colour whitish.

Length of adult female 0.50 mm.

Remarks.—This form may be easily recognized from any of the other Harpacticoida by the unusual appearance of the caudal rami, which are extremely slender and curved outwards in a most peculiar manner, their apical setæ being extended straight laterally, not as usual behind. This peculiarity has indeed given rise to the specific name *divaricata* here proposed.

Occurrence.—Only 3 female specimens of this remarkable Copepod have hitherto come under my notice. One of these specimens was taken at Bukken, west coast of Norway, the other 2 at Farsund. In both localities it occurred at a depth of about 50 fathoms, muddy bottom.

Fam. 12. Canthocamptidæ.

Characters.—Body, as a rule, slender, more or less cylindrical in form, with no sharp demarcation between the anterior and posterior divisions. Rostrum in most cases very small, and not distinctly defined behind. Anterior antennæ more generally 8-articulate, and distinctly hinged in the male. Posterior antennæ with the outer ramus comparatively small. Mandibular palp likewise in most cases of insignificant size. Posterior maxillipeds terminating in a well-developed clawed hand. 1st pair of legs more or less distinctly prehensile, the inner ramus being generally longer than the outer and bent in its outer part. Natatory legs more or less slender, with the outer ramus always longer than the inner, which in some cases becomes much reduced. Last pair of legs in female more or less

lamellar, with the distal joint generally well defined and the proximal joint expanded inside. Only a single ovisac present in female.

Remarks.—To this family I refer a number of genera, which, as regards both the external appearance and the structure of some of the appendages, exhibit a perplexing similarity to the more typical *Diosaccidæ (Amphiascus)*, though differing materially in a few points. Thus in all the forms only a single ovisac is present in the female, and the rostrum never attains that full development which is characteristic of the *Diosaccidæ*, being in most cases reduced to a very minute immobile point. The outer ramus of the posterior antennæ is very small, and this is also generally the case with the mandibular palp. As to the legs, the 1st pair are often built upon a very similar type to that in the *Diosaccidæ*, the inner ramus being generally longer than the outer, and more or less prehensile. On the other hand, this ramus, in the natatory legs, is as a rule less fully developed than in the *Diosaccidæ*. The present family is represented both in fresh water and in the sea, some forms also in brackish water.

Gen. 42. **Canthocamptus,** Westwood, 1836.

Syn: *Canthocarpus.* Baird.

Generic Characters.—Body slender, cylindric in shape, and very flexible, with the anterior division only little broader than the posterior. Cephalic segment of moderate size and not very deep; rostral projection very small, and rudimentary. Epimeral plates of the 3 succeeding segments comparatively small and rounded behind; last pedigerous segment scarcely narrower than the preceding one, but without true epimeral plates. Urosome well developed, with the segments spinulose at the hind edge ventrally and laterally, genital segment in female large and imperfectly divided in the middle, last segment short, with a distinct anal opercle edged with regular spinules. Caudal rami slightly produced and provided outside with 2 hair-like bristles, apical setæ normal. Eye well developed. Anterior antennæ more or less slender, 8-articulate, those in male strongly hinged. Posterior antennæ with the outer ramus rather small, biarticulate, distal joint the smaller. Oral parts on the whole poorly developed. Mandibular palp simple, biarticulate. Maxillæ without distinctly defined exopodal and epipodal plates. Anterior maxillipeds provided with only 2 digitiform lobules inside the unguiferous joint. Posterior maxillipeds normally developed. 1st pair of legs with the inner

ramus distinctly 3-articulate and longer than the outer, being more or less bent at the end. Natatory legs very slender, with the inner ramus much shorter than the outer and in the 2 anterior pairs 3-articulate, in 4th pair biarticulate; those in male having the inner ramus in all the pairs, or only in the 2 anterior ones, transformed. Last pair of legs with the distal joint comparatively small, inner expansion of proximal joint more or less prominent, marginal setæ of both joints rather coarse, spiniform.

Remarks.—This genus was established as early as the year 1836 by Westwood, to include the well-known fresh-water species, *C. staphylinus* Jurine. In recent times, several new species have been added, most of them likewise from fresh water; and a subdivision of the original genus into several nearly-allied genera has been carried out by some recent authors. The present genus is therefore now generally taken in a much more restricted sense than previously. It still comprises several well-defined species, 2 of which belong to the Norwegian fauna.

123. Canthocamptus staphylinus (Jurine).

(Pl. CXXVI & CXXVII).

Monoculus staphylinus, Jurine, Historie des Monocles, p. 74, Pl. VII, figs. 1—17.

Syn: *Canthocamptus minutus*, Baird (not Claus).

Specific Characters.—Female. Body moderately slender and slightly constricted in the middle. Cephalic segment scarcely longer than the 3 succeeding segments combined; rostrum forming a very small triangular projection between the insertion of the anterior antennæ. Urosome a little shorter than the anterior division, and having the segments rather sharply marked off from each other, genital segment exceeding in length the 2 succeeding ones combined, last segment much the smallest and produced at the end on each side in a short dentiform projection, anal opercle rather prominent, semilunar, and armed with a regular row of simple spinules. Caudal rami about the length of the anal segment, being twice as long as they are broad, and of uniform width throughout, the outer one of the 2 middle apical setæ comparatively short and very distinctly denticulate, the inner rather elongated, exceeding half the length of the body. Anterior antennæ comparatively slender and elongated, exceeding in length the cephalic segment, and clothed with rather short setæ, terminal part very narrow and about the length of the proximal part. Posterior antennæ of moderate size, proximal joint with 2 widely separated setæ on the anterior edge, distal joint of about the same length,

outer ramus scarcely half as long, and carrying 4 short setæ, 3 of which belong to the last joint. 1st pair of legs with the outer ramus about the length of the 1st joint of the inner, last joint somewhat larger than the preceding one, and armed with 2 spines and 2 geniculated setæ; inner ramus twice as long as the outer and very slender, 1st joint about the length of the other 2 combined, the latter somewhat unequal, the terminal one being much the longer and very narrow linear, carrying on the tip a slender denticulated spine, a long seta, and a small hair-like bristle. Natatory legs exceedingly slender, inner ramus of the 2 anterior pairs extending considerably beyond the 2nd joint of the outer, that of 4th pair to about the middle of that joint. Last pair of legs with the distal joint narrow oblong in form, and armed with 5 spines, 3 on the outer edge, one very small one on the inner edge near the end, and one very long apical one; inner expansion of proximal joint broadly rounded, and not extending to the middle of the distal joint, marginal spines 5 in number and somewhat unequal. Ovisac short and rounded, sub-globose in form, never extending beyond the end of the urosome. Spermatophore attached to the genital opening very large, sabre-like, and often of a very dark brownish colour.

Male not much smaller than female and easily recognizable by the prehensile anterior antennæ and the complete division of the anterior caudal segment. 1st pair of legs of exactly the same structure as in the female. Inner ramus of all the 3 succeeding (natatory) pairs conspicuously transformed, that of 2nd pair rather slender, with the outer 2 joints imperfectly defined, the last one armed inside with a short deflexed spine, and carrying on the somewhat obliquely rounded extremity 3 setæ, the outermost of which is much elongated; that of 3rd pair considerably shortened, middle joint produced at the end inside to a strong deflexed mucroniform process, last joint short, oval in form, and tipped with a small bristle; that of 4th pair with the distal joint produced at the end outside to a short spiniform projection, inside which 3 closely-set, long, curved and somewhat spiniform setæ are attached. Last pair of legs smaller than in female, distal joint of a similar shape, but provided inside near the base with an additional slender spine; inner expansion of proximal joint quite short, and provided with only 2 unequal spines. Genital lobes armed with 2 spines and a hair-like bristle.

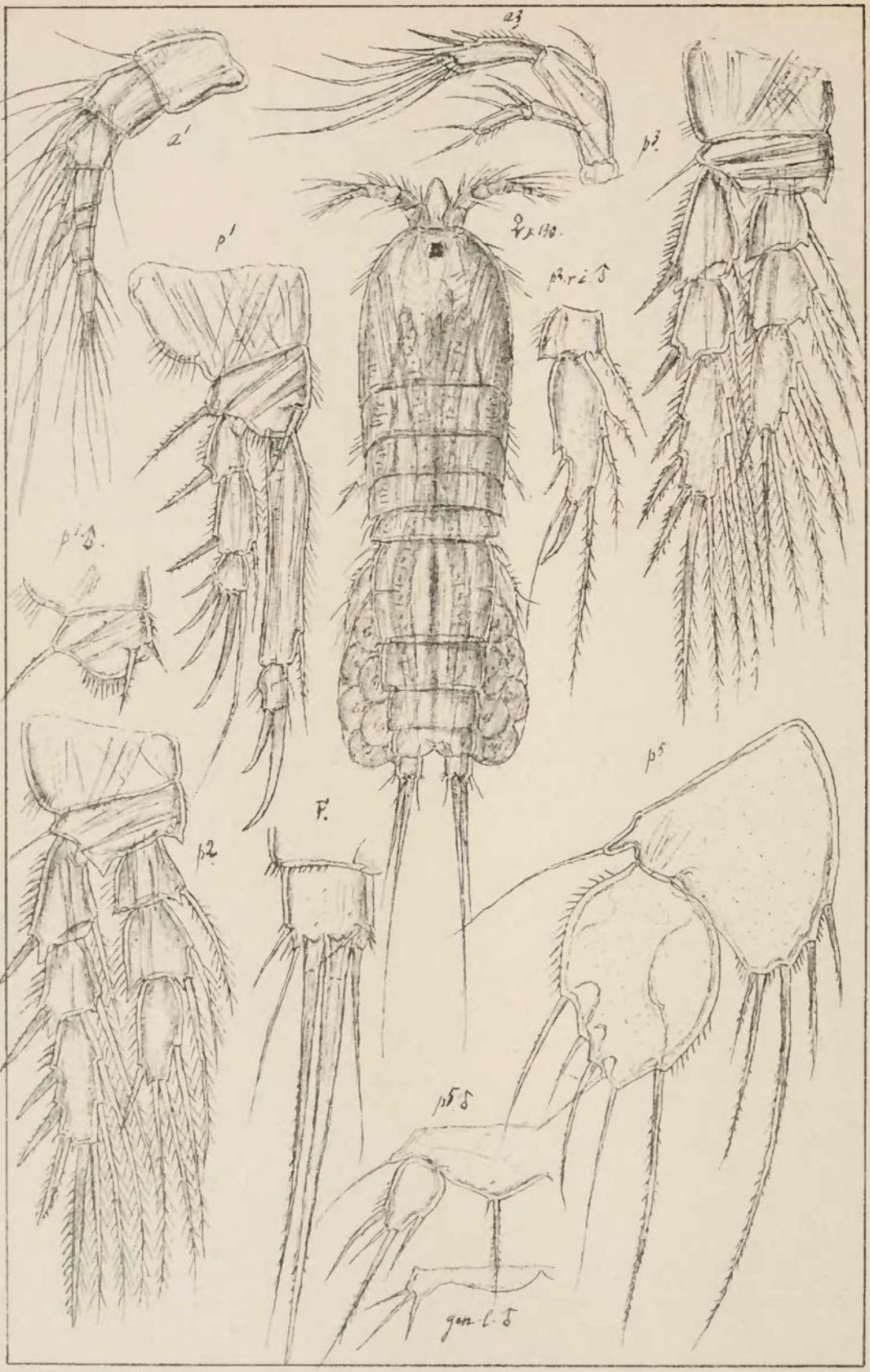
Colour somewhat variable, in some cases yellowish green, in others more reddish; that of male more generally of the last-named colour.

Length of adult female about 1 mm.

Remarks.—It is very probable, that the *Cyclops minutus* of O. Fr. Müller refers to the present species, and that thus the identification made by earlier authors is quite correct. But in any case the name *minutus* would be very inap-

Copepoda

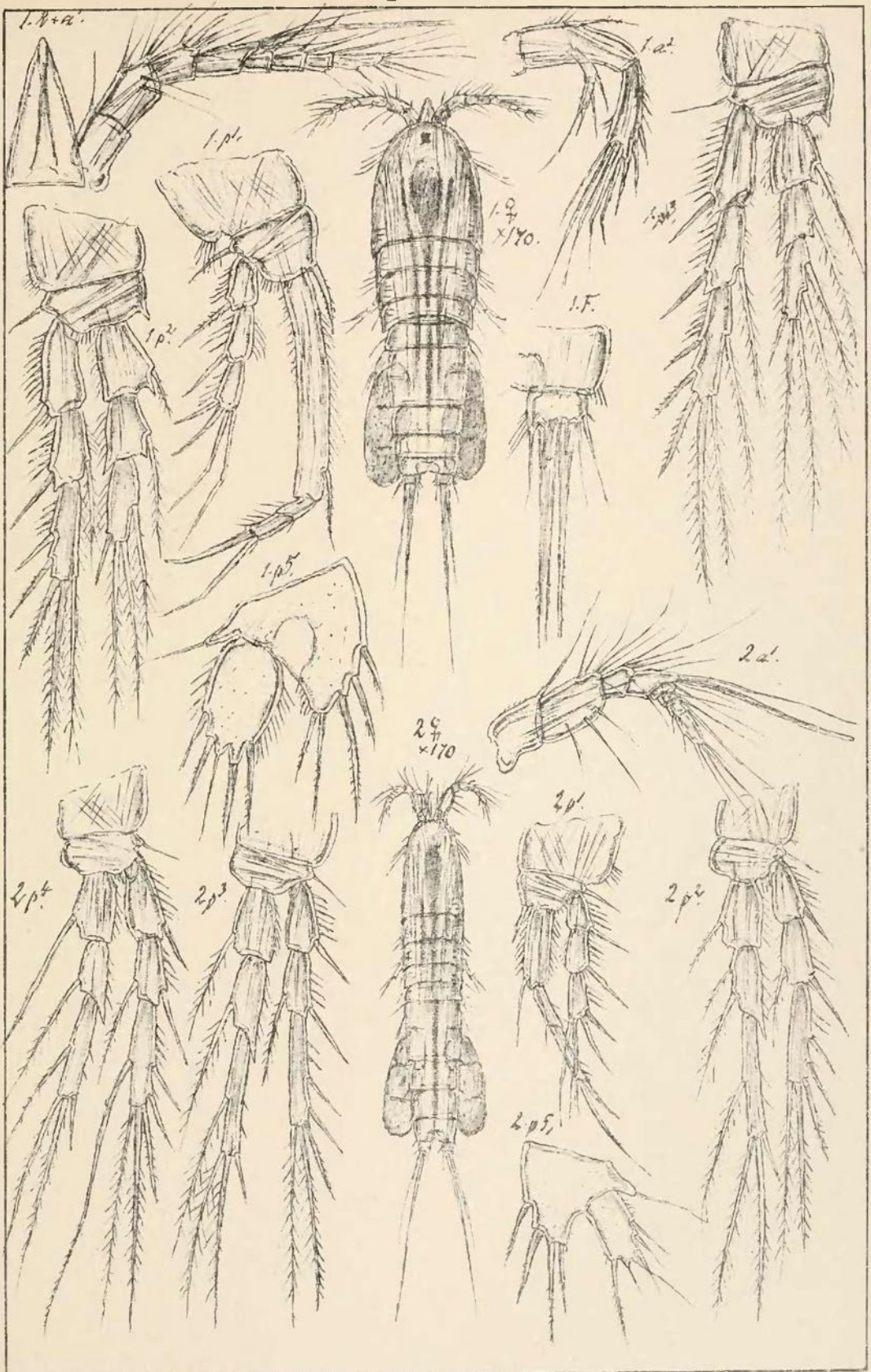
Diosaccidæ. Harpacticoida Pl. CXIII.



G.O.Sars autogr. Norsk lithgr. Officin

Amphiascus phyllopus, G.O.Sars.

Copepoda



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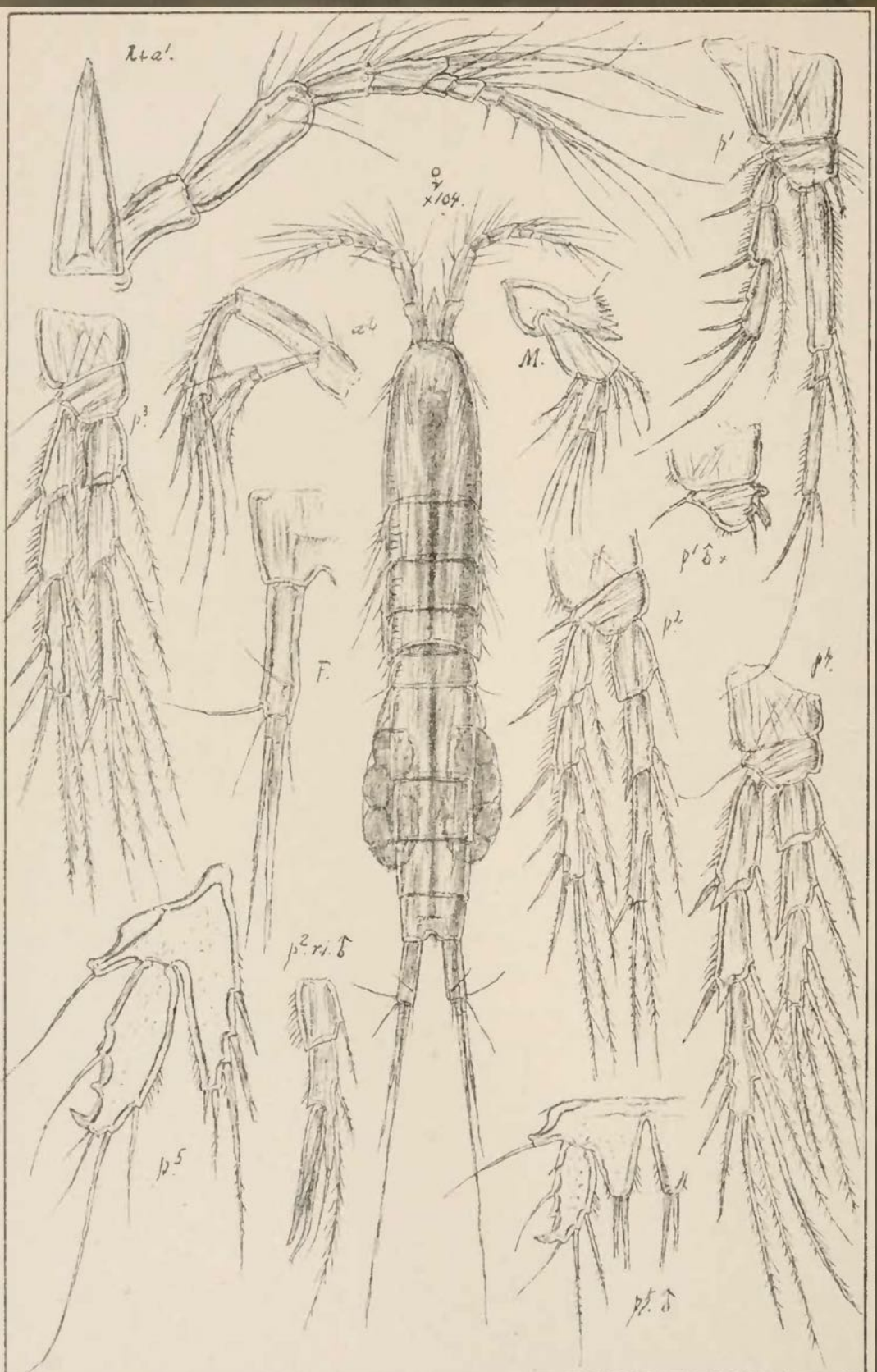
1. Amphiascus nanus. G.O.Sars.
2. " exiguus. G.O.Sars.



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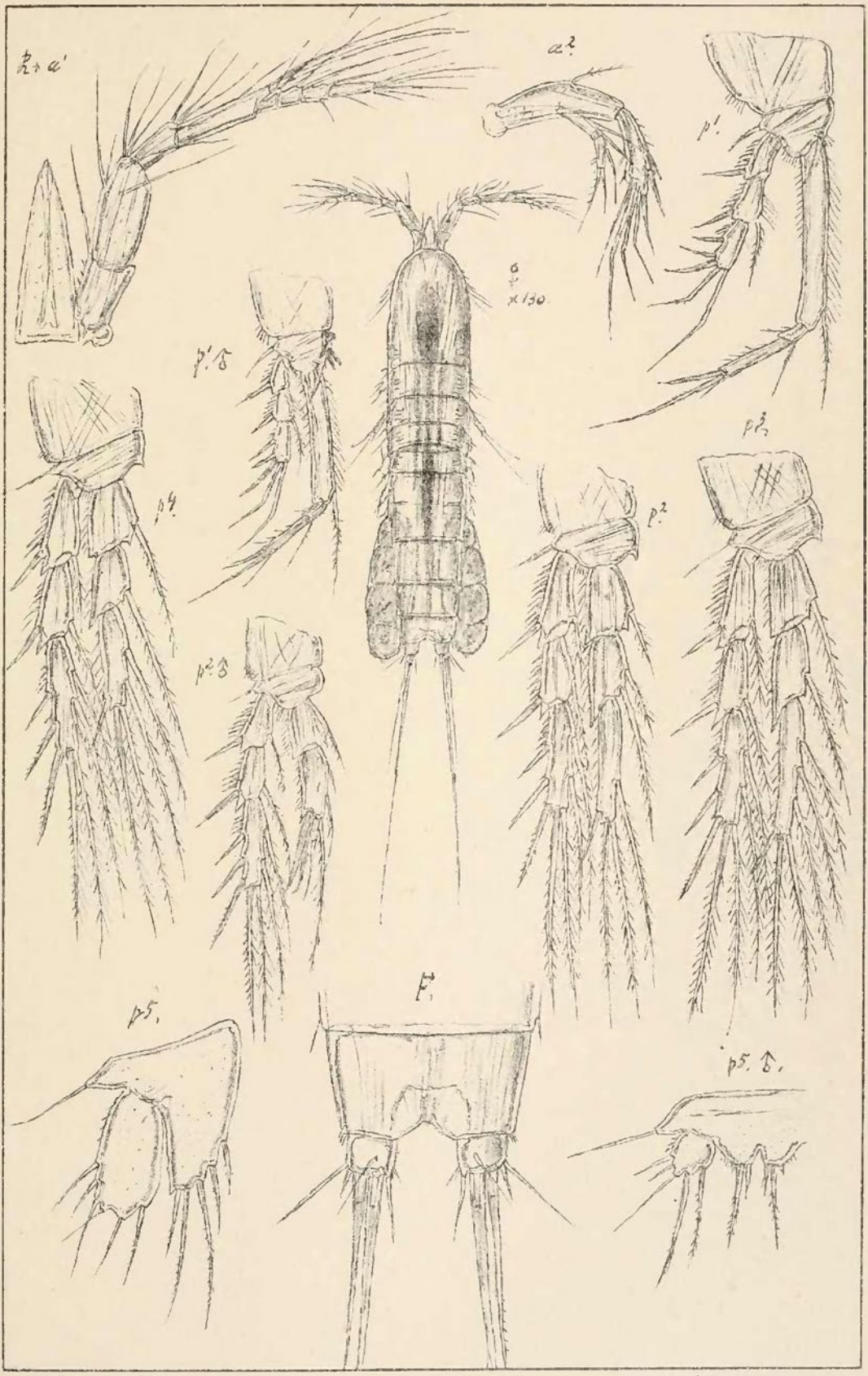
Amphiascus productus, G.O.Sars.

Copepoda

Diosaccidæ — Harpacticoida — Pl. CXVI.



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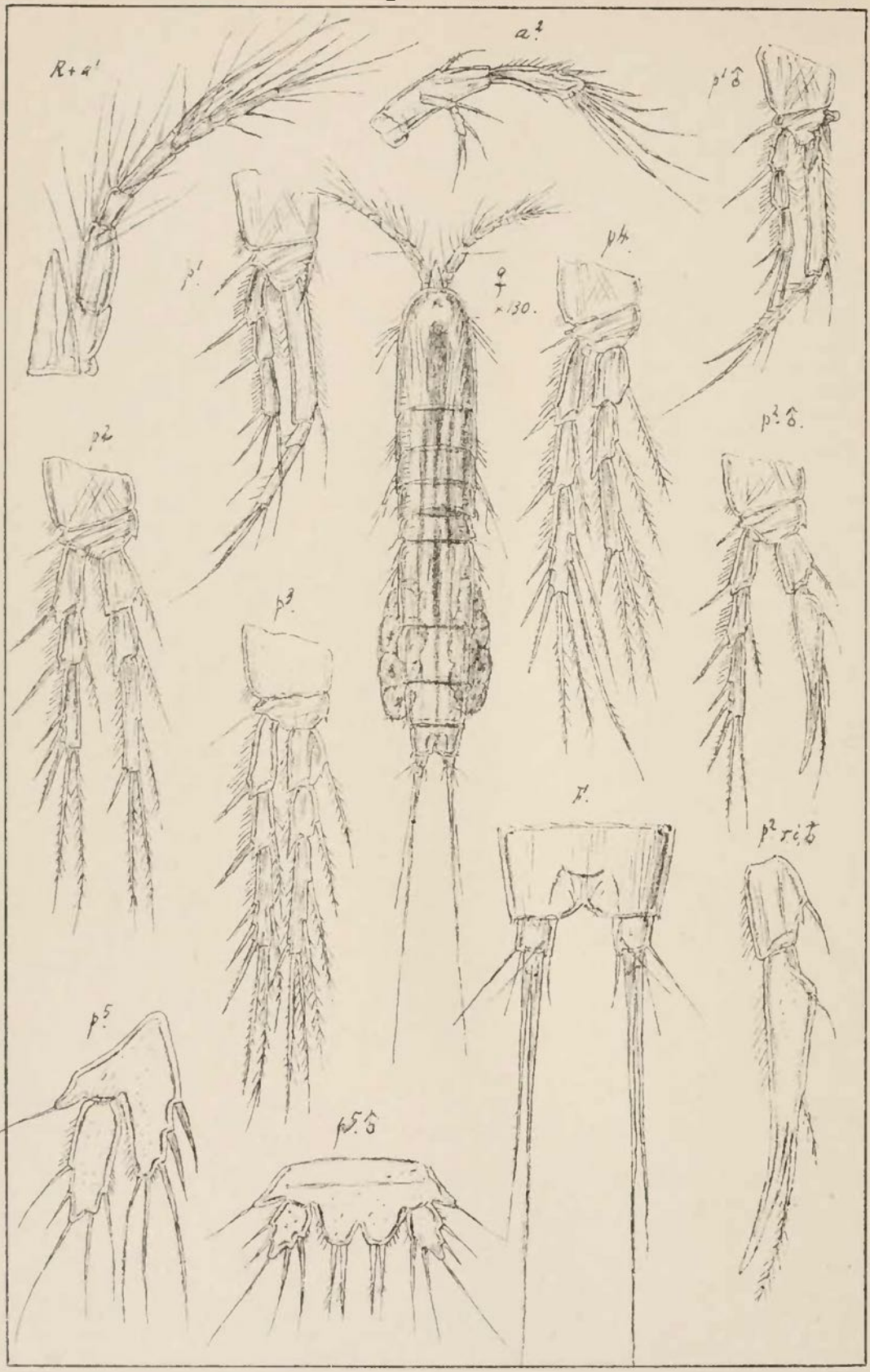
Amphiascus tenellus, G.O.Sars.



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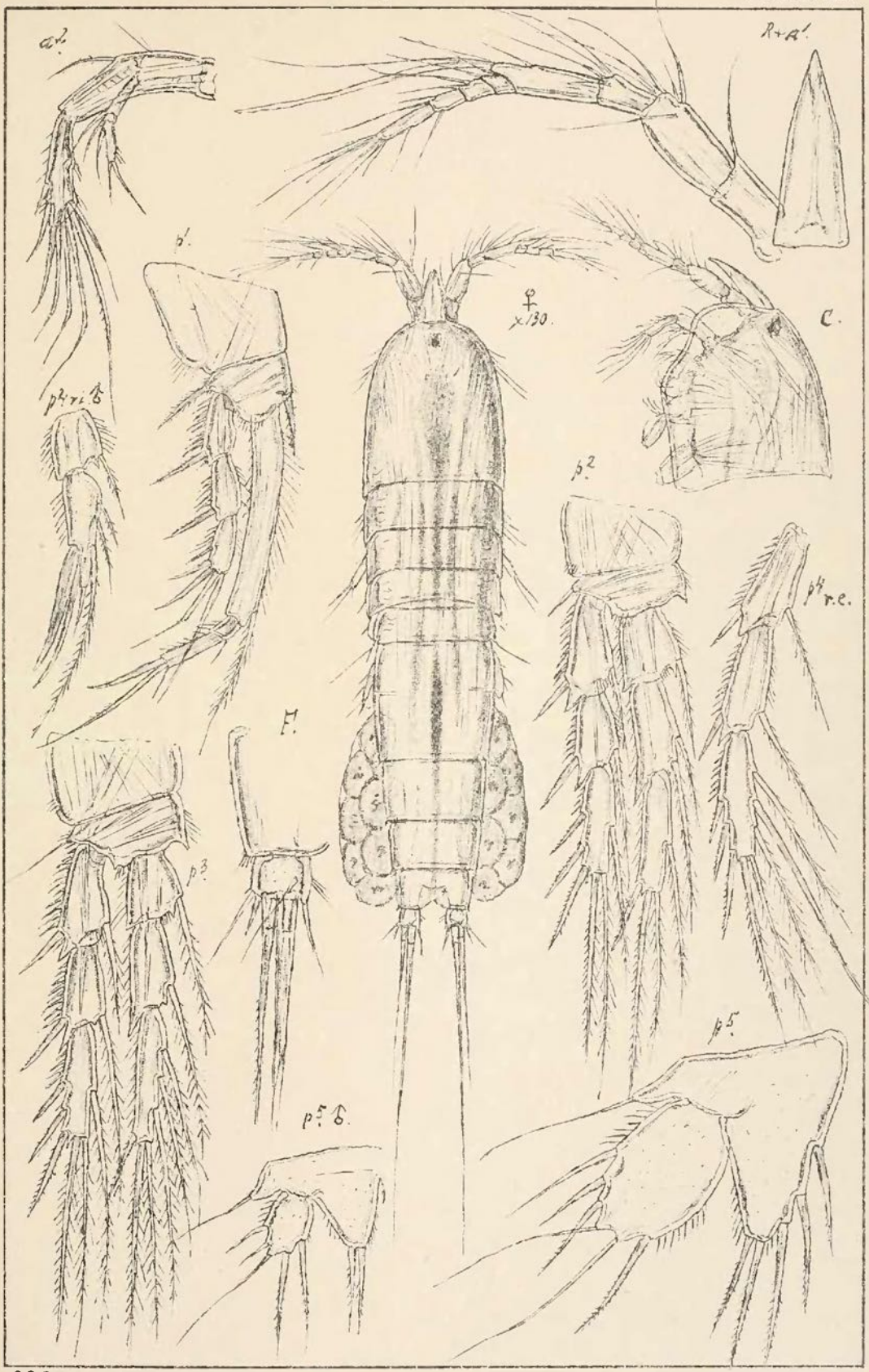
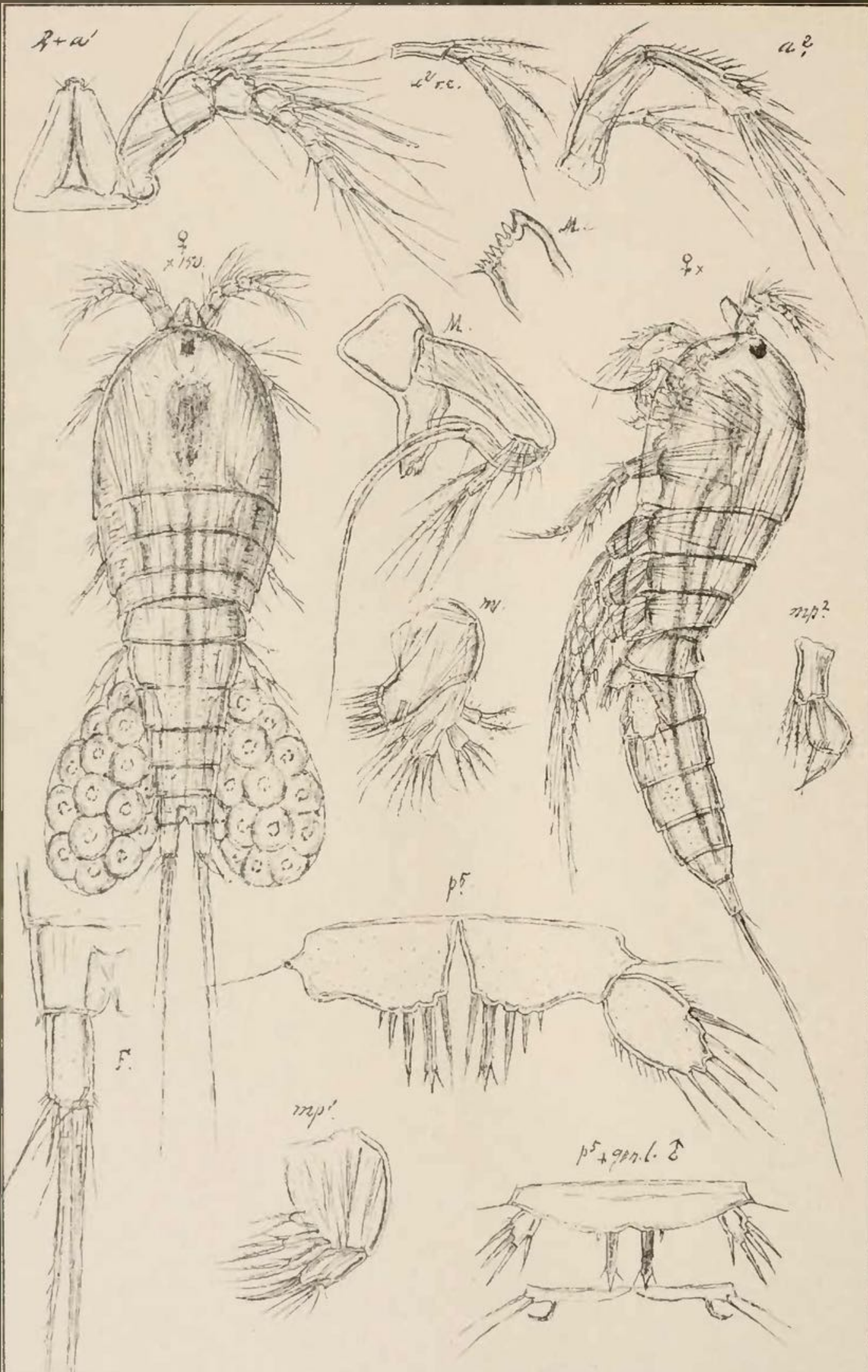
Amphiascus linearis, G.O.Sars.



G.O.Sars autogr

Amphiascus sinuatus, G.O.Sars

Norsk lithgr. Officin



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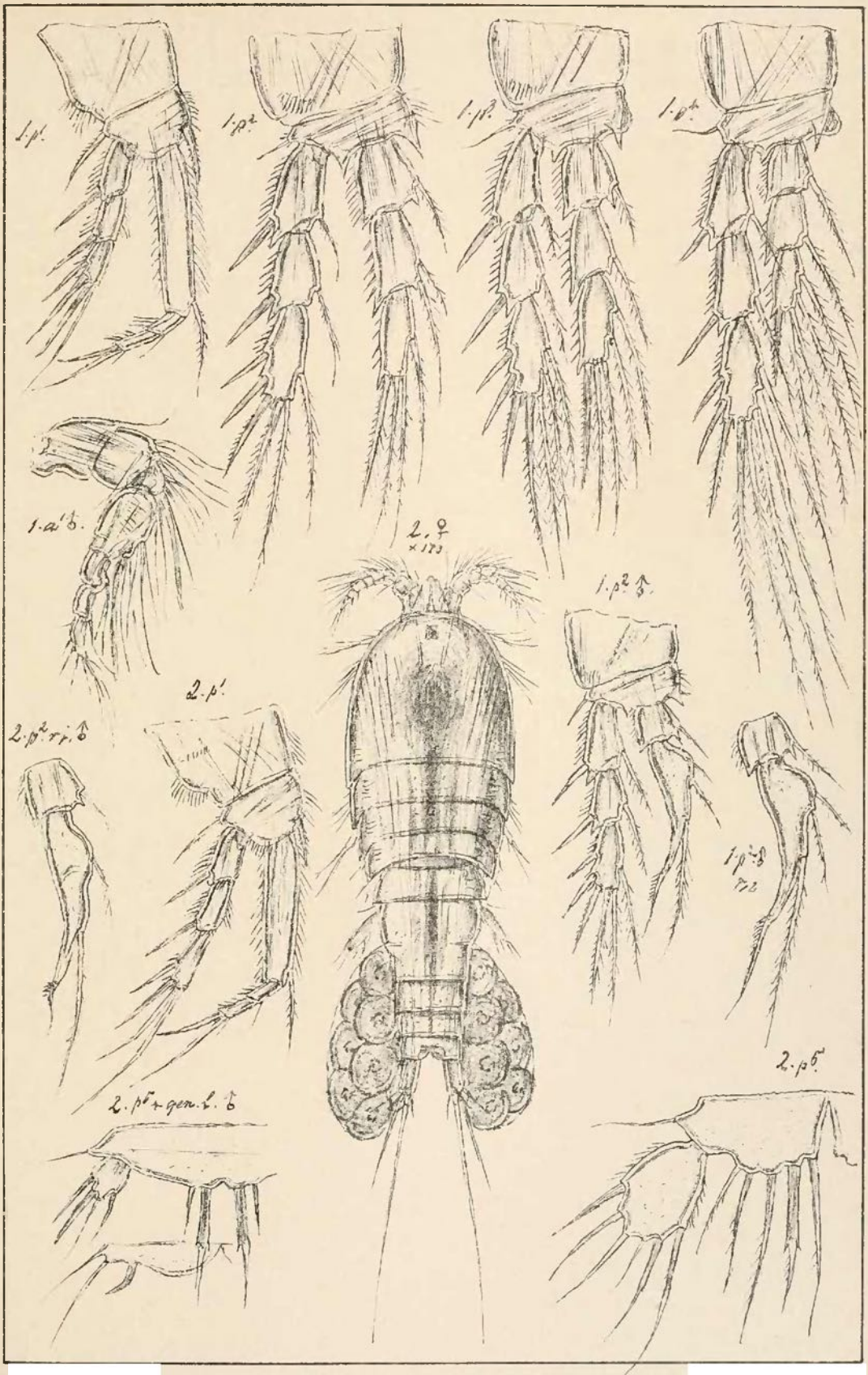
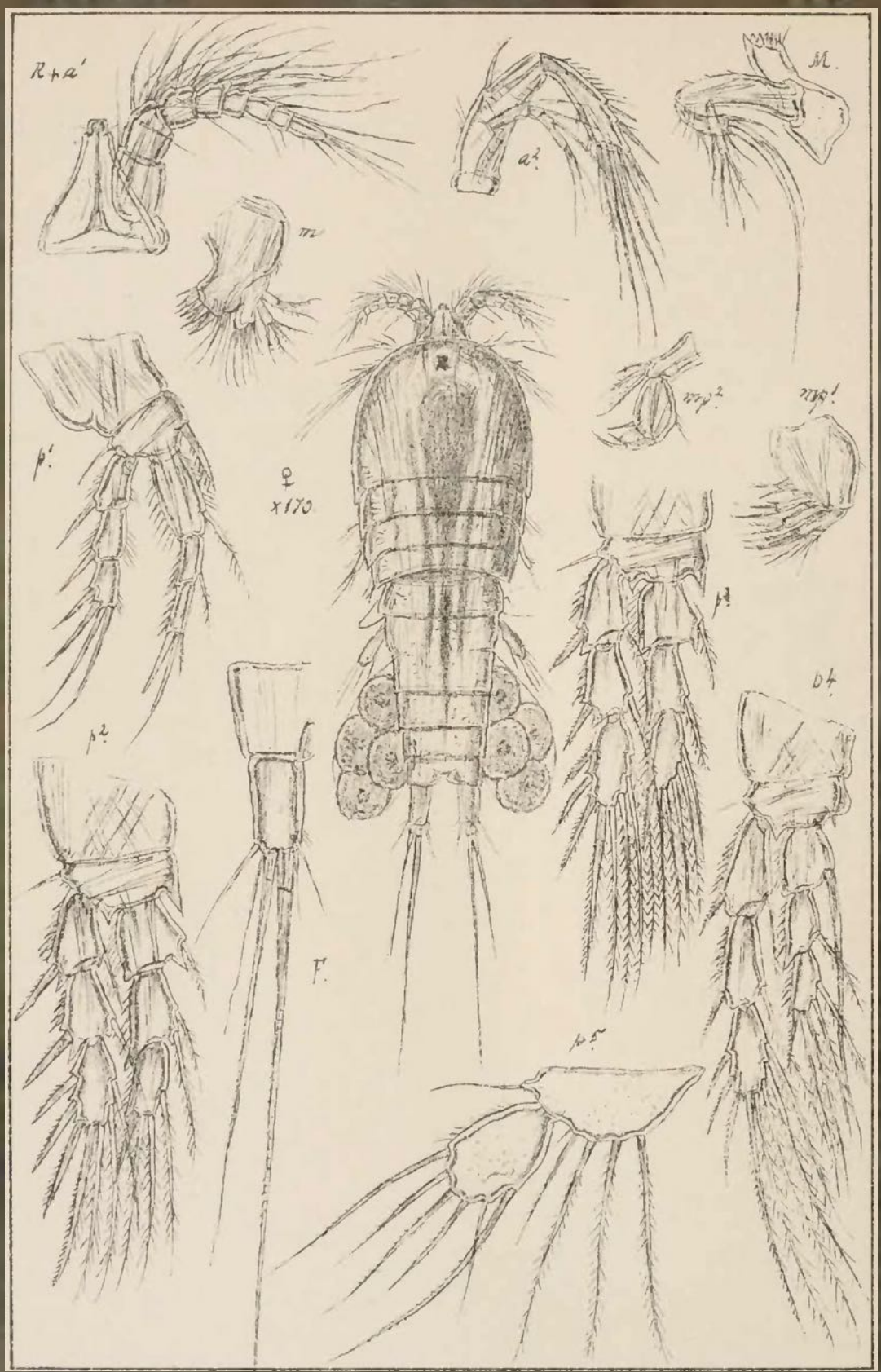


1. Stenhelia gibba, Boeck
(continued)
2. " proxima, G.O.Sars.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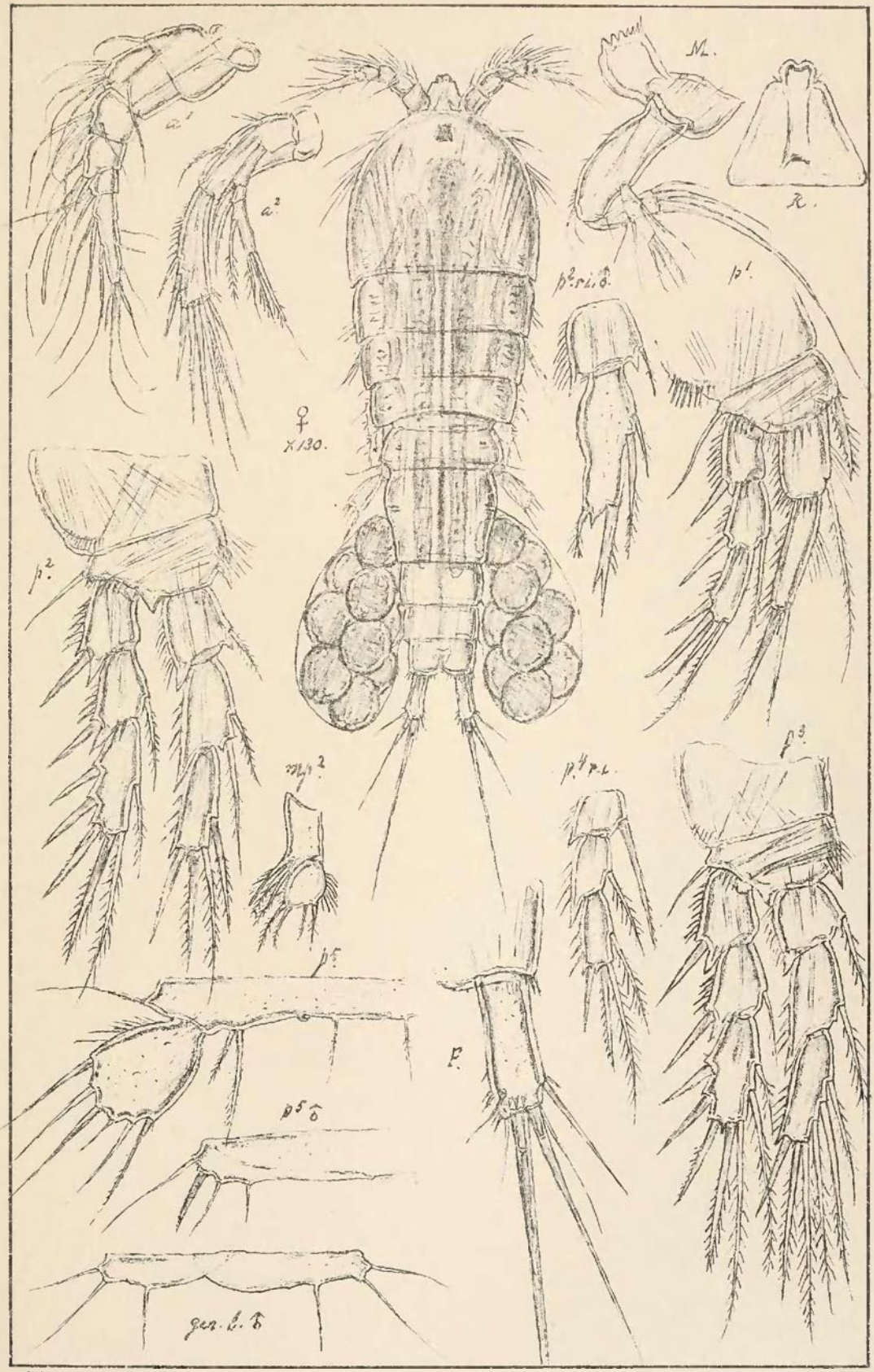
Copepoda

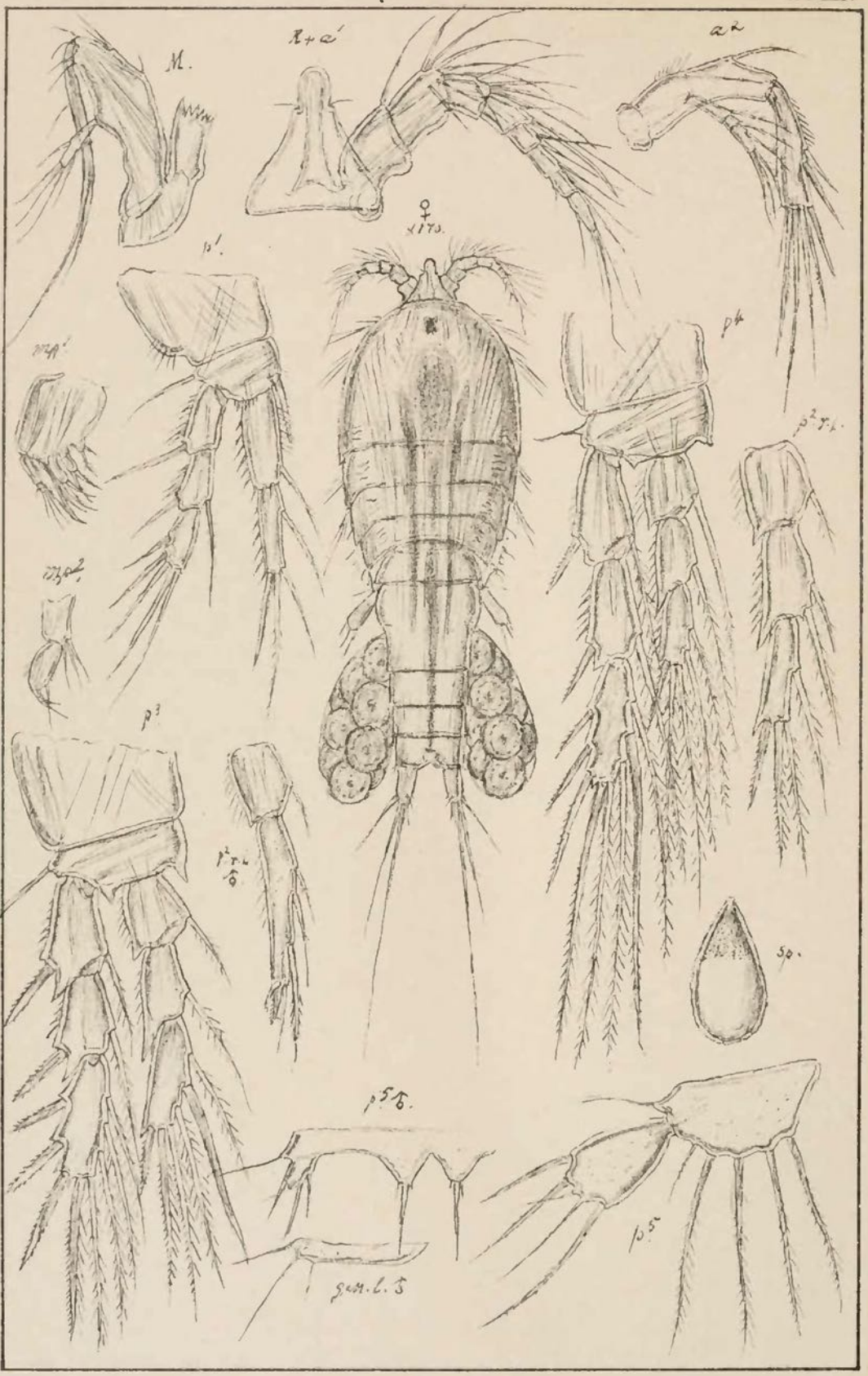
Diosaccidæ. Harpacticoida Pl. CXXII



G.O.Sars autogr. Norsk lithgr. Officin

Stenhelia palustris, (Brady).

Copepoda



G.O.Sars autogr

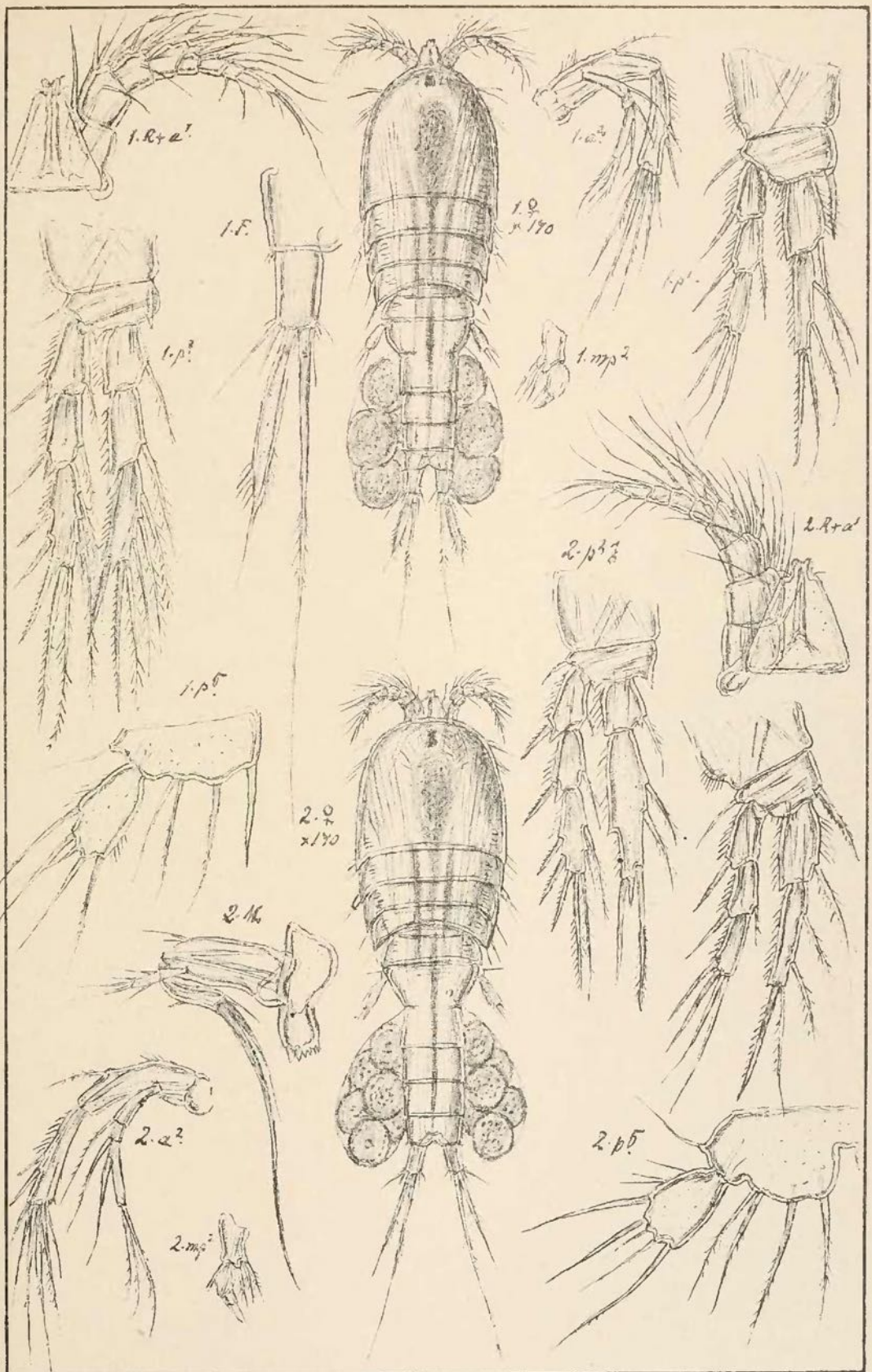
Norsk lithgr Officin

Stenhelia reflexa (Brady)

Copepoda

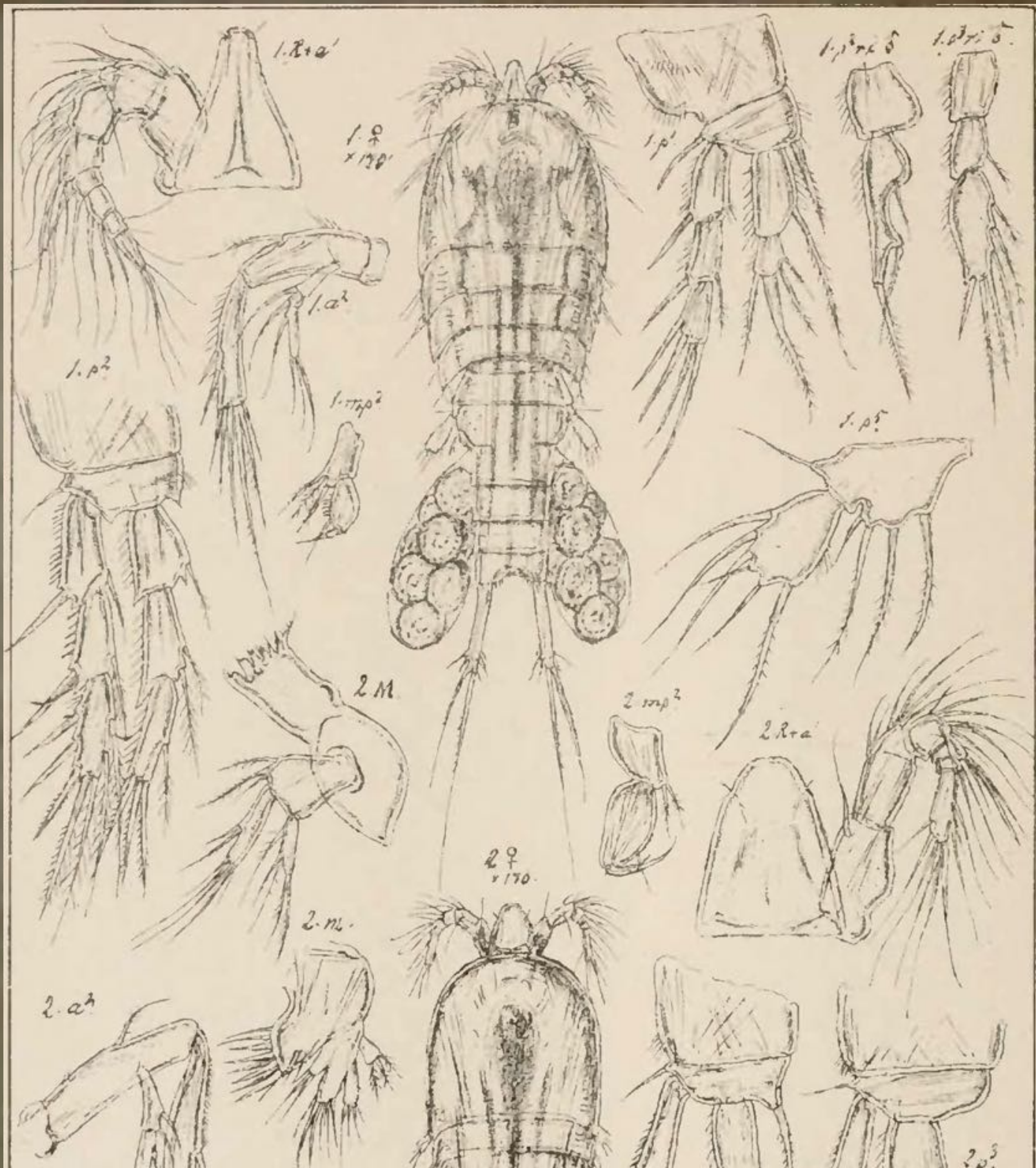
Harpacticoida

Diosaccidæ. Pl. CXXIV.



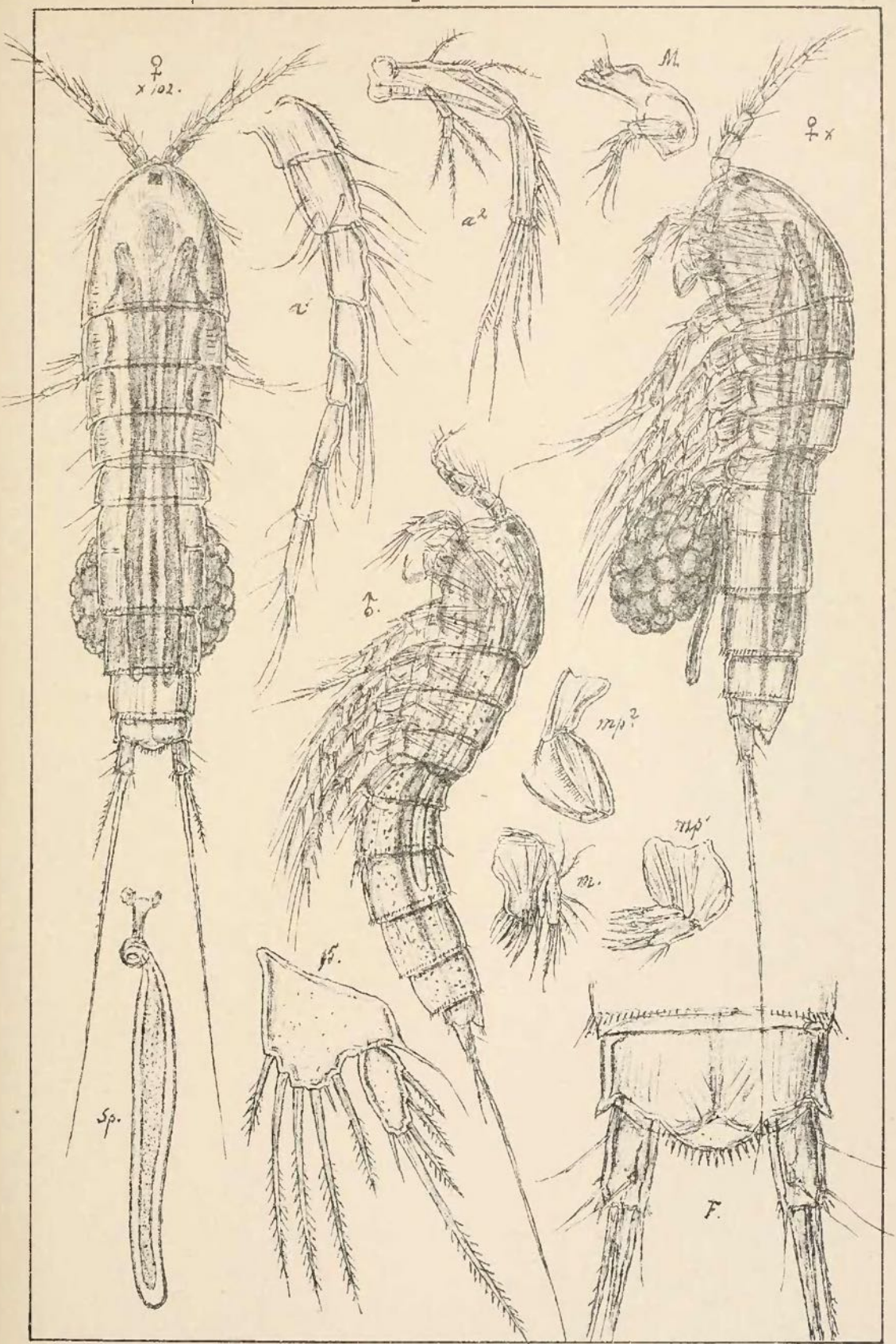
G.O.Sars autogr. Norsk Lithgr. Officin

1. Stenhelia Giesbrechti, (Scott).
2 " " Normani, (Scott).



1. p²
1. a²
2 M
2 mp²
2. m.
2. a²
2. p5.
2 p³.

Copepoda



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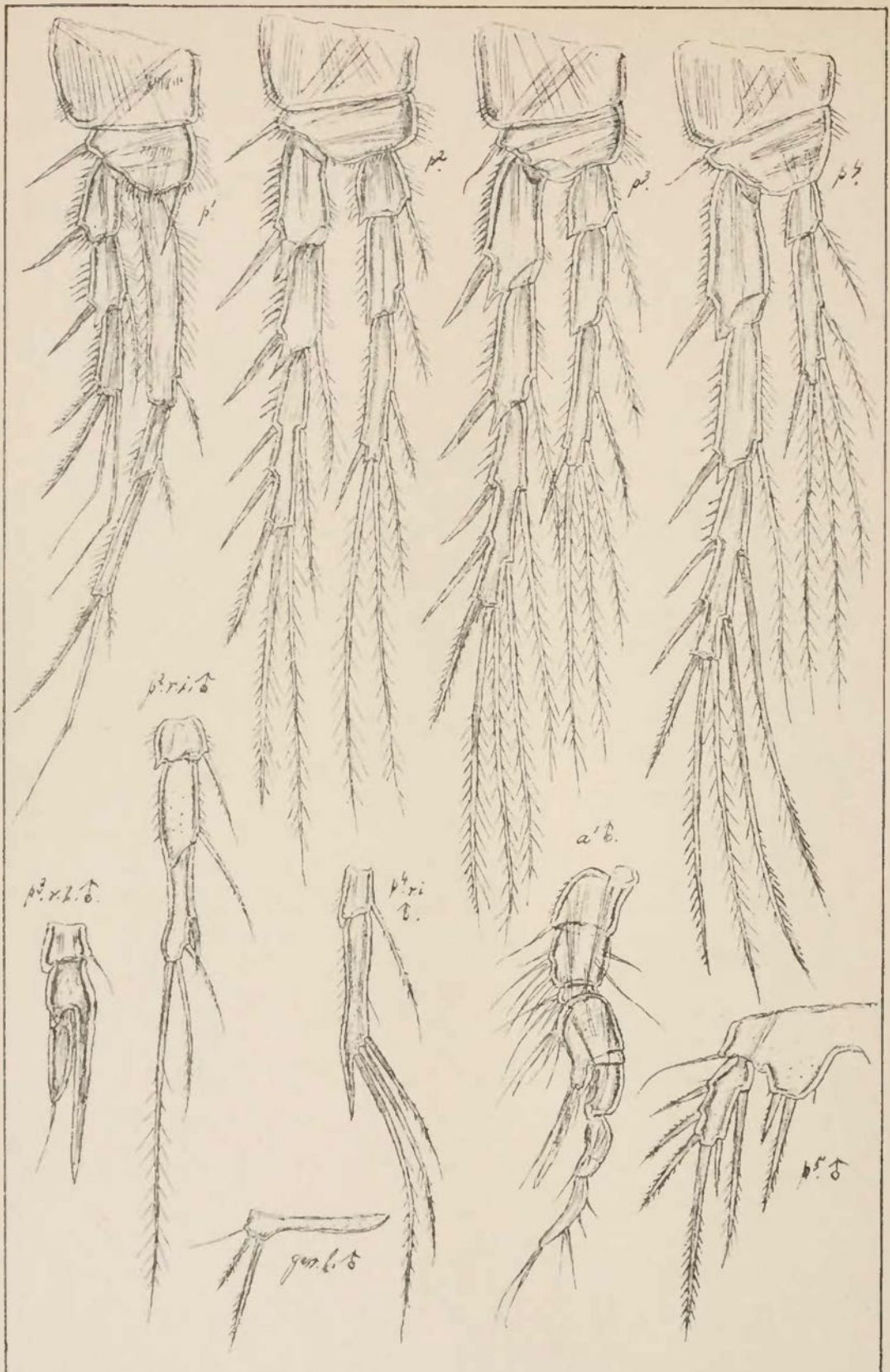
Canthocamptus staphylinus, (Jurine).

Copepoda



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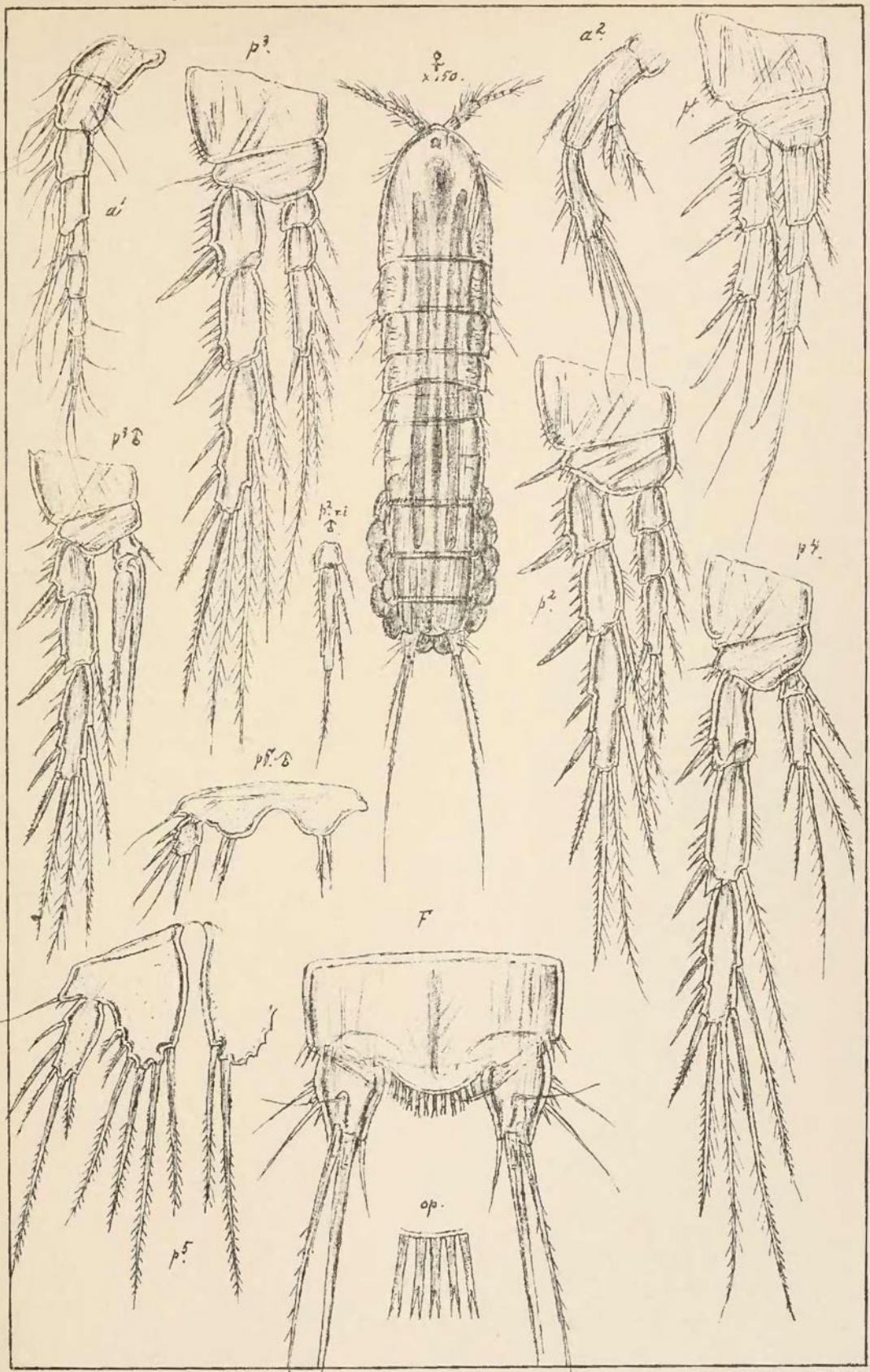
Canthocamptus staphylinus, (Jurine).

(continued)



G.O.Sars autogr. Norsk lithgr. Officin

Canthocamptus minutus, Claus