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 VII & VIII

IDYIDÆ (continued), THALESTRIDÆ (part)

WITH 16 AUTOGRAPHIC PLATES

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to the species here under discussion. It may easily be distinguished from Norman's species by its more robust form, and especially by the great development of the 2nd pair of epimeral plates in the female. The colour of the body is moreover rather different in the two species.

Occurrence.—I have taken this form rather abundantly in some places on the west coast of Norway, for instance, at Haugesund, Kopervik and Bukken. It is a sub-littoral form, being found close to the shore on the fronds of *Laminaria digitata* at low-water mark. The animal, like the species of *Porcellidium*, has the power of applying its body very firmly to any objects, so that it can only be loosened with considerable difficulty when alive. After the collecting-vessels have been emptied therefore, the greater number of the specimens remain in the bottles, firmly attached to the sides. On shaking the bottles with some fresh water, however, the specimens very soon leave their hold and can be emptied out with the water. In this manner I was enabled, during my last excursion, to secure a great number of specimens.

Distribution.—British Isles (Brady).

49. Aspidiscus fasciatus, Norman.

(Pl. XLVIII).

Aspidiscus fasciatus, Norman, Last Report on Dredging among the Shetland Isles. Brit. Assoc. Report for 1868, p. 298.

Specific Characters.—Female. Very like the preceding species in its general appearance, but of somewhat smaller size and less robust form of body. Anterior division broadly oval in outline, slightly narrowed both in front and behind. Rostrum somewhat more prominent than in *A. littoralis*, though exhibiting a very similar form. Epimeral plates of the first 3 free segments of metasome less produced behind, 2nd pair not extending nearly as far as the tip of the succeeding pair; posterior edge of 3rd segment straight, scarcely at all limbate. Last segment of metasome, as in the preceding species, wholly obtected by the fornicate hind part of the 3rd segment. Urosome with the segments somewhat less sharply defined than in *A. littoralis*. Caudal rami extremely small, but with the apical setæ excessively elongated, the innermost but one almost attaining the length of the whole body. Antennæ, oral parts and anterior pairs of legs of almost exactly the same structure as in *A. littoralis*. Last pair of legs, however, differing conspicuously in form; proximal joint less curved, and considerably dilated towards the end; distal joint shorter than the proximal one, and broadly oval or

lamelliform, being coarsely denticulate both at the edge and the outer face, marginal setæ very delicate, and only 3 in number.

Male resembling that of the preceding species, but somewhat more slender in form.

Body in both sexes of a pale yellow colour, with a broad transverse band of a rich crimson across the back, occupying the dorsal parts of the first 3 free segments of metasome.

Length of adult female 0.80 mm., of male 0.60 mm.

Remarks.—This is unquestionably the species originally described by Norman from the Shetland Isles under the above name. His statements about the colour of the animal[1]) leave no doubt as to the correctness of this assumption. Though very nearly related to the preceding species, this form may be easily distinguished by the less robust body, but especially by the uniform appearance of the epimeral plates. The form of the last pair of legs in the female is also conspicuously different, and, as above stated, the colour of the body is very characteristic.

Occurrence.—I have found this form not unfrequently in several places on the west coast of Norway, as also in the Trondhjem Fjord. It occurs only in depths varying from 6 to 20 fathoms, generally on *Laminaria saccharina*, but also on other algæ, and never in the littoral zone.

Distribution.—Shetland Isles (Norman).

Gen. 22. **Psamathe**, Philippi, 1840.

Syn: *Scutellidium*, Claus.

Generic Characters.—Anterior division of body somewhat depressed, though scarcely clypeiform, and without any hyaline rim at the edges. Rostral projection obtuse, not lamellar, nor distinctly defined at the base. Epimeral plates of the first 3 free segments of metasome discontiguous at the tips, not imbricate. Last segment of metasome freely exposed behind, very small, and without any distinct epimeral plates. Urosome more or less elongated, and slightly dilated in its anterior part. Caudal rami well developed, though rather short, apical setæ slender and somewhat divergent. Eye normally developed. Anterior antennæ

[1]) "Colour pale, with a ruby-coloured fascia on the 2nd and 3rd, or 2nd, 3rd, and 4th segments of cephalothorax." (Norman).

(in female) somewhat dilated in the middle, 9-articulate, terminal part abruptly narrowed. Posterior antennæ with the outer ramus less fully developed than in *Aspidiscus*. Mandibles, maxillæ and anterior maxillipeds of a structure very similar to that in the above-named genus. Posterior maxillipeds, however, differing in the presence of 3 strong claws at the tip. First pair of legs, as in *Aspidiscus*, very delicate, with both rami 3-articulate, though differing conspicuously in structure from those in that genus, outer ramus much shorter than the inner, with the terminal joint very small, and carrying on the tip a number of closely-disposed pulvilliform spines; inner ramus with the 2nd joint well developed, the last one carrying 2 densely fimbriate spines. Natatory legs with the middle joint of the inner ramus in all pairs carrying 2 setæ. Last pair of legs less strongly built than in *Aspidiscus*, proximal joint comparatively short and bilobed at the end, distal joint oblong, lamellar. Ovisac normal.

Remarks.—This genus was established by Philippi in the year 1840, to include a species found by him in the Mediterranean at Sorrento. The genus *Scutellidium* of Claus is unquestionably identical with Philippi's genus, and as that name is of much later date, it must cede the place to that proposed by Philippi. The genus is nearly allied to *Aspidiscus*, but differs in some characters rather conspicuously, both as regards the external appearance of the body and the anatomical details. In addition to the typical species, 2 other closely-related forms have been described, the one, *Scutellidium Arthuri* Poppe, from the Behring Sea, the other, *S. plumosum* Brady, from New Zealand.

50. Psamathe longicauda, Philippi.

(Pl. XLIX).

Psamathe longicauda, Philippi, in Wiegm. Archiv f. Naturgesch. 1840, p. 189, Pl. IV, fig. 1.

Syn: *Scutellidium thisboides*, Claus.

Specific Characters.—Female. Anterior division of body moderately expanded, oval in form, and scarcely at all narrowed behind. Cephalic segment occupying about half the length of the anterior division, and gradually contracted anteriorly, front narrowly rounded. Epimeral plates of the 3 succeeding segments of moderate size, discontiguous at the tips; 4th segment rather broad, with the posterior edge only very slightly incurved in the middle. Last segment of metasome extremely small, but wholly uncovered. Urosome about half the length of the anterior division, and gradually tapered behind; genital segment somewhat dilated in front, and imperfectly divided in the middle, lateral edges in this and

the 2 succeeding segments finely ciliated; anal segment comparatively short and deeply incised in the middle. Caudal rami about as long as they are broad and transversely truncated at the tip, apical setæ much elongated, the innermost but one exceeding twice the length of the urosome. Anterior antennæ rather robust and densely setiferous, the first 3 joints rather large and inflated, 4th joint much shorter and produced at the end anteriorly to a conical process carrying the sensory filament, terminal part abruptly attenuated and not attaining half the length of the proximal part, last joint linear and fully as long as the other 4 combined. Posterior antennæ with the outer ramus scarcely exceeding half the length of the inner, and 4-articulate. First pair of legs with the outer ramus scarcely longer than the basal joint of the inner, and carrying on the tip 4 pulvinular, recurved spines accompanied by a slender ciliated seta. Last pair of legs with the terminal joint more than twice as long as the basal one, and narrow lozenge-shaped in form, with one short apical seta and 4 more slender lateral ones, edges of the joint densely hairy.

Colour yellowish, with a more or less distinct rosy tinge, outer part of anterior antennæ dark violaceous.

Length of adult female 0.88 mm.

Remarks.—The above-described form is unquestionably that recorded by Claus and other authors as *Scutellidium thisboides*, the identity of which with Philippi's *Psamathe longicauda* I cannot doubt. Whether the 2 forms described as *Scutellidium Arthuri* Poppe and *S. plumosum* Brady, are in reality specifically distinct from the type, seems to me somewhat questionable.

Occurrence.—This form seems to be of very rare occurrence off the Norwegian coast. I only succeeded last summer in securing a few female specimens at Kopervik and Bukken in the lower part of the Stavanger Fjord. The specimens occurred together with *Aspidiscus littoralis* close to the shore on the fronds of *Laminaria digitata* at low-water mark.

Distribution.—British Isles (Brady), coast of France (Canu), Mediterranean (Philippi, Claus), Black Sea (Karawaiew), ? Franz Josef Land (Scott).

Gen. 23. **Machairopus**, Brady, 1883.

Generic Characters.—Anterior division of body much depressed, with the cephalic segment very large, rostral projection obtuse, not defined at the base.

Epimeral plates of the 3 succeeding segments discontiguous at the tips. Last segment of metasome very small, but wholly exposed. Urosome of moderate length and much narrower than the anterior division, genital segment distinctly divided in the middle. Caudal rami resembling those in *Psamathe*, but with the apical setæ less elongated. Eye quite normal. Anterior antennæ comparatively slender, 9-articulate, not dilated in the middle. Posterior antennæ with the outer ramus more fully developed than in *Psamathe*. Mandibles with the palp rather large, though of quite normal structure. Maxillæ with the epipodal lobe well developed and, as in *Psamathe*, carrying 2 large plumose setæ. Maxillipeds comparatively more strongly built than in that genus, the anterior ones with 2 well-developed lateral lobes, the one close to the base, the other at the junction with the slender unguiform terminal joint; the posterior ones terminating in a strong claw accompanied by 3 or 4 slender setæ. First pair of legs with the inner ramus much as in *Psamathe*, outer ramus rather short and stout, with the middle joint thickened, and armed on the lower face, close to the base, with a strong, claw-like spine curving outwards, last joint very short, with the 4 apical spines not pulvinular, being bent outwards and, like those in the genus *Idya*, densely ciliated along the outer part of the anterior edge. Middle joint of inner ramus in 2nd pair of legs with 2 natatory setæ, that in the 2 succeeding pairs with only a single such seta. Last pair of legs comparatively smaller than in *Psamathe*, and more lamellar.

Remarks.—This genus was established in the year 1883 by Prof. Brady, to include a species, *M. idyoides* Brady, found during the Challenger Expedition at the Kerguelen Islands. As observed by that author, the genus is somewhat intermediate between *Psamathe* (Scutellidium) and *Idya*, resembling in some particulars the former genus, in others the latter. Among the characters assigned to this genus by Prof. Brady, is the presence of 2 widely-distant eyes; but this statement must, I suppose, be due to a miscomprehension, the chitinous thickenings at the insertion of the anterior antennæ having in all probability been mistaken for eyes. The true visual organ, as in most other Harpacticoida, very soon becomes inconspicuous in preserved specimens through the dissolving action of the alcohol. There still remain, however, sufficient characters in support of this genus; and its validity is moreover now proved by the discovery in the northern ocean of another form, which, though closely agreeing with the type in all essential anatomical details, is yet evidently specifically distinct.

51. Machairopus minutus, G. O. Sars, n. sp.

(Pl. L).

Specific Characters.—Female. Form of body comparatively short and stout, with the anterior division broad and depressed, the posterior abruptly much narrower. Cephalic segment about the length of the 3 succeeding ones combined, and, seen dorsally, almost crescent-like, being evenly rounded in front and having the lateral corner much expanded. Penultimate segment nearly transversely truncated behind. Last segment of metasome very small, but wholly uncovered. Urosome scarcely attaining half the length of the anterior division, and gradually tapering behind, lateral edges of the segments finely ciliated. Caudal rami about as long as they are broad, and transversely truncated at the tip, innermost but one of the apical setæ not nearly attaining twice the length of the urosome. Anterior antennæ rather slender and gradually attenuated, 2nd joint but little longer than the 3rd, 4th about half the length of the latter, terminal part half as long as the proximal part, with the last joint shorter than the other 4 combined. Posterior antennæ with the outer ramus about half the length of the inner, and 4-articulate. First pair of legs of almost exactly the same structure as in the type species. Last pair of legs with the basal joint somewhat lamellar, and produced at the end inside to a conical process carrying 2 plumose setæ, terminal joint scarcely longer than the basal one, and of oval form, narrowly truncated at the tip, and provided with 3 apical and one lateral plumose seta.

Body of whitish colour, with a broad rosy band across the cephalic segment, and another of the same colour across the anterior part of the urosome.

Length of adult female 0.65 mm.

Remarks.—This is a much smaller species than that originally described by Brady, the length of which is recorded to be almost twice as large (1.30 mm.). In its external appearance this form looks very like some species of the genus *Idya*, especially *I. minor* Scott, and at the first sight may be easily confounded with that species. On a closer inspection, however, it is distinguished by the comparatively broader and more depressed anterior division, and by the rather different structure of the anterior antennæ. The colour also is rather characteristic.

Occurrence.—I have occasionally found this interesting form in several places on the west coast of Norway, for instance at Aalesund, Christiansund, Haugesund and Kopervik. It is a strictly littoral form, occurring close to the shore among algæ.

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

Gen. 24. **Idya,** Philippi, 1843.

Syn: *Thisbe*, Lilljeborg.

Generic Characters.—Body more or less distinctly depressed, with the anterior and posterior divisions sharply defined. Cephalic segment of moderate size and narrowly produced in front, rostral projection short and obtuse, not defined at the base. Epimeral plates of the 3 succeeding segments rather broad, lamellar, obtuse at the tips. Last segment of metasome very small. Urosome moderately slender, with the genital segment in female more or less distinctly divided in the middle, genital tubercles in male each armed with a strong posteriorly-pointing spine. Caudal rami generally short but, with some of the apical setæ much elongated. Eye normal. Anterior antennæ more or less slender and attenuated, 8-articulate, sensory filament of 4th joint very fully developed; those of male slightly transformed, subprehensile. Posterior antennæ with the outer ramus well developed, 4-articulate. Anterior lip rather prominent, tapering distally, terminal edge minutely denticulate. Mandibles with the masticatory part rather slender and coarsely dentated at the tip, palp of comparatively simple structure, though distinctly biramous. Maxillæ with the palp only very slightly lobular, epipodal lobe wholly absent. Both pairs of maxillipeds uncinate at the tip, the anterior ones biarticulate, with a single very slender lateral lobe at the junction of the two joints, the posterior ones distinctly 3-articulate, with a single slender apical claw. First pair of legs with both rami 3-articulate, but rather unequal in size and structure, the inner one much longer than the outer and having the penultimate joint more or less prolonged, the last very small with 2 comparatively short claws; outer ramus with the spine of the 1st joint, as a rule, much elongated, that of 2nd joint issuing from near the end, last joint provided at the inner corner with 2 slender ciliated setæ, and along the obliquely truncated end with 4 outward-curving spines gradually increasing in length, and each, like that of the 2nd joint, penicillate at the tip, or clothed on one edge with a limited number of long cilia. Natatory legs comparatively largely developed, with the rami nearly equal and the joints rather broad sublamellar; middle joint of inner ramus in all pairs with 2 natatory setæ. Last pair of legs more or less slender, extended laterally, proximal joint only very slightly expanded inside, distal joint generally narrow, linear; those in male not very different, though somewhat smaller than in female.

Remarks.—This genus was established in the year 1843 by Philippi, to include a Mediterranean species, *I. barbigera* Phil. Prof. Lilljeborg did not recognise the Philippian genus, and established a new genus, *Thisbe*, for the reception

of the form, previously described by Baird as *Canthocamptus furcatus*, a species which is undoubtedly closely allied to, if not identical with, that recorded by Philippi. Boeck was the first to call attention to this fact, and therefore restored the Philippian genus, which is now generally accepted. The genus is chiefly characterised by the comparatively simple structure of the oral parts, and by the peculiar penicillate appearance of some of the spines issuing from the outer ramus of the 1st pair of legs. It seems to comprise numerous species, which, however, are so closely, related that they were not recognized as such by earlier carcinologists, but only as accidental varieties of the same species. To Dr. Th. Scott is due the statement by a careful anatomical examination, that these supposed varieties in reality ought to be considered as distinct species, since their distinctive characters have proved to be perfectly constant and independent of external conditions. Dr. Scott has described 6 different species from the Scottish coast, and I have myself been enabled to distinguish no less than 9 Norwegian species, to be described below. The genus seems to be represented in all parts of the oceans, and I have even found one or two species of this genus in the Caspian Sea.

52. Idya furcata (Baird).

(Pl. LI, Pl. LII, fig. 1).

Canthocamptus furcatus, Baird, Brit. Entomostraca, p. 210, Pl. XXV, figs. 1 & 2, Pl. XXX. figs. 1—6.

? Syn: *Idya barbigera*, Philippi.

Specific Characters.—Female. Body moderately slender, with the anterior division, seen dorsally, regularly oval or elliptical in outline, being evenly narrowed both in front and behind. Urosome about half the length of the anterior division and gradually tapered behind, genital segment very distinctly divided in the middle. Caudal rami scarcely as long as the anal segment, outermost and innermost apical setæ comparatively short, the latter somewhat angularly bent at the base. Anterior antennæ of moderate length and gradually tapered distally, 2nd joint exceeding the 3rd in length, 4th joint shorter than either of these joints, terminal part about twice the length of the 4th joint. First pair of legs with the outer ramus extending somewhat beyond the 1st joint of the inner, 2nd joint of the latter but slightly attenuated, last joint very small, with the apical claws comparatively short and somewhat unequal, the one quite smooth, the other penicillate at the tip. Last pair of legs with the inner expansion of

the proximal joint broadly rounded and carrying 3 setæ, the middle one rather slender, the other 2 very small, distal joint moderately elongated, sublinear in form, with 5 slender setæ, 3 of which issue from the tip, 2 from the outer edge close to the end. Ovisac oval in form and generally very large, containing numerous ova or embryos, its colour varying, according to the development, from dark green to light yellowish red.

Male much smaller than female and of more slender form. Anterior antennæ more strongly built and distinctly geniculate. Last pair of legs of smaller size than in female, one of the apical setæ of the distal joint transformed to a strong ciliated spine.

Body in female of a whitish colour, and more or less distinctly banded transversally with a clear crimson; ovarial tubes generally of a very dark colour.

Average length of adult female about 1 mm., of male 0.65 mm.; maximum length of deep-water variety 1.50 mm.

Remarks.—The specific name *furcata* assigned to this form by Baird, refers to the strong development of the sensory filament issuing from the 4th joint of the anterior antennæ, which gives these organs the appearance of being bifurcate at the end. This is, however, a feature common to all the species of this genus. Whether the *Idya barbigera* of Philippi in reality belongs to this species or to some nearly-allied form, it is impossible at present to decide with perfect certainty; but as the present species is by far the commonest, there is good reason for believing the two to be identical. In any case, however, the specific name proposed by Baird must be retained as the older one. Besides the usual littoral form, another form of considerably larger size is occasionally met with in somewhat greater depths among decaying algæ. I have carefully compared this form with the usual one, but have failed to detect any perceptible anatomical difference.

Occurrence.—This is perhaps the commonest and most widely distributed of all our Harpacticoida, being found everywhere along the Norwegian coast, and generally in great numbers, close to the shore among algæ. It is also very often left in tidal pools together with other littoral forms. It is a very active little creature, swimming about with great speed, now and then affixing itself to the fronds of the algæ or to the walls of the vessel in which it is being observed.

Distribution.—Arctic Ocean, widely distributed, British Isles, Kattegat, coast of France, Mediterranean, the Red Sea (A. Scott), New Zealand (Brady), Chatham Islands (the present author).

53. Idya minor, Scott.

(Pl. LII, fig. 2).

Idya minor. Th. Scott, in Annals of Scottish Nat. Hist. 1896, p. 228, Pl. IV, figs. 11—17.

Specific Characters.—Female. Form of body on the whole considerably shorter and stouter than in *I. furcata*, with the anterior division only very slightly contracted behind, and the epimeral plates more closely contiguous. Urosome about half the length of the anterior division, and of nearly uniform width throughout. Caudal rami very short, with the apical setæ less elongated than in the other species. Anterior antennæ comparatively shorter than in *I. furcata*, with the 2nd and 3rd joints of about equal length. First pair of legs with the outer ramus scarcely extending beyond the 1st joint of the inner; 2nd joint of the latter comparatively longer and more attenuated than in *I. furcata*. Last pair of legs with the inner expansion of the proximal joint narrowly rounded at the tip, the outermost of the 3 marginal setæ considerably longer than the innermost; distal joint subspatulate in form, gradually widening towards the end.

Colour whitish.

Length of adult female 0.57 mm.

Remarks.—This is the smallest of the Norwegian species of *Idya*, and thus fully deserves the name given to it by Th. Scott. The size of the Norwegian specimens is even inferior to that recorded by Scott, which gives the length of the animal as 0.70 mm. It is, moreover, easily distinguished from *Idya furcata* by the much shorter and more compact form of body, in which respect it somewhat resembles the above-described *Machairopus minutus*.

Occurrence.—I have found this form occasionally in several places on the west coast of Norway in comparatively shallow water, on a muddy bottom.

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

54. Idya ensifera (Fischer).

(Pl. LIII, fig. 1).

Thisbe ensifera, Seb. Fischer in Abhandl. d. K. Bayer. Akad. Vol. VIII, p. 668, Pl. III, figs. 67—70.

Specific Characters.—Female. General form of body about as in *I. furcata*. Urosome, however, comparatively more slender, exceeding half the length of the anterior division. Caudal rami very short, apical setæ, on the other hand much elongated, the outermost and innermost ones being much longer than in *I. furcata*. Anterior antennæ likewise more elongated than in that species, and

more richly setiferous, 3rd joint rather narrow and somewhat exceeding in length the 2nd. First pair of legs with the inner ramus fully twice as long as the outer, 2nd joint comparatively slender, apical claws of about the same structure as in the 2 preceding species. Natatory legs with the rami more slender than in *I. furcata*, the 3rd joint of the outer ramus in 4th pair being especially of a very narrow form. Last pair of legs with the inner expansion of the proximal joint narrowly rounded and having all 3 marginal setæ well developed, distal joint exceedingly slender and elongated, narrow linear in form, and having one of the lateral setæ at some distance from the others.

Body of a whitish colour, faintly tinged with light red.

Length of adult female about 1 mm.

Remarks.—I think I am right in considering the above-described form to be identical with that recorded by Seb. Fischer as *Thisbe ensifera*. In size and external appearance it is very like *I. furcata*, and was also adduced to that species by Prof. Brady. On a closer examination, however, it is found to differ in the more elongated and more richly setiferous anterior antennæ, and especially in the exceedingly slender form of the distal joint of the last pair of legs. In the structure of the other legs also, and in the relative length of the caudal setæ, well-marked differences from *I. furcata* are found to exist.

Occurrence.—This form is by no means unfrequent off the Norwegian coast. In the upper part of the Christiania Fjord, for instance, it occurs rather plentifully in depths ranging from 6 to 20 fathoms; and I have also met with it in several localities on the west coast, and even in Finmark.

Distribution.—Madeira (Fischer).

55. Idya tenera, G. O. Sars, n. sp.

(Pl. LIII, fig. 2).

Specific Characters.—Female. Form of body very slender, with the anterior division, seen dorsally, oblong fusiform in outline, and the epimeral plates separated by deep lateral incisions. Urosome about half the length of the anterior division, and gradually tapering distally. Caudal rami very short, apical setæ somewhat less elongated than in *I. ensifera*. Anterior antennæ moderately slender, with the 3rd joint fully as long as the 2nd. First pair of legs with the inner ramus comparatively shorter than in *I. ensifera* and more resembling that in *I. furcata*, 2nd joint, however, scarcely longer than the 1st. Last pair of legs with

the proximal joint only very slightly expanded inside, but carrying the 3 usual marginal setæ; distal joint rather slender, resembling in form that in *I. furcata*.

Body of a whitish colour, without any distinct pigmentary ornament.

Length of adult female 0.78 mm.

Remarks.—This new species is nearly allied to *I. furcata*, but is of much smaller size and more slender form of body. In the relative length of the joints of the anterior antennæ, it somewhat resembles *I. ensifera*; but the structure of the 1st and last pairs of legs is rather different.

Occurrence.—I have found this form in considerable abundance in some localities on the west coast of Norway, for instance at Herø, Kopervik and Bukken, and occasionally also off the Finmark coast. It is a sublittoral form, generally occurring near the shores in campany with *I. furcata*, ovigerous females of both species being at once distinguished by their very different size.

56. Idya longicornis, Scott.

(Pl. LIV, fig. 1).

Idya longicornis, Th. Scott, in Ann. & Mag. of Nat. Hist. ser. 6, Vol. XV, p. 461, Pl. XVII, figs. 10—17.

Specific Characters.—Female. Form of body rather slender, with the anterior division, seen dorsally, oval fusiform in outline, epimeral plates comparatively broad, subcontiguous, except the last pair. Urosome about half the length of the anterior division and rather narrow, only slightly tapering distally. Caudal rami short, apical setæ, however, much elongated. Anterior antennæ exceedingly slender and attenuated, with the 3rd and 4th joints unusually narrow and elongated, both being of about equal length, and somewhat exceeding that of the 2nd joint; terminal part extremely narrow, and scarcely longer than the 4th joint. First pair of legs of inconsiderable size in proportion to the body, and somewhat resembling in structure those in *I. furcata*, the outer ramus extending considerably beyond the 1st joint of the inner. Last pair of legs with the proximal joint only very slightly expanded inside, the innermost of the marginal setæ comparatively short; distal joint very narrow, linear in form, being nearly 6 times as long as it is broad.

Body of a whitish colour, with a slight bluish green tinge, and exhibiting at the posterior part of the cephalic segment a short transverse band of a dark violaceous hue, and another similar band across the middle of the urosome; anterior antennæ with a small patch of the same colour near the end.

Length of adult female 1.50 mm.

Remarks.—This is one of the larger species of *Idya*, the length being recorded by Scott as even reaching 1.70 mm. The Norwegian specimens are not quite as large, but otherwise agree perfectly with the description given by that author. The species is especially characterised by the peculiar appearance of the anterior antennæ in the female, these appendages being quite unusually slender, and particularly distinguished by the great length and narrowness of the 3rd and 4th joints.

Occurrence.—I took this form, many years ago, at Christiansund and Sauesund, close to the shore among algæ; and even at that time I recognized it as a distinct species, to which the provisional name *I. nobilis* was given. It seems to be rather local in its occurrence, as no specimens have been found in the large material collected during recent years in other parts of the coast.

Distribution.—Scottish coast (Scott).

57. Idya elegantula, G. O. Sars, n. sp.

(Pl. LIV, fig. 2).

Specific Characters.—Female. Body moderately slender, with the anterior division, seen dorsally, oval in outline, being only slightly narrowed behind. Cephalic segment very large, considerably exceeding in length that of all the free segments of metasome combined, and gradually tapering in front to an obtuse point. Epimeral plates closely contiguous, and rounded at the tips. Urosome about half the length of the anterior division, and slightly attenuated distally, with the genital segment imperfectly divided in the middle. Caudal rami somewhat more produced than in the 4 preceding species, but otherwise of a very similar appearance. Anterior antennæ very slender, resembling in structure those in *I. longicornis*, but with the 3rd joint comparatively more elongated, exceeding in length both the preceding and succeeding joints. First pair of legs with both rami unusually slender, the inner one being, as usual, the longer, and having the 2nd joint much longer than the 1st and greatly attenuated distally; apical spines of outer ramus more slender than in any of the 4 preceding species. Last pair of legs with the distal joint much elongated, sublinear in form, one of the marginal setæ placed at rather a long distance from the others. Ovisac containing only a very limited number of comparatively large ova.

Body of a pale yellow colour, with several interrupted transverse bands of a clear chestnut brown across both the anterior and posterior divisions.

Length of adult female 0.80 mm.

Remarks.—In the structure of the anterior antennæ this form somewhat resembles *I. longicornis*. It is, however, of much inferior size, and moreover differs conspicuously from that species in the peculiarly slender form of the 1st pair of legs, in which respect it agrees more closely with the succeeding species, *I. gracilis*, Scott.

Occurrence.—Only a solitary female specimen of this beautiful species has as yet come under my notice. It was taken, many years ago, at Christiansund in a depth of 50—60 fathoms. The figure of the animal here given is a copy of the coloured drawing made from the specimen when still alive.

58. Idya gracilis, Scott.

(Pl. LV, fig. 1).

Idya gracilis, Th. Scott, Additions to the Fauna of the Firth of Forth; 13th Annual Report of the Fishery Board for Scotland, p. 171, Pl. IV, figs. 13—21.

Specific Characters.—Female. Body comparatively slender, attenuated behind. Cephalic segment rather broad, and somewhat exceeding in length that of the 3 succeeding segments combined. Epimeral plates broadly rounded, subcontiguous. Urosome considerably exceeding half the length of the anterior division, and gradually tapering distally. Caudal rami unusually produced, being nearly twice as long as they are broad, outermost and innermost of the apical setæ comparatively short, seta of the outer edge somewhat remote from the apex. Anterior antennæ of moderate length, 2nd joint the largest, 3rd and 4th of about equal length. First pair of legs with both rami very slender, somewhat resembling in structure those in *I. elegantula*, inner ramus, as usual, the longer, with the 2nd joint nearly twice as long as the 1st and much attenuated distally; apical claws of this ramus comparatively short. Terminal spines of outer ramus, on the other hand, exceedingly slender, each with only a few cilia at the tip. Last pair of legs with the proximal joint comparatively small, distal joint, however, rather elongated, oblong fusiform in shape, with one of the marginal setæ considerably remote from the others, issuing nearly from the middle of the outer edge.

Male not much smaller than female, and exhibiting the usual sexual differences. In the 2nd pair of legs, moreover, the seta of the 1st joint of the inner ramus is peculiarly modified, being transformed into a strong spine minutely bidentate at the tip.

Colour not yet determined.

Length of adult female about 1 mm.

Remarks.—This form, recently described by Th. Scott, may, on a close examination, be at once distinguished from any of the other species of *Idya* by the unusual production of the caudal rami. The structure of the 1st and last pair of legs, moreover, is rather characteristic.

Occurrence.—On examining the preserved material collected during the last 2 years from the sublittoral region off the west coast of Norway, at Aalesund, Kopervik and Bukken, I have succeeded in finding several specimens, both females and males, of this distinct species. It also occurs off the Finmark coast, as proved by the examination of some samples taken by Mr. Nordgaard and kindly forwarded to me.

Distribution.—Scottish coast (Scott).

59. Idya angusta, G. O. Sars, n. sp.

(Pl. LV, fig. 2).

Specific Characters.—Female. Body exceedingly slender and elongated, with the anterior division, seen dorsally, oblong in form. Cephalic segment exceeding in length that of the 3 succeeding segments combined, and, as usual, conically produced in front. Epimeral plates discontiguous, being separated by deep lateral incisions. Urosome extremely narrow, cylindrical in form, and exceeding half the length of the anterior division, genital segment distinctly divided in the middle. Caudal rami comparatively short, apical setæ, however, much elongated. Anterior antennæ slender, with the 3rd joint rather elongated, exceeding in length both the preceding and succeeding joints. First pair of legs less slender than in the 2 preceding species, 2nd joint of inner ramus scarcely longer than the 1st, last joint imperfectly defined and having the apical claws comparatively elongated and subequal, both penicillate at the tip. Last pair of legs unusually small, distal joint oval in form, being scarcely more than twice as long as it is broad, one of the marginal setæ attached to about the middle of the outer edge.

Colour not yet determined.

Length of adult female 0.87 mm.

Remarks.—In the exceedingly slender and narrow form of the body, this species bears a strong resemblance to a form described by Mr. A. Scott from the Irish Sea as *I. elongata.* It differs very essentially, however, in the much more slender and elongated anterior antennæ, these appendages in the Irish form being, on the contrary, unusually short and compact. The structure of the 1st and last pairs of legs also seems, to judge from the figures given, to be rather different in the 2 species.

Occurrence.—Only a solitary female specimen of this form has as yet come under my notice. It was taken, many years ago, at Herø, west coast of Norway, the depth not being recorded.

60. Idya finmarchica, G. O. Sars, n. sp.

(Pl. LVI).

Specific Characters.—Female. Body of comparatively robust form and much depressed, with the anterior division, seen dorsally, broadly oval in form. Cephalic segment considerably expanded, and about the length of the 3 succeeding segments combined. Epimeral plates broad and rounded at the tips, subcontiguous. Urosome about half the length of the anterior division, and gradually tapering distally, genital segment very distinctly divided in the middle, anal segment extremely small. Caudal rami somewhat produced, though comparatively shorter than in *I. gracilis*, innermost and outermost of the apical setæ comparatively short, seta of outer edge placed about in the middle. Anterior antennæ rather short and stout, not nearly attaining the length of the cephalic segment, 2nd joint the largest, though scarcely longer than the 3rd. Posterior antennæ and oral parts, as also the natatory legs, of exactly the same structure as in *I. furcata*. First pair of legs, however, rather different, with the rami comparatively more slender, the inner one being, as usual, the longer and having the 2nd joint of greater length than the 1st, though scarcely at all attenuated distally; last joint very small, but well defined, and carrying on the tip 2 remarkably slender subequal claws, both perfectly smooth. Terminal spines of outer ramus rather slender, each with only a few cilia at the tip. Last pair of legs rather fully developed, basal joint moderately expanded inside, with 2 of the marginal setæ very small, terminal joint large, oblong fusiform in shape and densely hairy, one of the marginal setæ remote from the others, and attached somewhat beyond the middle of the outer edge. Ovisac large.

Colour not yet determined.

Length of adult female 1.20 mm.

Remarks.—At first I believed this form to be the *I. clathæ* of Scott, on account of the peculiarly slender form of the apical claws of the inner ramus of the 1st pair of legs. Having recently, however, through the kindness of Th. Scott, had the opportunity of examining one of his specimens, I find that these 2 forms are evidently specifically distinct the one from the other. *I. clathæ* is a much smaller and more slender species, and has the anterior antennæ consider-

ably more elongated than the Norwegian species. Well-marked differences also seem to exist between the 2 species in the structure of the 1st and last pair of legs.

Occurrence.—Several specimens of this interesting form were found in some samples kindly forwarded to me by Mr. Nordgaard, who took them off the Finmark coast, partly at Repvaag, partly at Mehavn. Farther south this species does not seem to occur, being in all probability a true arctic form.

Gen. 25. **Idyopsis**, G. O. Sars, n.

Generic Characters.—Body short and depressed, somewhat resembling in form that in *Idya*, the anterior division being more or less expanded, the posterior abruptly much narrower. Rostral projection small, not defined at the base. Anterior antennæ not much elongated, 8-articulate, sensory filament of 4th joint much smaller than in *Idya*. Posterior antennæ with the outer ramus well developed, 3- or 4-articulate. Anterior lip of usual form. Mandibles with the palp rather fully developed, biramous. Maxillæ of quite normal structure, the epipodal lobe being well defined. Anterior maxillipeds of rather compact form, with all the lateral lobes distinctly developed, the outermost armed with one or two strong claws; terminal part distinct, 3-articulate, setiferous. Posterior maxillipeds well developed, 3-articulate, carrying on the tip 3 strong claws. First pair of legs with the outer ramus much shorter than the inner, and somewhat resembling that in *Idya*, the lateral and apical spines being provided along the outer part of one edge with slender cilia, inner ramus distinctly 3-articulate, with the 1st joint rather large, the other 2 much smaller and subequal in size, last joint carrying 2 slender claws on the tip, and inside 2 short setæ. Natatory legs resembling in structure those in *Idya*, middle joint of inner ramus, however, in the posterior pair with only a single seta. Last pair of legs, as in *Idya*, extended laterally, distal joint narrow and elongated.

Remarks.—This new genus somewhat resembles *Idya*, as regards the general form and composition of the body, but differs rather essentially in some of the anatomical details, especially in the structure of the oral parts. Two well-defined species of this genus occur off the Norwegian coast.

61. Idyopsis dilatata, G. O. Sars, n. sp.

(Pl. LVII, fig. 1).

Specific Characters.—Female. Anterior division of body much dilated, with the cephalic segment very largely expanded, and about twice as long as the 3 succeeding segments combined, lateral edges boldly curved, front bluntly rounded. Epimeral plates rather narrow, acutangular at the tips. Last segment of metasome extremely small, but wholly exposed. Urosome comparatively short, not attaining half the length of the anterior division, genital segment rather large and expanded, its lateral edges minutely indented in the middle and finely ciliated. Caudal rami about as long as they are broad, and obtusely truncated at the tip; apical setæ of moderate length. Eye well developed. Anterior antennæ comparatively slender, though not nearly attaining the length of the cephalic segment, 2nd joint much the largest, terminal part considerably shorter than the last 2 joints of the proximal part combined. Posterior antennæ with the first 2 joints imperfectly defined, outer ramus 3-articulate. First pair of legs with the outer ramus scarcely exceeding in length the 1st joint of the inner, and having all 3 joints of about equal size. Last pair of legs very narrow, with the proximal joint scarcely at all expanded inside, distal joint narrow fusiform in outline, with one of the marginal setæ attached to about the middle of the outer edge. Ovisac rounded, containing only a limited number of comparatively large ova.

Body of a pale yellowish colour, with a slight rosy tinge; ovarial tubes reddish brown, forming on each side, within the cephalic segment, a remarkably large cæcal dilatation.

Length of adult female about half a millimetre (0.48 mm.).

Remarks.—This form may be easily recognised by the remarkably broad and flattened cephalic segment, a character which has given rise to the specific name here proposed.

Occurrence.—Some few female specimens of this species have been found at different times off the west coast of Norway (Skjerjehavn, Sanesund) in depths ranging from 10 to 30 fathoms.

Distribution.—Polar Islands north of Grinnell Land (2nd Fram Exped.).

62. Idyopsis pusilla, G. O. Sars, n. sp.

(Pl. LVII, fig. 2).

Specific Characters.—Female. Anterior division of body less expanded than in the preceding species. Cephalic segment moderately dilated, and not nearly twice as long as the 3 succeeding segments combined. Epimeral plates comparatively broader and less extant, especially those of the last pair, which are obtuse at the tip. Urosome, as in the preceding species, rather short, genital segment less expanded, but more deeply indented on each side in the middle. Eye inconspicuous. Anterior antennæ comparatively shorter and stouter than in *I. dilatata*, with the terminal part about the length of the 2 preceding joints combined. Posterior antennæ with the first 2 joints distinctly defined, outer ramus comparatively short, but distinctly 4-articulate. Anterior maxillipeds remarkably large and robust, claw of outermost lobe coarsely spinulose on the one edge. First pair of legs closely resembling in structure those in *I. dilatata*, but with the outer ramus somewhat longer than the 1st joint of the inner. Last pair of legs with the proximal joint quite short, but produced inside to a narrow linguiform lamellar expansion, carrying on the tip 3 setæ, the middle one rather elongated; distal joint narrow fusiform in outline, seta of outer edge placed close to the apex.

Colour whitish.

Length of adult female 0.43 mm.

Remarks.—Though nearly allied to the preceding species, and evidently congeneric with it, this form is at once distinguished by the less expanded anterior division of the body, as also by the comparatively shorter and stouter anterior antennæ. The last pair of legs, also, are rather different in the 2 species.

Occurrence.—Only 2 female specimens of this form have hitherto come under my notice. They were found, many years ago, at Magerø, south of the entrance to the Trondhjem Fjord, in a depth of about 40 fathoms.

Gen. 26. **Idyella**, G. O. Sars, n.

Generic Characters.—General form of body rather resembling that in *Idya*, the 2 chief divisions being very sharply defined from one another. Anterior antennæ comparatively short, and angularly bent at the base, 8-articulate.

Posterior antennæ comparatively slender, 3-articulate, with the outer ramus short, biarticulate. Mandibles, maxillæ and anterior maxillipeds resembling in structure those parts in *Idyopsis*. Posterior maxillipeds, however, much more slender, and having a very movable articulation between the first 2 joints, last joint carrying an elongated claw accompanied by 2 or 3 slender setæ. First pair of legs with the outer ramus about as in *Idyopsis*, inner ramus, however, only composed of 2 joints very movably articulated together, the last one carrying outside 3 short setæ and at the tip 2 very slender claws. Natatory legs with the rami rather slender and subequal in length, middle joint of inner ramus carrying in the 2 anterior pairs 2 setæ, in the posterior pair 1. Last pair of legs slender and, as in *Idyopsis*, extended laterally.

Remarks.—This genus is nearly allied to *Idyopsis*, but differs in some particulars, especially as regards the structure of the posterior maxillipeds and that of the 1st pair of legs. Of this genus also, 2 well-defined species have been found off the Norwegian coast.

63. Idyella pallidula, G. O. Sars, n. sp.

(Pl. LVIII, fig. 1).

Specific Characters.—Female. Anterior division of body rather broad and depressed; seen dorsally, oval fusiform in outline, with the greatest width somewhat behind the middle. Cephalic segment very large, about twice as long as the 3 succeeding segments combined, and gradually tapering anteriorly, front conically produced. Epimeral plates sub-contiguous, obtuse at the tips. Last segment of metasome very small. Urosome not attaining half the length of the anterior division, genital segment produced on each side, somewhat in front of the middle, to an obliquely posteriorly-pointing triangular lobe; 2nd segment simple. Caudal rami short, with the usual number of setæ, one of them issuing from the middle of the outer edge, the 2 middle apical setæ rather slender. Eye wholly absent. Anterior antennæ scarcely attaining half the length of the cephalic segment and clothed with comparatively short setæ, 2nd joint the largest, terminal part about the length of the 2 preceding joints combined. Posterior maxillipeds with the middle joint scarcely at all dilated, sublinear in form. First pair of legs with the outer ramus much curved and somewhat exceeding half the length of the inner, proximal joint of the latter rather broad, lamellar, with a strong plumose seta in the middle of the inner edge, distal joint much narrower than the proximal one, and more than half its length. Last pair of legs very narrow,

proximal joint scarcely at all expanded inside, distal joint somewhat longer, with one of the marginal setæ attached to the outer edge in front of the middle.

Colour pale whitish, with a slight yellowish grey tinge.

Length of adult female about half a millimetre.

Remarks.—This form may be easily recognised by the conically produced frontal part, the peculiar form of the genital segment, and the total absence of any visual organ.

Occurrence.—I have only met with this peculiar Copepod in the upper part of the Christiania Fjord, where some few female specimens were found in a depth of about 30 fathoms, muddy bottom.

64. Idyella exigua, G. O. Sars, n. sp.

(Pl. LVIII, fig. 2).

Specific Characters.—Female. Anterior division of body somewhat less expanded than in the preceding species, with the cephalic segment of inferior size, not attaining twice the length of the 3 succeeding segments combined, and more evenly contracted anteriorly, front narrowly rounded. Urosome somewhat exceeding half the length of the anterior division, genital segment exhibiting on each side 2 successive triangular lobes separated by a deep median incision; 2nd segment with the posterior corners conically produced. Caudal rami about as in *I. pallidula*, but with the seta of the outer edge obsolete. Eye very conspicuous even in preserved specimens, exhibiting 4 dark-coloured lenticular bodies arranged in pairs in the usual place. Anterior antennæ comparatively more robust than in the preceding species, with the terminal part shorter, not attaining the length of the 2 preceding joints combined. Posterior maxillipeds with the 2nd joint conspicuously dilated beyond the middle. First pair of legs resembling in structure those in *I. pallidula*, but with the proximal joint of the inner ramus less broad and fully twice as long as the distal one. Last pair of legs less slender, proximal joint produced at the end inside to a narrow conical projection carrying 2 slender setæ; distal joint densely hairy, with one of the setæ issuing from the lower face in front of the middle. Ovisac rounded, only containing a limited number of comparatively large ova.

Colour not yet determined.

Length of adult female 0.44 mm.

Remarks.—This form is unquestionably congeneric with the preceding one, as it exhibits the same characteristic structure of the posterior maxillipeds and

of the 1st pair of legs. It may, however, at once be distinguished from that species by the very distinctly developed eye, and also by the characteristic form of the genital segment.

Occurrence.—On examining more closely some samples taken last summer at Bukken, in the lower part of the Stavanger Fjord, just below a steep hill, I succeeded in finding several specimens of this small Copepod. Among them was also a male specimen, which exhibited sexual differences from the female quite analogous to those found in the genus *Idya*.

Fam. 10. Thalestridæ.

Characters.—Body of rather variable form, in some cases much depressed, in others almost cylindrical or even compressed laterally, the 2 chief divisions, however, never being so sharply defined from each other as in the *Idyidæ*. Eye, as a rule, well developed, in some cases of rather complex structure. Anterior antennæ not much elongated, and generally composed of 8 or 9 articulations; those in male distinctly geniculate. Posterior antennæ with the first 2 joints imperfectly defined, outer ramus comparatively small. Oral parts on the whole normal; posterior maxillipeds terminating in a more or less strong clawed hand. First pair of legs with both rami, as a rule, prehensile, armed at the tip with unguiform spines. Natatory legs with both rami 3-articulate, the outer one the longer; inner ramus of 2nd pair of legs in male more or less transformed. Last pair of legs foliaceous, not extended laterally, and much larger in female than in male, covering the ovisac more or less entirely. The latter always single.

Remarks.—This is perhaps the most extensive of all the Harpacticoid families, comprising, as it does, even in the restriction here adopted, numerous genera and species. The family to which it bears the closest relationship, is unquestionably that of the *Diosaccidæ*, to be treated of farther on, the chief distinction between the two being the duplicity or non-duplicity of the ovisac.

65. Thalestris longimana, Claus.

(Pl. LIX & LX).

Thalestris longimana, Claus, Die freilebenden Copepoden, p. 130, Pl. XVIII, figs. 1—11.

Specific Characters.—Female. Body very robust, with the back more or less curved, and the segments of the anterior division sub-imbricate dorsally. Cephalic segment of very large size, and conspicuously compressed in its anterior part, the epimeral parts being very deep and arcuate. Rostral projection short and blunt at the tip. Urosome scarcely exceeding half the length of the anterior division, and having the segments very sharply defined; genital segment large and broad, seen dorsally, quadrangular in form, with the lateral parts lamellarly expanded; last segment very small, often almost wholly concealed by the preceding segment. Caudal rami comparatively short, not much longer than they are broad, and transversely truncated at the tip, each with a short seta at about the middle of the outer edge, innermost but one of the apical setæ much coarser than the others, and about equal in length to the urosome. Eye large and very conspicuous in living specimens. Anterior antennæ scarcely exceeding half the length of the cephalic segment, 2nd joint much the largest, about equal in length to the 2 succeeding joints combined, terminal part of about the same length. Anterior maxillipeds less compact than in the other species, with the claw of the outermost lateral lobe smaller, terminal part distinctly developed, narrow cylindrical and biarticulate. Posterior maxillipeds exceedingly large and powerful, with the hand considerably dilated, and forming a prominent angular projection below, defining the palm in front, the latter deeply concaved in the middle, with the edge densely spinulose throughout; terminal claw very strong and provided at the base inside with a slender spine. First pair of legs with both rami of equal length, the outer one somewhat narrower than the inner, and angularly bent near the base, each ramus armed at the tip with 2 unequal claws finely denticulate along the concave edge, and accompanied inside by a small, hair-like bristle; terminal joint of outer ramus, moreover, exhibiting on the outer edge 2 minute spinules. Last pair of legs exceedingly large, extending beyond the limits of the genital segment; distal joint oblong oval in form, and evenly rounded at the tip; inner expansion of proximal joint extending as far as the distal one, and somewhat narrowed in its outer part; marginal setæ of both joints comparatively short and simple.

Male somewhat smaller than female, and easily recognised by the more strongly built and geniculate anterior antennæ and the distinctly 5-articulate urosome. Inner ramus of 2nd pair of legs transformed in the usual manner. Last

pair of legs rather unlike those in female, and much smaller, distal joint narrow oblong in form, with some of the marginal setæ spiniform, inner expansion of proximal joint quite short, scarcely extending to the middle of the distal joint, and provided with only 3 marginal setæ, the outermost one spiniform. Genital tubercles with 3 subequal setæ.

Body of a golden yellow colour, more or less variegated with a dark reddish brown pigment, especially along the ventral face and at the posterior edges of the segments.

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

Remarks.—This form I regard as the type of the genus *Thalestris*, in the restriction here adopted. It is one of our larger Harpacticoids, and is moreover easily recognizable by its very robust form and the exceedingly powerfully developed posterior maxillipeds, which somewhat resemble those in *Harpacticus chelifer*.

Occurrence.—I have found this form not unfrequently in several localities of the west coast of Norway, as far as to the Trondhjem Fjord, in moderate depths among algæ. It moves in the usual somewhat jumping manner. When disturbed, it curves its body more or less sharply ventrally, and remains in this attitude quite motionless for some time.

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

66. Thalestris gibba (Krøyer).

(Pl. LXI).

Harpacticus gibbus. Krøyer, in "Gaimard" Voyage en Scandinavie, Pl. 43, figs. 2, a—p.

Syn: *Thalestris polaris*, Scott.

Specific Characters.—Female. Body somewhat more slender than in the preceding species, otherwise of a very similar aspect, with the back more or less gibbously curved, and the integuments very thick and tough. Cephalic segment, as in *T. longimana*, of considerable size and somewhat compressed anteriorly, with the epimeral parts rather deep and curved in the middle; rostral projection more prominent than in that species, and acutangular at the tip. Posterior edges of all the segments minutely crenulated. Urosome considerably exceeding half the length of the anterior division, and having the segments very sharply defined, the genital one of moderate size and less expanded than in *T. longimana;* last segment very small. Caudal rami unusually produced, being nearly 3 times as long as they are broad, apical setæ, on the other hand, much shorter than in

the said species, the innermost but one scarcely attaining half the length of the urosome, seta of the outer edge placed near the tip, and, like the outermost of the apical setæ, reduced to a small, knob-like spine. Anterior antennæ with the 2nd joint somewhat shorter than in *T. longimana*, terminal part nearly half the length of the proximal part. Posterior maxillipeds less powerfully developed than in that species, with the hand less dilated and the palm only slightly concaved, being defined in front by an obtuse angle. First pair of legs resembling in structure those in *T. longimana*, but with the rami somewhat narrower, apical claws scarcely at all denticulate. Last pair of legs well developed, though not nearly as large as in *T. longimana*, extending only somewhat beyond the middle of the genital segment, distal joint rounded oval in form and somewhat exserted at the tip, inner expansion of the proximal joint broadly rounded at the end, and scarcely extending as far as the distal joint; marginal setæ of both joints comparatively more elongated, some of them spiniform and minutely ciliated.

Male differing from the female in a manner analogous to that in the preceding species. Last pair of legs rather similar, but having the distal joint more attenuated towards the end, and the inner expansion of the proximal joint still shorter, with the 3 marginal setæ very unequal, the middle one being much elongated, whereas the outermost one is much reduced in size.

Colour of body, except the dorsal face of the cephalic segment, very dark bluish grey or almost black.

Length of adult female 1.50 mm.

Remarks.—This form was first figured (but not described) by Krøyer in the above-quoted work as *Harpacticus gibbus*. It was subsequently described by Th. Scott as a new species under the name of *Thalestris polaris*, he not having been aware of the fairly recognizable figures given of this species by Krøyer. It is nearly allied to *T. longimana*, though easily distinguishable by its more slender form, and especially by the much more produced caudal rami. When alive, it is also recognized at once by the very dark colour of its body.

Occurrence.—I have found this form in several localities on the west coast of Norway, and northwards along the whole Finmark coast as far as Vadsø. In some places it occurred in great numbers on a muddy bottom covered with decaying algæ, the depth being about 20 fathoms.

Distribution.—Franz Josef Land (Scott).

67. Thalestris rufoviolacens, Claus.

(Pl. LXII).

Thalestris rufoviolacens, Claus. Die Copepodenfauna von Nizza, p. 33, Pl. IV, figs. 18—22.

Specific Characters.—Female. Body comparatively short and stout, somewhat resembling in form that in *T. longimana.* Cephalic segment very large, with the epimeral parts deep and greatly curved in the middle; rostral projection somewhat prominent and acute at the tip. Urosome comparatively short, scarcely attaining half the length of the anterior division, genital segment large and rather broad in its anterior part; last segment, as usual, very small. Caudal rami extremely short, considerably broader than they are long, and densely clothed at the end with delicate filaments, the 2 larger of the apical setæ rather slender, and issuing close together from a knob-like projection at the inner corner below, outermost seta rather elongated and distant from the others. Anterior antennæ of the usual structure, 2nd joint rather large and tumid, terminal part nearly half the length of the proximal part. Posterior maxillipeds of moderate size, resembling those in *T. gibba.* First pair of legs likewise rather similar, though with the inner ramus somewhat shorter than the outer. Last pair of legs of quite extraordinary size, extending even beyond the 2nd caudal segment, both joints broad, foliaceous, and ornamented on the surface with a peculiar, as it were bipinnate marking; marginal setæ of both joints comparatively small and simple. Ovisac small, rounded, and almost wholly concealed by the lamellæ of the last pair of legs.

Male exhibiting the usual sexual differences from the female.

Body of a whitish colour, variegated with irregular patches, partly of a reddish, partly of a deep violaceous hue.

Length of adult female 0.90 mm.

Remarks.—The above-described form is unquestionably identical with that originally recorded by Claus as *T. rufoviolacens.* On the other hand the form so named by Brady does not belong to this species, but apparently to the next. The most characteristic features of the present form are the peculiar structure of the caudal rami and the extraordinary size of the last pair of legs in the female.

Occurrence.—Only 2 or 3 specimens of this form have hitherto come under my notice. They were taken, many years ago, at Herø, west coast of Norway, in moderate depths among algæ.

Distribution.—Mediterranean at Nice (Claus).

68. Thalestris brunnea, G. O. Sars, n. sp.

(Pl. LXIII).

Syn: *Thalestris ruforiolacens*, Brady (not Claus).

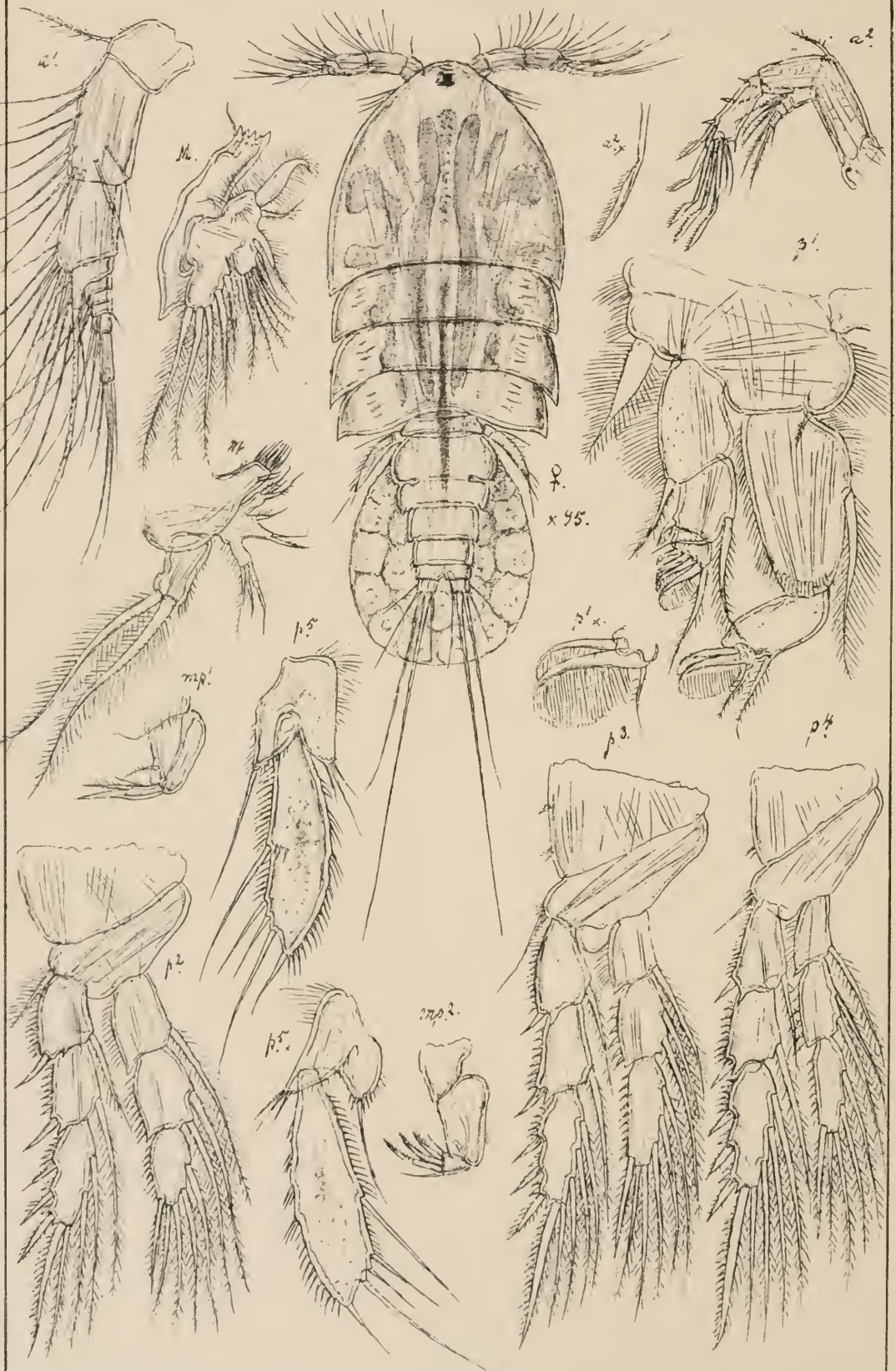
Specific Characters.—Female. Body very robust and somewhat depressed throughout its whole length; seen dorsally, slightly tapering behind. Integuments coarsely chitinized. Cephalic segment large and broad, occupying rather more than half the anterior division, epimeral parts less deep than in the 3 preceding species; rostral projection strong, deflexed, acutangular at the tip. Posterior edge of this and the 3 succeeding segments minutely crenulated. Urosome somewhat exceeding half the length of the anterior division, and slightly narrowed behind, genital segment almost twice as broad as it is long, and, like the 2 succeeding segments, having the lateral edges minutely ciliated; penultimate segment forming a triangular prominence behind, arching over the small last segment. Caudal rami short and broad, densely spinulose at the edges and with the apical setæ of inconsiderable length, the innermost but one being about half as long as the urosome. Eye very large and conspicuous in the living animal. Antennæ differing but little in structure from those in the other species. Mandibular palp, however, somewhat less fully developed, the basal part being only very slightly expanded distally. Anterior maxillipeds remarkably short and compact, with the innermost lateral lobe rather large, and divided into 2 diverging lappets, each carrying a thickish plumose seta, claw of outermost lobe very strong; terminal part rudimentary. Posterior maxillipeds likewise of an unusually compact structure, basal joint very short, hand much curved outside, palmar edge straight and imperfectly defined in front, terminal claw strong and much curved at the tip. First pair of legs with the outer ramus somewhat longer than the inner, and scarcely narrower, terminal joint armed with 3 unequal claws finely denticulated on the one edge, and moreover, at the inner corner, with a rather long curved seta, and outside the claws with a small spinule; inner ramus, as usual, carrying on the tip 2 claws, which are likewise finely denticulate and somewhat less unequal than in the preceding species. Last pair of legs of moderate size, extending somewhat beyond the middle of the genital segment, distal joint broadly oval in form and obtuse at the tip, inner expansion of proximal joint rather large, with 2 of the marginal setæ considerably produced and spiniform.

Colour of body, except the dorsal face of the cephalic segment, a deep brown, posterior edges of the segments still darker.

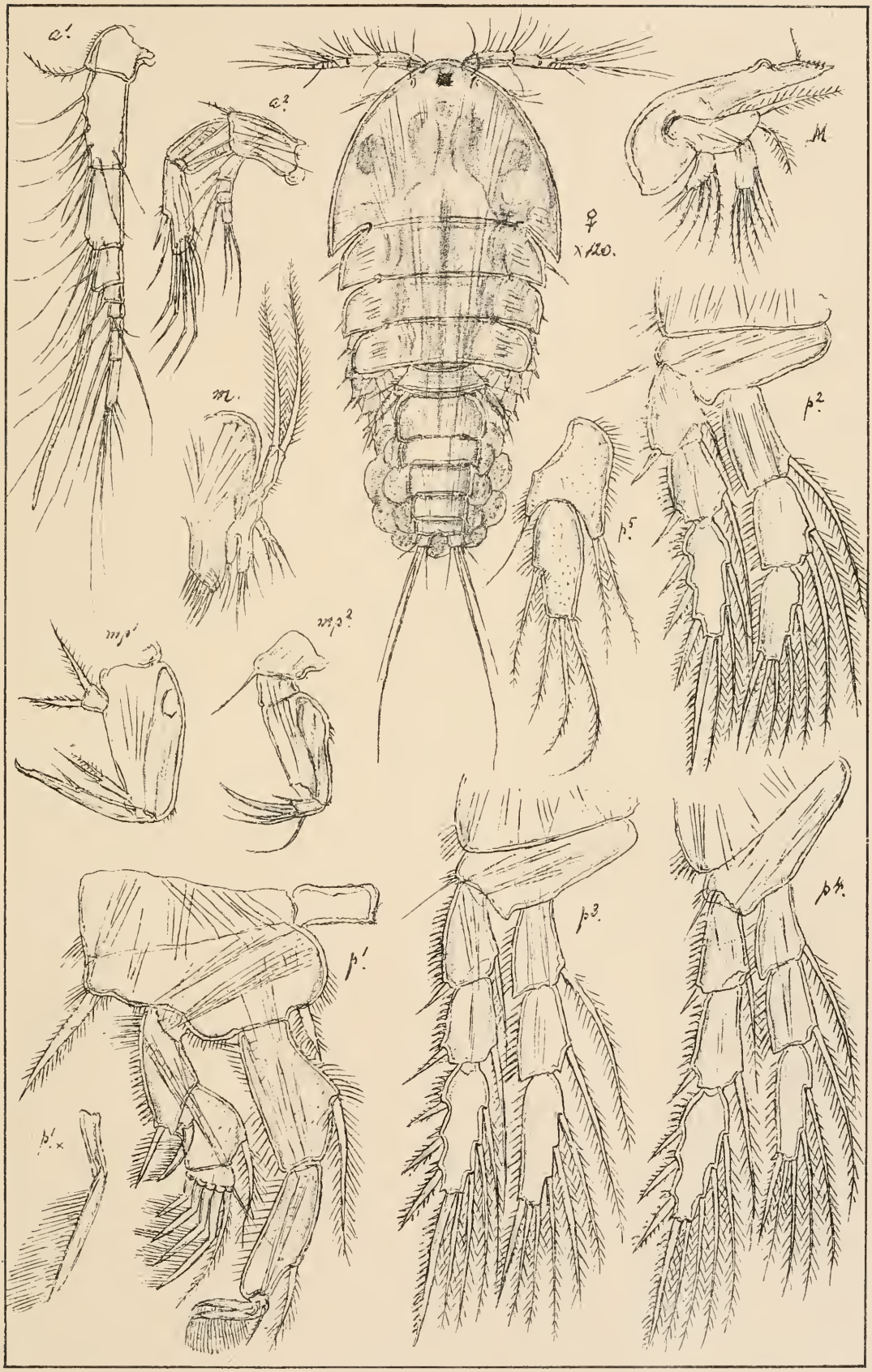
Length of adult female about 1 millimetre.

Copepoda

Harpacticoida.

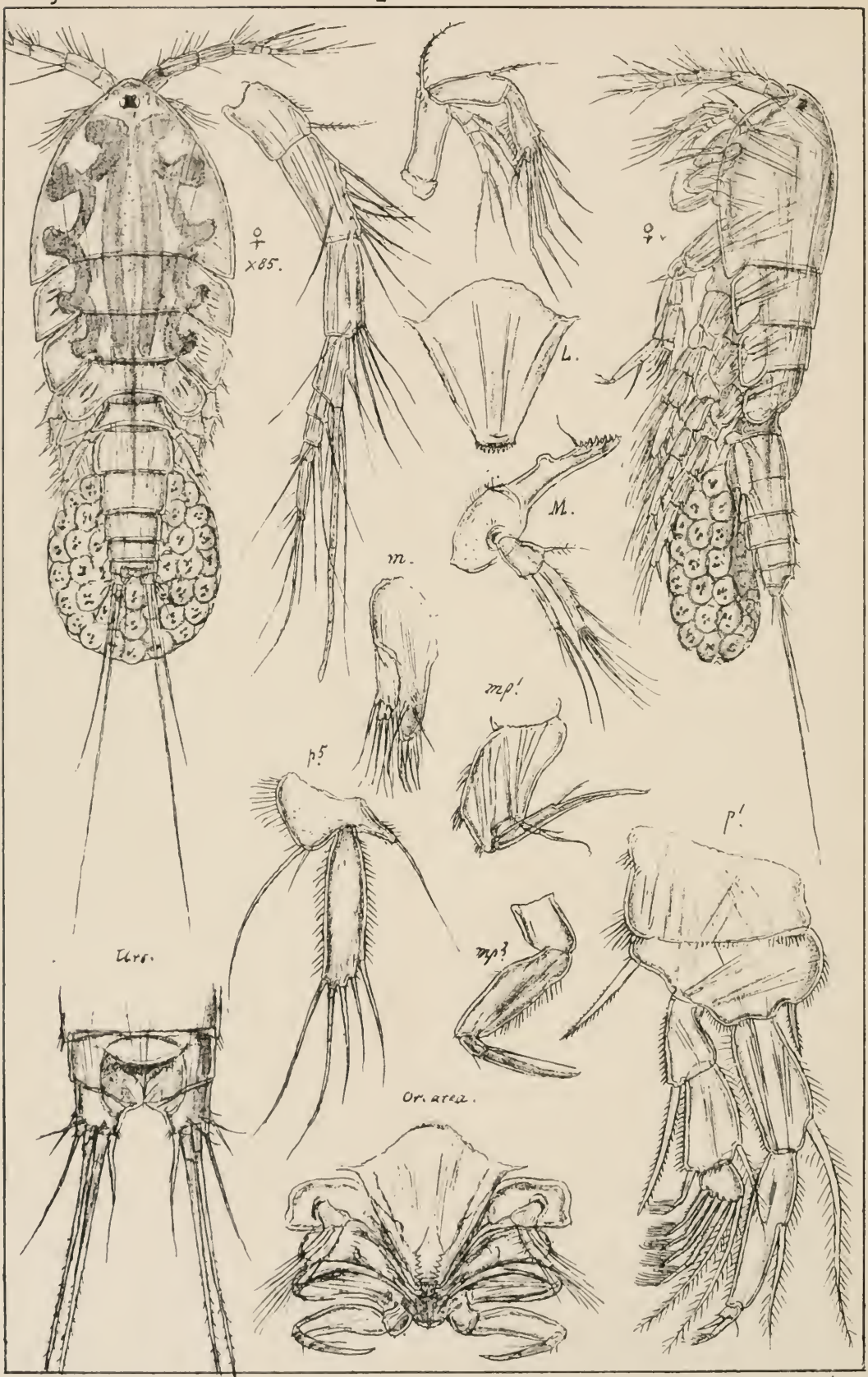


G.O. Sars autogr. Psamathe longicauda, Phil. Norsk Lithgr. Officin.



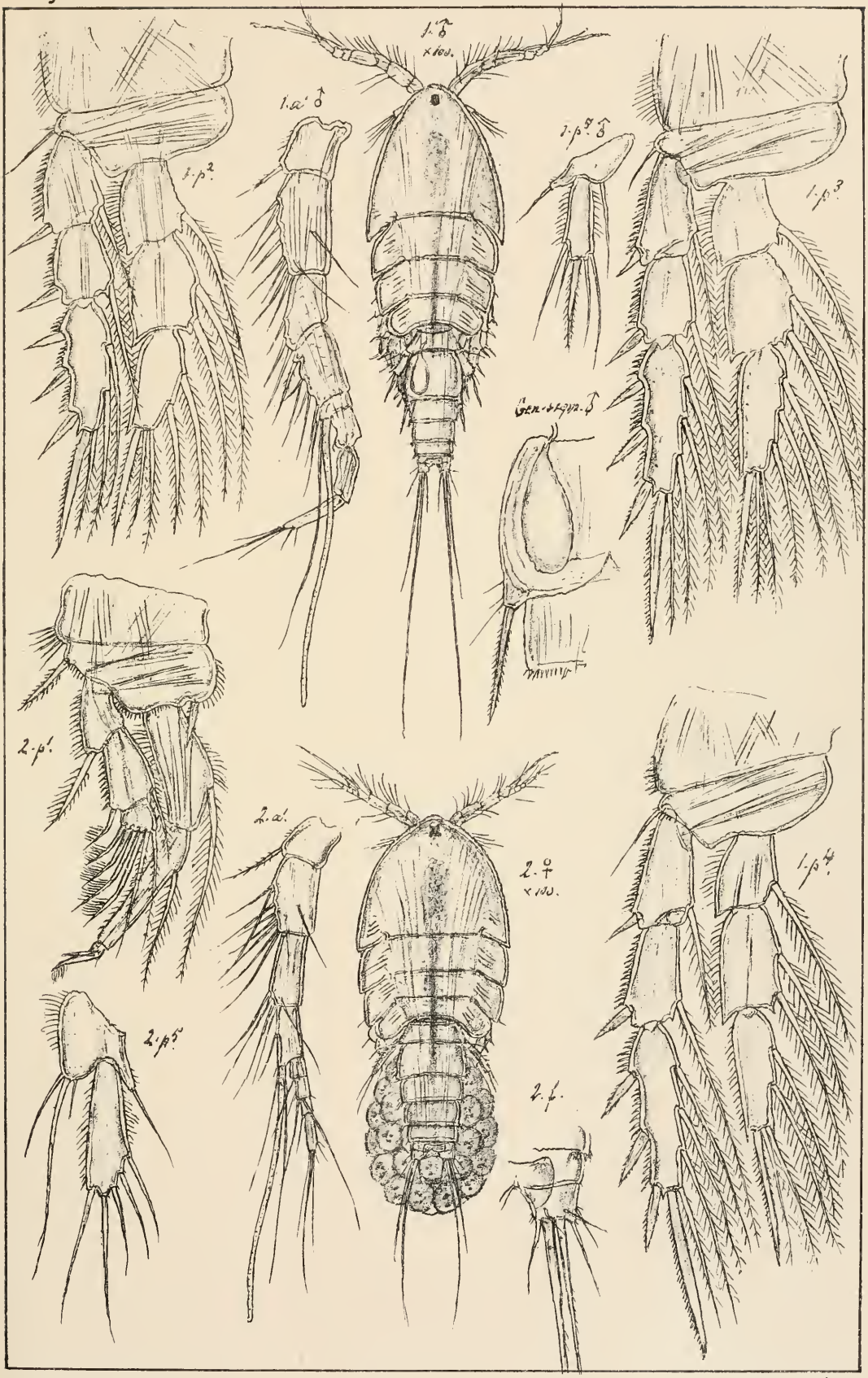
G.O. Sars autogr. Machairopus minutus, G.O. Sars. Norsk Lithgr. Officin.

Copepoda



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

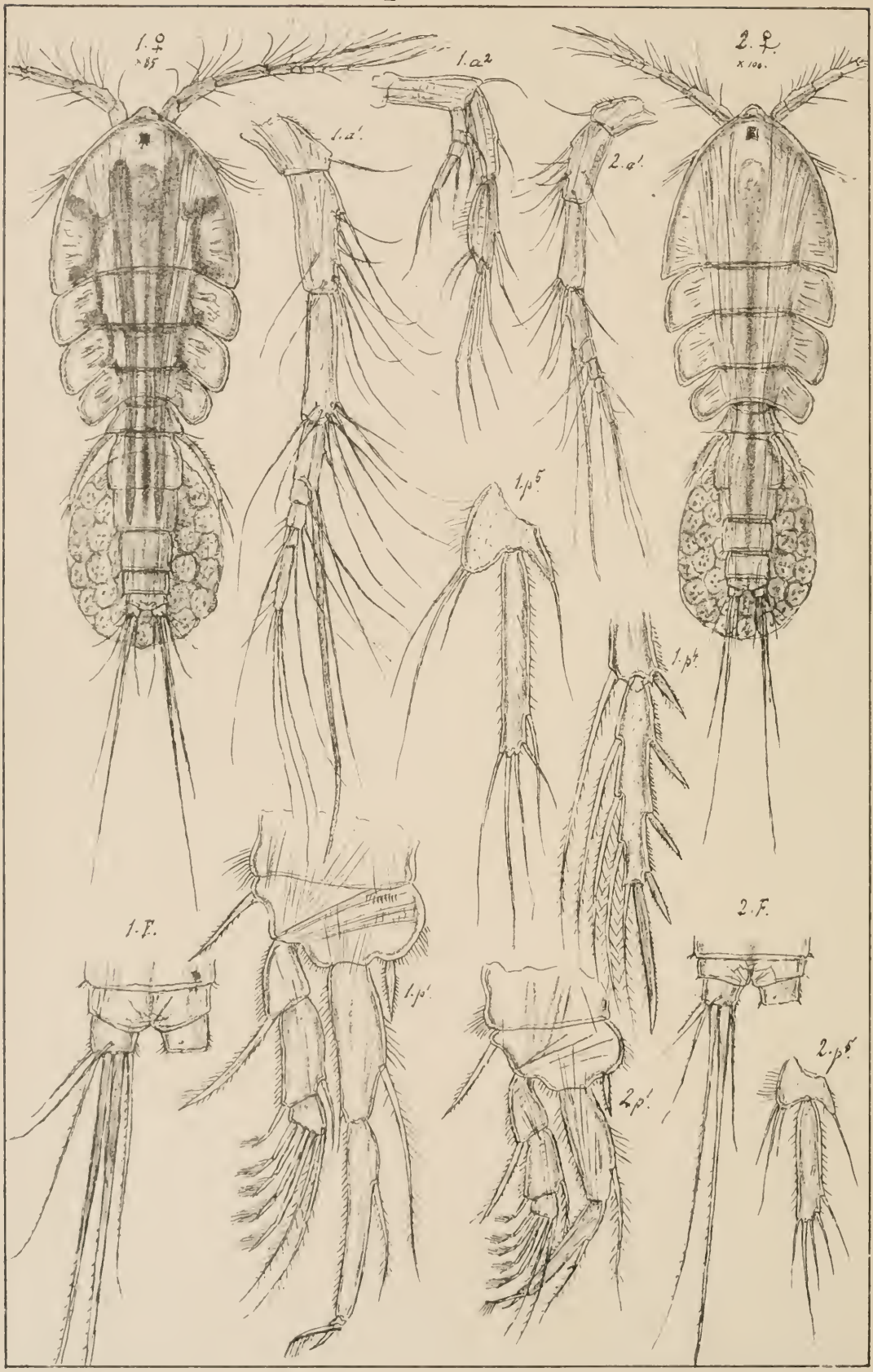
Jdya furcata, (Baird).



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

1. Jdya furcata, (continued)
2. Jdya minor, Scott

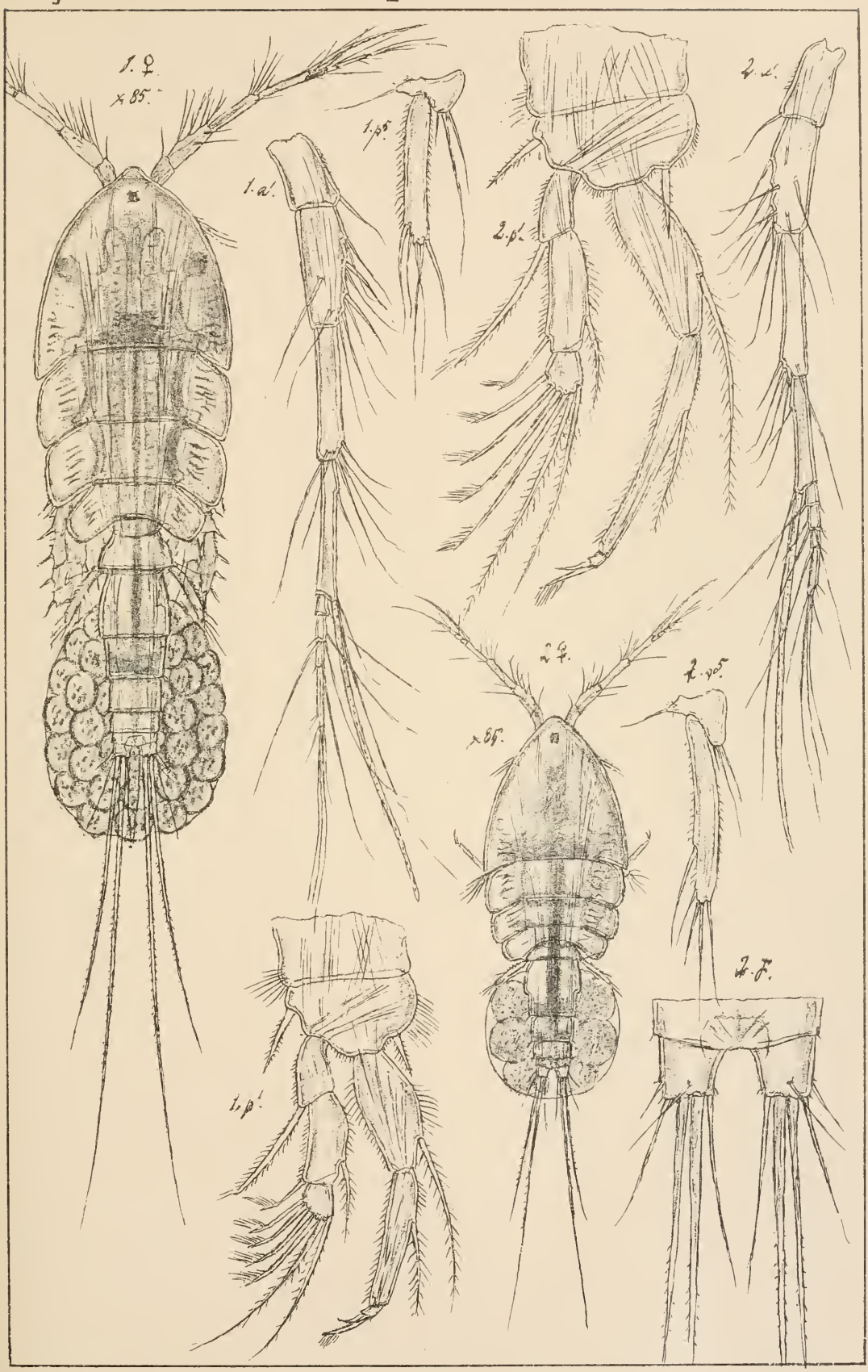
Copepoda



G.O. Sars autogr. Norsk Lithgr. Officin

1. Jdya ensifera (Fischer.)
2. Jdya tenera, G.O. Sars

Copepoda



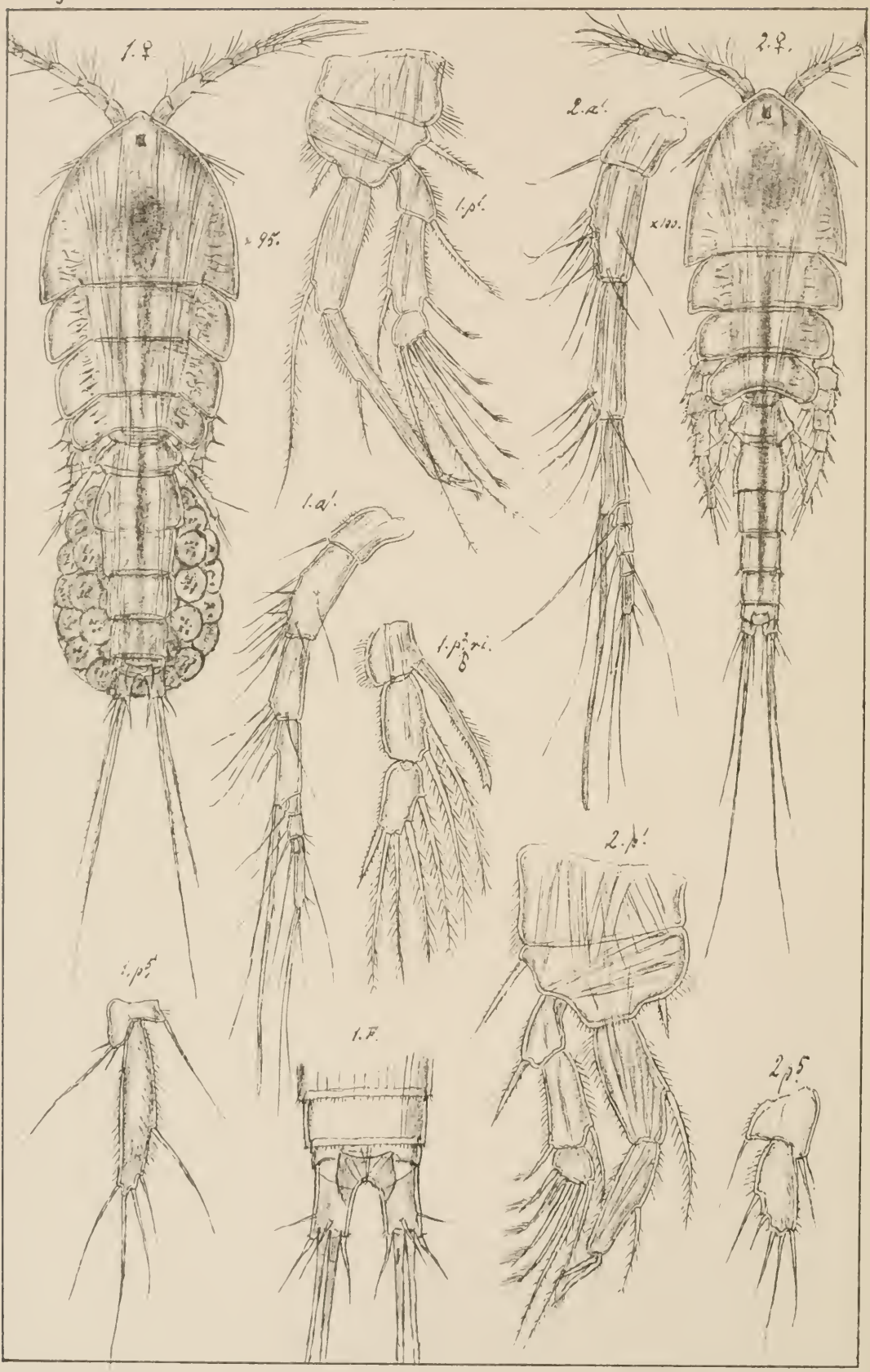
G.O. Sars autogr.

1 Jdya longicornis, Scott.
2 Jdya elegantula, G.O. Sars

Norsk Lithgr. Officin

Copepoda

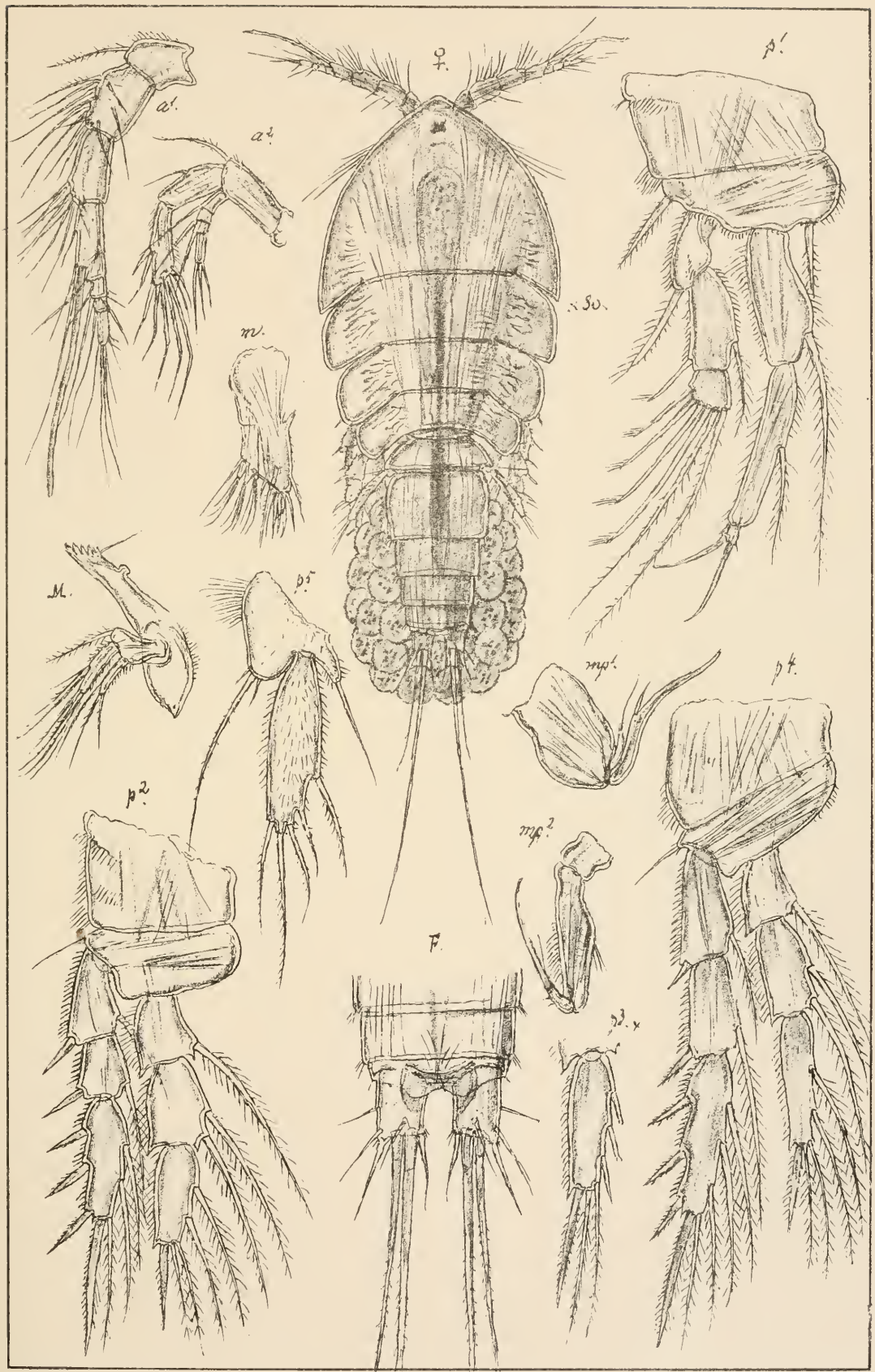
Harpacticoida.



G.O. Sars autogr.

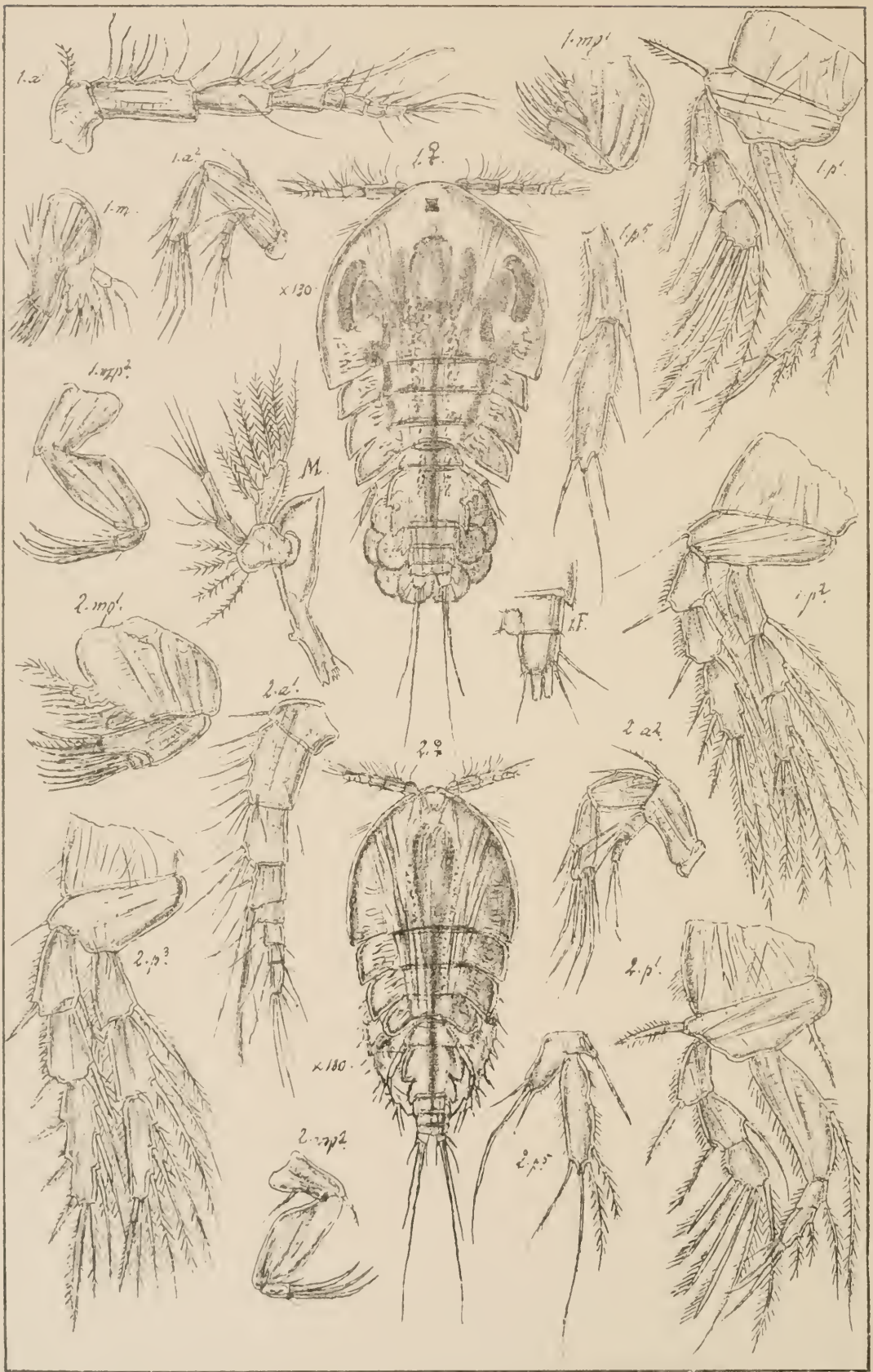
1. Jdya gracilis, Scott
2 Jdya angusta, G.O. Sars

Norsk Lithgr. Officin



G.O. Sars autogr. Norsk Lithgr. Officin

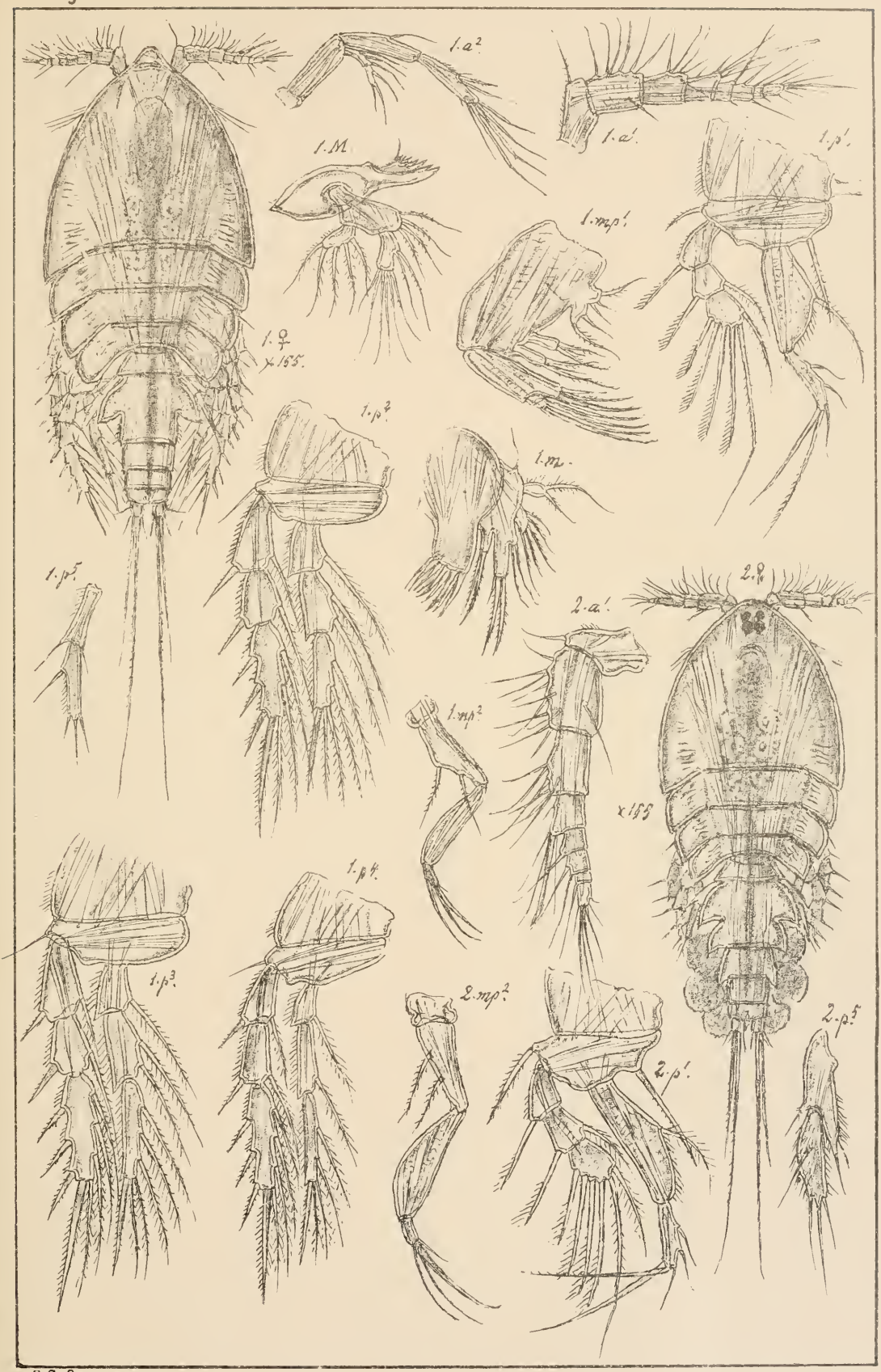
Jdya finmarchiça, G.O. Sars.



G.O. Sars autogr. Norsk Lithgr. Officin

1 Jdyopsis dilatata, G.O.Sars

2. Jdyopsis pusilla, G.O.Sars

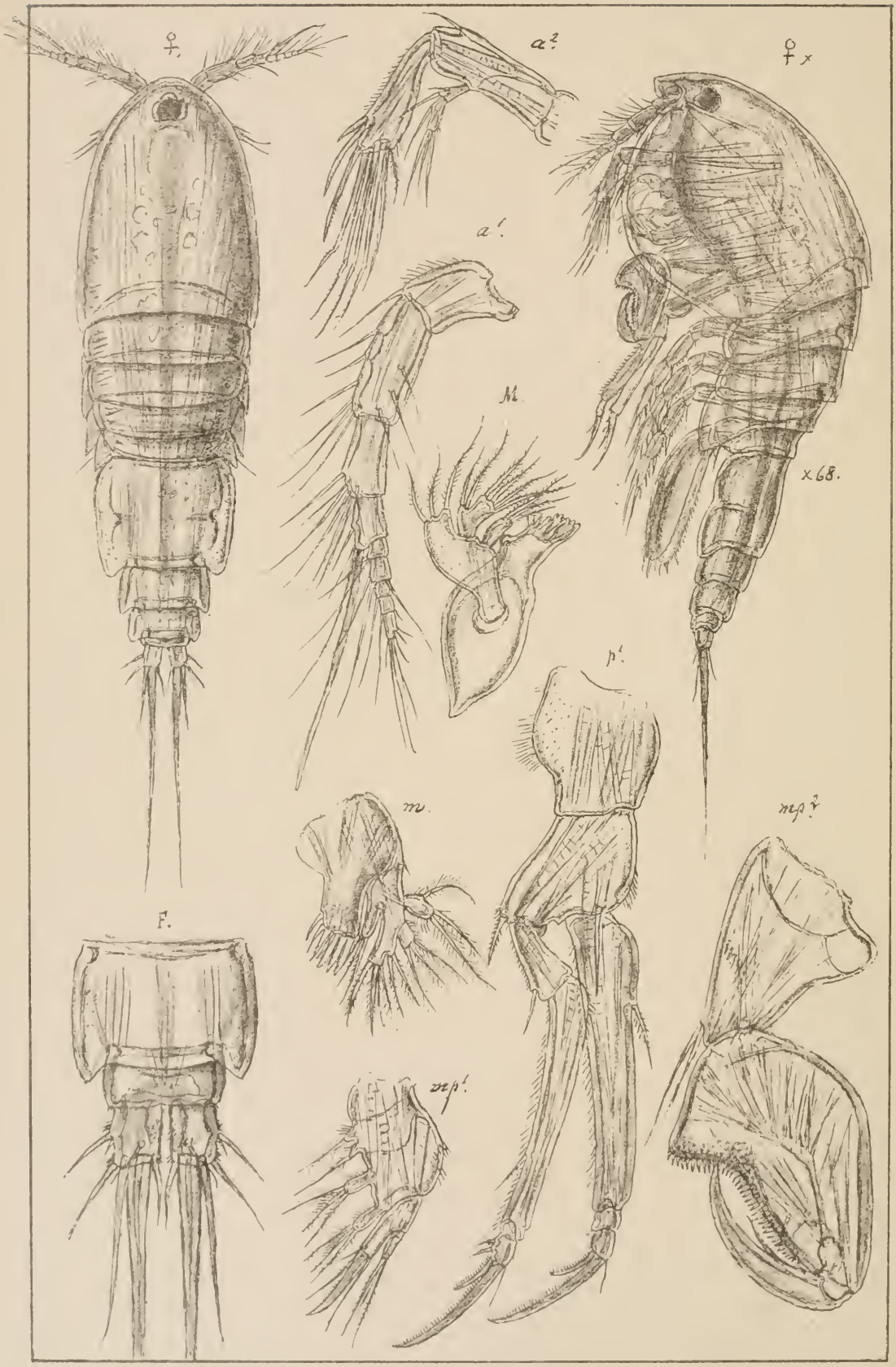


G.O. Sars autogr. Norsk Lithgr. Officin

1. Jdyella pallidula G.O. Sars
2. Jdyella exigua, G.O. Sars

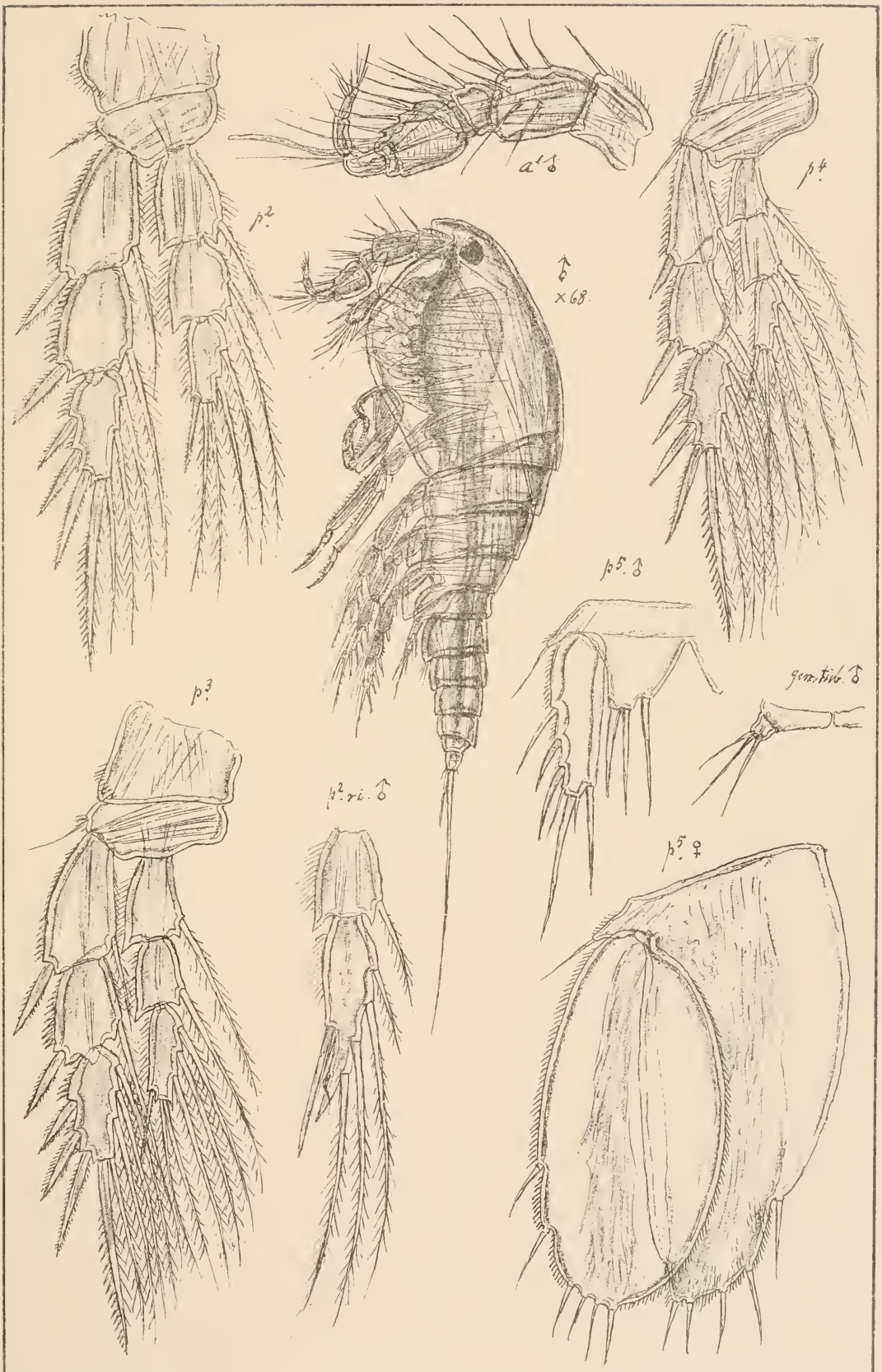
Copepoda

Harpacticoida.



G.O. Sars autogr. Norsk Lithgr. Officin

Thalestris longimana, Cls.



G.O. Sars autogr. Norsk Lithgr. Officin

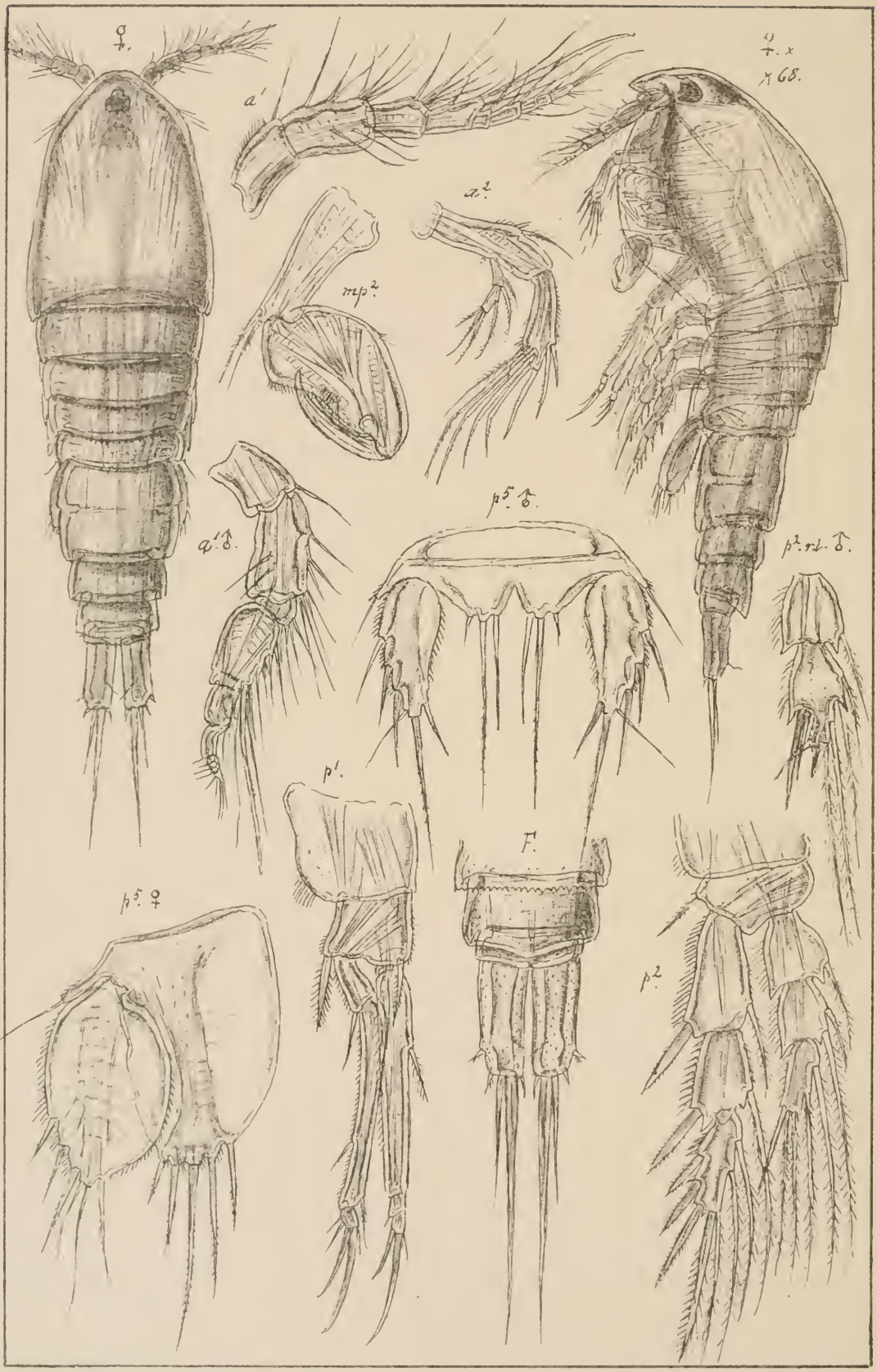
Thalestris longimana, Cls.
(continued)

Copepoda

Harpacticoida.

Thalestridæ

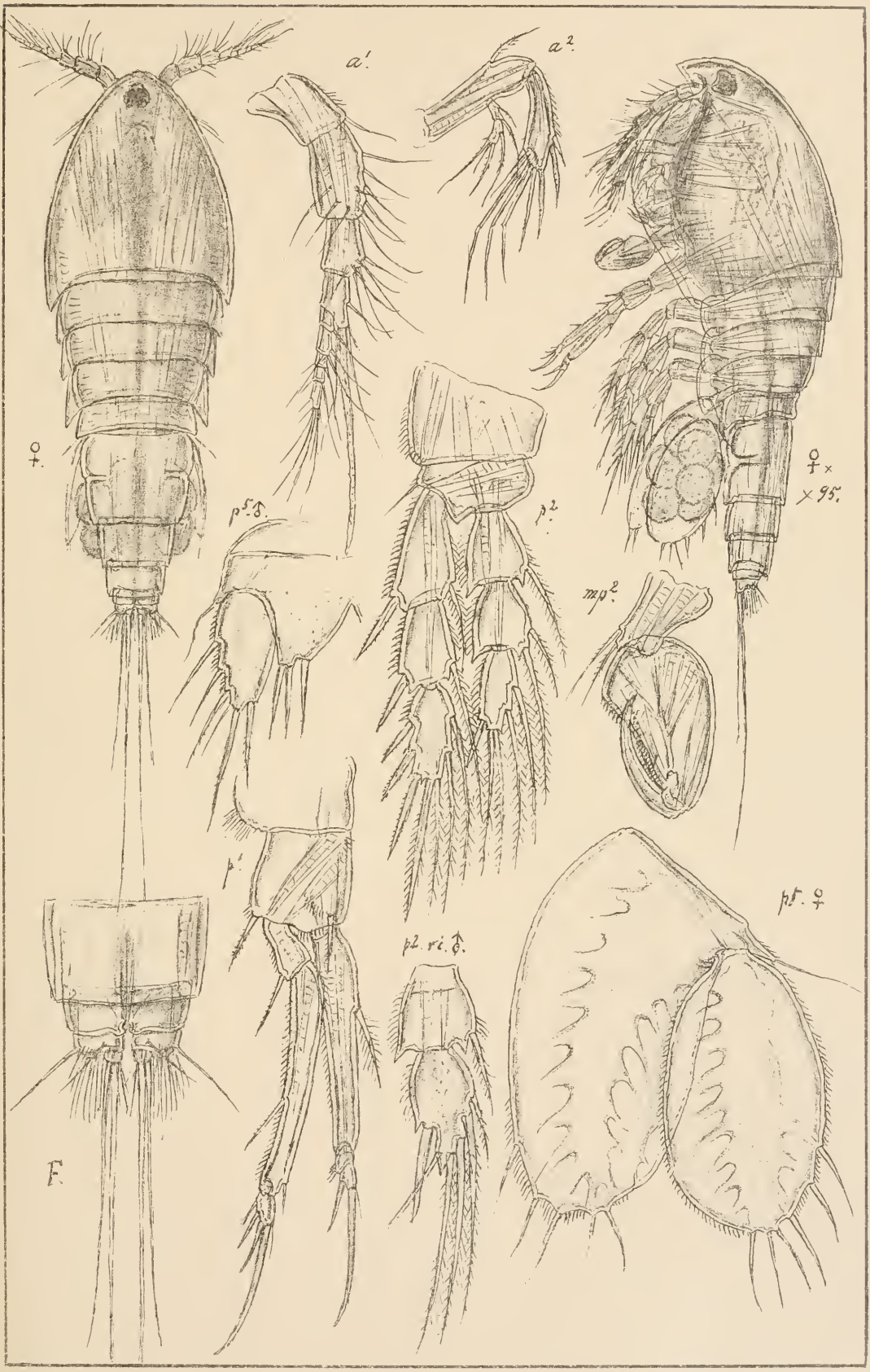
Pl. LXI.



G.O. Sars autogr

Norsk Lithgr. Officin

Thalestris gibba (Kröyer)

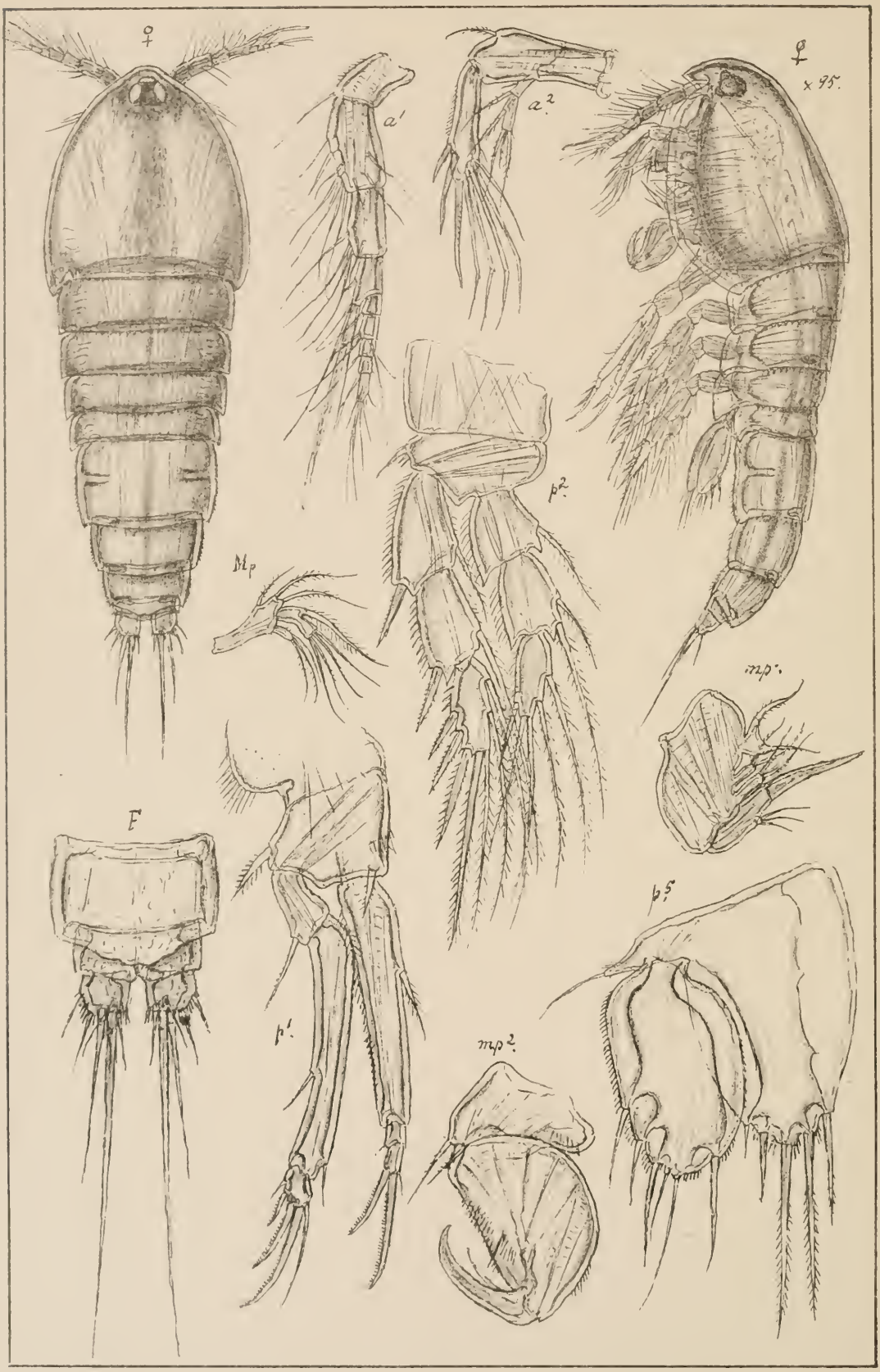


G.O. Sars autogr. Norsk Lithgr. Officin

Thalestris rufoviolacens, Cls.

Copepoda

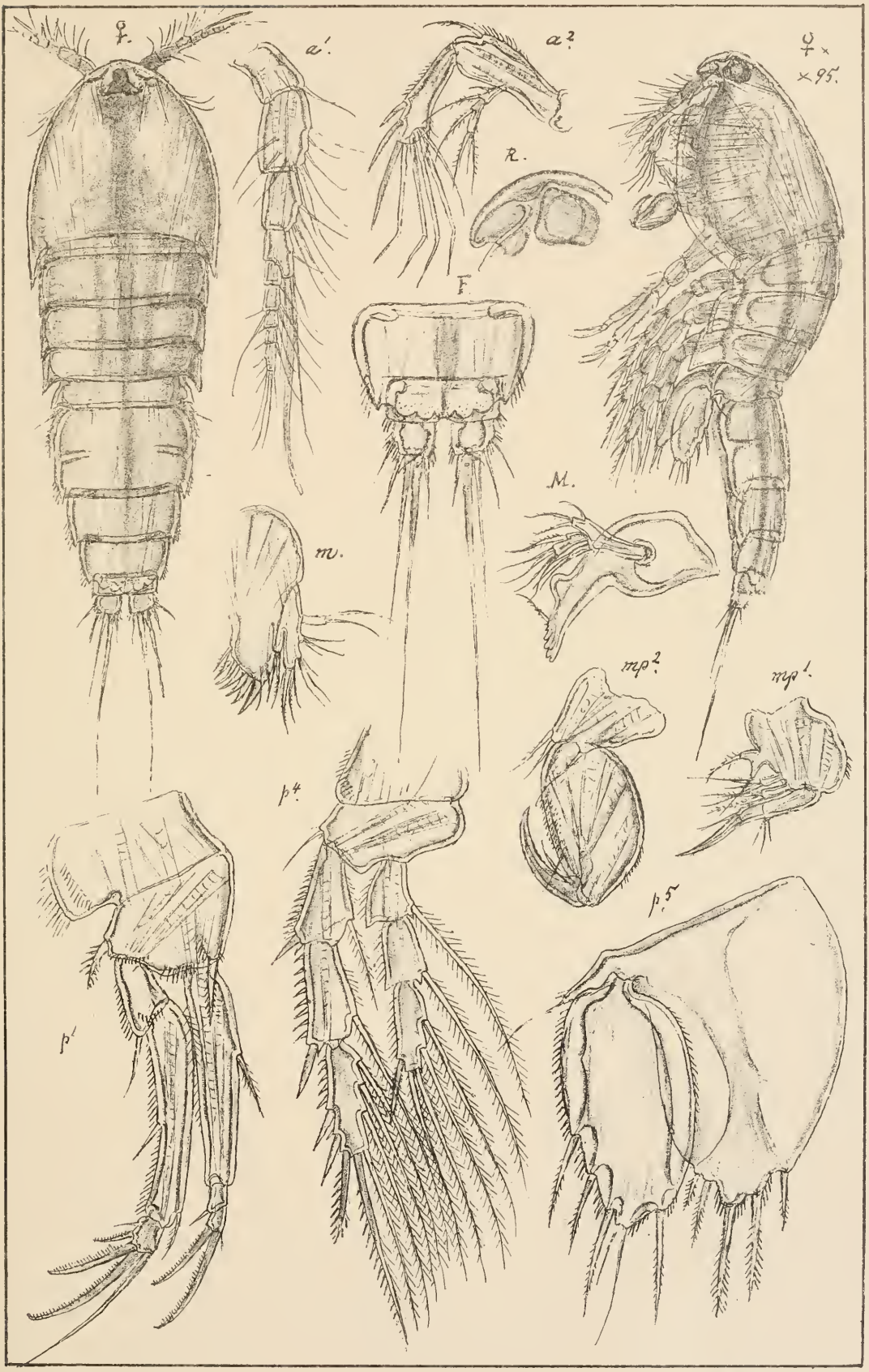
Thalestridæ. Harpacticoida. Pl. LXIII.



G.O. Sars autogr. Norsk Lithgr. Officin

Thalestris brunnea, G.O. Sars

Copepoda



G.O. Sars autogr. Norsk Lithgr. Officin

Thalestris purpurea, G.O. Sars