

**BIOLOGICAL RESULTS OF THE SNELLIUS
EXPEDITION**

VI. THE PORTUNIDAE OF THE SNELLIUS EXPEDITION

(PART I)

BY

JENTINA E. LEENE

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VI. THE PORTUNIDAE OF THE SNELLIUS EXPEDITION (PART I)

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JENTINA E. LEENE

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The present paper contains the results of the study of some genera of the Portunidae from the collections of the Snellius Expedition, and from the material of the Rijksmuseum van Natuurlijke Historie, Leiden, which I may resume as:

1. *Liocarcinus holsatus* Fabr. for the first time observed in the Indian Archipelago.
2. *Carupa laeviscula* Heller and *C. tenuipes* Dana are identical. For reasons of priority the name *laeviscula* should be cancelled.
3. A revision of the genus *Lupocyclus* Ad. & Wh., with a new species (*L. sexspinosus*).
4. Some revisions of the lists of synonyms of *Charybdis*-species.
5. A more extensive description of *Charybdis rosaea* (Hombr. et Jacq.) by means of the large material, which was collected.

I did not yet examine the genera *Thalamita* and *Neptunus*, because I got permission to use the Snellius material for the revisions of these genera, which I hope to publish as monographs of the Siboga Expedition.

I wish to thank Prof. Dr. H. Boschma for his kindness in entrusting the material to me for examination, Prof. Dr. H. Balss for the loan of material, Mr. Fenner A. Chace, Jr. for information and the sketches of fig. 1, and Dr. I. Gordon for her efficient and kind help during my stay in London.

Liocarcinus holsatus Fabr.

Portunus holsatus, Nobre, 1936, Fauna Marinha de Portugal, IV, Crust. decap. e stom. mar. de Portugal, p. 35 and figs. (see also for the literature and synonymy).

Museum Leiden

West Java, 1894, Dr. J. F. van Bemmelen.—1 ♂.

This species, which has its geographical distribution from Iceland along the W. Coast of Europe, the Mediterranean till the Black Sea, is here signalized for the first time in the Indo-pacific region. Probably this is a case of removal by means of ships.

Lissocarcinus polybioides Ad. & Wh.

Leene, 1938, Siboga Expedition, 39 c 3, p. 8.

Snellius Expedition

Near Koepang; dredge; 6—15 m; Dec. 4, 1929.—1 very small ♂, of which the chelipeds are in regeneration.

Carupa Dana

Leene, 1938, Siboga Expedition, 39 c 3, p. 9 (see also for older literature).

In my paper (1938) I maintained the two species of *Carupa*: *C. tenuipes* Dana and *C. laeviscula* Heller. This supposition had been based on a comparison of the figures given by Dana, Heller and Pesta with one another and with our material.

Afterwards I received sketches from the type of *C. tenuipes* Dana, which Mr. Chace was so kind as to draw for me. Now I could state that the suppositions of De Man, Klunzinger and Balss were right, and that the two species are identical.

For reasons of priority the name *laeviscula* should be cancelled.

The diagnosis of the genus, given by Alcock (1899, p. 25) should be changed into:

Cephalothorax transverse, moderately convex with unbroken surface.

The front proper projects distinctly beyond the rather well-defined inner supra-orbital angles, and is cut into four shallow lobes; its breadth is about a third the greatest breadth of the cephalothorax.

Antero-lateral borders moderately oblique and arched, about the same length as the postero-lateral, cut into seven rather irregular lobes (including the outer orbital angles).

The orbit, which has a distinct dorsal inclination, has two notches in its upper border; the median part of the lower border is cut into four lobes. The antennulae fold almost transversely.

“Basal” antenna-joint as long as broad, rather slender; the flagellum, which is of moderate length, stands in the orbital hiatus.

Epistome sufficiently long. Buccal cavern squarish, broader than long, the efferent branchial channels very well-defined.

Chelipeds longer and considerably more massive than the legs; arm with spines, the inner and outer angles of the wrist armed; palm inflated,

massive, nearly smooth; fingers stout, hardly as long as palm, strongly toothed.

The second to fourth pairs of pereopods slender; in the fifth pair (natatory legs) the merus is elongate, the carpus slender, but propus and dactylus are typical swimming paddles.

First abdominal tergum narrow, almost hidden by the cephalothorax; in the male the second up to the fifth terga are fused, though the suture between the second and third terga may be visible.

***Carupa tenuipes* Dana**

(figs. 1 & 2)

Carupa laeviscula, Sakai, 1935, Crabs of Japan, p. 136, pl. 35 fig. 3.

Carupa tenuipes, Balss, 1938, Göteborg Kungl. Vet. o. Vitterh.-Samh. Handl., ser. B, Bd. 5, N:o 7, p. 29.

Carupa laeviscula, Leene, 1938, Siboga Expedition, 39 c 3, p. 9.

Snellius Expedition

Maratoea; reef, Aug. 14—18, 1929.—1 ♀.

Kera, near Timor; Nov. 11—13, 1929.—1 ♂.

Near Koepang; Nov. 18—20, 1929.—2 ♂ ♂.

Koepang; reef; Nov. 30, 1929.—2 ♂ ♂.

Near Koepang, Timor; shore and reef; Dec. 3, 1929.—2 ♂ ♂, 1 ♀.

Koepang; reef and shore; Dec. 5, 1929.—3 ♂ ♂, 1 ♀.

Description: The cephalothorax is nearly perfectly smooth; examined under a lens we observe that it is very finely granular. There is only a trace of a granular transverse ridge near the last antero-lateral teeth. The regions are not distinguishable.

The front is cut into four shallow lobes, of which the medians are much narrower than and a little prominent beyond the lateral ones. The median teeth are round, elliptical; of the lateral teeth the anterior borders are nearly perpendicular to the median plane, sloping very slowly mediad; the tops are very obtuse, the lateral borders sloping outwards. The front can as a rule be clearly distinguished from and is distinctly prominent beyond the inner supra-orbital angles.

The antero-lateral borders are cut into seven rather irregular lobes. The first to fourth lobes are the same shape: truncate with round angles, of which the second to fourth are the same size, whereas the first is a little narrower; they are separated from one another by very narrow incisions; the fifth is much smaller and a little sharper. The sixth is much the largest, the top is bent claw-like, the seventh is spine-like, distinctly narrower and smaller than the sixth.

The postero-lateral borders distinctly converge posteriorly. The margin

of the posterior border is nearly straight, and forms a curve with the postero-lateral borders.

The upper border of the orbit is very slightly granular (only visible under a strong lens); it is divided into three parts by two rather indistinct incisions. The small inner supra-orbital angles are as a rule distinct. The

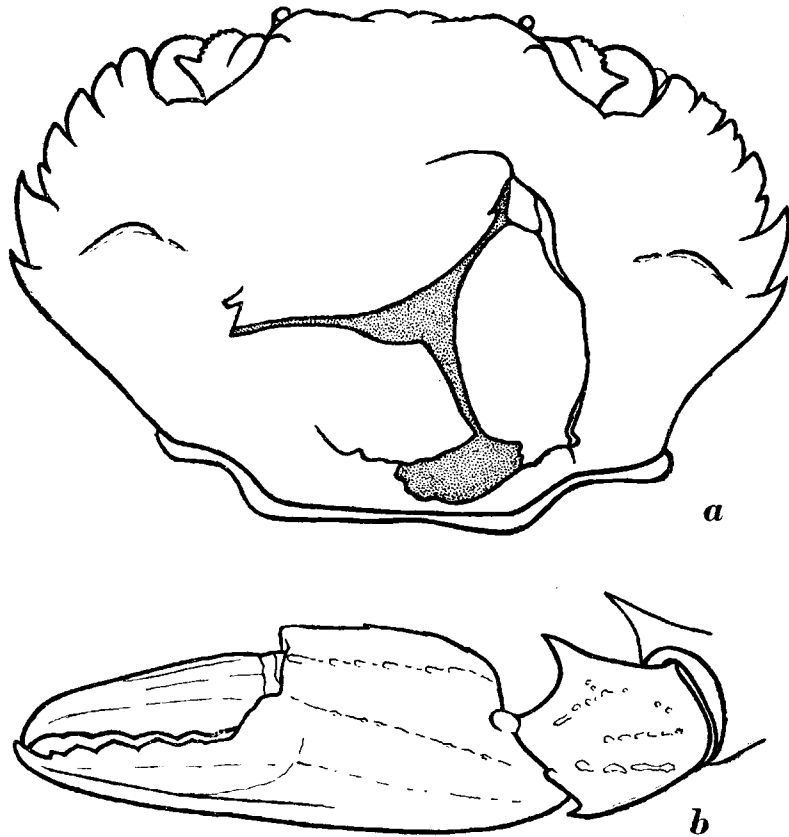


Fig. 1. *Carupa tenuipes* Dana. Type, M. C. Z., no. 4291. Paumotus? *a*, dorsal view of cephalothorax; *b*, outer face of left cheliped. *a* and *b*, \times ca. 15.

infra-orbital border has a lateral incision: the median part is cut into four lobes, of which the median two are much narrower than the lateral ones.

The "basal" antenna-joint is as large as broad, rather slender: it does not touch the front, therefore the flagellum, which is of moderate length, stands in the orbital hiatus.

The antennulae can be folded transversely.

The sub-orbital, sub-hepatic, pterygostomian and sub-branchial regions

are hairy and very finely granular; there is a distinct granular pleural groove.

Of the abdomen of the male the second up to the fifth terga are fused; of the sixth tergum the lateral borders are convergent posteriorly, the anterior and posterior borders are straight; the telson is triangular, the lateral borders are distinctly longer than the anterior borders.

The chelipeds, upwards of twice the length of the cephalothorax, are nearly without granulation, except for the three faintly granular costae on the upper surface of the palm, a few traces of granular ridges on the wrist and few granules between the spines on the arm. The arm has three claw-like spines on the anterior border, the posterior border has no armature; the inner angle of the wrist is distinctly spiniform, the outer angle has one distinct spinule and two little knobs. The palm has a knob at the wrist-articulation and a knob at the distal end of the anterior ridge. The fingers are somewhat longer than the palm.

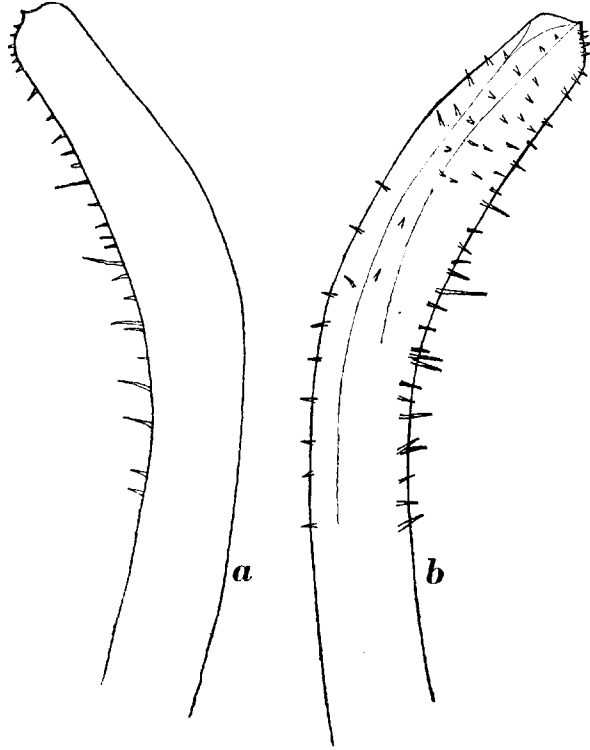


Fig. 2. *Carupa tenuipes* Dana. *a*, apex of first male pleopod, posterior view; *b*, apex, anterior view. $\times 56$.

The second up to the fourth pairs of pereopods are shorter than the chelipeds.

Of the natatory leg the merus is elongate, the carpus slender, but the propus and dactylus are broadened for swimming.

Of the first male pleopod the neck is directed antero-laterally; the apex is curved laterally. The apex has proximally a somewhat larger diameter than the neck distally. The inner border of the apex and of the distal part of the neck has some spinules, the outer border of these parts has more

spinules, moreover the distal part of the apex has many spinules on its posterior surface. The anterior surface of the pleopod is unarmed.

Measurements in mm :

	Marathea Aug. 14—18, 1929		Kera Nov. 11—13, 1929		Near Koe- pang Nov. 18—20, 1929		Near Koe- pang Dec. 3, 1929			Koe- pang Dec. 5, 1929			
	♀	♂	♂	♂	♂	♂	♂	♂	♀	♂	♂	♂	♀
Length of cephalothorax . .	7.0	3.9	8.5	6.9	8.9	6.7	10.3	8.2	9.9	10.2	7.8	6.2	9.7
Breadth of cephalothorax . .	10.4	5.3	12.5	9.5	13.0	9.4	15.0	11.9	14.7	14.9	10.5	8.1	14.1
Front	3.4	—	4.0	3.2	4.2	3.1	4.8	4.0	4.4	4.7	3.5	—	4.3
Fronto-orbital border	6.6	—	7.7	6.4	8.2	6.2	9.5	7.4	8.5	9.0	6.7	—	8.6
Length of cheliped (largest)	15.1	—	18.8	—	20.0	—	—	18.3	20.8	—	15.9	—	19.8
Breadth of cephalothorax . .													
Length of cephalothorax . .	1.49	1.36	1.47	1.38	1.46	1.40	1.46	1.45	1.48	1.46	1.35	1.31	1.45
Length of cheliped													
Length of cephalothorax . .	2.16	—	2.21	—	2.25	—	—	2.23	2.10	—	2.04	—	2.04

In the British Museum there are specimens from Mauritius (89.3.27.36) and from Cocos Keeling Id. (1907.7.16.3; pres. by F. Wood Jones).

Lupocyclus Ad. & Wh.

Lupocyclus, Leene, 1938, Siboga Expedition, 39 c 3, p. 10.

The cephalothorax is a little broader than long, convex; the regions are faintly indicated; the granular transverse ridges (or groups of granules) are of definite position.

The front is prominent beyond the inner supra-orbital angles and is cut into four or six teeth.

The antero-lateral borders, moderately oblique and moderately curved, are about equal in length to the postero-lateral ones; they are cut into five or six teeth (including the outer orbital angle) with sometimes little denticles in some or nearly all of the interdental spaces, bringing the total number to nine (the denticles are sometimes so small as to escape notice).

The orbits are large with a distinct dorsal inclination: the upper border with two incisions; the inner angle of the lower border is dentiform.

The antennulae are folded transversely.

The "basal" antenna-joint is longer as broad; the flagellum stands in the orbital hiatus.

The epistome is short, somewhat sunken. The buccal cavern is somewhat broader than long; the efferent channels well-defined.

The chelipeds are long or very long (in the latter case they are much longer than any of the legs, slender, the hand slenderer than the arm). The arm with spines, the wrist with spines on inner and outer angles, the hand with spines and costae, the fingers long and slender.

The second up to the fourth pairs of pereopods are slender.

The propus and dactylus of the natatory legs are typically foliaceous.

Of the abdomen of the male are the third up to the fifth terga fused: the first tergum is almost concealed beneath the cephalothorax.

Lupocyclus rotundatus Ad. & Wh.

(Plate I & fig. 3)

Lupocyclus rotundatus, Leene, 1938, Siboga Expedition, 39 c 3, p. 11. Gordon, 1938, Bull. Raffl. Mus., no 14, p. 175, fig. 1.

Snellius Expedition

Stat. 223, plankton 3, 0—1 m; March 23, 1930, about 21 p.m.—1 very small ♂.

The Snellius-specimen very probably belongs to this species; unfortunately it has no legs, owing to which it is not possible to state this with certainty.

For the description I used the Siboga material (Leene, 1938).

Description: The cephalothorax is covered with a dense pile and is crossed by the following granular transverse ridges or granular groups: (1) one on the frontal region, interrupted in the middle, which is not merely ridge-like, but consists of two groups of granules; (2) one on each of the proto gastric regions, which is exactly like a group of granules; (3) one on the mesogastric region, of which the lateral ends are bent anteriorly and which is distinctly interrupted in the middle; (4) one between the last antero-lateral teeth, which is widely interrupted by the cervical groove; (5) one on the cardiac region, interrupted in the middle; (6) a small group of granules near the posterior border of the cardiac region; (7) two on each of the mesobranchial regions, which are parallel to one another; (8) a small group of granules on the branchial lobe. Moreover, there is granulation between the two mesobranchial ridges and near the bases of the antero-lateral teeth.

The front is cut into six teeth, of which the median and submedian ones are very distinct from and prominent beyond the lateral ones, which are very small [for which reason the latter have hitherto been mentioned as reduplicated inner supra-orbital angles; but in agreement with the terminology which I used in the descriptions of the species of the genus *Charybdis* (1938) they must be considered as frontal teeth. This terminol-

ogy was based on the characteristics which Pearson (1908, L. M. B. C. Memoirs XVI, *Cancer*, p. 9) gives of the lateral frontal lobes, viz.: "each of the lateral lobes of the rostrum passes downwards as the *supraciliary* lobe, which fuses the anterior and inner region of the second antenna." Calman (1909, A treatise on Zoology, pt. VII, Appendiculata, 3rd fasc., Crustacea, p. 257) calls this supraciliary lobe the lateral process of the rostral plate]. The median teeth are triangular, distinctly prominent beyond the submedian teeth. The submedian teeth are on a somewhat higher plane than the median teeth; they are triangular, the median borders are rather

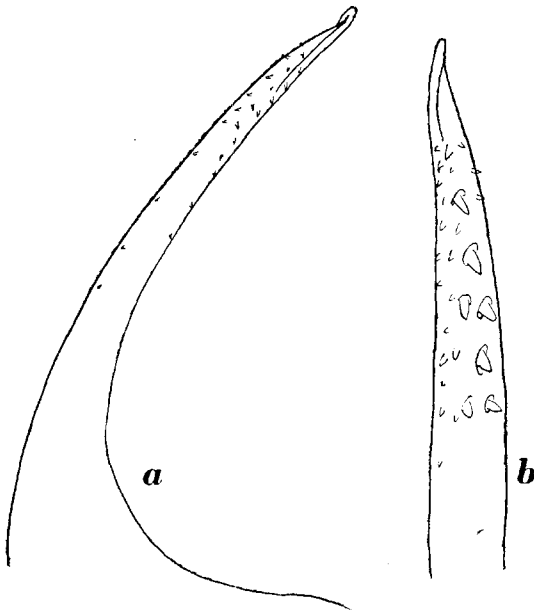


Fig. 3. *Limnocyclus rotundatus* Ad. & Wh.
a, first male pleopod, posterior view; *b*, apex,
 anterior view. *a*, $\times 50$; *b*, $\times 114$.

short, the lateral borders are curved outwards; they are prominent beyond and clearly separated from the lateral teeth, which are rather small. The borders of all the frontal teeth are finely serrate.

The antero-lateral borders are cut into five large teeth and four small ones. The small teeth are in the sinuses between the large teeth. The first tooth (outer orbital angle) is the largest, the smooth anterior border is concave, the granular outer border is convex. The second up to the fifth large teeth are about the same size and shape; the anterior borders are strongly concave, only at

the base with a few granules; the outer borders convex and granular, except for the fifth tooth, the outer border of which is smooth. The small teeth are distinctly smaller than the large ones; they may vary in size; the concave anterior borders are smooth, the convex outer borders are finely granular.

The postero-lateral borders converge rather strongly.

The margin of the posterior border is about straight; it forms a curve with the postero-lateral borders.

The granular upper border of the orbit is cut into three parts by two incisions. The inner supra-orbital angle is faintly defined. The granular

lower border has a wide incision laterally; the inner infra-orbital angle is dentiform and prominent beyond the inner supra-orbital angle.

The "basal" antenna-joint is longer than broad; it has a short, longitudinal granular crest.

The antennulae can be folded transversely.

The sub-orbital, pterygostomian and sub-branchial regions are smooth; the sub-hepatic region is faintly granular. There is a distinct granular pleural groove.

The sternum is granular.

Of the abdomen of the male the second and third terga are distinctly carinate, the fourth tergum has a small ridge. The second up to the fifth terga are fused. The sixth tergum is broader than long at the base, the lateral borders converge strongly posteriorly; the anterior border is about straight; the posterior border is curved anteriorly.

Distally the anterior border of the ischium of the cheliped ends in a spinule; the merus has five spines on the anterior border, of which the two proximal ones are the smallest, the posterior border has two spines, one distally and one some distance proximally from the distal end; the inferior border also ends in a spinule. All surfaces of the arm are covered with squamiform markings. The carpus has two spines, one at the inner angle and one at the outer angle; there are longitudinal granular ridges and on the under surface squamiform markings. The hand has six granular costae; the under surface has granular squamiform markings; the upper surface has three large spines: one at the wrist-articulation and two a short distance proximal to the distal end. The movable finger is about as long as the palm; the posterior border is granular.

The second up to the fourth pairs of pereopods have no specific characteristics.

The posterior border of the merus of the natatory leg has a spine some distance proximally to the distal end. The other joints have no armature.

The first male pleopod has an antero-laterally curved neck, with some rows of small spines on its posterior surface. The anterior surface has some larger spines besides the small spines, which are more or less arranged in rows. The posterior surface has few rows of small spines.

Lupocyclus quinquedentatus Rathbun

(Plate II & fig. 4)

Lupocyclus quinquedentatus, Leene 1938, Siboga Expedition, 39 c 3, p. 11.

Snellius Expedition

Timor, near Koepang; reef and shore; Dec. 3, 1929. — 1 ♀.

Description: The cephalothorax is covered with a short pile; the regions are ill-defined. It is crossed by distinct, granular transverse ridges: (1) one on each of the protogastric regions, (2) one on the mesogastric region, (3) one between the last antero-lateral teeth, which is widely interrupted by the cervical groove, (4) one on the cardiac region, which is interrupted in the middle, (5) a short post-cardiac one, (6) three on each of the mesobranchial regions, which are parallel to one another. Moreover clusters of granules near the first, third, fifth and seventh antero-lateral teeth,



Fig. 4. *Lupocyclus quinquedentatus* Rathbun.
First male pleopod, posterior view. $\times 24$.

on the frontal region and on the mesobranchial region near the cardiac region.

The front is cut into six acute, triangular teeth. The two median teeth, which are the broadest frontal teeth, are prominent beyond the others, the tops are directed a little outwards, the median borders are very slightly convex. The submedian teeth are distinctly narrower; the median borders are shorter than the lateral ones. These four teeth are separated from the lateral teeth by a wide gap; the lateral teeth are about as broad as the submedian teeth; the median borders are concave; the lateral borders straight; the tops are directed inwards. All borders of the frontal teeth are granular. The front is distinctly prominent beyond the inner supra-orbital angles.

The antero-lateral border is cut into eight teeth, of which five are large and three very small. The small teeth are placed in the first three sinuses. The large teeth, except for the last one, are about the same size and shape: acute, rather slender, claw-like; the anterior borders concave, the posterior borders convex. The last (eighth) tooth is smaller than the other large teeth.

The postero-lateral borders converge rather strongly posteriorly.

The margin of the posterior border is straight: it forms a curve with the postero-lateral borders.

The granular upper border has two incisions. The inner supra-orbital

angle is faintly defined. The granular lower border has a wide incision laterally; the inner infra-orbital angle is spine-like, and prominent beyond the inner supra-orbital angle.

The "basal" antenna-joint is longer than broad; it has a short, granular crest; its dorso-lateral angle is produced dorsally, but does not touch the front.

The antennulae can be folded transversely.

The sub-orbital and pterygostomial regions are smooth; the sub-hepatic and sub-branchial regions are granular. There is a distinct pleural groove.

The sternum in the male is hairy and granular on the first sternites; in the female it is bare and smooth.

Of the abdomen of the male the second and third terga are distinctly carinate, the fourth tergum has a faint ridge. The third, fourth and fifth terga are fused. The sixth tergum is much broader than long; the lateral borders are strongly curved and converge posteriorly; the anterior border is distinctly curved anteriorly in the middle, the posterior border is also curved anteriorly.

Of the abdomen of the female the second, third and fourth terga are carinate. The borders of the abdomen have fringes of long hairs.

The anterior border of the ischium of the cheliped ends distally in a spinule; the merus has three spines on the anterior border, anteriorly the distal border ends in a spinule, whereas the posterior and inferior borders also end in spinules. All surfaces of the arm are covered with squamiform granular markings. The carpus has one spine at the inner angle and two at the outer angle; it has distinct granular ridges. The propus, six-costate, has three spines, one at the wrist-articulation and two, nearly side-by-side, on the upper surface some distance proximally to the finger-joint; except for the upper surface, all surfaces are covered with granular squamiform markings. The fingers are slender, longer than the palm.

The second up to the fourth pairs of pereopods have no specific characteristics.

The merus of the natatory leg is long and slender; the posterior border has a spinule a short distance proximally to the distal end, the distal border has a spinule posteriorly.

The first male pleopod has a narrow neck, strongly outwards curved, of which the entire outer border has small spines, except for the most distal part; the inner border has small spines, except for the proximal part. The basal part of the pleopod has long hairs, whereas in the other species it has only some short hairs.

In the British Museum there are 2 ♂♂ (H.M.S. *Egeria*, coll. Bassett

Smith, 35—40 fms., 93.II.3.6I/62) and 3 young specimens ("Penguin", 92.8.28.189—196) of Macclesfield Bank.

Lupocyclus philippinensis Nauck

(Plate III & fig. 5)

Lupocyclus philippinensis, Balss, 1922, Arch. Naturgesch., 88. Jahrg., Abt. A, p. 113.
Leene, 1938, Siboga Expedition, 39 c 3, p. 11 (part).
(nec *L. strigosus*, Laurie, 1906, Rep. Pearl Oyster Fish., Brachyura, p. 412).

Snellius Expedition

Stat. 104*, dredge, about 100 m; Oct. 15, 1929.—1 ♂.

The material collected on the stations 2 and 64 of the Siboga Expedition belongs to this species. The material of station 313 of the Siboga Expedition belongs to *Lupocyclus sexspinosus* nov. spec.

The specimen in the Snellius material is rather small, therefore I describe the largest male of the Siboga station 2.

I compared all this material with the specimens mentioned by Balss (1922), which he kindly sent me on loan. They all proved to be identical. (Moreover Prof. Balss called my attention to the 21st rule of nomenclature, by which the author of this species is Nauck, and not Semper).

Description: The cephalothorax is covered with a short pile. There are no transverse ridges, but instead of them there are groups of granules, which sometimes are arranged nearly ridge-like, but most times without distinct demarcation: (1) on the frontal region two small groups of granules side-by-side, (2) on each of the protogastric regions a larger group, (3) on the mesogastric region two ribbonlike groups, which are bent anteriorly and a longitudinal group in the axis of this region, (4) on the metogastric region two comma-like groups, side-by-side, (5) on the cardiac region two groups, side-by-side, (6) near the posterior border of the cardiac region a small group, (7) on the branchial lobe a small group, (8) on each of the mesobranchial regions two groups behind one another, (9) on the posterior border of the epibranchial region a more or less ridge-like arranged group of granules, which does not reach the last antero-lateral tooth on the lateral side. Moreover there is granulation on the frontal teeth, on the orbital regions, on the hepatic region.

The front is cut into four triangular teeth. The two median teeth are strongly prominent beyond and narrower than the others; of the borders, which are serrated, the median ones are shorter than the lateral ones; they are separated from the lateral teeth by incisions, which are wider than the incision between themselves. Of the lateral teeth the median border and the distal half of the lateral border are serrated.

The antero-lateral border is cut into six teeth. The first tooth (outer orbital angle) is the largest; the granular anterior border is very slightly concave, the serrated outer border is straight. The second tooth is the smallest, with a concave, nearly smooth anterior border and a convex outer border. The third up to the fifth teeth are the same shape, but of different size, the third being the largest and the fifth the smallest: the concave anterior borders are nearly smooth, the faintly convex outer borders are serrated. The sixth tooth is distinctly longer than the preceding tooth, but not long, is spine-like, the top is directed anteriorly; the anterior border is smooth. In the incisions between the teeth there are large granules, which sometimes are shaped like very small denticles.

The postero-lateral borders are only a little convergent; they are slightly sinuous.

The margin of the posterior border is straight; it forms a curve with the postero-lateral borders.

The granular upper border of the orbit is cut into three parts by two incisions. The inner supra-orbital angle can hardly be distinguished. The granular lower border has a wide incision laterally; the inner infra-orbital angle is dentiform and prominent beyond the inner supra-orbital angle.

The "basal" antenna-joint is about one and a half times as long as broad.

The antennulae can be folded transversely.

The sub-orbital, pterygostomian, sub-branchial and sub-hepatic regions are smooth, except for a few granules on the undersurfaces of the teeth. There is a distinct granular pleural groove.

The sternum is granular, except for the first sternites, which are only granular along the borders.

Of the abdomen of the male the second and third terga are distinctly carinate, the fourth tergum has a faint crest. The second up to the fifth terga are fused. The sixth tergum is only a little broader than long, the straight lateral borders are convergent posteriorly; the anterior border is about straight, the posterior border is curved anteriorly.

The anterior border of the ischium of the long, slender cheliped ends distally in a knob. The merus (arm) has seven spines on the anterior border, which are about the same size, the distances between the proximal

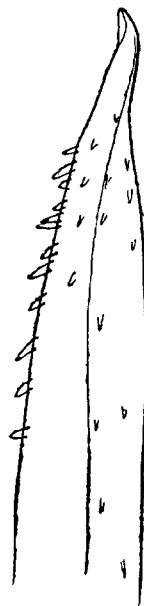


Fig. 5. *Lupocyclus philippinensis* Nauck. Apex of first male pleopod, posterior view.
× 114.

teeth are smaller than between the distal ones [in the specimens of Snellius stat. 104* there are seven to eight spines on the anterior border, which is also the case in the specimens mentioned by Balss (1922). According to Alcock (1899, Journ. As. Soc. Beng., vol. 68, pt. 2, p. 26) sometimes the number is 6—7]; the posterior border has two spines, of which one is at the distal end and the other some distance proximal to it; all surfaces are covered with granules, which are arranged more or less distinctly squamiformly. The carpus (wrist) has two spines, one at the inner angle and one at the outer angle; there are several longitudinal granular ridges; moreover, there is granulation between the ridges. The propus (hand), seven-costate, has three spines: one at the wrist-articulation and two, nearly side-by-side, on the granular costae of the upper surface, some distance proximal to the distal end; the costae are indicated by rows of squamiformly arranged groups of granules. The slender fingers are longer than the palms.

The second to fourth pairs of pereopods have no specific characteristics, except for their length.

The posterior border of the long, slender merus of the natatory leg has a spine some distance proximal to the distal end. The propus has no armature.

Of the first male pleopod the neck is bent outwards antero-laterally; the distal part of the inner border has a row of large spines, and there are small spines on the posterior surface. The apex is distinctly narrower than the neck, and has no armature.

In the British Museum there are 2 ♂♂ and 1 ♀ from Hongkong (Barney coll., 1930. 12. 2.68.70). The specimens of *L. strigosus* (Laurie, 1906) belong to *Lupocyclus sexspinosus* nov. spec.

***Lupocyclus sexspinosus* nov. spec.**

(Plate IV & fig. 6)

Lupocyclus strigosus, Laurie, 1906, Rep. Pearl Oyster Fish., Brachyura, p. 412.

Lupocyclus philippinensis, Leene, 1938, Siboga Expedition, 39 c 3, p. 11 (part).

Snellius Expedition

4° 24' S, 118° 47' E; Aug. 2, 1929. — Dipnet. Surface. Among algae. — 2 young specimens.

This species is very nearly related to *Lupocyclus philippinensis* Nauck, from which it is to be distinguished by the lower numbers of antero-lateral teeth (5 instead of 6) and of spines on the anterior border of the arm of the cheliped (5—6 instead of 6—8). In the British Museum I examined the material mentioned by Laurie (Ceylon, Herdman coll., 1907. 5.22.278),

which proved to belong to this species (Laurie already pointed out the smaller number of antero-lateral teeth). Of the Siboga material the specimens of stat. 313 belong to this species. As the Snellius specimens are very small, I give here the description of the male in the Siboga material.

Description: The cephalothorax is covered with a dense, short pile. (1) On the frontal region there is a granular transverse ridge, interrupted in the middle, (2) on each of the protogastric regions a group of granules, (3) on the mesogastric region a transverse ridge, interrupted in the middle, whereas in the axis of this region there is a longitudinal group of granules, (4) on the metagastric region a transverse ridge, which is interrupted in the middle, (5) on the cardiac region two groups of granules, side-by-side, (6) a small group of granules near the posterior border of the cardiac region, (7) on the branchial lobe a group of spinules, (8) on each of the mesobranchial regions two groups of granules behind one another, (9) a group of granules arranged ridge-like on the posterior border of the epibranchial region, which does not reach the last antero-lateral tooth on the lateral side. Moreover, there is granulation on the frontal teeth and along the postero-lateral borders and the hepatic region.

The front is cut into four triangular teeth, of which the two medians are strongly prominent beyond the lateral ones. Of the median teeth the tops are not acute, the granular median borders are much shorter than the granular lateral ones. The lateral teeth are acute, the median borders are much shorter than the lateral ones; the lateral borders pass on to the upper borders of the orbits without distinct separations. (Perhaps this is connected with the age of the animal, because this is also the case in the smaller specimens of *L. philippinensis*).

The antero-lateral border is cut into five teeth. The first tooth (the outer orbital angle) is the largest; the granular anterior border is very slightly concave, the granular outer border is faintly convex. The second, third and fourth teeth are about the same size and shape: a concave, smooth anterior border and a granular convex outer border. Between the first and second teeth there is a large sinus. The fifth tooth is somewhat longer than the preceding teeth, but not spine-like: the anterior border is concave.

The postero-lateral borders converge only a little; they are slightly sinuous.

The margin of the posterior border is faintly convex; it forms a curve with the postero-lateral borders.

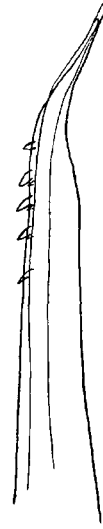


Fig. 6.
Lupocyclus
sexspinosus
nov. spec.
Apex of first
male pleopod,
posterior view.
× 114.

The granular upper border of the orbit is cut into three parts by two incisions. The inner supra-orbital angle is only indicated by a faint curve, not by a crest as is the case, for instance, in the genera *Charybdis* and *Thalamita*. The granular lower border has a wide incision laterally, the inner infra-orbital angle is dentiform and prominent beyond the inner supra-orbital angle.

The "basal" antenna-joint is about one and half times as long as broad.

The antennulae can be folded transversely.

The sub-orbital, pterygostomian, sub-branchial and sub-hepatic regions are smooth, except for the few granules on the undersurfaces of the teeth. There is a distinct granular pleural groove.

The sternum is granular, except for the first sternites, which are only granular along the borders.

Of the abdomen of the male the second and third terga are distinctly carinate, the fourth tergum has a faint crest. The second up to the fifth terga are fused. The lateral borders of the sixth tergum, which is somewhat broader than long, converge posteriorly; the anterior border is about straight, the posterior border is curved anteriorly.

The anterior border of the ischium of the long, slender cheliped ends in a knob distally. The merus (arm) has six spines on its anterior border, the distal borders of the upper and undersurfaces anteriorly end in spinules; there are two spines on the posterior border, one at the distal end and one some distance proximal to it; all surfaces are covered with granules, squamiformly arranged [in the specimens determined by Laurie (1906) the anterior border has 5—6 spines]. The carpus (wrist) has two spines, one at the inner angle and one at the outer angle; there are several longitudinal granular ridges; moreover there is granulation between the ridges. The propus (hand), seven-costate, has three spines, one at the wrist-articulation and two on the distal part of the upper surface, of which the outer one is only a short distance and the inner one on a somewhat longer distance proximal to the distal end; the costae are indicated by squamiformly arranged granules. The slender fingers are much longer than the palm. The granulation of this pair of appendages is less developed than in *L. philippinensis*.

The second to fourth pairs of long, slender pereopods have no specific characteristics.

The posterior border of the long, slender merus of the natatory leg has a spine some distance proximal to the distal end. The propus has no armature.

Of the first male pleopod the neck is bent laterally; on its inner border

near the distal end it has some large spines, on its outer border a few small spinules and on the anterior surface a few rows of small spinules near the outer border. The apex is much narrower than in *L. philippinensis*.

Podophthalmus nacreus Alcock

Leene, 1938, Siboga Expedition, 39 c 3, p. 14.

. Snellius Expedition

Near Koepang; small dredge, 10—15 m; Dec. 2, 1929. — 2 young specimens.

Podophthalmus vigil (Fabr.)

Sakai, 1935, Crabs of Japan, p. 134, pl. 39 fig. 2.

Leene, 1938, Siboga Expedition, 39 c 3, p. 12.

Snellius Expedition

Road of Waingapoe; Nov. 22, 1929. — 1 ♀.

Near Koepang; small dredge, 10—15 m; Dec. 2, 1929. — 1 young specimen.

Museum Leiden

Road of Probolingo, East Java; Sept. 1909; P. Buitendijk. — 1 ♂.

Passoeroean, East Java; April 1911; P. Buitendijk. — 1 ♂.

Road of Passoeroean, East Java; July 1915; P. Buitendijk. — 1 ♂, 1 ♀.

Poeloe-Weh; Nov. 1919; P. Buitendijk. — 1 ♀.

Shore of Priok; Oct. 1928; P. Buitendijk. — 4 ♂ ♂, 2 ♀ ♀.

Passoeroean; P. Schravenman. — 1 ♂.

Scylla serrata (Forsk.)

Sakai, 1935, Crabs of Japan, p. 133, textfig. 63.

Chopra & Das, 1937, Rec. Ind. Mus., vol. 39, p. 391.

S. Miyake, 1938, Annot. Zool. Japon., vol. 17, p. 109 (with Japanese literature).

Leene, 1938, Siboga Expedition, 39 c 3, p. 14.

S. Miyake, 1939, Rec. of Oceanograph. works in Japan, vol. 10, p. 174, pl. XVI (V) fig. 5.

Snellius Expedition

Little river near Menado; 0—1 m; Aug. 28, 1929. — 1 juv.

Koepang; fresh water; Nov. 17, 1929. — 1 ♂, 2 ♀ ♀.

Kaledoepa; Aug. 27, 1930. — 1 ♀.

Museum Leiden

North Coast of Java; 1904; P. Buitendijk. — 1 ♂, 2 ♀ ♀.

Tandjong Priok; 1907; P. Buitendijk. — 1 ♂.

North Coast of Java; 1908; P. Buitendijk. — 2 ♂ ♂.

Passoeroean; June 1921; P. Buitendijk. — 1 ♂.

South Coast of Madoera; Febr. 1924; P. Buitendijk. — 1 ♀.

Passoeroean; Dec. 1924; P. Buitendijk. — 1 ♂.

South Coast of Madoera; 1925; P. Buitendijk. — 3 juv., 1 ♂.

Shore of Tandjong Priok; July 1926; P. Buitendijk. — 1 ♂.

Passoeroean, East Java; Aug. 1926; P. Buitendijk. — 3 ♂ ♂.

Shore of Tandjong Priok; May 1927; P. Buitendijk. — 1 ♀.

Probolingo, East Java; Aug. 1927; P. Buitendijk. — 2 ♂ ♂.

- Soerabaia; Dec. 1927; P. Buitendijk. — 3 ♂♂.
 Madoera; July 1928; P. Buitendijk. — 1 juv.
 Bay of Sabang, Poeloe Weh. — 1 ♀.
 Mocara, Antjol, coast near Batavia; March 2, 1908; E. Jacobson. — 2 young ♂♂.
 Sinabang (Simaloer), Sumatra; II, 1913; E. Jacobson. — 1 ♂.
 Sinabang (Simaloer), Sumatra; III, 1913; E. Jacobson. — 1 ♂.

***Charybdis (Charybdis) cruciata* (Herbst)**

- Sakai, 1935, Crabs of Japan, p. 124, textfig. 58.
 Chopra & Das, 1937, Rec. Ind. Mus., vol. 39, p. 392.
 Leene, 1938, Siboga Expedition, 39 c 3, p. 24, figs. 1 & 2.

Snellius Expedition

- Red Sea, 17° 30' N, 40° 39' E; dipnet, surface; April 17, 1929. — 1 young ♂. The right antero-lateral border has seven teeth, there being a very small, narrow tooth between the first and second large teeth.
 Ternate: dipnet, 0—1 m; Sept. 25—27, 1929. — one immature specimen.

Museum Leiden

- Java, Preanger; 1904; P. Buitendijk. — 1 ♂.
 Island Alkmaar; 1906; P. Buitendijk. — 2 ♂♂, 1 ♀.
 Java Sea; Dec. 1907; P. Buitendijk. — 1 juv.
 North Coast of Java; 1908; P. Buitendijk. — 2 ♂♂, 1 ♀. The number of spines on the arms of the chelipeds may be more than three, while the granules have become spine-like.
 Bay of Soerabaia; Oct. 1908; P. Buitendijk. — 1 juv.
 Road of Probolinggo, East Java; Sept. 1909; P. Buitendijk. — 1 juv.
 Road of Semarang; 1909; P. Buitendijk. — 1 juv.
 North Coast of Java; 1910; P. Buitendijk. — 1 ♀.
 Road of Semarang; Oct. 1912; P. Buitendijk. — 2 juv.
 Road of Semarang; Jan. 1914; P. Buitendijk. — 1 juv.
 Shore of Priok; Nov. 1926; P. Buitendijk. — 1 young ♂.
 Soerabaia; Dec. 1927; P. Buitendijk. — 1 ♂.
 North West Coast of Java, near Tjilowong; P. Buitendijk. — 1 ♂, 2 juv.
 Passoeroean; P. Schravenman. — 1 ♂.
 East Coast of Java, sand-bar at the mouth of the river Arakoendoer; March 19, 1907 or 1901 (the dates were about illegible); G. A. J. v. d. Sande. — 1 specimen.

***Charybdis (Charybdis) affinis* Dana**

- Leene, 1938, Siboga Expedition, 39 c 3, p. 35, figs. 8 & 9.

Museum Leiden

- North Coast of Java (Java Sea); 1908; P. Buitendijk. — 1 ♂.
 South Coast of Madoera; Jan. 31, 1917; P. Buitendijk. — 1 ♀.
 Passoeroean, East Java; Dec. 1924; P. Buitendijk. — 2 ♂♂, 1 ♀.
 Soerabaia; Nov. 1925; P. Buitendijk. — 1 ♀.
 Soerabaia; July 1926; P. Buitendijk. — 1 ♂.
 Passoeroean, East Java; Aug. 1926; P. Buitendijk. — 1 ♂, 1 ♀.
 Soerabaia; Nov. 1926; P. Buitendijk. — 2 ♂♂, 2 ♀♀.
 Shore of Tandjong Priok; May 1927; P. Buitendijk. — 2 ♂♂, 1 ♀.
 Soerabaia; Sept. 1927; P. Buitendijk. — 1 juv. ♂.

Measurements in mm :

	North Coast of Java		South Coast of Madoera		Passeroean Dec. 1924		Soerabaya Nov. 1925		Soerabaya July 1926		Passeroean Aug. 1926		Soerabaya Nov. 1926		Shore of Tandjong Priok May 1927				Soerabaya Sept. 1927		Trobolingo Aug. 1927		Soerabaya Dec. 1927				
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	
Length of cephalothorax	28.0	23.2	29.0	26.8	25.7	13.2	24.8	12.6	13.5	16.3	21.5	18.2	18.7	12.0	11.4	10.3	10.6	14.8									
Breadth of cephalothorax	43.0	39.0	44.3	40.7	40.0	—	37.6	19.8	21.5	24.7	34.0	27.6	29.5	18.5	18.4	15.6	16.5	22.9									
Front	11.0	9.5	11.7	10.7	9.9	5.3	9.4	4.8	5.6	6.7	8.5	7.1	7.3	5.0	4.8	4.5	4.5	6.0									
Interorbital space	14.0	11.7	14.5	13.0	12.5	6.6	12.5	6.5	6.8	8.3	11.3	9.1	9.8	6.2	6.0	5.5	5.5	7.5									
Orbit	5.7	5.0	5.7	6.0	5.5	3.5	5.5	3.2	3.5	4.0	4.8	4.3	4.2	3.0	3.2	3.0	2.9	3.7									
Orbito-frontal border	24.5	21.0	25.3	23.8	22.9	13.0	21.8	12.3	13.0	15.5	19.8	16.8	17.3	11.6	11.5	10.6	10.5	14.0									
Length of cheliped (largest)	63.0	43.3	—	—	48.8	23.2	51.8	22.3	23.0	—	39.5	27.7	36.0	20.6	—	—	—	—									
Length of merus natatory leg	7.3	5.8	6.6	6.1	6.2	3.8	6.0	3.0	3.6	4.0	5.1	4.4	4.3	3.2	3.0	2.2	3.0	3.8									
Breadth of merus natatory leg	5.2	4.3	5.6	5.1	4.9	2.4	4.6	2.2	2.3	3.3	4.2	3.5	3.3	2.1	2.0	1.6	2.0	2.8									
Length 6th ♂ abd. segment	4.0	—	4.3	4.0	—	—	3.6	2.0	—	2.5	—	—	—	3.0	1.7	—	1.6	—									
Breadth 6th ♂ abd. segment	5.3	—	5.5	5.3	—	—	4.7	2.5	—	3.2	—	—	—	3.7	2.4	—	2.0	—									
Posterior border	14.5	13.0	15.9	14.0	14.2	7.1	13.6	6.6	7.5	8.4	11.6	9.7	10.0	6.5	6.3	5.8	6.0	8.0									
Cephalothorax breadth	1.54	1.68	1.53	1.52	1.56	—	1.52	1.57	1.59	1.52	1.58	1.52	1.58	1.54	1.61	1.51	1.56	1.55									
Cephalothorax length	1.40	1.35	1.18	1.20	1.27	1.58	1.30	1.36	1.57	1.21	1.21	1.26	1.30	1.52	1.50	1.37	1.50	1.36									
Merus length																											
Merus breadth																											

No exact measurements.

Soft

Probolingo, East Java; Aug. 1927; P. Buitendijk. — 1 ♀.
Soerabaia; Dec. 1927; P. Buitendijk. — 1 ♀.

Of this species there are no specimens in the Snellius material.

In the young specimens the last antero-lateral tooth of the cephalothorax is distinctly longer than the preceding teeth, whereas in the largest specimens it is slightly longer than those.

In all the young specimens the transverse ridge on the cardiac region of the cephalothorax is absent, though it is still doubtful whether *Ch. affinis* Alcock is identical with *Ch. affinis* Dana (see Leene, 1938, p. 37).

On examination of the specimens (3 ♂♂ and 1 ♀) mentioned by Hender-son (1893, Trans. Linn. Soc. (2), vol. 5, p. 374) it was evident, that they belong to a different *Charybdis*-species (probably to *Ch. natator* (Herbst), according to the label, written by Shen, in the bottle). So this reference must be cancelled.

Charybdis (Charybdis) hellerii (A. M.-Edw.)

Goniosoma annulatum, Miers, 1880, Ann. and Mag. Nat. Hist. (5), vol. 5, p. 238.

Charybdis (Goniosoma) merguicnsis, Chopra & Das, 1937, Rec. Ind. Mus., vol. 39, p. 394.

Charybdis (Charybdis) hellerii, Leene, 1938, Siboga Expedition, 39 c 3, p. 44, figs. 15, 16 & 17.

Museum Leiden

Amboina; 1864; Hoedt coll. — 1 ♂. The lateral borders of the sixth tergum of the abdomen are a little divergent posteriorly, instead of being parallel for three fourths to five sixths of their extent.

Road of Semarang; Jan. 1914; P. Buitendijk. — 1 young ♀.

Sangihe Islands; Hoedt coll. — 1 young ♀.

In the British Museum I examined the type specimens of *Goniosoma spiniferum* Miers, which proved to be identical with *Charybdis hellerii* (A. M.-Edw.), as De Man already suggested in 1895 (Leene, 1938, p. 45) and I could state, that the *annulatum* material published by Miers (1880) also belongs to *Ch. hellerii*. Moreover, there were in the collection a.o. specimens from Durban Bay (1936.8.22.4, S. African Museum), N. W. Australia (1932.11.30.183—184; 1 ♂, 1 ♀; Mrs. B. Grey), Hongkong (Barney coll., 1 ♂, 1930.12. 2. 101).

Charybdis (Charybdis) annulata (Fabr.)

Chopra & Das, 1937, Rec. Ind. Mus., vol. 39, p. 393, textfig. 4

Balss, 1938, Göteborgs K. Vet. Vitterli. Samh. Handl., ser. B., Band 5, n:o 7, p. 32. (nec *Goniosoma annulatum*, Miers, 1880, Ann. & Mag. Nat. Hist. (5), vol. 5, p. 238).

Snellius Expedition

Beo, Talaud Islands, shallow water, from nets of fishermen; June 14—21, 1930. — 1 juv.

Museum Leiden

Preanger, Java; 1904; P. Buitendijk. — 1 ♂.

In the British Museum there was an ovigerous female from Kosi Bay (Zululand) 1917.6.19.32, presented by Natal Govt. Mus. and a specimen 81.10 (Kurrachee Mus.).

Charybdis (Charybdis) anisodon (De Haan)

Leene, 1938, Siboga Expedition, 39 c 3, p. 64, figs. 29 & 30.

Snellius Expedition

Kaledoepa; Aug. 27, 1930. — 1 ♂.

Museum Leiden

Java Sea; 1907; P. Buitendijk. — 1 ♂.

Bay of Batavia; Oct. 1907; P. Buitendijk. — 1 young ♀.

Road of Semarang; Oct. 1907; P. Buitendijk. — 1 ♂.

Road of Semarang; P. Buitendijk. — 1 young ♀.

East Coast of Java, Sandheads before the river Arakoendoer; March 1907 (or 1901?).
1 young ♂.

Charybdis (Charybdis) orientalis Dana

Leene, 1938, Siboga Expedition, 39 c 3, p. 68, figs. 32, 33 & 34.

(nec Laurie, 1906, Ceylon Pearl Oyster Fish. Suppl. Rep., vol. 40, p. 418).

Snellius Expedition

Paleleh; shore; Aug. 22, 1929. — 1 ♀.

Near Koepang; Nov. 18—20, 1929. — 1 ♂.

Koepang; reef; Nov. 30, 1929. — 1 juv.

Timor, near Koepang; reef and shore; Dec. 3, 1929. — 1 ♂, 1 young ♀ and 1 ovigerous ♀.

Koepang; reef and shore; Dec. 5, 1929. — 1 ♀.

Ambon; Sept. 11—17, 1930. — 1 ovigerous ♀.

Ternate; Sept. 29, 1930. — 6 young ♀♀, 1 ♂.

Endeh, South Coast of Flores; Nov. 6—8, 1930. — 9 ♂♂, 9 ♀♀, and one specimen with a sacculinid.

Museum Leiden

Poeloe Weh; Nov. 30, 1910; P. Buitendijk. — 1 ♂.

Poeloe Weh; May 13, 1913; P. Buitendijk. — 1 ♂.

Poeloe Weh; Dec. 1924; P. Buitendijk. — 1 ♂.

In the British Museum I examined the material, determined by Laurie (1906) as *Ch. orientalis*, which proved to belong to a different *Ch.*-species. At this moment I am not able to state with certainty with what species this material must be grouped.

Charybdis (Charybdis) callianassa (Herbst)

? Chopra & Das, 1937, Rec. Ind. Mus., vol. 39, p. 395.

Leene, 1938, Siboga Expedition, 39 c 3, p. 81, figs. 41, 42 & 43.

(nec *Goniosoma variegatum*, Miers, 1879, Proc. Zool. Soc., p. 33).

Museum Leiden

Island Alkmaar; 1906; P. Buitendijk. — 1 ♂.

Of this species there are no specimens in the Snellius material.

Examining in the British Museum the *Goniosoma variegatum* material (Miers, 1879) I could state that this is not identical with *Ch. callianassa* (Herbst) as is the case with the *G. variegatum* material (Miers, 1884; Henderson, 1893), but that it belongs to *Ch. bimaculata* (Miers).

Charybdis (Charybdis) rosaea (Hombr. et Jacq.)

(Plate V & fig. 7)

Thalamita rosaea, Hess, 1865, Arch. Naturgesch., 31. Jahrg., 1. Bd., S. 140.

Charybdis (Charybdis) rosaea, Leene, 1938, Siboga Expedition, 39 c 3, p. 43, fig. 14.

Snellius Expedition

Stat. 320, 4° 59' 0 S, 130° 17' 0 E; Aug. 31, 1930. — 24 ♂♂, 14 ♀♀.

Banda, Anchorage off Banda Neira; Aug. 31, 1930. — 11 ♂♂, 4 ♀♀.

The large material which the Snellius Expedition collected enables me to give a more extensive description, than I did in my monograph on *Charybdis* (1938).

Description: The cephalothorax, of which the regions can be distinguished with some difficulty only, is covered with a short dense pile and is crossed by the following faintly granular transverse ridges: (1) one on the frontal region, which is interrupted in the middle, (2) one on each of the protogastric regions, which is short and curved anteriorly, (3) a sinuous one on the mesogastric region, (4) one between the last antero-lateral teeth, which is interrupted by the cervical groove and in the middle, (5) one on the cardiac region, which is merely a ridge-like elevation, most times without distinct granulation.

The front, distinctly prominent beyond the inner supra-orbital angles, is cut into six teeth. The median teeth are triangular, the median and lateral borders are slightly curved; they are a little prominent beyond the submedian teeth. The submedian teeth, which are broader than the medians, are on a higher plane; their median borders slope rather strongly laterally, the lateral borders run nearly straight backwards; they are only very slightly prominent beyond the narrow, triangular lateral teeth.

The antero-lateral border is cut into six teeth. The first tooth has a

straight anterior border, the granular outer border is slightly sinuous. The second tooth is about the same size, the anterior border is nearly straight, the outer border is convex. The third tooth is much broader, the granular anterior border is slightly concave, the granular outer border slightly sinuous or nearly straight. The fifth tooth is smaller than the third, but larger than the first and second teeth; the granular anterior border is slightly concave, the granular outer border is slightly convex. The sixth tooth is not prominent beyond the other teeth; its anterior border is concave.

The postero-lateral borders are rather short with regard to the antero-lateral borders; they converge rather strongly posteriorly.

The posterior border is a little convex; the margin forms a curve with the postero-lateral borders.

The orbit has a rather distinct dorsal inclination. The upper border is cut into three parts by two distinct incisions; the middle and inner parts have granular borders; the inner supra-orbital angle is distinctly broader than the lateral frontal teeth, the top is sharp (though not spine-like). The lower border is cut into two parts by a lateral incision; the median part has

a granular border, except for the dentiform inner infra-orbital angle; of the outer part only the median part of its border is granular.

The "basal" antenna-joint touches the front, excluding the flagellum from the orbital hiatus; it has a low granular crest.

The antennulae can be folded transversely.

The sub-orbital, sub-hepatic, sub-branchial and pterygostomial regions

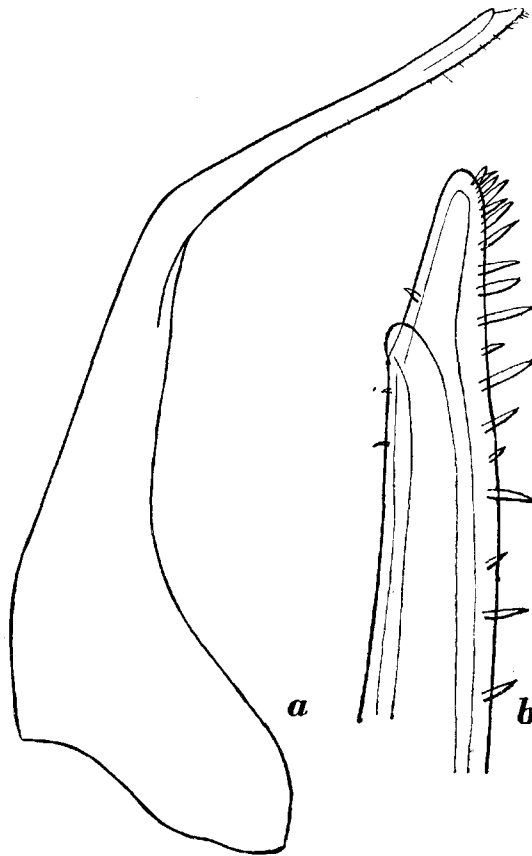


Fig. 7. *Charybdis rosacea* (Hombr. et Jacq) *a*, first male pleopod, posterior view; *b*, apex, posterior view. *a*, \times ca. 14; *b*, \times 56.

are bare and smooth; there are only some long pile and some granules on the ventral surface of the antero-lateral teeth.

The sternum is bare and smooth.

Of the abdomen of the male the second and third terga are keeled transversely. Of the sixth tergum the anterior border is slightly curved anteriorly, the posterior border is distinctly curved anteriorly, the lateral borders are nearly parallel for the proximal half and then converge posteriorly.

The chelipeds differ slightly in size. The granular anterior border of the arm has two spines; the posterior surface has a few large granules. The wrist has the usual armature: one spine at the inner angle and three spinules at the outer angle; there are three faintly granular ridges on the upper surface. The hand is six-costate; the costae are distinct, but faintly granular. The palm in the larger cheliped is more tumid than in the other; it has three spines: one at the wrist-articulation, and two on the upper surface, nearly side-by-side some distance proximal to the finger-joint. The movable finger is slender, and a little longer than the palm.

The second up to the fourth pairs of pereopods have no specific characteristics.

The merus of the natatory leg, which has the usual spine at its posterior border, is very short; it is about as long as broad (see table of measurements). The propus has no armature.

Of the first male pleopod the neck is bent rather abruptly antero-laterally. The outer border of the distal part of the neck and of the apex has some spines, the inner border of the apex has a few spinules only. The neck has a few rows of little spinules on the proximal part of its anterior surface.

This species is very nearly related to *Ch. rostrata* (A. M.-Edw.) and *Ch. callianassa* (Hcrbst).

It differs from *Ch. rostrata* in the following details:

1. The hand of the cheliped has three spines in *rosaea*, and two spines in *rostrata*.
2. The lateral borders of the male abdomen are parallel for half their extent in *rosaea*, and convergent over their whole length in *rostrata*.
3. The shape of the antero-lateral teeth of the cephalothorax.
4. The shape of the first male pleopods.

It differs from *Ch. callianassa* in the following details:

1. The shape of the front of the cephalothorax.
2. The shape of the antero-lateral teeth of the cephalothorax.

3. The shape of the first male pleopods.
4. The ratio cephalothorax breadth to cephalothorax length is about 1.25 in *rosaea* and 1.50 in *callianassa*.

It is desirable to group *Ch. rosaea* a little differently in the key (Leene, 1938, p. 20). I A 1 c should be cancelled, whereas I B 2 should be changed into:

2. Three spines on hand of cheliped; lateral borders of sixth abdominal segment are parallel for half their length
 - a. The ratio cephalothorax breadth to length is about 1.50.
Ch. callianassa (Herbst), p. 81.
 - b. The ratio cephalothorax breadth to length is about 1.25.
Ch. rosaea (Hombr. et Jacq.), p. 43.

Geographical distribution: Coast of New Guinea, Banda Sea.

***Charybdis (Charybdis) variegata* (Fabr.)**

Sakai, 1935, Crabs of Japan, p. 126, pl. 36 fig. 4, textfig. 59.
Leene, 1938, Siboga Expedition, 39 c 3, p. 84, figs. 44 & 45.

Museum Leiden

Road of Semarang; 1909; P. Buitendijk. — 1 ♀.
Road of Semarang; May 1914; P. Buitendijk. — 1 ♀.

Of this species there are no specimens in the Snellius material.

In both specimens the inner lobule of the outer part of the lower orbital border is not so distinctly sharply dentiform as is characteristic for the forma typica. In the specimen, which was collected in May 1914, the transverse ridges on the cephalothorax are not so pronounced as in the other specimen above-mentioned.

In the British Museum there were specimens from Hongkong (Barney coll., 1930. 12.2.103—105) and a dried male from Tugela K. (S. Afr. Museum, 1936, 8.22.5).

***Charybdis (Charybdis) natator* (Herbst)**

Goniosoma affine, Henderson, 1893, Trans. Linn. Soc. Zool. (2), vol. 5, p. 374.
Charybdis (Charybdis) natator, Leene, 1938, Siboga Expedition, 39 c 3, p. 93, figs. 50 & 51.

Snellius Expedition

Pankaja, near Makassar; shore; March 3, 1930. — 1 young ♂.

The cephalothorax is bare; the granular transverse ridge faintly indicated, especially on the posterior part. The median and submedian frontal teeth are distinctly truncate, whereas the lateral frontal teeth and the inner supra-orbital angles are obtuser than in the adult specimens.

In the British Museum there was a.o. a young ♂ from N.W. Australia (Mrs. B. Grey coll., 1932. 11.30.156).

***Charybdis (Gonihellenus) vadorum* (Alcock)**

Leene, 1938, Siboga Expedition, 39 c 3, p. 114, figs. 63, 64 & 65.

Museum Leiden

Road of Semarang; 1909; P. Buitendijk. — 1 young ♂.

EXPLANATION OF THE PLATES

PLATE I

Lupocyclus rotundatus Ad. & Wh. Dorsal view and abdomen of male specimen, Siboga Expedition, Stat. 60. × 2½.

PLATE II

Lupocyclus quinquedentatus Rathbun. Dorsal view of female specimen (Siboga Expedition, Stat. 37) and abdomen of male specimen (Siboga Expedition, Stat. 310). × 3.

PLATE III

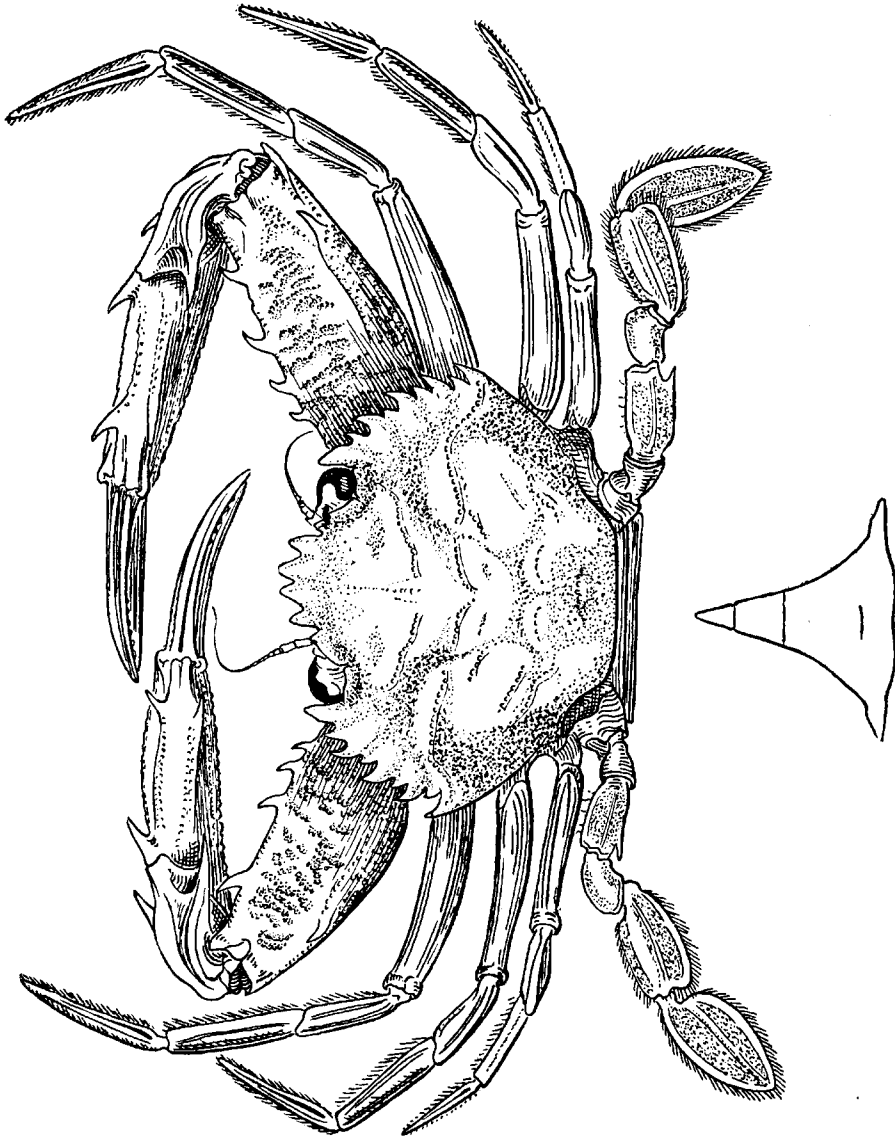
Lupocyclus philippinensis Nauck. Dorsal view and abdomen of male specimen, Siboga Expedition, Stat. 2. × 2.

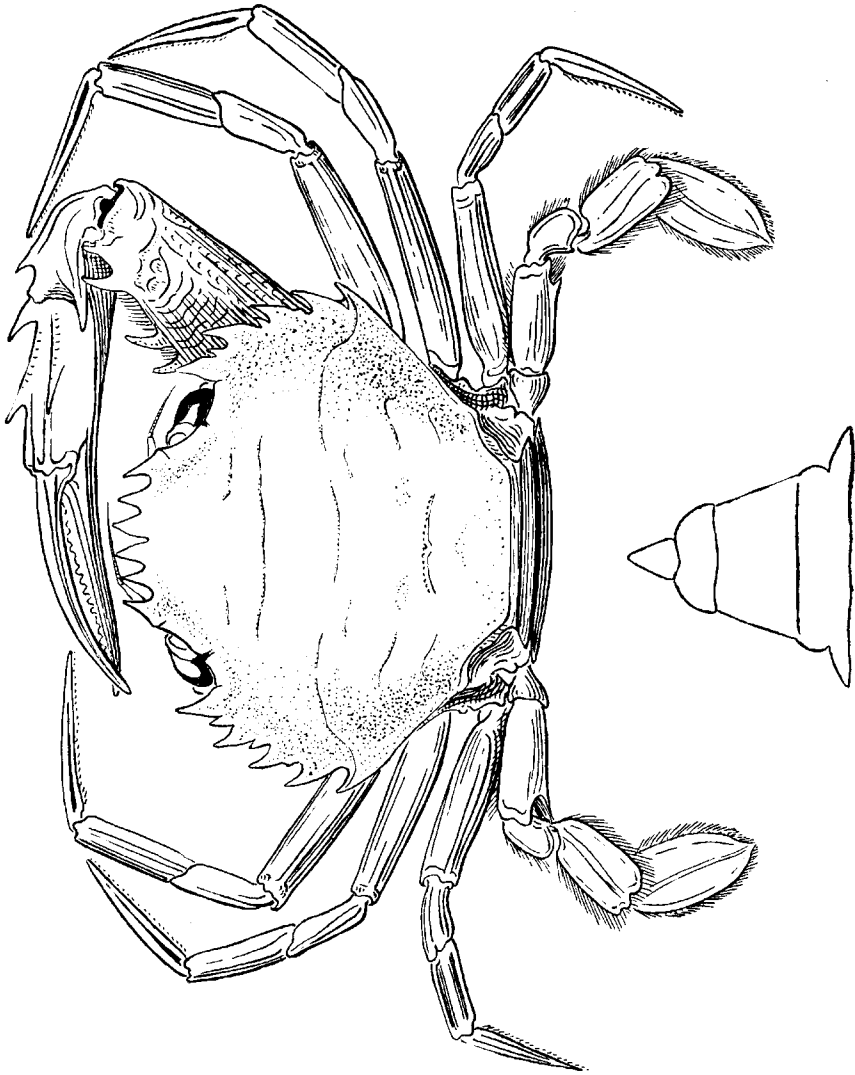
PLATE IV

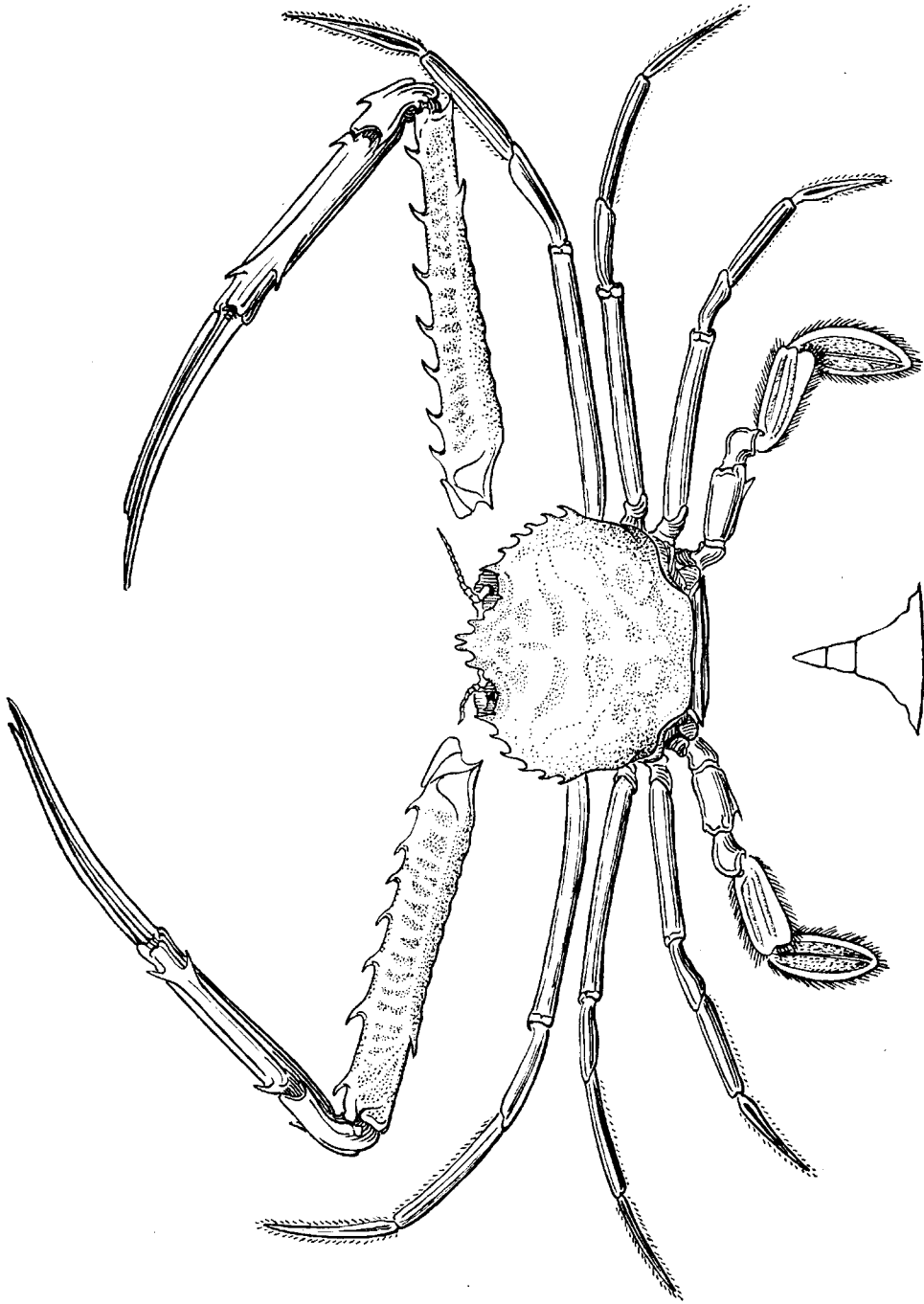
Lupocyclus sexspinosus nov. spec. Dorsal view and abdomen of male specimen, Siboga Expedition, Stat. 313. × 2½.

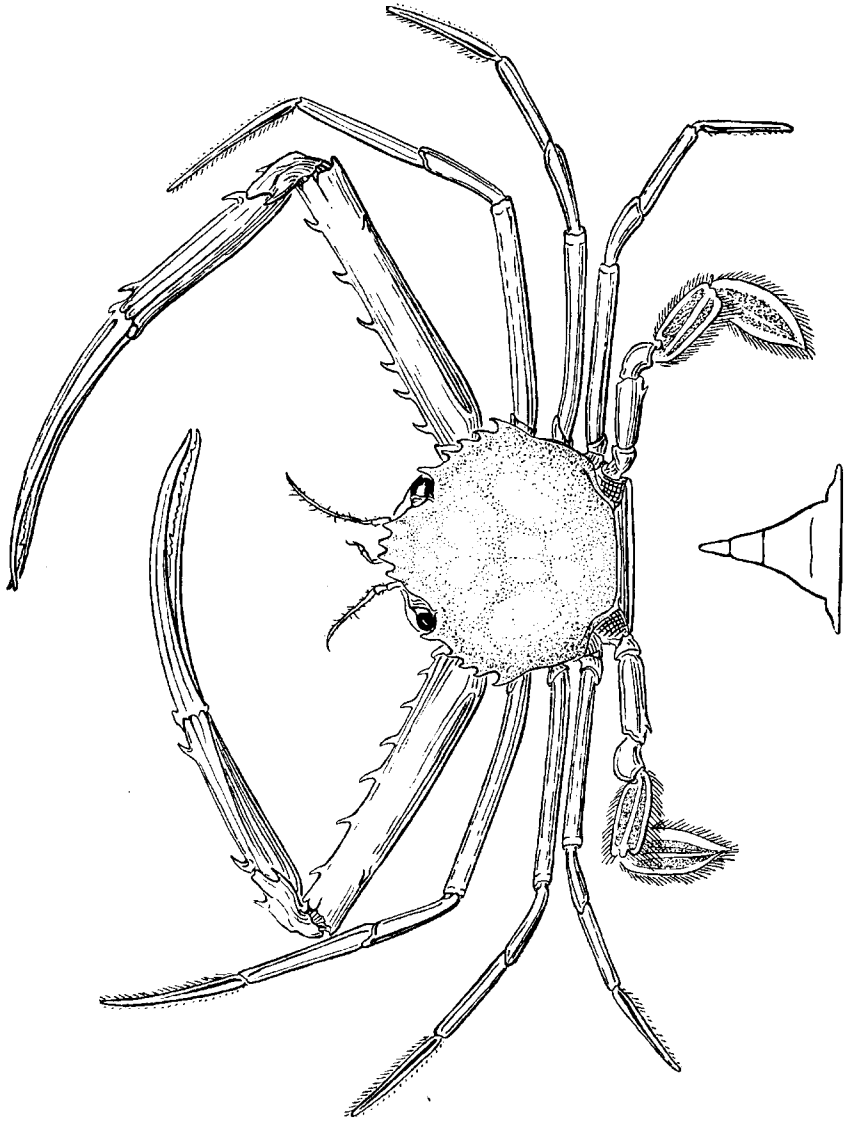
PLATE V

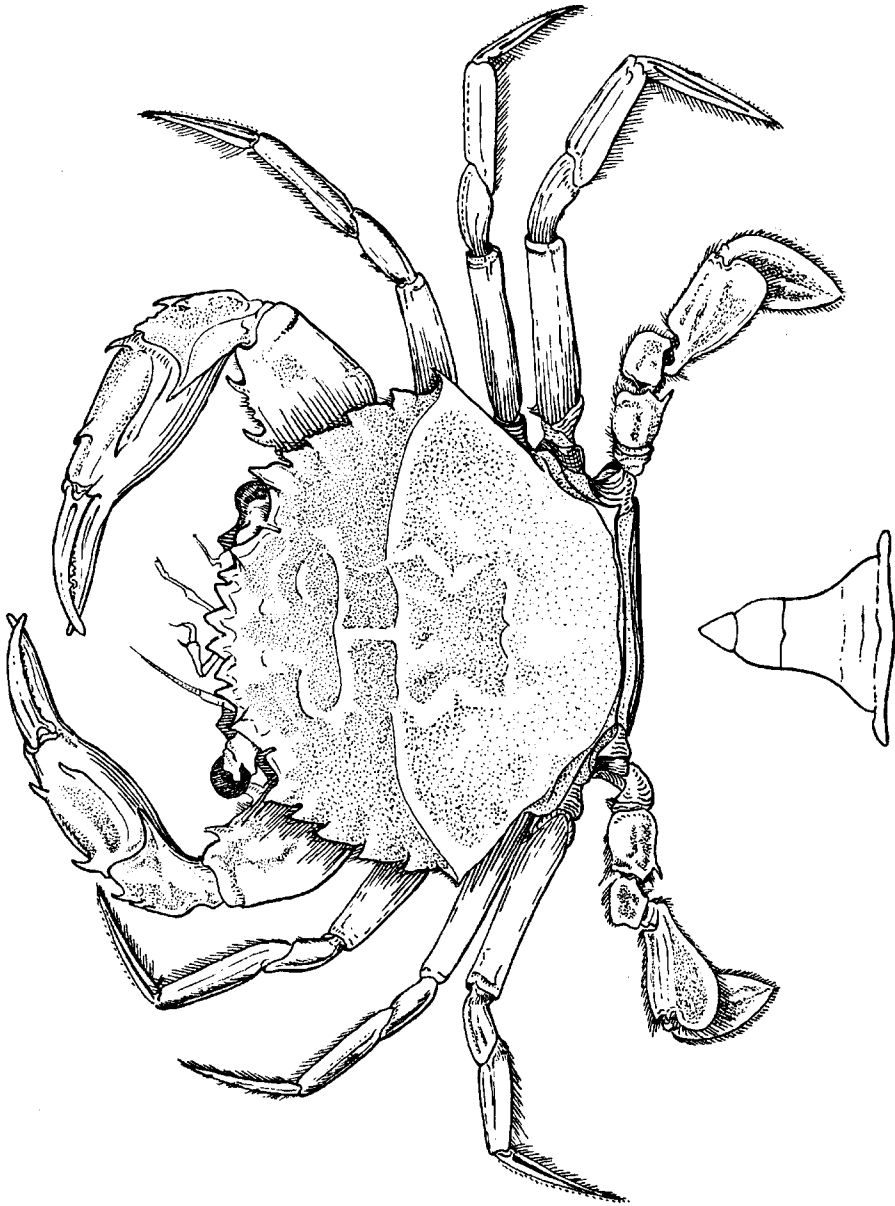
Charybdis rosaea (Hombr. et Jacq.). Dorsal view and abdomen of male specimen, Snellius Expedition. × 2.











Measurements in mm:

	S T A T I O N 320																																																						
	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♀	♀																																			
Length of cephalothorax	25.0	27.5	23.4	23.9	24.0	29.3	23.5	23.7	26.5	24.6	29.0	25.3	25.1	23.8	22.4	23.2	26.0	23.0	20.7	26.2	26.2	26.7	23.0	23.6	24.8	26.5	24.5	26.2	23.8	23.5	24.9	25.8	22.8	22.5	24.5	22.5	23.0	23.4	29.8	25.8	25.8	28.8	27.7	28.8	28.0	28.1	25.1	22.2	26.4	28.0	24.2	24.9	24.2		
Breadth of cephalothorax	31.0	34.5	30.0	30.5	30.8	36.6	29.5	30.1	33.0	29.8	36.5	31.5	30.7	29.6	27.9	29.5	32.2	30.5	26.0	32.2	33.2	28.6	29.6	31.6	34.6	31.5	33.0	31.5	33.0	30.7	30.0	32.0	—	28.7	27.6	31.3	28.2	28.5	29.4	36.8	32.0	33.5	36.0	34.0	—	35.0	34.1	31.8	28.3	32.5	35.0	31.2	31.7	30.6	
Front	9.0	9.5	8.2	8.5	8.5	9.9	8.2	8.3	9.3	8.5	9.7	8.7	8.5	8.4	7.8	8.1	9.0	8.3	7.5	8.7	9.0	8.0	8.4	8.6	9.7	8.3	9.0	8.3	9.0	8.2	8.3	7.9	8.1	7.9	8.2	8.3	8.9	8.2	8.2	8.3	10.2	8.9	9.0	9.5	9.3	9.8	9.6	9.7	8.5	7.6	9.0	9.9	8.3	8.5	8.2
Interorbital space	10.7	10.6	11.4	9.6	10.2	10.0	12.0	9.5	10.2	11.0	10.0	11.5	10.2	10.1	9.9	9.3	9.8	10.7	9.9	8.7	10.7	10.6	9.5	10.0	10.2	10.9	10.0	10.2	10.2	10.2	9.3	9.4	9.7	9.0	9.6	9.6	9.6	12.1	10.5	10.7	11.6	11.1	11.6	11.6	11.8	10.2	9.5	10.7	11.6	10.0	10.3	10.0			
Orbit	5.2	5.0	5.8	5.0	5.0	5.6	5.0	4.8	5.6	5.5	5.7	5.2	4.5	5.1	4.8	4.9	5.2	4.8	4.6	5.5	5.3	5.0	5.0	5.0	5.0	5.2	5.0	4.8	5.3	5.5	4.8	5.0	5.2	4.8	5.0	5.0	5.0	6.1	5.1	5.2	6.0	5.5	5.6	5.5	5.7	5.2	4.9	5.5	5.4	5.2	5.4	5.2			
Orbital-frontal border	19.8	19.8	21.8	18.6	19.0	19.0	22.5	18.6	19.0	21.4	20.0	22.1	19.7	19.5	19.5	18.2	18.7	20.1	18.5	17.3	20.9	20.2	18.9	18.9	19.2	20.2	19.3	20.5	19.0	18.5	19.9	20.1	18.1	18.0	19.5	17.9	18.6	18.9	23.3	19.9	20.5	21.9	21.2	22.5	21.8	22.1	19.4	18.3	20.5	21.4	19.1	20.2	19.5		
Length of cheliped (largest)	40.7	39.4	46.3	38.1	37.0	37.9	—	38.0	—	44.4	39.9	46.3	39.8	40.6	37.2	36.2	35.7	41.3	37.2	32.0	41.8	44.0	35.6	—	—	36.9	—	35.7	—	34.5	31.7	36.0	33.5	—	35.3	50.8	42.1	42.1	50.0	46.5	46.0	45.0	46.4	—	—	—	—	35.8	—	36.8					
Length of merus natatory leg	4.6	4.7	5.3	4.5	4.5	4.8	5.7	4.5	4.9	5.5	4.8	5.6	5.0	4.7	4.6	4.2	4.5	4.5	4.0	4.9	5.4	4.3	4.6	4.5	5.2	4.8	5.1	4.3	4.5	4.7	5.2	4.5	4.3	4.2	4.6	4.5	5.5	4.9	5.1	5.8	5.5	5.5	5.2	5.0	4.5	5.2	5.2	5.2	4.7	4.5	4.5				
Breadth of merus natatory leg	4.5	4.5	5.0	4.1	4.3	4.3	5.2	4.3	4.5	4.8	4.5	5.1	4.5	4.5	4.4	4.0	4.2	4.7	4.1	3.8	4.5	4.9	4.2	4.1	4.4	4.6	4.2	4.5	4.3	4.2	4.0	4.1	4.0	4.0	4.0	4.2	4.2	4.5	4.7	5.1	5.0	5.0	4.5	4.0	4.5	4.0	4.5	4.9	4.3	4.5	4.3				
Length 6th abd. segment	3.4	3.5	3.8	3.0	3.1	3.0	3.8	3.3	3.1	3.2	3.1	3.7	3.4	3.4	3.2	3.0	3.2	3.4	3.1	2.8	3.2	3.5	3.0	3.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
Breadth 6th abd. segment	4.2	4.5	5.0	4.0	4.2	4.0	5.3	3.9	4.4	4.8	4.0	4.8	4.7	4.5	4.5	3.8	4.0	4.5	4.0	3.6	4.5	4.9	4.0	4.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Posterior border	13.0	12.9	14.5	12.0	12.0	12.5	14.9	12.0	12.6	13.5	12.4	14.7	13.0	13.0	12.5	11.5	12.2	13.5	12.3	10.9	13.2	13.5	11.8	11.6	12.7	14.5	12.9	13.5	13.0	12.4	13.5	13.2	12.3	12.0	13.0	11.8	12.1	12.5	15.2	13.0	13.5	14.8	13.7	14.5	14.5	14.5	13.0	11.5	13.2	14.7	12.9	13.5	12.8		
Cephalothorax breadth	1.24	1.24	1.25	1.28	1.28	1.28	1.25	1.26	1.27	1.25	1.21	1.26	1.25	1.22	1.24	1.25	1.27	1.24	1.33	1.26	1.23	1.24	1.22	1.25	1.27	1.31	1.29	1.26	1.29	1.28	1.29	—	1.26	1.23	1.28	1.25	1.24	1.26	1.23	1.24	1.30	1.25	1.23	—	1.25	1.21	1.27	1.27	1.23	1.25	1.25	1.27	1.26		
Cephalothorax length	1.24	1.24	1.25	1.28	1.28	1.25	1.26	1.27	1.25	1.21	1.26	1.25	1.22	1.24	1.25	1.27	1.24	1.33	1.26	1.23	1.24	1.22	1.25	1.27	1.31	1.29	1.26	1.29	1.28	1.29	—	1.26	1.23	1.28	1.25	1.24	1.26	1.23	1.24	1.30	1.25	1.23	—	1.25	1.21	1.27	1.27	1.23	1.25	1.25	1.27	1.26			