pl. xxxi. fig. 5: Miers, Challenger Brachyurs, p. 176: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 369.

Carapace flat, its length in the middle line between ‡ and ‡ its breadth without the great lateral spines, its surface rough, granular, and symmetrically puckered or tubercled.

Front prominent beyond the inner supra-orbital angles and beyond the epistome, cut into four bluntly triangular teeth of nearly equal size, of which the middle two are the more prominent. Supra-orbital margin cut by two fissures.

Antero-lateral borders rather long, moderately oblique, cut into 9 teeth (including the outer orbital angle) the last of which is about 3 times longer than any of the others: the teeth are often rather irregular. Posterior border nearly straight and forming a dentiform angle of junction with the postero-lateral borders.

The orbits are not completely dorsal. The merns of the external maxillipeds is elongate, but has not the antero-external angle produced

laterally.

Chelipeds of the male a little over twice the length of the carapace, granular, the hand the most massive joint. 3, occasionally 4, teeth on the anterior (inner) border of the arm, and 1 at the far end of the posterior border. Hand and upper surface of wrist costate, the costs granular: both inner and outer angle of wrist spiniform: two spinules, which are often blunt and inconspicuous, on the hand in the usual position: fingers a good deal shorter than the palm.

Legs unarmed: sternum granular.

A small species; ovigerous females have the carapace 11 millim, long and 21 millim, broad including spines.

Colours of good fresh spirit specimens yellow, profusely mottled and speckled with brown green and purple.

In the Indian Museum are 43 specimens from the Andamans, off Ceylon 28 fathoms, and the Persian Gulf.

23. Neptunus (Hellenus) Brockii, de Man.

Neptunus brockii, de Man, Archiv. f. Naturges. LIII. 1887, i. p. 328, pl. xiii. fig. 4.

Closely resembles N. tuberculosus, but is distinguished by the following characters, specimens of the same size and sex being compared:—

- the front is not cut into teeth, but forms a simple lamina that projects slightly beyond the inner supra-orbital angles;
- (2) the surface of the carapace is cut up into low granular subregional elevations, but the tubercles characteristic of N. tuberculosus are absent:

(3) there are no spines on the hand. [But there are specimens of N. tuberculosus in which the spines of the hand are blunt and inconspicuous].

In the Indian Museum are two males from the Andamans. After comparing these with 43 specimens, of both sexes and all sizes, of N. tuberculosus I think they should be kept distinct.

24. Neptunus (Lupocycloporus) Whitei.

Achelous Whitei, A. Milne Edwards, Archiv. u Mus. X. 1861, pp. 343, 347, pl xxxi. fig. 6: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1886-90, p. 110: J. B. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 371.

Neptunus Whitei, Miers, Challenger Brachyura, p. 171.

Carapace fairly convex, its length about \$\frac{1}{3}\$ its breadth without the spines, its surface finely pilose, but not sufficiently so to conceal a characteristic series of transverse finely-beaded ridges, of which there are 3 on the gastric, 3 on either branchial region, and one on the cardiac.

The front, which is prominent beyond the bluntly dentiform inner supra-orbital angles and beyond the epistome, is cut into four very definite teeth of nearly equal size, of which the middle two are slightly the more prominent. Supra-orbital border cut by two fissures.

Antero-lateral borders moderately oblique, cut into nine regular teeth (including the outer orbital angle) of which the last is barely twice the length of the others in the adult, though in the young it is a good deal longer. Posterior border finely beaded, and forming a common curve with the postero-lateral borders.

Orbits large, almost entirely dorsal in position, not concealing the

large reniform eyes from dorsal view.

Chelipeds nearly 3 times the length of the carapace in the adult male, more or less covered with squamiform granules, the wrist and hand much slenderer than the arm. 4 to 6 spines on the anterior border of the arm; 2 on the posterior border, one being terminal the other submedian. Hand and upper surface of wrist costate, the costa granular: both inner and outer angle of wrist spiniform: at least 3 spines on the hand, one being in front of the apex of the wrist-joint and two side by side some distance behind the finger-joint. Fingers slender, compressed, ending in long needle-like points, the tips being slightly but very characteristically bent outwards; otherwise the dactylus is nearly straight and the immobile finger gently upcurved.

Legs, like the chelipeds, more or less pubescent: there is a spine near the far end of the posterior border of the merus of the last pair.

Abdomen of male pointed: in both sexes the 2nd and 3rd abdominal terga are transversely, but not very strongly, carinate. The largest specimen (male) in the Indian Museum has the carapace 24 millim. long and 44 millim. broad including the spines, but there are numerous egg-laden females that are much smaller than this.

In the Indian Museum are 33 specimens, from the Madras coast and the Andamans, besides one of the Challenger duplicates from New-Guinea.

25. ? Neptunus (Lupocycloporus) gracilimanus, (Stimpson).

? Amphitrite gracilimanus, Stimpson, Proc. Acad. Nat. Sci. Philad. 1858, p. 38. ? Neptunus gracilimanus, A. Milne Edwards, Archiv. du Mus. X. 1861, pp. 836, 839.

This species, if my identification be correct, though much like N. whitei, is easily distinguished by the following difference:—

- (1) the transverse beaded ridges of the carapace are much less distinct and are less numerous: they are six in number, the anterior gastric one being absent: the carapace also is decidedly more convex:
- (2) the shape of the front is entirely different, for instead of being cut into four subscute teeth of nearly equal size, it is cut into four lobes of which the outer ones are broad and shallow while the middle two are narrow and dentiform: the inner supra-orbital angles also are much blunter:
- (3) the last spine of the antero-lateral border is always in adults more than twice the length of any of the others:
- (4) both the spines on the posterior border of the arm are near the far end of that border:
- (5) the fingers are incurved, and the bending outwards at tip is inappreciable:
- (6) it is a much smaller species: the largest egg-laden female has the carapace 11 millim. long and 21 millim. broad including the spines, and there are numerous egg-laden females much smaller than this.

The differences are constant throughout the whole series of specimens of both sexes.

In the Indian Museum are 45 specimens from the Andamans, G. of Martaban, Arakan coast, and from the east coast of the Peninsula at 15-35 fms.

26. Neptunus (Achelous) granulatus (Edw.) A. M. Edw.

Lupea granulata, Milne Edwards, Hist. Nat. Crust. I. 454.

Amphibrite gladiator, De Haan, Faun. Jap. Crust. p. 65, pl. xviii. fig. 1.

Amphitrite speciosa, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 84, and U. S. Expl. Exp., Crust. pt. I. p. 276, pl. xvii. fig. 1.

Achelous granulatus, A. Milne Edwards, Archiv. du Mus. X. 1861, pp. 344, 347, aud in Maillard's l'ile Réunion, Annexe F. p. 2, and Nouv. Archiv. du Mus, IV.

1868, p. 70 and IX. 1873, p. 161: Streets, Bull. U. S. Nat. Mus. VII. 1877, p. 109: Miers, Phil. Trans. Roy. Soc. Vol. 168, 1879, p. 488, and Zool. H. M. S. Alert, pp. 230, 538: Richters in Möbius Meeresf. Maurit. p. 152: Muller, Verh. Nat. Ges. Basel VIII. 1886, p. 475: de Man, Archiv. f. Naturges. LIII. 1887, i. p. 381: Canc. Boll. Soc. Nat. Napol. III. 1889, p. 214: J. R. Henderson, Trans. Linn. Soc. Zool. (2) V. 1893, p. 371.

Neptunus (Achelous) granulatus, Miers, Challenger Brachyura, p. 180: Thall-witz, Abh. Zool. Mus. Dresden, 1890-91, No. 3, p. 48: Ortmann, Zool. Jahrb. Syst. VII. 1898-94, p. 72, and in Semon's Zool. Forschungsr. (Jens. Donk. VIII.) Crust. p. 45: de Man, Zool. Jahrb. Syst. VIII. 1894-95 p. 558.

Carapace depressed, a little over three-quarters as long as broad, finely subtomentose, its surface out up into well-defined sub-regional elevations the convexities of which are granular.

Front slightly receding, slightly prominent beyond the blunt inner supra-orbital angles and beyond the epistome, cut into four lobes (not counting the inner supra-orbital angles) of which the middle two are the smaller and less prominent and are often almost coalescent. Supraorbital border with two distinct fissures.

Antero-lateral borders very slightly oblique, cut into 9 teeth (including the outer orbital angle) of which the last is but little bigger than any of the others which it quite resembles in shape. The posterior border forms a common curve with the postero-lateral borders.

Orbits not completely dorsal: eyes not very large. Antero-external angle of morus of external maxillipeds considerably produced in a lateral direction.

Chelipeds in the male about 2½ times the length of the carapace, more or less granular, the hand not or little less massive than the arm. Arm with 4 or 5 spines on the anterior border, and with 2 on the posterior border—one submedian the other subterminal: outer border of wrist subcarinate up to a terminal spinule, inner angle of wrist strongly spiniform: hand costate, with a blunt spinule in front of the apex of the wrist-joint and a sharp spine some distance behind the finger-joint.

First three pair of legs rather slender.

Third abdominal tergum in both sexes strongly and sharply carinate.

Colours of good fresh spirit specimens pale yellow, the dorsal surface of the carapace and chelipeds profusely mottled and speckled with grey and dark red.

A small species: egg-laden females have the carapace 12 millim. long and 15 millim. in total breadth, but adult males are half again as big.

In the Indian Museum are 140 specimens from the Andamans and Nicobars, Persian Gulf, Mergui, Ceylon, and Malabar coast, (besides 3 from Mauritius and 2 from Upolu).

27. Neptunus (Achelous) orbicularis, Richters.

Achelous orbicularis, Richters in Möbius Meeresf. Maurit. p. 153, pl. xvi. figs. 14, 15: J. H. Henderson, Trans. Linu. Soc., Zool., (2) V. 1893, p. 871.

Differs from Neptunus (Achelous) granulatus in the following characters:-

- (1) the carapace is extremely thin and depressed, is perfectly smooth—except for faint marginal depressions—and bare, and is subcircular in shape, its length being 4 its breadth:
- (2) the outer fissure of the supra-orbital margin is obsolete, and the inner fissure is represented by a closed suture:
- (3) the antero-lateral borders are cut into 9 teeth which gradually decrease in size from before backwards:
- (4) the chelipeds in the male are about twice the length of the carapace, their surface is non-granular, and the posterior border of the arm is more expanded than in N. granulatus.

In the Indian Museum are 6 specimens from the Pedro Shoal (Laccadives) and 2, including an egg-laden female, from the Andamans.

CHARYBDIS, De Haan (GONIOSOMA, A. Milne Edwards).

Charybdis and Oceanus, De Haan, Faun. Japon. Crust. pp. 10, 9.

Goniosoma, A. Milne Edwards, Ann. Soi. Nat., Zool., (4) XIV. 1860, p. 263, and Archiv. du Mus. X. 1861, p. 367: Miers, Challenger Brachyura, p. 189.

Charybdis, M. J. Rathbun, Proc. Biol. Soc. Washington, XI. 1897, p. 161.

Carapace hexagonal, moderately broad, depressed or little convex, usually with transverse granular ridges at any rate in its anterior half.

Front proper (not including the inner supra-orbital angles from which it is distinctly separated) usually between a fourth and a third the greatest breadth of the carapace, cut into six lobes or teeth (exclusive of the supra-orbital angles).

Antero-lateral borders oblique, moderately arched, longer than the postero-lateral, cut into from 5 to 7—usually six—teeth including the outer orbital angles.

Upper border of orbit with two notches or fissures; there is a gap in the lower border, and the inner angle of this border is usually dentiform and moderately prominent. The antennules fold transversely.

Basal antenna-joint short and broad; its outer angle forms a lobule which usually fills the orbital histus and meets the front, excluding the flagellum from the histus.

Epistome sufficiently long: buccal cavern squarish, broader than long: the efferent branchial canals usually well defined.

Chelipeds massive, longer than any of the legs, usually a little unequal: arm with spines; the inner angle of the wrist strongly spiniform, the outer angle usually armed with spinules; palm prismatic or tumid, generally with costs and some definitely placed spines; fingers strong, usually about as long as palm, strongly toothed.

Legs compressed: in the last pair the merus and carpus are shortened and broadened (the merus usually having a spine at the far end of the posterior border) and the propodite and dactylus typically foliaceous for swimming.

The abdomen is as in Neptunus.

Although the name Charybdis has the priority, and although I cannot admit that anything short of absolute identity—letter for letter—justifies any charge of "preoccupation," I regret to discard a name that, like Goniosoma, has been in use without any shadow of misunderstanding, for nearly 40 years.

I do so only because I believe that Goniosoma, if the name be accepted, might with perfect propriety be merged again in Thalamita, and because, in any case, the name Goniosoma may conveniently be used for a subgenus.

I agree with Ortmann that Thalamonyx may quite reasonably be regarded as a subgenus of Charybdis, but for mere convenience I should prefer to subdivide the latter genus into three sections, or subgeners, characterized as follows:—

GONIOSOMA.

GONIOHELLENUA

III. The lobule at the external angle of the basal antennajoint does not nearly touch the front, so that the flagellum stands in the upper part of the orbital hiatus. The posterior border of the dorsum of the carapace is straight and forms either an angular junction, or a curve, with the postero-lateral borders. The four median frontal teeth are larger and broader than the two outermost pairs. A spine at the end of the posterior border of the arm may be present, or not GONIONEPTUNUS.

Key to the Indian species of the genus Charybdis (= Goniosoma.)

- I. The antennal flagellum is completely excluded from the orbital histus: the ridge that bounds the dorsum of the carapace posteriorly forms a curve with the postero-lateral borders : no spine on posterior border of arm (Goniosoma) :-
 - No distinct transverse ridges on the carapace behind the level of the last spine of the anterolateral borders :-
 - 1. Not more than three large spines on the anterior border of the arm: the orbits have no decided dorsal inclination and their major diameter is never more than one-third the width of the interorbital space :
 - u. First spine of antero-lateral border anteriorly truncated and notched: sixth abdominal tergum of male with curved and gradually convergent sides
 - b. First spine of antero-lateral border obliquely truncated with the inner angle soute: sixth abdominal tergum of male with curved and gradually-convergent sides : epibranchial regions extremely tumid dorsally
 - c. First spine of antero-lateral border acute: the sides of the sixth abdominal tergum of male parallel or slightly divergent in two-thirds or more of their extent :
 - i. An acute spine on the posterior border of carpus of last pair of legs
 - ii. A sharply dentiform lobule at the outer end of the lower border of the orbit
 - iii. The major diameter of the trae orbital cavity is barely a fourth the width of the interorbital space
 - 2. Four or more large spines on the anterior border of the arm: the orbits have a strong dorsal inclination and their major

G. cruciferum.

G. Rivers-Andersoni.

G. merguiense.

G. quadrimaculatum.

G. annulatum.

J. n. 7

II.

diameter is nearly half the width of the interorbital space: first tooth of anterolateral border anteriorly truncated and notched	G. miles.
B. A transverse ridge on the cardiac region, as well as one or two in the posterior half of either branchial region:—	G. Miles.
1. Two additional ridges in the posterior half of either branchial region; all the spines of the antero-lateral border well developed:— a. Carapace moderately broad: first spine of antero-lateral border trun-	,
cated, the last not enlarged corbits without dorsal inclination : cheli- peds strongly granular and nodular	G. natator.
b. Carapace very broad: last spine of the antero-lateral border twice as long as any of the others: orbits with strong dorsal inclination: a stout tooth on the lobule of the basal	
antenna-joint	G. variegatum,
C. A transverse ridge on the cardiac region, but none on the posterior half of the branchial region:—	G. orientale.
 Carapace flat: 3 spines on anterior border of arm, 5 on upper surface of hand: sides of 6th abdominal tergum of male curved 	,
and gradually convergent	G. affine.
male parallel for half their extent b. Carapace about four-fifths as long as broad: 2 spines on the hand: sides of 6th abdominal tergum of male curved: the two middle	G. callianassa.
frontal teeth remarkably prominent Antennal flagellum completely excluded from orbital histus: posterior border of dorsum of carapace straight and forming a dog's-eared angular junction with the postero-lateral borders: the posterior border of the arm ends in a spine (Goniohellenus):— A. Last spine of the antero-lateral border smaller	G. rostratum.
than any of the others	G. ornatus.

B. Last spine of the antero-lateral border far larger than any of the others

G. hoplites.

- The lobular process of the basal antenna-joint does not nearly touch the front, so that the flagellum stands in the upper part of the orbital hiatus (Gonioneptunus):-
 - A. Posterior border of dorsum of carapace forming an angular junction with the postero-lateral borders: the posterior border of the arm ends in a spine :-
 - 1. Transverse ridges of carapace faint: a large red impermanent spot on either branchial region
 - 2. Transverse ridges of carapace promispot on either branchial region
 - nent: a persistent small dark brown
 - B. Posterior border of dorsum of carapace forming a curve with the postero-lateral borders: no spine on the posterior border of the arm: carapace little transverse, the extent of the fronto-orbital border nearly equal to the greatest breadth of the carapace
 - G. investigatoris.

G. truncatus.

G. bimaculatus.

[Besides the species mentioned in the above Key, other two, which I have not seen, are included in the Indian Fauna by other authors. They are G. erythrodactylum (Lamk.) and G. sexdentatum (Herbst) A. M. E.

- G. srythrodactylum is recognized, according to A. Milne Edwards. by having seven teeth, of which the second and fourth are rudimentary, on the antero-lateral borders.
- G. sexdentatum. A. Milne Edwards, if not of Herbst, is very probably the same as de Man's G. merguiense.]
 - Charybdis (Goniosoma) crucifera, (Fabr.) A. M. Edw.

Rumph, Amboinsche Rariteitk. pl. VI. fig. P.

Cuncer sexdentatus, Herbst, Krabben pl. viii. fig. 58 (1790).

Cancer cruciatus, Herbst, Krabben pl. II. V. 155, pl. xxxviii. fig. 1 (1794.)

Portunus crucifer, Fabricius, Ent. Syst. Sappl. p. 864 (1798); Bosc, Hist. Nat. Crust. I. p. 218: Latreille, Hist. Nat. Crust. VI. p. 14 and Encycl. Meth. X. p. 191.

Thalamita crucifera, Milne Edwards, Hist. Nat. Crust. I. 462: Lucas, Hist. Nat. Anim, Art. Crust. p. 104: Haswell, Cat. Austral. Crust. p. 81.

Oceanus crucifer, De Haan, Fann. Japon. Crust. p. 40.

Charybdis crucifera, Dana, U. S. Expl. Exp. Crust. pt. I. p. 286, pl. xvii. fig. 11 a-c: Stimpson, Proc. Ac. Nat. Sci. Philad. 1868, p. 39.

Goniosoma cruciferum, A. Milne Edwards, Archiv. du Mus. X. 1861, pp. 371. 385: Tozzetti, "Magenta" Crust. p. 82, pl. vi. fig. 2 a-g: Nanck, Zeits. Wiss. Zool. XXXIV. 1880, p. 61, pl. i. fig. 27. (gastric testh): Muller, Ver. Ges. Nat. Basel, VIII. 1886. p. 475: Miers, "Challenger" Brachyura p. 191: de Man, Archiv. f. Naturges. LIII. 1887, l. p. 334, and Journ. Linn. Soc. Zool., XXII. 1887,

1888, p. 79, pl. v. fig. i, and Zool. Jahrb., Syst., VIII. 1895, p. 559: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 218: Walker, Journ. Linn. Soc., Zool., XX. 1886-90, p. 110: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 81: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 374.

Carapace not distinctly pilose, about two-thirds as long as broad, slightly convex, nearly smooth to the naked eye, the regions ill-defined. A finely granular curved line—broken on the gastric region—traverses it between the last spines of either antero-lateral border, and two similar lines—the anterior widely broken in the middle—cross the anterior part of the gastric region: these are the only ridges on the carapace, and they become faint with age.

The front is rather deeply cut into six prominent regular bluntpointed teeth, not including the inner supra-orbital angles, none of which project much beyond the others.

The antero-lateral borders are cut into six teeth including the outer orbital angles, of which the first is truncated and notched or bifid, the last is almost spine-like but is little more salient than the others, while the other four are broad anteriorly-acuminate lobes.

The posterior border of the dorsal surface of the carapace forms a curve with the postero-lateral borders.

The orbits have but little dorsal inclination: the major diameter of their cavity is a third the width of the inter-orbital space: neither the inner angle nor the lobule at the outer end of their lower border are dentiform, though the latter lobule is well defined.

The lobule at the antero-external angle of the basal autenna-joint has a ridge, but not a tooth.

The chelipeds are nearly $2\frac{1}{2}$ times the length of the carapace (in the male) and except for definitely placed costs and spines are smooth: the hands are a little unequal in size. The arm has three enlarged spines on the anterior (inner) border and a spinule at the far end of the inferior border, but the posterior border is unarmed. The wrist has the inner angle strongly spiniform and has three spinules and some smooth ridges on the outer surface. The hands are tunid but not inflated: they are 5-costate and have 4 spines on the upper surface. In both hands the fingers, which are strongly toothed, are as long as their palm.

In the last pair of legs the merus is about three-fourths as long as broad and has a spine at the far end of the posterior border; the carpus is unarmed, and there are one or two inconspicuous denticles near the far end of the posterior border of the propodite.

The abdomen in both sexes has the 2nd and 3rd terga bluntly carinate: in the male the 6th tergum is much broader than long and has curved and gradually convergent sides.

In spirit the gastric region is purplish brown with a large yellow cross.

Size large: good specimens in the Indian Museum have the carapace 65 millim, in extreme length and 95 millim, in extreme breadth,

29. Charybdis (Goniosoma) Bivers-Andersoni, n. sp.

Very closely related to *C. crucifera*, from which it only differs in coloration, in having the epibranchial regions most remarkably swollen above the general dorsal surface of the carapace, in having the frontal teeth very acute, the first tooth of the antero-lateral border not emarginate, and the transverse ridges of the carapace even more obscure.

Carapace perfectly free from pubescence, smooth and polished; its length is a little more than two-thirds its breadth; the gastric region is slightly tumid and the epibranchial regions are very strongly tumid above the rest of its surface. A fine and very faint strongly-arched line crosses the carapace between the last spine of either antero-lateral border, and a still fainter one crosses the gastric region anteriorly: these are the only lines on the carapace and are as faint in the young as in the adult.

Front cut into 8 acute teeth—including the inner supra-orbital angles—arranged in four distinct pairs, the outer pair on either side being almost spine-like.

Antero-lateral borders quite like those of C. crucifera, except that the first tooth is obliquely truncated with the inner angle very scute.

Posterior border curved as in O. crucifera.

Inner angle of lower border acutely dentiform: the orbits otherwise as in C. crucifera.

Chelipeds exactly as in O. crucifera except that the hands are less inclined to be tumid.

Last pair of legs as in O. crucifera except that the merus is hardly two-thirds as broad as long.

Abdomen in both sexes as in C. crucifera.

Colours in spirit: salmon-red, the frontal and antero-lateral borders and the boundary between the branchial and hepatic regions with numerous large creamy spots; four similar spots in a square on the gastric region and a very large one on either branchial region near the middle of the postero-lateral border; fingers blood-red in their distal half, the extreme tips milk-white.

In the Indian Museum are 9 specimens from off the Konkan coast, 56-58 fms., on a bottom of fine sand. The carapace of the largest specimen is 50 millim. in length and 78 millim, in extreme breadth.