

A NEW GENUS AND SOME NEW SPECIES OF CRABS OF THE
FAMILY GONEPLACIDÆ.

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This is the second of a series of papers describing new crabs obtained in Philippine and adjacent waters during the years 1907-1910 by the steamer *Albatross* of the United States Bureau of Fisheries. The first paper was published as No. 2044 of these Proceedings.¹

The new forms here described are as follows:

<i>Carcinoplax bispinosa.</i>	<i>Ceratoplax fulgida.</i>
<i>Carcinoplax spinosissima.</i>	<i>Ceratoplax truncatifrons.</i>
<i>Carcinoplax confragosa.</i>	<i>Typhlocarcinus craterifer.</i>
<i>Carcinoplax purpurea.</i>	<i>Hepthopelta apta.</i>
<i>Carcinoplax angusta.</i>	<i>Chasmocarcinus cavimanus.</i>
<i>Carcinoplax verdensis.</i>	<i>Typhlocarcinops decrescens.</i>
<i>Carcinoplax specularis.</i>	<i>Typhlocarcinops marginata.</i>
<i>Psopheticus hughi.</i>	<i>Typhlocarcinops angustifrons.</i>
<i>Goneplax renoculis.</i>	<i>Typhlocarcinops ocellaria.</i>
<i>Homoioplax</i> , new genus.	

The species enumerated form an important addition to the Goneplacidae. The Philippine region appears to be a favorable locality for the genus *Carcinoplax*, as seven well-defined species are added to the four already known. The occurrence of the genus *Chasmocarcinus* is worthy of note, it having previously been taken only in American waters.

The new genus *Homoioplax* is founded on an old species.

Family GONEPLACIDÆ.

Subfamily CARCINOPLACINÆ.

CARCINOPLAX BISPINOSA, new species.

Type-locality.—North of Marinduque: Tayabas Light (outer), N. 53° W., 18.7 miles; lat. 13° 42' 50'' N.; long. 121° 51' 30'' E.; 90 fathoms; gy. m., s.; March 2, 1909; station 5376, *Albatross*; one male.

¹[Scientific results of the Philippine cruise of the Fisheries steamer "Albatross," 1907-1910.—No. 31.]
New species of crabs of the families Grapsidae and Ocypodidae. Proc. U. S. Nat. Mus., vol. 47, No. 2044, May 7, 1914, pp. 69-85.

Type.—Cat. No. 46163, U.S.N.M.

Dimensions.—Type male, length of carapace, 13.3 mm.; width of carapace, spines excluded, 15.3 mm.; width, spines included, 15.5 mm.; width between outer angles of orbits, 10.8 mm.; width of front, 5.3 mm.

Carapace very convex from front to back, less so from side to side; regions scarcely indicated; surface smooth and shining, covered with punctæ and minute granules; postero-lateral margins slightly convergent posteriorly, antero-lateral margins short, arcuate, and armed with two small sharp spines, the anterior of which is about one and one-half times its length from the orbit and points forward, and the posterior of which is twice as far from the anterior spine and is directed obliquely outward. In the single male specimen the spines of the left side are shorter than those of the right side and are bluntly rounded; they were doubtless broken off in some previous stage. The anterior edge of the front is nearly straight, and close behind and parallel to it there is a sulcus; sides of front obliquely longitudinal, with a depression above the antenna. The orbital margin has a finely granulated edge; the upper part slopes slightly backward and is a little sinuous.

The right cheliped is heavier than the other; a short, stout, acute, curved spine is on the upper margin, distal to the middle; the carpus is longer than wide and is armed with two spines, one at the inner angle and one at the outer angle, the former the larger; the manus is thick, its lower margin is arcuate, especially in the larger chela, where the height of the manus is nearly equal to its superior length; the fingers meet when flexed, their prehensile edges are irregularly toothed; the larger dactyl bears a large backward-pointing basal tooth in both sexes; tips of fingers crossing. In the large chela the terminal half of the fixed finger and the entire length of the dactylus below and two-thirds of its length above are a medium shade of horn-color; in the small chela the terminal half of both fingers is the same color.

The ambulatory legs are slender, the last three segments hairy, especially the dactyls, which are styliiform, with the anterior or upper margin nearly straight.

The last five segments of the male abdomen form a triangle, slightly constricted between the fifth and sixth segments.

Differs from *C. indica*¹ in having two lateral spines instead of three, in the less advanced front, in the absence of a spine from the lower, outer margin of the arm, in the absence of a third, or dorsal spine, from the wrist, and in the shorter, stouter chelipeds.

¹ *Carcinoplax longimanus indicus* Doflein, Wiss. Erg. deutsch. Tiefsee-Exped. Valdivia, 1898-99, vol. 6, 1904, p. 114, pl. 35, figs. 1 and 2.

CARCINOPLAX SPINOSISSIMA, new species.

Type-locality.—Between Cebu and Bohol: Lauis Point Light, N. 10° E., 3.5 miles; lat. $10^{\circ} 10' N.$; long. $123^{\circ} 53' 15'' E.$; 165 fathoms; gy. m., s.; temp. $54.4^{\circ} F.$; March 25, 1909; station 5417, *Albatross*; one male.

Type.—Cat. No. 46173, U.S.N.M.

Dimensions.—Type male, length of carapace, 28.3 mm.; width of carapace, spines excluded, 32.6 mm.; width, spines included, 33.5 mm.; width between outer angles of orbits, 19.2 mm.; width of front, 9.4 mm.

Carapace very convex from front to back. Only the cardiac, intestinal, and posterior gastric regions are defined. Surface pubescent. Postero-lateral margins slightly convergent; antero-lateral margins shorter, armed with three sharp spines, of which the first is smaller than the second and third, which are subequal; the first spine may have an accessory spine on its posterior slope or two or three small spines or spinules outside its base; the second lateral spine has sometimes a very small spinule on its posterior slope. Edge of front beveled, faintly trilobed, granulate. Margin of orbit with sharp granules above, which become larger and spinelike at the outer angle and below; a short and small V-shaped sinus is situated at the middle of the upper margin.

Subhepatic and pterygostomian regions rough with sharp granules. Lower surface of crab pubescent, with longer hairs bordering the abdomen. Upper-outer surface of chelipeds long-hairy. Merus with a slender curved spine above, and several smaller uneven spines on the lower margins; surface near the margins rough with sharp granules. Exposed surfaces of carpus and manus also rough with sharp granules and small spines, the spines being situated near the inner angle of the wrist and in irregular longitudinal rows on the palm. The inner carpal spine is strong and acuminate and may bear spinules; near the outer angle there may be one, two, or three small spines. The spines of the palm include a very small one at the superior distal angle. Both fingers have two rough crests on the outer surface; the upper edge of the dactylus is rough with spinules. The brown color of the fingers extends on the outer margins from two-fifths to one-half the length from the tip; but on the prehensile edges from one-half to the whole length; prehensile edges irregularly toothed, meeting in the smaller cheliped, slightly separated in the larger cheliped; tips crossing; basal tooth of larger dactylus of moderate size.

Ambulatory legs fringed with long hair, merus joints with a small, slender, curved, subdistal spine; the third pair is nearly two and one-fourth times as long as the carapace, its merus is a trifle more than four times as long as wide; carpus and propodus of last pair considerably widened.

CARCINOPLAX CONFRAGOSA, new species.

Type-locality.—Between Cebu and Bohol: Cruz Point (Bohol), S. 20° E., 6 miles; lat. 9° 49' 35'' N.; long. 123° 45' E., 127 fathoms; temperature 59° F.; March 25, 1909; station 5420, *Albatross*; one female.

Type.—Cat. No. 46153, U.S.N.M.

Dimensions.—Type female, length of carapace, 38.7 mm.; width of carapace between tips of last lateral spines, 45 mm.; width between outer angles of orbits, 24.3 mm.; width of front, 11.7 mm.

Carapace very convex, inclining strongly downward anteriorly and postero-laterally; regions well defined, the hepatic region depressed; the granulation of the carapace is so coarse as to be visible to the naked eye, especially coarse on the branchial region; antero-lateral margin much shorter than the postero-lateral and armed with three well-developed teeth or spines, the first tooth distant from the orbit and the shortest, most dentiform and blunt-pointed, the second an acute-pointed tooth, the last a conical, sharp spine directed nearly forward; the three sinuses increase slightly in width from the anterior to the posterior; the carapace is just as wide a little behind the last teeth as it is between the tips of the last teeth.

The front, though nearly transverse, is bilobed, each lobe slightly concave and forming a small submedian tooth; a sulcus just behind the margin; a depression definitely separates the front from the orbits; the upper margin of the latter is transverse and furnished with bead granules; the granules of the lower margin are more pointed and more separated.

The chelipeds are distinctly unequal, short and stout; surface coarsely and unevenly granulate; a strong spine on the upper margin of the merus and the inner angle of the carpus and a smaller spine at the outer angle of the carpus. The greatest height of the larger palm is just equal to its superior length; a deep sulcus above the lower margin of the fixed fingers is continued back a little on the palm. Fingers elongate, gaping slightly when closed, teeth uneven, a large basal tooth on the larger dactyl; the brown color of the fingers occupies about half their length on the smaller chela, and runs up farther on the prehensile teeth; the brown is more extensive on the larger chela.

The legs are very hairy, especially on the margins of the last three segments. The third leg is twice as long as the carapace.

This species is not a typical *Carcinoplax*, as the carapace is not so smoothly rounded as in other species, and the front shows two submedian teeth.

CARCINOPLAX PURPUREA, new species.

Type-locality.—Near Marinduque Island: Tayabas Light (outer), N. 53° W., 18.7 miles; lat. 13° 42' 50'' N.; long. 121° 51' 30'' E.; 90

fathoms; gy. m., s.; Mar. 2, 1909; station 5376, *Albatross*; one female ovig. (type), one juv.

Type.—Cat. No. 46143, U.S.N.M.

Dimensions.—Type female, length of carapace, 29.5 mm.; width of carapace, 38.2 mm.; width between outer angles of orbits, 21 mm.; width of front, 9.7 mm.

Carapace very broad, with the antero-lateral margins very short and the postero-lateral margins almost parallel; surface very convex, both from front to back and from side to side, and covered with closely set granules which are much depressed and obscure on the posterior mesogastric and cardiac regions, elsewhere visible to the naked eye. The antero-lateral margin bears two projections, a tubercle distant from the orbit, and at a still greater interval a small forward-projecting spine. This spine is proportionally larger in small specimens. The postero-lateral margin has a small sinus some distance behind the spine. The anterior margin of the front is slightly concave, being most advanced at the outer angles, and also a little sinuous; the customary submarginal depression is hairy; sides of front very oblique, the sulcus between front and orbits being well marked. The upper margin of the orbit is concave, obscurely granulate, the lower margin has fewer, larger granules; the outer angle is pronounced but not dentiform.

The chelipeds (of the female) are rather elongate and unequal, coarsely granulate except on the fingers; the merus has a large tubercle on its upper margin; the carpus is considerably longer than wide, and bears a long, stout, blunt tooth or spine at its inner angle and a small, slender, sharp spine at its outer angle; the propodus is very thick, having a smooth, blunt, longitudinal ridge running through the middle of the inner surface. The larger palm is nearly one and one-half times as long, measured on the upper margin, as it is high, while the smaller palm is more than one and one-half times as long as high; a shallow longitudinal groove runs along the outer surface where it rounds into the upper surface. Fingers compressed, almost meeting when closed, armed with several large teeth interspersed with small ones, the larger dactylus bearing a large blunt, backward-pointing tooth at its base.

Legs very hairy, the last three joints clothed with long hairs which in the first three pairs form a furry coat but in the last pair are mostly marginal.

This species has much in common with *C. longimanus*, especially in the shape of wrist, chelæ, and carapace; the carapace, however, has more parallel sides behind the spines, the orbits are smaller and there is no tooth outside the orbit, as in *longimanus*. The arm has a tubercle in place of a spine; the wrist has a much smaller outer spine, although the inner spine is similar in the two species; and there is no prominent tubercle inside the palm.

CARCINOPLAX ANGUSTA, new species.

Type-locality.—Near Marinduque Island: Tayabas Light (outer), N. 53° W., 18.7 miles; lat. $13^{\circ} 42' 50''$ N.; long. $121^{\circ} 51' 30''$ E.; 90 fathoms; gy. m., s.; March 2, 1909; station 5376, *Albatross*; one female type, one male juv.

Type.—Cat. No. 46166, U.S.N.M.

Dimensions.—Type female, length, 23.8 mm.; width of carapace, 27.6 mm.; width between outer angles of orbit, 18.7 mm.; width of front, 9.8 mm.

A very narrow species. Carapace suboctagonal, the orbits being so oblique that they are almost in line with the adjacent antero-lateral margin, and the postero-lateral margins being not far from parallel. Carapace very convex, regions scarcely indicated, granulation fine and even, depressed, the granules trending forward. Margin of front faintly bilobed, each lobe slightly concave; corners broadly rounded; a notch above the antenna where the front joins the orbital margin. Upper margin of orbit nearly straight, the sulcus at its middle small but well marked; a small scallop at the outer angle; lobe at inner lower angle occupying half the lower margin of the orbit and very large and prominent. On the lateral margin of the carapace a small blunt tooth or large tubercle followed at a short distance by a very slight obtusangled tooth almost imperceptible; the distance from the orbit to the first tooth is greater than that between the two teeth. Behind the second tooth the margin is somewhat sinuous.

The margin of the epistome is cut into six scallops.

Chelipeds short and stout; merus with a short spine or tooth on upper margin; carpus large, with its inner angle swollen and tipped with a stout blunt spine. While the merus and carpus are granulated, the chelæ are smooth except for a low granulation on the upper surface. The larger palm, measured on its upper margin, is but little longer than its greatest height; a short, blunt tooth at end of upper margin; the fingers fit close together when shut, and cross considerably behind the tips; the brown color runs two-fifths the length of the dactylus, not so far on the fixed finger, but on both fingers the color extends further on the prehensile edge; above the lower margin of the immovable finger and extending back on the palm there is a deep groove. The length and height of the smaller palm are subequal, otherwise that chela is similar to the other.

Legs slender; the propodus of the last pair is considerably enlarged; this does not show on the right leg, which is abnormally reduced; last three segments moderately hairy.

In its narrow carapace this species resembles *C. bispinosa* but differs in its antero-lateral projections being bluntly dentiform instead of sharply spinose, in the orbits being oblique instead of trans-

verse, in the inner carpal spine being sharp instead of blunt, in the absence of an outer spine from the carpus, and the much narrower abdomen of the male.

CARCINOPLAX VERDENSIS, new species.

Type-locality.—Verde Island Passage: Sombrero Island, S. 80° E., 18.9 miles; lat. 13° 45' 05'' N.; long. 120° 30' 30'' E.; 394 fathoms; gn. m., s.; temperature 43.7° F.; January 21, 1908; station 5119, *Albatross*; one female ovig.

Type.—Cat. No. 46167, U.S.N.M.

Dimensions.—Female, length of carapace, 10.6 mm.; width of carapace, exclusive of spines, 12.7 mm.; width, inclusive of spines, 13 mm.

This species is narrower than *C. longipes*, the tooth next the orbit is much smaller and is a little less advanced than the outer end of the orbit, the next two antero-lateral projections are spines which are stouter and a little flattened, approaching the form of teeth; the postero-lateral margins are nearly straight and not very convergent; the denticle above the arm-joint is smaller and blunt; the spine at the inner angle of the wrist is larger, being strongly expanded on its proximal margin; the larger palm is higher and the prehensile teeth are lower; the fingers are very dark, nearly black; the legs are not quite so long and slender, and their carpus-propodus is a little more dilated.

CARCINOPLAX SPECULARIS, new species.

Type-locality.—Off southern Luzon: Sombrero Island, S. 7° W., 9.5 miles; lat. 13° 51' 30'' N.; long. 120° 50' 30'' E.; 159 fathoms; dk. gn. m.; January 17, 1908; station 5113, *Albatross*; one male.

Type.—Cat. No. 46164, U.S.N.M.

Dimensions.—Type male, length of carapace, 16.9 mm.; width of carapace, exclusive of teeth, 21 mm.; extreme width of carapace, 23 mm.; width between outer angles of orbits, 13.6 mm.; width of front, 6.7 mm.

This species has a strong resemblance to *C. longipes*.¹ The carapace is a little wider and appears wider than the measurements indicate on account of the broad antero-lateral teeth. The conspicuous pits of *longipes* are wanting. The first tooth is larger and more advanced than in *longipes*, with extremity rounded and lies close to, without embracing, the orbital margin; second and third teeth spiniform but not slender, the second one strongly curved, interspaces subequal. The edge of the front in front view is distinctly arcuate; in dorsal view faintly sinuous. The preorbital margin is nearly longitudinal. Eyes larger than in *longipes*.

¹ *Nectopanope longipes* Wood-Mason, Ann. Mag. Nat. Hist., ser. 6, vol. 7, 1891, p. 262.

The tooth on the upper margin of the merus of the cheliped is strong. The carpus is longer, measured from the articulation with the merus, than it is in the opposite direction, inner tooth excluded. This tooth is broad, thick, and blunt.

The chelæ are very unequal. On the upper surface of the manus there is an elongate-oval area which is nearly smooth and shining; viewed with a lens, it shows scattered granules, but presents an altogether different appearance from the rest of the manus, which is covered with crowded granules. The immovable finger is very wide at the middle. The color on the fingers is a light horn-color and covers about two-thirds of their length.

The ambulatory legs are not so long and slender as in *C. longipes*. Abdomen of male narrower than in that species.

PSOPHETICUS HUGHI, new species.

Type-locality.—Northern Mindanao: Macabalan Point Light, S. 31° to 39° E., 6 to 7.7 miles; lat. 8° 35' 30'' to 37' 15'' N.; long. 124° 36' E.; 200-220 fathoms; gn. m.; August 5, 1909; station 5504-5505, *Albatross*; one male.

Type.—Cat. No. 46180, U.S.N.M.

Dimensions.—Type male, length of carapace, 45.4 mm.; width without spines, 56.2 mm.; width with spines, 60 mm.; width between outer angles of orbit, 42.3 mm.

Carapace narrow, four-fifths as long as broad, with the sides strongly arched; surface very convex from front to back, conspicuously though irregularly punctate and pitted. The subtruncate front is slightly more advanced at the rounded angles than elsewhere; there is a very shallow sinus at the middle; the furrow above the edge is deep and narrow. Upper margin of orbit very oblique, but not so strongly sinuous as in *P. stridulans*; outer tooth broad, acute, directed obliquely outward. Spine at lateral angle of carapace acuminate and pointing strongly outward.

Chelipeds long and massive. Merus with a strong, much curved spine at middle of upper margin, three straight, slender spines on lower margin, two subdistal spinules on the inner margin. Carpus elongate, measured between the superior articulations with merus and manus; a stout, pointed spine at outer angle, inner angle produced, subacute. The fingers of the larger cheliped gape widely in their basal three-fifths, the distal two-fifths is strongly bent down.

The merus joints of the ambulatory legs are armed with a single, subdistal spine.

The first segment of the male abdomen covers the sternum on either side and is wider than the second or third segments.

P. hughi differs from the species previously described in its narrow and subcircular carapace; *P. stridulans*¹ is narrow but squarish,

¹ Wood-Mason, Illus. Zool. Investigator, Crust., part 1, 1892, pl. 5, fig. 1.

*P. insignis*¹ has rounded sides, but is very wide. It resembles *P. insignis* in its small exorbital tooth and the single spine on the legs; it resembles *P. stridulans* in the stout chelipeds, which are similarly armed, and in the general shape of palm and fingers. It differs from both those species in the base of the male abdomen, as the first and second segments do not cover the sternum in *stridulans* or *insignis*.

Named for Dr. Hugh M. Smith, now Commissioner of Fisheries, who was in charge of the work of the *Albatross* in the Philippines.

Subfamily GONEPLACINÆ.

GONEPLAX RENOCULIS, new species.

Type-locality.—Off southern Luzon: Malavatuan Island (N.), S. 23° E., 8.5 miles; lat. 14° 00' 00'' N.; long. 120° 17' 15'' E.; 80–102 fathoms; fne. s., m., sh.; temperature 59.6° F.; July 17, 1908; station 5278, *Albatross*; two females (one ovig., type; one with thin shell and broken).

Type.—Cat. No. 46307, U.S.N.M.

Dimensions.—Type female, length of carapace, 8.3 mm.; width of carapace, 12.6 mm.; width of front, 3.4 mm.; diameter of egg, about 0.3 mm. Male, length of carapace, 4.9 mm.; width of carapace, 7 mm.; width of front, 2.1 mm.

The sides of the carapace are less convergent posteriorly than in *G. rhomboides* (Linnaeus), the spine at the outer angle of the orbit is long and slender, the spine behind it is dentiform, sharp, and of good size. The upper margin of the orbit is strongly sinuous, as it is directed suddenly backward before joining the outer spine; the orbit itself is much larger in its outer half to accommodate the large reniform eye, which lies in the same plane as the anterior part of the carapace; the eye-stalk is stout and channeled above the cornea; the cornea is chiefly ventral, anterior and posterior; the lower margin of the orbit has a tooth at about the middle of the stalk; the orbit has more of a tendency to divide into two fossæ than in typical *Goneplax*, on account of the great enlargement of the eye at the cornea.

The merus of the chelipeds not only has the strong spine near the middle of the upper margin which is present in *G. rhomboides*, but it has two slender spines on the distal half of the lower, outer margin. The carpus is more elongate, and its upper face more rectangular than in *rhomboides*, the inner spine being situated farther back.

The ambulatory legs are more slender and a little longer than in *rhomboides*, those of the third pair more than two and one-half times as long as the carapace. The merus joints have the customary sub-distal spines.

¹ Alcock, Journ. Asiatic Soc. Bengal, vol. 69, 1900, p. 310.

Subfamily PRIONOPLACINÆ.

HOMOIOPLAX, new genus.

Differs from *Carcinoplax* Milne Edwards¹ only in having the third segment of the male abdomen too narrow at its base to cover the sternum between the last pair of legs, a character which distinguishes the subfamily Prionoplacinae from the Carcinoplacinae. The first segment and the proximal portion of the second segment of the abdomen in *Homoioplax* do cover the sternum, as in *C. longimanus*.

Type of genus.—*Homoioplax haswelli* (Miers) = *Pseudorhombila haswelli* Miers, Crust. Alert, 1884, p. 241.

(ὄμοιος, similar; πλαξ, anything flat and broad, carapace.)

Subfamily RHIZOPINÆ.

CERATOPLAX FULGIDA, new species.

Type-locality.—Near Marinduque Island: Tayabas Light (outer), N. 43° W., 6 miles; lat. 13° 49' 40" N.; long. 121° 40' 15" E.; 83 fathoms; gn. m.; February 24, 1909; station 5371, *Albatross*; one male type, one female.

Type.—Cat. No. 46401, U.S.N.M.

Dimensions.—Type male, length of carapace, 4.5 mm.; width of same, 7.4 mm.; fronto-orbital distance, 4.1 mm.; front, 2.2 mm.; length of third leg, 10.3 mm.

Smooth, shining, and bare except for a few hairs on the terminal half of the legs, a border on the inner edge of the merus and carpus of the chelipeds, and pubescence on lower surface of carapace. The carapace is anteriorly deflexed, antero-lateral margins acute, postero-lateral margins blunt and converging behind, posterior margin arcuate. Regions scarcely indicated, although there are some pit-like depressions regularly placed. Front faintly bilobed, corners rounded, edge sharp. The pear-shaped eyes have their upper surface separated from their anterior surface by an acute edge continuous with the margin of the carapace; cornea black, ventro-terminal.

Epistome vertical, edge sharp and straight, not emarginate. Buccal cavity broadly quadrate, filled by the maxillipeds; outer angle of the merus strongly produced in a truncate tooth.

Chelipeds nearly equal, dissimilar; wrist without an inner tooth; propodus with a sharp, marginal line below; propodal finger a little deflexed; fingers when closed, nearly meeting, tips crossing; middle teeth of larger immovable finger prominent; teeth of smaller chela lower and more acute.

Dactyli of first three legs falciform; of last leg, bowed downward and backward.

First segment of male abdomen linear, almost imperceptible; second half as long as the third and broadest distally; lateral angles of

¹ Ann. Sci. Nat., ser. 3, vol. 18, 1852, p. 164 [128].

third segment acute; third to seventh segments subtriangular with concave sides; terminal segment suboblong with tip rounded.

This species and the following one are so much wider than *C. ciliata* Stimpson¹ and *C. hispida* Alcock² that they are in no danger of being confused.

CERATOPLAX TRUNCATIFRONS, new species.

Type-locality.—Off western Samar: Badian Island (N.), N. 27° E., 5.75 miles; lat. 11° 31' 40'' N.; long. 124° 42' 40'' E.; 32 fathoms; gn. m.; April 14, 1908; station 5206, *Albatross*; one male.

Type.—Cat. No. 46399, U.S.N.M.

Dimensions.—Type male, length of carapace, 4.4 mm.; width of same, 7.4 mm.; fronto-orbital distance, 3.7 mm.; front, 1.8 mm.

This species is so closely allied to the preceding, *C. fulgida*, that it can best be described by comparison. The greatest width of the carapace is further back, the antero-lateral margins being longer and the postero-lateral shorter; the latter converge very little, almost imperceptibly. The front is truncate; the eyes viewed from before are higher; the ischiognath is wider; fingers longer; those of the smaller chela more deflexed and with smaller teeth, the immovable finger of the larger chela with less prominent teeth; base of abdomen narrower, first segment longer, being plainly visible, third segment much less extended laterally, its angles nearly right angles, terminal segment shorter, its length and breadth equal.

TYPHLOCARCINUS CRATERIFER, new species.

Type-locality.—East of Masbate Island: Destacado Island (S.), N. 87° E., 8.5 miles; lat. 12° 15' N.; long. 123° 57' 30'' E.; 80 fathoms; s., m., sh.; April 20, 1908; station 5213, *Albatross*; one female.

Type.—Cat. No. 46397, U.S.N.M.

Dimensions.—Type female, length of carapace, 9.9 mm.; width of same, 13.5 mm.; fronto-orbital distance, 5.7 mm.; width of front, 2.8 mm.

Surface covered with pubescence; margins fringed. The anterior part of the carapace is strongly bent down, the postero-lateral margins are subparallel and form a small, obtuse tooth at their union with the antero-lateral margins; posterior margin arcuate. The grooves separating the branchial from the gastric and cardiac regions are deep; mesogastric region well-defined; from it a median furrow leads to the edge of the front; when the pubescence is removed, the carapace appears coarsely punctate; near the lateral margins it is finely granulate; near the end of the cervical suture and almost in line with the orbital tooth there is a small but conspicuous crater-like pit; behind

¹ Alcock, Journ. Asiatic Soc. Bengal, vol. 69, 1900, p. 320, and synonymy.

² Journ. Asiatic Soc. Bengal, vol. 69, 1900, p. 321.

and outside this there is a much smaller and shallower pit. Edge of front bilobed. Upper surface of eye flat, smooth, hemispherical; cornea black, terminal.

Sides of buccal cavity parallel; anterior edge arcuate. Maxillipeds filling the cavity, merus with antero-external angle slightly produced. Pterygostomian regions protuberant.

Chelipeds equal in the female; they are granulous toward the margins and smooth in the middle; lower margin of propodus acute, not deflexed; fingers meeting when closed, except for a very small gape at base; teeth of the immovable finger larger than those of the dactylus, the highest tooth being the third from the base.

The only legs preserved are those of the last pair and a single unattached one; they are smooth and fringed with long hair.

This species is larger than *T. nudus* Stimpson,¹ *villosus* Stimpson¹ and *rubidus* Alcock;² the first two have two or more lateral teeth instead of one, while *T. rubidus* has none.

HEPHTHOPELTA APTA, new species.

Type-locality.—Between Cebu and Bohol: Lais Point Light, N. 27° E., 17.8 miles; lat. 9° 58' 30'' N.; long. 123° 46' E.; 175 fathoms; gn. m.; temperature 54.5° F.; March 25, 1909; station 5419, *Albatross*; one male.

Type.—Cat. No. 46389, U.S.N.M.

Dimensions.—Type male, length of carapace, 8 mm.; width, 9.7 mm.; width across front and orbits, 4.5 mm.; length of third leg, 17.2 mm.

Carapace granulous and pubescent, with somewhat longer hairs on the lateral margins, edge of front not visible in dorsal view. Eye-stalks moderately constricted next the cornea; although the smooth corneal surface is large, the pigment spot is small and dull-colored. The basal joint of the antennules fills the fossette but is not bulging. The maxillipeds gape considerably, and when in place the palpus does not cover the orifice of the efferent branchial canal; the merus has its rounded outer angle produced a little.

The chelipeds are rather massive and very unequal; margins of merus granulous, a few granuliform denticles projecting from the lower margin; a tooth at inner angle of carpus. Larger chela smooth except on the margins; palm high and thick; fingers meeting in their distal third; the immovable finger is bent down at its extremity, its upper edge along the gape is bent strongly outward and forms a tooth distal to the middle; near the base of the concave prehensile surface there is a tubercle; dactylus arched, having a large tooth near its middle. Smaller chela thick, lower surface

¹ Alcock, Journ. Asiatic Soc. Bengal, vol. 69, 1900, p. 322, and synonymy.

² Journ. Asiatic Soc. Bengal, vol. 69, 1900, p. 323.

flattened, oblong, with pronounced inner and outer margins, and not reaching as far as the finger, the inner margin ending distally in a prominent angle rounded off, the outer margin ending in a stout, blunt, outward-pointing spine; inner surface of palm rising in an obliquely-longitudinal crest through the middle; the inner margin of the upper surface ends proximally in a tubercle; surface finely granulous; upper surface also rugose; lower margins and inner crest tuberculous; fingers meeting throughout, finely toothed, outer margins fringed with hair. When the smaller cheliped is flexed there is formed on the lower side a small hole bounded by the ischium, merus, and propodus; it is probable that this hole serves as a passage for water into the left afferent branchial canal. The gape between the fingers of the larger cheliped forms, when that member is flexed, an oval area fringed with hair, widening toward the body by the peculiar slope of the immovable finger, and situated directly over the orifice of the right branchial canal.

The narrow legs are pubescent and the last three joints fringed with hair.

Between the fourth and fifth segments of the sternum a narrow plate is intercalated; this character is generic. In this species the plate covers the genital canal leading from the coxa. The abdomen is small, first segment almost concealed under carapace, third to fifth segments partially fused, third to seventh segments subtriangular, seventh segment oblong.

This species differs from *H. lugubris*¹ in its constricted eyestalks, in the produced outer angle of the merognath, in the arching dactylus and deflexed immovable finger of the large cheliped, and the flat lower surface of the small cheliped.

CHASMOCARCINUS CAVIMANUS, new species.

Type-locality.—Tanon Strait, east coast of Negros: Pescador Island, N. 72° E., 3.3 miles; lat. 9° 56' 30'' N.; long. 123° 15' E.; 300 fathoms; gn. m.; temperature 62.8° F.; April 1, 1908; station 5189, *Albatross*; one male.

Type.—Cat. No. 46413, U.S.N.M.

Dimensions.—Type male, length of carapace, 11.6 mm.; width of same, 14.4 mm.; fronto-orbital width, 7 mm.; front, 3.3 mm.

The carapace is loosely covered by a short, thin pubescence the removal of which discloses coarse punctæ and fine granules; the latter are especially abundant on the median regions and near the margins. The longitudinal depressions at the inner angles of the branchial regions are very deep. The carapace is widest a little in front of the postero-lateral angles; middle third of posterior margin transverse; upper margin of orbit transverse; front with sides slightly convergent

¹ Alcock, Journ. Asiatic Soc. Bengal, vol. 69, 1900, p. 327, and synonymy.

anteriorly, edge bilobed with a shallow emargination, outer angles rounded.

The eyes are of fair size; the stalk tapers a little distally; cornea well-developed, covering the whole end of the stalk. The basal segment of the antennules is ventrally flattened; second segment very long, as long as the orbit is wide; third segment five-sixths as long as second; flagellum about one-third as long as the preceding segment, each of its segments fringed with long hair, longer than the whole flagellum. The epistome is much deeper in the middle than elsewhere, curving backward between the palps of the maxillipeds; the edge is thin and vertical. Sides of buccal cavity parallel. Maxillipeds widely gaping, the gape wider than either endognath; outer margin of merus convex.

Chelipeds very unequal; the merus is sparingly furnished with fine granules, the lower edge bears a few spines; the carpus has a strong inner spine, and its upper surface is inwardly granulate; the palm has rounding margins and is granulate above; fingers of the large chela irregularly toothed; on the dactylus there is a large tooth near the base, then a small one followed by a sinus and a medium-sized tooth; opposite this cluster of teeth the immovable finger is armed with an irregular molariform tooth which is directed outward; near the tip are two teeth diminishing distally; the fingers gape moderately except at the terminal third; lower edge of fixed finger convex. The palm of the smaller chela of the male has on the inner surface reaching from the middle to the lower edge a large blunt compressed tooth; proximal to this tooth the surface is deeply hollowed out, the cavity embracing also a part of the outer surface. When the cheliped is flexed, the tooth fits in a sinus on the inner margin of the arm between two tubercles. The fingers fit close together; those of the dactylus are all shallow except one near the base; those of the fixed finger are narrower and more acute and about four of them at intervals are enlarged.

Legs slender, pubescent, and hairy, first three dactyli styliform, fourth recurved.

Abdomen and sternum granulate; abdomen small; first segment very short especially across the middle; second widening distally; third, fourth, and fifth fused; outer angles of third blunt; sixth with a low, broad, terminal tubercle; terminal segment suboblong. A broad plate is intercalated between the fourth and fifth segments of the sternum.

This species is nearest to *C. typicus*¹, in which the carapace is narrower, the chelæ flattened, the fingers of the larger chela strongly deflexed and evenly toothed.

¹ Rathbun, Bull. Labor. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 285, pl. 7, figs. 3-5.

Subfamily TYPHLOCARCINOPSINÆ.

TYPHLOCARCINOPS DECRESCENS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelego: Tinakta Island (E.), N. 12° W., 1.8 miles; lat. $5^{\circ} 10' 15''$ N.; long. $119^{\circ} 53'$ E.; 16 fathoms; fne. s., blk. sp.; February 22, 1908; station 5161, *Albatross*; four males, two females (one male is type).

Type.—Cat. No. 46407, U.S.N.M.

Dimensions.—Type male; length of carapace, 8.2 mm.; width of same, 10.1 mm.; width across front and orbits, 4.6 mm.; width of front, 2.3 mm.; length of third leg, 17.5 mm.

The surface is almost entirely pubescent except the outer side of the larger palm of the male, and the margins are fringed with hair. Carapace strongly bent downward anteriorly, nearly level from side to side, widest near the middle, postero-lateral margins sinuous, but with a general longitudinal direction, posterior margin convex. Beginning a little behind the orbit the margin is acute and soon forms a narrow crest which terminates at the middle of the postero-lateral margin; three shallow notches form as many slight teeth or lobes; surface near the margin sparingly granulate; these features are not visible until the hair is removed. Cardiac and posterior mesogastric region well-defined. The eyes fill the oval orbits but do not project beyond the general curve of the carapace; the cornea is pale and terminal. The front is widest just above the antennæ and is constricted behind that point, its anterior edge is arcuate and bilobed; a dorsal median furrow.

The epistome is short and its posterior edge is strongly arched forward either side of the middle. Sides of buccal cavity parallel; when the maxillipeds are in place they do not touch each other; merognath subquadrate, its antero-external angle obtuse but well-defined.

Chelipeds very unequal in the male; merus unarmed; carpus angled but not dentate on the inner side, sparingly granulate along the inner distal margin; propodus high, smooth, lower margin subacute, set off on the immovable finger by a deep groove; prehensile edges of fingers furnished with low teeth or lobes; the fingers gape narrowly and cross at the tips; in alcohol they are light horn-color. In the female the chelipeds are nearly equal, both are covered with pubescence, and the fingers nearly meet.

Although the length of the legs is represented by 3.2.1.4, the third being the longest and the fourth the shortest, yet their dactyli diminish notably in length from the first to the fourth pair, a fact to which the specific name draws attention.

The second and third segments of the abdomen have their lateral margins angled; the fourth to seventh segments taken together are

oblong with the sides moderately convergent; all the segments are distinct.

This species differs from *T. canaliculata* Rathbun¹ and *T. piroculata* Rathbun² in its narrower fronto-orbital region, less than half as wide as the carapace, instead of more than half, as in those species; in the dactyli diminishing in length from the first to the fourth pair; in the indented lateral margins of the carapace.

TYPHLOCARCINOPS MARGINATA, new species.

Type-locality.—Off eastern Palawan: 30th of June Island, N. 29° E., 12.2 miles; lat. 9° 12' N.; long. 118° 28' E.; 27 fathoms; fne. gy. s.; April 3, 1909; station 5426, *Albatross*; one male.

Type.—Cat. No. 46395, U.S.N.M.

Dimensions.—Type male, length of carapace, 6.7 mm.; width of same, 8.7 mm.; width across front and orbits, 4.5 mm.; width of front, 2.3 mm.; length of third leg, about 14.2 mm. (The tip of the dactyl is broken off.)

Surface pubescent, margins scantily fringed with hair. Carapace nearly level from side to side, bent down anteriorly so as to conceal the edge of the front in dorsal view; H-depression deep, mesogastric region wholly delineated, protogastric partially so; posterior half of carapace granulate, granules elsewhere obscure and scattered; postero-lateral margins straight and posteriorly convergent; antero-lateral margins long, denticulate, three interruptions in the denticles forming three teeth; the anterior tooth is truncate, on the other teeth the anterior denticle is acute making a dentiform tooth; in the smaller specimen the teeth are considerably narrower and are tuberculiform and subtruncate. Edge of front bilobed, lobes nearly transverse. Orbits pyriform, eyes somewhat protuberant, corneæ dark, ventral-terminal.

Epistome well developed and with a sharp edge; buccal cavity quadrate (as to sides and front, in ventral view) with corners rounded, completely filled by the broad maxillipeds; the outer edge of the merognath slants outward to the anterior angle.

Chelipeds not very unequal; merus and carpus granulate toward the margins; palm unevenly granulate, most so near the lower margin; fingers grooved, prehensile edges furnished with triangular teeth; a very small gape at base when fingers of larger chela are closed.

Legs slender; dactyli of first three pairs subequal, of last pair much shorter and strongly upcurved.

Abdomen with first segment linear; second, half as long as the third, both laterally acute, the third widest at its proximal end;

¹ Proc. Biol. Soc. Washington, vol. 22, 1909, p. 112.

² Trans. Linn. Soc. London, ser. 2, Zool., vol. 14, 1911, p. 239.

fourth to sixth, inclusive, moderately convergent; the seven segments distinct.

The fronto-orbital distance of *T. marginata* though greater than in *decreescens* is less than in *canaliculata* and *piroculata*, being little more than half the width of the carapace; this species is the only one of the genus in which the postero-lateral margins converge toward the posterior margin, and it is also peculiar in having three antero-lateral teeth.

TYPHLOCARCINOPS ANGUSTIFRONS, new species.

Type-locality.—Between Marinduque and Luzon: San Andreas Island (W.), S. 57° W., 8.5 miles; lat. 13° 38' N.; long. 121° 58' E.; 50 fathoms; sft. gn. m.; April 24, 1908; station 5220, *Albatross*; one male.

Type.—Cat. No. 46409, U.S.N.M.

Dimensions.—Type male, length of carapace, 11.7 mm.; width of same, 15.1 mm.; fronto-orbital width, 6.6 mm.; front, 3.5 mm.

Very close to *T. marginata*, but differs as follows: Size much greater; fronto-orbital distance shorter; postero-lateral margins more convergent; only two antero-lateral teeth, the first one in *marginata* being represented by a slight depression in the margin, without any break in the row of granules; the pigment spot on the eye is so faint as to be almost indistinguishable; the merognath is not produced at the outer angle.

TYPHLOCARCINOPS OCULARIA, new species.

Type-locality.—Between Samar and Masbate: Tubig Point, Destacado Island, N. 49° E., 5 miles; lat. 12° 12' 35'' N.; long. 124° 02' 48'' E.; 135 fathoms; gn. m., s.; March 13, 1909; station 5392, *Albatross*; one male.

Type.—Cat. No. 46408, U.S.N.M.

Dimension.—Type male, length of carapace, 14 mm.; width of same, 17.2 mm.; fronto-orbital width, 6.6 mm.; front, 3.6 mm.; length of third leg, 31 mm.

Covered with a short, close pubescence mixed with scanty soft hairs, except the chelipeds which are bare and shining save on the margins; postero-lateral margins posteriorly slightly convergent; lateral margins entire; median regions and cervical suture defined; margins finely granulate; front arcuate, bilobed. Orbits suborbicular, eyes flat, corneæ well-developed. Epistome narrow, deep, edge sharp. Sides of buccal cavity parallel, anterior margin arcuate; maxillipeds separated by a narrow gape; outer angle of merognath rounded.

Chelipeds massive, very unequal; margins of merus and carpus fringed with hair; lower edge of propodus marginate; fingers of large chela deflexed, gape narrow, tips much curved, crossing; on each

finger a sharp tooth at the middle, and a molar process at the base which is divided into two or three teeth; the smaller chela has the lower margin coarsely granulous and hairy, fingers less deflexed, almost meeting, teeth of propodus larger than those of dactylus, with three of them enlarged.

First three legs similar, fourth much shorter, with upcurved dactyl.

First segment of abdomen linear; second short, with pointed ends; third with outer angles rounded, surface convex except at the middle; remainder of abdomen suboblong.

The narrow front, round orbits and large chela with its few prehensile teeth easily distinguish this species.