[SCIENTIFIC RESULTS OF THE PHILIPPINE CRUISE OF THE FISHERIES STEAMER "ALBATROSS," 1907–1910.—No. 34.]

NEW SPECIES OF CRABS OF THE FAMILIES INACHIDÆ AND PARTHENOPIDÆ.

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This is the third 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 earlier papers were published as Nos. 2044 and 2067 of these Proceedings.[1]

The new species here described are as follows:

Achæus villosus.
Platymaia bartschi.
(*Platymaia alcocki.*)
Platymaia remifera.
Platymaia fimbriata.
Cyrtomaia horrida.
Cyrtomaia echinata.
Achæopsis suluensis.
Peltinia sublimis.
Antilibinia gilloloensis.
Pugettia mindanaoensis.
Pugettia leytensis.
Sphenocarcinus luzonicus.
Sphenocarcinus auritus.
Sphenocarcinus nodosus.
Hyastenus trispinosus.
Hyastenus auctus.
Hyastenus tuberculosus.
Hyastenus orbis.
Hyastenus biformis.
Hyastenus fraterculus.
Hyastenus scrobiculatus.
Hyastenus tinaktensis.
Chorilia sphenocarcinoides.
Naxioides rombloni.
Phalangipus filiformis.
Phalangipus retusus.
Maja suluensis.
Maja linapacanensis.
Maja bisarmata.
Leptomithrax sinensis.
Parthenope (Rhinolambrus) rudis.
Parthenope (Pseudolambrus) parva.
Cryptopodia angusta.

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

[Scientific results of the Philippine cruise of the Fisheries steamer *Albatross*, 1907–1910.—No. 32.] A new genus and some new species of crabs of the family Goneplacidæ. Proc. U. S. Nat. Mus., vol. 48, No. 2067, Dec. 16, 1914, pp. 137–154.

Especially noteworthy are the number of large, circular forms of Inachinæ, the great variety of *Hyastenus*, and the occurrence of a species of *Antilibinia*, a genus known previously from a single South African species.

All measurements are in millimeters.

Family INACHIDÆ.

Subfamily INACHINÆ.

ACHÆUS VILLOSUS, new species.

Type-locality.—Off Jolo: Jolo Light, S. 51° W., 3.6 miles; lat. 6° 06′ N.; long. 121° 02′ 30″ E.; 20 fathoms; co. S.; Feb. 14, 1908; station 5139, *Albatross.*

Holotype.—Male, soft shell. Cat. No. 48207, U.S.N.M.

Measurements.—Approximate. Entire length of carapace, 8.3; width of same, 6.6; length of rostrum, from front edge of orbit, 0.7; free portion of antenna, 3.7; length of hand, 3; width of same, 2; length of first walking leg, 30; merus, 10; carpus, 3.8; propodus, 9.5; dactylus, 4.3; second walking leg, 28.7; merus, 10.3; carpus, 3.4; propodus, 7.8; dactylus, 5; third walking leg, 23; merus, 8; carpus, 3; propodus, 5.6; dactylus, 4.4.

Carapace covered with soft hairs, mostly straight, a band of curved hairs on either side extending from the ends of the posterior margin to the orbit. Regions deeply separated and without spines or tubercles. Rostrum with a deep median groove, tip subtruncate, with a slight notch. Constriction behind eyes very short, hepatic region projecting almost at once.

Basal antennal segment bowed outward, ventral surface spinulous, second segment nearly as long as third and a little stouter. A spinule above eye at extremity.

Chelipeds covered with two sorts of hair, of which the curved ones are mostly on the surfaces and the straight ones on the margins; merus joints swollen, margins spinulous; palms swollen, fingers a little longer than upper margin of palm; fingers gaping and irregularly dentate for the basal three-fifths. Dactylus of first leg straight or nearly so, of second leg slightly curved, of third leg a little more curved, fourth leg unknown.

Relationship.—In the smoothness of the carapace, this species is related to *A. japonicus.*[1] The general shape is the same except for the absence of a "neck" in *villosus*, the supra-orbital hood being close to the hepatic protuberance. In *japonicus* the third leg has a more strongly curved dactylus.

[1] *Inachus* (*Achaeus*) *japonicus* de Haan, Fauna Japon., Crust., 1839, p. 99, pl. 29, fig. 3; pl. H.

PLATYMAIA BARTSCHI, new species.

Type-locality.—China Sea, off southern Luzon: Matocot Point, S. 50° E., 5.10 miles; lat. 13° 41′ 20″ N.; long. 120° 58′ E.; 198 fathoms; M. S.; July 24, 1908; station 5297, *Albatross.*

Holotype.—Male. Cat. No. 47319, U.S.N.M.

Measurements.—Length of carapace (tip of median rostral spine broken off), 74.2; width of same, 69.7; distance between tips of outermost spines of orbit, 28; length of cheliped, 148.6; of arm, 62; of manus (upper edge), 40.3; height of manus, 21.3; length of first leg, 310; merus, 111.3; propodus, 102; dactylus, 64; length of second leg, 275; merus, 103.7; propodus, 74; dactylus, 61.3; length of third leg, 245; merus, 91; propodus, 63; dactylus, 55; length of fourth leg, 225; merus, 84.5; propodus, 59; dactylus, 51.5; greatest width of dactylus, 4.9; greatest width of dactylus in distal half, 2.8; width of merus at middle, 8.5.

Carapace subcircular, as broad as long except for the median rostral spine, nearly smooth. Interantennular spine or median spine of rostrum nearly twice as long as lateral spines and less ascending; spines rather slender and acuminate. A row of spines on subhepatic and subbranchial regions.

Eye retractile against the upper of the two suprahepatic spines. Eye-stalks short, eyes very large, corneæ chiefly ventral. Antennæ slender, about one-third length of carapace; basal joint of peduncle free. Merus of external maxillipeds about half as wide as ischium, bearing the coarse palp at summit; both large joints spinous.

Chelipeds spinous, twice as long as carapace and stouter than the legs, especially as regards the palm. The latter has a double row of spines above and below, a single row inside. The lower row is continued on the immovable finger by one or two spines. Proximal half of dactylus spinulous above.

Legs long and flat, those of first pair about four and one-fourth times length of carapace; posterior edge with a single row of spines, anterior edge with a double row of spines, which are very long on propodus and dactylus; propodus about one and two-thirds times as long as dactylus. Legs of second and third pairs have front edge of merus spinous, those of second pair have front edge of propodus spinous and hinder edge spinulous. All the merus joints have a spine at end of hinder edge; last three dactyli twisted at middle, where they are strongly narrowed, then widen again before tapering to the horny tip; this last is longer than wide.

Abdomen seven-jointed; first tergum has three spines, remaining terga have small tubercles. The thoracic sterna bear a few spinules, as also do the epimeral plates corresponding to the third and fourth trunk legs.

Relationship.—Very near *P. wyville-thomsoni* Wood-Mason and Alcock[1] which is, I think, distinct from *P. wyville-thomsoni* Miers[2] and may be called *Platymaia alcocki.* In *P. alcocki* the branchial regions come very close together and in the young almost meet; in *P. bartschi* they are fairly distant. In *P. alcocki* the rostral horns are of equal length, in *P. bartschi* the middle horn is much the longer. In *P. alcocki* the manus is three times as long as high; in *P. bartschi*, twice as long as high. In *P. bartschi* the ambulatory legs are shorter in relation to carapace length than in *P. alcocki;* the dactyli of the last three pairs are narrower in their distal half than in *alcocki* and the horny tips more elongate; while the dactylus of the first pair is shorter in proportion to the propodus than in *alcocki.*

PLATYMAIA REMIFERA, new species.

Type-locality.—Between Cebu and Bohol: Lauis 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.*

Holotype.—Male. Cat. No. 47156, U.S.N.M.

Measurements.—Length of carapace, 51.5; width of same, 52; distance between tips of outermost spines of orbit, 25.2; length of cheliped, 94; of arm, 36.2; of manus (upper edge), 30.4; height of manus, 18; length of first leg, 232; merus, 85; propodus, 78.5; dactylus, 41.6; length of second leg, 222; merus, 88; propodus, 61.2; dactylus, 50.5; length of third leg, 210; merus, 79; propodus, 55.4; dactylus, 48.3; length of fourth leg, 194; merus, 72.4; propodus, 51.3; dactylus, 45.5; greatest width of dactylus, 3.3; greatest width of dactylus in distal half, 2.7; width of merus at middle, 5.

Closely allied to *P. bartschi*, but smaller. Carapace wider, the width being somewhat greater than length. Front broader at base and less advanced, lateral horns more ascending, median horn curved, concave above. The several dorsal spines are placed similarly to those of *bartschi;* but the cardiac spines are farther apart than in that species and are nearer to the posterior of the gastric spines; lateral gastric spines farther apart, and there is no second pair in front of them and near the orbit, as is the case in equal-sized specimens of *bartschi.*

Eyes similar to but smaller than those of *bartschi.*

Only one spine of good size on the subhepatic and one on the subbranchial region.

Chelipeds similar to those of *P. bartschi*, but the manus is highest at a greater distance from the fingers. Legs longer and narrower than in *bartschi*, those of first pair $4\frac{1}{2}$ times as long as carapace; propodi twice as long as dactyli. Propodi and proximal part of

[1] Deep-Sea Brachyura *Investigator,* 1899, p. 46.
[2] *Challenger* Rept., Zool., vol. 17, 1886, p. 13, pl. 2, fig. 1.

dactyli of last three legs fringed with hair on inner edge. Dactyli broader in their distal half than in *bartschi*, and horny tip shorter.

The three spines of the first abdominal somite are larger and more distant than in *bartschi*. The chief spine on the epimeral plates corresponding to the third and fourth trunk legs is larger than in *bartschi*.

PLATYMAIA FIMBRIATA, new species.

Type-locality.—Sibuko Bay, Borneo: Sipadan Island (W.) S. 12° E., 3.8 miles; lat. 4° 10′ 35″ N.; long. 118° 37′ 12″ E.; 415 fathoms; gn. M. S. Co.; temperature 42.3° F.; Sept. 28, 1909; station 5587, *Albatross*.

Holotype.—Female. Cat. No. 47177, U.S.N.M.

Measurements.—Length of carapace, 51; width of same, 37.2; distance between outer spines of orbit, 15.2; length of cheliped, 50.7; of arm, 17.8; of manus (upper edge), 10.8; height of manus, 5.6; length of dactylus, 12.2; length of first leg, 143.8; merus, 51.3; propodus, 42.4; dactylus, 31; length of second leg, 190; merus, 65.3; propodus, 58.6; dactylus, 37.2; length of third leg, 201; merus, 68; propodus, 66; dactylus, 40.3; length of fourth leg, 195; merus, 67.8; propodus, 63.3; dactylus, 39; width of merus at middle, 3; greatest width of dactylus, 1.9.

Carapace longer than broad, cervical groove very deep, surface covered with spines, interspaces smooth. The rostrum projects well beyond the general outline and is strongly constricted between the base of the lateral horns and the lobe of the inner margin of the orbit; the median of the three slender horns is more than twice as long as the lateral horns; all the horns are arched upward. The hepatic region bears one large spine, against which the eye is retractile, and several small spines and spinules. The gastric region has a large curved median spine; behind it there is a transverse groove, after which there is a much smaller median spine. Cardiac region traversed by a broad, smooth groove through the middle, on either side of which there is a large spine. Two spines on the posterior border of the intestinal region and an ill-defined row margins the branchial region; the posterior of these is largest and most elevated.

Eyes large and oval. The antennæ fall short of the end of the rostrum; basal joint spinulous, last joint of peduncle longer and slenderer than the preceding. Outer maxillipeds similar to those in the preceding species, the two principal joints spinous.

Chelipeds not much stouter than the legs in either sex, spinous, and hairy. In the male the superior length of the palm is nearly twice the height and same length as dactylus; in the female the palm is narrower than in the male and is shorter than dactylus. Legs very long and slender; first pair four and two-thirds times length

of carapace in male to three times in female; a double comb of long spines on inner margin of propodus and dactylus and of shorter spines on merus; outer margin and upper surface also spinous, lower surface partially spinulous. Second leg with upper surface as well as margins spinous throughout its length; at distal end of outer margin there is a loose brush of fine, curved hairs; dactylus with a thin fringe of short hair on its outer margin, the hair becoming longer and thicker near the tip. In the third and fourth legs the merus and carpus are similarly armed, but the propodus has only marginal spines and the dactylus a few distant spines on the proximal half of the outer margin of the dactylus; the propodus has two rows of long hair, one on the inner margin, the other near the outer margin and turned inward, exceeding the width of the segment; similar fringes are on the proximal half of the dactylus, but on the distal end of the outer margin there is a short row of outstanding hairs.

The abdomen in both sexes has a stout, conical spine on the first segment, while the other segments bear each a few spinules, and, in the sixth and seventh segments of the female, several spines. That part of the sternum which forms the anterior margin of the egg cavity is armed with a few sharp spines.

Differs from other species in having the carapace covered with spines and spinules in all ages instead of with granules or a few spines; in the elongated rostrum; in the ambulatory legs armed with spines and spinules on the upper surface; in the slenderness of the second, third, and fourth legs, and especially of their dactyli; in the brush of curled hair at end of outer margin of propodus of second leg; and in the brush of straight hair at end of outer margin of dactyli of last three legs.

CYRTOMAIA HORRIDA, new species.

Type-locality.—Between Negros and Siquijor: Apo Island (C.), S. 64° W., 7.3 miles; lat. 9° 08′ 15″ N.; long. 123° 23′ 20″ E.; 256 fathoms; gn. M. S.; temperature 53.3° F.; Aug. 19, 1909; station 5538, *Albatross.*

Holotype.—Large male. Cat. No. 47321, U.S.N.M.

Measurements.—Length of carapace, 59; length of carapace to rostral sinus, 48.2; width of carapace, 53; length of lateral gastric spine, 20.2.

Belongs to the group having a spine on upper margin of orbit. Carapace very rough with sharp granules and covered with short hair. The lateral gastric spines are by far the largest spines of the carapace; the outer spine of the orbit is next in size, and the branchial spine, the median gastric spine, and the upper orbital spine are next. Still smaller are the two cardiac spines, while there is

a small spine or spinule on the intestinal region and several of the same on the branchial regions, especially on the margin. The large gastric spines are in a plane nearly parallel with that of the rostrum and are slightly divergent from each other. There is a strong ridge leading from it to the outer margin of the outer spine of the orbit; from this ridge a secondary ridge curves around to the posterior hepatic spine.

The eyes have slender stalks and a large acute tubercle on the anterior side of the extremity. The basal segment of the antenna is armed with three downward pointing spines of which two are on the outer margin; the spine at the anterior angle is directed obliquely forward; two succeeding segments with a few sharp tubercles or granules on the under surface; third segment about four times as long as wide.

Manus of chelipeds very elongate, about three times as long as its greatest height and increasing in height from the proximal to the distal end; its spines are large at the base but acuminate at the tips. Fixed finger strongly inclined; the fingers gape moderately, and three or four teeth near the base of the dactylus are united in a submolar; the proximal two-fifths of the upper surface of the dactylus is spinulous.

First two legs heavily armed; third and fourth pairs have two rows of small, slender spines on the lower side of the merus; terminal spine on all the merus joints long; dactyli with several fringes of short hair.

First, second, and sixth segments of abdomen with one median spine; seventh segment with a spine each side of the middle, while the other segments have two spines each side of the middle; there is also a spine near the outer margin on all the segments save the first. Sixth segment a little wider than long, a forward-projecting lobe at distal corners.

This species has much in common with *C. goodridgei* McArdle;[1] but the latter has no supraorbital spine; the lateral gastric spines are directed strongly outward; the eyes are more robust; the movable segments of the antennal peduncle are armed with spines; the last two legs have no spines on the under side of the merus joints.

CYRTOMAIA ECHINATA, new species.

Type-locality.—Between Leyte and Mindanao: San Ricardo Point (Panaon Island), S. 50° E., 11.2 miles; lat. 10° 02′ 45″ N.; long. 125° 05′ 33″ E.; 732 fathoms; gn. M.; temperature 52.3° F.; July 31, 1909; station 5487, *Albatross.*

[1] Illus. Zool. *Investigator,* Crust., part 10, 1902, pl. 59, figs. 1–1*c*; part 12, 1907, pl. 78, figs. 2, 2*a*.

Holotype.—Large female. Cat. No. 47305, U.S.N.M.

Measurements.—Length of carapace to tips of rostral horns, 63.3; to rostral sinus, 53.7; width of carapace, spines excluded, 60.7; length of lateral gastric spine, 22; length of cheliped, 140; length of manus (upper margin), 39; greatest width of manus, 8.3; least width of manus, 5.8; length of first leg, 260; of second, 205; of third, 175; of fourth, 172.

The roughest species of *Cyrtomaia* known. Carapace covered with spines and spinules. Of the larger spines the gastric pair are by far the longest; they are very slender, slightly arched, and are directed forward in a plane nearly parallel with that of the rostral horns. The posterior median gastric spine and two spines on each branchial region of about the same size form an irregular transverse line. Of equal length is the spine at the outer angle of the orbit. The two cardiac spines are nearly as long. Lesser spines though of fair size are: One on each of the postero-lateral margins of the rectangular gastric field, one median almost in the middle of that field, one on the posterior part of the branchial region, and of the hepatic region. Of the smaller remaining spines there are many conspicuous ones below the gastric pair and a row above the branchial margin at the widest part of the carapace; of this size is the spine on the upper margin of the orbit and the one on the intestinal region. Two still smaller spines are on the posterior margin of the carapace either side of the middle. A prominent ridge runs from the long gastric spine to the hepatic region, thence to the inner hepatic spine. There is a spinule on the margin of the inner orbital lobe. The rostral horns are slender, a little longer than the interantennular spine, and are widely separated at base and slightly divergent.

Eye-stalk rather slender, bearing a bilobed tubercle near the extremity. Basal segment of antenna armed with 4 or 5 slender spines; the second spine from the distal end is near the inner margin; the two movable segments of the peduncle have a few minute spinules.

Chelipeds (of female) armed with numerous slender spines, the longest of which are in two rows bordering the inner surface of the merus, in the inner row on the upper border of the manus and in the outer row of the lower border. Gape of fingers narrow, confined to proximal half; prehensile teeth low.

First and second pairs of legs strongly armed, the longest spines forming a double comb on the propodus and dactylus of the first pair. Last two pairs furnished with a few small spines, scattered on all the articles of the third leg except the dactylus, but confined in the fourth leg to the proximal half or two-thirds of the merus, with a spine or two on the carpus. In all the trunk legs the distal spine on the merus is long and there is a spine on the ventral surface of the coxa.

On the sternum of the female there is a spine at the base of the cheliped and of the first leg, three spines in a triangle in front of the abdomen, and several spinules. Abdomen covered with spines and spinules.

C. echinata can be distinguished from all other species by the numerous spines and spinules of the carapace, abdomen, and basal joint of antenna. The carapace is much narrower than that of *C. murrayi*,[1] which it most nearly resembles.

ACHÆOPSIS SULUENSIS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Tinakta Island (N.), N. 82° W., 1.4 miles; lat. 5° 11′ 50″ N.; long. 119° 54′ E.; 10 fathoms; co. S.; Feb. 21, 1908; station 5159, *Albatross.*

Holotype.—Female. Cat. No. 48203, U.S.N.M.

Measurements.—Length of carapace to end of rostrum, 3.7; width of carapace, 3.3.

A very broad, subtriangular species, rostrum short, hepatic region laterally prominent and situated not far behind the eye. Two large, flat-topped, median spines, one gastric, one cardiac; a small tubercle on posterior slope of latter. Margins of hepatic and branchial regions denticulate or spinulous. A row of pterygostomian tubercles. Rostrum divided into two short triangular teeth. Supraorbital margin raised, very oblique, entire. Behind it are two small spinules, the second of which represents the postocular spine.

Eye-stalks long and rather slender, a small tubercle at end above, a broad tubercle on anterior margin and a narrower, sharper one below and nearer the base. Basal antennal segment very narrow and in ventral view very oblique.

The feet are so interlaced and so brittle that they can not be measured. Palms twice as long as broad and dilated at middle. First ambulatory leg missing; second leg about twice as long as carapace; last one about 6 mm. long; in all the dactylus is long and very slender, nearly straight in its proximal two-thirds, slightly curved at the extremity.

Each of the six segments of the female abdomen has an acute tubercle at the middle.

Relationship.—In the large median spines this species suggests *A. superciliaris* Ortmann[2] from Japanese waters, but that species has other dorsal spines which are lacking in ours, and the rostrum and orbital region are more elongate.

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[1] Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 15, pl. 3, fig. 1.

[2] Zool. Jahrb., Syst., vol. 7, 1893, p. 36, pl. 3, figs. 3, 3*a*.

Subfamily ACANTHONYCHINÆ.

PELTINIA SUBLIMIS, new species.

Type-locality.—Near Jolo: Jolo Light, S. 37° E., 0.7 mile; lat. 6° 04′ 20″ N.; long. 120° 59′ 20″ E.; 22 fathoms; S. Sh.; Feb. 14, 1908; station 5136, *Albatross.*

Holotype.—Male. Cat. No. 48247, U.S.N.M.

Measurements.—Length of carapace to end of rostrum, 11.7; width across front and orbits, 5.6; width between antero-lateral angles, 13.5; width between postero-lateral angles, 12.8.

A large part of the carapace is occupied by the lateral wings which extend from the orbit nearly to the posterior margin and are divided, not very deeply, into two very unequal parts. These wings, which are outwardly ascending, are separated from the body proper by a shallow furrow. The mesogastric and the cardiac region are each surmounted by a blunt, conical elevation, the latter the higher; each protogastric lobe bears a low elevation forming an equilateral triangle with the mesogastric tubercle. The posterior margin has a thin, narrow, suberect border. While the surface appears smooth to the naked eye, it is really microscopically granulate. Rostrum deflexed and cut halfway back into two small triangular teeth separated by a triangular sinus. On either side is a larger subtriangular preorbital tooth, in the postero-lateral angle of which is cut the small semicircular orbital margin. Eye immovable, very little of it visible from above; seen from below the eye-stalk appears flat and about one and a half times as long as wide; pigment dull-colored in alcohol. Anterior margin of antero-lateral wing sinuous, with a sinus near the angle and a faint trace of a tooth at the inner fourth.

Basal segment of antenna distally tapering and having a very small tooth at the outer distal angle; next two segments slender, the second one and a half times as long as the third; the flagellum is subequal in length to the free peduncular segments and exceeds the rostrum. Buccal cavity very small, widening a little distally; exognath of maxillipeds half as wide as ischium of endognath · merus wider than ischium, expanded at the antero-external angle.

Chelipeds a little longer than carapace; merus, carpus, and manus cristate above, merus with a terminal tooth, carpus with tubercle on inner surface, dactylus bicristate above; fingers with a wide gape in proximal half, a large tooth on the dactylus, in the gape; meeting edges dentate. The legs diminish rapidly in length; their margins are cristate; merus and carpus each with a large tooth at end of upper margin; propodus with a smaller subterminal tooth, and in the first pair with a still smaller tooth at the middle; in the first pair the merus also has a small tooth at the middle.

Differs from *P. nodulosa* Dana[1] in having the antero-lateral wing of the carapace much larger, the rostrum smaller, basal antennal segment narrower, legs wider and more strikingly toothed, especially the carpus.

ANTILIBINIA GILLOLOENSIS, new species.

Type-locality.—Between Gillolo and Makyan Islands: Makyan Island (S.), N. 67° W., 8.9 miles; lat. 0° 12′ 15″ N.; long. 127° 29′ 30″ E.; 288 fathoms; fne. S. M.; November 29, 1909; station 5624, *Albatross.*

Holotype.—Male. Cat. No. 48205, U.S.N.M.

Measurements.—Length of carapace in median line, 12.8; width of carapace, 10.3; length of rostrum, 1; length of cheliped, 22; hand, length above, 5.3; width, 4.7; length of dactylus, 5.3; length of first leg, 20.4; of second, 19.2; of third, 17; of fourth, 14.

The surface, except of the chelæ, is closely covered with a short spherical pubescence, among which are thinly scattered, longish, thin hairs. Carapace swollen, regions plainly indicated and nearly smooth; branchial region with a furrow parallel to the posterior margin and two subdivisions along its inner margin. Rostrum cut more than halfway to its base, sinus V-shaped, horns longer than wide, acute, outer margin convex, inner margin a little concave. Preorbital hood projecting sideways a little beyond basal antennal segment, and ending anteriorly in an acute tooth whose outer margin is longitudinal, anterior margin oblique. Postocular tooth conical, blunt-pointed, directed forward and slightly outward. Hepatic tooth much smaller, acute, higher up on the carapace. No branchial teeth. A band of tubercles and granules on the pterygostomian and subbranchial regions.

Eye almost immovable, large at its base, but the part dorsally visible is small, not so produced laterally as the postocular tooth; cornea light brown in alcohol. Basal antennal segment anteriorly narrowed and longitudinally furrowed; a small, sharp, antero-lateral tooth is visible dorsally in front of the preorbital tooth. The first movable segment is longer and much stouter than the next one, which reaches less than half its length beyond the rostrum.

The buccal cavity is shaped much as in *A. smithii* M'Leay,[2] but the long joint of the exognath is anteriorly acuminate, the merus of the endognath is obliquely produced in a rounded lobe, and the sinus at the inner angle is more rectangular.

Right cheliped (only one present) stout; merus triangular in cross-section, upper margin bearing a small terminal tooth and on its proximal half two tubercles; lower outer margin with two very

[1] Crust. U. S. Expl. Exped., 1852, p. 131; atlas, 1855, pl. 5, figs. 8*a*, 8*b*.
[2] See Krauss, Südafrik. Crust., 1843, pl. 3, fig. 4.

low tubercles followed proximally by a large tubercle, between which and the end of the merus the lower surface is hollowed out so that when the cheliped is flexed there is a gape at that point. The carpus has three blunt, longitudinal ridges, the uppermost one most prominent and proximally produced and angled. Manus smooth, somewhat compressed, upper and lower margins convex. Fingers deflexed, pointed, prehensile edges gaping in their basal three-fifths and roughened with irregular crenulations; two pits on the outer surface of each, one at the base, one near the middle.

Legs subcylindrical, unarmed; dactyli slender, moderately curved, horny tips light amber-colored.

Sternum and abdomen smooth, wider than in *A. smithii*.[1]

Relationship.—The only other species of the genus is *A. smithii* M'Leay,[2] from Natal, which is of large size and much rougher and has two branchial teeth or spines.

PUGETTIA MINDANAOENSIS, new species.

Type-locality.—Off Northern Mindanao: Tagolo Light, S. 75° W., 12.5 miles; lat. 8° 47′ 15″ N.; long. 123° 35′ 00″ E.; 162 fathoms; S.; temperature, 54.5° F.; Aug. 20, 1909; station 5543, *Albatross*.

Holotype.—Female. Cat. No. 48208, U.S.N.M.

Measurements.—Length of carapace on median line, 11.3; of rostral horns, 3.6; width of carapace without spines, 7.6 mm.

Regions of carapace for the most part smoothly rounded; a distinct areola tipped with a tubercle at the inner angle of the branchial region; a curved areola either side of the cardiac region; branchial spine of moderate size, conical, sharp, pointing directly outward; hepatic spine small, conical, sharp, pointing a little upward and a little forward; intestinal region produced backward in a conical protuberance which overhangs the posterior margin; a tubercle on the anterior part of the subbranchial region, and a row of three tubercles on the pterygostomian region. Preorbital hood ending anteriorly in a short acute tooth; postocular cup high and very concave. Horns horizontal, moderately divergent, acuminate. Basal segment of antenna with outer margin nearly straight, a small, sharp tooth at anterior angle, pointing obliquely outward and forward.

Cheliped very little stouter than legs, as long as carapace and one-third of rostrum; palm a little swollen, its upper length about one and three-fourths times its height and not much greater than length of dactylus. First ambulatory leg exceeding cheliped by length of dactylus and three-fourths of propodus.

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[1] See Krauss, Südafrik. Crust., 1843, pl. 3, fig. 4*c*.

[2] In Smith, Illus. Zool. S. Africa, Annulosa, 1838, p. 57.

Relationship.—In general appearance resembles *P. minor* Ortmann,[1] from Japanese waters, but there is no cardiac spine, a much smaller hepatic spine, and less prominent orbits.

PUGETTIA LEYTENSIS, new species.

Type-locality.—Between Leyte and Cebu: Capitancillo Island Light, S. 46° W., 15.7 miles; lat. 11° 10′ N.; long. 124° 17′ 15″ E.; 182 fathoms; gn. M.; temperature, 55.7° F.; Mar. 16, 1909; station 5403, *Albatross.*

Holotype.—Ovigerous female. Cat. No. 48209, U.S.N.M.

Measurements.—Length of carapace on median line, spines excluded, 19.3; length of horns, 4.8; width of carapace, spines excluded, 13.2; width, spines included, 16.

Carapace with six spines: one stout, blunt, at summit of conical cardiac area; one short, erect, on posterior margin; one long, subcylindrical, pointing outward and a little forward and upward, on each hepatic region; and one shorter, stouter, more conical, directed outward and a little upward, on the branchial region. Rostral horns very divergent, making an angle of about 70° and curved outward. Preorbital lobe bluntly toothed anteriorly; postocular cup bluntly pointed in dorsal view. Surface covered with a very short, dense, circular pubescence, with lines of long hair on the gastric region and on the lateral margin between the spines.

The basal segment of the antenna has a blunt tooth at the anteroexternal angle, but no tooth or tubercle on the external margin. Chelipeds as long as carapace minus rostrum; merus with a distal spine and a spine at proximal third of upper margin, and two tubercles on lower outer margin; carpus with obtuse ridge ending behind in a tubercle; fingers narrowly gaping. The merus of the ambulatory legs has a few tufts of hair, the carpus is enlarged distally.

The long, cylindrical, hepatic spine sufficiently distinguishes this species from all others of the genus.

Subfamily PISINÆ.

SPHENOCARCINUS LUZONICUS, new species.

Type-locality.—East coast of Luzon: San Bernardino Light, S. 27° W., 11 miles; lat. 12° 55′ 26″ N.; long. 124° 22′ 12″ E.; 195 fathoms; Sh.; temperature 59.3° F.; June 24, 1909; station 5475, *Albatross.*

Holotype.—Male. Cat. No. 48210, U.S.N.M.

Measurements.—Length of carapace on median line, 20.6; length of rostrum, 10.5; extreme width of carapace, 19; width without excrescences, 13.

[1] Zool. Jahrb., Syst., vol. 7, 1893, p. 44.

Carapace subtriangular, with a long rostrum of two divergent spines, equal to half the length of the remainder of the carapace; surface deeply channeled so as to leave 17 smooth, thinly setose, raised islets, as follows: One elongate-oval on the gastric region; one transversely subcircular, on the cardiac region; one in the shape of a Cupid's bow along the posterior border; two narrowly subtriangular on each branchial region, the point of the triangles directed outward and extending laterally beyond the line of the carapace, especially so in the case of the posterior of these two islets; an L-shaped hepatic and postocular islet; one semilunar preorbital; one oval subhepatic; two subbranchial, one of which is oval, the other elongate-spatulate. A tubercle in front of the gastric islet and either side of the cardiac islets; they and the channels are densely setose.

Chelipeds stouter than ambulatory legs and nearly as long as carapace and rostrum; merus very bluntly angled above, carpus with two blunt crests above, manus with one; manus tapering distally; fingers meeting at the tips, dactylus with an enlarged tooth at base. Of the ambulatory legs the first is much the longest, exceeds the cheliped by the dactylus and nearly half the propodus; legs subcylindrical, carpal segments with a longitudinal depression.

Relationship.—Very much like *S. stimpsoni* (Miers)[1], except that the branchial islet is divided into two and the merus joints of cheliped and legs are not sharply cristate as in that species.

SPHENOCARCINUS AURITUS, new species.

Type-locality.—East coast of Luzon: Atalaya Point, Batag Island, S. 65° E., 5.1 miles; lat. 12° 43′ 51″ N.; long. 124° 58′ 50″ E.; 308 fathoms; gn. M.; temperature 45.3° F.; station 5444, *Albatross.*

Holotype.—Ovigerous female. Cat. No. 48211, U.S.N.M.

Measurements.—Entire length of carapace, 17.3; length of rostrum, 3.3; greatest width of carapace, 11.4.

Carapace and rostrum subtriangular, the rostrum shorter than in any other species of the genus and composed of two flattened, somewhat ear-shaped horns which are contiguous nearly to the tips. Channels of the carapace covered with low, spherical setæ and some lines of longer, curved hairs. Islets flattened and 14 in number as follows: One gastric, longitudinal, oblong with a little transverse piece joined to the rear; one cardiac and intestinal in the form of a large T with the ends of the crosspiece curved backward and inward; on either side of this, one narrow-subspatulate, and parallel to the post-lateral margin of the carapace; one branchial, elongate, irregular, following lateral margin of carapace and touching the hepatic-

[1] *Oxypleurodon stimpsoni* Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 38, pl. 6, figs. 1–1*c*.

postocular islet, which is subcircular with a notch in the inner margin; one lunate preorbital islet; an elongate islet on the subbranchial and on the subhepatic region.

Chelipeds of female stouter than ambulatory legs and as long as carapace; upper margin of merus and manus subparallel; fingers narrowly gaping. First ambulatory leg exceeding cheliped by half the length of dactylus; legs cylindrical.

Differs from all other species by the pattern on the carapace and the short rostrum.

SPHENOCARCINUS NODOSUS, new species.

Type-locality.—Between Negros and Siquijor: Apo Island (C.), S. 26° W., 11.8 miles; lat. 9° 15′ 45″ N.; long. 123° 22′ 00″ E.; 279 fathoms; gn. M.; temperature 53.5° F.; Aug. 19, 1909; station 5536, *Albatross.*

Holotype.—Male. Cat. No. 48212, U.S.N.M.

Measurements.—Length of carapace in median line, 22; length of rostral horns, 4.3; width of carapace exclusive of tubercles, 16.2; same, inclusive of tubercles, 18.5.

Carapace ovate-triangular, densely covered with a coating of acute hairs, and ornamented with round knobs or tubercles of which there are eight of large size and seven of small size; the large ones are as follows: Four in a short cross in the middle of the carapace, of which two are median, gastric and cardiac respectively, and two are anterior branchial; a larger tubercle at the outer angle of each branchial region, and, largest of all, an oblong, nearly vertical excrescence nearly covering the hepatic region. The pubescence is shorter on the two lateral tubercles. The small tubercles are as follows: Two lateral gastric; two on each branchial region, one close in front of the large tubercle, one on each side of the cardiac region; and one intestinal. On the subbranchial region there is a suberect, semioval, laminar lobe or excrescence, with a narrow white edge. A similar, but smaller, narrow, right-angled area is on the pterygostomian region. Preorbital hood very oblique and terminating anteriorly in an acute angle; it is separated by a small U-shaped sinus from the postocular cup which is well-developed, especially below. Basal antennal segment narrow, curved, diminishing distally, unarmed. Rostral horns horizontal, with outer margins parallel, interspace V-shaped.

Chelipeds long and massive, two-thirds again as long as carapace; margins of three-sided merus blunt, unarmed; carpus with two blunt crests above and a tooth on the proximal half of inner margin; manus narrowing distally, with margins proximally thin; fingers dentate, with a large tooth at base of dactylus, a wide gape in basal

half. Ambulatory legs cylindrical, pubescent, the first pair one-fourth longer than cheliped.

Relationship.—Closely related to *S. carbunculus* Rathbun[1] from the Hawaiian Islands; in *carbunculus*, however, there are nine subequal prominences on the hinder part of the carapace, the intestinal and posterior branchial nodules being as large as the others; the hepatic nodule is fused with the postocular, while in *nodosus* these nodules are separate and very unequal in thickness.

HYASTENUS TRISPINOSUS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Tinakta Island (N.), N. 82° W., 1.4 miles; lat. 5° 11′ 50″ N.; long. 119° 54′ E.; 10 fathoms; co. S.; Feb. 21, 1908; station 5159, *Albatross.*

Holotype.—Male. Cat. No. 48213, U.S.N.M.

Measurements.—Length on median line without spine, 10.9; length of rostral horns, 5.4; width without spines, 7.8; width with spines, 9.7.

A subtriangular carapace with three spines, one of which is median just above the posterior margin, nearly erect, curved, acute, the other two at the branchial angles, longer, slenderer, directed outward and strongly upward, curved, with tip hooked forward. A low median tubercle on the gastric and on the cardiac region; a large gastric tubercle near the orbital sinus, and in the same horizontal line a very small one, nearer the middle. A branchial tubercle on the lobe in the angle between cardiac and intestinal regions; another much farther forward near the margin. Three very large pterygostomian tubercles besides the one formed by the projecting angle of the buccal cavity. Rostral horns slender, moderately divergent, horizontal, acuminate. Preorbital lobe with a well-developed anterior tooth; in front of it shows the narrow spine of the antennal segment. Orbital sinus very small and rounded; outside it, the anterior margin of the postocular cup is concave. The basal antennal segment bears on its outer margin beside the distal spine, a large lobe at the middle, and far back a small tubercle.

Chelipeds slender, as long as carapace and one-third the rostrum; the specimen is perhaps not fully mature. Manus not enlarged; fingers with a very narrow gape at base. The more distal spines of the dactyli of the ambulatory legs are of good size.

Relationships.—Near *H. diacanthus* (de Haan)[2] and *H. spinosus* A. Milne Edwards;[3] the median gastric tubercle in *trispinosus* is farther forward than in *diacanthus* and occupies the position of the anterior of the two spines in *spinosus;* but the most striking differ-

[1] Bull. U. S. Fish Comm. for 1903, pt. 3, 1906, p. 879, pl. 14, fig. 6.

[2] *Pisa (Naxia) diacantha* de Haan, Fauna Japon., Crust., 1838, pl. 24, fig. 1; 1839, pl. 96 and pl. G.

[3] Nouv. Arch. Mus. Hist. Nat., Paris, vol. 8, 1872, p. 250.

ence lies in the presence of the long (for *Hyastenus*) spines of the posterior carapace; the related species also have no antennal spine.

HYASTENUS AUCTUS, new species.

Type-locality.—Near Siasi, Sulu Archipelago: Sirun Island (N.), S. 80° W., 3.8 miles; lat. 5° 35′ 40″ N.; long. 120° 47′ 30″ E.; 17 fathoms; co. S.; Feb. 16, 1908; station 5148, *Albatross.*

Holotype.—Male. Cat. No. 48214, U.S.N.M.

Measurements.—Length on median line, 21; length of rostral horns, 12.2; width of carapace without spines, 14; width with spines, 15.2.

Gastric region very high, conical, rising to a subacute apex or tubercle; cardiac region a little less high, smoothly rounded; intestinal region with a short, conical, subacute spine. A stout, pointed spine at the branchial angle, directed outward, upward, and slightly backward; a little above, in front of, and within this spine is another, short, stout, tuberculiform, acute; on the anterior branchial areola there is a lower, smaller, submarginal tubercle. On each gastric region near the orbital sinus there is a large tubercle on each side, the distance between which is very little greater than from either to the median tubercle. A tubercle on margin of hepatic region. Three pterygostomian tubercles. Rostral horns straight, regularly tapering, divergent. Orbit and antennal joint much as in *H. spinosus.*

Chelipeds very little longer than carapace, excluding rostrum; palms not enlarged, fingers gaping very narrowly at base only. Legs rather stout, spinules of dactyls small.

Relationships.—Near *H. spinosus*, from which it differs in having only one median tubercle on the gastric region, instead of two tubercles or spines; and in having a supplementary tubercle or spine above the posterior branchial spine. Also has a curious resemblance to *H. hilgendorfi*[1] in its ornamentation, but the carapace is narrower behind and wider across the orbits; it lacks the two tubercles on the subbranchial region, also has fewer gastric tubercles, while the gastric region is more strongly humped.

HYASTENUS TUBERCULOSUS, new species.

Type-locality.—Near Jolo: Jolo Light, S. 17° E., 5.5 miles; lat. 6° 09′ N.; long. 120° 58′ E.; 29 fathoms; co. S.; Feb. 15, 1908; station 5141, *Albatross.*

Holotype.—Male. Cat. No. 48215, U.S.N.M.

Measurements.—Length on median line, 9.2; length of horn, 3.6; width of carapace, 6.

Carapace with four median tubercles, two large gastric, the posterior of which is at the highest point of the carapace, one cardiac and one intestinal; four additional tubercles on the gastric region,

[1] De Man, Jour. Linn. Soc. London, Zool., vol. 22, 1887, p. 14, pl. 1, figs. 3, 4.

two leading obliquely-transversely forward on each side of the anterior median tubercle, those of the inner pair very small; branchial region with a lateral row of four tubercles arching upward, the posterior of these being at the postero-lateral angle; a tubercle on the areola at the inner angle of the branchial region, between the cardiac and intestinal regions; a small but prominent tubercle on the hepatic margin; two large and one small pterygostomian tubercle. Rostral horns widely divergent, slender, arched upward. Anterior end of preorbital hood subrectangular, not produced. On the basal segment of the antenna, a blunt tooth or spine obliquely placed, visible from above, followed on the outer margin by a large lobe and then by a tubercle.

Chelipeds equal in length to the carapace and nearly half the rostrum; palms swollen, pubescent, a small tubercle on upper margin; fingers proximally arched, making a wide gape for half their length. Spinules on dactyli of ambulatory legs rather small.

Relationships.—This species suggests *H. hilgendorfi*, but the carapace is wider across the anterior part and the preorbital cup is not produced and pointed as in *hilgendorfi*; the prominences are similarly arranged, but none of them are spines; the manus of the adult male is shorter and wider and not wholly smooth, as in that species. On the other hand, the shape of carapace and orbit and especially the profile view, are very like *H. elongatus* (Ortmann),[1] but the carapace is wider in proportion to its length, also smoother, the horns shorter and more spreading, the legs shorter, especially those of the first pair, the propodus of which is one and a half times longer than the carpus (in *elongatus* twice as long).

HYASTENUS ORBIS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Observation Island, N. 70° W., 6.4 miles; lat. 4° 58′ 20″ N.; long. 119° 50′ 30″ E.; 9 fathoms; Co.; Feb. 24, 1908; station 5165, *Albatross.*

Holotype.—Ovigerous female. Cat. No. 48216, U.S.N.M.

Measurements.—Length of carapace on median line, 8; length of horns, 2.2; width of carapace, 5.1.

A small species, relatively wide, with large orbits; cardiac higher than gastric region, the latter sloping steeply down from the summit to the base of the horns. Five median tubercles of which three are gastric, one cardiac, one intestinal; a transverse row of four tubercles on the gastric region in a line between the anterior and the second of the median tubercles; a pair of tubercles behind the rostrum and forming an equilateral triangle with the anterior median tubercle; curve of four acute tubercles or spines on the margin of the branchial region, the posterior of which is longer and definitely spinate; three

[1] *Hyastenus diacanthus* var. *elongata* Ortmann, Zool. Jahrb., Syst., vol. 7, 1893, p. 55.

truncate pterygostomian tubercles, the anterior one the largest. The short, slender, acuminate rostral horns are spread wide apart and are slightly curved or convex to each other. The orbital coverings are large and prominent; preorbital hood very thin and sharp-edged, the anterior angle acutely pointed, the posterior angle with a blunt tooth; anterior margin of postocular cup with a very small tooth. Basal segment of antenna wide and armed at the anterior angle with a slender spine pointing directly forward and in large part visible in dorsal view; the margin behind it is longitudinal up to a slight lobe beyond which there is a deep sinus and a tubercle.

Chelipeds (of female) short and weak, margins of palms parallel, outer surface crossed by longitudinal lines of pubescence, fingers with an almost imperceptible gape at base. Ambulatory legs ornamented with long spatulate bristles on the margins; dactyli long and slender, their spinules relatively small.

Relationship.—This species is perhaps nearest to *H. verrucosipes* (Adams and White)[1] which has similar though not identical ornamentation on the carapace; *H. verrucosipes* is definitely set apart by the very elongated postocular cup and by the supplementary plate projecting sideways from the basal segment of the antenna.

HYASTENUS BIFORMIS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Tinakta Island (N.), N. 82° W., 1.4 miles; lat. 5° 11′ 50″ N., long. 119° 54′ E.; 10 fathoms; co. S.; Feb. 21, 1908; station 5159, *Albatross.*

Holotype.—Male. Cat. No. 48217, U.S.N.M.

Measurements.—Length of carapace on median line, 9.8; length of rostral horns, 3.5; width of carapace, 7.

Carapace oblong-triangular, high in the middle, cardiac higher than gastric region and bearing two prominent tubercles side by side, and behind them and lower down a median, flat tubercle; gastric region with two median tubercles, the posterior of which is larger and higher, and a tubercle on either side not far from the orbital sinus; an arch of three small tubercles near the margin of the branchial region, of which the posterior one is the largest, and is pointed; a single tubercle on the intestinal region and on the hepatic margin; a row of several tubercles on the subbranchial and subhepatic regions, and another row on the pterygostomian region. Rostral horns slender, widely separated by a U-shaped sinus, moderately divergent. Preorbital hood with a small tuberculiform point at the anterior angle; anterior margin of postocular cup cut into two subequal lobes. Basal segment of antenna broad, armed with two

[1] See Calman, Trans. Linn. Soc. London, ser. 2, Zool., vol. 8, 1900, p. 36, pl. 2, figs. 23, 24.

strong, blunt outer spines or teeth, the posterior of which is the larger; the tips of both are visible in dorsal view.

Chelipeds half again as long as the carapace excluding rostrum; merus subcylindrical, increasing distally where it bears a few sharp granules; manus somewhat compressed, two and a half times as long as its greatest width and armed on the upper surface and the upper half of the inner surface with sharp tubercles; fingers arched and widely gaping for their proximal two-thirds. Ambulatory legs slender, the first pair two-sevenths longer than cheliped; spinules of dactyli minute.

Relationships.—In the rounded outlines of the branchial regions this species reminds one of *H. planasius*[1] and of *H. calvarius*.[2] *H. planasius* has a flatter carapace, longer branchial spine, shorter, broader horns, and shorter, stouter chelipeds, while *H. calvarius* is smooth in its dorsal aspect except for a branchial and an intestinal spine. The pair of cardiac tubercles and the character of the antennal segment set the new species apart from all others.

HYASTENUS FRATERCULUS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Observation Island, N. 70° W., 6.4 miles; lat. 4° 58′ 20″ N.; long. 119° 50′ 30″ E.; 9 fathoms; Co.; Feb. 24, 1908; station 5165, *Albatross.*

Holotype.—Male. Cat. No. 48291, U.S.N.M.

Measurements.—Length of carapace on median line, 7; length of rostral horns, 0.7; width of carapace, 5.

This species is so near *H. biformis* that it can best be described by comparison. The carapace is posteriorly less rounded, the lateral and posterior margins of the branchial regions being straighter; the gastric region is ornamented with 3 prominent median tubercles (instead of 2) and 2 tubercles (instead of one) on each side, arranged obliquely and almost in line with the middle of the median tubercles; a marginal branchial row of 8 (on the left) or 9 (on the right) tubercles, unequal in size; many tubercles or granules on the subbranchial and pterygostomian regions; intestinal region produced obliquely backward in a large, blunt, conical elevation. Rostral horns short and directed forward. Margins of manus of cheliped more nearly parallel than in *biformis.* Merus of first ambulatory leg armed with three tubercles above on the proximal half. For the rest, much like *biformis*, having a similar cardiac region, orbits, antennæ, maxillipeds, and abdomen.

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[1] *Pisa planasia* Adams and White, Voy. Samarang, Crust., 1848, p. 9, pl. 2, figs. 4, 4*a*, 5, 5*a*.

[2] Compare Alcock and Anderson, Illus. Zool. *Investigator,* Crust., pt. 4, 1896, pl. 21, fig. 2.

HYASTENUS SCROBICULATUS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Tinakta Island (N.), S. 72° W., 2.75 miles; lat. 5° 12′ 40″ N.; long. 119° 55′ 10″ E.; 12 fathoms; S.; Feb. 22, 1908; station 5160, *Albatross.*

Holotype.—Male. Cat. No. 48218, U.S.N.M.

Measurements.—Length of carapace on median line, 8.2; length of rostral horns, 2; width of carapace, 5.

The cardiac region is the highest part of the carapace; it is surrounded by a trench and surmounted by a conical tubercle; a low tubercle may be seen on the posterior slope. Four median gastric tubercles, the second (from the front) very low, the others prominent; either side of the second and at some distance there is another tubercle; an arch of four spines or tubercles near the margin of the branchial region; the posterior one is a spine of fair size, the others are pointed tubercles diminishing in size anteriorly; an intestinal and a marginal hepatic tubercle; a row of three subhepatic and subbranchial tubercles and a row of two pterygostomian tubercles. Rostral horns flattened, regularly tapering, outer margins parallel. Anterior angle of preorbital hood produced obliquely in a short acute spine, posterior half of outer margin rounded and produced strongly outward; orbital sinus narrow; postocular cup triangular. Basal antennal segment wide and with two triangular, acute teeth or spines directed obliquely forward.

Chelipeds weak, no longer than carapace exclusive of rostrum; palms rough above, fingers narrowly gaping at base. Legs very slender, spinules of dactyli minute.

Relationship.—In the shape of carapace, details of orbit and basal antennal segment and roughness of cheliped, this species resembles *H. biformis* (p. 545), but can at once be told by the isolated cardiac region surmounted by one tubercle instead of two side by side, by the four instead of two median gastric tubercles, and by the flattened rostrum.

HYASTENUS TINAKTENSIS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Tinakta Island (N.), N. 82° W., 1.4 miles; lat. 5° 11′ 50″ N.; long. 119° 54′ E.; 10 fathoms; Co. S.; Feb. 21, 1908; station 5159, *Albatross.*

Holotype.—Female. Cat. No. 48221, U.S.N.M.

Measurements.—Length of carapace in median line, excluding spine, 11; length of rostral horns, 2.8; width of carapace without spine, 7.3.

Carapace wide, strongly constricted behind the spreading orbits; surface strongly tuberculate and spinate: three blunt spines or high

tubercles on the median line of the gastric region; eight lateral gastric tubercles, four of which are granulated; hinder part of cardiac region produced upward in a long, spadelike spine, compressed antero-posteriorly; seven small cardiac tubercles; a large, flat, triangular, erect tubercle or elevation, and three small tubercles on the intestinal region; on the hinder part of the branchial region three strong spines on each side, of which one is at the lateral angle, one above that point, and one near the cardiac region; many branchial tubercles; one hepatic tubercle, which on the right side is split in two; one tubercle on the anterior part of the subbranchial region and a large bilobed pterygostomian tubercle. Rostrum strongly deflexed, horns slender, widely divergent. Preorbital hood divided into two subequal teeth, the anterior of which is upcurved but not at all advanced; orbital slit narrow; postocular cup large, produced outward and forward to cover the end of the eye, ventral surface flat and smooth. Basal segment of antenna armed with three large, somewhat flattened, lobes or teeth, but outside the two anterior of these lobes the segment is produced outward and obliquely upward forming a partial floor to the orbit.

Chelipeds of female weak, shorter than carapace. Legs of moderate length, ornamented with stout unequal setæ; dactyli long, very slender, and very finely armed.

Relationships.—In its roughness this species resembles *H. oryx*,[1] but it is much more uneven and of quite different shape. In the lateral extension of the basal antennal segment, it shows a kinship with *H. verrucosipes*.[2] The large, compressed, erect elevations of cardiac and intestinal regions are unique.

CHORILIA SPHENOCARCINOIDES, new species.

Type-locality.—Between Negros and Siquijor: Apo Island (C.), S. 26° W., 11.8 miles; lat. 9° 15′ 45″ N.; long. 123° 22′ 00″ E.; 279 fathoms; gn. M.; temperature 53.5° F.; Aug. 19, 1909; station 5536, *Albatross*.

Holotype.—Male. Cat. No. 48202, U.S.N.M.

Measurements.—Length of carapace on median line, 15.6; estimated length of rostral horns (the tips of both are broken off), 5.3; width of carapace without spines, 10.7; with spines, 12.6.

Carapace covered with pubescence, out of which emerge the larger protuberances on the posterior part; one of these is transverse and occupies the greater part of the intestinal region and a strip parallel to the posterior margin; another covers the cardiac region; while

[1] A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 8, 1872, p. 250, pl. 14, fig. 1.

[2] See Calman, Trans. Linn. Soc. London, ser. 2, Zool., vol. 8, 1900, p. 36, pl. 2, figs. 23 and 24.

on either side is a pear-shaped branchial eminence transversely placed and ending outwardly in a spine; the hepatic region culminates in a conical, acute spine directed outward and slightly upward; of tubercles there is one median on the mesogastric region, one at inner angle of the branchial region, and one farther back, behind the middle of the interspace between cardiac and branchial regions; a spine on anterior part of subbranchial region; a row of three pterygostomian tubercles. Rostral horns slender, widely separated, moderately divergent. Preorbital hood expanded laterally and with an acute tooth anteriorly; postocular cup well developed. Anterior angle of basal antennal segment acute; outer margin with a slight concavity.

Chelipeds as long as carapace and rostrum; merus armed above with three low tubercles and a terminal spine; carpus with a thin outer crest and two blunt crests; margins of manus blunt, subparallel, length about one and a half times height; fingers feebly crenate, a broad low tooth at the base of the dactyl in a narrow gape. The first ambulatory legs are lacking, but the second are about one-fourth longer than the chelipeds.

Relationships.—This species has orbits similar to those of *C. longipes* Dana[1] and *C. japonica* (Miers)[2], that is, there is a short, U-shaped sinus between preorbital hood and postorbital cup; the basal antennal segment also is elongate as in those species. Instead of the numerous spines on the carapace of typical species, *C. sphenocarcinoides* has ornamentation on the posterior half similar to that on certain species of *Sphenocarcinus*, especially *S. luzonicus* (see p. 539), while the tuberculation of the anterior half of the carapace is akin to that of the atypical species of *Pugettia*, e. g., *P. minor* Ortmann.[3]

NAXIOIDES ROMBLONI, new species.

Type-locality.—Near Romblon: Romblon Light, S. 56° E., 4.5 miles; lat. 12° 38′ 15″ N.; long. 122° 12′ 30″ E.; 37 fathoms; hrd. S.; temperature 75.7° F.; Mar. 25, 1908; station 5179, *Albatross.*

Holotype.—Male. Cat. No. 48201, U.S.N.M.

Measurements.—Length of carapace on median line, 7.6; width of carapace, 5; length of rostrum, 7; length of cheliped, 11.7; length of first leg, 19.5; of second leg, 15; of third leg, 11.5; of fourth leg, 9.

A small, delicate species. Carapace with numerous spines and acute tubercles. Cardiac region most elevated, conical, surmounted by a short, conical spine, and bearing another spine nearly as large on its posterior slope; there are several tubercles the largest of which

[1] Amer. Jour. Sci., ser. 2, vol. 11, 1851, p. 269.

[2] *Hyastenus* (*Chorilia*) *japonicus* Miers, Proc. Zool. Soc. London, 1879, p. 27, pl. 1, figs. 2, 2*a*, 2*b*.

[3] Zool. Jahrb., Syst., vol. 7, 1893, p. 44.

are two on the anterior slope side by side. Three median spines, the posterior the largest, on the gastric region; a transverse row of four tubercles or spines, in a line between the first and second median; behind the outer ones of this row there is another in transverse line with hinder median spine; two small tubercles near posterior border of mesogastric region. The longest spines of the carapace proper are two on the margin of each branchial region; in front of each spine there is a tubercle while between them and farther in there is a smaller spine; a ring of granules near the inner angle; besides several other granules and tubercles on the gastric as well as on the branchial region. A flattish spine on hepatic region. A stout, curved, acute spine above posterior margin. Subbranchial and pterygostomian regions spinous, the anterior spine largest.

Rostral horns nearly as long as carapace, slender, curved, divergent from their bases, a little convex toward each other and a little convex upward in a side view; they lack the accessory spine or spinule commonly found in species of this genus. Preorbital hoods long and narrow, inclined toward each other anteriorly, outer margin nearly straight, and posterior margin transverse, forming an acute dentiform angle; anterior end produced in a long, narrow, sharp tooth. On upper margin of orbit, a small triangular tooth close to the postorbital cup; the latter angular, upper surface rhomboidal, outer surface larger, subrectangular. Basal antennal segment longitudinally grooved, armed at the anterior angle with a slender spine, visible from above; further back on the the margin there is a shallow lobe.

Chelipeds slender, the manus slightly wider than the merus and enlarging a little distally; surface finely granulate. Fingers about one-third as long as manus, gaping in basal half. Merus armed with 3 spines above and 2 below, all of medium length. The merus of the ambulatory legs, besides the long terminal spine, has from 3 to 5 other irregular spines. The carpus bears 2 spines above on the distal half; they are insignificant on the last 2 legs. The dactyli are armed with from 8 to 12 sharp spinules visible to my unaided eye.

The under side of the crab is ornamented with lines of globular setæ. The first to sixth segments, inclusive, of the abdomen bear a median spine or tubercle.

Relationship.—This pretty little species differs from all others in lacking an accessory spinule on the rostral horns and in having more than one spine on the merus joint of the legs. The orbits, however, are of typical form. It is perhaps nearest to *N. taurus* Pocock,[1] which also has granulated chelipeds and divergent horns, but the

[1] Compare Illus. Zool. *Investigator,* Crust., pt. 6, pl. 33, figs. 5, 5*a*.

horns are straight, the basal antennal segment has a tooth at its middle, and the carapace is differently ornamented.

PHALANGIPUS FILIFORMIS, new species.

?Leptopus longipes MILNE EDWARDS, Cuvier's Règne Anim., Crust., atlas, pl. 34, fig. 1.

Type-locality.—East of Leyte: Tacbuc Point, S. 80° W., 15.2 miles; lat. 10° 46′ 24″ N.; long. 125° 16′ 30″ E.; 57 fathoms; Sh.; July 29, 1909; station 5478, *Albatross.*

Holotype.—Male. Cat. No. 48223, U.S.N.M.

Measurements.—Length of carapace on median line, 22.2; length of horns, 1.4; width of carapace, 21; length of cheliped, 53.5; length of first ambulatory leg, 166.5.

The spines of the carapace are placed as in *P. herbstii*[1] but they are slenderer and sharper. The front of the carapace is equally wide, measured between the tips of the anterior and well-developed spines of the preorbital hoods and between the posterior extremities of the hoods. Rostral horns slender, their outer margins divergent. On either side of the very sharp tooth of the upper and the lower margin of the orbit there is a U-shaped sinus. Pterygostomian spine very long, acuminate, a smaller spine behind it. A laminar projection on the first abdominal segment occupies nearly its whole width and is pointed at the middle; sixth segment armed with a spine near the distal end. The two pairs of spines on the sternum at the base of the chelipeds are well developed and acuminate.

Chelipeds slender, the merus more so than the merus of the ambulatory legs; manus subcylindrical, but widening a little distally; the fingers gape narrowly in their basal half where the margins are wavy, not toothed.

Relationship.—In *P. herbstii* the outer margins of the preorbital hood are oblique, not parallel; the outer margins of the rostral horns are subparallel; the tooth on the lower margin of the orbit is wider; the pterygostomian spine is shorter; the prominence on the first abdominal segment is much smaller, the sixth segment is unarmed; the chelipeds are stout, the manus of the male much swollen, the dactylus has a large basal tooth in the gape; the ambulatory legs are a little stouter and much shorter.

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[1] *Egeria herbstii* Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 292. Not *Cancer longipes* Linnæus, Syst. Nat., ed. 10, vol. 1, 1758, p. 629, which is undetermined.

PHALANGIPUS RETUSUS, new species.

? *Egeria longipes* ADAMS AND WHITE, Zool. Voy. Samarang. Crust., 1848, p. 7 (Zebu).

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Tinatka Island (N.), S. 80° W., 3.3 miles; lat. 5° 12′ 30″ N.; long. 119° 55′ 50″ E.; 18 fathoms; fne. S.; Feb. 21, 1908; station 5157, *Albatross.*

Holotype.—Male. Cat. No. 48222, U.S.N.M.

Measurements.—Length of carapace on median line, 24; length of horns, .7; width of carapace, 20.8; length of cheliped, 45.7.

Spines of carapace stout and blunt, those on median line subtruncate. Margin of preorbital hood sinuous, the anterior spine and the posterior denticle equally produced. Rostral horns blunt, widely separated, outer margins very slightly divergent. Superior tooth of orbital margin broad, subtruncate, a U-shaped notch on either side; inferior tooth narrow-triangular, subacute, notches U-shaped. Lateral spine of basal antennal segment prominent, directed forward, outward and downward. Pterygostomian prominence a large, flat, rounded lobe, followed posteriorly by a tubercle. A thick, rounded plate projects horizontally from the first abdominal segment. Each segment of the sternum is furnished with tubercles, and near the base of the chelipeds there is a long, slender, conical, blunt spine.

The merus of the cheliped is slenderer than that of the first ambulatory leg, while the manus is stouter and increases steadily in width to the distal end. The fingers meet and are finely dentate for their distal three-fifths; the basal two-fifths gape, and the dactylus is armed with one broad tooth. The ambulatory legs are all broken, but those of the first pair are estimated at about six times the length of the carapace.

Relationships.—This species differs from all others in the large rounded pterygostomian lobe. In the blunt-pointed spines of the carapace it approaches *P. herbstii*, which is distinguished by the characters of the orbit. The manus of the male is intermediate between the filiform type of *arachnoides*[1] and *filiformis* and the much swollen manus of *herbstii;* it is in fact near *investigatoris*[2] in shape but much shorter and slightly compressed and smooth.

Subfamily SCHIZOPHRYSINÆ.

MAJA SULUENSIS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Observation Island, N. 70° W., 6.4 miles; lat. 4° 58′ 20″ N.; long. 119° 50′ 30″ E.; 9 fathoms; Co.; Feb. 24, 1908; station 5165, *Albatross.*

Holotype.—Female. Cat. No. 48224, U.S.N.M.

[1] *Egeria arachnoides* Latreille, Tabl. Encyc. Méth., pt. 24, 1818, pl. 281, fig. 1.
[2] *Egeria investigatoris* Alcock, Jour. Asiat. Soc. Bengal, vol. 64, 1895, p. 225.

Measurements.—Length of carapace on median line, 41.2; length of rostral horn, 13.1; width of carapace without spines, 31.6.

A *Maja* with three long median spines, two gastric and one cardiac, one dorsal branchial spine, four long marginal spines behind the orbit, one of which is hepatic, two small spines on posterior margin near the middle, a long curved spine at posterior end of preorbital hood, followed by a short spine and then by a long postocular spine, rostral horns about two-sevenths as long as remainder of carapace and strongly divergent. Carapace covered with coarse granules bearing setæ. Basal antennal segment armed with two spines at the anterior angles, which are in line with the median deflexed spine of the front.

Chelipeds slender, smooth, shorter than the next leg in the female. Ambulatory legs smooth and hairy.

Relationship.—Strongly resembles *M. miersii* Walker,[1] from Singapore. Differs in having an additional gastric spine and in lacking the secondary spine on the hepatic region.

MAJA LINAPACANENSIS, new species.

Type-locality.—Linapacan Strait: Observatory Island (N.), S. 55° W., 10.7 miles; lat. 11° 37′ 15″ N.; long. 119° 48′ 45″ E.; 46 fathoms; S. M.; Dec. 18, 1908; station 5335, *Albatross.*

Holotype.—Carapace only. Cat. No. 48225, U.S.N.M.

Measurements.—The figures are estimated, as the carapace is broken posteriorly. Length of carapace on median line, 30; width without spine, 27.

A narrow, pyriform *Maja* with two median spines (one gastric, one cardiac), a dorsal branchial spine in line with the cardiac spine, two slightly divergent rostral horns (incomplete), three broad, flat spines above orbit, one of which is attached to the narrow, preorbital hood, postocular spine longest, intermediate spine well separated from the other two; about seven small, irregular lateral spines, of which two are hepatic; the anterior of these is the largest and forms a right-angled sinus with the postocular tooth. Surface covered with irregular, punctate granules or tubercles. Vertical projection of front triangular, tipped with a truncate spine. Basal segment of antenna armed with three long blunt spines (two at anterior angles and one at middle of inner margin) and four shorter spines or teeth (one on anterior margin, three on inner margin); a granulated tubercle on posterior edge of antennular cavities; lower edge of orbit tuberculate.

Relationship.—This appears to be much like *Paramithrax* (*Leptomithrax*) *compressipes* Miers,[2] from Canton, described from a larger

[1] Jour. Linn. Soc. London, vol. 20, 1887, p. 113, pl. 6, figs. 1–3.
[2] Ann. Mag. Nat. Hist., ser. 5, vol. 4, 1879, p. 8.

specimen without dorsal branchial spine; *linapacanensis*, however, is a true *Maja*, as the movable part of the antenna is quite within the orbit.

MAJA BISARMATA, new species.

Type-locality.—Off northern Mindanao: Point Tagolo Light, S. 71° W., 8.7 miles; lat. 8° 47′ N.; long. 123° 31′ 15″ E.; 182 fathoms; temperature 54.3° F.; Aug. 9, 1909; station 5519, *Albatross*.

Holotype.—Male. Cat. No. 48220, U.S.N.M.

Measurement.—Length of carapace on median line, 20; length of horn, 5.5; width of carapace excluding spines, 15.7; including spines, 18.2.

Carapace oblong-ovate, covered, as are also the ambulatory legs, with hairs; spines numerous, arranged as follows: Two pairs of small spines between preorbital hoods, followed by three pairs on gastric region (of which the second pair are larger), then one large median, one pair of very small spines, another large median spine, finally a pair near together; two lateral gastric spines on each side, making in all sixteen gastric spines; one small genital spine; two large cardiac spines side by side; three small intestinal spines in a triangle pointing forward; seven dorsal branchial spines of which three are large; three small dorsal hepatic spines, and two marginal, of which the anterior is long; three long marginal branchial spines. Rostral horns slender, gradually tapering, acuminate. Preorbital hood armed posteriorly with a rather small, outward-pointing spine, separated by a U-shaped sinus from the larger intermediate spine; this in turn is separated by a V-sinus from the oblique postorbital spine, which has a tubercle near the base of its inner margin.

Basal antennal segment armed with two anterior spines besides a tubercle at posterior end of outer margin; of the spines, the one at the outer angle is nearly horizontal and directed outward and a little forward, the one at the inner angle subparallel but directed a little more forward and slightly downward. Subhepatic and subbranchial regions each with several tubercles; pterygostomian region armed with a very short, stout spine and two tubercles.

Chelipeds slender, one-third longer than carapace minus rostrum; carpus three-fifths as long as merus; both are finely roughened, and the merus has a small, slender, terminal spine. Palmar portion of manus nearly as long as merus, more slender, smooth; fingers almost half as long as palm, fingers meeting, without teeth. Ambulatory legs fringed on each side with long hairs, those of first pair very little longer than cheliped; merus joints each with a terminal spine.

Relationships.—Differs from other species in having a definite number of spines and pointed tubercles, the interspaces being smooth; also in two instead of one cardiac spine. The chelipeds resemble those of *M. suluensis* but the carpus is not so long.

LEPTOMITHRAX SINENSIS, new species.

Type-locality.—China Sea, near southern Luzon: lat. 21° 33′ N.; long. 116° 15′ E.; 88 fathoms; crs. S. Sh.; Nov. 4, 1908; station 5311, *Albatross.*

Holotype.—A dried specimen, sex unknown, showing only the carapace with basal antennal segments and epistome attached. Cat. No. 48219, U.S.N.M.

Measurements.—Length of carapace on median line, 32; width of carapace without spines, 25.3; length of rostrum exclusive of point broken off, 5.7.

Carapace oblong-ovate, convex; regions well marked, covered with irregular tubercles and granules except on the horns, the sides of the gastric region, and some of the interregional furrows, where it is nearly smooth. The projecting hepatic region is armed with two short spines, the posterior one smaller; branchial regions with four strong marginal spines, the posterior of which is well up on the dorsal surface; two short triangular spines on the posterior margin; three sizable median tubercles, two gastric, one genital; the principal submedian, paired tubercles are, three between orbits, diminishing anteriorly; two gastric, in front of large, anterior, median tubercle, the anterior pair nearer together; one large, mesogastric; one at summit of cardiac region and one on posterior slope; two small, intestinal. Rostral horns slightly curved (concave outside), acute, about twice as long as basal width. Supraorbital hood rather closely granulate, broad, and with a small postero-external tooth or lobe, the tip of which is broken off; next sinus narrow; intermediate tooth long, triangular, acute, granulate; next sinus like a buttonhole, being closed anteriorly; postocular cup produced obliquely forward, outward and slightly upward, ending in a narrow, truncate spine. Interantennular spine curved forward, blunt-pointed. Basal antennal segment wide, nearly smooth, with two distal spines and an outer marginal lobe; the inner distal spine is dentiform, compressed in an oblique plane, thick, curved, the tip reaching a little further forward than the interantennular spine, the inferior or convex margin crenulate; the outer distal spine is gradually tapering, acuminate, produced outward more than forward and granulate above. The subhepatic region is swollen, tuberculate, and granulate; the subbranchial region is similarly roughened; a conical elevation on the pterygostomian region.

Relationships.—This species is very close to *L. edwardsii*[1] in shape and ornamentation, but the postocular cup of *edwardsii* is directed straight forward and is sharply acute at tip, and the basal antennal

[1] *Maja* (*Paramithrax*) *Peronii* de Haan (not Milne Edwards), Fauna Japon., Crust., pl. 21, figs. 2, 2*a*, 2*b*. *Maja* (*Paramithrax*) *edwardsii* de Haan, same reference, 1839, p. 92, pl. G.

segment has a concave, nonlobed, outer margin, the carapace is less high in the middle and the two posterior spines are nearer together. *L. sinensis* is also near *L. tuberculatus*,[1] the latter having a similar basal antennal segment (judging from figure 2, cited), but it also has a postocular cup like that of *edwardsii*.

Family PARTHENOPIDÆ.

PARTHENOPE (RHINOLAMBRUS) RUDIS, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Observation Island, N. 70° W., 6.4 miles; lat. 4° 58′ 20″ N.; long. 119° 50′ 30″ E.; 9 fathoms; Co.; Feb. 24, 1908; station 5165; *Albatross*.

Holotype.—Male. Cat. No. 48246, U.S.N.M.

Measurements.—Length of carapace, 29.6; width of carapace, 29; length of manus, on outer margin, 37.2; length of dactylus of cheliped, 16; length of first ambulatory leg, 50.2.

The specimen has only one cheliped, the left. The species is a striking one, as all the spines and lobes are stout, thick, and bluntly rounded at the tip; the furrows of the carapace are deep; and the legs are unusually long and with little ornamentation.

Carapace high, the hepatic and cardiac regions bounded by deep furrows and the front coursed by a broad and deep channel leading back to the gastric region; two other grooves cross the branchial region and inclose an oblong area armed with two spines, of which the posterior is longer and less stout; cardiac lobe somewhat compressed from front to back and surmounted by a tubercle, which is a little more elevated than the branchial spines; at the middle of the posterior margin there is a large tubercle or spine pointing obliquely upward and backward. All the elevated portions of the carapace are covered with rather large tubercles and pits, which give them a somewhat worm-eaten appearance. There is a large preorbital tubercle directed forward, which does not interrupt the margin of the orbit. Front deflexed at an angle of 50 degrees, edge thick, crenulate, tip rounded and partly broken. Orbit with 8 or 10 denticles on inner margin and 5 teeth on outer margin between upper sinus and antenna. Postorbital constriction strong, the sinus broad and rounded; hepatic projection forming almost a right angle, blunt; branchial margin rounded, furnished with 8 low tubercles, the last one a little removed and post-lateral, the sixth and seventh confluent, posterior margin with 2 tubercles each side of the middle spine. Subbranchial region flat and with a row of tubercles below the margin and parallel to it.

[1] *Paramithrax tuberculatus* Whitelegge, Mem. Austral. Mus., vol. 4, 1900, p. 146, pl. 34, figs. 1 and 2.

Second and third segments of antenna wide and thin, with lobed margins. Merognath deeply grooved through the middle. Sternum and abdomen (male) tuberculate; penultimate segment of abdomen armed with a conical, sharp, slightly curved, downward-pointing spine.

Cheliped a little more than three times as long as carapace, rough with rasp-like tubercles and large lobes and spines; the merus has 5 tubercles (3 large) on outer margin, about 10 (4 large) on inner margin, 7 low, smooth, and subequal on lower margin; of tubercles on upper surface one is as large as any of the marginal ones. On the carpus one tubercle, and that near the middle, is enlarged and only to a moderate size. The manus has 5 tubercles on outer margin, of which 3 are the largest on the crab and are flattened, 2 of them subtruncate; about 10 tubercles on inner margin, somewhat saw-toothed in shape, 2 near the distal end enlarged into conical spines; on the lower margin about 11 smooth, low tubercles like those of the merus; on the upper surface a much enlarged tubercle as on the merus. Fingers elongate, basal half of a reddish color, distal half white except for the tips, which are brown; surface rough with granules, a large tubercle or lobe on top of dactylus toward its base.

Legs cylindrical, merus crossed with two (in the last pair one) bands of brownish-red (in alcohol); dactyli with a short velvety coat, the last one the longest; last pair of legs roughened with small tubercles on the merus and propodus and 2 lobes on upper margin of carpus.

Of described species, this comes nearest to *P.* (*R.*) *cybelis* Alcock.[1] It has a similar form, except as to the rostrum, the carapace is pitted and the cheliped has about the same amount of armature; but all the spines of *cybelis* are acute, the cardiac region has 2 strong spines, and the rostrum has a narrow terminal lobe.

PARTHENOPE (PSEUDOLAMBRUS) PARVA, new species.

Type-locality.—Tawi Tawi Group, Sulu Archipelago: Tinakta Island (N.), N. 82° W., 1.4 miles; lat. 5° 11′ 50″ N.; long. 119° 54′ E.; 10 fathoms; co. S.; Feb. 21, 1908; station 5159, *Albatross.*

Holotype.—Female, mature. Cat. No. 48245, U.S.N.M.

Measurements.—Length of carapace, 8; width, 7.6; outer length of larger (right) palm, 6.3.

Carapace high, the branchial regions deeply separated from the gastro-cardiac; a large rounded tubercle on the gastric and on the cardiac region; 2 lines of granules diverge anteriorly from the gastric tubercle; cardiac region sparingly furnished with granules; branchial ridge curved (concave outward), marked by 4 tubercles and a few

[1] Jour. Asiat. Soc. Bengal, vol. 64, 1895, p. 270; Illus. Zool. *Investigator,* Crust., pt. 4, 1896, pl. 22, fig. 6.

granules, the posterior tubercle situated on the postero-lateral margin considerably above the lateral angle; from this posterior tubercle a line of granules curves (concave backward) toward the summit of the cardiac region; on the outer slope of the branchial region there is an obliquely longitudinal line of granules. Front deflexed at an angle of about 45 degrees, channeled, margin crenulate, extremity triangular and blunt-tipped, bearing a small, rectangular tooth on either side. Upper margin of orbit with a tooth close to the one at the outer angle; lower margin with 3 additional teeth, the inner one the most prominent. The lateral margins of the carapace are parallel and denticulate for a short distance behind the orbital angle, after which the hepatic margins are gently convex and bear 3 or 4 denticles; the branchial regions are bordered with 6 or 7 teeth up to the lateral angle, where the last tooth is a little enlarged. The postero-lateral margins bear 2 teeth or tubercles each side of the branchial ridge; there are 5 tubercles on the posterior margin. All the marginal teeth of carapace and chelipeds are denticulated.

Through the middle of the outer maxillipeds there is a line of granules.

Chelipeds moderately contorted, twice as long as carapace; merus irregularly dentate on anterior and posterior margins, 3 teeth noticeably large on the anterior margin, 2 on the posterior margin, the distal one of these being terminal, flattened and rounded at the end, a row of teeth on upper surface; lower edge finely dentate; lower surfaces partly granulate. Carpus with 2 lobes on outer edge. Manus much wider in the right cheliped, its upper surface widest at about the distal two-fifths, the margins of the same irregularly lobed or toothed, 4 larger lobes on outer (posterior) edge and 3 on inner (anterior) edge; lower edge bordered by many small teeth; surfaces nearly smooth.

Ambulatory legs very slender; the merus joints have a few small tubercles on the margins, also the carpus and propodus of the last pair.

P. (*P.*) *parva* has much in common with *P.* (*R.*) *longispina*[1] (specimens of equal size compared), having similar shape of hind part of body and of chelipeds, and similar ornamentation, but the new species has the hepatic region much less protuberant, the larger projections of the carapace are tubercles, not spines, the chelipeds are shorter and lack tubercles on the lower surface, while the tubercles of the legs are much feebler.

[1] *Lambrus longispinus* Miers, Ann. Mag. Nat. Hist., ser. 5, vol. 4, 1879, p. 18.

CRYPTOPODIA ANGUSTA, new species.

Type-locality.—China Sea, near Hongkong: lat. 21° 42′ N.; long. 114° 50′ E.; 38 fathoms; sft. gy. M.; temp. 72.1° F.; Aug. 9, 1908; station 5302, *Albatross.*

Holotype.—Female. Cat. No. 48249, U.S.N.M.

Measurements.—Length of carapace, 11.4; width of carapace at lateral angles, 15; width at postero-lateral angles, 12.8.

Carapace narrow for a *Cryptopodia*, the several slopes from the central triangular depression being of nearly equal depth; the depression has 3 spines on its posterior border, one of which is slender and surmounts the cardiac region, the others short, each on the highest point of the more elevated branchial region; 2 sharp tubercles or spines side by side at the anterior end of the depression; the ridges and 3 elevations marked with rasp-like granules. Antero-lateral margins nearly straight and in line with sides of rostrum, inner margins of orbits parallel, postero-lateral margins sloping backward and inward, posterior margin transverse; margins dentate, teeth denticulated and separated mostly by closed fissures; 3 teeth in front of lateral angle more pronounced, also the tooth at the postero-lateral angle and 4 others on the posterior margin which divide that margin into 5 sinuses, whose relative width is expressed by 1.5:3.5:3:3.5:1.5.

Chelipeds very unequal, perhaps accidentally so; upper margins of merus and manus dentate, lower margin and lower surface tuberculate; 3 enlarged teeth on inner and outer margins of merus and outer margin of manus, 4 enlarged teeth on inner margin of manus; base of dactylus with 2 or 3 strong teeth. Ambulatory legs cristate; lower margins of last pair dentate save on the dactylus, lower margins of ischium and merus of first three pairs sparingly dentate.

In the 5 spines on the dorsal surface this species resembles *C. angulata cippifer* Alcock,[1] but that species or subspecies is much wider, its lateral angles further forward and more produced, its front between the eyes not having parallel sides.

[1] Illus. Zool. *Investigator,* Crust., pt. 4, 1896, pl. 23, fig. 4.