

scutellars. The exception, *E. intermedia*, n. sp. (Costa Rica), has a presutural bristle, but only one row each of prescutellars and marginal scutellars, and is thus intermediate between the tropical and temperate zone species.

Nothing is known of the food habits of the larvae. The only clue known to me is that a series of specimens in the collection of the U. S. National Museum, from Spring Lake, Fla., February 28 and March 3, 1930 (N. C. Nicoll), is labeled "Egg plant." The specimens are teneral and may have been reared.

SPECIES OF SOUTH TEMPERATE ZONE

Eugaurax bicolor Malloch, Diptera Patagonia and S. Chile, pt. 6, fasc. 5: pp. 422, 424. 1934. (Buenos Aires, Argentina).

Eugaurax bipunctata Malloch, *ibid.*: 422, 423 (Montevideo, Uruguay).

Eugaurax pleuralis Malloch, *ibid.*: 422 (Chile).

E. pleuralis is the only species of *Eugaurax* known to me which has the mesonotum polished, lacking the pollinose appearance of the others. It is also unique in its broad cheek and black-spotted pleuron.

Eugaurax floridensis Malloch

Eugaurax floridensis Malloch, *Ins. Insc. Menstr.* 1: 46. 1913. (Fla., N. J.).

Little can be added to Malloch's description, except to note the error, undoubtedly a *lapsus calami*, in crediting the species with "two notopleural and four supraalar bristles." All are notopleurals, two anterior and four posterior, a formula that occurs in all five specimens known to me. The mesonotal pattern is characteristic. The narrow occipital spot is conspicuously bidentate dorsally by reason of a large V-shaped yellow area behind the frontal triangle.

Specimens examined: Holotype female, Biscayne Bay, Fla., and two paratypes (♂, ♀), Atlantic Beach, Fla.; ♀, Sebastian, Fla., February 10, 1919 (A. Wetmore) [U. S. National Museum]; ♀, Jackson County, Iowa, June 15, 1934 (H. C. Knutson) [Iowa Wesleyan College].

The only published record known to me is "NY" in the "List of the Insects of New York" (1928, p. 861), but it is probable that this really refers to *E. floridensis vittata*. The paratype from Riverton, N. J., "7-3-98," which is not typical *floridensis*, is somewhat intermediate with *vittata*.

Eugaurax floridensis vittata, n. subsp.

As described for *floridensis* but with much darker habitus, differing in having three (or four) broad black mesonotal stripes, a broader occipital spot, and a hypopleural spot. There is some variation in the number of posterior notopleurals, with two specimens having five and six, but with so few specimens this does not necessarily indicate a characteristic trend for the northern race. No difference was observed in the male genitalia.

Holotype female and allotype, Lafayette, Ind., August 4 (J. M. Aldrich). U.S.N.M. type no. 59626. Paratypes: 2 (♂, ♀), topotypical, June 16, 1915 and August 5 (Aldrich) [USNM]; ♂, Algonquin, Ill., May 29, 1896 [Illinois Nat. Hist. Survey]; 2 (♂, ♀), Norway Bay, Quebec, August 24, 1938 [Canadian National Collection].

The paratype of *E. floridensis* Malloch from Riverton, N. J., is intermediate but closer to *vittata*, as noted above.

Eugaurax intermedia, n. sp.

Female: Predominantly light yellow, marked with black as follows: Arista except for thickened basal segment, ocellar spot, moderately broad occipital spot, three mesonotal stripes posterior to mesonotal suture, metanotum, and dorsum of abdomen except for large basal spot and narrow yellow margins and apex; mesonotal stripes dark reddish anterior to suture, but this color is probably variable; median stripe twice the width of a lateral and extending beyond the latter to the base of the scutellum; supraalar area and pleuron entirely yellow; bristles brown to blackish.

Front somewhat collapsed, in life probably narrower than an eye; cheek narrow, one-seventh the height of an eye and less than half the breadth of the third antennal segment, the lower margin with short, fine, pale yellow hairs; third antennal segment subreniform, 1.5 times as broad as long; arista long pubescent; thoracic chaetotaxy: 1 weak, hairlike humeral, 2 + 5 notopleural, 1 presutural, 2 postalar, 10 bristles in single prescutellar row, and 1 apical and 4-5 marginal scutellars in a single row. Venation normal for the genus.

Length, 2 mm.

Holotype female, Higuato, San Mateo, Costa Rica (Pablo Schild). U.S.N.M. type no. 59627.

Although this species is represented by a unique specimen, I have no hesitation in describing it at this time because of the distinct chaeto-

taxy. It possesses a presutural bristle as do the other tropical species, but unlike the others it has only single rows of prescutellar and marginal scutellar bristles.

Eugaurax sp.

Three specimens, one collected at Las Palmas near Pacora, Panama, one at Miami, Fla., on plane from Barranquilla, Colombia, and one at Brownsville, Tex., on plane from the Canal Zone, indicate the presence of a distinct species in Central America. None of the specimens is in good condition, however, and the species will not be described until more material is available. The strong cheek bristles are a distinctive feature, compared with other known species of the genus.

Eugaurax spp. (*quadrilineata*, etc.)

Four described species pass to the end of the key, as follows:

Eugaurax quadrilineata (Williston), Diptera of St. Vincent: p. 422. 1896 (*Oscinis*; St. Vincent); Coquillett, Proc. U. S. Nat. Mus. 22: 266. 1900 (*Oscinis*; oc. Puerto Rico); Duda, Folia Zool. Hydrobiol. 2: 99. 1930 (*Conioscinella*; oc. Costa Rica). NEW COMBINATION, from type in British Museum (Nat. Hist.).

E. insularis Malloch, Ins. Insc. Menstr. 1: 64.

1913 (Puerto Rico). Although not so stated in the original description, the type and paratype of *insularis* appear to have been the specimens recorded by Coquillett (1900) as *quadrilineata*.

E. hystrix (Duda), *op. cit.*: 99. 1930 (*Conioscinella*; Brazil). NEW COMBINATION, from holotype male, Petropolis, Brazil (Borgmeier) [type in Instituto Biológico, São Paulo, Brazil, lent for study through the courtesy of the late Oscar Monte].

E. fasciventris (Duda), *op. cit.*: 102. 1930 (*Conioscinella formosa* var.; Peru). NEW COMBINATION, from female, presumably holotype, Callao, Peru, June 3, 1913 (R. Paessler), examined 1937 in Zoologisches Museum at Hamburg, Germany (type now destroyed).

In addition to the type and paratype of *insularis*, I have before me 23 specimens, chiefly teneral or in mediocre condition, from Florida (Biscayne Bay, Cape Sable, Spring Lake), Cuba, Jamaica, and the Panama Canal Zone. Possible differences may exist in the width of the front and in the presence or absence of black supraalar vittulae, but the present material is not suitable for further study. I am inclined to believe that at least *insularis* and possibly *hystrix* are synonyms of *quadrilineata*, but these and other questions must await adequate series in good condition.

ZOOLOGY.—*Some new and rare Pacific pagurids.*¹ BRYCE C. WALTON, Allan Hancock Foundation, University of Southern California. (Communicated by F. A. CHACE, Jr.)

The comparatively recent existence of a juncture between the Atlantic and Pacific Oceans in what is now the Panama area would presuppose the existence of rather closely related decapod forms on the two sides of the isthmus. A preliminary examination of the Paguridea collected by the Allan Hancock Pacific Expeditions disclosed the presence of the following two undescribed species, which are closely related to rather unique Caribbean forms not previously reported from the Pacific side, and also a series of both sexes of a rare scutellated hermit previously known only from the Bay of Panama.

¹ Contribution from the Allan Hancock Foundation. Received March 24, 1950.

Family PYLOCHELIDAE Spence-Bate, 1888

Genus **Parapylocheles** Alcock, 1905

Parapylocheles glasselli, n. sp.

Fig. 1

Type.—Male holotype, A.H.F. no. 401, from Ensenada de San Francisco, Sonora, Mexico, 16 fathoms; collected February 7, 1940, by the *Velero III* at station 1087-40.

Diagnosis.—Chelipeds equal, similar, devoid of spines or granules. Carapace smooth, polished, precervical portion a little longer than wide. Rostral point broad, triangular, with truncate apex, extending between the base of eye stalks, lateral points wanting. Eye stalks short, stout, constricted in the middle; the cornea dilated and the ophthalmic scales completely lacking.

Antennal acicle narrow, triangular, and reduced. Second and third pereopods exceeding chelipeds in length. Tail fan symmetrical, telson not divided by sulci, uropods without scabrous pavement of corneous granules.

Description.—Chelipeds equal, similar, smooth, with only a few scattered setae. Lateral margins slightly swollen, with the widest point approximately at the middle of the palm. Fingers acuminate, short, about one fourth the total length of the manus. Carpus about one-third the length of the manus, narrow proximally, but flaring to approximately width of manus distally. Anteromedial corner produced into a blunt tubercle. Merus twice the length of carpus, with no distinct crest.

External maxillipeds noncheliform and flagellate.

Precervical portion of carapace slightly longer than wide, transversely convex, more coriaceous than calcareous. Rostral point broadly triangular with apex truncate, not extending beyond coxal segment of eye stalks, lateral points lacking. Postcervical region divided into a leathery median plate which narrows sharply posteriorly, and two larger lateral plates which become more membranous laterally.

Eye stalks short, terete, stout, and constricted in the middle; the cornea well developed and dilated. The ophthalmic scales are completely wanting, exposing the coxal articulation of the eye stalk.

Antennal acicle narrowly triangular, convex, and very short, extending only one half the length of the eye stalk; lightly setose and with entire margins. Antennal peduncle longer than the eye stalk when extended, exceeding it by the length of the very short fourth, and fifth, articles; flagellum with only a few scattered setae, and exceeding the reach of the chelipeds by one third its length.

Antennular peduncle longer than the eye, exceeding it for one third the length of the terminal peduncular article; flagellum consisting of approximately 12 annulations and densely setose beneath.

Second and third thoracic legs a little longer than the chelipeds, compressed, not crested, and with the exception of the dactyls, very sparsely setose. Dactyl curved, subequal to the propodus in length, and terminating in a sharp, horny claw. Fourth thoracic appendage subcheliform. Anterior face of the coxae of the fifth pair, which

are cheliform, produced into low cone-shaped tubercles bearing the male genital pores.

Abdominal terga distinct and symmetrical, with the first and last smaller. There are no pleura, and on the ventral surface the somites are distinguishable only by very slight constrictions. Abdominal appendages biramous; the posterior blade being reduced in all four pairs, which are practically of uniform size.

Telson symmetrical, spade shaped, unmarked by sulci, with eighteen heavy, evenly spaced setae along the distal margin. Uropods large, both blades flattened and membranous, the posterior blade the smaller, both with serrate, setose margins, and completely lacking a scabrous surface.

Measurements.—Total length (rostral point to tip of abdomen) 11 mm; length of carapace 5 mm; length of precervical region 2.75 mm; width of precervical region 2.25 mm; length of manus 3 mm; length of fingers 0.75 mm; length of carpus 1 mm; length of dactyl, second thoracic leg 2 mm; length of propodus, second thoracic leg 2.5 mm; length of telson 1.75 mm.

Distribution.—Gulf of California at Ensenada de San Francisco, Sonora, and Southwest Cove of San Francisco Island, Baja California.

Discussion.—A comparison of this species with *P. scorpio* (Alcock), heretofore the sole species in the genus, reveals some differences in characteristics that usually would be considered generic, rather than specific. The most obvious of these is the reduction in the number of pleopods, the specimen before me having but four pairs instead of five, as in *P. scorpio*. Likewise the complete absence of ophthalmic scales and the scabrous area of the uropods would also be in this category, since presence or absence of structures has been considered generic characters, while differences in degree or manner of possession constitute specific characters. The variation in the number of pleopods within a genus has a precedent, however, the male of *Pagurus variabilis* (Milne-Edwards and Bouvier) having three, instead of the usual four pleopods. Also the general proportions, the nonoperculiform nature of chelipeds, the noncheliform external maxillipeds, which are approximated at the base, the telson not marked by sulci, and the twelve pair of branchiae make this form identifiable as *Parapylocheles*.

Though a notation of the small, poorly developed eye of *P. scorpio* is given in the generic description by Alcock, this characteristic is one of

degree and should not by itself be considered of generic importance; thus the possession of robust, well-developed eyes by *P. glasselli* would not forego its inclusion in the genus. A case in point is shown within this small family when the genus *Chiropalataea* was separated from *Pylocheles* on the basis of this character by Spence-Bate. Alcock himself (1905) and Milne-Edwards and Bouvier all agree that in spite of the lack of well-developed eyes *Chiropalataea* should be considered synonymous with *Pylocheles*.

Thus, while the differences between *P. glasselli* and the genotype seem to be as great as those between *P. scorpio* and other genera such as *Pylocheles* or *Mixtopagurus*, the writer feels that there would be little merit in erecting a new genus, even if these suppressions prove to be constant when more specimens are obtained.

Remarks.—This species is named for the late Steve A. Glassell, who has made many significant contributions to the knowledge of the decapod fauna of Pacific waters.

This constitutes the first record from American Pacific waters of this small and interesting family, as well as for the genus.

Family PAGURIDAE Dana, 1852

Genus *Xylopagurus* Milne-Edwards, 1880

Xylopagurus cancellarius, n. sp.

Fig. 2

Type.—Female holotype, U. S. N. M. no. 90384, from off Port Utria, Colombia, in 20 fathoms; collected by the *Velero III*, February 15, 1934, at station 238-34.

Paratype.—Male, A. H. F. no. 343, collected with the holotype.

Diagnosis.—Ophthalmic scales narrow, constricted in the center, rounded distally with 9 or 10 upward-curving spines on the distal margin. Dorsal surface of carpus of large cheliped with a strongly raised median ridge, which extends slightly beyond anterior margin of carpus; proximal margin of manus notched to receive it. Fifth thoracic legs subcheliform. Abdominal shield with four prominent conical tubercles, one pair just anterior, and the other just posterior to a central pitlike depression; not marked by discreet longitudinal sulcus.

Description.—Chelipeds unequal, dissimilar, the right vastly larger. Inner margin of manus prolonged into a triangular tubercle two-thirds

as large as immovable finger; fingers strongly curved, occluding only at tips, moderately setose. Palm laterally convex throughout the proximal half of its length, concave at the base of the fingers, the distal two-thirds covered with conical granules, the proximal one third smooth. Lateral margins of the palm subparallel, setose, and the proximal dorsal margin notched to receive the carpal crest. Carpus triangular in cross section, with the apex the prominent dorsal crest; merus as long as carpus, crest less well developed.

Minor cheliped very weak, less than one-third the width of the large cheliped and reaching only to the distal edge of the carpus of the major hand. Palm subcylindrical, smooth, lightly setose; carpus cylindrical, smooth, not crested.

External maxillipeds not approximated at base, the biarticulate ischium large, with dorsomedian margin serrate, and a conspicuous curved spine on the medial surface. All three pairs flagellate.

Precervical portion of carapace longer than wide, smooth, well calcified, strongly convex. Rostral point triangular, acute, lateral points angular, reduced, extending only to base of rostral point. Postcervical portion with well calcified median plate and lateral plates becoming membranous marginally.

Eye stalks are stout, widening distally; the ophthalmic scales small, directed medially, narrow, constricted in the center, rounded distally, with 9 or 10 upward-curving spines on the distal margin.

Antennal acicle very much reduced, extending no farther than do the eye scales, very narrow, with serrate distal margin; antennal peduncle reaching only to base of cornea when extended. Flagellum setose and short, not exceeding the large cheliped in length.

Second and third thoracic legs compressed, smooth, polished, and reaching beyond the base of the fingers of the major cheliped. Dactyl only sparsely setose and equal in length to propodus. Coxae of the third pair bearing the prominent circular genital openings on the ventral surface. Fourth pair subcheliform and having the distinctive large oval rasp as in *X. rectus*; the fifth pair having the movable finger so reduced as to be almost vestigial resulting in a subcheliform condition.

Abdominal terga weakly calcified, asymmetrical, larger on the left side, and not in contact with one another. Abdominal appendages unequally biramous, posterior blade being larger.

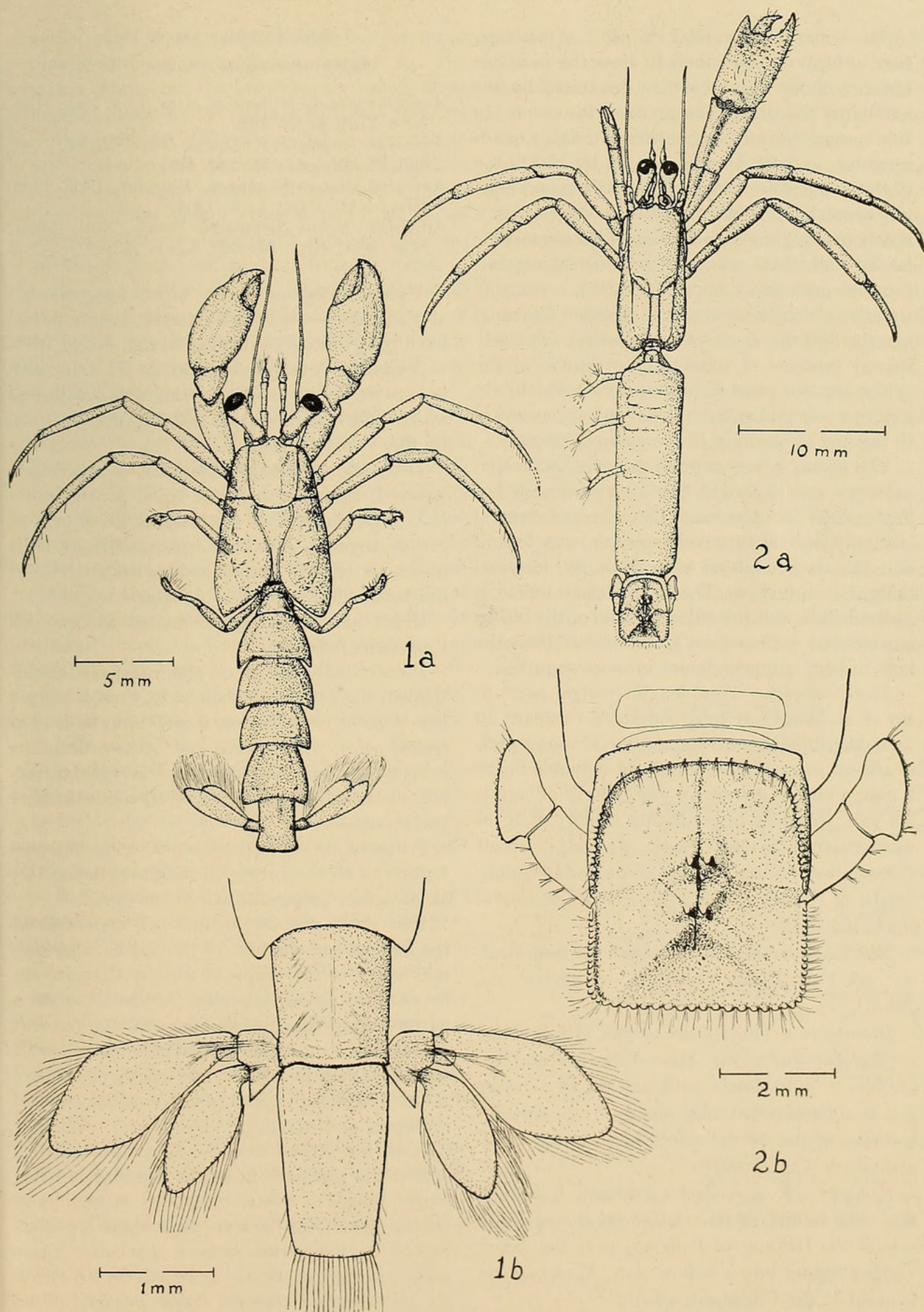


FIG. 1.—*Parapylocheles glasselli*, n. sp.: a, Dorsal view; b, extended tail fan, dorsal view.

FIG. 2.—*Xylopagurus cancellarius*, n. sp.: a, Dorsal view; b, Caudal "shield," dorsal view.

The conspicuous caudal "shield," a modification to form an operculum to close the posterior opening of the vegetable tube inhabited by the animal, is the distinctive mark of the genus. In this species it is strongly calcified, roughly quadrangular, and apparently formed by the fusion of the two posterior terga. There is a raised margin around the entire perimeter except for a notch marking the line of fusion of the two plates; lateral and distal margins composed of regular, rounded granules, each separated by a rounded sinus in which there is a tuft of setae. Proximal margin merely a raised ridge with regularly spaced fascicles of setae. In the center of the shield are two pairs of prominent conical tubercles, one pair just anterior, and one pair posterior, to the line of fusion of the component terga.

The telson is very much reduced, though well calcified, and is carried flexed forward so it lies flat against the abdomen. The exposed ventral (actually dorsal) surface is marked by a central and two deeper lateral pits, while the terminal margin is spinulose. The uropodal peduncle is well calcified, and the outer surfaces of the blades are covered with conical spines rather than the low rounded granules found in most pagurids.

Measurements.—Total length (rostral point to tip of abdomen) 34 mm; length of carapace 10 mm; length of precervical region 4 mm; length of major manus 7 mm; length of movable finger 2 mm; width of manus 3.5 mm; length of carpus 3.5 mm; length of minor manus 4 mm; width of minor manus 1 mm; length of dactyl second thoracic leg 4.5 mm; length of propodus 5 mm; length of caudal shield 5 mm; width of caudal shield 3.5 mm.

Distribution.—Known only from the type locality, off Port Utria, Colombia, at station no. 238-34.

Discussion.—This species is very closely allied to *Xylopagurus rectus* Milne-Edwards and resembles it quite closely, although the two species can be differentiated very readily by cursory inspection of the caudal shield because the ornamentation is quite different.

Remarks.—*X. cancellarius* evidently has much the same habits as its relative on the opposite side of the Isthmus of Panama, as it was taken wedged tightly into a hollow reed, *Typha* sp., as is usual in the Caribbean species.

Genus *Aniculus* Dana, 1852

Aniculus elegans Stimpson, 1859

Aniculus elegans Stimpson, Ann. Lyc. Nat. Hist. New York **8**: 83. 1859.

Aniculus longitarsus Streets, Proc. Acad. Nat. Sci. Philadelphia **23**: 240. 1871.

Aniculus elegans Stimpson, Bouvier, Bull. Mus. Hist. Nat. Paris **1**: 8. 1895.

Aniculus elegans Stimpson, Boone, Bull. Amer. Mus. Nat. Hist. **63**: 140, fig. 1. 1931.

Type.—Stimpson's type, which was collected at Panama by the Rev. J. Rowell, is believed to have been destroyed in the Chicago fire of 1871.

Neotype.—A female neotype, A. H. F. no. 394, is here designated. This specimen was collected at Taboga Island, station 959-39, May 2, 1939, by the *Velero III*.

Description.—Chelipeds similar, equal, fingers spooned, tipped with horny black hooves, movable finger almost half the total length of manus, carpus trigonal, as wide as manus distally; the underside of both carpus and merus setose, but not tuberculated as in *A. aniculus*.

Third maxillipeds approximated at base, all three pairs flagellate.

Precervical portion of the carapace shield-shaped, slightly longer than wide. *Frontal margin with angular lateral points three-fourths as long as rostral point*, which is marked by two deep circular pits. *Median areolet of gastric region a complete rhomboid*, with the two anterior sides longest and straightest.

Postcervical region coriaceous, widening posteriorly, with the narrow median area defined by an elongate, tonguelike calcareous plate.

Eye stalks slender, cylindrical, expanded at the base and at the base of the cornea. Ophthalmic scales in the shape of a right triangle, the hypotenuse facing laterally. Antennal acicle a narrow acute triangle, *its apex reaching one-half the length of the cylindrical third peduncular article*, which reaches two-thirds the length of the eye stalk. Flagellum short, barely reaching tips of chelipeds, and naked.

Both the second and the third thoracic legs exceed the chelipeds in length, the dactyl being longer than the related propodus in each case. On the meral joint the transverse scutes are interrupted on the dorsal surface, the entire inside surface being smooth and polished. *On the carpus the scutes extend over the dorsal one-half of the*

medial surface, the ventral-medial surface being smooth. Propodus completely ringed by the scutae. Abdomen soft, only slightly coiled, terga ciliated, lobed, not in contact with one another.

Measurements.—The following measurements are for the largest specimen, a male of approximately the same size as Stimpson's type (5 inches). Total length (rostral point to tip of abdomen) 80 mm; length of carapace 41 mm; length of precervical portion 20 mm; width of precervical portion 17 mm; length of manus 23 mm; length of movable finger 11 mm; length of carpus 12 mm; length of dactyl of third thoracic leg 19 mm; propodus third thoracic leg 16 mm; length of telson (including plate) 14 mm.

Distribution.—Boone (1931) states that *A. elegans* was previously known only from West Panama and the Pearl Islands, though E. L. Bouvier (1895) in a list of species of the Digue collection lists this form with the Baja California fauna. No locality data other than that in the title are given, however, but in a paper by Hariot (1895) on the algal collection of Digue, made at the same time, the localities given were almost without exception from the pearl dredgings at La Paz. To support this assumption further, among the new species of decapods described by Bouvier in this paper was *Eiconaxius vivesi* "(dediée a M. Vives, sur le désir de M. Digue)." Since Señor G. J. Vives was an official of the Mexican Government at La Paz, and this would be within the normal expected range of a Panamic species, the writer feels it is quite logical to accept this as a record of this species from La Paz.

In the series of six specimens in the Hancock collections are two specimens from Acapulco, Mexico; one from the Tres Marias Islands, Mexico; one from Taboga Island, Panama; one from Secas Islands, Panama; and one from off Cape San Francisco, Ecuador, which represents a southward extension of range.

Two specimens were taken in the intertidal zone, three 2-5 fathoms, and the one from Ecuador in 15 fathoms.

Remarks.—A detailed comparison of the specimens in the Hancock collections with Boone's description in the above-mentioned paper disclosed discrepancies in several characteristics that

would lead one to believe that the description was of a species distinct from *A. elegans* since it failed to check not only with these specimens, but also at least in one particular, with Stimpson's and Street's original descriptions.

Through the courtesy of John C. Armstrong, of the American Museum of Natural History, I was able to examine the specimens described by Boone and found that they are *Aniculus elegans* Stimpson. To forestall the possibility of other workers being misled, as was the writer, the species has here been very briefly redescribed and the characteristics not agreeing with Boone's description given in italics.

It seems notable that such a large and conspicuously colored animal could be so consistently missed by collectors in the intertidal zone. It is possible that this form is as obscure as it is rare. Yap-Chiongeo (1938) reports that a very closely related species, *Aniculus aniculus* (Fabricius), is fossorial, as this species might well be, which would help to account for its rarity in collections.

One specimen from Acapulco was collected by Dr. Carl L. Hubbs; the other from the same locality by Dr. E. Yale Dawson; and the others in the series were dredged by the *Velero III*.

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