

without shoulder on margin proximal to fixed finger; minor chela about $5\frac{1}{2}$ times as long as wide, dactyl not "balaeniceps" and without carina on extensor margin, about twice as long as palm; 2nd pereopod with proximal carpal article twice as long as 2nd; 3rd pereopod with dactyl subspatulate, propodus bearing 2 or 3 feeble spines on flexor margin, ischium with prominent movable spine; maximum carapace length to base of rostrum 16 mm.

RANGE.—Réunion, Andaman Sea west of peninsular Thailand, South China Sea southeast of Hong Kong, southwest of Manila Bay, Philippines, and Selat Sunda, Indonesia; 14 to 280+ meters.

REMARKS.—The only specimen of this species that I have seen is the incomplete large female paratype from southeast of Hong Kong that has the orbital hoods dentate. Although the rostrum of this specimen conforms with the original description of the species, being "highly compressed and narrow, dorsally rounded, without carina," there is a rather prominent, though blunt, ridge in the midline of the carapace, reaching posteriorly slightly beyond the midlength of the latter. Inasmuch as this rather obvious ridge was not mentioned in the original description, it is not included among the characters attributed in the above key to those specimens in which the orbital hoods are unarmed.

15. *Alpheus coutierei* De Man, 1909

Alpheus Coutierei De Man, 1909a:107 [type locality: the type series came from 2 *Siboga* stations: southeast side of Pearl Bank, Sulu Archipelago, Philippines (15 m) and off northeastern tip of Timor, Indonesia (27–54 m)]; 1911:409, pl. 22: fig. 97.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum acute, barely overreaching 1st antennular segment, sharply carinate in midline, carina extending posteriorly to posterior $\frac{1}{3}$ of carapace, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle or acute paired teeth on gastric region, anterior margin transverse and unarmed mesial to orbital hoods, curving directly onto rostral margin, orbital hoods unarmed; 2nd antennular segment $2\frac{1}{2}$ times as long as wide; basal antennal segment (basicerite) bearing extremely small ventrolateral spine; antennal scale with lateral margin deeply concave, distolateral spine rather stout, considerably overreaching narrow distal margin of blade; major cheliped with merus armed with small, acute, subdistal tooth on inferior flexor margin, chela compressed, $2\frac{1}{2}$ times as long as wide, palm with "saddle" proximal to adhesive plaque, proximal shoulder obtuse, with shoulder on margin proximal to fixed finger; minor cheliped with merus unarmed on inferior flexor margin, chela 4 times as long as wide, fingers slightly longer than palm; 2nd pereopod with proximal carpal article subequal to or somewhat longer than 2nd; 3rd pereopod with dactyl simple, merus and ischium unarmed; maximum carapace length to base of rostrum about 6 mm.

RANGE.—Sulu Archipelago, Philippines, southeastern Indonesia off eastern Timor, Fiji, Tonga, and Samoa islands; 15 to at least 27 meters.

16. *Alpheus crinitus* Dana, 1852

Alpheus crinitus Dana, 1852a:21 [type locality: Balabac Strait]; 1852b:548, pl. 34: fig. 8.—D.M. and A.H. Banner, 1978:221.

DIAGNOSIS.—(Crinitus Group). Body not unusually compressed or setose; rostrum large, overreaching 1st antennular segment, carinate in midline, base not abruptly delimited from adrostral furrows; orbital hoods unarmed; 2nd antennular segment about 4 times as long as wide; major chela slightly compressed, $2\frac{1}{3}$ times as long as wide, without sculpture, smooth, slightly pubescent, dactyl not double-ended; minor chela $3\frac{2}{3}$ times as long as wide, lightly pubescent, fingers slightly shorter than palm; 2nd pereopod with proximal carpal article slightly shorter than 2nd; 3rd pereopod lightly pubescent, with dactyl pointed, simple, propodus with about 4 pairs of spinules on flexor margin, merus with acute distal tooth on flexor margin; carapace length to base of rostrum about 7 mm.

RANGE.—Recorded from the Red Sea, in addition to the type locality in Balabac Strait, the southernmost passage between the Sulu Sea and the South China Sea.

*17. *Alpheus crockeri* (Armstrong, 1941)

Crangon crockeri Armstrong, 1941:8, figs. 2, 3 [type locality: Matautu Bay, Savai'i, Western Samoa; coral in shallow water].

Crangon tuthilli A.H. Banner, 1953:63, fig. 19 [type locality: off southwest Oahu, Hawaii; 12 to 107 meters].

Alpheus crockeri.—Crosnier and Forest, 1966:225, figs. 4, 5.—A.H. and D.M. Banner, 1966b:84, fig. 28.

DIAGNOSIS.—(Macrocheles Group). Body not unusually compressed or setose; rostrum prominent but not nearly reaching as far as distal margin of elongate 1st antennular segment, rounded dorsally, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle or paired large acute teeth on gastric region, anterior margin concave and unarmed mesial to orbital hoods, meeting rostral margin at somewhat less than right angle, region not flattened, orbital hoods armed with acute marginal teeth, adrostral furrows shallow; 2nd antennular segment about twice as long as wide; basal antennal segment (basicerite) armed with strong ventrolateral spine not overreaching stylocerite; antennal scale with lateral margin slightly concave, distolateral spine rather weak, distinctly but not far overreaching tapered blade; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin; major chela compressed, about 3 times as long as maximum width, dactyl rather sharply angled toward flexor side of chela, not clearly double-ended, mesially laminate except near opposable margin, forming high, sharp dorsal crest, bulbous distally, plunger reduced to small blunt triangle,

palm with acute tooth each side of dactylar articulation, blunt carina supporting tooth on mesial side of dactylar articulation entire, not interrupted by transverse notch, without "saddle" proximal to adhesive plaque, with very low, broadly rounded shoulder on margin proximal to fixed finger; minor chela about $4\frac{1}{2}$ times as long as maximum width, dactyl slender, slightly longer than palm, not "balaeniceps" or carinate on extensor margin; 2nd pereopod with proximal carpal article about $1\frac{3}{4}$ times as long as 2nd; 3rd pereopod with dactyl simple, sharp, propodus with 7 to 9 spiniform setae on flexor margin, merus unarmed, ischium with mobile spine; maximum carapace length probably about 8 mm.

MATERIAL.—PHILIPPINES. South of Itbay Island, Batan Island; sta 5321; $20^{\circ}18'30''\text{N}$, $121^{\circ}51'15''\text{E}$; 48 m; white sand, coral, broken shells; 9 Nov 1908 (1125–1129); 9' Johnston oyster dredge; 1 female [5.3].

RANGE.—Réunion, Andaman Sea coast of peninsular Thailand, Gulf of Thailand, Philippines, Indonesia, Mariana and Samoan islands and Hawaii in the Pacific Ocean and the islands of Sao Tomé and Annobon in the eastern Atlantic; intertidal to 50 meters.

*18. *Alpheus davaoensis*, new species

FIGURE 2

DIAGNOSIS.—(Crinitus Group). Body neither unusually compressed nor densely setose; rostrum minute, barely visible (Figure 2a), carinate in extreme anterior part, carina becoming indistinct on anterior gastric region but more apparent on posterior gastric region and extending posteriorly as barely visible line to about midlength of carapace, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle or paired acute teeth on gastric region, anterior margin unarmed, forming slightly flattened convex lobe either side of rostrum protruding anteriorly beyond margin of orbital hoods, orbital hoods unarmed, rostral furrows moderately deep anteriorly; 2nd antennular segment slightly less than twice as long as wide; basal antennal segment (basicerite) unarmed; antennal scale with lateral margin rather strongly and regularly concave, distolateral spine not very stout, far overreaching semicircular distal margin of greatly reduced blade; 1st pereopods (Figure 2e,h) with merus armed with acute subdistal tooth on inferior flexor margin; major chela (Figure 2f) subcylindrical, fully $2\frac{1}{2}$ times as long as maximum width, dactyl bent slightly toward flexor side of chela, not really double-ended, bearing very short, truncated, distally concave plunger, acutely prominent proximally (Figure 2g), palm without sculpture except for faint sulcus proximal to adhesive plaque; minor chela (Figure 2i,j) $3\frac{1}{3}$ times as long as wide, dactyl slender, fingers $\frac{4}{5}$ as long as palm, rather deeply excavate on opposable margins; both 2nd pereopods missing; 3rd pereopod (Figure 2k,l) with dactyl hooked, obscurely biunguiculate, propodus bearing about 9 spines on flexor margin, carpus not distinctly armed, merus armed with strong

distal tooth on flexor margin, ischium without movable spine; carapace length 4 mm.

MATERIAL.—PHILIPPINES. Davao Gulf, Mindanao: sta 5253; $7^{\circ}04'48''\text{N}$, $125^{\circ}39'38''\text{E}$; 51 m; coral; 18 May 1908 (1347–1358); 6' Johnston oyster dredge; 1 female [4.0], holotype (USNM 205661).

TYPE LOCALITY.—Same as above.

RANGE.—Known only from the unique female holotype from Davao Gulf, Mindanao, Philippines; 51 meters.

REMARKS.—My opinion that the single specimen described above represents a previously undescribed species of a genus several members of which are quite variable may be unjustified, but I have been unable to relate the specimen to any of the approximately 22 known species of the Crinitus Group. The following six species apparently agree with *A. davaoensis* in lacking an ischial spine on the third pereopod: *A. arethusa* De Man, 1909a; *A. bradypus* Coutière, 1905; *A. cylindricus* Kingsley, 1878; *A. spongium*, *A. stanleyi*, and *A. styliceps* Coutière, 1905. The specimen from the Davao Gulf differs from *A. arethusa* from Indonesia and Australia in having the frontal margin recessed and the distolateral spine of the antennal scale less stout and the blade more reduced. It is distinguished from *A. bradypus* from the Laccadive and Mariana islands in having the rostrum less distinct, the distolateral spine of the antennal scale less stout and the blade more reduced, the major chela with a less pronounced depression proximal to the adhesive plaque, and the dactyl of third pereopod indistinctly biunguiculate rather than simple. From *A. cylindricus* from the eastern Pacific and western and eastern Atlantic it disagrees in having the front recessed, the distolateral spine of the antennal scale less stout and the blade more reduced, and a distal tooth on the inferior flexor margin of the merus of the third pereopod. It seems to be separated from *A. spongium* from the Red Sea to Japan, the Philippines, Indonesia, and Australia, with which it may be most similar, in the recessed front and minute rostrum, and the more concave lateral margin of the antennal scale and less stout distolateral spine. It deviates from *A. stanleyi* from the Indian Ocean, the Philippines, and Indonesia in the recessed front and minute rostrum, the absence of a tooth on the basal antennal segment (basicerite), and the much more reduced blade of the antennal scale. It differs from *A. styliceps* from the Indian Ocean in the very different front and rostrum, the more concave lateral margin of the antennal scale, and the shorter fingers of the minor chela. In two species of the Crinitus Group, *A. crinitus* and *A. heurteli* Coutière, 1897c, the presence or absence of an ischial spine on the third pereopod is unknown. *Alpheus davaoensis* differs from the Philippine *A. crinitus* in the minute rather than unusually large rostrum, more robust antennular peduncle, and, possibly, the obscurely biunguiculate dactyl of the third pereopod, and from *A. heurteli* from the Bay of "Fernando-Velosa" in having the rostrum not overreaching the orbital hoods (the latter species has the two proximal carpal articles of the second pereopod subequal, a character that

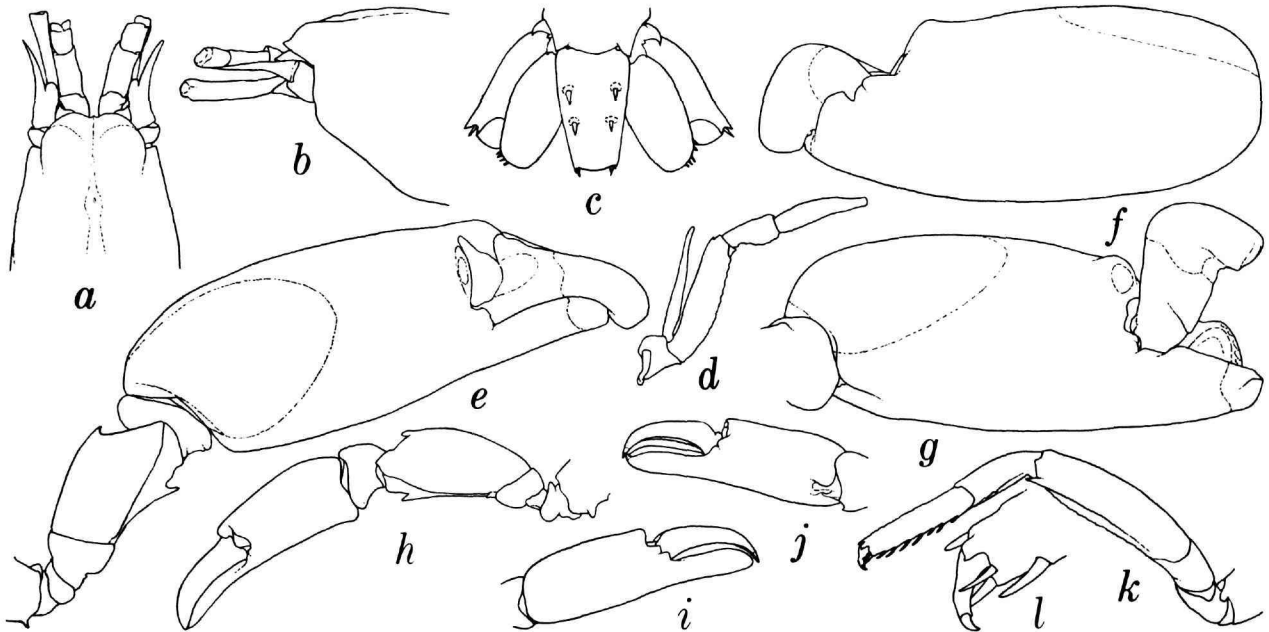


FIGURE 2.—*Alpheus davaoensis*, new species, female holotype from *Albatross* sta 5253, carapace length 4.0 mm: a, anterior carapace and appendages, dorsal aspect; b, same, lateral aspect; c, telson and uropods, dorsal aspect; d, right 3rd maxilliped; e, right (major) cheliped; f, right (major) chela, extensor surface; g, same, flexor surface; h, left (minor) cheliped; i, left (minor) chela, extensor surface; j, same, flexor surface; k, left 3rd pereopod; l, same, dactyl.

cannot be compared with the missing second pereopods in *A. davaoensis*).

ETYMOLOGY.—The proposed specific name obviously relates to the type locality of the species.

***19. *Alpheus deuteropus* Hilgendorf, 1879**

Alpheus deuteropus Hilgendorf, 1879:834, pl. 4: figs. 8–10 [type locality: Zanzibar].—Coutière, 1899:81 (fig. 45), 166 (fig. 184), 215 (figs. 254, 255).—D.M. and A.H. Banner, 1982:42, fig. 8.

DIAGNOSIS.—(Macrocheles Group). Body not unusually compressed or setose; rostrum acute, not nearly reaching as far as distal margin of 1st antennular segment, bluntly but strongly carinate in midline, carina not extending posteriorly far beyond eyes, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without paired large acute teeth overhanging posterior ends of adrostral furrows, anterior margin variable, region shelf-like, flattened, orbital hoods armed with slender tooth, nearly as long as rostrum, adrostral furrows deep; 2nd antennular segment about 3 times as long as wide; basal antennal segment (basicerite) armed with strong acute tooth not overreaching stylocerite; antennal scale with lateral margin concave, distolateral spine strong, far overreaching distally narrow blade, but not unusually stout; 1st pereopods with merus armed

with small acute distal tooth on inferior flexor margin; major chela compressed, about twice as long as wide, dactyl directed slightly toward flexor side of chela, not double-ended, bearing short, truncated, distally excavate plunger, palm with strong, acute tooth each side of dactylar articulation, ridge supporting tooth on mesial side of articulation with transverse notch terminating prominent channel on mesial side of palm, very shallow "saddle" or distal sinus proximal to adhesive plaque, with shoulder offset from margin proximal to fixed finger; minor chela nearly $2\frac{3}{4}$ times as long as wide, fingers more than $\frac{1}{2}$ as long as palm, dactyl neither carinate nor "balaeniceps," palm with unusually strong tooth on mesial aspect at dactylar articulation, with offset transverse incision at base of tooth; 2nd pereopod with proximal carpal article at least $\frac{1}{3}$ longer than 2nd; 3rd pereopod with dactyl simple, not biunguiculate, propodus bearing 5 pairs of spines on flexor margin, merus armed with strong distal spine on flexor margin, ischium bearing movable spine; maximum carapace length to base of rostrum about 11 mm.

MATERIAL.—PHILIPPINES. Grand Island, Subic Bay, Luzon [14°46'N, 120°14'E]; 2–6 m; scattered clumps of coral; 8 Jan 1908 (1300–1730); dynamite: 1 female [7.7].

RANGE.—Red Sea, eastern and South Africa through the Indian Ocean to Japan and Australia, and eastward across the

Pacific to Hawaii.

REMARKS.—The single specimen collected by the *Albatross Expedition* lacks the two anterior pairs of pereopods, but comparison with intact specimens identified by A.H. Banner leaves little doubt about the determination.

Partial dissection of some of the material in the Smithsonian collections revealed a frontal region slightly different from the Coutière illustration (1899, fig. 45). Although the supramarginal orbital spines are situated at the lateral extremities of the orbitorostral carinae, as indicated by Coutière, there is no suggestion of what appears from his illustration to be a fused extension of the margin of the orbital hood extending dorsally to the base of each spine. In other words, the orbital spines seem to be completely isolated from the margin, except for their connection with the base of the rostrum by the orbitorostral carinae.

***20. *Alpheus diadema* Dana, 1852**

Alpheus diadema Dana, 1852a:23 [type locality: Lahaina, Maui, Hawaii]; 1852b:555, pl. 35: fig. 7.—D.M. and A.H. Banner, 1982:140, fig. 40.
Alpheus insignis Heller, 1862a:269, pl. 3: figs. 17, 18 [type locality: Red Sea].

DIAGNOSIS.—(Diadema Group). Body not unusually compressed or setose; rostrum prominent but variable, not reaching level of distal margin of 1st antennular segment, feebly carinate in dorsal midline, base abruptly delimited from adrostral furrows; carapace with median tubercle on gastric region, anterior margin unarmed but convex mesial to orbital hoods and slightly incised lateral to rostral margin, orbital hoods unarmed, adrostral furrows deep and sharply defined laterally on orbital hoods as well as mesially at rostral margin; 2nd antennular segment nearly twice as long as wide; basal antennal segment (basicerite) with strong ventrolateral tooth not reaching level of tip of stylocerite; antennal scale with lateral margin concave proximally, stout, laterally convex distolateral spine overreaching diagonal distal margin of blade; major cheliped with chela nearly cylindrical, fully twice as long as wide, dactyl nearly straight in longitudinal plane, not double-ended, bearing well-developed plunger, palm without sculpture except for narrow transverse "saddle" proximal to adhesive plaque, merus with inferior flexor margin armed with strong distal tooth; minor cheliped with chela about 3 times as long as wide, dactyl about as long as palm and "balaeniceps" in male, shorter and not "balaeniceps" in female, merus without distal tooth on inferior flexor margin; 2nd pereopod with proximal carpal article about as long as 2nd; 3rd pereopod with dactyl simple or obscurely biunguiculate, propodus with at least a dozen spines on flexor margin, carpus with flexor margin terminating distally in strong tooth, merus with acute subdistal tooth, ischium with strong movable spine; maximum carapace length to base of rostrum about 9 mm.

MATERIAL.—PHILIPPINES. Marungas Island, Sulu Archipelago [6°06'N, 120°58'E]; shore, coral head; 19 Feb 1908: 1 male [3.5].

RANGE.—Red Sea and eastern Africa, Indian Ocean, Japan, Philippines, Indonesia, Australia, and tropical Pacific to Hawaii.

REMARKS.—The single specimen from Marungas Island lacks the three anterior pairs of pereopods, but the carapace is so distinctive in this species that there is little danger of misidentification unless the concept of the species becomes modified.

***21. *Alpheus dispar* Randall, 1840**

Alpheus dispar Randall, 1840:141 [type locality: Manila].
[?] *Alpheus digitalis* De Haan, 1844: pl. 45: fig. 4; 1849:178 [type locality: Japan].—Coutière, 1898b:249, fig. 2.—Holthuis and Sakai, 1970:94.
Alpheus distinguendus De Man, 1909b:155, pl. 7: figs. 9–14 [type locality: Japan].—D.M. and A.H. Banner, 1982:157, fig. 47.

DIAGNOSIS.—(Brevirostris Group). Body not unusually compressed or setose; rostrum reaching nearly as far as distal margin of 1st antennular segment, carinate in midline, carina becoming somewhat obscure posteriorly but extending nearly to midlength of carapace, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or strong paired acute teeth overhanging posterior ends of adrostral furrows, anterior margin transverse and unarmed mesial to orbital hoods, curving directly onto rostral margin, region not unusually flattened, orbital hoods unarmed, adrostral furrows deep; 2nd antennular segment 3 times as long as wide; basal antennal segment (basicerite) armed with small lateral tooth not nearly reaching level of tip of stylocerite; antennal scale with lateral margin very slightly concave, distolateral spine not unusually stout, barely overreaching distal margin of blade; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin; major chela compressed, 3 times as long as wide, dactyl nearly straight in longitudinal plane, not double-ended, bearing very short plunger defined only proximally, palm without teeth either side of dactylar articulation, sculpture limited to narrowly triangular flattened or slightly concave plane, widening distally, on margin proximal to dactylar articulation and to obscure longitudinal ridge on flexor surface, without "saddle," without shoulder on strongly compressed margin proximal to fixed finger, surface paved with flattened granules; minor chela about 4½ times as long as wide, dactyl broad in male, 2¾ times as long as palm, somewhat "balaeniceps" in male only; 2nd pereopod with 2 proximal carpal articles subequal; 3rd pereopod with dactyl pointed, simple, subspatulate, propodus, carpus, and merus without spines, ischium bearing movable spine; maximum carapace length 27 mm.

MATERIAL.—PHILIPPINES. Cotabate, Mindanao, below mouth of Mindanao River [7°13'N, 124°15'E]; 20 May 1908 (1430–1730); seine: 1 male [15.0]. Tilik, Lubang Island [13°49'N, 120°12'E]; beach; sand, mud; 14 Jul 1908 (1430–1700); 130' seine: 1 male [13.0].

RANGE.—Red Sea, Madagascar, Mergui Archipelago, Sing-

apore, Indonesia, Philippines, China, Japan, Australia; in depths shallower than 37 meters, especially off river mouths.

REMARKS.—Both specimens collected during the *Albatross* Philippines Expedition lack the major cheliped, which may be diagnostic in this species, so the identification may be considered somewhat tentative.

Randall (1840:141) referred his species to "*A. brevirostris*? (Edw.) Mus. Acad.," followed by: "Dr. Burroughs has brought from Manilla a species of *Alpheus* agreeing with M. Edwards's description of *A. brevirostris*, with this exception, that it has a distinct tooth on the outer side of the basilar article of the external antennae; there is also a somewhat elevated ridge on the outer side of the arm. I have named it, provisionally, *A. dispar*." This name seems to be a senior synonym of *A. distinguendus*, a name proposed by De Man (1909b) for the Japanese specimen called *A. rapax* Fabricius by De Haan (1844, 1849). According to D.M. and A.H. Banner (1982:173), the only possibly significant differences distinguishing *A. distinguendus* from *A. brevirostris* are the absence of a transverse groove ("saddle") on the palm of the major chela and the granular, rather than smooth, surface of that appendage. Until such time as these two characters may prove to be unimportant, those authors "reluctantly" considered the two forms to be specifically distinct. In a report published a year earlier but actually prepared later, A.H. and D.M. Banner (1981:229) recorded the species that they called *A. distinguendus* from the Philippines (one specimen from 36 meters in Manila Bay and seven from the Manila market). There would seem to be little doubt that the species "brought from Manilla" by Dr. Burroughs is the same as the one from Japan called *A. distinguendus* by De Man and that *A. dispar* is the valid name for this species by all those who consider it to be distinct from *A. brevirostris* (Olivier, 1811).

22. *Alpheus dolerus* A.H. Banner, 1956

Alpheus dolerus A.H. Banner, 1956:362, fig. 21 [type locality: Saipan, Mariana Islands].—D.M. and A.H. Banner, 1982:205, fig. 63.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum acute, not overreaching distal margin of 1st antennular segment, dorsal carina rounded, not extending posteriorly beyond orbital hoods, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed, narrowly concave, orbital hood unarmed but with stiff seta on anteromesial margin, adrostral furrows shallow; 2nd antennular segment twice as long as wide; basal antennal segment (basicerite) armed with small acute tooth; antennal scale with lateral margin sinuous, distolateral spine not unusually stout, overreaching distally tapered blade; major chela somewhat compressed, $2/3$ times as long as wide, dactyl not double-ended, bearing well-developed, distally convexly oblique plunger, unarmed either

side of dactylar articulation, without distinct longitudinal carina near margin proximal to fixed finger, with "saddle" on palm proximal to adhesive plaque, with distinct shoulder proximal to but not overhanging "saddle," with heavy, rounded shoulder on opposite margin proximal to fixed finger, palm without sharp ridge on mesial surface subparallel with "dorsal" margin; minor chela about $3\frac{1}{2}$ times as long as wide, dactyl subequal to palm in length, with proximal short row of setae in male but not truly "balaeniceps"; 2nd pereopod with proximal carpal article no longer than 2nd; 3rd pereopod with dactyl pointed, simple, propodus bearing about 12 spines on flexor margin, carpus and merus unarmed, ischium with strong movable spine; maximum carapace length to base of rostrum about 7 mm.

RANGE.—Somalia, Madagascar, Philippines and Australia eastward to the Society Islands [Hawaii, according to D.M. Banner, pers. comm.]; in coral heads to a depth of 4 meters.

*23. *Alpheus edamensis* De Man, 1888

Alpheus Hippothoe var. *edamensis* De Man, 1888a:518 [type locality: the type series was collected at 2 Indonesian localities: "Pulo Edam" (= Pulau Damar-Besar) off Djakarta, Java, and "Amboina" (= Ambon)].

Alpheus acanthomerus Ortmann, 1890:474, pl. 36: fig. 12 [type locality: Tahiti].

Alpheus edamensis D.M. and A.H. Banner, 1982:188, fig. 57.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum sharp, reaching level of distal margin of 1st antennular segment, dorsal carina rounded, not extending posteriorly beyond orbital hoods, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed, slightly concave near rostrum, orbital hood unarmed, adrostral furrows moderately deep; 2nd antennular segment nearly twice as long as wide; basal antennal segment (basicerite) armed with acute lateral tooth; antennal scale with lateral margin strongly concave, distolateral spine stout, overreaching narrow blade; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin, major chela somewhat compressed, about $2\frac{1}{4}$ times as long as broad, dactyl not noticeably curved in longitudinal plane, not double-ended, having well-developed plunger, palm without prominent longitudinal carina near margin proximal to fixed finger, with "saddle" proximal to adhesive plaque, proximal shoulder rounded, not overhanging "saddle," shoulder proximal to fixed finger strong, rounded, slightly projecting; minor chela about 3 times as long as wide, dactyl slightly longer than palm, not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article slightly shorter than 2nd; 3rd pereopod with dactyl pointed, simple, propodus bearing 16 spines on flexor margin, carpus with acute tooth each side of distal margin, merus with acute tooth at distal end of flexor margin, ischium with movable spine; maximum carapace length to base of rostrum 17 mm.

MATERIAL.—PHILIPPINES. Port Palapag, Samar [12°38'N, 125°01'E] 3 Jun 1909: 1 male [11.0]. Batan Island [13°15'N, 124°00'E]; tide pool; 5 Jun 1909: 1 ovig female [12.5].

INDONESIA. Great Tobea, Selat Butung, Celebes [4°33'S, 122°42'E]; tide pools; 15 Dec 1909: 1 male [9.3].

RANGE.—Red Sea, Madagascar, Réunion, Seychelles, Mauritius, Malaya, Thailand, Indonesia, Philippines, Ryukyus, Fiji, Samoa, Society Islands; intertidal to 50 meters.

REMARKS.—The specimen from Port Palapag lacks the 2nd pair of pereopods, but the well-developed, rather than truncate, plunger on the dactyl of the major chela helped to distinguish it from related species of the *Edwardsii* Group.

*24. *Alpheus edwardsii* (Audouin, 1826)

Nomen delinquum Savigny, 1817: pl. 10: fig. 1.

Athanas Edwardsii Audouin, 1826:91.

Alpheus Audouini Coutière, 1905:911, pl. 87: fig. 52.

Alpheus edwardsii.—A.H. and D.M. Banner, 1972:1141, fig. 1 [neotype locality: Suez].

Alpheus edwardsii.—D.M. and A.H. Banner, 1982:270, fig. 83.

DIAGNOSIS.—(*Edwardsii* Group). Body not unusually compressed or setose; rostrum acute, reaching to about distal margin of 1st antennular segment, dorsal carina rounded, not extending posteriorly beyond orbital hoods, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed, nearly transverse, orbital hood unarmed, adrostral furrows moderately deep; 2nd antennular article about twice as long as wide; basal antennal segment (basicerite) armed with small, acute lateral tooth; antennal scale with lateral margin distinctly concave near midlength, distolateral spine not unusually stout, overreaching tapered blade; 1st pereopods with merus armed with sharp distal tooth on inferior flexor margin; major chela somewhat compressed, about $2\frac{1}{3}$ times as long as wide, dactyl not noticeably curved in longitudinal plane, not double-ended, having well-developed plunger, palm without prominent longitudinal carina near margin proximal to fixed finger, with "saddle" proximal to adhesive plaque, proximal shoulder blunt, but overhanging "saddle," shoulder proximal to fixed finger strong, slightly projecting but not acute; minor chela less than 4 to nearly $4\frac{1}{2}$ times as long as wide, fingers from $\frac{2}{3}$ as long as palm in male to subequal to palm in female, dactyl "balaeniceps" in male only; 2nd pereopod with proximal carpal article $1\frac{1}{4}$ to twice as long as 2nd; 3rd pereopod with dactyl pointed, simple, propodus with about 8 spines on flexor margin, carpus with distal extensor angle acute, merus unarmed, ischium with movable spine; maximum carapace length to base of rostrum about 14 mm.

MATERIAL.—PHILIPPINES. Upper reef, inside Dumurug Point, Port Cataingan, Masbate [11°57'N, 124°03'E]; 2–3 m; sand, scattered clumps of staghorn coral; 19 Apr 1908 (1500–1600); dynamite: 6 males [7.0–10.9] 1 ovig female

[9.1]. Chase Head, Endeavor Strait, Palawan [11°01'N, 119°18'E]; $2\frac{1}{2}$ to 4 mm; coral, sand; 22 Dec 1908 (1400–1600); dynamite (3 shots): 1 ovig female [9.0]. Port Gubat, southeastern Luzon [12°55'N, 124°09'E]; tide pool; 23 Jun 1909 (1300–1700): 1 male [12.6].

RANGE.—Probably from Red Sea and eastern and South Africa to Thailand, Philippines, Indonesia, Australia, and Caroline Islands (not yet known from Central Pacific islands east of Truk or New Zealand); intertidal under rocks to 25 meters.

REMARKS.—In the largest male, from Port Gubat, southeastern Luzon, the dactyl of the minor chela is not fully "balaeniceps" in form; the margins of the dactyl display a low carina above a row of setae on each side, but the segment is rounded on the extensor surface, not noticeably flattened as is usual in males of this species. This specimen might be assigned to *A. haanii* Ortmann, 1890:472, if the minor chela of the male of that Japanese species should prove to be like that of the Port Gubat specimen (see D.M. and A.H. Banner, 1982:273).

25. *Alpheus ehlersii* De Man, 1909

Alpheus ehlersii De Man, 1909c:663, pl. 70 [type locality: "island of Edam, Bay of Batavia" (= Pulau Damar-Besar, off Djakarta, Java, Indonesia)].—D.M. and A.H. Banner, 1982:132, fig. 37; 1985:16.

DIAGNOSIS.—(*Diadema* Group). Body not unusually compressed or setose; rostrum acute, not reaching level of distal margin of 1st antennular segment, carina rounded, not extending posteriorly beyond orbital hoods; carapace without median tooth or tubercle on gastric region or paired flanges overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed but convexly produced at junction with orbital hood, latter unarmed, adrostral furrows rather shallow; 2nd antennular segment nearly twice as long as wide; basal antennal segment (basicerite) bearing strong tooth not reaching level of tip of stylocerite; antennal scale with lateral margin concave proximally, distinctly convex in distal $\frac{1}{2}$, distolateral spine rather stout, overreaching distal margin of blade; 1st pair of pereopods with merus armed with acute or blunt distal tooth on inferior flexor margin; major chela slightly compressed, about $2\frac{3}{4}$ times as long as wide, dactyl nearly straight in longitudinal plane, not double-ended, with well-developed plunger, palm with shallow oblique groove or "saddle" proximal to adhesive plaque; minor chela about 4 times as long as wide, fingers longer than palm, not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article twice as long as 2nd; 3rd pereopod with dactyl pointed, simple, neither biunguiculate nor subspatulate, propodus bearing about 7 spines on flexor margin, carpus with blunt distal tooth on extensor margin, ischium bearing movable spine; maximum carapace length to base of rostrum about 6 mm.

RANGE.—Red Sea, eastern Africa, Madagascar, Thailand, Philippines, Indonesia, Australia, and Caroline, Marshall,

Phoenix, Samoa, and Tonga island groups; intertidal on dead coral heads.

26. *Alpheus euchirus* Dana, 1852

Alpheus euchirus Dana, 1852a:21 [type locality: Balabac Strait]; 1852b:545, pl. 34: fig. 6.—D.M. and A.H. Banner, 1982:197.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum acute, not overreaching distal margin of 1st antennular segment, dorsal carina not extending posteriorly beyond orbital hoods, base not abruptly delimited from adrostral furrows; carapace without flattened teeth overhanging posterior ends of adrostral furrows, orbital hood armed with small marginal spine; basal antennal segment (basicerite) with, at most, reduced lateral tooth; 1st pereopods with merus unarmed on inferior flexor margin; major chela somewhat compressed, about twice as long as wide, dactyl somewhat skewed from longitudinal plane of palm, not double-ended, palm with "saddle" proximal to adhesive plaque, proximal shoulder not overhanging "saddle," strong, rounded shoulder on opposite margin proximal to fixed finger; minor chela with stout fingers; 2nd pereopod with 1st carpal article about twice as long as second; 3rd pereopod with dactyl pointed, simple, propodus with 7 or 8 sets of spines on flexor margin, merus with very small, inconspicuous distal tooth on flexor margin; carapace length about 7 mm.

RANGE.—Known only from the type locality in Balabac Strait, the southwestern passage between the Sulu Sea and the South China Sea.

REMARKS.—In his preliminary report on the species of *Alpheus* collected by the United States Exploring Expedition, Dana (1852a) listed eight species under the heading "Orbitae margo inermis": *A. strenuus*, *A. pacificus*, *A. obesomanus*, *A. crinitus*, *A. mitis*, *A. parvirostris*, *A. pugnax*, and *A. diadema*; one species, *A. euchirus*, under "Orbitae margo spinula armatus"; and five species under "Orbitae margo spinula dente armatus": *A. acutofemoratus*, *A. tridentulatus*, *A. neptunus*, *A. laevis*, and *A. malleator*. The form of the orbital hoods in the latter group is very variable. The Atlantic *A. malleator* has a sharp marginal spine, sometimes with a smaller spine mesial to it on each orbital hood. *Alpheus laevis* (= *A. lottini*) has an acute tooth arising from the surface of the hood, rather than from its margin. *Alpheus tridentulatus* (a nomen dubium applied to a species possibly from the western Atlantic) and *A. neptunus* have been transferred to the genus *Synalpheus* and have flattened, triangular orbital teeth characteristic of that genus. *Alpheus acutofemoratus*, if the current concept of that species is correct, has the orbital hoods completely unarmed; Dana (1852a:22) notes of this species, "Orbitae margo acutus sed spina non productus." It is difficult to understand why Dana placed this species in the category that he did and species like *A. parvirostris* and *A. diadema* in the first category, inasmuch as the frontal margin in those species is as produced as it is in *A. acutofemoratus*. Although Dana does not mention the orbital hoods in his description of *A. euchirus*, per se, it

seems unlikely that he would have created a special category for this species and illustrated a distinct marginal spine on the orbital hood (clearly seen under a lens) in pl. 34: fig. 6a, if the hoods were unarmed. I am inclined to agree with D.M. and A.H. Banner (1982:199) that *A. euchirus* is the only known member of the Edwardsii Group with spinose orbital hoods and that it is one of several of Dana's species—like *A. pugnax* and perhaps *A. tridentulatus*—that have not yet been rediscovered.

*27. *Alpheus eulimene* De Man, 1909

Alpheus Eulimene De Man, 1909a:101 [type locality: off north coast of Pulau Waigeo; 0°7.2'N, 130°25.5'E; 83 meters]; 1911:364, pl. 16: fig. 76. *Alpheus eulimene*.—D.M. and A.H. Banner, 1982:105, fig. 27.

DIAGNOSIS.—(Crinitus Group). Body neither unusually compressed nor densely setose; rostrum small, not reaching nearly as far as distal margin of 1st antennular segment, carina extending posteriorly as faint line nearly to midlength of carapace, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle posterior to base of rostrum and without flattened teeth overhanging posterior ends of adrostral furrows, frontal region projecting and unarmed except for rostrum between centers of orbital hoods, region not noticeably flattened, orbital hoods unarmed, adrostral furrows not especially deep; 2nd antennular segment fully 1½ times as long as wide; basal antennal segment (basicerite) unarmed; antennal scale with lateral margin somewhat concave, distolateral spine unusually stout, far overreaching distal margin of reduced blade; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin; major chela broadly oval in cross-section, about 2½ times as long as wide, dactyl rather sharply skewed from longitudinal plane, not double-ended, plunger truncate, projecting only proximally as bluntly acute angle, palm without sculpture except for variably distinct depression distally proximal to adhesive plaque; minor chela 3 times as long as wide, dactyl 1½ times as long as palm, curved in longitudinal plane, not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article little more than ½ as long as 2nd; 3rd pereopod with dactyl variably biunguiculate, sometimes simple, propodus bearing about 8 spines on flexor margin, carpus with both distal angles projecting, flexor surface with 1 or 2 spines, merus with strong, acute, distal tooth on flexor margin, ischium unarmed; maximum carapace length to base of rostrum about 5 mm.

MATERIAL.—PHILIPPINES. Babuyan Channel, north of Luzon: sta 5325; 18°34'15"N, 121°51'15"E; 410 m; green mud; 11.8°C; 1 Nov 1908 (1113–1132); 12' Tanner beam trawl, mud bag: 2 males [2.5, 3.0] 2 females [2.6, 4.1]. Grande Island, Subic Bay, Luzon [41°46'N, 120°14'E]; 2–6 m; scattered clumps of coral; 8 June 1908 (1300–1730); dynamite: 1 female [4.6] (identification tentative). Southwest of Manila Bay, Luzon: sta 5108; 14°05'05"N, 120°19'45"E; 24 m; coral; 15 Jan 1908 (0834–0835); 9' Albatross-Blake beam trawl, mud bag (dredging cable fouled on gin block; trawl

not dragged on bottom): 1 female [4.0]; sta 5109; 14°03'N, 120°16'30"E; 18 m; coral; 15 Jan 1908 (1026–1038); 9' *Albatross-Blake* beam trawl (trawl immediately torn on coral): 1 male [3.8]. Davao Gulf, Mindanao: sta 5249; 7°06'06"N, 125°40'08"E; 42 m; coral, sand; 18 May 1908 (1102–1109); 6' Johnston oyster dredge: 1 male [3.3].

RANGE.—Maldives Islands, Australia, Indonesia, Philippines, Japan, Mariana Islands; subtidal to 410 meters.

*28. *Alpheus euphrosyne euphrosyne* De Man, 1897

Alpheus euphrosyne De Man, 1897:745, pl. 36: fig. 64 [type locality: Java Sea].

Alpheus eurydactylus De Man, 1920:109 [type locality: Java].

Alpheus euphrosyne euphrosyne.—D.M. and A.H. Banner, 1982:232, fig. 73.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum acute, not nearly reaching level of distal margin of 1st antennular segment, dorsal carina low, rounded, not extending posteriorly far beyond orbital hoods, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed, concave near rostrum, orbital hood unarmed, adrostral furrows shallow or obsolescent; 2nd antennular segment nearly twice as long as wide; basal antennal segment (basicerite) usually unarmed; antennal scale with lateral margin slightly convex, nearly straight, distolateral spine not prominent, usually reaching level of broadly rounded distal margin of blade but sometimes shorter; 1st pereopods with merus usually unarmed on inferior flexor margin; major chela somewhat compressed, about $2\frac{1}{3}$ times as long as wide, dactyl lying in longitudinal plane of palm, not double-ended, having well-developed plunger, strong longitudinal ridge extending proximally from heavy, rounded shoulder on margin proximal to fixed finger, "saddle" on opposite margin proximal to adhesive plaque, with proximal shoulder rounded, not overhanging "saddle"; minor chela $4\frac{1}{2}$ times as long as wide in male, more than 5 times as long as wide in female, fingers subequal to length of palm in male, slightly longer in female, dactyl distinctly "balaeniceps" in male only; 2nd pereopod with proximal article from slightly longer to more than twice as long as 2nd; 3rd pereopod with dactyl pointed, subspatulate, propodus bearing about 9 spines on flexor margin, carpus with distal extensor angle projecting but bluntly rounded, merus unarmed, ischium with or without movable spine; maximum carapace length to base of rostrum about 27 mm.

MATERIAL.—PHILIPPINES. Manila market, Luzon; 4 Jan 1908: 1 male [21.8]. Inner Sound, Malampaya River, Palawan [10°50'N, 119°24'E]; 1–2 m; soft mud; 26 Dec 1908 (0900–1500); dynamite or seine: 1 female [20.7].

RANGE.—Kenya, Thailand, Philippines, Indonesia, and Queensland, Australia; shallow, muddy, estuarine habitats.

REMARKS.—There is little doubt that these two specimens belong to the same species even though the fine male from the Manila market has a prominent sharp tooth on the basal

antennal segment (basicerite), whereas this segment is quite unarmed in the somewhat damaged female from Palawan. In both specimens, the blade of the antennal scale clearly overreaches the distolateral spine. The minor chela of the male has the palm only slightly constricted proximal to the adhesive plaque and the fixed finger.

29. *Alpheus facetus* De Man, 1908

Alpheus facetus De Man, 1908:100 [type locality: off Djedan, Kepulauan Aru, Indonesia; 5°23'S, 134°41'E; 18 meters].—D.M. and A.H. Banner, 1982:62, fig. 14; 1985:17.

DIAGNOSIS.—(Sulcatus Group). Body not unusually compressed or setose; rostrum acute, nearly reaching level of distal margin of 1st antennular segment, dorsal carina blunt, widening slightly posteriorly and extending to near midlength of carapace, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or paired large acute teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood forming flattened, convex prominences, orbital hood bearing marginal spine directed anteromesiad, adrostral furrows wide and shallow; 2nd antennular segment nearly $1\frac{1}{2}$ times as long as wide; basal antennal segment (basicerite) armed with acute tooth reaching level of tip of rostrum but not quite as far as end of stylocerite; antennal scale with lateral margin nearly straight, distolateral tooth not unusually strong, but distinctly overreaching distal margin of tapered blade; anterior pereopods with merus armed with small acute distal tooth on inferior flexor margin; major chela slightly compressed, from less than $2\frac{1}{2}$ to more than $3\frac{1}{2}$ times as long as wide, dactyl lying in longitudinal plane of palm, not double-ended, bearing rather strong plunger directed proximally, making virtually no angle with opposable margin of dactyl on distal side of plunger, palm without teeth either side of dactylar articulation, without "saddle" proximal to adhesive plaque but often with paired oblique ridges on central part of palm; minor chela about $4\frac{1}{2}$ times as long as wide, fingers about as long as palm, dactyl not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article about twice as long as 2nd; 3rd pereopod with dactyl simple, propodus bearing about 11 spines on flexor margin, carpus with distal angles slightly projecting, merus unarmed, ischium bearing movable spine; maximum carapace length to base of rostrum about 10 mm.

RANGE.—Western Indian Ocean, Thailand, Viet Nam, Philippines, Indonesia, Japan, Australia, and Caroline Islands; intertidal to 30 meters.

30. *Alpheus foresti* A.H. and D.M. Banner, 1981

Alpheus foresti A.H. and D.M. Banner, 1981:229, fig. 4 [type locality: southwest of Manila Bay, Philippines; 14°02.7'N, 120°20.3'E; 200 meters].—D.M. and A.H. Banner, 1985:17.

DIAGNOSIS.—(Edwardsii Group?). Body not unusually compressed or setose; rostrum reaching nearly as far as distal

margin of 1st antennular segment, flattened dorsally, margins abruptly delimited from and overhanging adrostral furrows; carapace without median tooth or tubercle on gastric region or strong paired acute teeth overhanging posterior ends of adrostral furrows, anterior margin mesial to orbital hoods unarmed, meeting rostral margin in concave curve, orbital hood unarmed, 2nd antennular segment twice as long as wide; basal antennal segment (basicerite) apparently armed with small, acute ventrolateral tooth not nearly reaching level of tip of stylocerite; antennal scale with lateral margin nearly straight, distolateral spine wide, overreaching or falling short of distal margin of blade; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin; major chela considerably compressed, nearly 3 times as long as wide, dactyl lying in longitudinal plane of palm, not double-ended, plunger not separated from terminal tooth, palm with ill-defined notch representing "saddle" proximal to adhesive plaque, subrectangular shoulder on margin proximal to fixed finger followed distally by 2nd prominence; minor chela $6\frac{1}{2}$ times as long as wide, dactyl subequal to palm in length, not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article considerably longer than 2nd; 3rd pereopod with dactyl subspatulate, propodus without spines on flexor margin, carpus without strong projection distally from either extensor or flexor margins, merus unarmed, ischium with movable spine; maximum carapace length to base of rostrum about 16 mm.

RANGE.—Southwest of Manila Bay, Luzon, Philippines, and off southwestern Celebes, Indonesia; 134 to 200 meters.

***31. *Alpheus frontalis* H. Milne Edwards, 1837**

Alpheus frontalis H. Milne Edwards, 1837:356 [type locality: Australia].—D.M. and A.H. Banner, 1982:99, figs. 231,m, 25.

Alpheus latifrons A. Milne-Edwards, 1873:87 [type locality: Upolu, Western Samoa].

Betaeus uricola Richters, 1880:164, pl. 17: figs. 34, 35 [type locality: Mauritius].

DIAGNOSIS.—(Crinitus Group). Body neither unusually compressed nor densely setose; rostrum obsolescent, rostral carina rounded, extending posteriorly to base of eyes, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region and without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin extending as vaulted shelf-like projection between orbits, adrostral furrows rather deep; 2nd antennular segment nearly 3 times as long as wide; basal antennal segment (basicerite) bearing small acute ventral tooth; antennal scale with lateral margin sinuous, distolateral spine strong, overreaching distal margin of blade; 1st pereopods with merus unarmed distally on flexor margin; major chela broadly oval in cross section, about $2\frac{1}{3}$ times as long as wide, dactyl lying nearly in longitudinal plane of palm, not double-ended, bearing well-developed but distally truncate plunger, palm without obvious sculpture of any kind; minor chela slightly less than $2\frac{1}{2}$ times as long as wide in males, $3\frac{3}{4}$ as long as wide in

females, dactyl broadly "balaeniceps" in male, about $\frac{3}{4}$ as long as palm, unmodified in female, about $\frac{1}{2}$ as long as palm; 2nd pereopod with proximal carpal article fully twice as long as 2nd; 3rd pereopod with dactyl simple, propodus bearing about 9 spines on flexor margin, carpus terminating in acute tooth on flexor margin, blunt tooth on extensor margin, merus unarmed, ischium with movable spine; maximum overall carapace length about 16 mm.

MATERIAL.—PHILIPPINES. Port Matalvi, Luzon [15°29'N, 119°56'E]; 23 Nov 1908; electric light: 1 female [5.3]. Varadero Bay, Mindoro [13°30'N, 12°59'E]; surface; 22–23 Jul 1908 (2000–0200); dip net from gangplank with electric light: 2 males [5.2, 5.3]. Sablayan Anchorage, western Mindoro [120°50'N, 120°46'E]; surface; 12 Dec 1908 (1900–2030); dip net, electric light: 1 female [7.5].

RANGE.—Red Sea and eastern Africa to Japan, Philippines, Indonesia, Australia, across Pacific to the Society Islands, but not Hawaii; low tide to 130 meters (all four of the *Albatross* specimens were found swimming at the surface under an electric light).

REMARKS.—The statement by Miya (1974:136) that the major chela of *A. frontalis* is "entirely granulated on the inner surface, and densely covered with rather long soft hairs on the inner ventral surface, especially on the immovable finger" hardly reflects the relatively smooth and very sparsely hairy chelae of the specimens available to me. The larger of the *Albatross* females, however, displays a somewhat rougher and hairier major chela than do most of the other specimens examined.

***32. *Alpheus funafutensis* Borradaile, 1898**

FIGURE 3

Alpheus funafutensis Borradaile, 1898:1013, pl. 15: fig. 10 [type locality: Funafuti, Ellice Islands].—De Man, 1911:436.

Alpheus acanthomerus, var. *inermis* Lankester, 1901:564 [type locality: Kelantan, Malaya].

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum sharp, not reaching level of distal margin of 1st antennular segment, dorsal carina blunt, not extending posteriorly beyond orbital hood, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood concave near rostrum, orbital hood unarmed, adrostral furrows moderately deep; 2nd antennular segment about $1\frac{1}{2}$ times as long as wide; basal antennal segment (basicerite) armed with acute ventrolateral tooth reaching nearly to level of tip of stylocerite; antennal scale with lateral margin deeply concave, distolateral spine stout, far overreaching narrow blade; 1st pereopods with merus unarmed on inferior flexor margin; major chela somewhat compressed, about twice as long as wide, dactyl not noticeably curved in longitudinal plane, not double-ended,

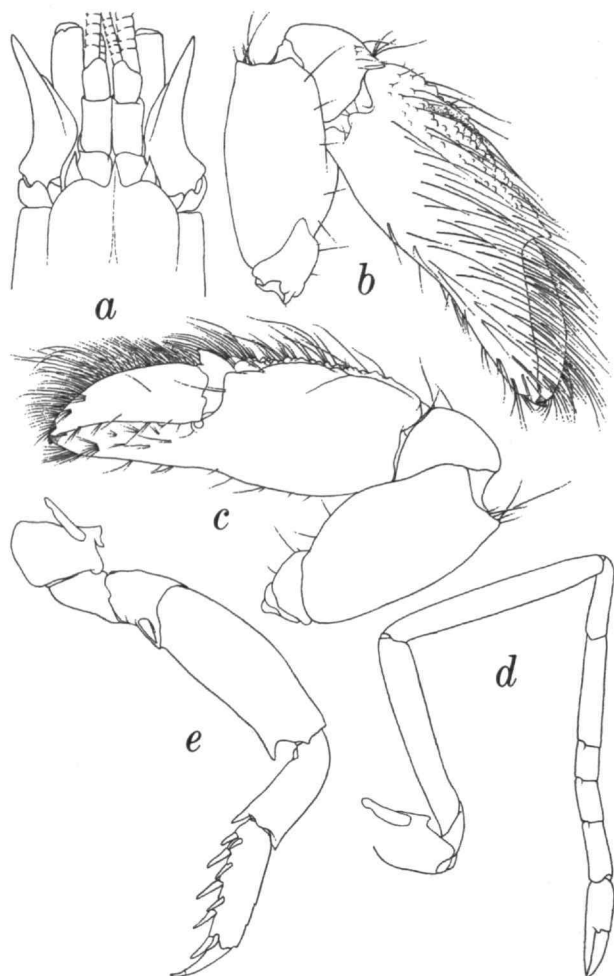


FIGURE 3.—*Alpheus funafutensis*, ovigerous female from Grande Island, Subic Bay, Luzon, carapace length 5.0 mm: a, anterior carapace and appendages, dorsal aspect; b, minor cheliped, extensor aspect; c, same, flexor aspect; d, right 2nd pereopod; e, right 3rd pereopod.

palm with "saddle" proximal to adhesive plaque, proximal shoulder rounded, not overhanging "saddle," shoulder proximal to fixed finger strong, rounded, slightly projecting; minor chela nearly $2\frac{1}{4}$ times as long as wide, dactyl shorter than palm, not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article shorter than 2nd; 3rd pereopod with dactyl pointed, simple, propodus bearing 9 spines on flexor margin, merus with acute tooth at distal end of flexor margin, ischium with movable spine; maximum carapace length to base of rostrum about 7 mm.

MATERIAL.—PHILIPPINES. Grande Island, Subic Bay, Luzon [$14^{\circ}46'N$, $120^{\circ}14'E$]; 2–6 m; scattered clumps of coral; 8 Jan 1908 (1300–1730); dynamite: 1 ovig female [5.0].

RANGE.—Kenya, Malaya, Indonesia, Philippines, and central Pacific islands.

REMARKS.—The specimen from Subic Bay lacks the major cheliped, but it agrees otherwise with the characters mentioned by De Man (1911:331, 436) based on his examination of an ovigerous female syntype of *A. funafutensis*, especially in having the movable finger of the minor chela (Figure 3c) "sharply carinate above." It seems to differ from the male from Thailand described by A.H. and D.M. Banner (1966b:155, fig. 60) in having a shorter rostrum, the frontal margin lateral to the base of the rostrum concave rather than convexly produced, the antennal scales slightly shorter (Figure 3a), sharp granules, rather than "rounded papillae," on the palm of the minor chela (Figure 3b), and the proximal article of the second pereopod (Figure 3d) distinctly shorter than, rather than subequal, to the second.

*33. *Alpheus gracilipes* Stimpson, 1860

Alpheus gracilipes Stimpson, 1860:32 [type locality: Tahiti, among corals in depth of about 2 meters].—D.M. and A.H. Banner, 1982:143, fig. 41.

DIAGNOSIS.—(Diadema Group). Body not unusually compressed or setose; rostrum acutely triangular, flattened dorsally, not carinate, nearly reaching level of distal margin of 1st antennular segment, base abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, anterior margin unarmed and concave mesial to orbital hoods, latter unarmed but bluntly angulate and obscurely carinate, adrostral furrows sharply defined and overhung mesially by margin of rostral base, abruptly but less sharply delimited laterally; 2nd antennular segment twice as long as wide; basal antennal segment (basicerite) armed with acute tooth nearly reaching level of tip of stylocerite; antennal scale with lateral margin concave, distolateral spine strong, laterally convex, overreaching narrow blade; 1st pereopods with merus armed with distal tooth on inferior flexor margin; major chela slightly compressed, $3\frac{1}{2}$ times as long as wide, dactyl moving in plane angled slightly toward flexor side of palm, not double-ended, plunger not strong, clearly defined only proximally, palm with deep transverse groove or "saddle" proximal to adhesive plaque; minor chela 5 times as long as wide, dactyl nearly as long as palm, "balaeniceps" in both sexes; 2nd pereopod with proximal carpal article slightly longer than 2nd; 3rd pereopod with dactyl slender, simple, propodus bearing 10–16 spines on flexor margin, carpus with subacute distal tooth on extensor margin, merus unarmed, ischium with movable spine; maximum carapace length to base of rostrum about 13 mm.

MATERIAL.—INDONESIA. Great Töbea, Selat Butung, Celebes [$4^{\circ}33'S$, $122^{\circ}42'E$]; tidepool; 15 Dec 1909: 1 male [9.1].

RANGE.—Red Sea and eastern Africa to Hong Kong, Ryukyu Archipelago, Philippines, Indonesia, Australia, and eastward through Pacific islands to Hawaii; intertidal to depth of 6 meters.

34. *Alpheus gracilis* Heller, 1862

Alpheus gracilis Heller, 1862a:271, pl. 3: figs. 19, 20 [type locality: Red Sea].
Alpheus gracilis var. *Alluaudi* Coutière, 1905:882 [type locality: Mahé Island, Seychelles].

Alpheus gracilis var. *luciparensis* De Man, 1911:338 [type locality: "5700 m. N. 279°E from South point of South-Lucipara-island. Reef."].

Crangon gracilis var. *simplex* A.H. Banner, 1953:75, fig. 25 [type locality: Waikiki Reef, Oahu, Hawaii].

Alpheus gracilis—D.M. and A.H. Banner, 1982:60, fig. 13.

DIAGNOSIS.—(Sulcatus Group). Body not unusually compressed or setose; rostrum sharp, not reaching as far as distal margin of 1st antennular segment, rounded dorsally, not carinate, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or paired large acute teeth overhanging posterior ends of adrostral furrows, anterior margin unarmed mesial to orbital hoods but deeply incised lateral to base of rostrum, orbital hood armed with sharp marginal spine directed slightly mesiad, adrostral furrows shallowly rounded; 2nd antennular segment slightly longer than wide; basal antennal segment (basicerite) armed with strong and prominent tooth not reaching level of tip of unusually long stylocerite; antennal scale with lateral margin faintly concave, distolateral spine fairly strong and reaching beyond distal margin of blade; anterior pereopods with small acute distal tooth on inferior flexor margin; major chela compressed; 2¹/₂ times as long as wide, dactyl not curved much beyond longitudinal axis of palm, not double-ended, bearing moderately developed plunger, palm with 1 tooth beside dactylar articulation, without longitudinal carina near margin proximal to fixed finger, with shallow, rounded transverse depression or "saddle" proximal to adhesive plaque and with slight constriction in margin proximal to fixed finger; minor chela 4¹/₂ times as long as wide, not "balaeniceps" in either sex, tooth on margin of palm at articulation with dactyl; 2nd pereopod with proximal article more than twice as long as 2nd; 3rd pereopod with dactyl biunguiculate or not, propodus with 10 spines on flexor margin, carpus with rounded distal tooth on extensor margin, merus and ischium unarmed; maximum carapace length to base of rostrum about 7 mm.

RANGE.—Red Sea, eastern and possibly South Africa to Thailand, Philippines, Japan, Indonesia, Queensland, Australia, and Pacific islands, including Hawaii and Society Islands.

*35. *Alpheus hailstonei* Coutière, 1905

Alpheus Hailstonei Coutière, 1905:879, pl. 74: fig. 18 [type locality: Maldive Islands (3 localities)].

Alpheus Hailstonei, var. *laetabilis* De Man, 1908:98 [type locality: 8 Indonesian localities; 27 to 120+ meters].

Alpheus Hailstonei, var. *assimulans* De Man, 1908:99 [type locality: 3 Indonesian localities; 54 to 113 meters].

Crangon hailstonei var. *paucispinata* A.H. Banner, 1953:51, fig. 16 [type locality: off Kauai Island, Hawaii; Hanamaulu warehouse, N. 44°30', W. 2.6 miles; 125 to 165 meters].

Alpheus hailstonei.—D.M. and A.H. Banner, 1982:38, fig. 6.

DIAGNOSIS.—(Macrocheles Group). Body not unusually

compressed or setose; rostrum sharp, not nearly reaching as far as distal margin of 1st antennular segment, rounded dorsally, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle or paired large acute teeth on gastric region, anterior margin rather deeply sinuous mesial to orbital hoods, slanting gradually into rostral margin, region not flattened, orbital hood armed with acute marginal tooth, adrostral furrows short and shallow; 2nd antennular segment 3–4 times as long as wide; basal antennal segment (basicerite) with well-developed ventrolateral tooth not overreaching stylocerite; antennal scale with lateral margin concave, distolateral spine not unusually strong but considerably overreaching narrowly tapered distal margin of blade; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin; major chela nearly 2¹/₂ times as long as wide, dactyl strongly curved toward flexor side of chela, not double-ended, bearing high sharp crest on extensor margin, bulbous distally, without plunger, palm with acute tooth each side of dactylar articulation, carina supporting tooth on mesial side of dactylar articulation interrupted by transverse notch, without "saddle" proximal to adhesive plaque, with subrectangular shoulder on margin proximal to fixed finger; minor chela 4¹/₂ times as long as wide, dactyl subequal to palm in length, not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article about 1³/₄ times as long as 2nd; 3rd pereopod with dactyl usually somewhat biunguiculate, propodus with 11 pairs of spines on flexor margin, merus unarmed, ischium with movable spine; maximum carapace length to base of rostrum about 8 mm.

MATERIAL.—PHILIPPINES. Off Jolo Island, Sulu Archipelago; sta 5138; 6°06'N, 120°58'50"E; 35 m; sand, coral; 14 Feb 1908 (1055–1115); 12' Agassiz beam trawl, 2 mud bags: 1 ovig female [4.9].

RANGE.—Kenya, Madagascar, Seychelles, Maldive Islands, Australia, Indonesia, Philippines, Japan, and Hawaii; 27 to 536 meters (the aberrant Philippine specimens reported by D.M. and A.H. Banner, 1978:223 were found in dead coral heads in no more than 5 meters).

REMARKS.—The *Albatross* Philippine specimen has the second antennular segment slightly less than 3 times as long as wide (compared with the usual 3–4 times and 1.8–2.2 times in the three Philippine specimens reported by D.M. and A.H. Banner, 1978:223, from barely 5 meters deep). It also has the antennal peduncle (carpocerite) fully 5 times as long as wide (compared with the usual nearly 7 times and slightly more than 4 times in the Banner Philippine material).

*36. *Alpheus hippothoe* De Man, 1888

Alpheus Hippothoe De Man, 1888b:268, pl. 17: figs. 1–5 [type locality: Sullivan Island (Lanbi Kyun) and King Island Bay (Padaw Aw), Mergui Archipelago, Burma].

Alpheus hippothoe.—D.M. and A.H. Banner, 1982:195, fig. 59.

DIAGNOSIS.—(Edwardsii Group). Body not unusually com-

pressed or setose; rostrum slender, reaching level of distal margin of 1st antennular segment, dorsal carina rounded, extending posteriorly to posterior gastric region, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed, nearly transverse, not flattened, orbital hood unarmed, adrostral furrows moderately deep; 2nd antennular segment $2\frac{2}{3}$ times as long as wide; basal antennular segment (basicerite) bearing acute lateral tooth not reaching level of tip of stylocerite; antennular scale with lateral margin deeply concave in proximal $\frac{1}{2}$, distolateral spine strong, considerably overreaching narrow blade; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin, somewhat reduced in minor cheliped; major chela compressed, $2\frac{1}{3}$ times as long as wide, dactyl not noticeably curved in longitudinal plane, not double-ended, plunger rather poorly developed, truncate, palm without prominent longitudinal carina near margin proximal to fixed finger, with "saddle" proximal to adhesive plaque, proximal shoulder rounded but overhanging "saddle," shoulder proximal to fixed finger strong, rounded, at right angle to palm; minor chela about $2\frac{2}{3}$ times as long as wide, dactyl slightly shorter than palm, without setiferous longitudinal crest; 2nd pereopod with proximal carpal article about twice as long as 2nd; 3rd pereopod with dactyl simple, not biunguiculate, propodus bearing about 14 spines on flexor margin, carpus with both margins projecting distally, merus with strong acute tooth near distal end of flexor margin, ischium with strong movable spine; maximum carapace length to base of rostrum about 12 mm.

MATERIAL.—PHILIPPINES. Visayan Sea north of Cebu: sta 5401; $11^{\circ}24'45''N$, $124^{\circ}06'E$; 55 m; fine sand; 16 Mar 1909 (1005–1032); 6' McCormick trawl: 2 males [10.1, 10.1]. Near Siasi, Sulu Archipelago: sta 5147; $5^{\circ}41'40''N$, $120^{\circ}47'10''E$; 38 m; coral sand, shells; 16 Feb 1908 (1127–1147); 12' Agassiz beam trawl, mud bag: 1 female [4.4].

RANGE.—Red Sea, Madagascar, Seychelles, South Africa, Indian Ocean, Malaysia, Indonesia, Philippines, Japan, Fiji and Tonga islands; intertidal to 55 meters.

REMARKS.—See "Remarks" under *A. serenei*.

*37. *Alpheus hyphalus*, new species

FIGURES 4, 5

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum rather narrow, reaching level of distal margin of 1st antennular segment (Figure 4a), dorsal carina prominent but blunt, not extending posteriorly beyond midgastric region, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed, concave near rostral margin, orbital hood unarmed, adrostral furrows moderately deep; 2nd antennular

segment twice as long as wide; basal antennular segment (basicerite) with small, sharp ventrolateral spine not nearly reaching level of tip of stylocerite (Figure 4b); antennular scale with lateral margin rather deeply concave, distolateral spine stout, considerably overreaching narrow blade; 1st pereopods with merus unarmed (Figure 4g,h,k,l); major chela somewhat compressed, about $2\frac{1}{3}$ times as long as wide, dactyl only slightly skewed from longitudinal axis of palm but with rather strong, blunt, sinuous carina on extensor margin, not double-ended, with well-developed plunger (Figure 4f), palm with strong longitudinal ridge near margin proximal to fixed finger (Figure 4e), with "saddle" proximal to adhesive plaque, proximal shoulder blunt but slightly overhanging "saddle," shoulder proximal to fixed finger strong, rounded, slightly projecting, mesial surface with sharp ridge subparallel with dorsal margin below distal end of depression associated with "saddle," similar ridge on opposite surface less sharp; minor chela (Figures 4i,j) about 3 times as long as wide, dactyl about as long as palm, weakly "balaeniceps" in male; 2nd pereopod (Figure 5d) with proximal carpal article nearly $1\frac{1}{2}$ times as long as 2nd; 3rd pereopod (Figure 5b) with dactyl pointed, simple, propodus bearing about 9 spines on flexor margin, carpus only slightly produced on each side of distal margin, merus unarmed, ischium with movable spine; carapace length to base of rostrum 7.0 mm.

MATERIAL.—PHILIPPINES. Verde Island Passage: sta 5292; $13^{\circ}38'45''N$, $121^{\circ}01'12''E$; 296 m; fine black sand; $11.3^{\circ}C$; 23 Jul 1908 (1437–1457); 12' Agassiz beam trawl, mud bag: 1 male [7.0], holotype (USNM 205662).

TYPE LOCALITY.—Same as above.

RANGE.—Known only from the unique male holotype from Verde Island Passage, Philippines; 296 meters.

REMARKS.—This species appears to be an offshore relative of *A. pacificus*; it differs from that species in the longer rostrum, more elongate distolateral spine of the antennular scale, somewhat different sculpture on the major chela, and the form of the minor chela of the male.

ETYMOLOGY.—The name, derived from the Greek *hyphalos* ("under the sea"), alludes to the considerable depth at which the single representative of the species was found, compared with the usually intertidal habitat of the possibly related *A. pacificus*.

38. *Alpheus ladronis* A.H. Banner, 1956

Alpheus ladronis A.H. Banner, 1956:360, fig. 20 [type locality: Saipan, Mariana Islands].—D.M. and A.H. Banner, 1978:223.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum small, acute, not nearly reaching level of distal margin of 1st antennular segment, distinctly carinate in midline as far as posterior margins of eyes, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or strong paired acute teeth overhanging posterior ends of adrostral furrows, anterior

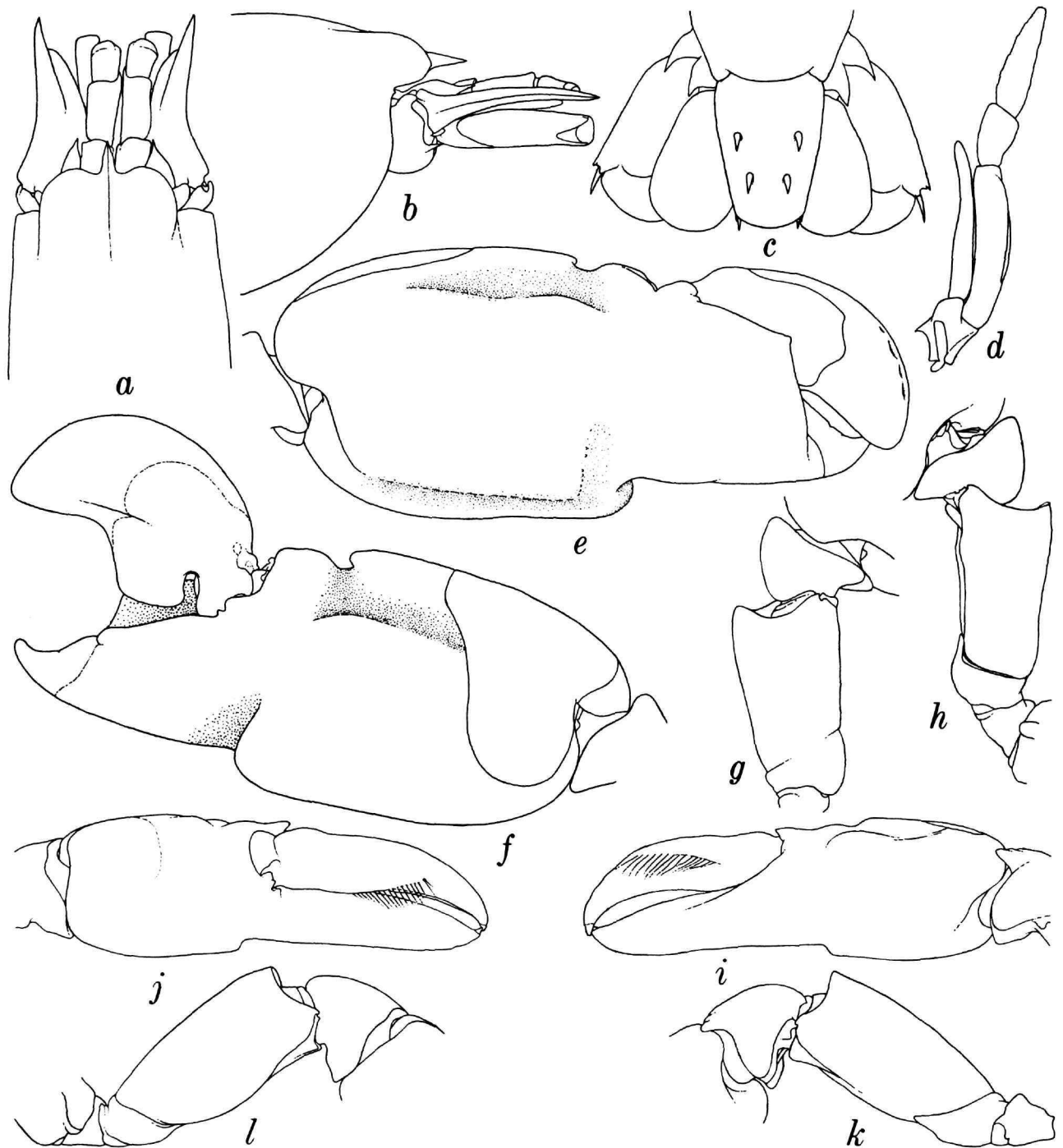


FIGURE 4.—*Alpheus hyphalus*, new species, male holotype from *Albatross* sta 5292, carapace length 7.0 mm: *a*, anterior carapace and appendages, dorsal aspect; *b*, same, lateral aspect; *c*, telson and uropods, dorsal aspect; *d*, right 3rd maxilliped; *e*, left 1st (major) chela, mesial aspect; *f*, same, lateral aspect; *g*, left 1st (major) cheliped, proximal segments, mesial aspect; *h*, same, lateral aspect; *i*, right 1st (minor) chela, mesial aspect; *j*, same, lateral aspect; *k*, right 1st (minor) cheliped, proximal segments, mesial aspect; *l*, same, lateral aspect.

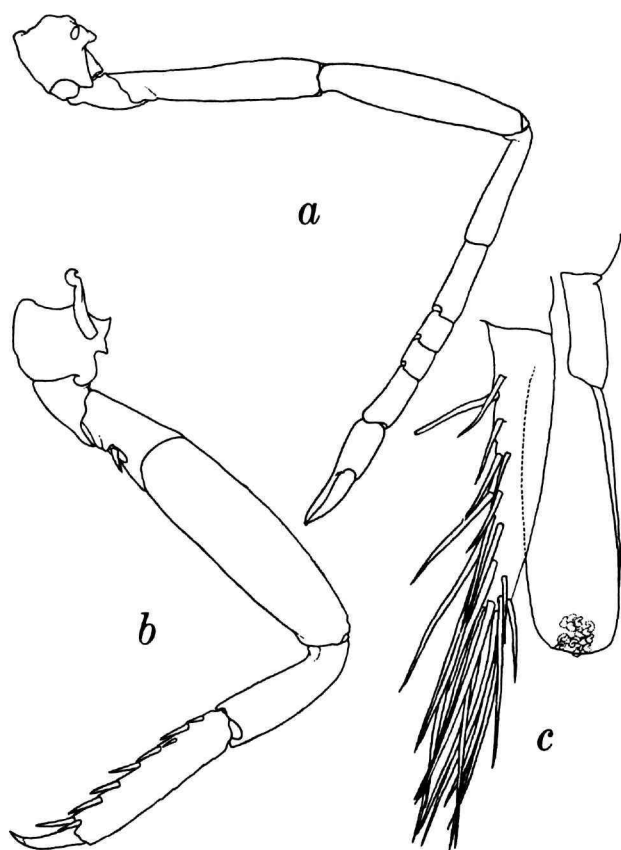


FIGURE 5.—*Alpheus hyphalus*, new species, male holotype from Albatross sta 5292, carapace length 7.0 mm: a, right 2nd pereopod; b, right 3rd pereopod; c, right appendices masculina and interna.

margin mesial to orbital hoods unarmed, nearly transverse, meeting rostral margin at obtuse angle, orbital hoods unarmed, adrostral furrows shallowly rounded; 2nd antennular segment fully $1\frac{1}{2}$ times as long as wide; basal antennal segment (basicerite) armed with small acute lateral tooth not nearly reaching level of tip of stylocerite; antennal scale with lateral margin nearly straight, distolateral spine strong but not unusually stout, overreaching distal end of tapered blade; major cheliped with chela compressed, fully $2\frac{1}{2}$ times as long as wide, fingers narrowly acute, dactyl not double-ended, palm without longitudinal carina near margin proximal to fixed finger, with shallow "saddle" proximal to adhesive plaque, proximal shoulder low, not overhanging "saddle," shoulder on margin proximal to fixed finger much stronger, merus with conspicuous subterminal tooth on inferior flexor margin; minor cheliped with chela 4 times as long as wide, dactyl slightly longer than palm, not "balaeniceps"; 2nd pereopod with proximal carpal article nearly $1\frac{1}{2}$ times as long as 2nd; 3rd pereopod with dactyl pointed, simple, propodus bearing 8 slender spines on flexor margin, carpus with extensor margin

projecting distally, merus and ischium unarmed; maximum carapace length probably about 5 mm.

RANGE.—Philippines, Marianas, and Samoa; shallow water.

39. *Alpheus leptochirus* Coutière, 1905

A[lpheus] leptochirus Coutière, 1905:914, pl. 87: fig. 54 [type locality: Maldiv Islands (2 localities)].

Alpheus leptochirus.—D.M. and A.H. Banner, 1978:223.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum slender, reaching nearly to level of distal margin of 1st antennular segment, distinctly carinate in midline as far as posterior limits of orbital hoods, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or strong paired acute teeth overhanging posterior ends of adrostral furrows, anterior margin mesial to orbital hoods unarmed and rather deeply incised each side of rostrum, orbital hoods unarmed, adrostral furrows rather deep; 2nd antennular segment less than $1\frac{1}{2}$ times as long as wide; basal antennal segment (basicerite) armed with lateral tooth; antennal scale with lateral margin not deeply concave, distolateral spine strong but not unusually stout, overreaching distal end of tapered blade; 1st pereopods with distal tooth on inferior flexor margin of merus; major chela compressed, 3 to $3\frac{1}{2}$ times as long as wide, dactyl not double-ended, with shallow "saddle" proximal to adhesive plaque, proximal shoulder low, not overhanging "saddle," shoulder on margin proximal to fixed finger not very strong; minor chela 5 to $5\frac{1}{2}$ times as long as wide, dactyl shorter than palm, "balaeniceps" in male only; 2nd pereopod with proximal carpal article as long as or slightly shorter than 2nd; 3rd pereopod with dactyl very slender, simple, not biunguiculate, propodus bearing 7 slender spines on flexor margin, carpus with extensor margin projecting slightly distally, merus and ischium unarmed; maximum carapace length to base of rostrum perhaps about 5 mm.

RANGE.—Maldiv Islands, Seychelles, Réunion, and, perhaps, Philippines. The records from Hawaii by A.H. Banner (1953:133) and the Marianas by the same author (1956:362) need to be confirmed (see "Remarks" below).

REMARKS.—A.H. Banner (1953:134) was fully aware that the three specimens dredged in 30 to 60 meters off Diamond Head, Oahu, Hawaii, might represent a distinct species. I have had the opportunity to examine one of these specimens—an ovigerous female with a carapace length of 4.2 mm—and I have found that it differs from Coutière's description in the following particulars: the rostral carina is rounded, rather than "presque tranchante"; the margins of the ocular hoods are sinuously transverse and laterally angular, rather than regularly convex; the shoulder proximal to the "saddle" on the major chela arises almost vertically from and almost overhangs the "saddle"; and the third pereopod has the ischium armed with a long lateral spine. Only the availability of additional material will permit a determination as to whether these differences fall

within the range of variability of *A. leptochirus*, but one of the discrepancies listed by Banner (1953:134) is invalid. He noted that the second carpal article of the second pereopod is 1.1 times as long as the first, rather than 0.7 as long; in his description of this appendage, Coutière (1905:915) stated: "Les 2 premiers segments du carpe sont egaux en longueur, parfois meme le 2me est le plus long."

40. *Alpheus leviusculus leviusculus* Dana, 1852

Alpheus Edwardsii var. *leviusculus* Dana, 1852b:543 [type locality: Wake Island, North Pacific].

Alpheus leviusculus.—Dana, 1855, pl. 34: fig. 3a–f.

Alpheus Bouvieri var. *Bastardi* Coutière, 1898c:133, fig. 1a [type locality: the type series apparently included material from the Gulf of Aden, Madagascar (2 localities), and Panama].

Alpheus leviusculus leviusculus.—D.M. and A.H. Banner, 1982:246, fig. 77.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum triangular, short, not nearly reaching level of distal margin of 1st antennular segment, rounded in dorsal midline, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or strong paired acute teeth overhanging posterior ends of adrostral furrows, anterior margin mesial to orbital hoods unarmed, nearly transverse, concave near rostral margin, orbital hoods unarmed, adrostral furrows broad and shallow; 2nd antennular segment no more than $1\frac{1}{3}$ times as long as wide; basal antennal segment (basicerite) with strong lateral tooth not quite reaching level of tip of stylocerite; antennal scale with lateral margin nearly straight, distolateral spine not especially stout, overreaching distal margin of fairly wide blade, sometimes considerably; 1st pereopod without distal tooth on inferior flexor margin of merus; major chela somewhat compressed, fully $2\frac{1}{2}$ times as long as wide, dactyl nearly straight in longitudinal plane, not double-ended, bearing well-developed plunger, palm without longitudinal carina near margin proximal to fixed finger, with "saddle" proximal to adhesive plaque, shoulder proximal to "saddle" rounded or forming right angle with surface of palm, shoulder on margin proximal to fixed finger low and rounded; minor chela fully $3\frac{1}{2}$ times as long as wide, dactyl slightly shorter than palm, usually clearly "balaeniceps" in male; 2nd pereopod with proximal carpal article not quite $1\frac{1}{2}$ times as long as 2nd; 3rd pereopod with dactyl simple, sometimes with slight swelling on flexor margin, propodus bearing about 9 spines on flexor margin, carpus with extensor margin projecting at articulation with propodus, merus unarmed, ischium usually without movable spine; maximum carapace length about 10 mm.

RANGE.—Red Sea, eastern Africa, Indian Ocean, Indonesia, and Pacific islands at least as far eastward as Wake Island.

REMARKS.—The presence or absence of an ischial spine on the third and fourth pereopods does not seem to be as diagnostic of this species as it is of most members of the genus. Specimens in the Smithsonian collections from Hong Kong show no trace of such a movable spine, but those from the Indian Ocean have small but distinct ones.

*41. *Alpheus lobidens* De Haan, 1849

Alpheus lobidens De Haan, 1849:179 [type locality: Japan (probably near Nagasaki, according to Holthuis in A.H. and D.M. Banner, 1975:431)].—D.M. and A.H. Banner, 1981:29.

Alpheus crassimanus Heller, 1862b:526 [type locality: Nicobar Islands].

Alpheus inopinatus Holthuis and Gotlieb, 1958:42, figs. 8, 9 [type locality: Herzliya, Israel].

Alpheus lobidens polynesica A.H. and D.M. Banner, 1975:429, fig. 3A–H, J–L [type locality: Kaneohe Bay, Oahu, Hawaii].

Alpheus lobidens lobidens.—D.M. and A.H. Banner, 1982:252, fig. 78s.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum acute, triangular, reaching nearly to level of distal margin of 1st antennular segment, dorsal carina rather sharp, not extending posteriorly beyond orbital hoods, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood unarmed, somewhat incised near rostral margin, adrostral furrows moderately deep; 2nd antennular segment about twice as long as wide; basal antennal segment (basicerite) armed with small ventrolateral tooth not nearly reaching level of tip of stylocerite; antennal scale with lateral margin variably concave, distolateral spine stout, overreaching blade; 1st pereopods with or without distal tooth on inferior flexor margin of merus; major chela somewhat compressed, about $2\frac{1}{2}$ times as long as wide, dactyl not noticeably curved in longitudinal plane, not double-ended, having well-developed plunger, palm with longitudinal groove but no carina near margin proximal to fixed finger, with "saddle" proximal to adhesive plaque, shoulder proximal thereto usually rounded, sometimes abrupt, but not overhanging "saddle," shoulder proximal to fixed finger always well developed but varying from rounded to angular; minor chela 3 to $4\frac{3}{4}$ times as long as wide, dactyl subequal to palm in length, strongly "balaeniceps" in male only; 2nd pereopod with proximal carpal article $1\frac{1}{4}$ to $1\frac{2}{3}$ times as long as 2nd; 3rd pereopod with dactyl pointed, simple, propodus usually bearing about 10 spines on flexor margin, carpus not produced distally at propodal articulation, merus unarmed, ischium usually bearing movable spine; maximum carapace length to base of rostrum about 19 mm.

MATERIAL.—PHILIPPINES. Olongapo, Subic Bay, Luzon [$14^{\circ}50'N$, $120^{\circ}16'E$]; shore; 7 Jan 1908 (1400–1515); 2 males [6.6, 8.3] 3 ovig females [8.0–10.7].—Tilik, Lubang Island [$13^{\circ}49'N$, $120^{\circ}12'E$]; beach; sand, mud; 14 Jul 1908 (1430–1700); 1 ovig female [10.1].

RANGE.—Entire Indo-Pacific region from the Red Sea to Hawaii, as well as eastern and central Mediterranean; intertidal to 25 meters.

REMARKS.—In regard to the determination by A.H. and D.M. Banner (1975:431) that *A. crassimanus* is a junior synonym of *A. lobidens*, it may be of interest to recall the remarks of Coutière (1899:14). He noted that the type specimen of *A. lobidens* in the Museum at Leiden was in such poor condition that it was impossible to determine the sex of the

specimen satisfactorily and whether it represents the species called *A. strenuus* by Dana or *A. crassimanus* of Heller. He decided, however, that it was a female and therefore a senior synonym of Dana's species, in which the *balaeniceps* dactyl of the minor chela occurs in both sexes.

Because of the delays often associated with the publication of major works, the detailed revision of this species and the relegation of *A. inopinatus* and the subspecies *polynesica* to its synonymy—which was to have appeared “in a check-list of the alpheidids of the Red Sea at some time in the future” according to D.M. and A.H. Banner (1982:241, footnote)—were actually published during the preceding year (D.M. and A.H. Banner, 1981:29).

*42. *Alpheus lottini* Guérin, 1829

Cancer sublucanus Forskål, 1775:94 [type locality: Juddah, Saudi Arabia; the name was suppressed under the plenary powers in Opinion 1367 of the International Commission on Zoological Nomenclature (1985:361)].

Alpheus Lottini Guérin, 1829, pl. 3: fig. 3.

Alpheus Lottinii.—Guérin, 1838:38 [type locality: New Ireland, Bismarck Archipelago].

A[lpheus] ventrosus H. Milne Edwards, 1837:352 [type locality: Mauritius].

A[lpheus] laevis Randall, 1840:141 [type locality: Hawaii].

Alpheus Thetis White, 1847:75 [Australia; nomen nudum].

Crangon latipes A.H. Banner, 1953:82, fig. 27 [type locality: off Waikiki Reef, Oahu, Hawaii; 6 meters].

Alpheus lottini.—D.M. and A.H. Banner, 1982:65, fig. 15.

DIAGNOSIS.—(Sulcatus Group). Body somewhat but not extraordinarily compressed, not twice as high as wide, not setose; rostrum reaching to about level of distal margin of 1st antennular segment, base flattened, abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region, without paired teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood short, transverse, unarmed, submarginal area not flattened, orbital hood armed with sharp tooth directed anteromesial from surface of hood, not marginal, adrostral furrows narrow and rather deep; second antennular segment usually about $1\frac{3}{4}$ times as long as wide; basal antennal segment (basicerite) with strong, acute ventrolateral tooth nearly or quite overreaching stylocerite; antennal scale with lateral margin faintly sinuous, nearly straight, distolateral spine rather stout, overreaching distal margin of tapered blade; 1st pereopods with inferior flexor margin of merus terminating distally in strong but blunt projection; major chela compressed, about $2\frac{1}{2}$ times as long as wide, dactyl not strongly arched, veering only slightly from longitudinal plane of chela, not double-ended, bearing reasonably well-developed plunger, palm totally devoid of sculpture; minor chela $2\frac{1}{2}$ to 3 times as long as wide, dactyl subequal to palm in length, fairly slender, rather strongly hooked distally, not “*balaeniceps*” in either sex; 2nd pereopod with proximal carpal article nearly or fully twice as long as 2nd; 3rd pereopod with dactyl stout, laterally compressed, tip bluntly hoof-like, surrounded by ridge of soft chitin, propodus bearing 5–7 rather stout spines on flexor margin, carpus with both extensor and flexor margins

produced distally, merus and ischium unarmed; maximum carapace length to base of rostrum about 13 mm.

MATERIAL.—PHILIPPINES. Southwest of Manila Bay, Luzon: sta 5109; $14^{\circ}03'45''N$, $120^{\circ}16'30''E$; 18m; coral; 15 Jan 1908 (1026–1038); 9' *Albatross-Blake* beam trawl (trawl immediately torn on coral): 5 males [5.0–6.6] 2 ovig females [3.8–5.2]. Cagmanaba Bay, Burias Pass, southeastern Luzon [$13^{\circ}03'N$, $123^{\circ}18'E$]; coral heads; 11 Mar 1908: 1 male [7.5] 1 ovig female [8.7]. Palag Bay, Lagonoy Gulf, eastern Luzon [$13^{\circ}44'N$, $123^{\circ}56'E$]; from coral; 16 Jun 1909: 1 male [6.8] 1 ovig female [7.8]. Marungas Island, Sulu Archipelago [$6^{\circ}06'N$, $120^{\circ}58'E$]; shore, coral head; 19 Feb 1908: 1 male [5.5] 2 females [3.0, 5.7], 1 ovig [5.7].

RANGE.—Red Sea to South Africa, eastward to the Philippines, Indonesia, Australia, to Hawaii, the Galapagos Islands, and the American mainland from the Gulf of California to Colombia; *A. lottini* is found only in association with living pocilloporid corals, which are commonly confined to sublittoral depths to about 50 meters.

*43. *Alpheus macellarius*, new species

FIGURES 6, 7

DIAGNOSIS.—(Brevirostris Group). Body not unusually compressed or setose; rostrum slender, not reaching anteriorly quite as far as distal margin of 1st antennular segment (Figure 6a), bluntly carinate in midline posteriorly to slightly beyond bases of orbital hoods, base not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or paired acute teeth overhanging posterior ends of adrostral furrows, anterior margin unarmed and transverse mesial to orbital hoods, curving gradually into rostral margin, region not noticeably depressed, orbital hoods unarmed and uncarinate, adrostral furrows comparatively shallow; 2nd antennular segment about $2\frac{1}{4}$ times as long as wide; basal antennal segment (basicerite) armed with strong lateral tooth not reaching level of tip of stylocerite (Figure 4b); antennal scale with lateral margin concave near midlength, convex distally, distolateral spine strong, slightly overreaching distal margin of blade; major cheliped with chela (Figure 4d) oval in cross section, 3 times as long as wide, dactyl straight in longitudinal plane, not double-ended, plunger much reduced, defined only by proximal angle, palm without teeth either side of dactylar articulation, sculpture limited to narrow, transverse notch or “saddle” proximal to adhesive plaque; merus (Figure 4e) armed with distal tooth on inferior flexor margin; minor cheliped with chela (Figure 4f) 5 times as long as wide, dactyl not broadened or “*balaeniceps*” in either sex, nearly $1\frac{1}{2}$ times as long as palm, merus (Figure 4g) without fixed distal tooth on inferior flexor margin; 2nd pereopod (Figure 4h) with proximal article of carpus $1\frac{1}{3}$ times as long as 2nd; 3rd pereopod (Figure 4i) with dactyl (Figure 4j) subspatulate, propodus bearing series of fine spines on flexor margin, merus unarmed, ischium bearing movable spine; maximum carapace length about 12 mm.

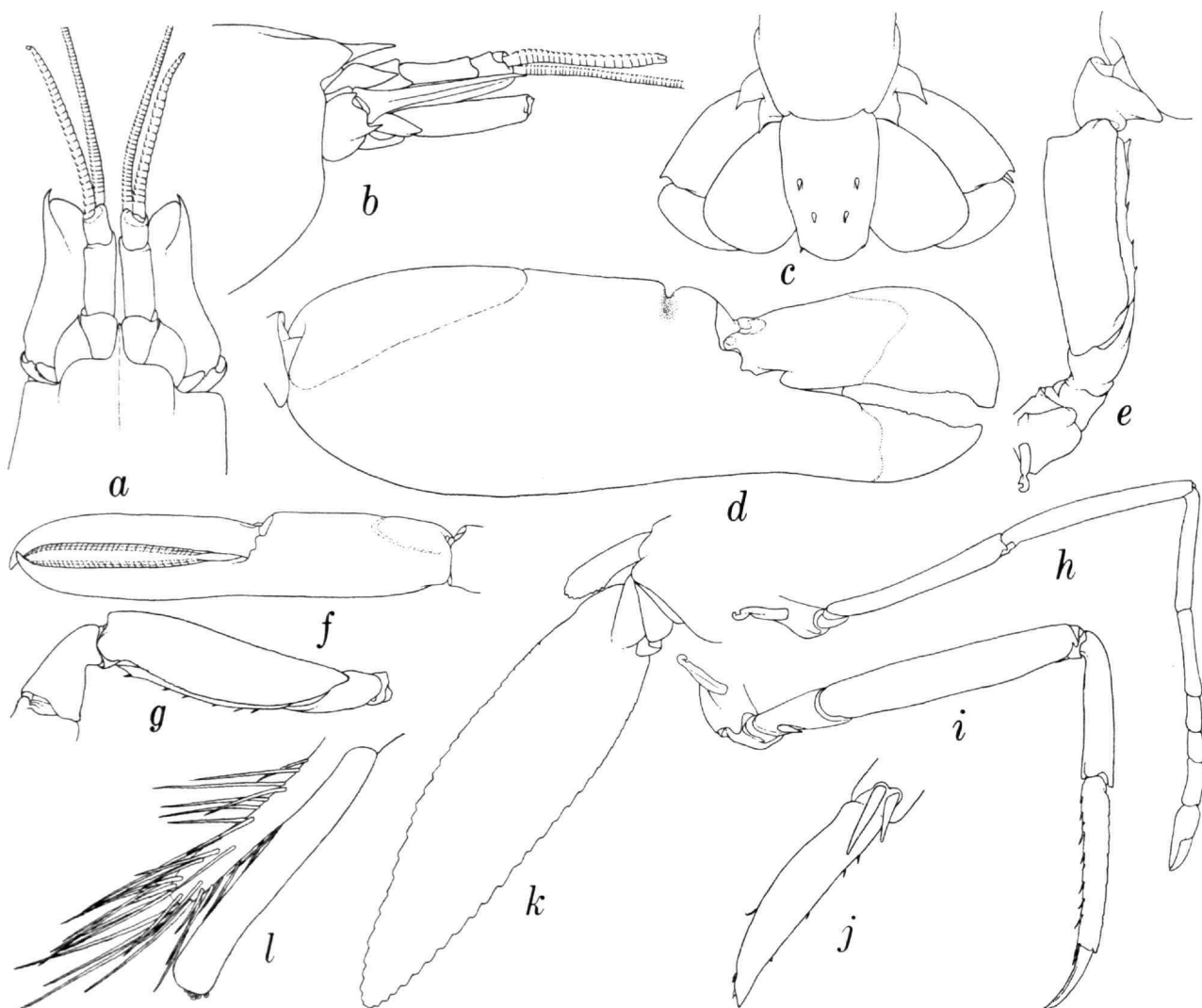


FIGURE 6.—*Alpheus macellarius*, new species, male holotype from Cebu Market, carapace length 11.2 mm: *a*, anterior carapace and appendages, dorsal aspect; *b*, same, lateral aspect; *c*, telson and uropods, dorsal aspect; *d*, right 1st (major) chela; *e*, right 1st (major) cheliped, proximal segments, lateral aspect; *f*, left 1st (minor) chela; *g*, left 1st (minor) cheliped, proximal segments, lateral aspect; *h*, right 2nd pereopod; *i*, right 3rd pereopod; *j*, same, dactyl; *k*, right 1st pleopod, posterior aspect; *l*, right appendices masculina and interna, anterior aspect.

MATERIAL.—PHILIPPINES. Dupon Bay, Leyte [10°55'N, 124°25'E]; 17 Mar 1909 (1900–2200); electric light: 1 female [6.8]. Cebu Market [10°18'N, 123°54'E]; 20 Mar 1909: 2 males [10.9, 11.2], larger is holotype (USNM 205663).

TYPE LOCALITY.—Vicinity of Cebu City, Cebu, Philippines.

RANGE.—Known only from the three *Albatross* specimens cited above from the south central Philippines.

REMARKS.—Of the approximately 33 members of the *Brevirostris* Group currently recognized, including the incompletely described *A. miyakei* Miya, 1974 (the sole species of the group with spinose orbital hoods), only 14 agree with *A.*

macellarius in having a distinct transverse, distally delimited groove or “saddle” on the palm of the major chela proximal to the adhesive plaque at the dactylar articulation. Of these 14, the following five species may be eliminated from identification with *A. macellarius* by the styloform rather than spatulate or subspatulate dactyls of the third and fourth pereopods: *A. barbatus*, *A. miersi*, *A. pubescens* De Man, 1908, *A. savuensis* De Man, 1908, and *A. talismani* Coutière, 1898d. Three species—*A. brevicristatus* De Haan, 1849, *A. brevirostris* (Olivier, 1811), and *A. cythereus* A.H. and D.M. Banner, 1966b—are distinguished by the presence of prominent

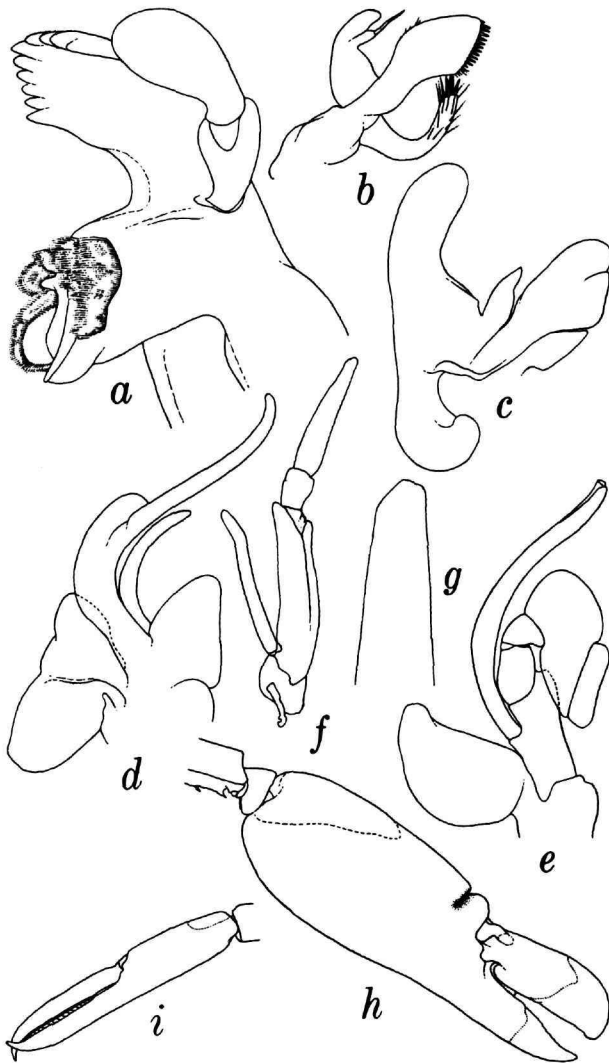


FIGURE 7.—*Alpheus macellarius*, new species, a–g, male paratype from Cebu Market, carapace length 10.9 mm; h, i, female paratype from Dupon Bay, Leyte, carapace length 6.8 mm: a, right mandible; b, right 1st maxilla; c, right 2nd maxilla; d, right 1st maxilliped; e, right 2nd maxilliped; f, right 3rd maxilliped; g, same, distal end; h, right 1st (major) chela; i, left 1st (minor) chela.

longitudinal ridges or carinae on the major chela. Two more—*A. bellulus* Miya and Miyake, 1969, and *A. moretensis* D.M. and A.H. Banner, 1982 (together with *A. cythereus*, *A. pubescens*, and *A. sauvensis*)—have the dactyl of the minor chela “balaeniceps,” at least in the male. Of the four remaining species, *A. djeddensis* Coutière, 1897d, differs from *A. macellarius* chiefly in the form and proportions of the chelae of the first pereopods, both chelae being less than three times as long as wide, compared with fully three times as long as wide in the major chela and more than five times as long as

wide in the minor chela of *A. macellarius*; *A. homochirus* (Yu, 1935) has the major chela four and one-half times as long as wide and the fingers twice as long as the palm, compared with about one and one-half times as long as the palm in the Philippine species; *A. platyunguiculatus* (A.H. Banner, 1953) has the minor chela less than four times as long as wide, compared with fully five times, and the proximal article of the carpus of the second pereopod no more than one-half, rather than longer than, the second article; finally, *A. rapax* Fabricius, 1798, which seems to be closely related to *A. macellarius*, apparently differs in the presence of flattened strips and accompanying delimiting longitudinal ridges or lines on the superior and inferior surfaces and the omission of any suggestion of the obtuse longitudinal ridge and accompanying depression sometimes present on the lateral surface of the major chela, compared with the complete absence of any such longitudinal sculpture in the new species, as well as in the more bowed and hairier fingers of the minor chela. The discussion of the extreme variability of *A. rapax* in D.M. and A.H. Banner (1982:176) indicates that *A. macellarius* may prove to be a variant of that species, but comparison of the Philippine specimens with one from the Andaman Sea identified by A.H. Banner as *A. rapax* has served to minimize the credibility of that possibility.

ETYMOLOGY.—From the Latin word for “of the meat or provision market,” in allusion to the source of the holotype of the species.

*44. *Alpheus macroskeles* Alcock and Anderson, 1894

FIGURE 8

Alpheus macroskeles Alcock and Anderson, 1894:153 [type locality (restricted by “type” selection by Alcock, 1901:141, documented by A.H. and D.M. Banner, 1981:232): Bay of Bengal, 490 meters].—D.M. and A.H. Banner, 1978:224, fig. 1.

DIAGNOSIS.—(Brevirostris Group). Body not unusually compressed or setose; rostrum narrow, sharp, not nearly reaching as far as distal margin of 1st antennular segment, feebly carinate in midline, carina disappearing on anterior gastric region, base not abruptly delimited from adrostral furrows; carapace with or without median tubercle on gastric region, without flattened teeth overhanging posterior ends of adrostral furrows, anterior margin between rostrum and orbital hood variably incised, submarginal region not flattened, orbital hoods unarmed, adrostral furrows not very deep; 2nd antennular segment about $3\frac{1}{2}$ times as long as wide; basal antennal segment (basicerite) with slender ventrolateral spine not reaching level of tip of stylocerite; antennal scale with lateral margin rather weakly concave, distolateral spine not especially strong, overreaching distal margin of blade by varying extent; 1st pereopods with merus armed with acute distal tooth on flexor margin and stronger tooth near distal end of extensor margin; major chela subcylindrical, about 7 times as long as wide, dactyl sometimes overreached by fixed finger,

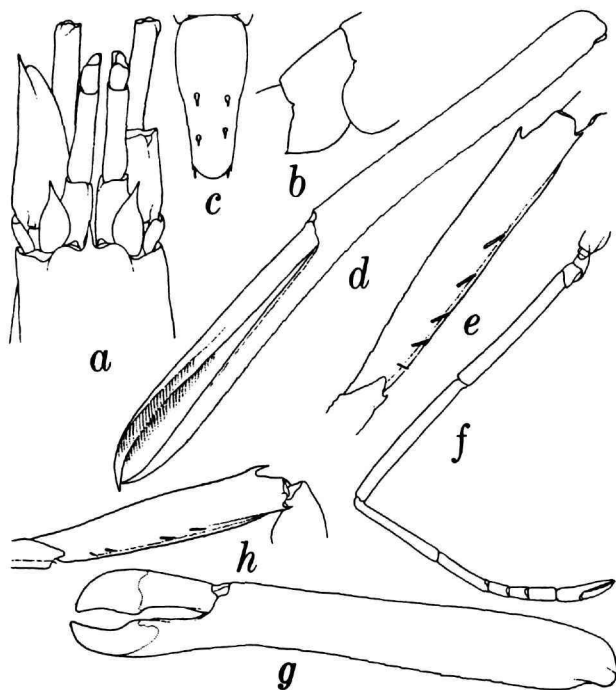


FIGURE 8.—*Alpheus macroskeles*, a-f, male from *Albatross* sta 5624, carapace length 8.3 mm; g,h, male from *Albatross* sta 5625, carapace length 8.1 mm: a, anterior carapace and appendages, dorsal aspect; b, 5th abdominal somite; c, telson, dorsal aspect; d, left 1st (minor) chela, flexor aspect; e, merus of left 1st (minor) cheliped, mesial aspect; f, left 2nd pereopod; g, left 1st (major) chela, flexor aspect; h, merus of left 1st (major) cheliped.

not double-ended, plunger little developed, palm without sharp tooth either side of dactylar articulation, without longitudinal carina or "saddle" proximal to adhesive plaque, without shoulder on margin proximal to fixed finger; minor chela 10–14 times as long as wide, dactyl $2/3$ to fully as long as palm, "balaeniceps" in male, palm somewhat granulate; 2nd pereopod with proximal carpal article $1\frac{2}{3}$ to twice as long as 2nd; 3rd pereopod with dactyl subspatulate, carpus with blunt distal lobe on extensor margin, merus unarmed, ischium bearing movable spine; maximum carapace length about 10 mm.

MATERIAL.—PHILIPPINES. Babuyan Channel, north of Luzon: sta 5328; 18°29'N, 121°39'E; 274 m; blue mud; 12.2°C; 19 Nov 1908 (0944–1004); 12' Tanner beam trawl, mud bag: 1 female [8.2]. Balayan Bay, southern Luzon: sta 5117; 13°52'22"N, 120°46'22"E; 216 m; 21 Jan 1908 (0927–0947); 12' Tanner beam trawl, mud bag: 1 male [7.5] (identification?). Northeast of Mindoro: sta 5122; 13°21'30"N, 120° [probably 121°] 30'33"E; 402 m; green mud; 2 Feb 1908 (1059–1119); 12' Tanner beam trawl, mud bag: 1 female [8.2]. Samar Sea, east of Masbate: sta 5396; 11°57'N, 124°12'24"E; 251 m; green mud; 15 Mar 1909 (0945–1005); 12' Agassiz beam trawl, mud bag: [8.1] (identification?). West of Leyte: sta 5409; 10°38'N, 124°13'08"E; 346 m; green mud; 18 Mar

1909 (0951–1020); 12' Agassiz beam trawl, mud bag: 1 ovig female [6.9]. Bohol Strait, east of Cebu: sta 5197; 9°52'30"N, 123°40'45"E; 318 m; green mud; 12.4°C; 9 Apr 1908 (0855–0915); 12' Agassiz beam trawl, 3 mud bags: 1 male [9.8] (identification?); sta 5198; 9°40'50"N, 123°39'45"E; 402 m; green mud; 12.2°C; 9 Apr 1908 (1125–1145); 12' Agassiz beam trawl, 3 mud bags: 1 ovig female [8.2].

INDONESIA. West of Halmahera: sta 5624; 0°12'15"N, 127°29'30"E; 527 m; fine sand, mud; 29 Nov 1909 (1058–1118); 12' Agassiz beam trawl: 1 male [8.3]; sta 5625; 0°07'00"N, 127°28'00"E; 421 m; gray mud, fine sand; 29 Nov 1909 (1416–1437); 12' Agassiz beam trawl: 1 male [8.1].

RANGE.—Perhaps the only authentic records of *A. macroskeles* are those mentioned by Alcock and Anderson (1894) in the Bay of Bengal and the Andaman Sea in depths of 265 to 494 meters. The ovigerous female tentatively identified by De Man (1911:403) from the Bali Sea in 330 meters lacked both chelipeds and differed in minor respects from the descriptions of *A. macroskeles*; the present study indicates that specimens of this species cannot be distinguished from those of *A. nonalter* without recourse to at least one of the first chelipeds (see "Remarks" under the latter species). The specimen recorded from the Red Sea by Balss (1915:23) came from a depth of only 58 meters, which might cast some doubt on the identification, yet D.M. and A.H. Banner (1978:224) found "excellent agreement" between paratypes of *A. macroskeles* and specimens from only 77 meters in the South China Sea. At the other extreme, Calman (1939:208) assigned to this species 18 specimens from depths of 528 to more than 1061 meters in the Gulf of Aden.

REMARKS.—The two males from *Albatross* stations 5117 and 5197 (Balayan Bay and Bohol Strait, respectively) lack both first chelipeds and their identity with *A. macroskeles* is therefore questionable (see "Remarks" under *A. nonalter*.)

45. *Alpheus maindroni* Coutière, 1898

Alpheus *Maindroni* Coutière, 1898c:133, figs. 2, 2' [type locality: the type series came from 2 localities: Masqat (Muscat), Gulf of Oman, and Djibouti, Gulf of Aden].

Alpheus maindroni.—D.M. and A.H. Banner, 1982:203, fig. 62; 1985:19.

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum triangular, not nearly reaching distal margin of 1st antennular segment, bluntly carinate in midline, carina not extending posteriorly beyond bases of eyes, base of rostrum not abruptly delimited from adrostral furrows; carapace without median tooth or tubercle on gastric region or paired acute teeth overhanging posterior ends of adrostral furrows, anterior margin mesial to orbital hoods unarmed but convexly produced anteriorly, meeting rostral margin at less than right angle, orbital hoods unarmed, adrostral furrows shallow; 2nd antennular segment $1\frac{1}{2}$ times as long as wide; basal antennal segment (basicerite) armed with acute ventral tooth not nearly reaching level of tip of stylocerite; antennal

scale with lateral margin slightly concave, distolateral spine stout, considerably overreaching distal margin of blade; 1st pereopods with merus armed with acute tooth on inferior flexor margin; major chela compressed $2\frac{1}{2}$ times as long as wide, dactyl straight in longitudinal plane, not double-ended, bearing very well developed plunger, palm without longitudinal carina near margin proximal to fixed finger, with reduced "saddle" forming shallow, poorly delimited, oblique depression proximal to adhesive plaque, shoulder on margin proximal to fixed finger rounded; minor chela 3 times as long as wide, dactyl slightly longer than palm, not "balaeniceps" in either sex; 2nd pereopod with proximal carpal article more than twice as long as 2nd; 3rd pereopod with dactyl pointed, simple, propodus bearing 9 spines on flexor margin, carpus slightly projecting distally on both extensor and flexor margins, merus and ischium unarmed; maximum carapace length about 9 mm.

RANGE.—Gulf of Aden, Gulf of Oman, Mozambique, Madagascar, Philippines, Indonesia, and Australia, Caroline and Marshall islands; shallow water.

***46. *Alpheus malabaricus* (Fabricius, 1775)**

FIGURE 9

Astacus Malabaricus Fabricius, 1775:415 [type locality: Malabar Coast, southwestern India].

Alpheus macrodactylus Ortmann, 1890:473, pl. 36: fig. 10, 10e [type locality: Sydney].

Alpheus dolichodactylus Ortmann, 1890:473, pl. 36: fig. 11 [type locality: Tokyo Wan, Japan].

Alpheus dolichodactylus, var. *leptopus* De Man, 1910:289 [type locality: the type series came from 4 *Siboga* stations in the vicinity of the Lesser Sunda Islands, Indonesia; 18–289 meters].

Alpheus malabaricus mackayi A.H. Banner, 1959:149, fig. 12 [type locality: Wailupe fish pond, Oahu, Hawaii].

Alpheus malabaricus malabaricus.—A.H. and D.M. Banner, 1966b:145, fig. 55.

Alpheus malabaricus songkla A.H. and D.M. Banner, 1966b:147, fig. 56 [type locality: Lake Songkla, Songkla, Thailand].

Alpheus mackayi.—A.H. and D.M. Banner, 1975:428, fig. 2A–H.

Alpheus malabaricus trefzae D.M. and A.H. Banner, 1982:207, fig. 64 [type locality: Brammo Bay, Dunk Island, Queensland, Australia; low tide].

Alpheus mazatlanicus Wicksten, 1983:46, figs. 7, 8 [type locality: Laguna del Caimanero, Sinaloa, Mexico].

DIAGNOSIS.—(Edwardsii Group). Body not unusually compressed or setose; rostrum variable in length and proportionate width, rarely if ever reaching as far as distal margin of 1st antennular segment, median carina moderately sharp to rounded, not reaching posteriorly beyond limits of orbital hoods, base not abruptly delimited from adrostral furrows; carapace without tooth or tubercle on gastric region or paired acute teeth overhanging posterior ends of adrostral furrows, anterior margin mesial to orbital hoods variably incised to nearly transverse, orbital hoods unarmed, adrostral furrows, relatively shallow and short; 2nd antennular segment about twice as long as wide; basal antennal segment (basicerite) armed with acute ventrolateral spine not nearly reaching level of tip of stylocerite; antennal scale with lateral margin

moderately concave to nearly straight, distolateral spine strong but not unusually stout, distinctly overreaching distal margin of blade or not; 1st pereopods with merus armed with acute distal tooth on inferior flexor margin; major chela compressed, $2\frac{1}{2}$ to $3\frac{1}{2}$ times as long as wide, dactyl straight in longitudinal plane, not double-ended, plunger moderately well-developed to barely distinguishable, palm with longitudinal furrow but no carina near margin proximal to fixed finger, with "saddle" proximal to adhesive plaque, shoulder proximal to "saddle" obtusely rounded to slightly projecting and overhanging "saddle"; minor chela $4\frac{1}{2}$ to $7\frac{1}{2}$ times as long as wide, dactyl from less than $1\frac{1}{2}$ to more than 3 times as long as palm, not "balaeniceps" in either sex, 2nd pereopod with proximal carpal article from slightly longer than to twice as long as 2nd; 3rd pereopod with dactyl subspatulate, propodus with or without series of spinules on flexor margin, carpus with blunt distal projection on extensor margin, short acute distal tooth on flexor margin, merus unarmed, ischium with movable spine; maximum carapace length to base of rostrum about 13 mm.

MATERIAL.—PHILIPPINES. "Little Harbor at Luneta, Manila Harbor," Luzon; 12 Dec 1907: 4 males [5.2–9.2] 3 females [4.2–7.4], 1 ovig [7.4]. Alimango River, Burias Island [13°06'N, 122°57'E]; sand, mud; 5 Mar 1909 (0900–1200); 130' seine (2 hauls), dynamite (5 shots): 1 female [7.0].

RANGE.—East Africa to Mexico; intertidal to at least 289 meters.

REMARKS.—Admittedly superficial study of the *A. malabaricus* complex has suggested to me that the species—like the Atlantic *A. floridanus* Kingsley, 1878 (see Chace, 1972:65)—is highly variable and widely ranging. A large number of taxa could be envisioned by recognizing the almost innumerable combinations of variable characters (see Wicksten, 1983:47, table E). For instance, the specimen from Burias Island illustrated in Figure 9 is nearly identical with the Australian specimen identified and illustrated by D.M. and A. H. Banner (1982:210, fig. 65) as *A. macrodactylus*, except for the more elongate first chelipeds. The character that seems most clearly to distinguish *A. macrodactylus* from a form like *A. malabaricus trefzae* (see D.M. and A.H. Banner, 1982:208, fig. 64f) is the much better developed plunger on the dactyl of the major chela, but a specimen from off Cochin, southwestern India, identified as *A. malabaricus malabaricus* by A.H. Banner has a plunger virtually identical with the one shown in Figure 9d, combined with a minor chela like the one illustrated from a specimen of *A. malabaricus dolichodactylus* by De Man, 1911 (1915), pl. 23: fig. 105f. A.H. and D.M. Banner (1975:428) elevated *A. malabaricus mackayi* A.H. Banner, 1959, to species status because the rostrum is much smaller than it is in typical *A. malabaricus* and the fingers of the minor chela are only one and one-half, rather than two and one-half or more, times as long as the palm, but the rostrum is no smaller than it is in *A. malabaricus trefzae* and the fingers of the minor chela no shorter, in relation to the palm, than they are in *A. malabaricus songkla*.