de Man, Notes Leyden Mus. I. 1879, p. 60, V. 1883, p. 151, and XV. 1893, p. 286: Lenz and Richters, Abh. Senck. Nat. Ges. Frankfurt, XII. 1881, p. 422: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 220: J. R. Henderson, Trans. Linn. Soc. Zool. (2) V. 1893, p. 375.

? Goniosoma dubium, Hoffmann in Pollen and Van Dam, Rech. Faun. Madagasc., V. 2, 1874, p. 11, pl. ii. figs. 6–8.

Carapace about two-thirds as long as broad, crossed transversely by salient granular lines which have the same disposition as in *C. variegata* De Haan, except that there is only one on either branchial region behind the level of the last spine of the antero-lateral borders.

Front cut into 6 truncated teeth, *not* including the inner supra-orbital angles.

Antero-lateral borders very little oblique, cut into six teeth (including the outer orbital angles) *of which the second is rudimentary and looks like a denticle cut out of the base of the first*, while the last is not enlarged in adults, though in the young it *may* be.

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

Orbit without any particular dorsal inclination, its major diameter a little more than a third the width of the inter-orbital space, the inner angle of the lower border broadly dentiform, the lobule at the outer end of this border distinct but not dentiform.

Arm with 3 spines on the anterior border and none on posterior border: wrist with a strong spine at the inner angle and 2 or 3 spinules on the outer: hand not tumid, 5 spines, of which 4 are large, on the upper surface.

In the fifth pair of legs the merus is nearly twice as long as broad, and has the usual spine on the posterior border: the same border of the propodite is serrated.

In the Indian Museum are five specimens, from the Pedro Shoal, from the Madras coast of the Gulf of Manár, and from off the Arakan coast.

This species is distinguished from *C. anisodon*, which, though not known to occur in Indian Seas, is found at Singapore, by the presence of granular ridges on the carapace, by the five spines (instead of 2) on the hand, and by the serrated (instead of smooth) posterior border of the propodite of the last pair of legs. It is one of the conspicuous links between *Goniosoma* and *Thalamita*.

40. *Charybdis* (*Goniohellenus*) *ornata*, A. M. Edw.

Thalamita truncata, De Haan, Faun. Japon. Crust. p. 43, pl. ii. fig. 3 and pl. xii. fig. 3 only ♂.

Charybdis truncata, Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 39.

Goniosoma ornatum, A. Milne Edwards. Archiv. du Mus. X. 1861, pp. 376, 385: Miers, P. Z. S. 1879, pp. 20, 33, and Challenger Brachyura p. 191: Ortmann, Zool. Jahrb., Syst., VII. 1893, p. 83: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 376: de Man, Zool. Jahrb., Syst., VIII. 1895, p. 562.

A smallish species: the length of the carapace in adults is about 26 millim., its extreme breadth about 36 millim.

Length of carapace rather over two-thirds the extreme breadth. Carapace moderately convex with the regions fairly well defined, crossed transversely by well marked granular ridges which have much the same disposition as those of *O. crucifera*, except that there are in addition (1) a broad one—divided in the middle line—on the cardiac region, and (2) a short and broad one—or traces of two—on either branchial region.

The front is cut into eight lobes (*including* the inner supra-orbital angles) arranged in four pairs, of which the outermost pair on either side are bluntly dentiform, and the two middle pairs are broad shallow and lobe-like.

The antero-lateral borders are cut into six teeth (including the outer orbital angles) of which the first is obliquely truncated and the last is the smallest; the edges of all are entire.

The posterior border of the dorsum of the carapace is straight, and forms a somewhat up-turned or dog's-eared angle of junction with the postero-lateral borders.

The orbits have a strong dorsal inclination and their major diameter is not much less than half the width of the inter-orbital space: the inner angle of their lower border is broad and hardly dentiform.

The chelipeds are about $2\frac{1}{3}$ times the length of the carapace (in the male) and all their surfaces are covered with granular transverse squamiform markings. There are 2—less commonly 3—enlarged spines on the anterior border of the arm and the posterior border ends in a spinule. Inner angle of wrist strongly spiniform, three spinules on the outer angle. Hand 6 or 7-costate—the costæ with squamiform crenations—and with 4 spines on the upper surface. In adults the palm is full and is longer than the fingers in the larger cheliped, but shorter than the fingers in the smaller cheliped.

Merus of last pair of legs about two-thirds as broad as long, with the usual strong spine on the posterior border: the same border of the propodite is finely serrated.

In both sexes the 2nd and 3rd—and to a much less extent the 4th—abdominal terga are transversely keeled: the 6th tergum in the male is broader than long and has strongly curved sides.

In the Indian Museum are 6 fine specimens from the mouth of the

Hughli and Coromandel coast and 1 from the Arakan coast—also 1 from Hongkong and 1 from Java.

41. *Charybdis* (*Goniohellenus*) *hoplites*, Wood-Mason.

Goniosoma hoplites, Wood-Mason, Ann. Mag. Nat. Hist. (4) XIX. 1877, p. 422: Alcock and Anderson, J. A. S. B. Vol. LXIII. pt. 2, 1894, p. 184, and Ill. Zool. Investigator, Crust. pl. xxiii. fig. 6: Alcock, Investigator Brachyura, p. 67.

A small or smallish species.

The length of the carapace is not much more than half the extreme breadth measured between the tips of the last spine of the antero-lateral borders.

Carapace covered with a dense short tomentum, convex, the regions well defined and fairly well areolated—the convexities of many of the areolæ granular. The gastric region is divided into three sub-regions, the cardiac into two, and there is a very pronounced and independent swelling on the inner part of either branchial region.

A granular ridge crosses the middle of the gastric region transversely, and a similar ridge—strongly arched forwards—crosses each branchial region, beginning on the tip of the last epibranchial spine: these are the only transverse ridges on the carapace, although it sometimes happens that two of the granular subregional convexities of the anterior part of the gastric region are ridge-like.

The front is exactly like that of *C. ornata*, except that the outermost pair of teeth on either side are rather sharper.

The antero-lateral borders are cut into six teeth (including the outer orbital angle) of which the last is a *Neptunus*-like spine at least twice as long as those in front of it: the other 5 are square-cut lobules separated by wide and deep notches, and having their outer edge serrate and their anterior angle acuminate.

The posterior border of the dorsum of the carapace forms a strong dog's-eared angle of junction with the postero-lateral borders.

The orbits are exactly as in *C. ornata*, except that the inner fissure of the roof is wider and the outer fissure less distinct.

The chelipeds in typical specimens are exactly as in *C. ornata*, but it sometimes happens that the granulation of the arm does not cover the whole surface of that joint.

The last pair of legs are as in *C. ornata*, but the breadth of the merus varies from half to two-thirds the length of that joint.

The 6th tergum of the abdomen of the male is truncate-triangular, having almost no curve to the sides.

In the Indian Museum are 45 specimens from off the Coromandel coast, from about 50 to about 110 fathoms, and 4 from off the Indus Delta, 16 to 44 fms.

In an average specimen the length of the carapace is 26 millim., and the extreme breadth 48 millim.

Charybdis (*Goniohellenus*) *hoplites*, var. *vadorum*.

Differs from the typical deep-sea form in the following particulars:—

(1) the carapace is depressed, therefore the granular convexities of the areolæ stand out in higher relief:

(2) the last spine of the antero-lateral borders is rather longer:

(3) the spine at the inner angle of the wrist is much longer:

(4) Egg-laden females are hardly half the size.

In the Indian Museum are 9 specimens from the Orissa coast, 7½ to 20 fms., 6 from the Persian Gulf, and 3 from the Arakan coast.

Charybdis (*Goniohellenus*) *hoplites* var. *pusilla*.

This is a dwarf variety, egg-laden females having a carapace only about 9 millim. long and about 16 millim. in extreme breadth.

The carapace is of a thin texture, the chelipeds and legs are slenderer, and the dorsal bulge of the branchial regions is stronger and sharper.

In the Indian Museum are 300 specimens from off the Konkan coast 56 to 58 fathoms.

Gonioneptunus, Ortmann.

Gonioneptunus, Ortmann, Zool. Jahrb. Syst. etc., VII. 1893–94, p. 79.

This "genus," as Ortmann remarks, is a link between *Charybdis* (=*Goniosoma*) and *Neptunus*. It has much the same bearing to *Goniosoma* that the "genus" *Cronius* has to *Neptunus*, and is one of those forms that would justify any general zoologist in uniting all the Lupine "genera" of systematists into one natural genus.

It differs from *Goniosoma* only in the fact that the broad lobular process of the external angle of the basal antenna-joint is not in contact with the front, so that the antennal flagellum is not excluded from the orbital hiatus.

42. *Charybdis* (*Gonioneptunus*) *truncata* (De Haan).

Portunus truncatus, Fabricius, Ent. Syst. Suppl. p. 365, and Latreille, Hist. Nat. Crust. VI. p. 16, (*fide* A. M. Edw.).

Thalamita truncata, Milne Edwards, Hist. Nat. Crust. I. 463 (*fide* A. M. Edw.).

Portunus (*Thalamita*) *truncatus*, De Haan, Faun. Japon. Crust. p. 43, pl. xii. fig. 3, ♀ only.

Portunus (*Charybdis*) *truncatus*, De Haan, Faun. Japon. Crust. p. 65, pl. xviii. fig. 2.

Goniosoma truncatum, A. Milne Edwards, Archiv. du Mus. X. 1861, pp. 380, 385, pl. xxxiv. fig. 4.

Gonioneptunus subornatus, Ortmann, Zool. Jahrb. Syst. VII. 1893, p. 79, pl. iii. fig. 9.

The lobule of the basal antenna-joint does not touch the front, so that the flagellum stands in the upper part of the orbital hiatus.

The length of the carapace slightly exceeds two-thirds of the extreme breadth.

Carapace covered with a dense short tomentum, moderately convex, the regions ill-defined, crossed transversely by fine granular ridges which have the same disposition and are almost as faint as those of *O. crucifera*: in addition there are small patches of granules on the cardiac and inner part of the branchial regions.

The front is cut into eight teeth (*including* the inner orbital angles) of which the middle four are broadly triangular and almost acute, while the pair on either side are sub-confluent and form a sort of reduplicated inner supra-orbital angle, somewhat as in *Neptunus* (*Lupocycloporus*) *whitei*.

Antero-lateral borders cut into six teeth, of which the second is the smallest, and the 6th—though more spine-like—is hardly more prominent than those in front of it: all except the sixth are cut rather square, have the free edge serrate, and are anteriorly acuminate—much as in *O. hoplites*.

The posterior border of the dorsal surface of the carapace is practically straight and forms an obtuse angle of junction with either postero-lateral border.

Except that the inner angle of the lower edge of the orbit is dentiform and strongly prominent, and that the inner fissure of the roof is wider, the orbits, and the eyes, are as in *O. ornata*.

Chelipeds not much more than twice the length of the carapace, their upper surface more or less granular, their under surface with smooth-worn squamiform markings. Arm with two more enlarged and one or two less enlarged spines on the anterior border, and one at the far end of the posterior border. Wrist with 3 spinules on the outer angle and a large spine at the inner angle. Hands inflated, strongly 6 or 7-costate—the costæ granular, and with 3 small spines on the upper surface: very similar, in fact, to those of *O. callianassa*. The fingers in the smaller cheliped are as long as, but in the larger cheliped are shorter than, the palm.

The merus of the last pair of legs is nearly as long as broad and has the usual spine on the posterior border: the same border of the propodite is smooth.

In both sexes the 2nd and 3rd abdominal terga are carinate—the 2nd strongly and sharply so. The 6th tergum of the male is truncate-triangular, the sides being very slightly sinuous.

In life the dorsal surface of the carapace is terra-cotta red and there is a good-sized crimson spot towards the inner side of the middle of either branchial region: the exposed dorsal surface of the chelipeds is reddish with numerous darker red markings.

In the Indian Museum there are 6 specimens, including an egg-laden female, from the Gulf of Martaban 53–67 fathoms.

In the male the carapace is about 27 millim. long and about 39 millim. in extreme breadth: in the female it is a good deal smaller.

43. *Charybdis* (*Gonioneptunus*) *bimaculata*, Miers.

Goniosoma variegatum var. *bimaculatum*, Miers, Challenger Brachyura, p. 191, pl. xv. fig. 3.

As in *C. truncata* the lobule at the outer angle of the basal antenna-joint does not touch the front, so that the antennal flagellum stands in the orbital hiatus.

Length of carapace more than $\frac{2}{3}$ but less than $\frac{3}{4}$ the breadth.

Carapace flattish, covered with dense short tomentum, crossed transversely by salient granular ridges arranged exactly as in *C. ornata*.

Front almost similar to that of *C. ornata*, except that, as in *C. truncata*, the outer pair of teeth on either side are sub-confluent and form a sort of reduplicated inner supra-orbital angle.

Antero-lateral borders exactly as in *C. truncata*, except that the last (spine-like) tooth is at least half again as long as any of those in front of it.

Posterior border of dorsal surface of carapace exactly as in *C. truncata*.

Eyes and orbits as in *C. ornata*.

Chelipeds about $2\frac{1}{2}$ times the length of the carapace. The lower border and the distal half of the upper surface of the arm are granular: there are 2 or 3 spines on the anterior border of this joint, and the posterior border ends in a spine. Upper surface of wrist granular, the inner angle of this joint strongly dentiform, and there are 2 or 3 spinules on the outer angle. Hand in the adult inflated and, except that the squamiform markings of the under surface are almost obliterated, exactly similar to that of *C. truncata*.

Abdomen as in *C. truncata*.

Except that the merus is only about $\frac{2}{3}$ as long as broad, the last pair of legs are as in *C. truncata*.

In the Indian Museum are 2 small specimens, from Palk Straits

and the Orissa coast, as well as one of the "Challenger" duplicates from Japan.

In the Japanese specimen there is a small dark spot near the middle of either epibranchial region.

Though the sculpture of the carapace and the dorsal inclination of the orbits do certainly give this species a considerable resemblance to *C. variegata*, and though the hands strongly resemble those of *C. callianassa* (which has been confused with *C. variegata*), this species is absolutely different from those, and is very nearly allied to *C. truncata*.

44. *Charybdis* (*Gonioneptunus*) *investigatoris*, n. sp.

The lobule of the basal antenna-joint does not touch the front, so that the flagellum stands in the upper part of the orbital hiatus.

Length of carapace nearly five-sixths the breadth.

Carapace little transverse, little convex, the regions indistinct, and the transverse markings extremely indistinct.

Front cut into eight teeth (*including* the inner orbital angles) of which (1) the middle two are rounded, rather narrow, and distinctly the most prominent (2) the submedian are broad and slant outwards, and (3) the outermost pair on either side are narrow and subacute, and form a sort of reduplicated supra-orbital angle. *The extent of the fronto-orbital border is almost equal to the greatest breadth of the carapace.*

Antero-lateral borders little oblique, cut into six acute teeth with sharp entire edges, of which the first 3 are much larger than the next 2, while the last is a spine only slightly more prominent than the tooth in front of it.

The posterior border of the dorsum of the carapace, though nearly straight forms a curve with the postero-lateral borders.

The eyes and orbits are large—the major diameter of the orbit being at least half the width of the inter-orbital space—but have no particular dorsal inclination: the inner angle of the lower border of the orbit is not dentiform.

Chelipeds slender, about twice the length of the carapace. Four acute spines, three of which are enlarged, on the anterior border, and none on the posterior border. Wrist with 3 spinules on the outer angle and a very long and acute spine at the inner angle. Hand slender with indistinct costæ on the outer surface, with a ridge along the middle of the inner surface, and with four spines on the upper surface—the two on the inner edge of the upper surface being singularly large and acute. Fingers acute, markedly longer than the hand (palm).

Legs long and slender. The merus of the last pair is more than

twice as long as broad and has the usual spine at the far end of the posterior border: there are 1 or 2 spinules on the same border of the propodite of this pair.

The 6th abdominal tergum of the male is truncate-triangular and its line of separation from the preceding segments is indistinct.

A single male specimen, with the carapace 10 millim. long and 12 millim. broad, from off the Ganjam coast, 35 fathoms.

Thalamonyx, A. Milne Edwards.

Thalamonyx, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 168: Miers, Challenger Brachyura, p. 192.

Resembles *Charybdis* (=*Goniosoma*) in all essential characters but differs in the following particulars:—

(1) the front proper (not including the inner supra-orbital angles) is broader, being very much more than a third the greatest width of the carapace, and is cut into two broad lobes, not including the inner supra-orbital angles:

(2) the antero-lateral borders are very little oblique, and are cut into 5 teeth only.

Ortmann, whom I am inclined to follow, regards it as only a subgenus of *Charybdis* (=*Goniosoma*). de Man, on the other hand, is inclined to regard it as identical with *Thalamita*, and there is much to be said in favour of this view also. The fronto-orbital border, however, is not quite so broad and the antero-lateral borders are not, therefore, so nearly parallel, nor is the posterior part of the carapace so contracted nor the inner supra-orbital angle so broad as in most species of *Thalamita*. It is a form that excellently well illustrates the real generic unity of the two supposed genera.

45. *Thalamonyx gracilipes*, A. M. Edw.

Thalamonyx gracilipes, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 169, pl. iv. fig. 3.

Thalamonyx danæ var. *gracilipes*, Miers, Challenger Brachyura, p. 192.

Goniosoma (*Thalamonyx*) *danæ*, Ortmann, Zool. Jahrb., Syst., VII. 1893–94, p. 83 (part).

Carapace more than two-thirds as long as broad with the regions fairly well defined and the surface granular, some of the granules forming short transverse lines.

Front sublamellar and prominent, divided into two broad shallow lobes of which the inner angles are a little bit pronounced.

Antero-lateral borders little oblique and little arched, forming an obtuse angle little short of a right-angle with the anterior border, cut into five claw-like teeth of nearly equal size.

The posterior border of the dorsum of the carapace is straight but does not form an angle with the postero-lateral borders.

Orbits large, with no particular dorsal inclination, their major diameter about half the width of the inter-orbital space: the inner angle of the lower border is bluntly acuminate but hardly dentiform.

Chelipeds granular: arm with squamiform markings, with 2 spines on the anterior border and none on the posterior border: wrist costate, with 3 tiny spinules on the outer angle and a strong spine at the inner angle: hands not inflated (in the female at least), carinate, with 3 spines on the upper surface.

Merus of last pair of legs hardly half as long as broad, with the usual spine near the far end of the posterior border.

An egg-laden female in the Indian Museum, from the Andamans, has the carapace 7 millim. long and 9 millim. broad.

Miers and Ortmann regard this species as not distinct from *T. danæ*, A. M. Edw. (Nouv. Archiv. du Mus. V. 1869, p. 183, pl. vii. figs. 6, 7).

Thalamita, Latreille, A. M. Edw.

Thalamita, Latreille in Cuvier Règne An., Crust. (ed. 2) Vol. IV. p. 33 (footnote): A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XIV. 1860, p. 228, and Archiv. du Mus. X. 1861, p. 354: Miers, Challenger Brachyura, p. 193.

Thalamites quadrilatères, Milne Edwards, Hist. Nat. Crust. I. 457.

Carapace hexagonal (but, owing to the straightness of the antero-lateral borders, with a quadrilateral cast), broad or very broad, depressed or little convex, usually with well marked transverse ridges.

The extent of the fronto-orbital border is usually little less than the greatest breadth of the carapace: the width of the inter-orbital space is from three-fifths to half the greatest breadth of the carapace: and the width of the true front (*i.e.* excluding the broad inner supra-orbital angles) is from two-fifths to a third the greatest breadth of the carapace.

Front well separated from the broad supra-orbital angles and cut into 2, 4, or 6 lobes or teeth, not including the supra-orbital angles.

Antero-lateral borders hardly oblique, forming almost a right angle with the frontal border, very little arched, cut into 5 teeth (including the outer orbital angle) of which the fourth is often rudimentary and sometimes absent.

Two sutures in the upper border of the orbit: a gap in the lower border, of which border the inner angle is seldom prominent. The antennules fold transversely.

Basal antennal joint having its outer angle enormously produced,

the process being in close contact with the whole length of the inner supra-orbital angle and completely filling the orbital hiatus, from which, therefore, the antennal flagellum is widely excluded.

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

Chelipeds and legs as in *Charybdis* (=*Goniosoma*). Abdomen as in *Neptunus*.

Obviously different as the extremes are, the forms included under *Charybdis* (=*Goniosoma*) and *Thalamita* yet constitute an unbroken series, and there is no one character, still less a combination of characters, by which the two groups can be sharply segregated.

Among Indian forms, however, even the most Charybdis-like Thalamites (e.g. *T. exetastica* and *imparimanus*) never have more than five distinct teeth on the antero-lateral border (though *T. exetastica* has a microscope accessory (6th) denticle on the first tooth), and always have a characteristic broadening of the inner supra-orbital angle; while the most Thalamita-like Charybdes (e.g. *C. investigatoris*) has the antero-lateral border cut into six distinct teeth and has a narrow inner supra-orbital angle.

Key to the Indian species of the genus Thalamita.

I. The extreme extent of the basal antenna-joint is far greater than the major diameter of the orbit:—
  A. Front cut into six lobes of nearly equal size—*exclusive* of the broad inner supra-orbital angles:—
    1. Antero-lateral borders of carapace cut into five teeth of nearly equal size:—
      i. Transverse ridges of carapace faint: outer surface of palms nearly smooth ..... *T. crenata.*
      ii. Transverse ridges of carapace very distinct: outer surface of palms costate ..... *T. danæ.*
    2. Antero-lateral borders cut into five teeth, of which the 4th is much the smallest:—
      i. Fourth tooth rudimentary: crest of basal antenna-joint with some large spines..... *T. prymna.*
      ii. Fourth tooth rudimentary: crest of basal antenna-joint smooth ..... *T. picta.*
      iii. Fourth tooth small: basal antenna-joint granular ..... *T. stimpsoni.*

B. Front cut into two lobes—*exclusive* of the broad inner supra-orbital angles :—

1. Inner supra-orbital angles arched, much narrower than either of the frontal lobes :—

i. Frontal lobes distinct and independent : hand covered with squamiform markings, its outer surface costate ..... *T. sima* [*T. arcuata?*]

ii. Median frontal notch indistinct : only the upper part of hand granular, its outer surface smooth or very indistinctly costate :—

a. Teeth of antero-lateral border of carapace acute, the last more prominent than the others ..... *T. poissonii* [*? T. sima.*]

b. Lobes of antero-lateral border square-cut, the last not enlarged ..... *T. chaptali.*

2. Inner supra-orbital angles straight or little arched, not much narrower than either of the frontal lobes :—

i. Crest of basal antenna-joint smooth : 4th tooth of antero-lateral borders of carapace rudimentary.. ..... *T. integra.*

ii. Crest of basal antenna-joint granular, denticulate, or spinose :—

a. Crest granular or dentate : 4th tooth of antero-lateral borders rudimentary : fingers rather stumpy .... *T. admeta.*

b. Crest granular or dentate : 4th tooth small : fingers sharp and as long as the palm ..... *T. savignyi.*

c. Crest spinose : 4th tooth somewhat smaller than the others : frontal lobes prominent, with their angles though rounded strongly pronounced..... *T. quadrilobata.*

II. The extreme extent of the basal antenna-joint is equal to, or less than, the major diameter of the orbit :—

A. Front cut into six lobes—*exclusive* of the inner supra-orbital angles :—

1. Antero-lateral borders of the carapace cut into five teeth, of which the fourth is rudimentary :—