

Crustacea caspia.

Contributions to the knowledge of the Carcinological Fauna of the Caspian Sea.

By **G. O. Sars**,

Professor of Zoology at the University of Christiania, Norway.

Part III.

AMPHIPODA.

Third Article.

Gammaridæ (concluded). **Corophiidæ**.

With 8 autographic plates.

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18. **Niphargoides corpulentus**, G. O. Sars, n. sp.

(Pl. XVII, figs. 1—19).

Specific Characters. — ♂. Body very robust and tumid, with broadly vaulted back. Cephalon exceeding in length the 1st segment of mesosome, lateral lobes obtusely rounded. Anterior pairs of coxal plates somewhat deeper than the corresponding segments, and fringed on the distal edge with moderately long bristles; 1st pair scarcely expanded distally; 4th pair about as broad as they are deep. Last pair of epimeral plates of metasome slightly produced at the lateral corners, and having outside the latter an oblique row of bristles. Segments of urosome slightly raised dorsally, the last 2 with a pair of small, subdorsal spinules. Eyes well developed, though not very large, oval reniform, pigment dark. Antennæ short and stout, the superior ones about twice the length of the cephalon; with the flagellum fully as long as the last 2 peduncular joints combined, accessory appendage half the length of the flagellum and 4-articulate. Inferior antennæ about the length of the superior, flagellum longer than the last peduncular joint. Gnathopoda moderately strong and somewhat unequal, the posterior ones being the larger, propodos in both pairs oblong oval, not tapering distally, palm well defined and shorter than the hind margin. Pereiopoda

the setæ, at the end of the joints slender spines. The antepenultimate pair (fig. 7) are, as usual, considerably shorter than the other 2, which are about of equal length. The basal joint of the former is rather broad and obliquely oval in shape, with the anterior edge considerably curved. The basal joint of the penultimate pair (fig. 8) is considerably narrower and more elongated, with the posterior edge slightly sinuate in the middle and fringed with slender setæ. The last pair (fig. 9) are distinguished by the large size of the basal joint, which is greatly expanded and of a broad cordiform shape, with the posterior edge strongly curved below the middle, and fringed with long setæ springing off from small serrations of the edge. The outer joints of these legs nearly agree in their longitudinal relation with those in *N. caspius*.

The 2 anterior pairs of uropoda (fig. 11) are rather stout, but otherwise of quite normal structure, with the rami subequal and armed with scattered spines of the usual kind.

The last pair of uropoda (fig. 12) are comparatively short, and resemble in structure those in the type species. The basal part is short and thick, and is armed at the end below with a transverse row of 7 slender spines. The outer ramus is about twice as long as the basal part, and densely fringed in its outer part with ciliated setæ, having besides on the outer edge 2 strong spines. The terminal joint of this ramus is extremely small, nodiform. The inner ramus exhibits the usual scale-like shape, and scarcely exceeds in length the basal part. It is armed at the tip with 2 strong spines, and has inside 3 small bristles.

The telson (fig. 13) is, as in the other species, cleft to the base, being accordingly divided into 2 halves, which are somewhat longer and less diverging than in *N. caspius*. Each lobe carries at the obtusely truncated tip a transverse row of 5 slender spines increasing in length outwards, but is otherwise quite unarmed.

Occurrence. — Of this species 2 specimens were collected by Mr. Warpachowsky, the one at Stat. 2, in the western part of the North Caspian Sea, south of the Tschisty Bank, the other at Stat. 59, farther north, at some distance from the mouth of the Wolga. Both specimens were of the male sex. A third male specimen has been collected, according to the label, by Dr. Baer, but without statement of locality.

19. *Niphargoides compactus*, G. O. Sars, n. sp.

(Pl. XVII, figs. 14—19).

Specific Characters. — ♂. Body extremely robust and compact, having the last 2 segments of mesosome and those of metasome each provided with a well-

marked transverse sulcus dorsally. Cephalon comparatively small, with the lateral lobes evenly rounded. Anterior pairs of coxal plates rather large, fully twice as deep as the corresponding segments, and fringed distally with moderately long bristles; 1st pair considerably expanded in their outer part; 4th pair very large, deeper than they are broad. Last pair of epimeral plates of metasome about as in the preceding species. Urosome of moderate size; 2nd segment with a single small spinule dorsally; 3rd segment with 2 spinules on each side of the dorsal face. Eyes well developed, oval reniform. Antennæ short, subequal in length, the superior ones with the 2nd joint of the peduncle rather elongated, flagellum extremely small, accessory appendage 4-articulate. Inferior antennæ with the flagellum very small, not even attaining the length of the last peduncular joint. Gnathopoda very powerfully developed and rather unequal in size, propodos in both pairs large and broad at the base, obpyriform, with the palm very oblique and much longer than the hind margin, being defined below, in the posterior pair, by a distinct projecting angle armed with a strong spine. Pereiopoda nearly of the same structure as in *N. corpulentus*. Last pair of uropoda comparatively more fully developed than in the 2 preceding species, outer ramus sublamellar and densely fringed with ciliated setæ, inner ramus scale-like, having inside a row of ciliated bristles, and terminating with 2 small spines. Telson with each of the lateral halves armed at the obtusely truncated tip with 4 spines. Length of adult male 17 mm.

Remarks. — This new species is at once distinguished by its unusually stout and compact body, and by the distinct transverse sulci crossing the dorsal face of some of the segments. Moreover the structure of the antennæ and especially that of the gnathopoda may serve to easily recognize the species. I have only seen a single specimen, and for this reason have not been able to examine the oral parts. But there cannot be any doubt that it is congeneric with the 2 preceding species.

Description of the male. — The length of the specimen examined measures 17 mm., and this form accordingly grows to a much larger size than any of the other known species of the present genus.

The form of the body (see fig. 14) is extremely robust and compact, more so indeed than in any of the other species. The back is very broad and has across each of the 2 posterior segments of the mesosome and those of the metasome a very conspicuous transverse depression or sulcus.

The cephalon is comparatively small, scarcely longer than the 1st segment of the mesosome, and its lateral parts are partly concealed by the largely developed 1st pair of coxal plates. The lateral lobes are somewhat projecting and quite evenly rounded at the tip.

The anterior pairs of coxal plates are comparatively large, being fully twice as deep as the corresponding segments, and are fringed on their distal edges with a regular row of moderately long bristles. The 1st pair are, unlike what is the case in the 2 preceding species, considerably expanded in their outer part, being accordingly much broader than the succeeding pair. The latter are, like the 3rd pair, obliquely rounded at the tip, both pairs being almost exactly of the same shape, though somewhat differing in size. The 4th pair are very large and expanded, being somewhat deeper than they are broad, and exhibit the usual irregular, angular shape, with a distinctly projecting corner below the posterior emargination.

The 3 posterior pairs of coxal plates are comparatively small, though a little larger than in the 2 preceding species.

The epimeral plates of the metasome exhibit almost exactly the same shape as in *N. corpulentus*, and the last pair have a similar oblique row of bristles outside the lateral corners as found in the 2 preceding species.

The urosome is somewhat less robust than in *N. corpulentus*, but otherwise exhibits a very similar appearance. As in that species, there is a small dorsal spinule on the 2nd segment, and on the last segment (see fig. 19) 2 similar spinules are found on each side of the dorsal face.

The eyes are well developed and of a form and size similar to those in *N. corpulentus*.

The antennæ are short and subequal in length, being about twice as long as the cephalon. They are rather richly supplied with bristles, generally arranged in distinct fascicles, especially along the outer edge. The superior ones (fig. 15) have the 1st joint of the peduncle large and somewhat flattened, the second much narrower and rather elongated, whereas the 3rd joint is extremely small, scarcely exceeding $\frac{1}{4}$ of the 2nd. The flagellum is likewise unusually small, not even attaining half the length of the 2 last peduncular joints combined, and is composed of 9 articulations. The accessory appendage is about half as long as the flagellum, and 4-articulate. The inferior antennæ (fig. 16) have the 2 outer joints of the peduncle comparatively more slender than in the 2 preceding species, and densely clothed posteriorly with slender bristles. The flagellum is extremely small, being much shorter than the last peduncular joint, and is composed of 6 articulations.

The gnathopoda (figs. 17 and 18) are very powerfully developed and rather unequal in size, the posterior ones being much the stronger. The propodos in both pairs, but especially in the posterior one, is very large and greatly tumefied at the base, nearly obpyriform in shape, with the palm very oblique and much longer than the hind margin. The defining angle is on the posterior pair (fig. 18) greatly projecting and, as in the anterior

pair, armed with a strong spine, which is accompanied by 2 smaller ones. The carpus is short and broad, being produced below to a narrow setiferous lobe.

The pereopoda (see fig. 14) are on the whole very similar to those in *N. corpulentus*, and, as in that species, the basal joint of the last pair is very large and laminar, being densely fringed with bristles.

The 2 anterior pairs of uropoda are of the usual structure.

The last pair of uropoda (see fig. 19) appear somewhat more fully developed than in the 2 preceding species, and have the outer ramus rather broad, sublamellar, and densely fringed with ciliated setæ. As in the preceding species, there are besides on the outer edge of this ramus 2 ledges, to each of which are secured 2 spines. The terminal joint is so very small as easily to escape attention. The inner ramus exhibits the usual scale-like appearance and has inside a row of 7 short, ciliated setæ, at the tip 2 small spines.

The telson (*ibid.*) resembles that in *N. corpulentus*, except that each of the lateral halves has only 4 apical spines.

Occurrence. — The above described specimen was taken by Mr. Warpachowsky last summer in the eastern part of the North Caspian Sea, at Stat. 65.

20. *Niphargoides quadrimanus*, G. O. Sars, n. sp.

(Pl. XV, figs. 1—13).

Specific Characters. — Body less robust than in the 3 preceding species, and not nearly so tumid, back quite smooth throughout. Cephalon rather small, with the lateral lobes broadly rounded. Anterior pairs of coxal plates of moderate size, and fringed distally with a regular row of bristles; 1st pair scarcely expanded distally; 4th pair about as broad as they are deep. Last pair of epimeral plates of metasome nearly rectangular, and without any row of bristles outside the lateral corners. Eyes comparatively small, oval reniform. Antennæ comparatively more elongated than in the 3 preceding species and subequal in length, the superior ones with the 1st joint of the peduncle very large, fully twice as long as the other 2 combined, flagellum exceeding half the length of the peduncle, accessory appendage 6-articulate. Inferior antennæ rather strongly built, with the antepenultimate and penultimate joints of the peduncle expanded posteriorly to setiferous lobes, the outer 2 peduncular joints being moreover armed with spines arranged in oblique rows, flagellum exceeding half the length of the peduncle. Gnathopoda of exactly same appearance in the 2 sexes, being rather powerful and some-

what unequal in size, propodos of the anterior ones oval quadrangular, that of the posterior considerably larger and more regularly quadrate in outline, palm in both pairs nearly transverse, defining angle armed with 3 spines, the outmost of which is particularly strong. Anterior pairs of pereopoda less robust than in the 3 preceding species, carpal joint scarcely expanded, propodal joint armed with a double row of slender spines. The 3 posterior pairs of pereopoda rather much elongated and densely supplied with bristles as also with fascicles of slender spines; basal joint of last pair very much expanded, with the posterior edge somewhat irregularly curved and fringed with short bristles. The 2 anterior pairs of uropoda rather robust and armed with strong spines. Last pair of uropoda reaching considerably beyond the others, outer ramus more than twice as long as the basal part and edged with scattered non-ciliated bristles, terminal joint well defined; inner ramus small, scale-like. Telson small, with the lateral lobes strongly diverging, each with a single apical spinule. Length of adult female 10 mm.

Remarks. — The present form is chiefly characterised by the shape of the propodos of the posterior gnathopoda, which is more pronouncedly quadrate than in any of the other known species: hence the specific name. From the 3 preceding species it is moreover easily distinguished by its less robust body and by the structure of the antennæ and caudal appendages. In outer appearance this and the following species bear a strange resemblance to the species of the genus *Pontoporeia*.

Description of the female. — The length of fully adult, ovigerous specimens is about 10 mm.

The body (see fig. 1) is on the whole considerably more slender than in the 3 preceding species, and also much less tumid, with the back evenly rounded and quite smooth throughout, without any trace of the transverse depressions found in *N. compactus*.

The cephalon is comparatively small, though somewhat exceeding in length the 1st segment of the mesosome. The frontal edge is somewhat produced between the bases of the superior antennæ, without, however, forming any distinct rostral projection. The lateral lobes are rather prominent and broadly rounded at the tip; behind them there is a rather deep emargination encircling the large and swollen basal joint of the inferior antennæ.

The anterior pairs of coxal plates are of moderate size, being somewhat deeper than the corresponding segments, and are fringed distally with slender setæ, which become rather short on the 4th pair. The 1st pair (see fig. 4) are of about the same breadth throughout, and have the distal edge somewhat oblique. The 2 succeeding pairs are regularly oblong quadrangular in shape. The 4th pair (see fig. 6) are, as usual, the largest, being about as broad as

they are deep, and exhibiting a distinctly projecting corner just below the posterior emargination. The 3 posterior pairs are small and bilobed.

The epimeral plates of the metasome are well developed and quite smooth. The last pair are nearly rectangular, and do not exhibit any trace of the oblique row of bristles found in the 3 preceding species outside the lateral corners.

The urosome is of moderate size and perfectly smooth above.

The eyes are distinct, though not very large, and of an oval reniform shape, with dark pigment.

The superior antennæ (fig. 2) are considerably more elongated than in the 3 preceding species, being about 3 times as long as the cephalon. The 1st joint of the peduncle is very large, fully twice as long as the other 2 combined, and is densely setous on the outer edge. The 3rd joint is about half as long as the 2nd, both being densely setous outside. The flagellum considerably exceeds half the length of the peduncle, and is composed of about 11 articulations. The accessory appendage is half as long as the flagellum, and 6-articulate.

The inferior antennæ (fig. 3) are about equal in length to the superior, and are rather strongly built, being generally bent in a genicular manner. The basal joint is very large and globular. The antepenultimate and penultimate joints of the peduncle are both expanded posteriorly to short setiferous lobes, that of the penultimate joint having, moreover, outside 2 oblique rows of short spines. The last peduncular joint is simple cylindrical and nearly as long as the penultimate one. It has posteriorly several fascicles of slender bristles and outside 4 oblique rows of small spines. The flagellum is fully as long as the 2 outer joints of the peduncle combined, and is composed of 10 articulations.

The gnathopoda (figs. 4, 5) are rather powerful and somewhat unequal in size, the posterior ones (fig. 5) being, as usual, the larger. The propodos of the anterior gnathopoda (fig. 4) is quadrangular in shape, that of the posterior ones (fig. 5) considerably broader and more pronouncedly quadrate in outline. In both pairs the palm is nearly transverse and defined below by a distinct angle, to which are secured 3 spines, the outmost of which is particularly strong. The hind margin is somewhat longer than the palm, and exhibits in its outer part 3 or 4 fascicles of short bristles.

The 2 anterior pairs of pereopoda (fig. 6) are moderately strong, with the meral joint rather large and densely setiferous on the posterior edge. The carpal joint is, on the other hand, but very little expanded, and is provided posteriorly, in addition to the setæ, with 3 strong spines. The propodal

joint is, as usual, narrow linear, and is armed in its outer part posteriorly with a double row of slender spines.

The 3 posterior pairs of pereopoda (figs. 7—9) are rather elongated and generally strongly reflexed. They have the outer part densely setiferous and besides provided with fascicles of slender spines. The antepenultimate pair (fig. 7) are, as usual, somewhat shorter than the other 2, and have the basal joint regularly oval in form, with from 4 to 5 fascicles of slender bristles anteriorly. The meral joint of this pair is rather broad, its posterior edge bulging considerably in the middle. In the penultimate pair (fig. 8) the basal joint is comparatively narrower and more elongated, with the posterior edge slightly sinuated below the middle. The last pair (fig. 9) are distinguished by the large size of the basal joint, which forms posteriorly a very broad lamellar expansion, the edges of which are somewhat irregularly curved and throughout fringed with short bristles. Anteriorly this joint terminates in an obtuse corner very densely clothed with slender bristles. The outer joints of these legs exhibit a similar longitudinal relation as in the 3 preceding species.

The 2 anterior pairs of uropoda (figs. 10—11) are rather strongly built, with the rami subequal and armed with 5 strong apical spines and a single lateral one.

The last pair of uropoda (fig. 12) are considerably more elongated than in the 3 preceding species, projecting far beyond the other pairs. The basal joint is rather short and armed at the end below with a transverse row of 5 not very elongated spines. The outer ramus is fully twice as long as the basal part and rather narrow, with only scattered simple bristles and 2 fascicles of spines on the outer edge. The terminal joint of this ramus is well defined and about $\frac{1}{4}$ as long as the proximal one, terminating in an obtuse setiferous point. The inner ramus is small and scale-like, with 2 apical spines.

The telson (fig. 13) is comparatively small, and has the lateral lobes strongly diverging, each armed with only a single apical spinule.

The male does not differ from the female except by the anterior pairs of coxal plates being somewhat smaller. On the other hand, neither in the structure of the antennæ nor in that of the gnathopoda or caudal appendages are there any differences to be detected, and this is probably the case with all the species belonging to this genus.

Occurrence. — Of this species solitary specimens were collected by Mr. Warpachowsky at 3 different Stations of the North Caspian Sea, the one (St. 58) located in the western part of that basin, north of the Tschisty Bank, the 2nd (St. 61) occurring far north, at some distance outside the

Bay Bogutui Kultuk, and the 3rd (St. 63) lying somewhat farther south than the latter.

In the collection of Dr. Grimm this species is likewise represented only by quite solitary specimens collected in the southern and middle part of the Caspian Sea, the depth varying from 7 to 20 fathoms.

21. *Niphargoides æquimanus*, G. O. Sars, n. sp.

(Pl. XVIII, figs. 14–23).

Specific Characters. — Very much like the last described species, as to outer appearance, but of much smaller size. Cephalon considerably exceeding in length the 1st segment of mesosome, and having the lateral lobes rather produced and rounded at the tip. Anterior pairs of coxal plates comparatively smaller than in *N. quadrimanus*, and fringed with scattered bristles distally; 1st pair somewhat expanded in their outer part; 4th pair fully as broad as they are deep. Epimeral plates of metasome well developed and quite smooth. Urosome without any spines dorsally. Eyes comparatively small. Antennæ of a structure similar to that in *N. quadrimanus*, but with a less number of articulations in the flagella. Gnathopoda almost exactly alike both in structure and size, propodos in both pairs oblong quadrangular, with the palm much shorter than the hind margin. Pereiopoda resembling those in *N. quadrimanus*, except that the basal joint of last pair is still more expanded. Last pair of uropoda comparatively more elongated than in the said species. Telson with the lateral lobes scarcely diverging, each armed at the tip with 2 unequal spines. Length of adult male 5 mm.

Remarks. — This form is very nearly allied to *N. quadrimanus*, and may easily be confounded with it. On a closer examination, it is, however, found to differ, not only by its small size, but also in some structural details, especially in the structure of the gnathopoda and the shape of the basal joint of the last pair of pereiopoda. Finally the last pair of uropoda are more elongated, and the lateral lobes of the telson scarcely diverging.

Description of the male. — The length of an apparently adult specimen measures only 5 mm., and this form is accordingly much inferior in size to the other known species. The form of the body (see fig. 14) is rather slender and somewhat compressed, bearing on the whole a strong resemblance to that in *N. quadrimanus*.

The cephalon is almost as long as the first 2 segments of the mesosome combined, and has the lateral lobes rather prominent and narrowly rounded at the tip.

The anterior pairs of coxal plates are but little deeper than the corresponding segments, and are fringed on the distal edge with a restricted number of slender bristles. The 1st pair (see fig. 17) are somewhat expanded in their outer part, with the distal edge slightly curved. The 2 succeeding pairs are oval quadrangular in form, and obtusely truncated at the tip. The 4th pair are fully as broad as they are deep, and of the usual, irregular, angular shape.

The epimeral plates of the metasome are rather large, and without any trace of bristles. The last 2 pairs are nearly rectangular, whereas the 1st pair, as usual, are more rounded.

The urosome is comparatively stout, and has not any spines dorsally, the first 2 segments having only in the middle of the dorsal face a few small hairs.

The eyes are rather small and of an oval reniform shape, with dark pigment.

The antennæ (figs. 15, 16) exhibit a structure similar to that in *N. quadrimanus*, but have the flagella less fully developed, each being composed of only 7 articulations. The accessory appendage of the superior ones is scarcely half so long as the flagellum, and 5-articulate.

The gnathopoda (figs. 17, 18) are moderately strong, and, unlike what is the case in the other species, subequal, the propodos being in both pairs almost exactly alike both in size and shape. It is of an oblong quadrangular form, with the palm nearly transverse and much shorter than the hind margin. The spines issuing from the lower corner are less strong than in *N. quadrimanus*.

The pereopoda resemble in their structure those in the said species. On closer comparison, however, some minor differences are to be found. Thus the basal joint of the antepenultimate pair (fig. 19) appears comparatively shorter in proportion to its breadth, and that of the last pair (fig. 20) has the posterior expansion still larger and more regularly rounded, with a smaller number of marginal bristles.

The 2 anterior pairs of uropoda (fig. 21) are likewise much of the same appearance as in *N. quadrimanus*, except that the rami want the lateral spine present in that species.

The last pair of uropoda (fig. 22) are still more slender than in the said species, the outer ramus being about 3 times as long as the basal part. It has but very few marginal bristles, and, as in *N. quadrimanus*, 2 fascicles of spines on the outer edge. The inner ramus has but a single apical spinule.

The telson (fig. 23) differs from that in the said species in having the lateral lobes comparatively broader and not at all diverging, each being armed at the tip with 2 unequal spinules.

Occurrence. — Of this species only 3, partly defective specimens were collected by Mr. Warpachowsky at Stat. 53, occurring north of the island of Kulaly.

In the collection of Dr. Grimm there is a single specimen, which was taken in the middle part of the Caspian Sea, near the western coast, from a depth of 10 fathoms.

Gen. 6. **Pandorites**, G. O. Sars.

Syn.: *Pandora*, Grimm.

Generic Characters. — Body but little compressed, and quite smooth above. Coxal plates of moderate size; 1st pair the smallest; 4th pair but slightly emarginated posteriorly. Epimeral plates of metasome well developed. Urosome short and stout. Eyes placed close to the lateral lobes of the cephalon. Antennæ rather slender, but not much elongated, equal-sized, the superior ones with an accessory appendage. Oral parts normal. Gnathopoda very unequal, and of the same structure in the 2 sexes; the anterior ones of normal appearance, the posterior ones, however, peculiarly developed and rather powerful, resembling those in the genus *Gammaracanthus*, the propodos being greatly expanded distally, with the palm arcuate and having below a particularly long and slender spine. Pereiopoda not much elongated, and of normal structure, basal joint of last pair lamellarly expanded. Last pair of uropoda small. Telson likewise small and cleft to the base.

Remarks. — This genus has been established by Dr. Grimm to include a rather peculiar Gammarid from the Caspian Sea to be described below. But as the name he proposes, *Pandora*, has been used long ago, and as also the derivations *Pandorina* and *Pandorella* have been appropriated in Zoology, I propose to change the name to *Pandorites*. Besides the typical species, *P. podoceroides*, Dr. Grimm refers another form to the same genus under the name of *P. coeca*. But this form differs essentially both in the structure of the antennæ and gnathopoda, and cannot therefore in my opinion be regarded as congeneric. The specimens of the latter form contained in the collection of Dr. Grimm and taken from the very considerable depth of 108 fathoms, would all seem to be still immature.

22. **Pandorites podoceroides**, Grimm, MS.

(Pl. XIX).

Specific Characters. — Body rather slender, with evenly rounded back, and exhibiting in its outer appearance some resemblance to that in the

species of the genus *Podocerus*. Cephalon with the lateral lobes rather projecting and evenly rounded at the tip, postantennal corners produced to an acute point. Anterior pairs of coxal plates considerably deeper than the corresponding segments, and but sparingly setous; 1st pair much smaller than the others, and somewhat tapering distally; 4th pair rather broad, with the infero-posteal corners angularly produced. Last pair of epimeral plates of metasome almost rectangular. Urosome short and stout, with a few small hairs and spinules dorsally. Eyes of moderate size and oval in form, being placed just within the edges of the lateral lobes of the cephalon. Superior antennæ about twice the length of the cephalon, joints of the peduncle successively diminishing in size, flagellum nearly as long as the peduncle, accessory appendage comparatively small and 4-articulate. Inferior antennæ with the last 2 joints of the peduncle simple cylindric, flagellum about half the length of the peduncle. Anterior gnathopoda moderately strong and rather densely setous, propodos obpyriform, with the palm oblique and imperfectly defined below. Posterior gnathopoda much larger and rather elongated, with only scattered small bristles, basal joint subfusiform, the 3 succeeding ones comparatively small and narrow, propodos extremely large and gradually expanded distally, palm obliquely arcuate and defined below by a very slight angle, dactylus long and falciform. The 2 anterior pairs of pereopoda of moderate size and rather densely setous; the 3 posterior pairs slightly increasing in length and comparatively strongly built, basal joint of last pair large and lamellar, its posterior expansion terminating below in a broadly rounded lobe, and having the edge smooth. Last pair of uropoda extremely small, outer ramus scarcely longer than the basal part and having the terminal joint quite rudimentary, inner ramus scale-like, with a single apical seta. Telson small, lateral lobes not diverging, each with a single apical spine. Length of adult female 11 mm., of male 13 mm.

Remarks. — This is the only as yet known species of the genus, the form named by Dr. Grimm *Pandora coeca* being, as above stated, not congeneric.

Description of the female. — The length of fully adult, ovigerous specimens is about 11 mm.

The form of the body (see fig. 1) is somewhat slender and scarcely at all compressed, the back being broadly rounded and quite smooth throughout. On the whole it bears an unmistakable resemblance to that in some species of the genus *Podocerus*, or rather *Ischyrocerus*; hence the specific name proposed by Dr. Grimm.

The cephalon is not fully so long as the first 2 segments of the mesosome combined, and forms (see fig. 2) a slight angular projection in front.

The lateral lobes considerably project between the bases of the 2 pairs of antennæ, and are quite evenly rounded at the tip. The postantennal corners are produced to an acuminate, anteriorly curving process.

The anterior pairs of coxal plates are considerably deeper than the corresponding segments, and are, excepting the 1st pair, but very sparingly setous at the distal edge. The 1st pair (see fig. 12) are much smaller than the others and somewhat tapered distally, with the tip obliquely rounded and fringed with a number of rather elongated setæ. The 2 succeeding pairs (see figs. 13, 14) are comparatively broad, and subrhomboidal in shape, with the terminal edge obtusely rounded. The 4th pair (see fig. 16) are still somewhat broader and but very slightly emarginated posteriorly, with the posterior expansion not, as usual, truncated, but terminating in a single angular corner.

The 3 posterior pairs of coxal plates successively decrease in size, the antepenultimate pair (see fig. 17) being considerably larger than the other 2, though not nearly so deep as the anterior pairs

The epimeral plates of the metasome are of moderate size and perfectly smooth. The 1st pair, as usual, exhibit a rounded form, whereas the 2 succeeding pairs are almost rectangular.

The urosome is comparatively short and stout, with a few small hairs and spinules dorsally.

The eyes (see fig. 2) have a somewhat unusual position, being placed close to the edges of the lateral lobes of the cephalon, and also by this character the present form acquires some habitual resemblance to the species of the genus *Podocerus*. They are of moderate size and oval in form, with the visual elements well developed and the pigment of a dark hue.

The superior antennæ (fig. 3) are rather slender, but not very much elongated, scarcely exceeding twice the length of the cephalon. The 1st joint of the peduncle is much the largest, being fully as long as the other 2 combined, and, like the latter, is provided at the end with slender bristles. The 3rd joint is rather small, about half the length of the 2nd. The flagellum is nearly as long as the peduncle, and composed of 7 articulations. The accessory appendage is rather small, being about $\frac{1}{3}$ as long as the flagellum, and 4-articulate.

The inferior antennæ (fig. 4) are about the length of the superior, and of quite normal structure, being, as the latter, clothed with scattered fascicles of slender bristles. The 2 outer joints of the peduncle are simple cylindrical, and successively diminish both in length and breadth. The flagellum does not attain the length of those joints combined, and is composed of 5 rather slender articulations.

The oral parts (figs. 5—11) are of quite normal structure, and need not therefore be described in detail.

The anterior gnathopoda (fig. 12) likewise exhibit quite a normal appearance, being moderately strong and rather densely setiferous. The propodos is somewhat tumid, and of an ovate, or rather obpyriform shape, with the palm not defined below by any distinct angle, but carrying at the junction with the hind margin the usual spines.

The posterior gnathopoda (fig. 13), on the other hand, are quite unlike the anterior, and of a rather peculiar structure, strongly reminding of that characteristic of the genus *Gammaracanthus*. They are much larger than the anterior ones and considerably elongated, being also much less densely setiferous. The basal joint is large and dilated on the middle, exhibiting a somewhat fusiform shape, and is filled with strong muscles moving the outer part of the leg. The 3 succeeding joints are comparatively small and narrow, the carpal one being produced below to a short and narrow setiferous lobe. The propodos is exceedingly large, and gradually expands distally, acquiring thereby a somewhat flattened shape. The palm is longer than the hind margin and obliquely curved, its edge being sharpened and fringed with a regular row of small bristles. The defining angle is very slight, and is (see fig. 14) armed with 3 comparatively short spines, behind which there are 2 or 3 fascicles of comparatively short bristles. Inside the angle, as in most other Gammaridæ, 2 juxtaposed spines occur, the outer of which is exceedingly slender and elongated. Between these 2 spines and those of the defining angle the tip of the slender, falciform claw is received when impinged.

The anterior pairs of pereiopoda (figs. 15, 16) do not exhibit any essential peculiarity in their structure. They are rather densely setous and somewhat unequal in size, the 1st pair (fig. 15) being the larger.

The 3 posterior pairs of pereiopoda (figs. 17—19) are comparatively strongly built and not much elongated, being provided in their outer part with fascicles of slender bristles. The antepenultimate pair (fig. 17) are, as usual, somewhat shorter than the other 2, and have the basal joint oval quadrangular in form, with the anterior edge slightly curved and throughout provided with fascicles of slender bristles. The basal joint of the penultimate pair (fig. 18) is more elongated and somewhat narrowed distally, with 4 fascicles of bristles on the outer part of the anterior edge. The last pair (fig. 19) are distinguished by the large size of the basal joint, which forms posteriorly a broad lamellar expansion terminating below in a rounded lobe. The edges of the expansion are obscurely serrate, but without any trace of bristles. On the other hand the anterior edge of this joint is very densely setiferous in its outer part.

The 2 anterior pairs of uropoda (figs. 20, 21) are comparatively strongly built, with the rami subequal and armed at the tip with blunt spines. In the 1st pair (fig. 20) each of the rami has besides a lateral spine, whereas in the 2nd pair (fig. 21) this is only the case with the inner ramus.

The last pair of uropoda (fig. 22) are extremely small, reaching but little beyond the others. The outer ramus is scarcely longer than the basal part, and has one lateral and 2 apical spines, but no lateral setæ. The terminal joint of this ramus is so very minute as easily to escape attention, forming only a diminutive nodule tipped with a few hair-like bristles. The inner ramus is of the usual scale-like character and provided with a single apical bristle.

The telson (fig. 23) is likewise unusually small, scarcely reaching beyond the basal part of the last pair of uropoda. It is divided by a deep and narrow cleft into 2 halves, each of which carries on the somewhat truncated tip a single spine accompanied by a small hair.

The adult male (fig. 24) is somewhat larger than the female, attaining a length of about 13 mm., and has the metasome somewhat more fully developed, but is otherwise of a very similar appearance. In the structure of the antennæ, no other difference is to be found than that the flagella have a somewhat greater number of articulations. Also the gnathopoda exhibit a structure very similar to that in the female, though the posterior ones appear somewhat larger.

Occurrence. — Of this interesting form a few specimens were collected by Mr. Warpachowsky at Stat. 63, in the eastern part of the North Caspian Sea.

The collection of Dr. Grimm contains solitary specimens, derived from 4 different Stations, one of which is located in the southern part, the other 3 in the middle part of the Caspian Sea, the depth ranging from 7 to 48 fathoms.

Fam. COROPHIIDÆ.

Gen. *Corophium*, Latr.

Remarks. — This genus, as is well known, has hitherto been regarded as exclusively marine, no species having ever been found in fresh water; and even in brackish water it is rather seldom to meet with these peculiar Amphipods, which on the whole would seem to be restricted to the open Ocean coasts, where the water is very salt. From the Black Sea only 3 species are recorded by Mr. Sowinsky, and one of these, described as

C. longicorne var. *levicorne*, is evidently not at all a *Corophium*, but a true *Siphonoecetes*. The remaining 2 species are *C. Bonelli* Edw. and *C. crassicornae* Bruzel., both known also from the European coasts, and it is most probable, that the form recorded by Dr. Marcusen as *C. bidentatum* is identical with the last named species, in which case only 2 species are met with in the Black Sea. It was therefore rather unexpected to find this genus very abundantly represented in the Caspian Sea, both as to species and individuals. On a closer examination of the rich material of *Corophians* collected by Mr. Warpachowsky, I have been enabled to distinguish no less than 6 different species, all of which are new to science, exhibiting well marked differences from those earlier known. It will be shown below that the species are rather easily distinguishable especially by the structure of the inferior antennæ, those of the male sex particularly exhibiting the distinguishing characters very clearly pronounced. The *Corophians* are known to be chiefly littoral and sublittoral in their occurrence, living partly among algæ, partly at muddy bottom, and in both cases constructing for themselves abodes of mud or other material for dwelling in. The same habits are also to be stated for the Caspian species, and their muddy tubes are often found together with the specimens, in several cases containing within them the animal in its original position.

23. *Corophium nobile*, G. O. Sars, n. sp.

(Pl. XX and XXI).

Specific Characters. — Cephalon angularly produced between the bases of the superior antennæ, lateral corners narrowly rounded. First pair of coxal plates densely clothed with slender, partly ciliated setæ. All the segments of urosome distinctly defined. Superior antennæ very slender and elongated, exceeding in male half the length of the body; peduncle, especially in the male, densely setiferous, its 1st joint having in both sexes 2 distant spines on the lower edge, flagellum in male exceeding the length of the peduncle. Inferior antennæ in male very strongly developed, equalling in length about $\frac{3}{4}$ of the body, penultimate joint of the peduncle rather large and tumid, being produced at the end posteriorly to 2 somewhat diverging unguiform projections, the outer of which is the larger, last joint somewhat shorter than the penultimate one, and having above the middle a short spiniform prominence, but no spine at the end. Inferior antennæ in female much less strong than in male, but of a similar structure, though the projections of the penultimate peduncular joint are smaller and less divergent. Gnathopoda of the structure characteristic of the genus. Anterior pairs of pereopoda

comparatively slender, with the meral joint not much expanded, and in male densely clothed with slender bristles anteriorly. Last pair of pereiopoda very much elongated, exceeding half the length of the body, basal joint rather expanded and, as usual, provided on both edges with a double row of partly ciliated setæ, outer joints very slender and narrow. The 2 anterior pairs of uropoda strongly built and densely spinous; last pair small, with the terminal joint oval lamelliform and densely setiferous. Telson about twice as broad as it is long, and provided at the end above with 2 lamelliform crests, each divided into 4 recurved teeth, tip transversely truncate. Length of adult female 10 mm., of male 11 mm.

Remarks. — This is the largest and finest of the Caspian species, and is easily recognizable by the slender and elongated superior antennæ, and by the structure of the inferior ones. Moreover the comparatively slender form of the anterior pairs of pereiopoda may serve to easily distinguish this species from the other Caspian forms.

Description. — The length of adult, ovigerous females is about 10 mm., that of males 11 mm., and this form accordingly grows to a considerably larger size than any of the other known species.

The form of the body (see Pl. XX, figs. 1 and 2, Pl. XXI, fig. 1) is that characteristic of the genus, being subdepressed, with the back broadly vaulted, and the lateral parts of the segments extended horizontally. As seen from above (Pl. XXI, fig. 1), the body appears nearly of equal breadth throughout, exhibiting a somewhat linear form.

The cephalon is broad, subdepressed, and exceeds somewhat in length the first two segments of the mesosome combined. The frontal edge is (see Pl. XXI, fig. 1) angularly produced in the middle, and the lateral corners project as narrowly rounded lobes between the bases of the 2 pairs of antennæ. Behind these lobes the lateral edges of the cephalon form (see Pl. XX, figs. 1 and 2) a broad emargination encircling the base of the inferior antennæ.

The coxal plates are, as in the other species of the genus, very small and scale-like. The 1st pair (see Pl. XX, fig. 12) are, however, somewhat more fully developed, being produced anteriorly to a narrowly rounded lobe clothed with numerous slender, anteriorly curving setæ, some of which are finely ciliated. The 3 posterior pairs are slightly bilobed, with the anterior lobe the larger.

The epimeral plates of the metasome are rather shallow, and all of them obtusely rounded at the lateral corners, their edges being densely fringed with ciliated bristles. Those of the last pair are much larger than the others in accordance with the greater development of the corresponding segment.

The urosome (Pl. XXI, fig. 9) is short and stout, much depressed, and divided into 3 distinctly defined segments rapidly diminishing in size.

The eyes are small, rounded, and located at the bases of the lateral lobes of the cephalon. The ocular pigment is of a dark hue, but the visual elements would seem to be less perfectly developed.

The superior antennæ (Pl. XX, fig. 3, Pl. XXI, fig. 2) are very slender, and somewhat more elongated in the male than in the female, considerably exceeding half the length of the body in the former. The peduncle is densely setiferous, especially in the male, and, as usual, is composed of 3 distinctly defined joints, the 1st of which is much the largest, though not fully so long as the other 2 combined. In both sexes this joint is armed on the lower edge with 2 distant spines. The 3rd joint is scarcely more than half as long as the 2nd and very narrow. The flagellum is extremely slender, filiform, equaling in the female about the peduncle in length, in the male considerably longer, and divided into about 20 short articulations.

The inferior antennæ (Pl. XX, fig. 4, Pl. XXI, fig. 3) are in both sexes subpediform, but much larger in the male than in the female, exceeding in the former $\frac{3}{4}$ of the length of the body. The peduncle is only composed of 4 joints, the first 2 being fused together. The penultimate joint is much the largest, and especially in the male very much tumefied, exhibiting a somewhat fusiform shape. It is in both sexes produced at the end posteriorly to 2 strong unguiform projections, the outer of which is the larger. These projections are, however, much coarser and more divergent in the male than in the female (comp. Pl. XX, fig. 4 and Pl. XXI, fig. 3). The last peduncular joint, which is very movably articulated to the penultimate one, is somewhat shorter than the latter and much narrower, being sublinear in form. It is, like the preceding joints, provided inside with fascicles of slender bristles, and has the posterior edge produced above the middle to a short and stout, somewhat recurved projection, which is received between the projections of the preceding joint, when the outer part of the antenna is bent in against the inner. The flagellum is not fully so long as the last peduncular joint, and is composed of 3 articulations, the last 2 of which, however, are very small. It is densely clothed on both edges with fascicles of slender bristles. At the tip it has a dense brush of very delicate bristles, between which, on close examination, 2 short curved hooks are found to project, both issuing from the extremely small terminal joint (see Pl. XXI, fig. 4).

The buccal area (see Pl. XX, figs. 1 and 2) is not much protuberant, and partly covered by the 1st pair of coxal plates. The oral parts, though exactly agreeing with those in the other species of the genus, may here be

described in detail, as they in some points differ rather markedly from those in the *Gammaridæ*.

The anterior lip (Pl. XX, fig. 5) is broadly quadrangular in form, with a dentiform projection in front. The terminal edge is very slightly emarginated and finely ciliated.

The posterior lip (fig. 6) is rather large, with distinctly developed inner lobes. The outer lobes are narrowly rounded at the tip, which is edged with delicate cilia, and project outside to a narrow lappet.

The mandibles (figs. 7, 8) are short and stout, with a well-developed molar expansion. The cutting edge is in both mandibles divided into 2 superposed lamellæ, the outer of which is distinctly dentated, whereas the inner is very narrow, spiniform, especially on the right mandible. Behind the cutting edge there occur on the left mandible 3, on the right only 2 ciliated spines. The palp (see fig. 7) is very small, and composed of only 2 joints of about equal length, and generally forming together a strong geniculate bend. The 1st joint has at the end a single spiniform seta, and a similar, though somewhat more slender seta issues from the tip of the very narrow, conically tapering terminal joint.

The 1st pair of maxillæ (fig. 9) would seem wholly to want the basala lobe. The masticatory lobe is narrowly truncated at the end, which carries several slender spines. The palp is well developed and biarticulate, with the terminal joint somewhat expanded distally and armed at the tip with a number of small spines.

The 2nd pair of maxillæ (fig. 10) are rather fully developed, being scarcely smaller than the 1st pair. The inner lobe is somewhat curved and narrowed distally, having at the tip a dense clothing of small spines and along the inner edge a regular row of slender, ciliated setæ. The outer lobe is considerably larger than the inner and somewhat expanded distally, with a dense brush of slender spines on the obtusely truncated tip.

The maxillipeds (fig. 11) exhibit all the pertaining parts well developed. The basal lobes are of a somewhat unusual form, being conically tapered distally, and having along the inner edge a row of slender curved setæ. The masticatory lobes are very much elongated, narrow linguiform in shape, and fringed along the inner edge with numerous very delicate bristles. The palps are slender, and rather densely setiferous, with the joints somewhat laminar. The last joint is comparatively small and narrow, and the dactylus is extremely minute, knob-shaped, and setous at the tip.

The anterior gnathopoda (fig. 12) are comparatively slender and feeble in structure. The basal joint is rather narrow, though gradually somewhat widening distally. The ischial joint is short and thick, and carries below a

dense transverse row of very slender anteriorly curving setæ. The meral joint is so very minute as easily to escape attention. The carpus, on the other hand, is very large and compressed, almost fusiform in outline, and is very densely setiferous, especially on the lower edge. The propodos is somewhat shorter than the carpus, slightly curved, and rather narrow, though gradually widening distally, being densely clothed anteriorly with slender bristles, partly arranged in transverse rows. The palm is very short and transverse, being defined below by a distinctly projecting corner; its edge is minutely spinulose. The dactylus is comparatively slender, and extends considerably beyond the defining corner of the palm, when closed.

The posterior gnathopoda (fig. 13) are more strongly built than the anterior, and of a very different structure. The basal joint is rather thick and not much elongated, being firmly connected with the extremely short, nearly band-shaped ischial joint. The meral joint is peculiarly developed, being produced along the lower side of the carpus to a broad, lamellar expansion, which is firmly connected to the latter, though defined by a distinct suture. The expansion, which extends until the end of the carpus, is fringed with a double row of exceedingly long and slender setæ, which are finely ciliated and curved anteriorly, forming together a broad fan. The propodos is very narrow and elongated, sublinear in form, and clothed on both edges with fascicles of slender bristles. It projects at the end below the dactylus to an acute corner; but no distinct palm is present. The dactylus is slender and curved, being armed on the concave edge with 4 strong secondary denticles.

The 2 anterior pairs of pereopoda (Pl. XXI, fig. 5) are exactly alike both in size and structure, and are rather slender, compared with those in the other species. The basal joint is slightly expanded and, as in the other species, contains a glandular mass, which probably serves to secrete a viscid fluid to be used for constructing the dwelling tubes. The meral joint is about the length of the last 2 combined, and is not much expanded, terminating at the end anteriorly in an obtuse corner. Anteriorly this joint is in the male clothed with slender diverging bristles, forming a very dense brush. The propodal joint is very narrow and conically tapering, with scattered small bristles on the edge and at the tip. The dactylus is about the length of that joint and very slender, terminating in a sharp point.

The 2 succeeding pairs of pereopoda (figs. 6 and 7) are comparatively short and stout, and of essentially the same structure, though somewhat unequal in size, the antepenultimate pair (fig. 6) being considerably shorter than the penultimate one (fig. 7). In both pairs the basal joint is rather expanded and of an oval fusiform shape, but in the antepenultimate pair its

posterior edge is nearly straight and perfectly smooth, whereas in the penultimate pair it is arched and fringed with a number of ciliated setæ. The meral joint gradually widens distally and is obliquely truncated at the end, with the anterior corner more prominent than the posterior. The carpal joint is considerably smaller, and likewise obliquely truncated at the end, but in an inverted manner, the posterior corner being the more prominent. On the outer side of this joint there are 2 oblique rows of strong curved spines, the lower row, terminating at the posterior corner, containing 6 spines successively increasing in length distally. The propodal joint is very narrow, sublinear, and much longer than the carpal one. The dactylus is comparatively short and strongly curved, being more or less extended outwards, for which reason it often appears inverted. Both those pairs of legs are generally found to be strongly reflexed, with their outer part extended laterally (see fig. 1), and it is most likely that they are of essential service in affixing the animal within its tube.

The last pair of pereiopoda (fig. 8) exhibit an appearance very different from that in the 2 preceding pairs. They are very slender and elongated, considerably exceeding half the length of the body, and are generally extended straight backwards. The basal joint is lamellarly expanded and broadly oval in form, though somewhat tapering distally. It is fringed on both edges with numerous slender plumose setæ, arranged in a double row, those of the anterior edge being generally curved downwards. The outer joints are very narrow and increase somewhat in length, the propodal one being the longest. They are clothed with fascicles of slender bristles, those issuing from the end of the joints being particularly elongated. The dactylus is of moderate length, somewhat curved, and terminates in a very acute point.

The branchial lamellæ (see fig. 5 and 6) are simple, oblong oval in form, and only present at the base of the 4 anterior pairs of pereiopoda.

The incubatory lamellæ (see Pl. XX, fig. 1 and 13) are present at the base of all the legs, except the anterior gnathopoda and the last pair of pereiopoda. They are narrow linguiform in shape so as not to fit together with their edges. As they, however, are all round fringed with strong incurved setæ, the ova in the marsupial pouch are by these means securedly kept in place.

The pleopoda (Pl. XX, fig. 14) are distinguished by the unusual development of the basal part, which is produced inside to a very large and broad, sublaminar expansion, into which a bundle of strong muscular fibres are seen to pass. Inside the obtuse tip of this expansion 2 peculiarly constructed spines are found to be secured, being placed close together and

provided with small recurved hooks (see fig. 15). By the aid of these spines, which meet the corresponding ones on the adjacent pleopod, both are bound together, so as only to be admitted to move simultaneously. The rami, which issue close together from the outer corner of the basal part, are turned obliquely inwards, and are divided into numerous short articulations, each carrying a pair of long natatory setæ.

The 2 anterior pairs of uropoda (Pl. XX, figs. 9, 10, 11) are essentially of the same structure, though rather different in size, the 1st pair being much the larger. They are rather strongly built, with both the basal part and the rami coarsely spinous. In the 1st pair (fig. 10) the basal part is nearly twice as long as the rami, and armed in the distal part of the inner edge with 4 very strong spines, the outer edge being minutely spinulose throughout. The rami are subequal and narrowly rounded at the tip, each carrying from 17 to 18 spines, which are more densely crowded on the outer edge, those issuing from the tip being longer than the others. In the 2nd pair (fig. 11) the basal part is but little longer than the rami, and, like the latter, has a smaller number of spines.

The last pair of uropoda (fig. 12) are very unlike the preceding ones, and rather small, scarcely reaching beyond the basal part of the 2nd pair. They are simple, not biramous, being composed of 2 joints of about equal size, the latter of which is somewhat lamellar and oval in form, being clothed at the obtusely rounded tip with a dense brush of slender bristles.

The telson (fig. 13) is nearly twice as broad as it is long, and somewhat narrowed distally. The tip is entire and almost transversely truncated, being flanked on each side by a projecting vertical crest, which is divided into 4 small recurved teeth, best seen in a lateral view of the animal (see fig. 14). No doubt, this peculiar structure of the telson, which seems to be common to all the species of the genus, may stand in some connexion with the tubicolous nature of the animal, serving in all probability to affix the animal within its tube.

Colour. — As in most other species, the body is ornamented with a dark brown pigment, which is pretty well observable even in specimens for a long time preserved in spirit. This pigment is (see Pl. XX, figs. 1 and 2, Pl. XXI, fig. 1) chiefly restricted to the dorsal face of the animal, forming on the cephalon a distinctly defined dark longitudinal band, which expands in front so as nearly to occupy the whole breadth of the cephalon (see Pl. XXI, fig. 1). On the mesosome the pigment forms in each segment 2 more or less distinct transverse bands, which are confluent in the middle of the dorsal face. In the metasome and urosome the pigment is generally more irregularly distributed. Moreover, some of the appendages of the body are more or less

distinctly pigmented; and especially the inferior antennæ in the male show a rather peculiar arrangement of the pigment, as shown in fig. 2 on Pl. XX and fig. 1 on Pl. XXI.

Occurrence. — This pretty species has been collected by Mr. Warpachowsky in 9 different Stations of the North Caspian Sea, though in none of them occurring in any considerable number. Of the Stations 6 (St. 17, 23, 24, 26, 52, 53) are distributed in the tract north of the peninsula Mangy-schlak, the other 3 (St. 61, 63, 64) in the northern and eastern part of the basin.

In the collection of Dr. Grimm this species is also represented, having been collected in several places both of the southern and middle part of the Caspian Sea, at a depth ranging from 6 to 40 fathoms.

24. *Corophium chelicorne*, G. O. Sars, n. sp.

(Pl. XXII).

Specific Characters. — Frontal edge of cephalon not produced in the middle, lateral lobes narrowly rounded. First pair of coxal plates with only 3 slender bristles at the tip. The last 2 segments of urosome less distinctly defined. Superior antennæ but sparingly setous, and in female scarcely exceeding $\frac{1}{3}$ of the length of the body, 1st joint of the peduncle about the length of the other 2 combined, and in female armed below with about 7 spinules, in male without any such spinules, 2nd joint in male considerably longer than in female, flagellum in both sexes shorter than the peduncle. Inferior antennæ very strongly built, especially in the male, penultimate joint of the peduncle exceedingly large and produced at the end posteriorly to a very prominent, acuminate, thumb-like projection having inside a small secondary tooth; last peduncular joint scarcely more than half as long as the preceding one, and armed below the middle with a short recurved projection, being moreover produced at the end to a strong spiniform process, which crosses the end of the thumb-like projection when the joint is incurved, thereby giving these antennæ a pronounced cheliform character; flagellum about the length of the last peduncular joint, and of the usual structure. Gnathopoda scarcely differing in their structure from those in the preceding species. Anterior pairs of pereiopoda somewhat stronger, but rather much elongated, with the meral joint longer than the last 2 combined, and gradually widening distally, anterior edge scarcely setous. Last pair of pereiopoda somewhat shorter and less slender than in the preceding species, otherwise of a very similar appearance. The 2 anterior pairs of uropoda with the rami spinous only at the tip and the outer edge. Last pair

of uropoda and telson nearly as in *C. nobile*. Length of adult female 7 mm., of male 8 mm.

Remarks. — The present species is easily recognizable by the peculiar structure of the inferior antennæ, which exhibit, as it were, a cheliform character, on account of the great development of the projection issuing from the penultimate joint of the peduncle, which forms a sort of thumb, against which another spiniform process originating from the last peduncular joint, admits of being impinged; hence the specific name.

Description. — The length of fully adult ovigerous females is about 7 mm., that of males 8 mm., and this species is accordingly somewhat inferior in size to the preceding one.

The form of the body (see figs. 1 and 5) appears on the whole somewhat less slender than in *C. nobile*, but is otherwise rather similar.

The cephalon is about the length of the first 2 segments of the mesosome combined, and has the frontal edge not at all produced in the middle being only slightly arcuate (see fig. 2). The lateral lobes are narrowly rounded and not very prominent.

The coxal plates are of exactly the same shape as in the preceding species, but the 1st pair (see fig. 8) have only 3 slender bristles on the tip and a few small hairs on the anterior edge.

The epimeral plates of the metasome likewise agree with those in the said species.

The urosome (fig. 14) exhibits the usual short, flattened form, and has the 1st segment very distinctly defined. On the other hand is the line of demarcation between the 2 other segments far less distinct, though they are not perfectly fused together, as is the case in some other known species.

The eyes are very small and rounded, with dark pigment.

The superior antennæ are (see figs. 1 and 5) comparatively shorter than in the preceding species, and in the female scarcely exceed $\frac{1}{3}$ of the length of the body. In the male they are, as usual, somewhat more elongated, though not nearly to such an extent as in the male of *C. nobile*. They are in both sexes but sparingly supplied with bristles, and have the 1st joint of the peduncle about as long as the other 2 combined. In the female this joint (see fig. 3) is armed below with several acute spinules, generally 7 in number, whereas in the male (see fig. 6) no trace of such spinules are found. In the latter the 2nd peduncular joint is considerably more elongated than in the female, being more than twice as long as the 3rd. The flagellum is in both sexes shorter than the peduncle, and is composed in the female of 10, in the male of 15 articulations.

The inferior antennæ (figs. 4 and 7) are in both sexes very strongly built, though, as usual, much larger in the male than in the female, equaling in the former $\frac{2}{3}$ of the length of the body. The penultimate joint of the peduncle is exceedingly large and tumid, and is produced at the end posteriorly to a very prominent, thumb-like projection terminating in an acuminate point, and having inside a well marked secondary tooth. This projection is comparatively more strongly developed in the male than in the female (comp. figs. 4 and 7), but in both sexes extend until the end of the last peduncular joint. The latter exhibits the usual cylindric shape, and is scarcely more than half as long as the penultimate joint. It has inside, somewhat below the middle, a short and stout recurved prominence, and is moreover produced at the end to a strong spiniform process. When the joint is bent in, this process crosses the tip of the thumb-like projection of the preceding joint, whereby the antenna acquires a pronounced cheliform character (see fig. 17). The flagellum is about the length of the last peduncular joint, and of same structure as in the preceding species.

The gnathopoda (figs. 8—9) agree nearly exactly in their structure with those in the said species, and need not therefore be described in detail.

The 2 anterior pairs of pereopoda (fig. 10) appear somewhat more strongly built, though they are rather elongated. The meral joint is somewhat longer than the last 2 combined, and gradually expands distally, terminating in front in an obtuse, setiferous prominence. The anterior edge of this joint is in both sexes nearly quite smooth. The carpal joint is rather short, and the propodal one less slender than in *C. nobile*. The dactylus is not fully so long as the propodal joint, and very acute.

The 2 succeeding pairs of pereopoda (figs. 11, 12) do not exhibit any essential difference from those in the preceding species.

The last pair of pereopoda (fig. 13) are likewise of a very similar structure, though being perhaps not quite so slender as in *C. nobile*. Of the outer joints, the propodal one is particularly elongated, being nearly twice as long as the carpal one.

The uropoda (see fig. 14) agree on the whole with those in the preceding species, except that the rami of the 2 anterior pairs are spinous only at the tip and the outer edge.

The telson (*ibid.*) would likewise seem to be constructed in the same manner as in that species.

Also the pigmentation of the body resembles that observed in *C. nobile*.

Occurrence. — This species has been collected by Mr. Warpachowsky at no less than 10 different Stations of the North Caspian Sea. Of the Stations one (St. 6) is located near the western coast, at the entrance of the Bai Agra-

chansky, 3 others (St. 53, 54, 56) north and west of the island Kulaly, the remaining 6 Stations (St. 61, 63, 64, 66, 69, 86) in the eastern part of the basin. At two of the Stations (St. 63 and 69) it occurred in great abundance.

The species is also rather abundantly represented in the collection of Dr. Grimm, having been collected in several localities both of the southern and middle part of the Caspian Sea, the depth ranging from 6 to 44 fathoms.

25. *Corophium curvispinum*, G. O. Sars, n. sp.

(Pl. XIII, fig. 1—9).

Specific Characters. — Frontal edge of cephalon slightly angular in the middle, lateral lobes rather prominent and narrowly rounded. First pair of coxal plates with 3 slender bristles at the tip. Urosome with the 2 outer segments less distinctly defined. Superior antennæ in female comparatively short, not attaining $\frac{1}{3}$ of the length of the body, and but sparingly setous, 1st joint of the peduncle with 4—5 spinules below, flagellum shorter than the peduncle; those in male much more fully developed, and having the peduncle densely setiferous below, its 2nd joint much elongated, being fully as long as the 1st, flagellum scarcely exceeding the length of the 2 outer peduncular joints combined. Inferior antennæ much larger in male than in female, attaining in the former almost the whole length of the body, penultimate joint of the peduncle gradually widening distally, and produced at the end posteriorly to a strongly incurved spiniform projection, at the base of which is a short, slightly bilobed expansion; last peduncular joint nearly as long as the penultimate one, and having near the base inside a short recurved prominence, but no spine at the end; flagellum shorter than the last peduncular joint. The 2 anterior pairs of pereopoda comparatively short and stout, with the meral joint much expanded. Last pair of pereopoda moderately slender and of the usual structure. Uropoda and telson nearly as in *C. chelicorne*. Length of adult female 6 mm., of male 7 mm.

Remarks. — As in the other species, the most prominent distinguishing character is also in this form the structure of the inferior antennæ, which is rather peculiar, and, as usual, more pronounced in the male than in the female. Moreover the structure of the superior antennæ in the male and that of the 2 anterior pairs of pereopoda will serve to easily distinguish this species from any of the 2 preceding ones.

Description. — The length of fully adult, ovigerous females does not exceed 6 mm., that of males being about 7 mm., and this form accordingly is still somewhat smaller than *C. chelicorne*.

The form of the body (see fig. 1) is on the whole much like that in the 2 preceding species, though perhaps a little more slender than in *C. chelicorne*.

The cephalon about equals in length the first 2 segments of the mesosome combined, and has the frontal edge slightly angular in the middle. The lateral lobes are rather prominent, and narrowly rounded at the tip.

The coxal and epimeral plates do not differ essentially from those in *C. chelicorne*, and the urosome (fig. 8) exhibits likewise a similar appearance to that in the said species, the last 2 segments being less sharply defined.

The eyes are small, and, as usual, placed at the bases of the lateral lobes of the cephalon.

The superior antennæ are rather different in the two sexes. In the female they are (fig. 2) comparatively short, scarcely attaining $\frac{1}{3}$ of the length of the body, and are rather sparingly setous. The 1st joint of the peduncle is about the length of the other 2 combined, and is armed below with 4—5 small spinules. The 2nd joint has a similar spinule in the middle of the posterior edge. The flagellum is shorter than the peduncle, and composed of about 9 articulations. In the male these antennæ (see figs. 1 and 4) are much more fully developed, and have the peduncle densely clothed with fascicles of slender bristles. The 2nd peduncular joint is considerably elongated, fully equalling in length the 1st one, but is, as usual, much narrower. The flagellum scarcely exceeds in length the last 2 peduncular joints combined, and is composed of about 12 articulations.

The inferior antennæ likewise exhibit a rather different appearance in the two sexes, being in the male (see fig. 1) much more fully developed than in the female (fig. 3), attaining in the former almost the length of the whole body. The penultimate joint of the peduncle gradually widens distally, and is produced at the end posteriorly (see fig. 5) into a strongly incurved spini-form projection, at the base of which is a small, slightly bilobed expansion. The last peduncular joint is rather elongated, being nearly as long as the penultimate one, but, as usual, much narrower, and of simple cylindric form. It is armed, at a short distance from the base inside, with a stout recurved prominence, but it has no spine at the end. The flagellum is shorter than the last peduncular joint, and exhibits the usual structure.

The gnathopoda scarcely differ in their structure from those in the 2 preceding species.

The 2 anterior pairs of pereopoda (fig. 6) are, on the other hand, considerably shorter and stouter, with some of the joints lamellarly expanded. The basal joint is rather broad, with the anterior edge curved and fringed with about 10 slender setæ. The meral joint is considerably expanded,

being almost as broad as it is long, and is setous on both edges. The last 2 joints are comparatively short, and the dactylus is fully as long as the propodal joint.

The last pair of pereopoda (fig. 7) exhibit the usual slender form, and are about half as long as the body.

The 2 anterior pairs of uropoda (see fig. 8) are rather short and stout, especially the 2nd pair (fig. 9), and the rami have a smaller number of spines than in the 2 preceding species.

The last pair of uropoda (see fig. 8) are somewhat narrower than in those species; otherwise of a very similar appearance. This is also the case with the telson.

The pigment of the body is arranged in a manner similar to that found in the 2 preceding species.

Occurrence. — This species, as the preceding one, has been collected by Mr. Warpachowsky at no less than 10 different Stations of the North Caspian Sea. Of these Stations, 2 (St. 2 and 50) are located in the western part of the basin, off the Tschisty Bank, another (St. 21) at the point of the peninsula Mangyschlak, 4 others (St. 16, 17, 27, 52) in the neighbourhood of the islands Kulaly and Morskoy, and the remaining 3 (St. 32, 55, 56) between these islands and the opposite western coast. At Station 32 and 55 the species occurred rather plentifully.

The species is also represented in the collection of Dr. Grimm, having been taken in the Bays of Baku and Schachowaja from the shore to 5 fathoms. Moreover, numerous specimens of a *Corophium*, extracted from the intestine of an *Accipenser stellatus* and preserved in the same collection, have, on a closer examination, turned out to belong exclusively to this species.

26. *Corophium robustum*¹⁾, G. O. Sars, n. sp.

(Pl. XXIII, figs. 10—16).

Specific Characters. — Body rather robust, with broad flattened back. Frontal edge of cephalon very slightly angulated in the middle, lateral lobes narrowly rounded. Coxal plates and urosome about as in the 2 preceding species. Superior antennæ in female comparatively short, not attaining $\frac{1}{3}$ of the length of the body, in male somewhat more elongated and having the peduncle densely clothed with bristles, 1st joint of the peduncle in female with 3 small spinules below, 2nd joint in both sexes shorter than

1) In the plate this species is named *C. bidentatum*; but as this name has been previously used by Dr. Marcusen for an apparently different species from the Black Sea, I have changed the name to *robustum*.

the 1st, flagellum not nearly attaining the length of the peduncle. Inferior antennæ in both sexes very strongly built, though, as usual, somewhat larger in male than in female; penultimate joint of the peduncle large and tumid, being produced at the end posteriorly to a moderately long and but slightly curved spiniform projection, at the base of which, as in *C. curvispinum*, there is a short bilobular expansion; last peduncular joint much shorter than the penultimate one, and having somewhat above the middle posteriorly a short recurved prominence, end of the joint produced to a strong spiniform process; flagellum shorter than the last peduncular joint. The 2 anterior pairs of pereopoda resemble those in *C. curvispinum*, though they are somewhat more elongated; meral joint rather much expanded and densely setiferous anteriorly. Last pair of pereopoda comparatively more elongated than in *C. curvispinum*, exceeding half the length of the body. Uropoda and telson nearly as in that species. Length of adult female 7 mm., of male 8 mm.

Remarks. — This species is nearly allied to the preceding one, though easily distinguishable by the more robust form of the body and by the structure of the 2 pairs of antennæ, the inferior of which are in both sexes very coarsely built, and have the last peduncular joint, as in *C. chelicorne*, produced to a spiniform process.

Description. — The length of adult, ovigerous females is about 7 mm., that of males 8 mm., and this form is accordingly somewhat larger than *C. curvispinum*, or about the size of *C. chelicorne*.

The form of the body (see fig. 10) is rather robust, with broad, flattened back.

The cephalon has the frontal edge but very slightly produced in the middle, forming an obtuse angle. The lateral lobes are moderately prominent and narrowly rounded at the tip.

The coxal and epimeral plates do not exhibit any difference from those in the 2 preceding spines.

The urosome (fig. 15) likewise agrees with that of the said species in having the last 2 segments less distinctly marked off from each other.

The eyes are small, but distinct, with dark pigment.

The superior antennæ are in the female comparatively short, not attaining $\frac{1}{3}$ of the length of the body, and have the 1st joint of the peduncle armed below with 3 distant spinules. In the male these antennæ (fig. 11) are, as usual, more fully developed, though not nearly so much elongated as in the male of *C. curvispinum*, and as in the latter, have the peduncle densely clothed with slender bristles. The 2nd joint is somewhat longer in the male than in the female, but in both sexes it is considerably shorter

than the 1st. The flagellum in none of the sexes attains the length of the peduncle, and is composed of about 12 articulations.

The inferior antennæ are less different in the two sexes than is the case in *C. curvispinum*, exhibiting in both of them a very robust structure. In the male, however, they are (see fig. 10), as usual, somewhat coarser than in the female, exceeding somewhat in length $\frac{2}{3}$ of the body. The penultimate joint of the peduncle is very large and tumid, nearly as long as the last joint and the flagellum combined, and is produced at the end posteriorly to a moderately long, and but slightly curved spiniform projection, at the base of which there is a small, slightly bilobed expansion, similar to that found in *C. curvispinum*. The last joint of the peduncle has somewhat above the middle posteriorly a short recurved prominence, and the end of the joint is produced to a strong spiniform process similar to that in *C. chelicorne*. The flagellum is comparatively short, scarcely equalling in length the last peduncular joint, and exhibits the usual structure.

The gnathopoda do not exhibit any peculiarity in their structure.

The 2 anterior pairs of pereopoda (fig. 13) on the whole resemble those in *C. curvispinum*, though they are somewhat more elongated. The basal joint is pronouncedly laminar and edged anteriorly with long setæ. The meral joint is about the length of the last 2 combined and rather broad, being in the male densely clothed with bristles anteriorly.

The last pair of pereopoda (fig. 14) appear somewhat more elongated than in *C. curvispinum*, considerably exceeding half the length of the body, but otherwise they exhibit a very similar structure.

Also the uropoda and the telson are but little different, though, on a closer comparison, small differences may be stated to exist. Thus in comparing the 2nd pair of uropoda (fig. 16) with those in *C. curvispinum* (fig. 9), the rami are found to be comparatively longer and also armed with a greater number of spines.

The pigmentation of the body is very distinct and of a darker hue than in the other species.

Occurrence. — Of this species only a few specimens were collected by Mr. Warpachowsky at Stat. 32, about midway between the peninsula Mangyschlak and the opposite western coast. Some other specimens were collected last summer at Stat. 83, probably located in the eastern part of the North Caspian Sea.

In the collection of Dr. Grimm the species is represented by rather numerous specimens, partly collected in the Bays of Baku and Schachowaja from shallow water, partly in the middle part of the Caspian Sea from depths ranging from 7 to 40 fathoms.

27. *Corophium mucronatum*, G. O. Sars, n. sp.

(Pl. XXIV, figs. 1—7).

Specific Characters. — Frontal edge of cephalon angularly produced in the middle, lateral lobes comparatively short. Superior antennæ of moderate length, and in both sexes but sparingly setous, 1st joint of the peduncle exceeding the other 2 combined, and having below 3 distant spinules, flagellum equalling in length the peduncle. Inferior antennæ in male rather strong, with the penultimate joint considerably tumefied, subfusiform, and produced at the end posteriorly to a long mucroniform projection reaching beyond the middle of the last joint, and having at the base a small secondary tooth, last joint somewhat shorter than the penultimate one, and provided near the base posteriorly with a short recurved prominence, but without any spiniform process at the end. Anterior pairs of pereopoda moderately strong, meral joint rather much expanded distally, and clothed anteriorly with slender bristles. Last pair of pereopoda with the outer joints unusually broad, sublaminar. Uropoda and telson of the usual structure. Length of adult male 6 mm.

Remarks. — At first sight the present species somewhat resembles *C. chelicorne*, but is, on closer examination, easily distinguished by the very slender mucroniform projection of the penultimate peduncular joint of the inferior antennæ, and by the want of a spiniform process at the end of the last peduncular joint. Moreover, this species is very prominently distinguished by the structure of the last pair of pereopoda, the outer joints of which exhibit a quite unusual broad, sublaminar shape.

Description of the adult male. — The length of the body in an apparently full-grown specimen scarcely attains 6 mm., and this form is accordingly somewhat inferior in size to the preceding ones.

The form of the body (see fig. 1) is that characteristic of the genus, being on the whole not very slender.

The cephalon has the frontal edge (see fig. 2) considerably produced between the bases of the superior antennæ, forming in the middle an acute angle. The lateral lobes are comparatively short and narrowly rounded at the tip.

The coxal and epimeral plates exhibit the usual appearance.

The urosome (fig. 7), as in the 3 preceding species, has the line of demarcation between the last 2 segments less distinct than that between the 1st and 2nd.

The eyes are small, rounded, with dark pigment.

The superior antennæ (fig. 3) are rather elongated, considerably exceeding in length $\frac{1}{3}$ of the body, and are but sparingly setiferous. The 1st joint of the peduncle is a little longer than the other 2 combined, and has below 3 distant spinules. The flagellum about equals in length the peduncle, and is composed of 12 articulations.

The inferior antennæ (see figs. 1 and 4) are rather strongly built, though scarcely exceeding half the length of the body. The penultimate joint of the peduncle is considerably tumefied, almost fusiform in shape, and is produced at the end posteriorly to a very long and slender, mucroniform projection extending beyond the middle of the last joint, and having at the base a small secondary tooth. The last peduncular joint is somewhat shorter than the penultimate one, and, as usual, much narrower, being cylindric in form. It is armed near the base posteriorly with a short recurved prominence, but has not any spiniform process at the end. The flagellum is a little shorter than the last peduncular joint, and of the usual structure.

The gnathopoda do not exhibit any peculiarity whatever.

The 2 anterior pairs of pereopoda (fig. 5) are moderately strong, with the basal joint pronouncedly laminar, and the meral joint considerably expanded distally, its anterior edge being clothed with scattered slender bristles. The 2 outer joints are not very slender, and the dactylus is about the length of the propodal joint.

The last pair of pereopoda (fig. 6) are about half the length of the body, and are prominently distinguished by the unusual shape of the outer joints, which, instead of being linear, are rather broad and compressed, and edged with fascicles of delicate bristles.

The uropoda and telson (see fig. 7) do not differ much from those parts in the other species.

The pigmentation of the body is the usual one, though it is less conspicuous than in *C. robustum*.

Occurrence. — Of this species some specimens, chiefly of the male sex, were collected by Mr. Warpachowsky at Stat. 63, in the eastern part of the North Caspian Sea. Solitary specimens were, moreover, taken at 2 other Stations (St. 53 and 56) north and west of the island of Kulaly.

In the collection of Dr. Grimm there are a few badly preserved specimens, collected partly in the Bay of Baku, partly in the bay of Balchansky from comparatively shallow water.

28. *Corophium monodon*, G. O. Sars, n. sp.

(Pl. XXIV, figs. 8—16).

Specific Characters. — Body rather slender, especially in the male. Frontal edge of cephalon angularly produced in the middle, lateral lobes narrowly rounded. Urosome with all the segments well defined. Superior antennæ of moderate length, and not very different in the two sexes, though the peduncle in male appears somewhat more elongated and more densely setous, 1st joint of the peduncle in both sexes longer than the other 2 combined, and having at the end below a single spinule; flagellum in female about the length of the peduncle, in male somewhat shorter. Inferior antennæ in female rather small and feeble, scarcely longer than the superior ones, in male much more elongated, exceeding $\frac{2}{3}$ of the length of the body, penultimate joint of the peduncle long and slender, almost cylindrical in form, being produced at the end posteriorly to a narrow mucroniform projection not extending to the middle of the last joint, and having no secondary tooth at the base; last peduncular joint with only a very slight rudiment of a tooth near the base posteriorly; flagellum very short, scarcely exceeding half the length of the former joint. Anterior pairs of pereopoda somewhat more slender than in *C. mucronatum*, meral joint gradually widening distally, and provided anteriorly with scattered bristles. Last pair of pereopoda with the basal joint rather expanded, the outer joints, however, narrow and slender. Uropoda and telson of the usual structure. Length of adult female 4 mm., of male 5 mm.

Remarks. — Of all the Caspian species, this one would seem to come nearest to the typical species, *C. grossipes*, Lin. It is however evidently specifically distinct, differing, among other characters, in the much less strong development of the inferior antennæ, the penultimate peduncular joint of which is far less tumefied, and wants the deep sinus occurring in that species at the base of its terminal projection.

Description. — The length of fully adult, ovigerous females does not exceed 4 mm., that of the male being 5 mm., and this form accordingly is the smallest of the Caspian species, and in this respect is also rather inferior to the typical form, *C. grossipes*, Lin.

The form of the body (see fig. 8) is rather slender, especially in the male, otherwise of the usual appearance.

The cephalon has the frontal edge (see fig. 9) distinctly produced in the middle, forming an almost right angle. The lateral lobes are not very prominent and they are, as in the other Caspian species, narrowly rounded at the tip.

The coxal and epimeral plates are of the usual shape.

The urosome (fig. 15) has all the segments very distinctly defined, the line of demarcation between the last 2 segments being fully as sharply marked as that between the 1st and 2nd.

The eyes are comparatively larger than in the other species, and of a rounded form, with the pigment very dark.

The superior antennæ are in the female (see fig. 10) about $\frac{1}{3}$ of the length of the body, in the male, as usual, somewhat more elongated, though not nearly reaching half the length of the body. The peduncle is in the female but sparingly setous, whereas in the male (see figs. 8, 11) it is densely clothed below with slender bristles. In both sexes the 1st joint of the peduncle is considerably longer than the other 2 combined, and is armed below with a single spinule placed at the end of the joint. As in most other species, the 2nd peduncular joint is more elongated in the male than in the female (comp. fig. 10 and 11). The flagellum in the female about equals the peduncle in length, whereas in the male it is somewhat shorter. It is composed of from 10 to 12 articulations.

The inferior antennæ are in the female (see fig. 10) comparatively small and feeble, not even exceeding the superior ones in length. In the male (figs. 8 and 12) they are much more fully developed and rather slender, equalling about $\frac{2}{3}$ of the length of the body. The penultimate joint is scarcely at all dilated, being almost cylindric in form, and in the male nearly attains the length of the last peduncular joint and the flagellum combined. It is produced at the end posteriorly to a simple narrowly mucroniform projection, which does not nearly extend to the middle of the succeeding joint, and wholly wants any secondary tooth at the base. The last peduncular joint is in the female quite unarmed, whereas in the male there is a very slight rudiment of a dentiform prominence near the base posteriorly. The flagellum is comparatively very short, being in the male scarcely half as long as the last peduncular joint.

The gnathopoda exhibit the structure characteristic of the genus.

The 2 anterior pairs of pereopoda (fig. 13) are somewhat more slender than in the 3 preceding species, though they resemble on the whole those in *C. micronatum*. As in that species, the meral joint gradually widens distally, and is provided anteriorly with scattered slender setæ.

The last pair of pereopoda (fig. 14) are moderately elongated, equalling about half the length of the body. The basal joint is rather large and expanded, whereas the outer joints exhibit the slender narrow form found in most other species.

The 2 anterior pairs of uropoda (see figs. 15), are constructed in the usual manner, though the difference in size is somewhat more pronounced

in this than in most other species, the 2nd pair being very small as compared with the 1st.

The last pair of uropoda (fig. 16) have the terminal joint considerably narrower than the proximal one, and are only provided with a restricted number of bristles, between which a single apical spine is distinguished. In the typical species, *C. grossipes* Lin., this joint is much broader and lamelliform, without any spine.

The pigmentation of the body would seem to differ somewhat in different specimens, being as a rule restricted to the cephalon and the 6 anterior segments of the mesosome only, whereas the posterior part of the body appears almost devoid of pigment. On the antennæ the pigment has a similar arrangement as is found in most other species.

Occurrence. — Of this species numerous specimens were collected by Mr. Warpachowsky at Stat. 63, lying in the eastern part of the North Caspian Sea. Solitary specimens were moreover taken at Stat. 64, in the neighbourhood of the former and at Stat. 59, in the western part of the basin.

In the collection of Dr. Grimm this species is represented by a few, in most cases very badly preserved specimens, which, according to the labels, were collected partly in the South Caspian Sea, partly in the Bays of Murawjew and Krasnowodsk, the greatest depth being 40 fathoms.

Explanation of the Plates.

Pl. XVII.

Niphargoides corpulentus, G. O. Sars.

(Figs. 1—13).

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| Fig. 1. Adult male, viewed from left side. | Fig. 7. Antepenultimate pereopod. |
| » 2. Superior antenna. | » 8. Penultimate pereopod. |
| » 3. Inferior antenna. | » 9. Last pereopod. |
| » 4. Anterior gnathopod, with coxal plate. | » 10. Last epimeral plate, from left side. |
| » 5. Posterior gnathopod (basal joint not fully drawn). | » 11. Second uropod. |
| » 6. First pereopod. | » 12. Last uropod. |
| | » 13. Telson. |

Niphargoides compactus, G. O. Sars.

(Figs. 14—19).

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| Fig. 14. Adult male, viewed from right side. | Fig. 18. Posterior gnathopod (do). |
| » 15. Superior antenna. | » 19. Last segment of urosome, with telson and right last uropod; dorsal view. |
| » 16. Outer part of an inferior antenna. | |
| » 17. Anterior gnathopod (basal joint not fully drawn). | |

Pl. XVIII.

Niphargoides quadrimanus, G. O. Sars.

(Figs. 1—13).

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| Fig. 1. Adult, ovigerous female, viewed from left side. | Fig. 7. Antepenultimate pereopod. |
| » 2. Superior antenna. | » 8. Penultimate pereopod. |
| » 3. Inferior antenna. | » 9. Last pereopod. |
| » 4. Anterior gnathopod, with coxal plate. | » 10. First uropod. |
| » 5. Posterior gnathopod. | » 11. Second uropod. |
| » 6. Second pereopod with coxal plate. | » 12. Last uropod. |
| | » 13. Telson. |

Niphargoides æquimanus, G. O. Sars.

(Figs. 14—23).

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| Fig. 14. Adult male, viewed from right side. | Fig. 20. Last pereopod. |
| » 15. Superior antenna. | » 21. Second uropod. |
| » 16. Inferior antenna. | » 22. Last uropod. |
| » 17. Anterior gnathopod, with coxal plate. | » 23. Telson. |
| » 18. Posterior gnathopod (do). | |
| » 19. Antepenultimate pereopod (outer part not drawn). | |

Pl. XIX.

Pandorites podoceroides, Grimm.

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| Fig. 1. Adult, ovigerous female, viewed from left side. | Fig. 14. Outer part of propodos of same, more highly magnified. |
| » 2. Cephalon, without the appendages. | » 15. First pereopod, with coxal plate. |
| » 3. Superior antenna. | » 16. Second pereopod (do). |
| » 4. Inferior antenna. | » 17. Antepenultimate pereopod. |
| » 5. Anterior lip. | » 18. Penultimate pereopod. |
| » 6. Posterior lip. | » 19. Last pereopod. |
| » 7. Left mandible, with palp. | » 20. First uropod. |
| » 8. Masticatory parts of the mandibles. | » 21. Second uropod. |
| » 9. First maxilla. | » 22. Last uropod. |
| » 10. Second maxilla. | » 23. Telson. |
| » 11. Maxillipeds. | » 24. Adult male specimen (from Dr. Grimm's collection), viewed from right side. |
| » 12. Anterior gnathopod, with coxal plate. | |
| » 13. Posterior gnathopod, with coxal plate, branchial and incubatory lamellæ. | |

Pl. XX.

Corophium nobile, G. O. Sars.

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| <p>Fig. 1. Adult, ovigerous female, viewed from left side.</p> <p>» 2. Adult male, from right side.</p> <p>» 3. Superior antenna of female.</p> <p>» 4. Inferior antenna of same.</p> <p>» 5. Anterior lip.</p> <p>» 6. Posterior lip.</p> <p>» 7. Left mandible, with palp.</p> <p>» 8. Right mandible, without the palp.</p> <p>» 9. First maxilla.</p> <p>» 10. Second maxilla.</p> | <p>Fig. 11. Maxillipeds.</p> <p>» 12. Anterior gnathopod of female, with coxal plate.</p> <p>» 13. Posterior gnathopod of same, with incubatory lamella.</p> <p>» 14. Pleopod.</p> <p>» 15. Inner corner of the basal part of same, more highly magnified, showing the peculiar structure of the 2 marginal spines.</p> |
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Pl. XXI.

Corophium nobile, G. O. Sars

(continued).

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| <p>Fig. 1. Adult male, viewed from the dorsal face.</p> <p>» 2. Superior antenna of same.</p> <p>» 3. Inferior antennæ of same.</p> <p>» 4. Outer part of the flagellum, highly magnified, showing the 2 terminal hooks.</p> <p>» 5. First pereopod of male, with coxal plate and branchial lamella.</p> <p>» 6. Antepenultimate pereopod (do).</p> | <p>Fig. 7. Penultimate pereopod.</p> <p>» 8. Last pereopod.</p> <p>» 9. Urosome, without the left 1st and 2nd uropod; dorsal view.</p> <p>» 10. First uropod.</p> <p>» 11. Second uropod.</p> <p>» 12. Last uropod.</p> <p>» 13. Telson, from the dorsal face.</p> <p>» 14. Same, viewed obliquely from right side, showing the vertical, dentated crests.</p> |
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Pl. XXII.

Corophium chelicorne, G. O. Sars.

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| <p>Fig. 1. Adult, ovigerous female, viewed from left side.</p> <p>» 2. Frontal part of cephalon; dorsal view.</p> <p>» 3. Superior antenna of same.</p> <p>» 4. Inferior antenna of same.</p> <p>» 5. Adult male, viewed from right side.</p> <p>» 6. Superior antenna.</p> <p>» 7. Inferior antenna.</p> <p>» 8. Anterior gnathopod, with coxal plate.</p> | <p>Fig. 9. Posterior gnathopod.</p> <p>» 10. First pereopod.</p> <p>» 11. Antepenultimate pereopod, with branchial lamella.</p> <p>» 12. Penultimate pereopod.</p> <p>» 13. Last pereopod.</p> <p>» 14. Urosome, without the right 1st and 2nd uropod; dorsal view.</p> |
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Pl. XXIII.

Corophium curvispinum, G. O. Sars.

(Figs. 1—9).

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| <p>Fig. 1. Adult male, viewed from right side.</p> <p>» 2. Superior antenna of female.</p> <p>» 3. Inferior antenna of same.</p> <p>» 4. Anterior antenna of male.</p> <p>» 5. Middle part of inferior antenna of same.</p> | <p>Fig. 6. First pereopod.</p> <p>» 7. Last pereopod.</p> <p>» 8. Urosome, without the right 1st and 2nd uropod; dorsal view.</p> <p>» 9. Second uropod.</p> |
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Corophium robustum, G. O. Sars.

(Figs. 10—16).

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| <p>Fig. 10. Adult male, viewed from left side.</p> <p>» 11. Anterior antenna of same.</p> <p>» 12. Middle part of inferior antenna of same.</p> <p>» 13. First pereopod, with coxal plate and branchial lamella.</p> | <p>Fig. 14. Last pereopod.</p> <p>» 15. Urosome, without the left 1st and 2nd uropod.</p> <p>» 16. Second uropod.</p> |
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PL. XXIV.

Corophium mucronatum, G. O. Sars.

(Figs. 1—7).

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| Fig. 1. Adult male, viewed from left side.
» 2. Frontal part of cephalon; dorsal view.
» 3. Anterior antenna of male.
» 4. Inferior antenna (basal part not fully drawn). | Fig. 5. First pereopod, with coxal plate and branchial lamella.
» 6. Last pereopod.
» 7. Urosome, without the left 1st and 2nd uropod; dorsal view. |
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Corophium monodon, G. O. Sars.

(Figs. 8—16).

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| Fig. 8. Adult male, viewed from right side.
» 9. Cephalon, without the appendages; dorsal view.
» 10. Cephalon of female, with antennæ and oral parts, viewed from right side.
» 11. Superior antenna of male. | Fig. 12. Inferior antenna of same.
» 13. First pereopod, with coxal plate and branchial lamella.
» 14. Last pereopod.
» 15. Urosome, viewed from the dorsal face.
» 16. Last uropod. |
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