

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 XXI & XXII

LAOPHONTIDÆ (continued)

WITH 16 AUTOGRAPHIC PLATES



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Male with the inner ramus of 3rd pair of legs transformed in a similar manner to that in the male of *L. depressa*. Last pair of legs very small, with the distal joint rounded, and the inner expansion of proximal joint almost obsolete.

Colour yellowish grey.

Length of adult female 0.55 mm.

Remarks.—This form, first described by Boeck, belongs to the smaller species of the genus. It is moreover easily distinguished from any of the 3 preceding species by the narrow and produced caudal rami, and by the slender form of the posterior maxillipeds and of the legs.

Occurrence.—I have met with this form not unfrequently in many places, both of the south and west coasts of Norway, as also in the Trondhjem Fjord, and Th. Scott also records it from Finmark. It is found in moderate depths, ranging from 6 to 20 fathoms, among algæ.

Distribution.—British Isles (Brady), coast of France (Canu).

155. *Laophonte elongata*, Boeck.

(Pl. CLXII).

Laophonte elongata, Boeck, Nye Slægter og Arter af Saltvandscopepoder. Chr. Vid. Selsk. Forh. 1872, p. 50.

Specific Characters.—*Female.* Body slender and elongated, with the segments sharply marked off from each other, and fringed at the posterior edge with delicate spinules. Cephalic segment comparatively large and deep, with the lower edges strongly curved in the middle; rostral projection of moderate size and truncated at the tip. Urosome nearly as long as the anterior division, lateral expansions of genital segment and the 2 succeeding ones densely setiferous; last segment shorter than the preceding one. Caudal rami exceedingly slender and elongated, almost attaining half the length of the urosome, and scarcely at all divergent, apical setæ of moderate length. Anterior antennæ rather slender, almost attaining the length of the cephalic segment, and composed of 6 articulations only, the last 2 being confluent, 2nd joint the largest and without any projection of the hind edge. Posterior antennæ about as in *L. thoracica*. 1st pair of legs, as in that species, very slender, with the basal part much elongated, outer ramus small and only composed of 2 joints. Natatory legs slender and elongated, resembling in structure those in *L. thoracica*. Last pair of legs with the distal joint considerably narrower than in that species, otherwise of a rather similar structure.

Colour pale yellowish, with scattered orange patches along the sides of urosome; ovaria dark green.

Length of adult female 0.60 mm.

Remarks.—This form is nearly allied to *L. thoracica*, though easily distinguishable by its more slender body, and especially by the very narrow and elongated caudal rami, which moreover are not divergent, as in that species, but extended straight behind. Of the structural details, the biarticulate outer ramus of the 1st pair of legs and the very narrow distal joint of the last pair in the female may be mentioned as well-marked distinguishing characters. The form recorded by Th. Scott from Franz Josef Land as *L. longicaudata* Boeck, seems to be the present species, as the outer ramus of the 1st pair of legs is indicated to be biarticulate.

Occurrence.—I have found this form occasionally in several localities both of the south and west coasts of Norway in moderate depths among algæ.

Distribution.—Frans Josef Land (Scott).

156. *Laophonte typhlops*, G. O. Sars, n. sp.

(Pl. CLXIII).

Specific Characters.—*Female.* Body moderately slender, with the segments sharply marked off from each other. Cephalic segment rather broad, though comparatively shorter than in *L. elongata*, rostral projection obtusely rounded at the tip. Urosome shorter than the anterior division, lateral expansions of genital segment and the 2 succeeding ones well marked and finely setous; last segment about the length of the preceding one. Caudal rami rather produced, considerably exceeding in length the last segment, slightly divergent and attenuated distally, apical setæ very slender, the longest of them almost attaining the length of the whole body. Eye wholly absent. Anterior antennæ slender and elongated, being fully as long as the cephalic segment, and distinctly 7-articulate. Posterior antennæ with the distal joint long and narrow, outer ramus well developed, about half the length of the proximal joint. 1st pair of legs with the basal part less narrow than in the 2 preceding species, outer ramus distinctly 3-articulate and exceeding half the length of the 1st joint of the inner, the latter much longer than the basal part. Natatory legs with the rami long and slender, 1st joint of inner ramus provided inside with a well-marked seta. Last pair of legs comparatively large, distal joint, however, extremely narrow, sublinear, tip conically produced; inner expansion of proximal joint narrowly exerted at the tip, marginal setæ 5 in number, 2 of them issuing from the tip, proximal seta of inner edge attached at rather a long distance from the others close to the base.

Male with the anterior antennæ hinged in the usual manner, but having the last joint of the proximal part only slightly dilated. Inner ramus of 3rd pair of legs only differing from that in female in the seta of the outer edge being transformed to a short spine. Last pair of legs, as usual, much smaller than in female, distal joint narrow fusiform; inner expansion of proximal joint very slight, with a single seta.

Colour whitish, pellucid.

Length of adult female 0.64 mm.

Remarks.—In most of the structural details the present form closely agrees with a species recently described by Th. Scott as *L. longiremis*. It is however very conspicuously distinguished from that species by the much more produced caudal rami. In *L. longiremis*, both according to the figures and the description given by Scott, these rami are comparatively short, not exceeding in length the last segment, whereas in the present species they are almost twice as long and much more slender in form. Another character distinguishing this species is the total absence of any visual organ, a feature which has given rise to the specific name here proposed.

Occurrence.—Some few specimens of this form were found in the summer 1906 at Flekkerö, south coast of Norway, in a depth of about 20 fathoms.

157. *Laophonte longicaudata*, Boeck.

(Pl. CLXIV).

Laophonte longicaudata, Boeck, Oversigt over de ved Norges Kyster iagttagne Copepoder. Chr. Vid. Selsk. Forhandl. 1864, p. 279.

Syn: *Laophonte Hodgeri*, Brady.

Specific Characters.—*Female.* Body rather slender, with the segments of the anterior division less sharply marked off from each other than in the preceding species. Cephalic segment large and contracted in front, rostral projection strongly prominent and somewhat curved as the tip, which is minutely trilobate. Urosome with the lateral expansions of the anterior segments rather slight and only sparingly setous; last segment about the length of the preceding one. Caudal rami very long and slender, equalling in length the last 2 segments combined, and extending straight behind, apical setæ comparatively short. Anterior antennæ scarcely exceeding half the length of the cephalic segment, and distinctly 7-articulate, 2nd joint the largest and exhibiting in the middle behind a short denticulate projection. Posterior antennæ of rather feeble structure, outer ramus well developed. 1st pair of legs less robust than in most other species, outer ramus

3-articulate, and exceeding half the length of the 1st joint of the inner, the latter about the length of the basal part, terminal claw very slender. Natatory legs well developed, with the inner ramus larger and broader than in most other species, its proximal joint only in the 4th pair setiferous. Last pair of legs comparatively small, distal joint narrow oval in form, with the inner edge straight; inner expansion of proximal joint short and broad, with 5 marginal setæ, the apical one the longest.

Male with the inner ramus of 3rd pair of legs transformed in the usual manner. Last pair of legs very small, distal joint well defined and somewhat widening towards the end, with 4 marginal setæ; inner expansion of proximal joint almost obsolete.

Body in female of whitish colour, with 3 light orange transversal bands, the 1st across the cephalic segment, the 2nd occupying the posterior part of the genital segment, the 3rd the anal segment.

Length of adult female 0.73 mm.

Remarks.—This form, first recorded under the above name by Boeck, is a very distinct species, easily distinguished by its slender form of body, the greatly prominent rostral projection, and the long and narrow caudal rami. In the living state it is also readily recognized by its peculiar and beautiful colouring.

Occurrence.—I have met with this form occasionally off the west coast of Norway, as also in the Trondhjem Fjord, in moderate depths among algæ.

Distribution.—British Isles (Brady).

158. *Laophonte similis* (Claus).

(Pl. CLXV).

Cleta similis, Claus, Die Copepoden-Fauna von Nizza, p. 20, Pl. V, figs. 13, 14.

Syn: *Laophonte setosa*, Boeck.

„ — *affinis*, Boeck.

Specific Characters.—*Female.* Body rather slender, with the segments of the anterior division not very sharply marked off from each other. Cephalic segment of moderate size, with the rostral projection short and broad, obtusely rounded at the tip. Urosome almost as long as the anterior division, lateral expansions of the segments not much prominent, last segment shorter than the preceding one. Caudal rami rather produced, exceeding in length the anal segment, and scarcely at all divergent, apical setæ much elongated. Anterior antennæ rather slender, almost attaining the length of the cephalic segment, and only composed of 6 ar-

ticulations, the outer 2 being confluent, 2nd joint somewhat shorter than 3rd, with a small nodiform projection in the middle behind. Posterior antennæ with the outer ramus comparatively short, but of usual structure. 1st pair of legs much stronger than in *L. longicaudata*, with the inner ramus rather elongated, outer ramus about half the length of the 1st joint of the inner, and only composed of 2 joints, the distal one very slender, linear in form. Natatory legs well developed and of normal structure, proximal joint of inner ramus in all of them without any seta inside. Last pair of legs of moderate size, distal joint oblong oval in form and densely ciliated on both edges, marginal setæ 5 in number, the apical one very slender, hair-like; inner expansion of proximal joint linguiform, extending somewhat beyond the middle of the distal joint, marginal setæ 4 in number, the outermost but one much the longest. Ovisac rounded oval in form.

Male with the inner ramus of 3rd pair of legs transformed in the usual manner. Last pair of legs very small, with the distal joint quite short and only provided with 4 setæ, the innermost rather strong, spiniform; inner expansion of proximal joint almost obsolete, though carrying a single well-developed seta.

Colour dark yellowish.

Length of adult female 0.90 mm.

Remarks.—This form was first described by Claus under the name of *Clela similis*, and was subsequently also recorded by Prof. Brady. Boeck, however, did not recognise the species, but described it under another name, viz., *L. setosa*. The form subsequently named by the same author *L. affinis* is scarcely different from that species. On the other hand, is the form described by Canu as *L. similis* evidently not that species, as clearly shown by the very different structure of the anterior antennæ and the last pair of legs. The present form is one of the larger species of the genus, and may be easily recognised by its slender and graceful body and the very long caudal setæ.

Occurrence.—I have met with this form not unfrequently in the upper part of the Christiania Fjord, as also occasionally off the south and west coasts of Norway in moderate depths among algæ.

Distribution.—Mediterranean at Nizza (Claus), British Isles (Brady), ? Franz Josef Land (Scott).

159. *Laophonte horrida*, Norman.

(Pl. CLXVI & CLXVII).

Laophonte horrida, Norman, Report of the "Valorous" Expedition. Proceed. Royal Soc. London 1876, p. 206.Syn: *Cicla minuticornis*, Buebholtz.

Specific Characters.—*Female.* Body elongated, with all the segments very sharply marked off from each other by deep strictions. Cephalic segment, seen dorsally, almost quadrangular in form, dorsal face produced behind into a strong backwards-curving spiniform projection. Rostrum strongly prominent, conspicuously constricted at the base, and exhibiting on each side in the middle an angular ledge carrying a delicate bristle, terminal part linguiform, with the tip narrowly rounded. The 4 succeeding segments angularly produced laterally, and each carrying dorsally 2 juxtaposed strong denticulated spines curving backwards; hind edge of the segments coarsely spinulose, except between the 2 dorsal spines. Urosome almost as long as the anterior division, the 2 divisions of the genital segment and the succeeding segment each with 2 dorsal spines similar to those on the anterior division, but more closely juxtaposed; lateral parts of these segments triangularly expanded and densely setiferous. Penultimate segment with the posterior edge divided dorsally in the middle into 4 peculiar spines, branching in a hand-like manner; last segment simple and shorter than the preceding one. Caudal rami rather produced, considerably longer than the anal segment, and each carrying a very strong, almost spiniform apical seta exceeding in length the urosome, the other setæ small and hair-like. Anterior antennæ rather slender, exceeding in length the cephalic segment (without the rostrum), and 6-articulate, 2nd joint the largest, and provided at the hind edge beyond the middle with a small nodiform projection, 3rd joint exceeding in length the outer 3 joints combined. Posterior antennæ strongly developed, being fully as long as the anterior ones, outer ramus of normal structure. Posterior maxillipeds comparatively large, with the basal part narrow, hand fusiform in shape, dactylus much elongated and curved at the end. 1st pair of legs slender and elongated, with the 2nd basal joint very narrow, outer ramus small and only consisting of 2 joints; inner ramus with the proximal joint quite smooth, and somewhat exceeding in length the 2nd, basal joint, apical claw long and slender. Natatory legs with both rami very narrow, distal joint of inner ramus provided in the 2nd and 4th pairs with 3, in the 3rd pair with 4 setæ, none of which issue from the outer edge. Last pair of legs of moderate size, distal joint however very small and somewhat obliquely truncated at the end, with only 3 setæ; inner expansion of proximal joint rather

broad at the base, but narrowly exerted at the tip, extending beyond the distal joint, marginal setæ 4 in number.

Male almost of same size as the female, but of more slender form. Anterior antennæ strongly linged, with the last joint of the proximal part considerably dilated, distal part terminating in a claw-like point. Outer ramus of 3rd pair of legs very powerfully developed, with all the joints considerably thickened and having the spines very coarse, setæ of inner edge short and spiniform; inner ramus transformed in the usual manner. 4th pair of legs likewise with the outer ramus much coarser than in female and with the setæ of the inner edge spiniform. Last pair of legs very small, with the inner expansion of proximal joint obsolete.

Colour dark yellowish brown.

Length of adult female 1.30 mm.

Remarks.—This remarkable form was first described by Buchholtz from the German Arctic Expedition, but was erroneously identified with Müller's *Cyclops minuticornis*, for which reason Norman proposed for it a new specific name, viz., *horrida*. It is one of the largest species of the genus, and is moreover easily recognised by the strong spinous armature of the body, which latter character has given rise to the specific name proposed by Norman.

Occurrence.—I have found this form rather abundantly in the upper part of the Christiania Fjord in a depth of from 10 to 20 fathoms, muddy bottom. It also occurs occasionally both of the south and west coasts of Norway at least up to the Trondhjem Fjord, and Th. Scott records it moreover from the Finnmark coast. The specimens are in most cases so densely coated with mud, that the peculiar spinous armature of the body is only faintly traced. In some cases, however, the body appears cleaner, so as to reveal the regular arrangement of the spines more clearly. The movements of the animal are rather clumsy, and, as in most other species, are effected in a somewhat jerking manner.

Distribution.—British Isles (Brady), Greenland (Buchholtz), Polar islands north of Grinnels Land (2nd Fram Expedition), Franz Josef Land (Scott), off Bear Island and Spitsberg (Scott).

160. *Laophonte brevispinosa*, G. O. Sars, n. sp.

(Pl. CLXVIII).

Specific Characters.—*Female.* Body resembling in its general form that of the preceding species, and having a rather similar dorsal armature. Cephalic segment, however, somewhat different in shape, bulging considerably to each side in its posterior part, and having the lower edges produced in front to rounded

projecting lobes; dorsal process much shorter than in *L. horrida*. Rostrum rather narrow, being scarcely at all dilated in the middle, tip minutely bilobate. The 4 succeeding segments rounded laterally, dorsal spines very short and perfectly smooth, edges of the segments not spinulose. Urosome with the lateral expansions of the anterior segments less produced, dorsal spines larger than those of the anterior division; penultimate segment with the hind edge divided dorsally in the middle into 2 well-defined branching appendages, to each side of which 3 densely crowded simple spines occur. Caudal rami resembling in form and structure those in *L. horrida*. Anterior antennæ, as in that species, very slender and 6-articulate, 2nd joint however quite simple, without any projection of the hind edge, 3rd joint shorter than the 3 outer joints combined. Posterior antennæ less robust than in *L. horrida*, not attaining the length of the anterior ones, outer ramus very narrow. 1st pair of legs likewise of feebler structure, with the proximal joint of the inner ramus scarcely longer than the 2nd basal joint, outer ramus, as in *L. horrida*, biarticulate. Natatory legs about as in that species. Last pair of legs rather small, with the distal joint almost transversely truncated at the tip; inner expansion of proximal joint not extending beyond the distal joint; number of setæ on both joints as in the preceding species.

Male with the outer rami of 3rd and 4th pairs of legs far less robust than in *L. horrida*, setæ of inner edge not transformed.

Colour dark brownish grey.

Length of adult female about 1 mm.

Remarks.—This form looks very like the preceding species, and may easily be confounded with it. On a closer examination, it is however found to differ very markedly in some points, both as regards the armature of the body and the structure of the appendages.

Occurrence.—I have hitherto only met with this form in 2 localities, viz., Hvalør, at the entrance of the Christiania Fjord, and at Lillesand, south coast of Norway. In both localities it occurred on a muddy bottom, in a depth of about 10 fathoms.

161. *Laophonte Koreni*, Boeck.

(Pl. CLXIX).

Laophonte Koreni, Boeck, Nye Slægter og Arter af Saltvandscopepoder. Chr. Vid. Selsk. Forhandl. 1872, p. 51.

Specific Characters.—*Female.* Body comparatively short and broad, conspicuously depressed, with the segments sharply marked off from each other.

Cephalic segment about the length of the 4 succeeding segments combined, and slightly contracted in front; rostral projection not much prominent and triangular in form, tip narrowly rounded. The 3 succeeding segments with the lateral parts rounded off and densely setiferous. Urosome much shorter than the anterior division, all the segments, except the last, with well-marked lateral expansions densely fringed with delicate bristles. Caudal rami short and thick, of rounded quadrangular form, and somewhat divergent, being clothed inside with hair-like spinules partly arranged in transversal rows, apical setæ slender and divergent. Anterior antennæ of moderate length and somewhat thickened at the base, 7-articulate, with the 3rd joint the longest. Posterior antennæ rather stout, with the outer ramus of normal structure. Posterior maxillipeds powerfully developed. 1st pair of legs likewise rather strong, with the 2nd basal joint comparatively broad, bulging considerably inside, outer ramus distinctly 3-articulate, and exceeding half the length of the 1st joint of the inner, the latter fully as long as the basal part, and ciliated on the inner edge, apical claw strong and curved at the tip. Natatory legs well developed, inner ramus however comparatively short, with only 4 setæ on the terminal joint. Last pair of legs with the distal joint rather large and oblong oval in form, carrying 5 comparatively short setæ, that issuing from the conically produced tip very thin, hair-like; inner expansion of proximal joint only slightly produced, with 5 marginal setæ, the outer 2 closely juxtaposed and smaller than the others. Ovisac large, rounded oval in form.

Male with the anterior antennæ strongly hinged, last joint of proximal part almost globose, terminal part armed at the base outside with a strong claw-like projection. 3rd and 4th pairs of legs very conspicuously transformed, outer ramus in both pairs much stronger than in female, with the spines considerably thickened; inner ramus of 3rd pair only biarticulate, distal joint produced outside to a short triangular projection, and carrying on the tip 2 unequal setæ; inner ramus of 4th pair reduced to a small nodiform joint carrying 2 thickish diverging setæ. Last pair of legs, as usual, much smaller than in female, distal joint slightly widening towards the end and provided with 4 setæ only; inner expansion of proximal joint almost obsolete, though carrying 2 small setæ.

Colour light yellowish grey.

Length of adult female 0.70 mm.

Remarks.—This form, first recorded by Boeck under the above name, may be easily recognised by its broad depressed body, the sharp demarcation of the segments, and the long diverging caudal setæ. The transformation of the inner rami of the 3rd and 4th pairs of legs in the male is rather unlike that generally met with in the present genus.

Occurrence.—I have found this form occasionally in the upper part of the Christiania Fjord, as also off the west coast of Norway in moderate depths among algæ. Out of Norway it has not yet been recorded.

162. *Laophonte proxima*, G. O. Sars, n. sp.

(Pl. CLXX).

Specific Characters.—*Female.* Body more slender than in the preceding species, though, as in that form, conspicuously depressed, with the segments sharply marked off from each other. Cephalic segment about as in *L. Koreni*: the 3 succeeding segments however more angular and less densely setous. Urosome rather short, and having the lateral expansions of the segments less produced. Caudal rami comparatively longer than in *L. Koreni* and gradually tapering distally, apical setæ less divergent. Anterior antennæ more slender, with the 2nd and 3rd joints of about equal length. Posterior antennæ resembling in structure those in *L. Koreni*. 1st pair of legs somewhat less robust than in that species, otherwise of a very similar structure. Natatory legs also rather similar, except that the distal joint of the inner ramus in the 3rd pair of legs has 5 setæ, and that the outer ramus of the 4th pair is somewhat shorter and stouter. Last pair of legs differing more conspicuously from those in *L. Koreni*, the distal joint being much shorter and broader, obliquely oval in form, and very densely hispid, marginal setæ 6 in number, 2 of them on the outer edge closely juxtaposed.

Colour not yet ascertained.

Length of adult female 0.84 mm.

Remarks.—The present form is closely allied to *L. Koreni*, differing however in the more slender form of the body, as also in some of the structural details, for instance in the shape of the distal joint of the last pair of legs. Only the female sex is as yet known.

Occurrence.—Some few specimens of this form were picked up from a sample taken at Kopervik, west coast of Norway, from moderate depth.

163. *Laophonte Strömi* (Baird).

(Pl. CLXXI & CLXXII).

Canthocamptus Strömii, Baird, Brit. Entomostraca, p. 208, Pl. XXVII, fig. 3 (not Lilljeborg, nor *Dactylopus Strömi* Claus).Syn: *Laophonte curvicauda*, Brady (not Boeck).

Specific Characters.—*Female.* Body rather slender, gradually attenuated behind, with the segments well marked off from each other. Cephalic segment of moderate size, with the rostral projection very short and rounded at the tip. Urosome with the anterior segments slightly expanded laterally, last segment about the length of the preceding one. Caudal rami about twice as long as they are broad, smooth, with the tip transversely truncated, apical setæ slender and elongated. Anterior antennæ rather slender, almost as long as the cephalic segment, and distinctly 7-articulate. Posterior antennæ with the stem itself of normal structure, outer ramus however very small, and having the setæ imperfectly developed. 1st pair of legs with the outer ramus 3-articulate, and exceeding half the length of the proximal joint of the inner, the latter rather strong and ciliated on both edges. Natatory legs well developed, with the normal number of spines and setæ. Last pair of legs of moderate size, distal joint rather broad and obliquely oval in form, with 6 marginal setæ, the innermost of which is quite short and arising from a nodiform projection bordered inside by a strongly chitinized rim; inner expansion of proximal joint rather broad, but scarcely extending beyond the middle of the distal joint, marginal setæ 5 in number, the outermost one very small. Ovisac large, oval in form.

Male somewhat smaller than female, and having the 2 anterior free segments of metasome considerably larger than the 2 succeeding ones. Urosome much narrower than in female, almost cylindrical in form, with the segments scarcely at all expanded laterally. Anterior antennæ very powerfully developed and strongly hinged, with the last joint of the proximal part globularly dilated, distal part biarticulate and terminating in a sharp point. 2nd and 3rd pairs of legs conspicuously transformed and much larger than in female, with the outer rami very powerful, their terminal joint more or less incurved and having the spines largely developed and divergent, setæ of inner edge much reduced in size. Inner ramus of 2nd pair with the proximal seta of the distal joint transformed to a spine-like appendage pointing straight inwards and terminating in a hamiform point; that of 3rd pair biarticulate, with the distal joint much dilated and produced outside to a short and thick spiniform projection flanked at the base with a row of 4 strong denticles, marginal setæ 4 in number, 2 of them issuing from the

somewhat produced tip. 4th pair of legs of exactly same structure as in the female. Last pair of legs very much reduced, distal joint obsolete, and replaced by 3 hair-like setæ.

Colour light yellowish.

Length of adult female 0.88 mm., of male 0.77 mm.

Remarks.—This is in my opinion the form originally recorded by Baird as *Canthocamptus Strömi*. Prof. Lilljeborg described under this name a very different form, which subsequently was named by Boeck *Mesochra Lilljeborgi*, and Prof. Claus identified Baird's species with another Harpacticoid belonging to the genus *Dactylopusia*. Though the identification of Claus has been admitted by all subsequent authors, I have felt justified to reject also this identification as erroneous, and have accordingly recorded Claus's species under a new name, viz., *Dactylopusia vulgaris*. Indeed, the figures given by Baird clearly show his species to belong neither to the genus *Mesochra* nor to *Dactylopusia*, but quite certainly to the genus *Laophonte*, and, as the present form is one of the commoner littoral species and on the whole agrees in its general appearance pretty well with Baird's figure, it is very likely to believe it to be the true Bairdian species.

Occurrence.—Off the west coast of Norway this form occurs rather abundantly in the littoral region among algæ, as also occasionally in tidal pools. On the other hand, I have not met with it off the south coast or in the Christiania Fjord, where it is replaced by 2 nearly-allied species, to be described below.

Distribution.—British Isles (Baird, Brady), Franz Josef Land (Scott).

164. *Laophonte curticauda*, Boeck.

(Pl. CLXXIII).

Laophonte curticauda, Boeck, Oversigt over de ved Norges Kyster iagttagne Copepoder. Chr. Vid. Selsk. Forhandl. 1864, p. 278 (not Brady).

Specific Characters.—*Female.* Very like the preceding species as to its external appearance, but of smaller size and somewhat less slender form of body. Rostral projection, as in the said species, very short and obtuse at the tip. Caudal rami of a similar form to those in *L. Strömi*, but densely covered with small adpressed spikes, apical setæ long and slender. Anterior antennæ comparatively less elongated than in that species, 7-articulate. Posterior antennæ with the outer ramus well developed and of quite normal appearance, carrying 4 distinctly ciliated setæ. 1st pair of legs of moderate size and resembling in structure those in *L. Strömi*. Natatory legs likewise of a very similar structure, except that the

distal joint of the inner ramus in 3rd and 4th pairs has only 3 setæ, and that the terminal joint of the outer ramus in 4th pair is shorter, with only 3 spines. Last pair of legs differing more conspicuously, distal joint much smaller and oval in form, with only 5 setæ, the innermost one quite normal; inner expansion of proximal joint less broad, but rather prominent, extending as far as the distal joint; marginal setæ 4 in number, the outermost but one much longer than the others.

Male with the 2nd pair of legs scarcely at all transformed, having only the rami somewhat more elongated than in female. 3rd pair, on the other hand, very unlike those in the female, the outer ramus being exceedingly powerful and incurved, with the spines strongly developed and the setæ of the inner edge spini-form; inner ramus distinctly 3-articulate, with the middle joint produced outside to a mucroniform process. 4th pair of legs likewise somewhat transformed, having the outer ramus considerably more strongly built than in female. Last pair of legs very small, though having the distal joint well defined and edged with 4 slender setæ.

Colour yellowish.

Length of adult female 0.72 mm.

Remarks.—This form was very imperfectly characterised by Boeck, and it was for this reason not recognised by Prof. Brady, who described under the name of *L. curticauda* a different species, viz., that recorded above as *L. Strömi*. It is indeed closely allied to that species, but evidently specifically distinct, differing, as it does, in some of the structural details very conspicuously, for instance in the much fuller development of the outer ramus of the posterior antennæ, the rather unlike shape of the last pair of legs in both sexes, and finally in the somewhat different transformation of the natatory legs in the male.

Occurrence.—I have met with this form not unfrequently in the upper part of the Christiania Fjord in moderate depths, as also in some places of the south coast of Norway. Boeck found a single specimen at Haugesund, west coast of Norway. It is very probable that it also occurs off the British Isles, but has been confounded with the preceding species.

165. *Laophonte minuta*, Boeck.

(Pl. CLXXIV).

Laophonte minuta, Boeck, Nye Slægter og Aiter af Saltvandscopepoder. Chr. Vid. Selsk. Forhandl. 1872, p. 52.

Specific Characters.—*Female.* Body moderately slender, with the segments rather sharply marked off from each other. Rostral projection somewhat more

prominent than in the 2 preceding species, and obtusely acuminate at the tip. Caudal rami somewhat produced, exceeding in length the anal segment, apical setæ, on the other hand, unusually short. Anterior antennæ of moderate size and distinctly 7-articulate. Posterior antennæ, like those in *L. Strömi*, having the outer ramus quite rudimentary and of conical form, with only 2 hair-like setæ. 1st pair of legs built on the same type as in the 2 preceding species, though perhaps somewhat less strong. Natatory legs likewise of a rather similar structure, except that the 4th pair is considerably smaller than the others, with no setæ on the outer ramus inside. Last pair of legs somewhat resembling in shape those in *L. Strömi*, innermost seta of the distal joint, however, quite normal, and the 2 outermost setæ on the inner expansion of proximal joint both very small.

Male with the outer rami of 2nd and 3rd pairs of legs much stronger than in female, and having the spines, especially of the terminal joint, very large and divergent; inner ramus of 3rd pair, as in *L. Strömi* only composed of 2 joints, the distal one produced at the end outside to a short spiniform projection. 4th pair of legs scarcely different from those in female. Last pair of legs much reduced, distal joint not defined, and replaced by a very slight expansion carrying 4 setæ, inside which 2 other small setæ occur.

Colour yellowish.

Length of adult female 0.80 mm.

Remarks.—This form also is closely related to *L. Strömi*, perhaps still more so than *L. curticauda*. It is however easily recognised from any of them by the sharply defined body-segments, and more particularly by the unusually short caudal setæ, whereas the caudal rami themselves are more produced than in the said species. It seems indeed that the present form has been observed by Prof. Brady, but only regarded by him as a variety of his *L. curticauda* (= *L. Strömi*). In Pl. 78 of his Monograph 2 figures of a leg of the last pair are given, the one (fig. 7) representing the usual form, the other (fig. 8) indicated as belonging to a variety. The former figure undoubtedly refers to *L. Strömi*, whereas the latter may have been drawn from a specimen of the present species. The specific name given by Boeck to this species is somewhat inappropriate, as it does not in reality belong to the smaller but rather more to the larger species of the genus.

Occurrence.—I have hitherto only met with this form in the upper part of the Christiania Fjord; but here it occurs at times in great abundance on a muddy bottom, at a depth of 3 to 10 fathoms.

Distribution.—? British Isles (Brady).

166. *Laophonte littoralis*, Scott.

(Pl. CLXXV).

Laophonte littorale. Scott, On some new and rare Crustacea from Scotland. Ann. Mag. Nat. Hist. ser. 6, Vol. XII, p. 238, Pl. XI, figs. 7—14.

Specific Characters.—*Female*. Body somewhat robust, with the anterior division slightly depressed and broader than the posterior. Cephalic segment comparatively large, equalling in length the 4 succeeding segments combined, rostral projection short, triangular. Urosome almost as long as the anterior division, and having the anterior segments slightly expanded laterally, last segment fully as long as the preceding one. Caudal rami about twice as long as they are broad and somewhat divergent, apical setæ rather elongated. Anterior antennæ of moderate length and somewhat thickened at the base, 7-articulate. Posterior antennæ rather strongly built, outer ramus, however, extremely small, conical in form, and only provided with 2 hair-like bristles. 1st pair of legs powerfully developed, with the inner ramus very strong, outer ramus exceeding half the length of the proximal joint of the inner, and 3-articulate, middle joint much the longest. Natatory legs normal, except that the terminal joint of the outer ramus in the 4th pair wants any seta of the inner edge. Last pair of legs well developed, distal joint rather large and having the form of a regularly rounded lamella, with 6 comparatively short marginal setæ; inner expansion of proximal joint not extending to the middle of the distal joint, and provided with 5 marginal setæ, the 2 outer of which are smaller than the others. Ovisac rather large, rounded oval in form.

Male with the outer rami of 2nd and 3rd pairs of legs scarcely at all differing in structure from those in female. Inner ramus of 2nd pair with the proximal seta of the last joint transformed to a short and thickish spine; that of 3rd pair 3-articulate, with the terminal joint very short, middle joint, as usual, produced at the end outside to a spiniform process. 4th pair of legs very unlike those in female, outer ramus exceedingly powerful and incurved, with the spines very large, 3 of them issuing from the terminal joint; inner ramus much reduced in size, unarticulate, with a single seta and 2 hair-like bristles. Last pair of legs with the distal joint not defined, it being replaced by 3 small setæ, inside which another similar seta is attached.

Colour light yellowish grey.

Length of adult female 0.67 mm.

Remarks.—Though the habitus-figure of this species given by Scott looks rather unlike that here reproduced, I cannot doubt that the present form is the same as that observed by the said author, since in all the structural details it

exhibits a very close agreement. The most prominent character of this species is undoubtedly the peculiar transformation of the 4th pair of legs in the male. Moreover the shape of the last pair of legs in the female is rather characteristic.

Occurrence.—A few specimens of this form were taken, some years ago, from a tidal pool at Haugesund, west coast of Norway.

Distribution.—Scottish coast (Scott).

167. *Laophonte brevirostris* (Claus).

(Pl. CLXXVI).

Cleta brevirostris, Claus, Die freilebenden Copepoden, p. 124.

Syn: *Laophonte Herdmani*, Scott.

Specific Characters.—*Female.* Body moderately slender and gradually tapering behind, with the segments well marked off from each other. Cephalic segment rather large, about the length of the 4 succeeding segments combined, rostral projection very short and slightly bilobular at the tip. Urosome shorter than the anterior division, and having the anterior segments somewhat expanded laterally. Caudal rami comparatively short, not attaining the length of the anal segment, and transversely truncated at the tip, apical setæ rather slender. Anterior antennæ much shorter than the cephalic segment, and only composed of 6 articulations, the last 2 being confluent; 2nd joint somewhat dilated and exhibiting a short nodiform projection of the hind edge in the middle. Posterior antennæ with the outer ramus normally developed. 1st pair of legs moderately strong, with the inner ramus rather elongated, outer ramus distinctly 3-articulate, but comparatively small, not attaining half the length of the proximal joint of the inner. Natatory legs well developed, with the normal number of setæ. Last pair of legs with the distal joint comparatively short and broad, spatulate in form, marginal setæ somewhat unequal and 5 in number, all issuing from the almost transversely truncated end of the joint; inner expansion of proximal joint obliquely truncated and extending almost to the end of the distal joint, marginal setæ 4 in number, the outermost but one much longer than the others.

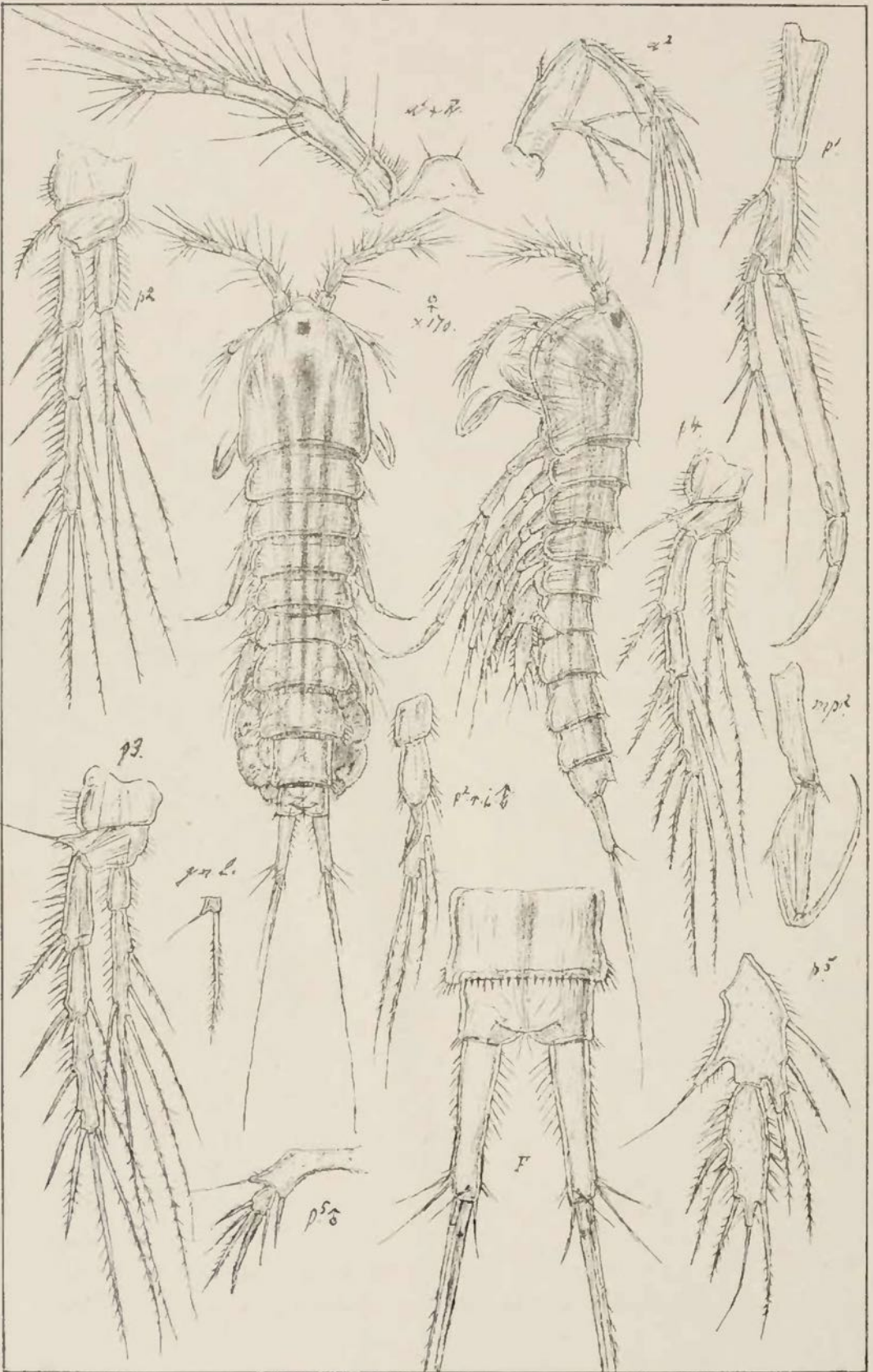
Male with the 2nd pair of legs resembling in structure those in female, except that one of the setæ attached inside the distal joint of the inner ramus appears somewhat coarser, with the proximal part thickened and densely clothed with small spinules. 3rd pair of legs with the outer ramus somewhat more strongly built than in female, the terminal joint being more or less incurved and having the setæ of the inner edge spiniform; inner ramus transformed in the usual manner. 4th pair of legs of exactly same structure as in the female. Last pair of

Copepoda

Laophontidæ

Harpacticoida

PL. CLXI



G.O.Sars autogr

Norsk lithgr. Officin.

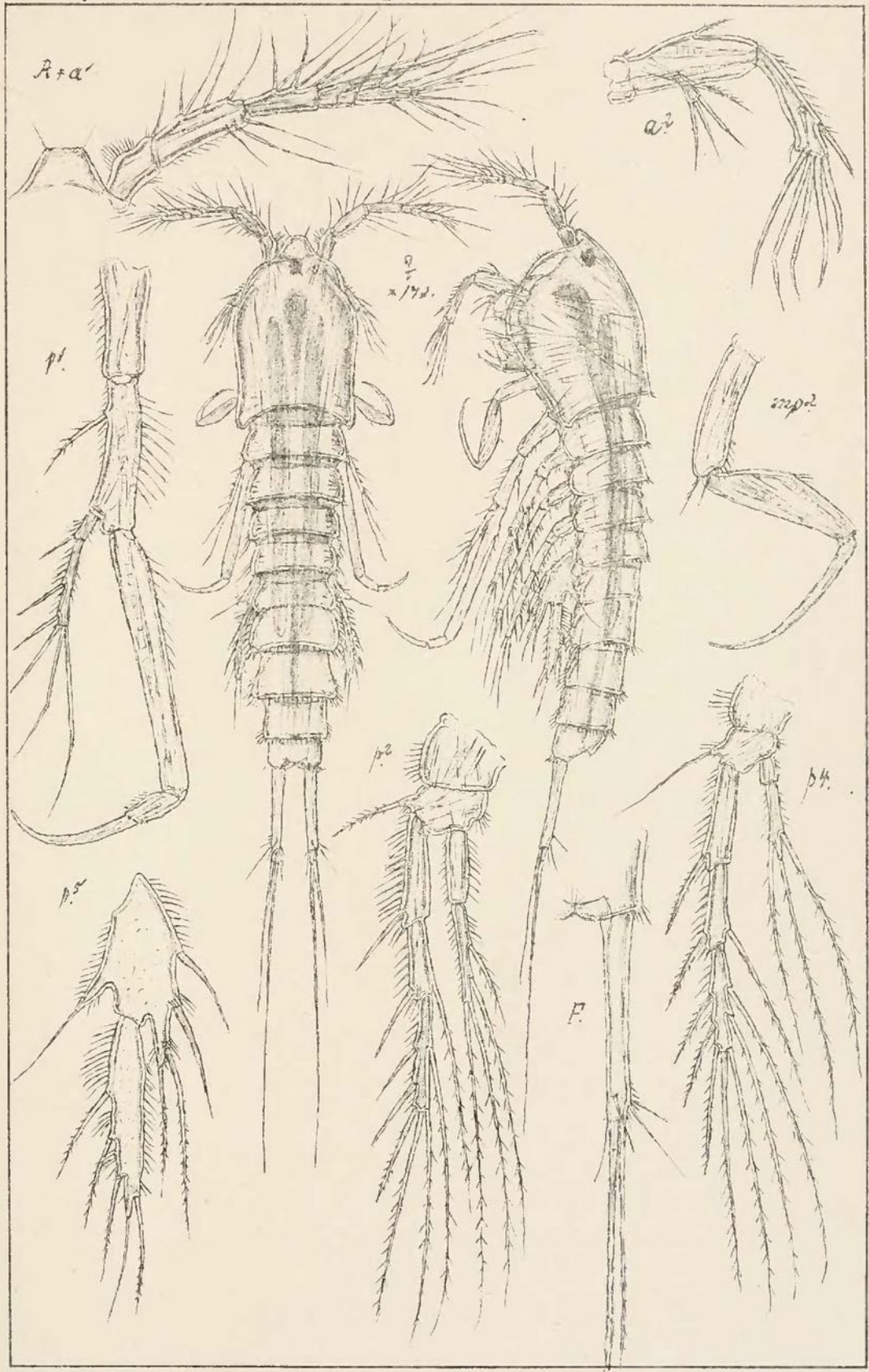
Laophonte thoracica, Boeck

Copepoda

Laophontidœ

Harpacticoida

PL. CLXII



G.O. Sars autogr.

Norsk lithg: Officin.

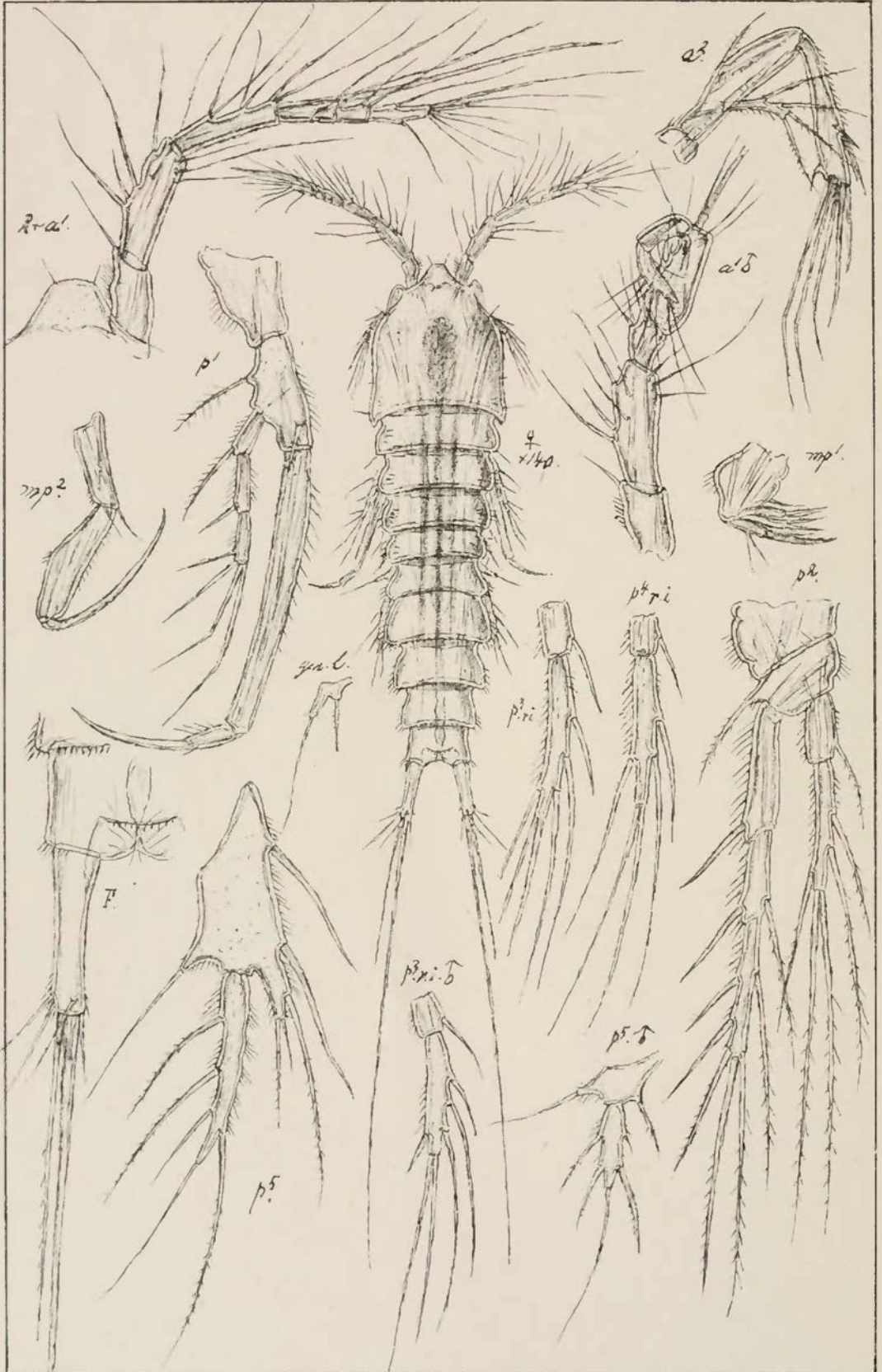
Laophonte elongata, Boeck

Copepoda

Laophontidæ

Harpacticoida

PL. CLXIII



G.O. Sars autogr.

Norsk lithogr. Officin.

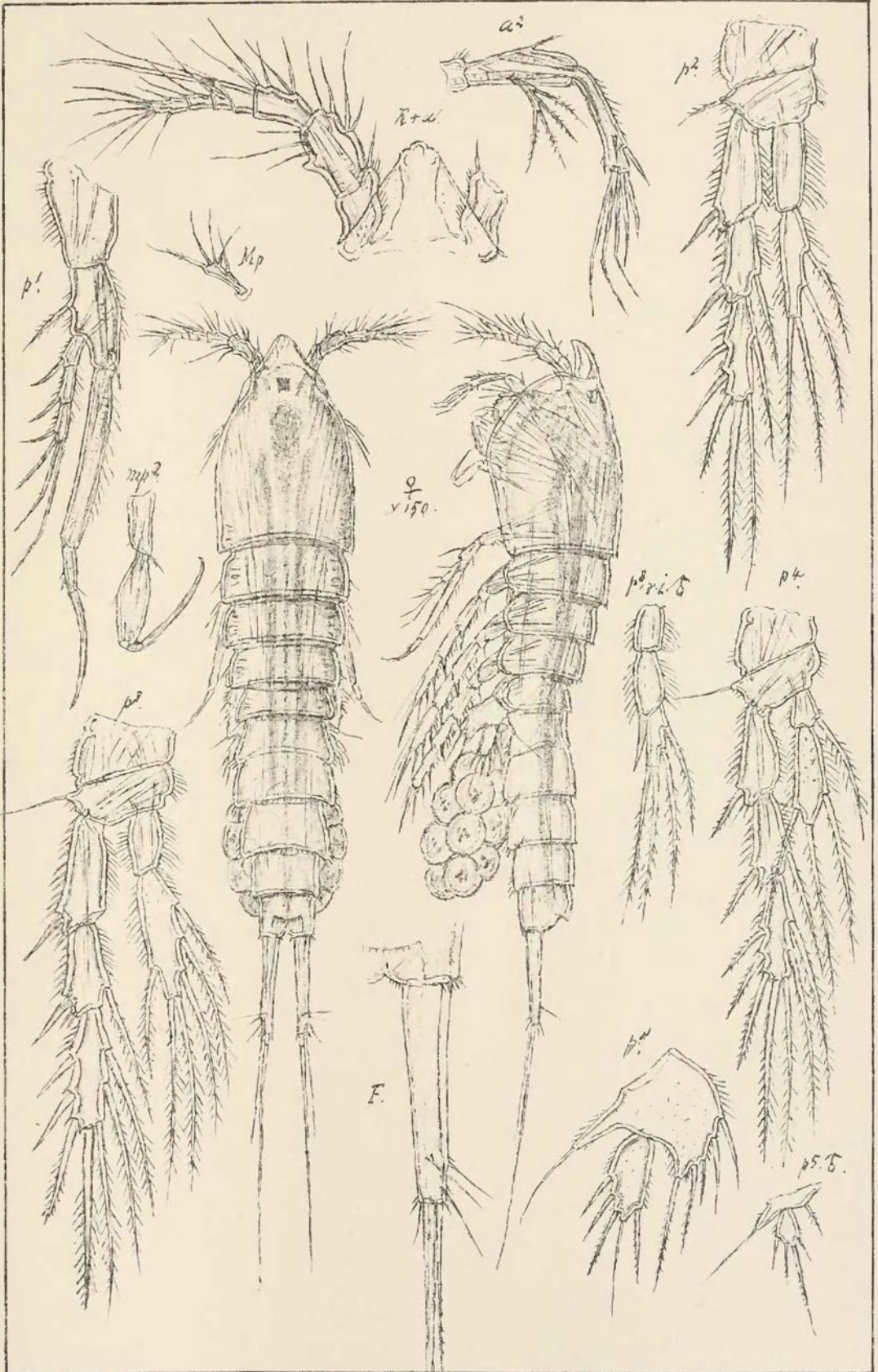
Laophonte typhlops, G.O. Sars

Copepoda

Laophontidœ

Harpacticoida

PL. CLXIV



G.O. Sars autogr.

Norsk lithgr. Officin.

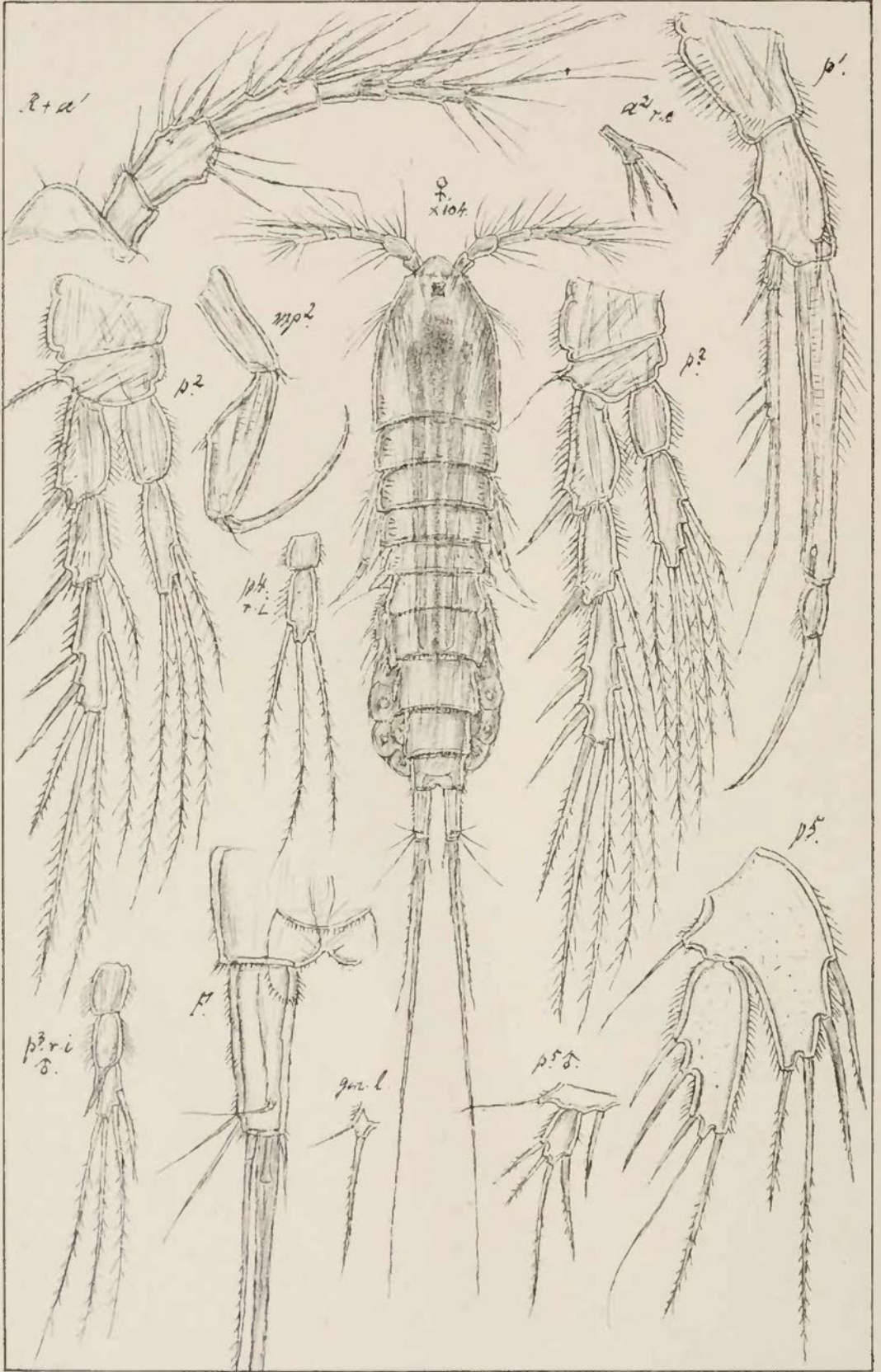
Laophonte longicaudata, Boeck

Copepoda

Laophontidæ

Harpacticoida

PL. CLXV



G.O. Sars autogr.

Norsk lithogr. Officin.

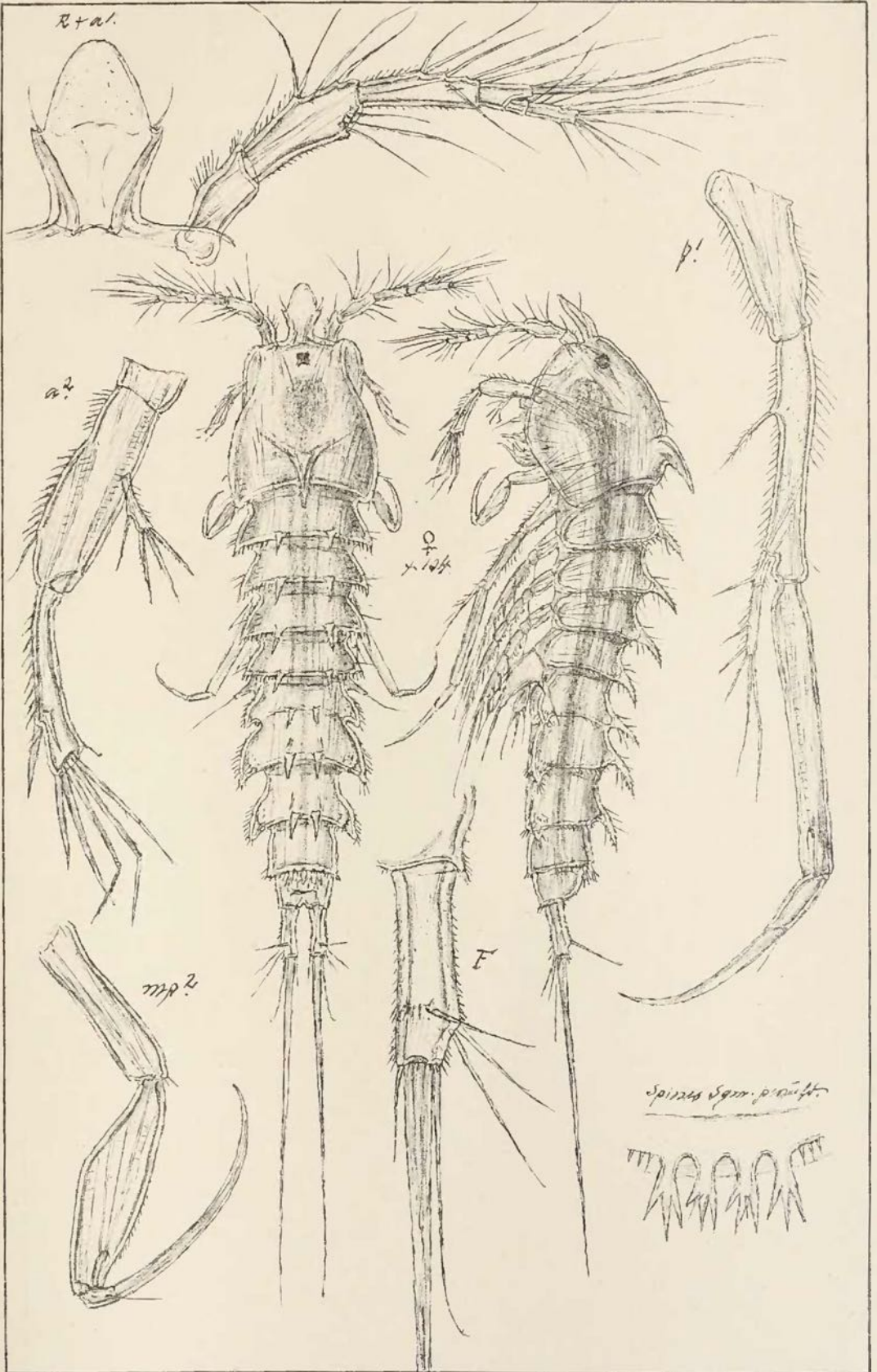
Laophonte similis (Claus)

Copepoda

Laophontidæ

Harpacticoida

PL. CLXVI



G.O.Sars autogr.

Norsk lithgr. Officin.

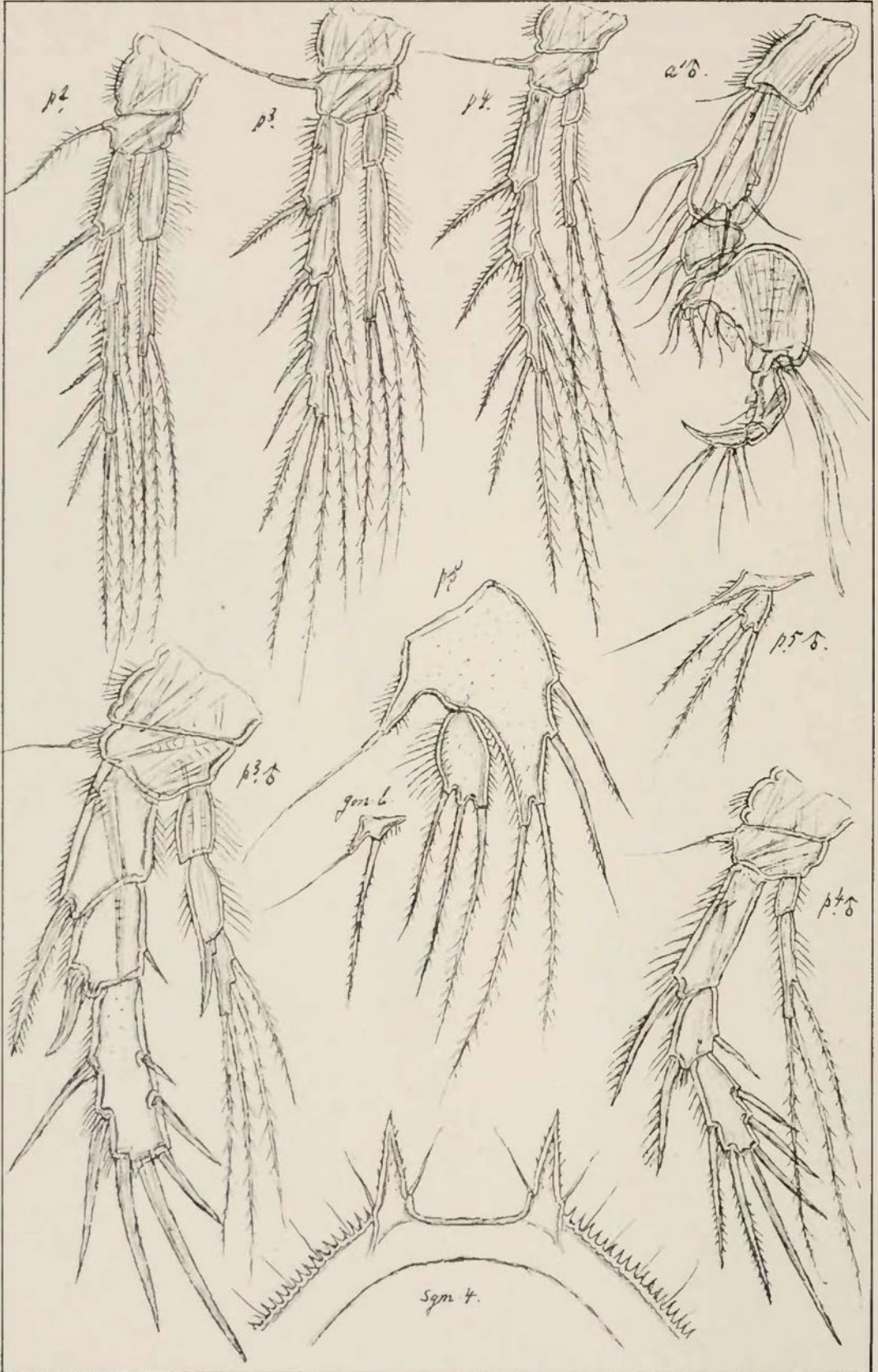
Laophonte horrida, Norm

Copepoda

Laophontidæ

Harpacticoida

PL. CLXVII



G.O. Sars autogr.

Norsk lithgr. Officin.

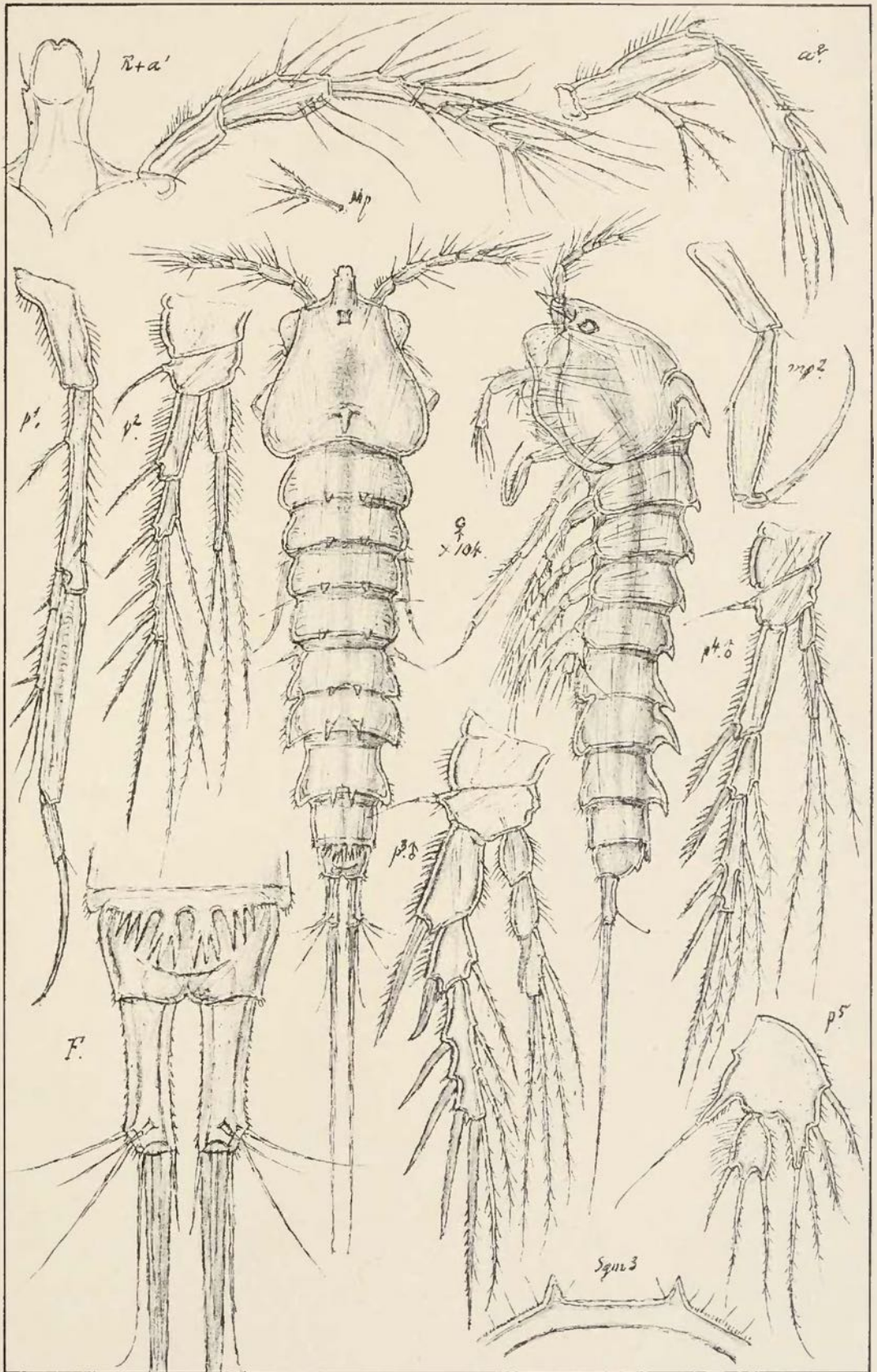
Laophonte horrida, Norm
(continued)

Copepoda

Laophontidœ

Harpacticoida

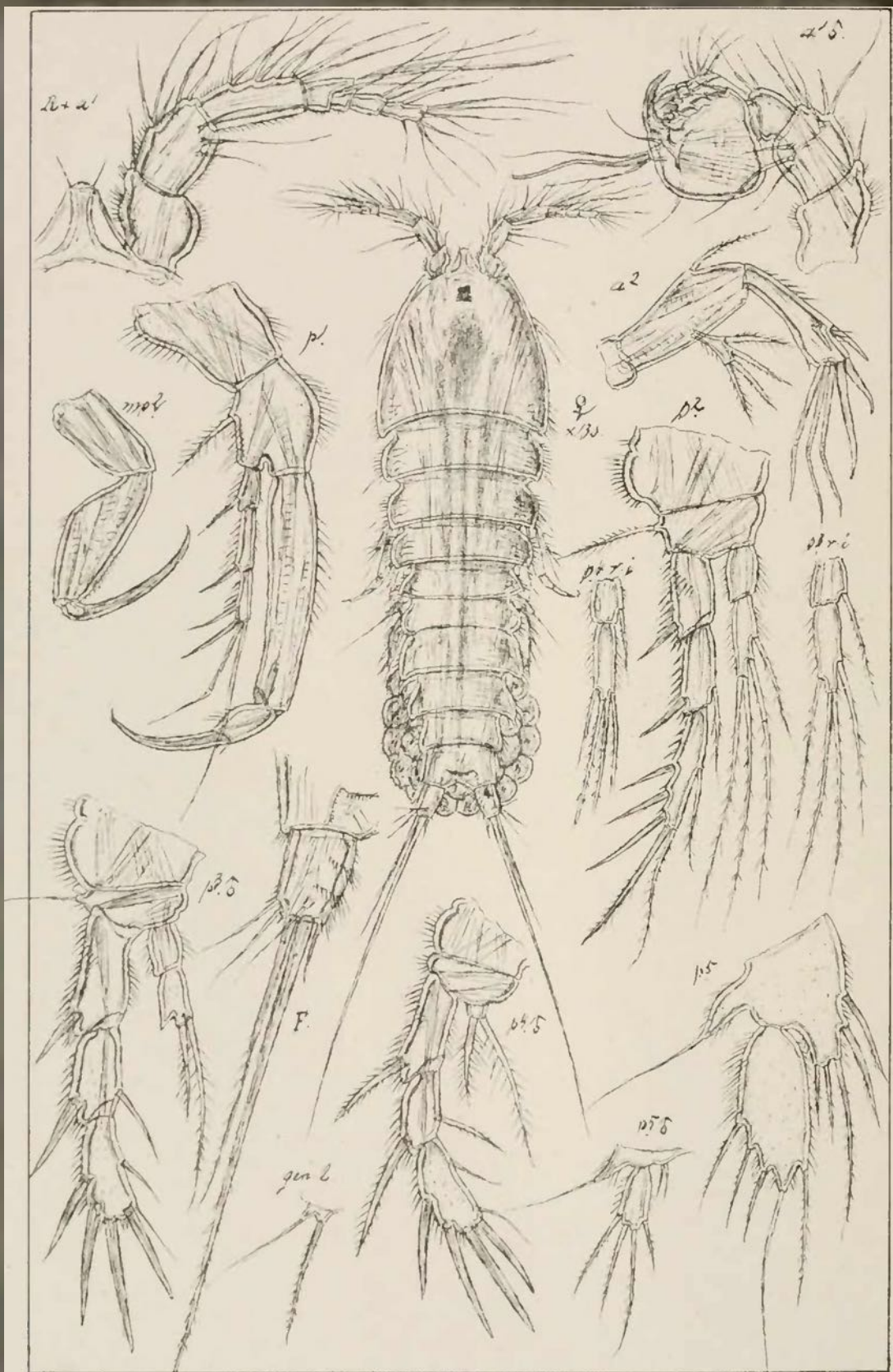
PL. CLXVIII



G.O. Sars autogr.

Norsk lithogr. Officin.

Laophonte brevispinosa G.O. Sars

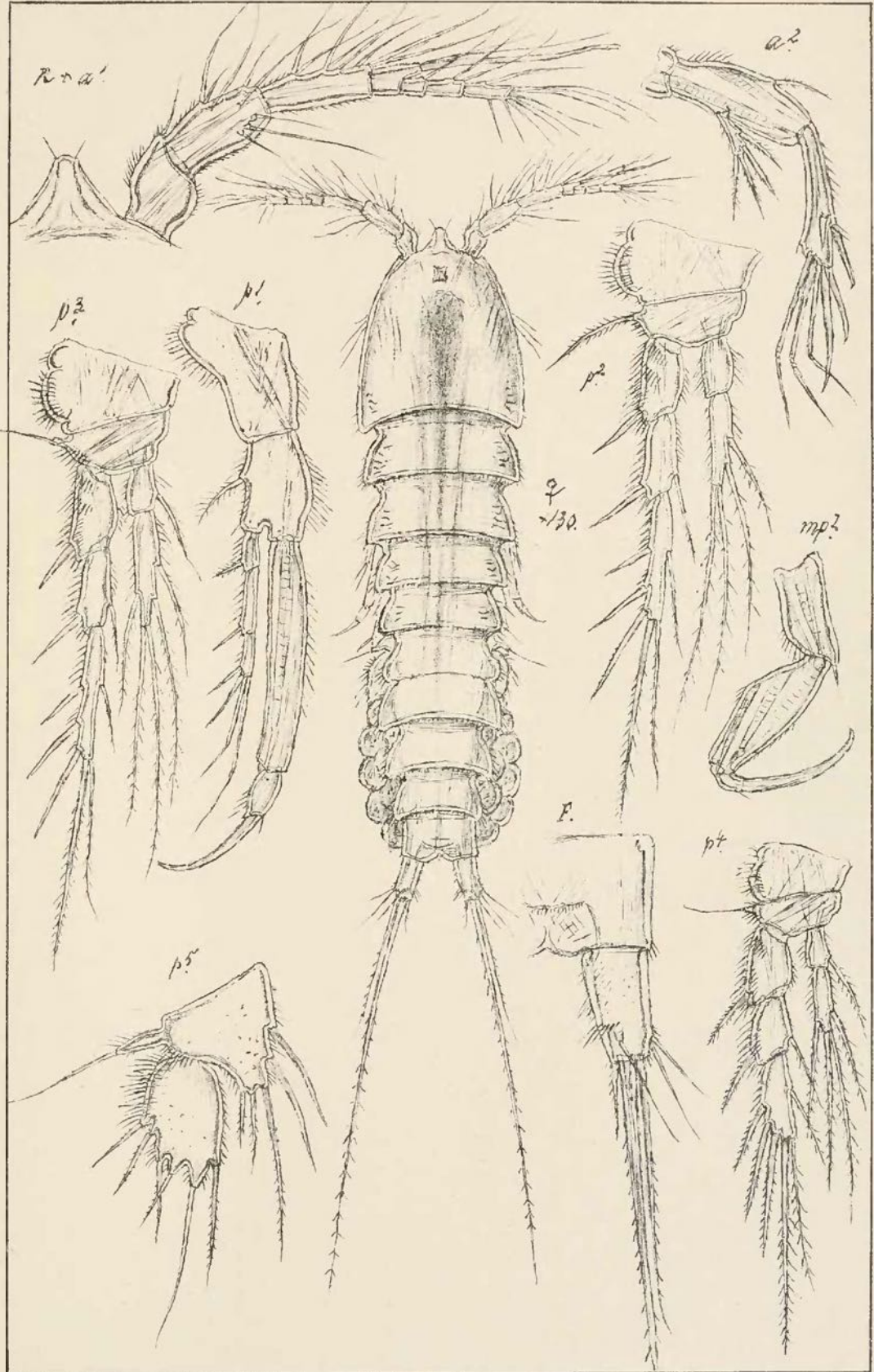


Copepoda

Laophontidæ

Harpacticoida

PL.CLXX



G.O.Sars autogr.

Norsk lithogr. Officin.

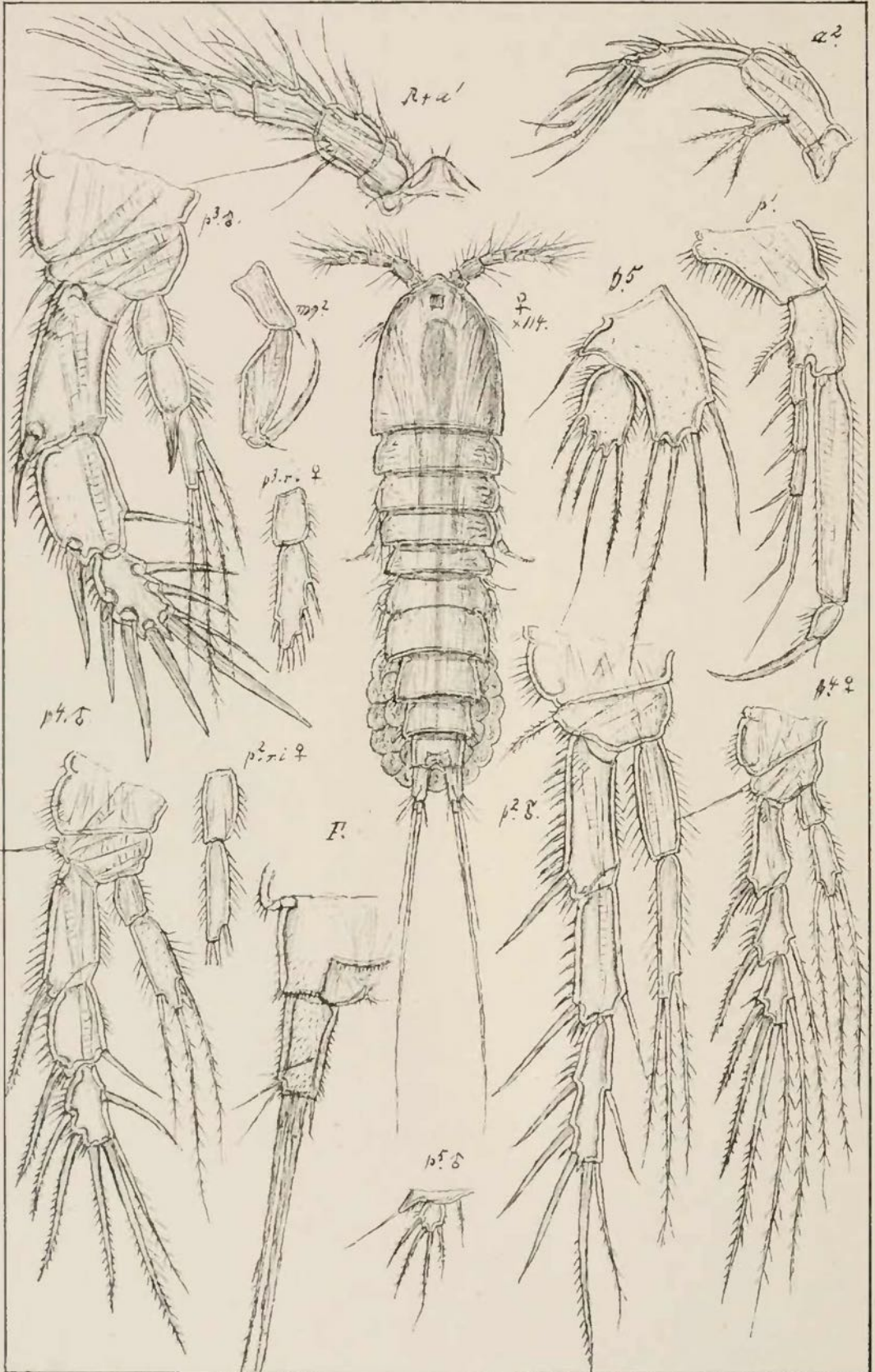
Laophonte proxima, G.O.Sars

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXIII



G.O. Sars autogr.

Norsk lithgn. Officin.

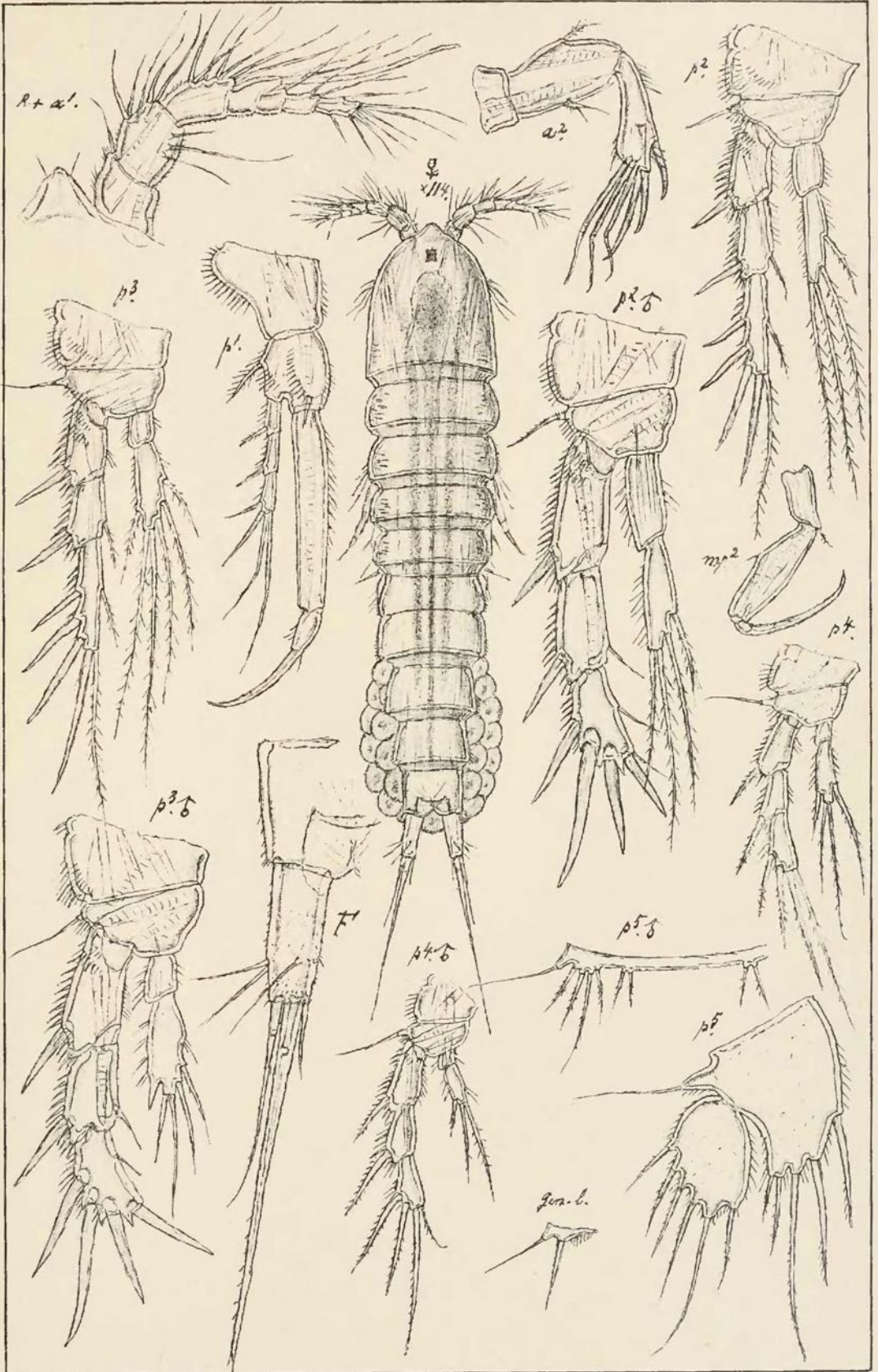
Laophonte curticauda Boeck

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXIV



G.O. Sars autogr.

Norsk lithogr. Officin.

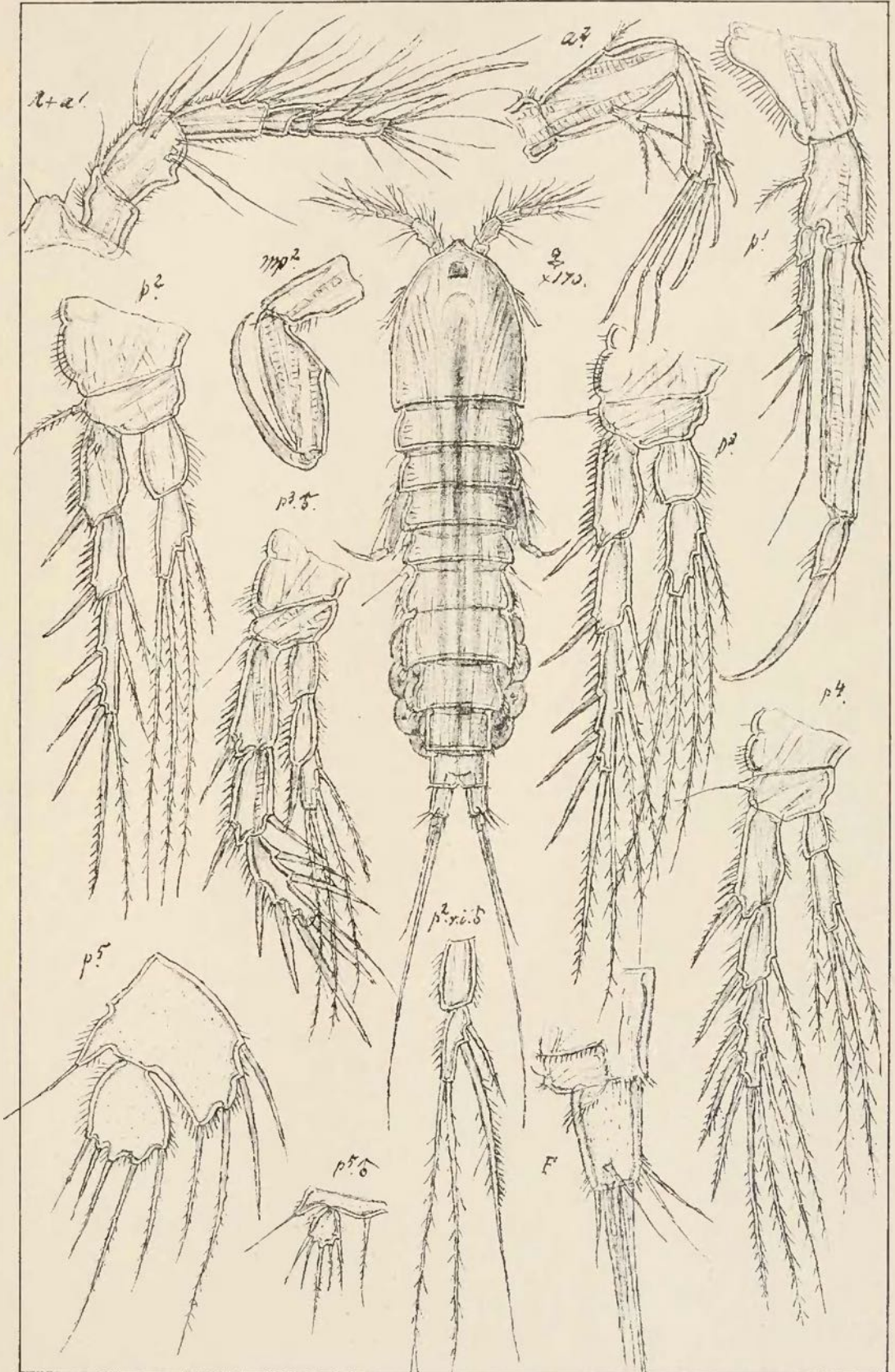
Laophonte minuta, Boeck

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXVI



G.O. Sars autogr.

Norsk lithogr. Officin.

Laophonte brevirostris (Claus)

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 XXIII & XXIV
LAOPHONTIDÆ (continued)

WITH 16 AUTOGRAPHIC PLATES



BERGEN
PUBLISHED BY THE BERGEN MUSEUM
SOLD BY
ALB. CAMMERMEYER'S FORLAG, CHRISTIANIA
1908

legs, as usual, very small, but with the distal joint well defined, and having the same number of setæ as in the female; inner expansion of proximal joint very slight, with a single seta only.

Colour yellowish.

Length of adult female 0.54 mm.

Remarks.—I think I am right in identifying the present form with *Cleta brevirostris* of Claus. It was at first very imperfectly characterised by that author, and for this reason Mr. A. Scott did not recognise the species, but described it under another name, viz., *L. Herdmani*. In his account of the Copepoda of Nice, Claus gives, however, 2 detail-figures, which do not seem to leave any doubt as to the identity of his form with the present species. The peculiar short spatulate form of the distal joint of the last pair of legs in the female will suffice for distinguishing this form from any of the other species.

Occurrence.—I have met with this form not infrequently off both the south and west coasts of Norway in moderate depths among algæ.

Distribution.—British Isles (Scott), Mediterranean, at Messina and Nice (Claus), the Red Sea (A. Scott).

168. *Laophonte congenera*, G. O. Sars, n. sp.

(Pl. CLXXVII).

Specific Characters.—*Female.* Very like the preceding species (*L. brevirostris*), but somewhat more strongly built, with rather coarse integuments. Rostral projection more prominent, with the tip distinctly bilobular. Urosome with the lateral expansions of the segments well defined and densely fringed with spinules. Caudal rami about the length of the anal segment, and of uniform width throughout, both edges fringed with short hairs. Anterior antennæ distinctly 7-articulate, the last 2 joints being well defined, 2nd joint without any projection behind, and scarcely longer than the 3rd. Posterior antennæ, oral parts and legs of a structure very similar to that in *L. brevirostris*. Last pair of legs, however, slightly different in shape, distal joint comparatively narrower, rounded oval in form (not transversely truncated at the tip); inner expansion of proximal joint shorter, scarcely extending beyond the middle of the distal joint.

Male with the inner ramus of 2nd pair of legs transformed in a manner analogous to that in *L. brevirostris*, distal seta of inner edge, however, more fully developed, with the thickened proximal part very large and coarsely spinulose in its outer half. 3rd pair of legs resembling in structure those in *L. brevirostris*.

Last pair of legs with the distal joint narrower, proximal joint with 2 unequal setæ inside.

Colour not yet ascertained.

Length of adult female 0.53 mm.

Remarks.—This form is closely allied to *L. brevirostris*, and may easily be confounded with it. On a closer examination, however, it is found to differ in its more prominent rostral projection, its distinctly 7-articulate anterior antennæ, and the shape of the last pair of legs.

Occurrence.—Some few specimens of this form were found in samples taken at Kopervik and Skutesnæs, south-west coast of Norway, from a depth of 10—20 fathoms.

169. *Laophonte perplexa*, Scott.

(Pl. CLXXVIII).

Laophonte perplexa, Th. Scott, Marine and fresh-water Crustacea from Franz Josef Land. Linn. Soc. Journ. Zool. Vol. XXVII, p. 103, Pl. 7, figs. 1—7.

Specific Characters.—*Female.* General form of body about as in *L. congenera*. Rostral projection, however, less prominent, and with the tip entire. Lateral expansions of caudal segments well developed and densely spinulose. Caudal rami about the length of the anal segment and slightly narrowed distally. Anterior antennæ distinctly 7-articulate, 2nd joint longer than 3rd, and without any projection behind. Posterior antennæ and oral parts scarcely differing in structure from those in the 2 preceding species. 1st pair of legs, however, with the outer ramus consisting of only 2 joints, the last one twice the length of the 1st. Natatory legs of a similar structure to that in the 2 preceding species. Last pair of legs with the distal joint comparatively small and obtusely truncated at the end, inner expansion of proximal joint short and broad, not extending to the middle of the distal joint. Ovisac comparatively large, rounded oval in form.

Male with the 2nd pair of legs much larger than in female, distal joint of inner ramus shorter than the proximal one, and produced inside to a narrow cylindrical process, finely ciliated on both edges and tipped with a slender bristle; seta in front of this process very small and not ciliated. 3rd pair of legs with the inner ramus not transformed, outer ramus, however, very coarse and incurved, with the spines, especially of the terminal joint, strongly developed. 4th pair of legs likewise comparatively larger than in female, with the spines of the outer ramus stronger and more coarsely denticulated. Last pair of legs much reduced in size, and without any expansion of the proximal joint inside.

Colour of female pale orange, ovisac dark bluish.

Length of adult female 0.64 mm.

Remarks.—This form was first recorded from the Arctic Ocean by Th. Scott, who considers it to be most nearly allied to the 2 species *L. curticauda* Boeck and *L. similis* Claus. It is however undoubtedly much more closely related to *L. brevirostris* Claus (= *L. Herdmani* Scott), though differing both from that species and the nearly-allied *L. congenera* G. O. Sars, in the structure of the 1st pair of legs, the outer ramus of which is only biarticulate. It is also of rather larger size than either of these 2 species. A remarkable feature in the present species is that the inner ramus of the 3rd pair of legs in the male does not exhibit any trace of the conspicuous transformation found in all other species of the genus *Laophonte*.

Occurrence.—I found this form, many years ago, not infrequently off the Finmark coast, at Hammerfest and Vadsø, and it has also been recorded by Th. Scott from that part of our country. It moreover occurs in the Trondhjem Fjord, at Selven, and occasionally also at Kopervik and Bukken on the south-west coast of Norway, in moderate depths.

Distribution.—Franz Josef Land (Scott), Polar islands north of Grinnell Land (2nd Fram-Expedition)

170. *Laophonte macera*, G. O. Sars, n. sp.

(Pl. CLXXIX).

Specific Characters.—*Female.* Body slender and narrow, with the segments sharply marked off from each other, and the integuments of very coarse consistency. Cephalic segment comparatively large and deep, with the rostral projection not very prominent, and blunted at the tip. The 4 succeeding segments much narrower and rounded laterally. Urosome almost as long as the anterior division, and having the lateral expansions of the segments rather prominent. Caudal rami considerably produced, being about 4 times as long as they are broad, and narrow linear in form; apical setæ of moderate length. Anterior antennæ 7-articulate, with the 2nd joint simple and about the length of the 3rd. Posterior antennæ with the outer ramus comparatively small, but of normal structure. Posterior maxillipeds largely developed. 1st pair of legs with the outer ramus biarticulate, and scarcely exceeding half the length of the proximal joint of the inner. Natatory legs of normal structure. Last pair of legs with the distal joint of moderate size and oval in form, inner expansion of proximal joint comparatively short, not extending to the middle of the distal joint. Ovisac small, rounded.

Male with the 2nd pair of legs scarcely larger than in female, but having one of the marginal setæ of the inner ramus remarkably transformed, consisting of a thickish and somewhat nodulose basal part and a thin apical bristle. 3rd pair of legs with the inner ramus transformed in the usual manner, outer ramus nearly as in the female. Last pair of legs very small, with no expansion inside the proximal joint.

Colour yellowish.

Length of adult female 0.50 mm.

Remarks.—This form is nearly allied to the 3 preceding species, but is of smaller size than any of them, and moreover distinguished by its very narrow body, the unusually coarse integuments, and above all by the much more produced caudal rami.

Occurrence.—I have occasionally met with this small species off the south coast of Norway, at Risør, Lillesand and Farsund, in moderate depths among algæ. A single specimen was also found in a sample taken by Mr. Nordgaard in the Salten Fjord, north of the Arctic Circle.

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

171. *Laophonte Nordgaardi*, G. O. Sars, n. sp.

(Pl. CLXXX).

Specific Characters.—*Female.* Body comparatively short and stout, tapering only slightly behind. Integuments not very coarse. Cephalic segment comparatively large, exceeding in length the 4 succeeding segments combined; rostral projection rather prominent and obtusely pointed at the tip. Urosome much shorter than the anterior division and having the lateral expansions of the segments rather prominent. Caudal rami short, being scarcely twice as long as they are broad, and considerably divergent, apical setæ of moderate length. Anterior antennæ rather large, but composed of only 6 articulations, the last 2 being confluent; 2nd joint much the largest, and without any projection behind. Posterior antennæ with the outer ramus normally developed. Posterior maxillipeds very powerful. 1st pair of legs with the outer ramus distinctly 3-articulate, and somewhat exceeding half the length of the proximal joint of the inner. Natatory legs with the number of setæ on both rami somewhat reduced. Last pair of legs with the distal joint comparatively small, narrow oval in form, and provided with only 4 setæ, the apical one much the longest; inner expansion of proximal joint triangular in form, and extending to about the middle of the distal joint, marginal setæ 4 in number, all of nearly equal length.

Male with the 2nd pair of legs of exactly the same structure as in female. 3rd pair of legs with the inner ramus transformed in the usual manner, spiniform projection of middle joint sigmoid, terminal joint comparatively short, and provided with only 3 setæ. Last pair of legs much smaller than in female, distal joint gradually widening towards the end, and provided with 5 setæ.

Colour not yet ascertained.

Length of adult female 0.48 mm.

Remarks.—The present species is easily distinguishable from any of the 4 preceding ones, both as regards its external appearance and the structure of some of the appendages, especially that of the last pair of legs. It is one of the smallest species known.

Occurrence.—Some few specimens of this distinct form were found in a sample taken by Mr. Nordgaard in the Salten Fjord, north of the Arctic Circle, and kindly sent to me for examination. I have much pleasure in naming it in honour of that distinguished naturalist, to whom I am indebted for the examination of this and many other interesting species of Copepoda.

172. *Laophonte parvula*, G. O. Sars, n. sp.

(Pl. CLXXXI).

Specific Characters.—*Female.* Body rather short and stout, gradually tapering behind, with the segments sharply marked off from each other. Rostral projection of moderate size and obtusely pointed at the tip. Urosome almost as long as the anterior division, lateral expansions of the segments not very prominent. Caudal rami short, only slightly longer than they are broad, and scarcely at all divergent, apical setæ of moderate length. Anterior antennæ distinctly 7-articulate, 2nd joint produced behind to a triangular projection. Posterior antennæ with the outer ramus normally developed. Posterior maxillipeds not very strong. 1st pair of legs with the outer ramus distinctly 3-articulate, and exceeding half the length of the proximal joint of the inner. Natatory legs of normal structure. Last pair of legs with the distal joint narrow oblong in form, and provided with 7 marginal setæ, the 2 proximal ones of the outer edge closely juxtaposed, one of the apical setæ very slender; inner expansion of proximal joint triangular, and extending somewhat beyond the middle of the distal joint, marginal setæ 5 in number, all of nearly equal length. Ovisac of moderate size, rounded oval in form.

Male unknown.

Colour not yet ascertained.

Length of adult female 0.48 mm.

Remarks.—The present form is of about the same size as *L. Nordgaardii*, but is easily distinguished from that species by the distinctly 7-articulate anterior antennæ and the peculiar shape of the last pair of legs. The general form of the body is also somewhat different.

Occurrence.—Some few specimens of this form, all of the female sex, were picked up from samples taken at Risør and Lillesand, south coast of Norway.

173. *Laophonte nana*, G. O. Sars, n. sp.

(PL. CLXXXII).

Specific Characters.—*Female.* Body very short and stout, somewhat depressed in front and rapidly tapering behind, almost pyriform in shape. Cephalic segment large and broad, with the rostral projection obtusely triangular in shape. Eye very large and light red. Urosome much shorter than the anterior division, and having the lateral expansions of the segments rather slight. Caudal rami short, not much longer than they are broad, and scarcely at all divergent, middle apical seta about half the length of the body. Anterior antennæ rather stout and gradually tapering distally, being only composed of 6 articulations, 2nd joint the largest and without any projection behind. Posterior antennæ with the outer ramus extremely small and rudimentary, conical in form, with a single apical seta and a minute lateral hair. 1st pair of legs less slender than usual, outer ramus biarticulate and about half the length of the proximal joint of the inner. Natatory legs well developed and of normal structure, except that the terminal joint of the outer ramus in the 4th pair is shortened and armed with only 3 spines. Last pair of legs with the distal joint small, sub-truncate at the tip, and provided with 5 setæ, the 2 outermost ones closely juxtaposed; inner expansion of proximal joint rather large and somewhat curved, extending nearly as far as the distal joint, marginal setæ 4 in number, the outermost but one the longest, digitiform process outside this joint short and broad. Ovisac large, rounded oval in form.

Male with the 2nd pair of legs considerably larger than in female, inner ramus very slender, with only 3 setæ on the distal joint, the innermost one short, spiniform. 3rd pair of legs very unlike those in female, outer ramus exceedingly strong, with the setæ of the inner edge spiniform, inner ramus distinctly 3-articulate, spiniform projection of middle joint of a rather peculiar appearance, being sigmoid in form and abruptly bent outwards. Last pair of legs extremely small, distal joint with only 3 setæ, proximal joint without any expansion inside.

Colour of female pale yellow, with dark green ovaria.

Length of adult female 0.42 mm.

Remarks.—This is perhaps the smallest of all the known species of the present genus, and is moreover easily recognised by its short pyriform body, as also by the structure of some of the appendages in both sexes.

Occurrence.—I have only met with this form in the upper part of the Christiania Fjord. It occurred there occasionally on a muddy bottom in shallow bays near the town.

174. *Laophonte inopinata*, Scott.

(Pl. CLXXXIII).

Laophonte inopinata. Th. Scott, Additions to the Fauna of the Firth of Forth. Tenth Annual Report of the Fishery Board for Scotland, Part III, p. 256, Pl. XI, figs. 1—12.

Specific Characters.—*Female.* Body slender, sub-cylindric in form, with the segments sharply marked off from each other, and clothed at the hind edge with scattered spinules with a dense fringe of small denticles between them. Rostral projection triangular. Urosome much shorter than the anterior division, and having the lateral expansions of the segments well defined and densely hairy; last segment exceeding in length the preceding one. Caudal rami comparatively short and of uniform width throughout, somewhat divergent and clothed both at the edges and on the upper face with short hairs; middle apical seta much elongated, exceeding half the length of the body, and having its distal part densely clothed with woolly cilia, tip naked and turned up in a hamiform manner. Anterior antennæ composed of only 6 articulations, the last 2 being confluent, 2nd joint simple and exceeding in length the 3rd. Posterior antennæ rather strong, with the outer ramus normally developed. 1st pair of legs not much elongated, outer ramus biarticulate, and scarcely half as long as the proximal joint of the inner. Natatory legs poorly developed, with the setæ much reduced both in size and number, inner ramus in the 2 anterior pairs biarticulate, in 4th pair quite rudimentary, uniarticulate. Last pair of legs well developed, distal joint somewhat fusiform in outline, and provided with 5 setæ arising from digitiform projections of the edge; inner expansion of proximal joint short and broad, not nearly extending to the middle of the distal joint, marginal setæ 4 in number, the outermost but one much the longest. Ovisac small, rounded.

Male not examined.

Colour light yellow.

Length of adult female 0.55 mm.

Remarks.—This form, described by Th. Scott in the above-mentioned paper, is at once distinguished from any of the other known species by the peculiar structure of the middle apical seta of the caudal rami. It also differs from most other species in the poor development of the natatory legs, which would seem to make it quite unable to move freely in the water.

Occurrence.—Only a very limited number of specimens of this form, all of the female sex, have hitherto come under my notice. Some of them were found off the south coast of Norway, at Risør and Lillesand, and some off the south-west coast, at Skutesnæs. Th. Scott also records this species from the Finmark coast.

Distribution.—Scottish coast (Scott).

175: *Laophonte denticornis*, Scott.

(Pl. CLXXXIV).

Laophonte denticornis, Th. Scott, Additions to the Fauna of the Firth of Forth. Twelfth Annual Report of the Fishery Board for Scotland, Part III, p. 246. Pl. VII, figs. 13—23.

Specific Characters.—*Female.* Body very slender, cylindrical in form, with all the segments sharply marked off from each other, and more or less angular. Rostral projection broadly triangular, with the tip narrowly produced. Urosome fully as long as the anterior division, lateral expansions of the anterior segments well defined and densely spinulose, last segment about the length of the preceding one, and having the anal opercle triangularly produced. Caudal rami nearly 4 times as long as they are broad, linear in form, and somewhat divergent, each with a well-marked keel running along the dorsal face; apical setae of moderate length and distinctly spinulose. Anterior antenna rather large, but composed of only 6 articulations, the last 2 being confluent; 2nd joint produced behind to a remarkably strong claw-like projection. Posterior antennae and oral parts of normal structure. 1st pair of legs with the outer ramus very small, biarticulate, scarcely more than $\frac{1}{3}$ as long as the proximal joint of the inner. Natatory legs poorly developed, with the setae much reduced, inner ramus in all pairs biarticulate and finely ciliated on both edges. Last pair of legs with the distal joint narrow oblong in form, and somewhat obliquely truncated at the end, which carries 5 somewhat unequal setae; inner expansion of proximal joint rather large, extending about as far as the distal joint, marginal setae 4 in number, all of nearly equal length.

Male not examined.

Colour whitish grey.

Length of adult female 0.80 mm.

Remarks.—The above-described form agrees on the whole so closely with the species recorded by Th. Scott, that I cannot doubt that it is the same. Yet there is one apparent difference to be noted as regards the structure of the 1st pair of legs, the outer ramus of which is said by that author to be 3-articulate; but I think this statement must be due to some mistake. The present form is a very distinct one, easily recognisable from any of the other known species.

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

Distribution.—Scottish coast (Scott).

Gen. 53. **Laophontopsis**, G. O. Sars, n.

Generic Characters.—Body slender, cylindric in form, with deep indentations between the segments. Integuments unusually hard, and exhibiting a pitted sculpturing. Rostral projection broad, lamellar, and distinctly defined at the base by a transverse suture. Caudal rami pronouncedly lamellar, with the apical setæ very short and rudimentary. Anterior antennæ short and stout with the articulations much reduced in number. Posterior antennæ and oral parts differing only slightly in structure from those in *Laophonte*. 1st pair of legs likewise of a very similar appearance, though differing in the presence of a plumose seta inside the proximal joint of the inner ramus. Natatory legs well developed, with the outer ramus very slender and provided inside with long ciliated setæ, inner ramus bi-articulate, with the number of setæ somewhat reduced. Last pair of legs in female with both the distal joint and the inner expansion of the proximal joint narrowly produced.

Remarks.—The present new genus is founded upon the anomalous species *Laophonte lamellifera* of Claus, which seems to me to be entitled to form a distinct generic type, exhibiting, as it does, some rather striking differences from the other species of *Laophonte*. The most conspicuous of these differences is shown in the peculiar structure of the caudal rami, from which the name of the species has been derived. There are however 2 other less conspicuous characters by which the present genus differs very markedly from most other *Laophontidæ*, and which are only found in one other very distinct genus referable to that family, viz., the genus *Normanella* Brady, to be described farther on. The first of those

characters refers to the rostral plate, which does not as usual form the immediate continuation of the cephalic segment, but, as in *Normanella*, is sharply defined from it at the base by a well-marked transverse suture. The second character is found in the structure of the 1st pair of legs, the inner ramus of which has attached inside the proximal joint a short, though well defined plumose seta, of which no trace is found in other *Laophontida*, except in the genus *Normanella*. We only know as yet a single species of the present genus.

176. *Laophontopsis lamellifera* (Claus).

(Pl. CLXXXV).

Cleta lamellifera, Claus, Die freilebenden Copepoden, p. 123, Pl. XV, figs. 21—24.

Specific Characters.—*Female.* Body narrow and elongated, slightly tapered behind, with the segments somewhat raised dorsally and fringed at the hind edge with distant spinules. Rostral plate broadly triangular in form, tip obtusely rounded. Urosome about the length of the anterior division, lateral expansions obsolete, last segment fully as long as the preceding one, anal opercle finely denticulate. Caudal rami twice the length of the anal segment and closely juxtaposed, tapering somewhat distally, outer edge with 2 distant bristles, dorsal seta issuing close to the base, middle apical seta scarcely half the length of the ramus, the other 2 still smaller. Anterior antennæ short and stout, composed of 4 joints only, the last 2 of the proximal part, and all of the terminal part, being confluent; setæ of the anterior edge comparatively short, partly spiniform. Posterior antennæ of quite normal structure. 1st pair of legs with the outer ramus 3-articulate and about half the length of the proximal joint of the inner, plumose seta of the latter very small, and attached about in the middle. Natatory legs with the terminal joint of the outer ramus very narrow, and provided in the anterior pair with one, in the other 2 pairs with 2 setæ inside; inner ramus in 2nd pair of legs with only 3 setæ, in the other 2 pairs with 4. Last pair of legs with the distal joint narrow linear in form, and provided with 6 partly spiniform setæ, 4 of which are attached to the outer edge, apical seta much the longest; inner expansion of proximal joint narrow linguiform, and extending considerably beyond the middle of the distal joint, marginal setæ 5 in number, the innermost one somewhat remote from the others. Ovisac of moderate size and oval in form.

Male not examined.

Colour whitish grey.

Length of adult female 0.88 mm

Remarks.—This form was first briefly described by Claus as *Cletu lamellifera*, and subsequently more closely examined by Prof. Brady, who referred it to the genus *Laophonte* of Philippi. It is an easily recognisable species, which cannot be confounded with any of the other *Laophontidæ*.

Occurrence.—I have only met with this form in a single locality, viz., at Hvalor, in the outer part of the Christiania Fjord, where some few female specimens were taken from a depth of about 6 fathoms, muddy bottom.

Distribution.—Mediterranean (Claus), British Isles (Brady), coast of France (Canu).

Gen. 54. **Asellopsis**, Brady, 1873.

Generic Characters.—Body pronouncedly depressed, with all the segments lamellarly expanded laterally. Rostral projection triangular, not defined behind by any suture. Caudal rami lamelliform, with the apical setæ rudimentary. Anterior antennæ in female with the number of joints reduced; those of male strongly hinged. Posterior antennæ about as in *Laophonte*. Oral parts also of a somewhat similar structure. 1st pair of legs with the outer ramus small, biarticulate, proximal joint the larger; inner ramus strong, resembling in structure that in *Laophonte*. Natatory legs well developed, with the full number of setæ, outer ramus coarsely spinulose outside; inner ramus of 3rd pair in male transformed in the usual manner. Last pair of legs in female with both joints lamellar and provided with comparatively short setæ; those in male without any expansion inside the proximal joint.

Remarks.—This genus was established in the year 1873 by Prof. Brady, to include a species, *A. hispida*, which, as regarded its external appearance, differed very markedly from the other *Laophontidæ*, as indicated by the generic name. Subsequently, however, he withdrew this genus, believing that the form upon which it was founded did not differ sufficiently in its anatomical details from *Laophonte*. As of recent years several genera closely related to that genus have been established and comprised within a particular family, *Laophontidæ*, I think that the present genus may also be acceptable, the more so as, in addition to the typical form, there is another well-defined species, which is evidently referable to that genus, viz., the form recently described by Th. Scott as *Laophonte intermedia*. In the structure of the caudal rami and the rudimentary condition of their apical setæ, the present genus agrees with *Laophontopsis*; but the form of the body is very different, and there are also several differences to be found in the structural details, which preclude a combination of these 2 genera.

177. *Asellopsis hispida*, Brady.

(Pl. CLXXXVII).

Asellopsis hispida, Brady & Robertson, Ann. & Mag. Nat. Hist. Vol. XII, p. 137, Pl. IX, figs. 6—10.

Specific Characters.—*Female.* Body comparatively broad, flattened, with the lateral expansions of the anterior segments truncated at the end. Cephalic segment very large, almost quadrangular in outline, rostral projection rather prominent, with the tip blunted. Urosome much shorter than the anterior division and having all the segments produced laterally to triangular imbricated expansions. Caudal rami short and broad, forming rounded lamellæ densely clothed with short hairs both at the edges and on the upper face, setæ of outer edge closely juxtaposed and not far from the end, dorsal seta issuing from about the middle, medial apical seta scarcely longer than the ramus, the other 2 still smaller. Eye well developed and of light red colour. Anterior antennæ of moderate size, and composed of 5 articulations, the last 2 of the proximal part being confluent; last joint transversely truncated at the tip. Posterior antennæ with the apical spines and setæ comparatively short and thick, outer ramus rather small and provided with 4 short ciliated setæ. 1st pair of legs with the outer ramus scarcely half as long as the proximal joint of the inner, distal joint of nearly the same length as the proximal one, but considerably narrower, and carrying outside a thin flexuous bristle, at the tip a single spine and 2 geniculated setæ. Natatory legs with the proximal joints of the rami somewhat dilated, especially in the anterior pairs, the 2 first joints of outer ramus armed with a double row of coarse spinules. Last pair of legs comparatively large, distal joint oblong oval in form with the outer edge minutely spinulose and carrying 5 rather short setæ arising from digitiform prominences, the penultimate one very thin, hair-like, inner edge of the joint quite smooth; inner expansion of proximal joint considerably produced and of narrow linguiform shape, extending about as far as the distal joint, marginal setæ 4 in number, the 2 innermost ones much shorter than the other 2.

Male with the anterior antennæ very strongly built and distinctly 6-articulate, last joint of proximal part globularly dilated, terminal part biarticulate, claw-like. Inner ramus of 3rd pair of legs distinctly triarticulate, middle joint produced at the end outside to a spiniform projection. Last pair of legs very small, with no trace of an inner expansion of the proximal joint.

Colour light yellow, with orange shading.

Length of adult female 0.58 mm.

Remarks.—The present form, first described by Messrs. Brady and Robertson under the above name, is easily recognisable by its flat expanded body and the

densely hispid lamelliform caudal rami. From the nearly allied species, *A. intermedia* (Scott), it may be distinguished by the somewhat different form of these rami, as also by some differences in the structure of the 1st pair of legs, as shown by the figures given by that author.

Occurrence.—I have found this form occasionally off the south coast of Norway, at Risør and Lillesand, in moderate depths, but more frequently off the south-west coast, at Skutesnæs and Haugesund. In the last-named locality it also occurred in tidal pools together with other littoral forms.

Distribution.—British Isles (Brady).

Gen. 55. **Laophontodes**, Scott, 1894.

Generic Characters.—Body more or less slender, with all the segments sharply marked off from each other by conspicuous constrictions. Cephalic segment comparatively broad and projecting in front to a triangular rostral plate not defined at the base. Urosome with the postero-lateral corners of the segments more or less produced. Caudal rami long and narrow, with one of the apical setæ rather strong. Anterior antennæ in female comparatively slender, with the 2 outer joints of the proximal part confluent; those in male hinged in the usual manner. Posterior antennæ with no trace of an outer ramus. Mandibular palp comparatively small, club-shaped. Maxillæ with the exopodal and epipodal lobes imperfectly developed. Anterior maxillipeds comparatively small, with only 2 digitiform lobes inside the claw-bearing joint. Posterior maxillipeds of normal structure. 1st pair of legs with the outer ramus much smaller than the inner, though composed of 3 well-defined joints, the last of which is rather short and obliquely truncated at the tip, spine of 1st joint of normal appearance, all the other 5 spines slender, geniculate, and gradually increasing in length distally; inner ramus, as in *Laophonte*, distinctly prehensile, biarticulate, with the proximal joint long and slender, distal joint armed at the tip with a curved claw and a slender seta. Natatory legs more or less extended laterally, the 2nd basal joint being considerably produced and bent upon the 1st in an elbow-like manner, rami very unequal and attached at rather a long distance from each other, the outer one slender, 3-articulate, with the spines rather elongated, inner ramus much smaller than the outer, narrow linear in form, and composed of only 2 joints, the 1st very small and in some cases imperfectly defined; inner ramus of 3rd pair of legs in male

slightly transformed. Last pair of legs forming each a slender curved stem extending laterally, its 2 joints imperfectly defined, the proximal one without any distinct expansion inside, but produced outside to a slender digitiform process tipped with a delicate bristle; those in male comparatively smaller than in female, with the 2 joints completely confluent, and the number of setæ reduced.

Remarks.—This genus was established by Th. Scott in the year 1894, and was at first merely regarded as a subgenus of *Laophonte*. In my opinion it is a fairly well defined genus, differing very markedly from the other genera comprised within the present family in several of the structural details, for instance, in the total absence of an outer ramus on the posterior antennæ, and in the rather peculiar structure of the legs. Off the coasts of Norway, there occur 3 well defined species belonging to this genus.

178. *Laophontodes typicus*, Scott.

(Pl. CLXXXVII).

Laophontodes typicus, Th. Scott, Additions to the Fauna of the Firth of Forth. Twelfth Annual Report of the Fishery Board for Scotland, Part III, p. 249, Pl. VIII, figs. 2–8.

Specific Characters.—*Female.* Body narrow, elongate, tapering behind, with the segments more or less angular in form. Cephalic segment sub-quadrangular in outline, postero-lateral corners only slightly produced. Rostral projection not very prominent, and obtuse at the tip. Urosome very narrow and (including the caudal rami) almost as long as the anterior division, lateral expansions of the segments well defined and minutely spinulose at the edges; last segment almost as long as the preceding one, and having the anal opercle finely denticulate, caudal rami narrow linear in form and rather divergent, being nearly twice as long as the anal segment, setæ of outer edge somewhat distant, dorsal seta well developed and issuing near the end of the ramus; middle apical seta rather strong, the other 2 very small, the outermost one being the longer, and connected at the base with the middle one. Anterior antennæ rather slender, almost attaining the length of the cephalic segment, and composed of 5 articulations, 2nd joint about the length of the 3rd, and exhibiting behind a slight ciliated expansion; terminal part fully as long as the 3rd joint. Posterior antennæ with the distal joint long and narrow, exhibiting the usual armature. Posterior maxillipeds not very strong, hand narrow fusiform in shape. 1st pair of legs with the outer ramus about half as long as the proximal joint of the inner, geniculate spines of the last joint rapidly increasing in length, the innermost one being 3 times as long as the whole ramus, apical claw of inner ramus of moderate size and much curved at the end,

accompanying seta rather longer than the claw. Natatory legs without any setæ inside the outer ramus. Last pair of legs with the proximal part shorter than the distal one, and provided inside with 2 closely juxtaposed setæ, distal part carrying 5 strong setæ, 2 outside and 3 at the tip, inner edge smooth. Ovisac small, rounded, with a very limited number of ova.

Male with the anterior antennæ rather strongly built, proximal part consisting of 4 well-defined joints, the last globularly dilated, terminal part uniaarticulate, claw-like. Inner ramus of 3rd pair of legs 3-articulate, with the middle joint much the longest and produced at the end outside to a spiniform projection. Last pair of legs with only a single strong seta opposite the outer digitiform process, terminal part with one lateral and 2 somewhat unequal apical setæ.

Colour not yet ascertained.

Length of adult female 0.45 mm.

Remarks.—This is the first species described, and thus deserves its specific name as the type of the present genus. It is easily distinguished from the other 2 species by its long and narrow body, the form of the cephalic segment, and the angular shape of the succeeding segments.

Occurrence.—A solitary female specimen of this interesting form was taken some years ago, at Bukken, south-west coast of Norway, from a depth of about 20 fathoms. Some few specimens of both sexes were moreover picked up from a sample taken by Mr. Nordgaard in the Salten Fjord, north of the Arctic Circle, and kindly sent to me for examination.

Distribution.—Scottish coast (Scott), Franz Josef Land (Scott).

179. *Laophontodes bicornis*, A. Scott.

(Pl. CLXXXVIII).

Laophontodes bicornis, A. Scott, Description and Notes of some new and rare Copepoda from Liverpool Bay. Report for 1985 on the Lancashire Sea Fisheries Laboratory, p. 14, Pl. III, figs. 24 & 25, Pl. IV, figs. 1—7.

Specific Characters.—*Female.* Body of a narrow and elongated form somewhat similar to that of the preceding species. Cephalic segment, however, very different in shape, exhibiting behind the middle a conspicuous constriction, anterior part triangularly expanded laterally, posterior part sending off to each side a remarkable horn-like process pointing obliquely backwards; rostral projection broadly triangular, with the tip slightly produced and obtusely pointed. The 3 succeeding segments very narrow and rounded laterally; last pedigerous segment somewhat broader. Urosome slender, though somewhat shorter than the anterior division,

lateral expansions of the segments only slightly produced and obtuse at the tip; last segment rather small, scarcely half as long as the preceding one, and having the anal opercle considerably prominent. Caudal rami narrow linear in form and slightly divergent, about equalling in length the last 2 segments combined, setæ of outer edge small and attached near the end, dorsal seta well developed, middle apical seta about twice the length of the ramus. Eye very conspicuous in the living animal. Anterior antennæ resembling in structure those in *L. typicus*; 3rd joint however comparatively longer. Posterior antennæ and oral parts almost exactly as in that species. 1st pair of legs likewise of a very similar structure. Natatory legs differing in the presence of well-developed setæ inside the outer ramus. Last pair of legs with the proximal part considerably longer than the distal one, and finely ciliated on both edges, carrying inside at the end 2 closely juxtaposed setæ, distal part with 5 marginal setæ, 3 at the tip and one on each side. Ovisac rounded.

Male with the anterior antennæ somewhat less strongly binged than in the preceding species. Inner ramus of 3rd pair of legs with the projection of the middle joint very small. Last pair of legs comparatively smaller than in female, with no boundary between the proximal and the distal parts; number of setæ as in the male of *L. typicus*.

Body of a beautiful violaceous colour, with the ova in the ovisac light green. Length of adult female 0.44 mm.

Remarks.—This form, first described by Mr. A. Scott from a solitary female specimen, is at once distinguished from the type species by the peculiar shape of the cephalic segment, and still more by the very prominent lateral processes issuing from its posterior part. It moreover differs conspicuously in the presence of well-developed setæ inside the outer ramus of the natatory legs, and the shape of the last pair of legs is also somewhat different.

Occurrence.—I have met with this peculiar Copepod not infrequently in several localities both on the south and west coasts of Norway in depths ranging from 10 to 30 fathoms. It is however easily overlooked on account of its small size.

Distribution.—British Isles (Scott).

180. *Laophontodes expansus*, G. O. Sars, n. sp.

(Pl. CLXXXIX).

Specific Characters.—*Female.* Body comparatively short and stout, flattened, with the lateral parts of the segments lamellarly expanded. Cephalic segment very large, with the lateral edged evenly curved and densely clothed with long cilia; rostral projection rather prominent, terminating in a spiniform point. Lateral parts of the succeeding segments produced to narrow linguiform plates densely ciliated at the end. Urosome much shorter than the anterior division, and having all the segments, except the last, expanded laterally in a manner similar to those of the anterior division, last segment short and broad, with the anal opercle prominent and finely spinulose at the edge. Caudal rami long and slender, linear in form, and considerably divergent, inner edge ciliated in the middle, outer edge exhibiting in front of the middle two small tufts of cilia, setæ of this edge rather distant, dorsal and apical setæ about as in *L. bicornis*. Anterior antennæ comparatively slender, but composed of only 4 joints, the terminal part being uniaarticulate. Posterior antennæ and oral parts about as in the 2 preceding species. 1st pair of legs also rather similar, though comparatively more strongly built, with the apical claw of the inner ramus rather strong, and the accompanying seta much elongated. Natatory legs without any setæ inside the outer ramus, apical seta of this ramus very small and rudimentary; inner ramus of 4th pair of legs likewise much reduced, and only provided with a single apical seta. Last pair of legs with the proximal part much shorter than the distal one, and without any seta inside, distal part, like the proximal one, clothed at the edges with irregular tufts of hairs, setæ 5 in number, 2 of them issuing from the upper face.

Male unknown.

Colour not yet ascertained.

Length of adult female 0.41 mm.

Remarks.—In its external appearance this form differs considerably from the 2 preceding species. It is however undoubtedly congeneric with them, exhibiting in the structural details all the chief features of the present genus.

Occurrence.—Only 2 female specimens of this remarkable form have as yet come under my notice. They were found in a sample taken by Mr. Nordgaard in the Salten Fjord, and kindly sent to me for examination.

Gen. 56. **Platychelipus**, Brady, 1880.

Generic Characters.—Body sub-cylindrical in form, resembling that in *Laophonte*, all the segments being very sharply marked off from each other. Cephalic segment of moderate size, and projecting in front in a triangular rostral plate, not defined at the base. Urosome with the lateral expansions of the segments only slightly marked. Caudal rami of moderate size, with the apical setæ comparatively short, the middle one very coarse, spiniform. Anterior antennæ in female 6-articulate, 2 of the joints belonging to the terminal part; those in male very strongly hinged. Posterior antennæ rather powerful, with the innermost apical seta spiniform and coarsely denticulated, outer ramus very small. Oral parts nearly as in *Laophonte*: posterior maxillipeds, however, less powerful, with the dactylus very slender and clothed inside with thin spinules. 1st pair of legs with both rami biarticulate, the outer one rather coarsely built, though shorter than the inner, the latter far less fully developed than in *Laophonte* and less pronouncedly prehensile, the apical claw being very thin, almost setiform. Natatory legs with the outer ramus strongly built, having the spines very coarse, whereas the setæ are much reduced, or in some cases wholly wanting, inner ramus poorly developed; those in male much larger than in female, with the outer ramus very powerful, inner ramus of 3rd pair of legs transformed in a manner similar to that in the male of *Laophonte*. Last pair of legs with the distal joint comparatively short, lamelliform, inner expansion of proximal joint well developed; those in male very much reduced.

Remarks.—This genus was established in the year 1880 by Prof. Brady, to include a species, *P. littoralis*, found by him off the British coast. It was referred by that author to his sub-family *Nannopinae*, though in reality it only exhibits a very remote affinity to the gen. *Nannopus*, on which this sub-family was founded. In my opinion the present genus ought unquestionably to be included in the family *Laophontidae*, exhibiting, as it does, all the chief features of that family. Off the Norwegian coast, 2 well-defined species referable to this genus occur.

181. **Platychelipus littoralis**, Brady.

(Pl. CXC & CXCI).

Platychelipus littoralis, Brady, Monograph on British Copepoda, Vol. II, p. 103, Pl. LXXIX, figs. 20—23, Pl. LXXX, figs. 15—19.

Specific Characters.—*Female.* Body moderately slender, slightly tapering behind, with well-marked constrictions between the segments. Cephalic segment

scarcely as long as the 3 succeeding segments combined, rostral plate obtusely pointed at the tip. Urosome much shorter than the anterior division, last segment not attaining the length of the preceding one. Caudal rami comparatively short and of uniform width throughout, setæ of outer edge closely juxtaposed, and, like the dorsal seta, issuing in front of the middle, medial apical seta distinctly jointed at the base, and not attaining half the length of the urosome. Anterior antennæ rather stout, with the setæ of the anterior edge short and thick, last joint about the length of the 3rd. Posterior antennæ with the outer ramus somewhat dilated in the middle and carrying 3 comparatively short setæ, one apical and one on each side. Mandibular palp comparatively large and densely hairy, with 5 thickish setæ, the innermost arising from a digitiform process. 1st pair of legs with the outer ramus about half the length of the inner, and rather coarsely built, last joint armed with 4 spines, but without any setæ; apical claw of inner ramus almost attaining the length of the whole ramus and turned up at the tip in a hamiform manner. Natatory legs remarkably short and stout, with no setæ on the outer ramus, the latter coarsely built, with the spines exceedingly strong; inner ramus in 2nd pair of legs normally developed though only carrying a single apical seta, in the 2 succeeding pairs quite rudimentary. Last pair of legs rather small, distal joint short, with 5 thickish setæ; inner expansion of proximal joint extending beyond the distal joint, and subtruncate at the end, which carries 4 strong setæ. Ovisac of moderate size and oval in form.

Male differing considerably from the female in its external appearance, having the anterior division of the body somewhat dilated in the middle, whereas the posterior is very slender and narrow. Rostral projection rather small and conical in form. Anterior antennæ strongly built, with the last joint of the proximal part globularly dilated, and the terminal part unguiform. 1st pair of legs slightly differing from those of the female as regards the outer ramus, the distal joint of which is comparatively larger, with an additional short seta inside the tip. Natatory legs remarkably strong, with the outer ramus much larger than in female, inner ramus in all of them well developed, though much smaller than the outer. Last pair of legs each reduced to a narrow rim carrying 4 setæ, inside which is another very small bristle.

Colour dark reddish brown.

Length of adult female 0.97 mm, of male 0.84 mm.

Remarks.—The present species is the type of the genus *Platychelipus*, and in some characters seems, indeed, to differ conspicuously from the typical species of *Laophonte*, especially as regards the female. The male, however, ex-

hibits sexual characters quite analogous to those found in some species of that genus, for instance *L. Stromi* and allied forms.

Occurrence.—I have only met with this form in a single locality, viz., in a shallow bay near Christiania. It occurred here not infrequently close to the shore, on a muddy bottom, males and females being present in about equal number and often seen tied together in copulation. Th. Scott also records this form from the Finmark coast. The movements of the animal consist chiefly in a slow creeping through the loose mud in which it dwells, and with which the surface of the body is often thickly covered. During these movements the very flexible body is twisted in various ways, and both the antennæ and the legs swing to and fro. At times the animal is seen slowly climbing up the walls of the vessel in which it is observed; but I have never seen it make even the slightest attempt to swim, and, indeed, the structure of the natatory legs, at any rate in the female, seems to render the animal quite unfit for such a movement.

Distribution.—British Isles (Brady), Novaja Zemlja (Scott).

182. *Platychelipus laophontoides*, G. O. Sars, n. sp.

(Pl. CXCII).

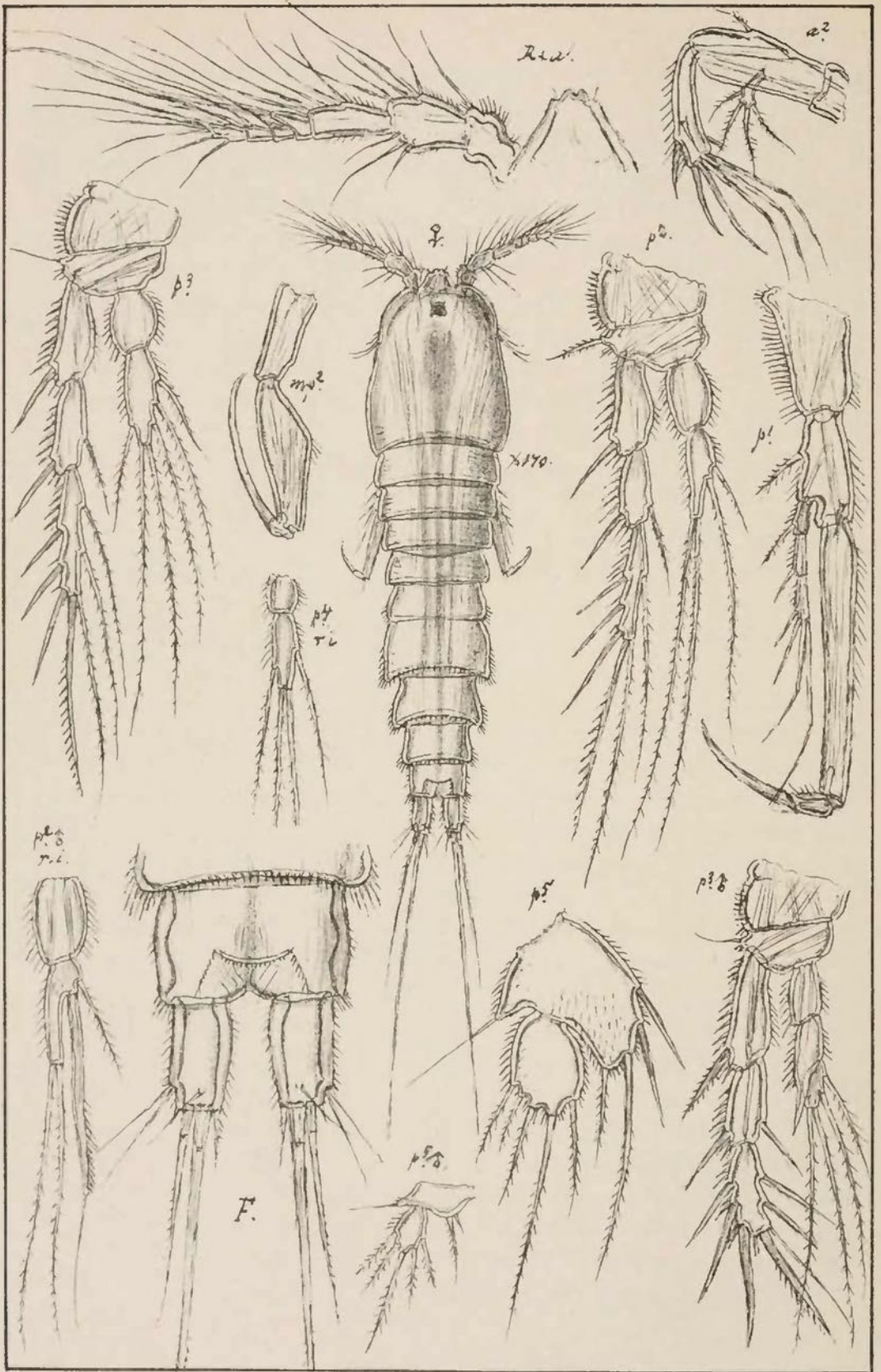
Specific Characters.—*Female.* Body somewhat less robust than in the preceding species, though otherwise of rather a similar appearance, tapering gradually behind. Cephalic segment exceeding in length the 3 succeeding ones combined, rostral projection minutely bilobular at the tip. Urosome comparatively more elongated, with the last segment fully as large as the preceding one. Caudal rami about twice as long as they are broad, and somewhat tapered distally; setæ of outer edge, like the dorsal one, issuing a little behind the middle, medial apical seta somewhat exceeding half the length of the urosome, and not jointed at the base. Anterior antennæ comparatively more slender than in the type species, with the setæ of the anterior edge less strong, terminal joint considerably longer than the 3rd. Posterior antennæ with the outer ramus extremely small, and having one of the setæ much longer than the others. Mandibular palp comparatively smaller than in *P. littoralis*, though of a very similar structure. 1st pair of legs likewise exhibiting the structure characteristic of the genus, outer ramus, however, comparatively narrower than in the type species, with the last joint longer than the 1st, and carrying 3 spines and 2 minutely ciliated setæ; apical claw of inner ramus very slender, and evenly curved at the tip. Natatory legs with the outer ramus less strongly built than in *P. littoralis*, and provided inside with a few

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXVII



G.O. Sars autogr.

Norsk lithogr. Officin

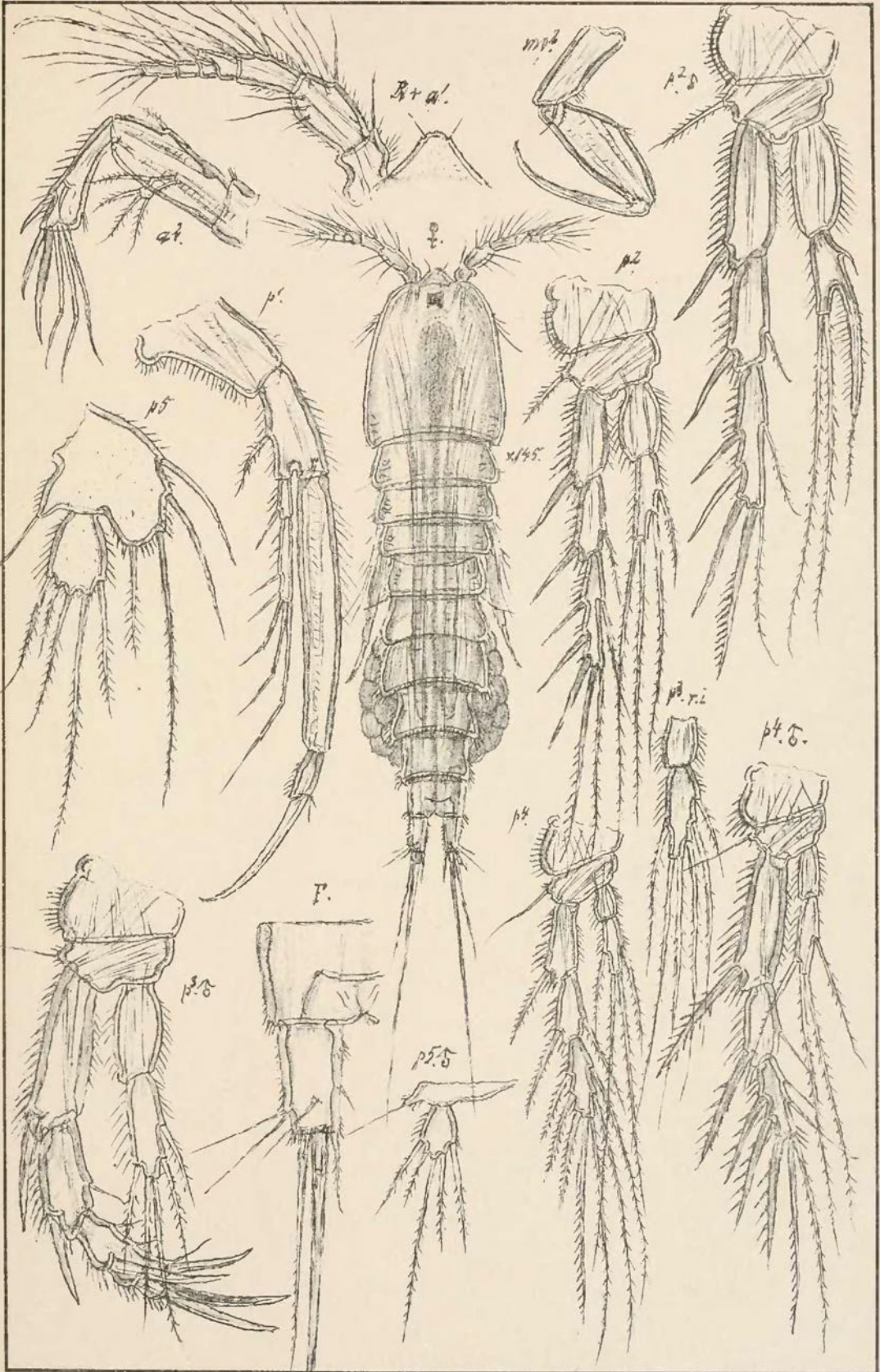
Laophonte congenera, G.O. Sars

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXVIII.



G.O. Sars autogr.

Norsk lithgr. Officin.

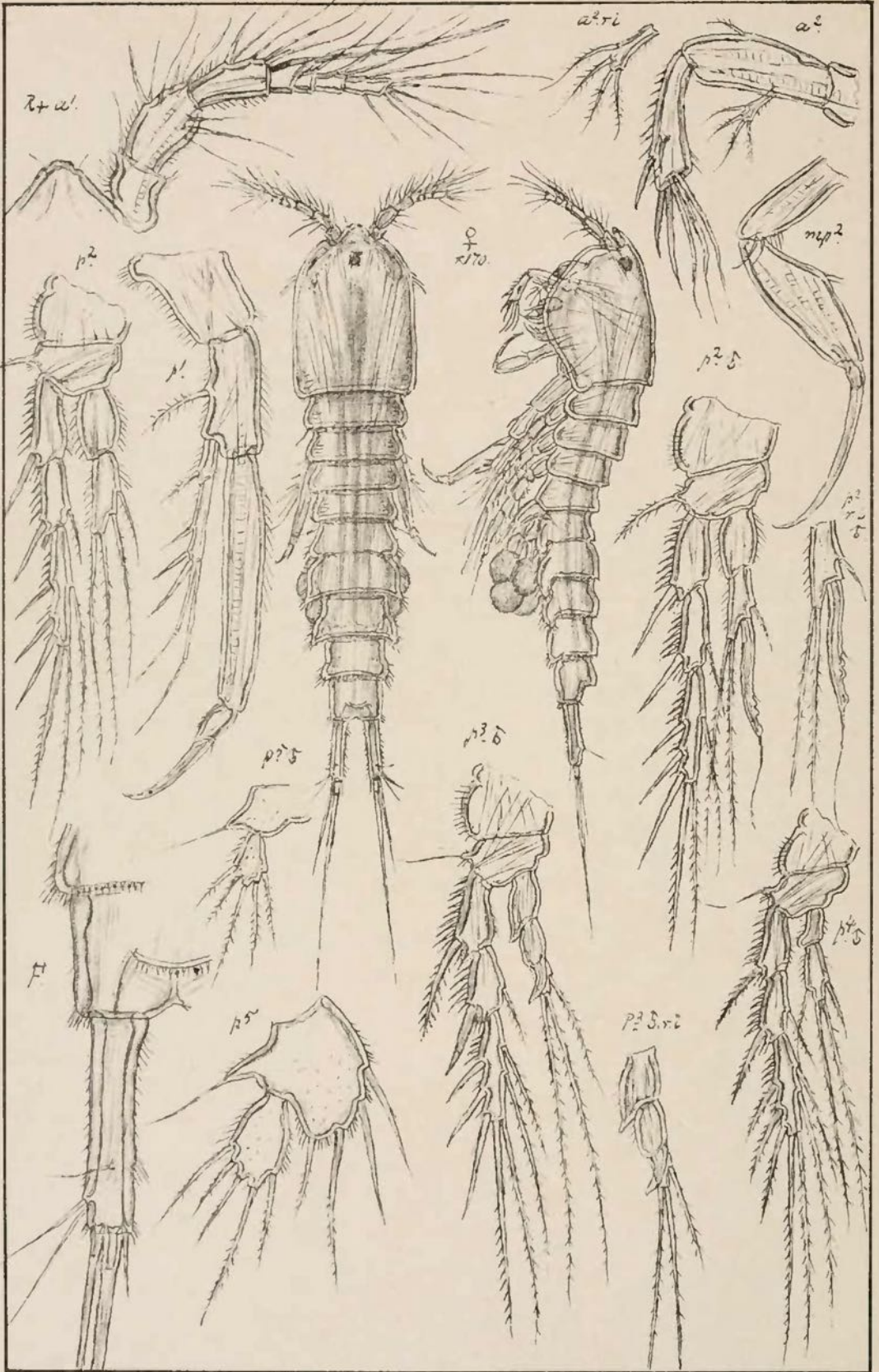
Laophonte perplexa, Scott

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXXIX



G.O.Sars autogr.

Norsk lithogr. Officin.

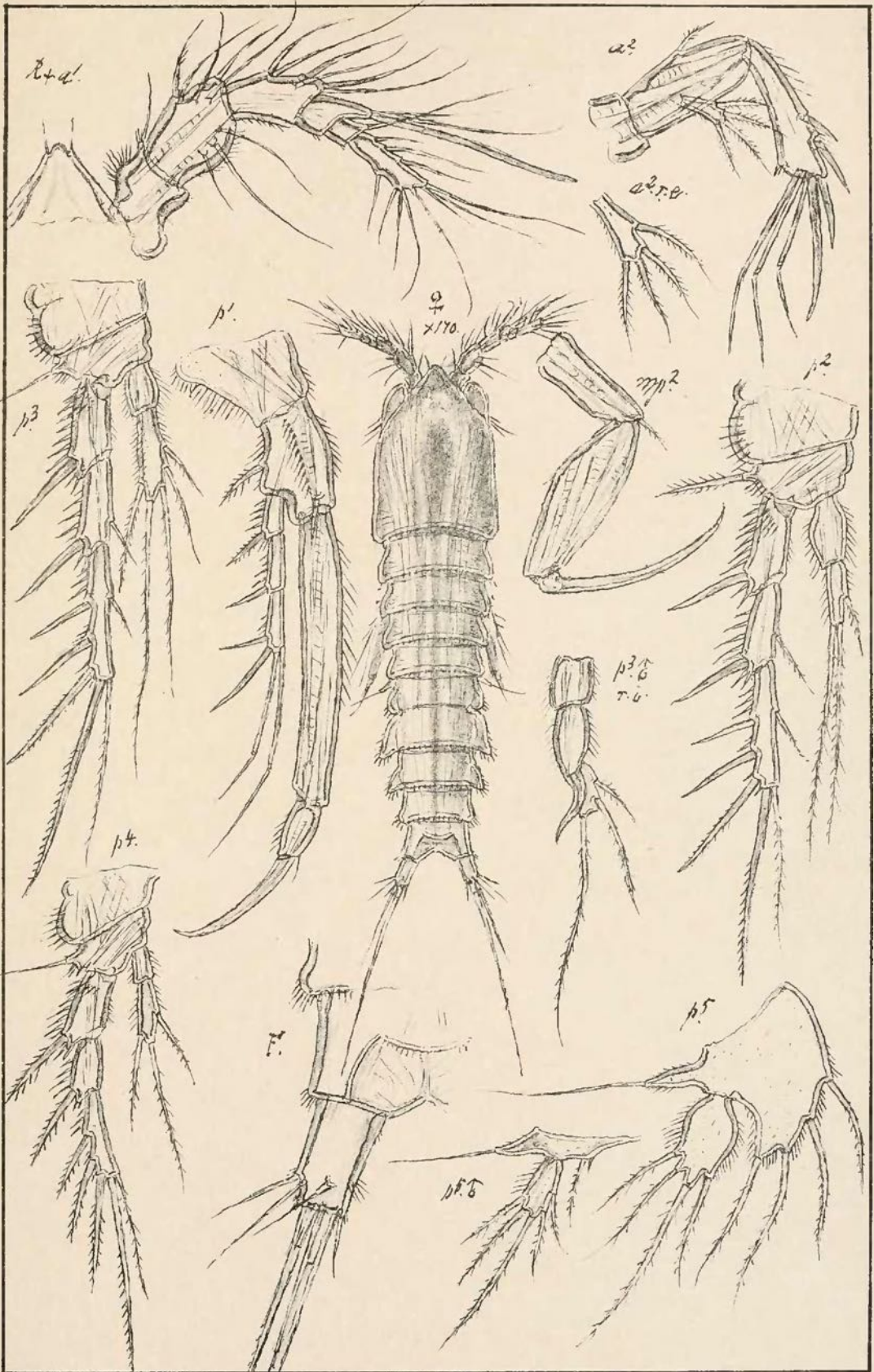
Laophonte macera, G.O.Sars

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXX



G.O.Sars autogr.

Norsk lithogr. Officin.

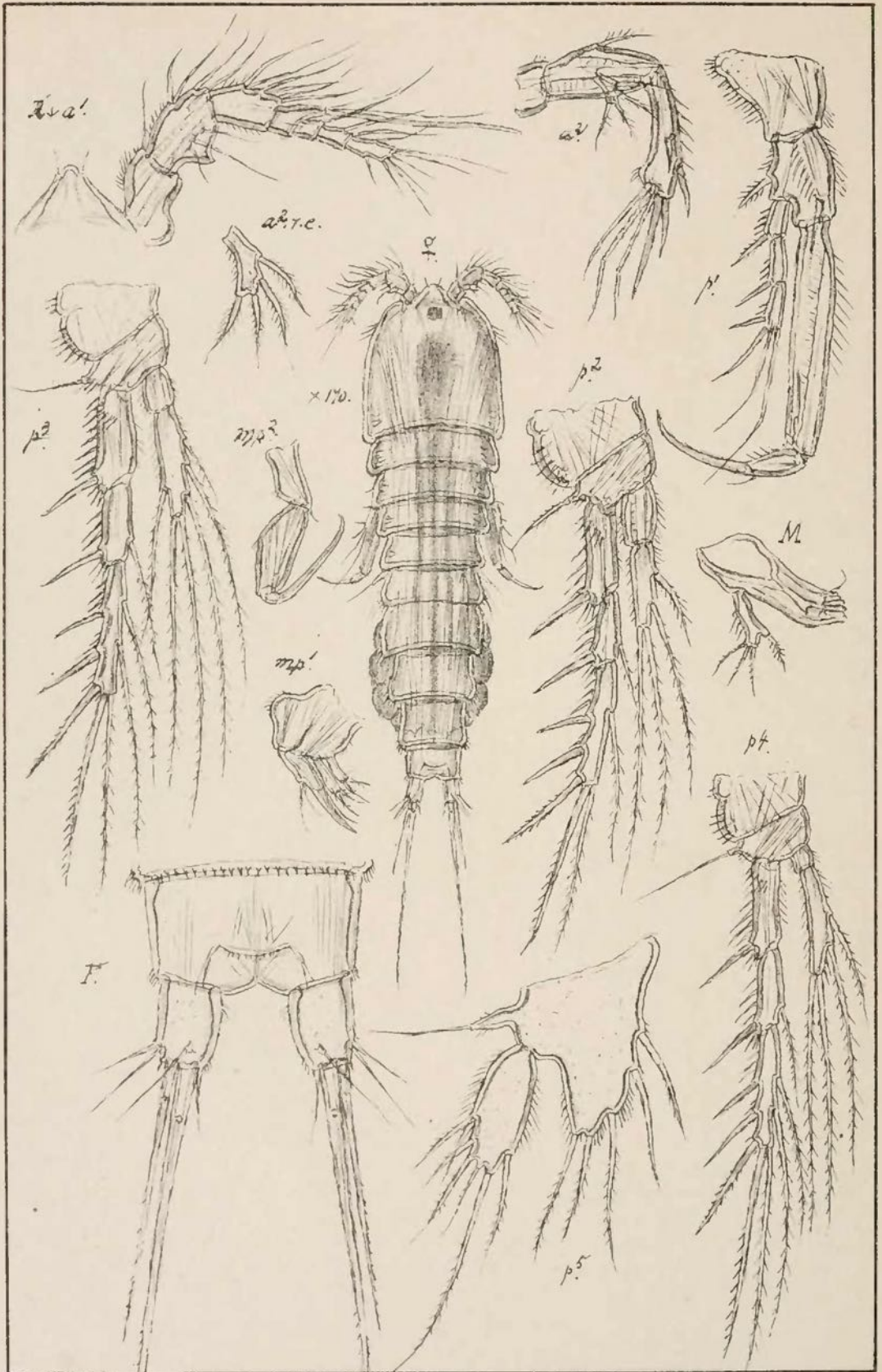
Laophonte Nordgaardii, G.O.Sars

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXXI



G.O.Sars autogr.

Norsk lithogr. Officin.

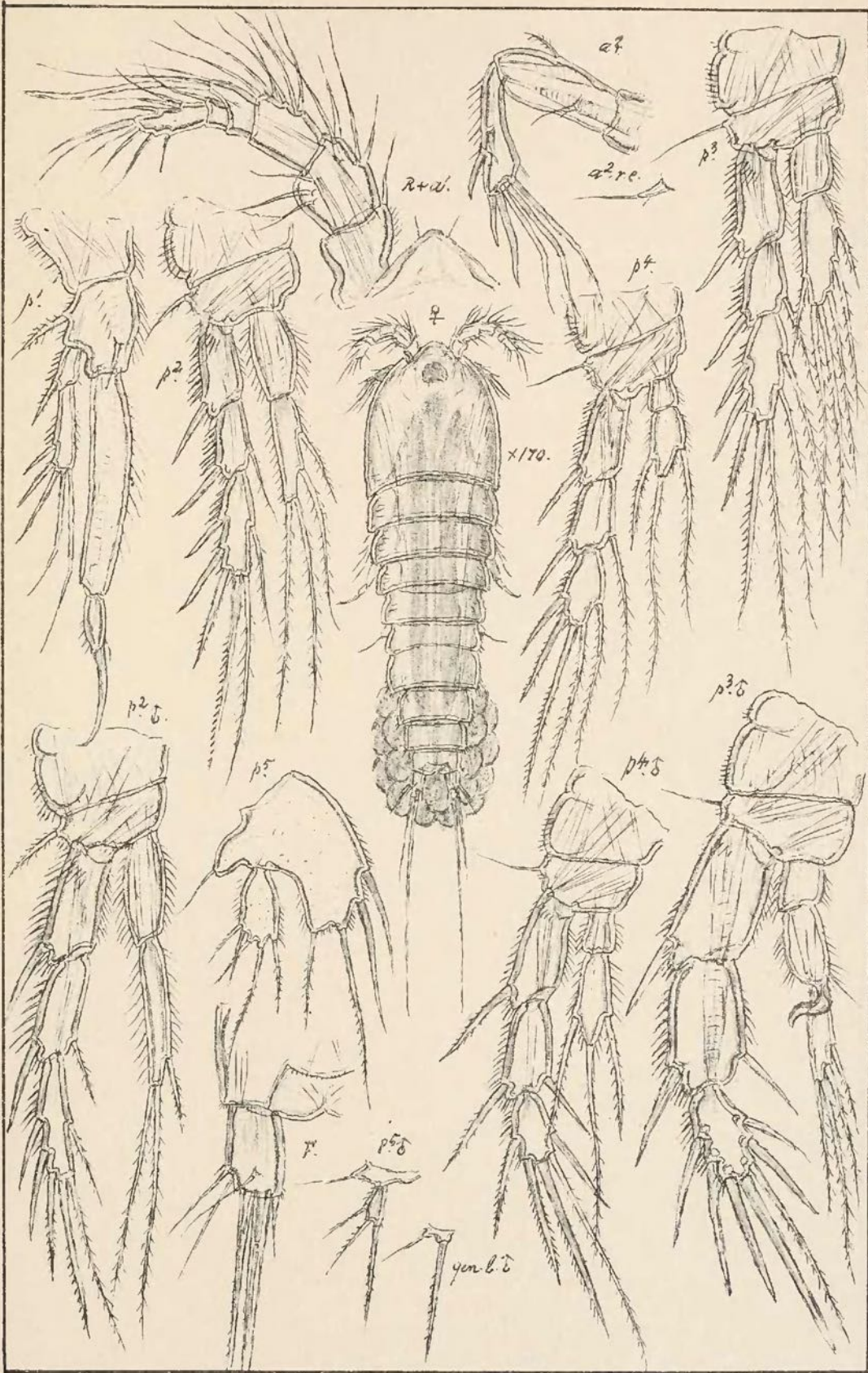
Laophonte parvula, G.O.Sars

Copepoda

Laophontidae

Harpacticoida

PL. CLXXXII



G.O. Sars autogr.

Norsk lithogr. Officin.

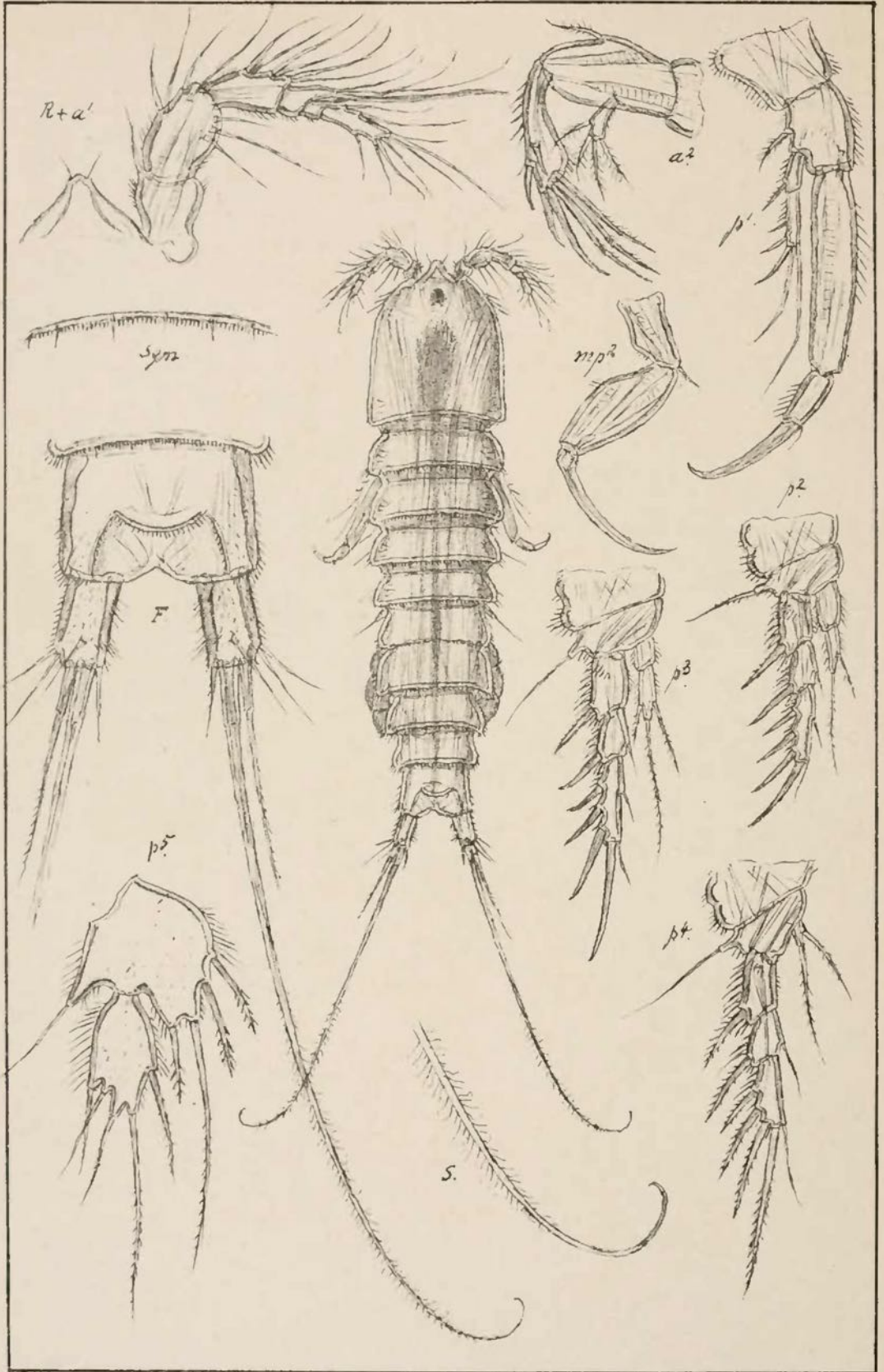
Laophonte nana, G.O. Sars

Copepoda

Laophontidæ

Harpacticoida

PL. CLXXXIII



G.O. Sars autogr

Norsk lithogr. Officin.

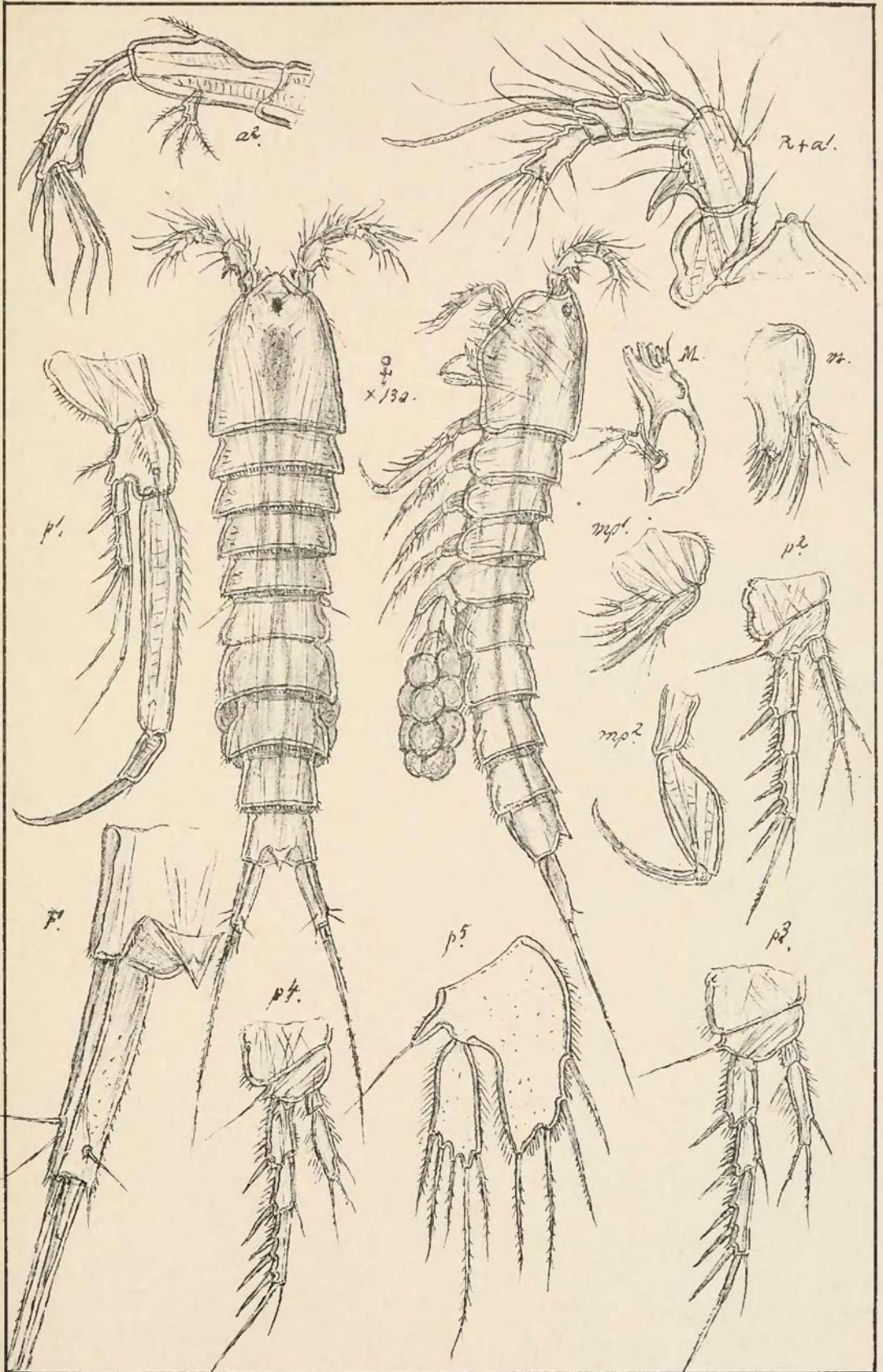
Lacphonte inopinata Scott

Copepoda

Laophontidœ

Harpacticoida

PL. CLXXXIV



G.O. Sars autogr.

Norsk lithogr. Officin.

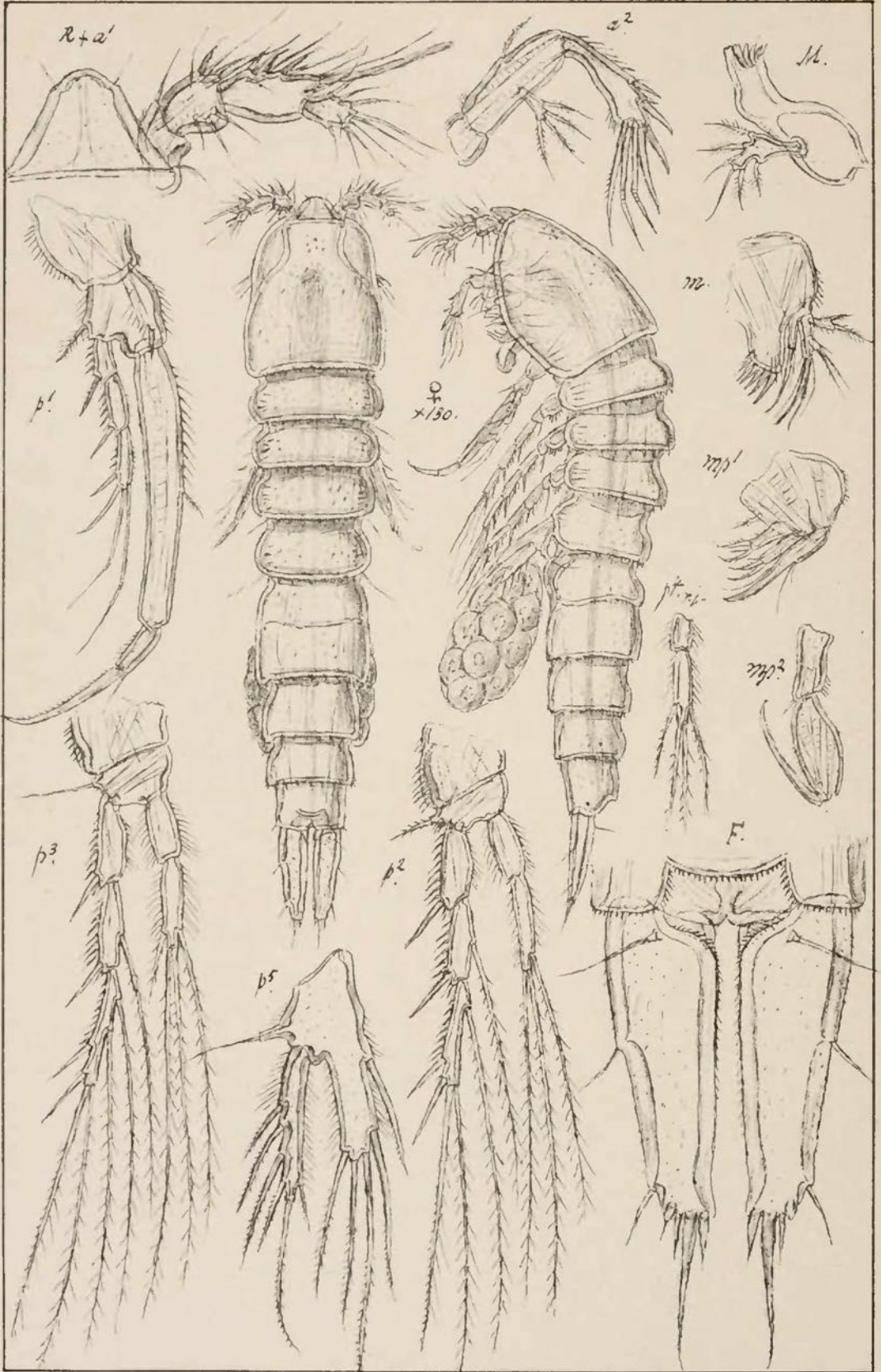
Laophonte denticornis, Scott

Copepoda

Laophontidœ

Harpacticoida

Pl. CLXXXV.



G.O. Sars autogr.

Norsk lithgr. Officin.

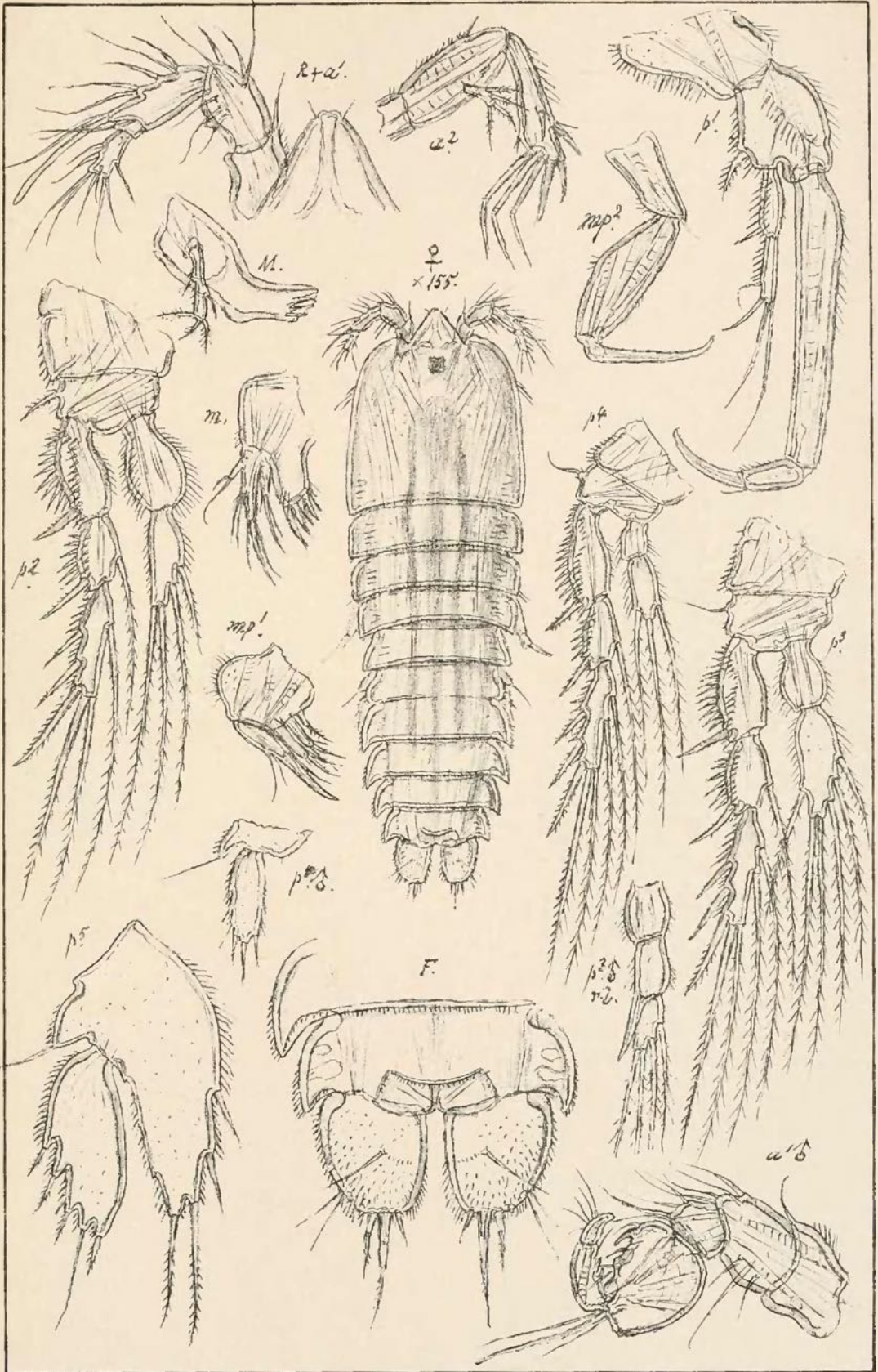
Laophontopsis lamellifera, (Claus)

Copepoda

Laophontidæ

Harpacticoida

Pl. CLXXXVI.



G.O. Sars autogr.

Norsk lithogr. Officin.

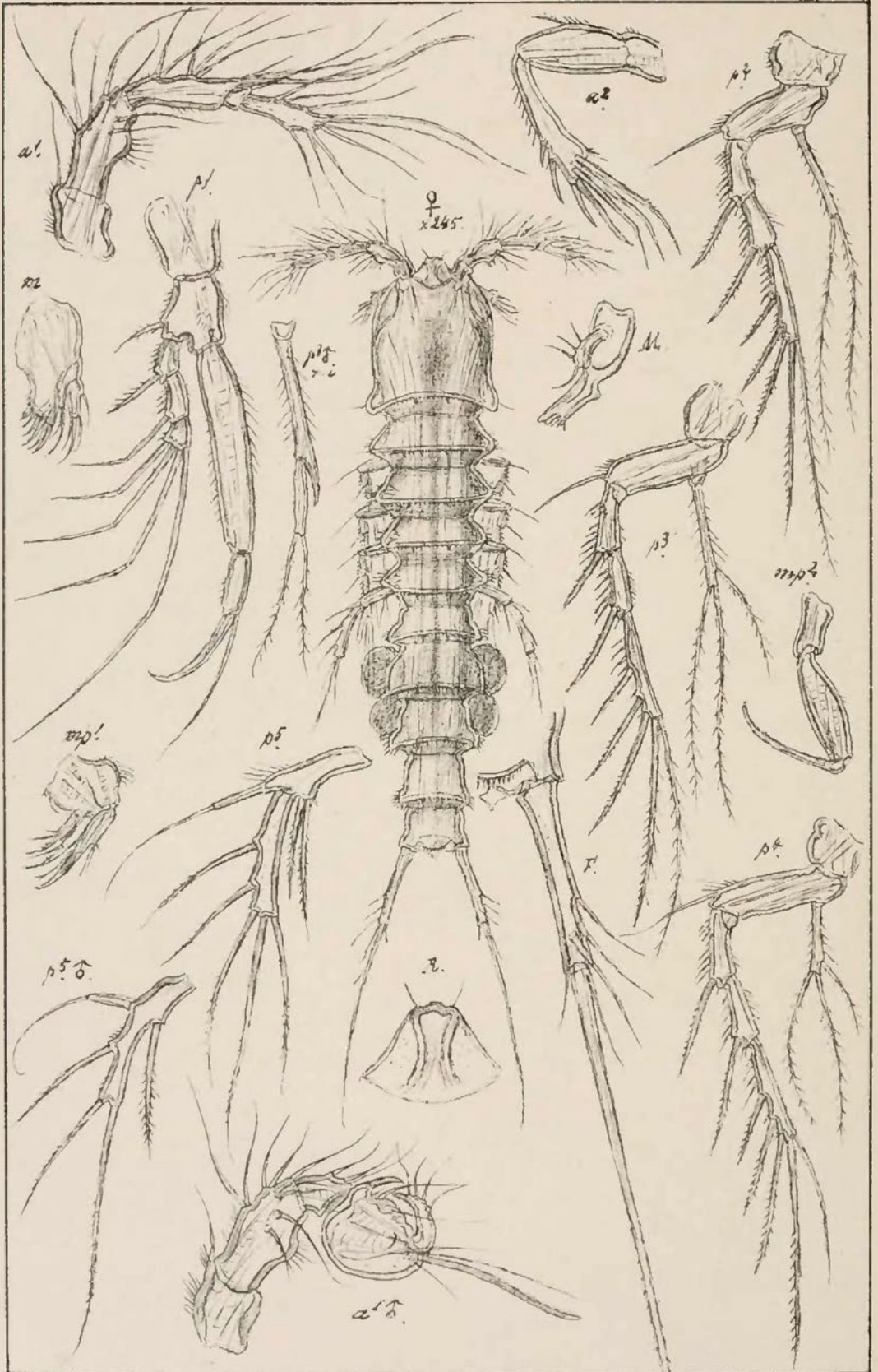
Asellopsis hispida, Brady.

Copepoda

Laophontidæ

Harpacticoida

Pl. CLXXXVII.



G.O. Sars autogr.

Norsk lithogr. Officin.

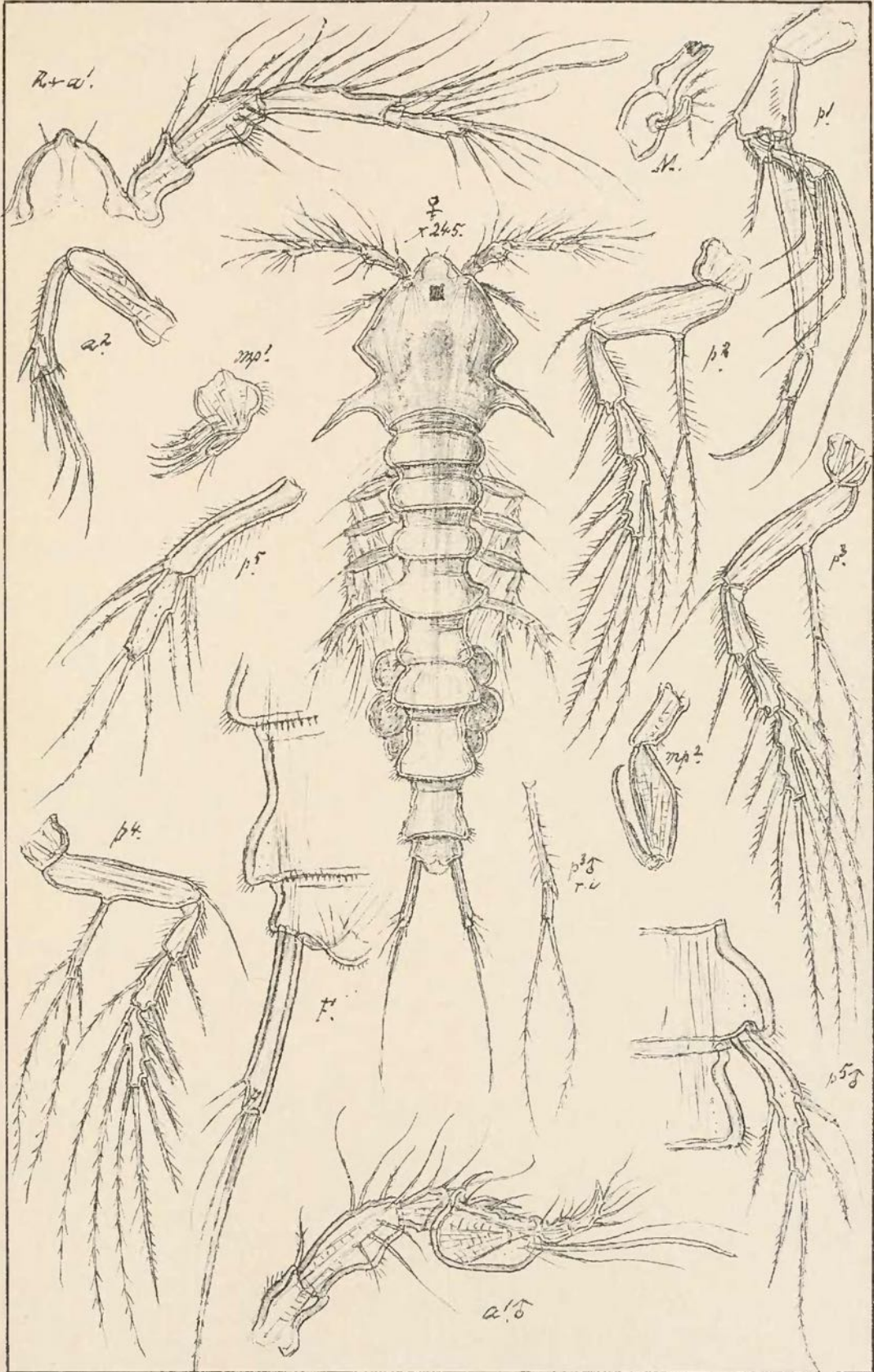
Laophontodes typicus, Scott.

Copepoda

Laophontidœ

Harpacticoida

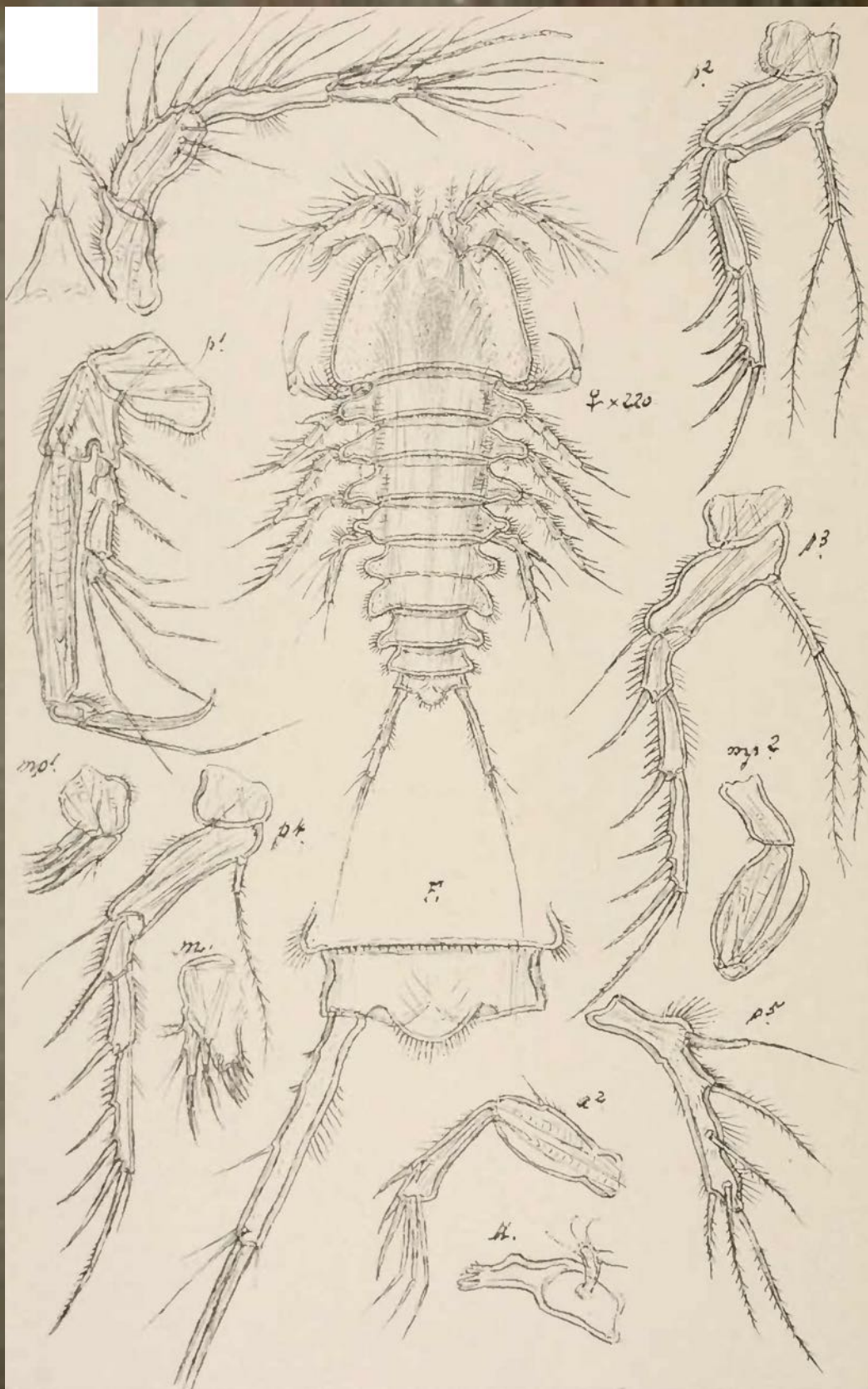
Pl. CLXXXVIII.



G.O. Sars autogr.

Norsk lithgr. Officin

Laophontodes bicornis, Scott.

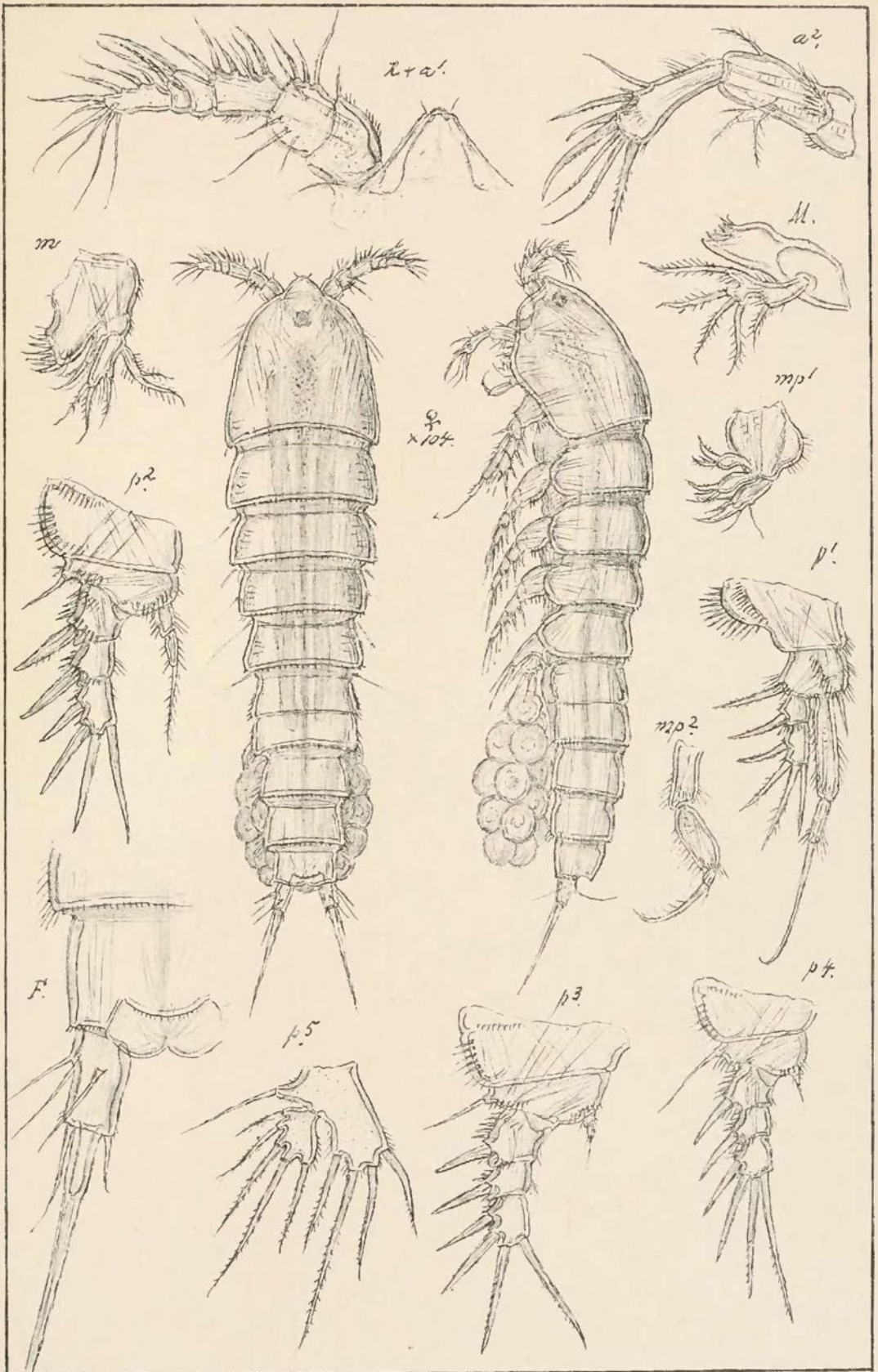


Copepoda

Laophontidæ

Harpacticoida

Pl. CXC.



G.O. Sars autogr.

Norsk lithogr. Officin.

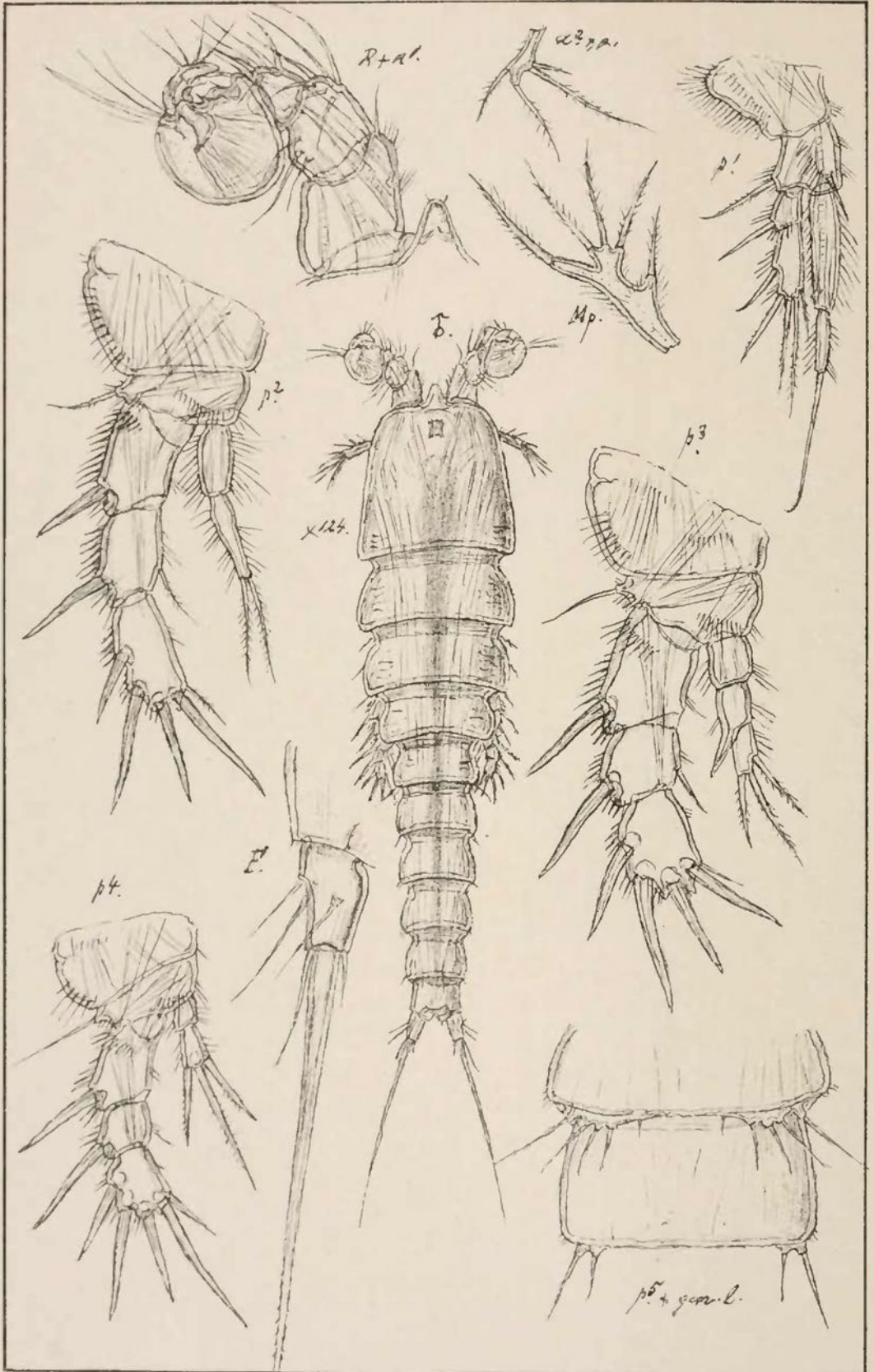
Platychelipus littoralis, Brady.

Copepoda

Laophontidœ

Harpacticoida

Pl. CXCI.



G.O. Sars autogr.

Norsk lithogr. Officin.

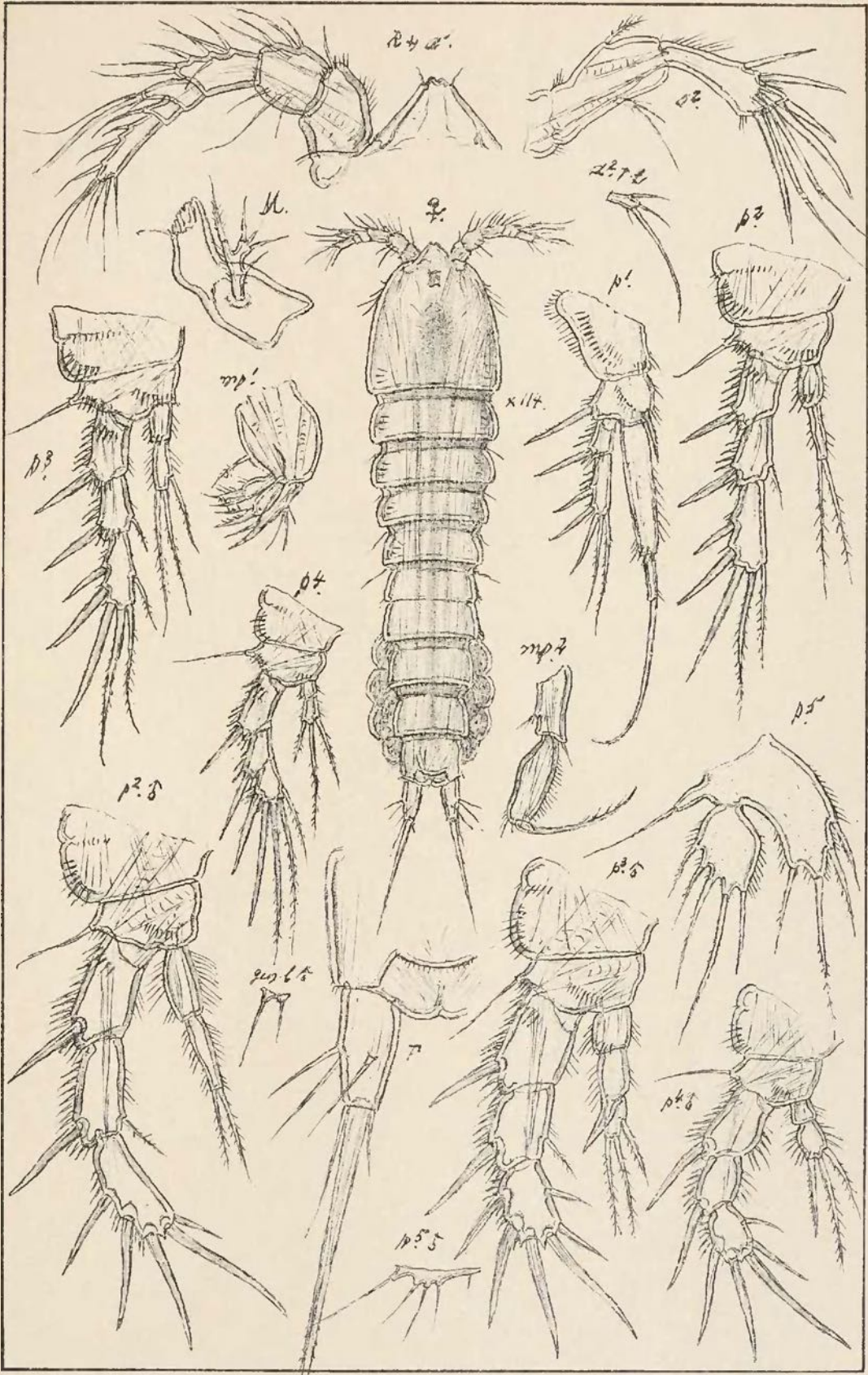
Platychelipus littoralis, Brady.
male

Copepoda

Laophontidoe

Harpacticoida

PL CXCII.



G.O.Sars autogr.

Norsk lithogr. Officin.

Platychelipus laophontoides G.O.Sars.