

THREE NEW SPECIES OF THE GENUS *ALPHEUS* (DECAPODA,  
ALPHEIDAE) FROM THE INTERNATIONAL INDIAN OCEAN  
EXPEDITION

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CORRECTION TO: THREE NEW SPECIES OF THE GENUS *ALPHEUS*  
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OCEAN EXPEDITION. CRUSTACEANA, 15 (2): 141

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Through our confusion from the correspondence with Dr. A. J. Bruce, previously of the Fisheries Research Station, Hong Kong, who donated the specimens discussed in this paper, we attributed them to the International Indian Ocean Expedition, and their collection to United States ships. All specimens reported upon were collected by R.V. "Cape St. Mary", Hong Kong Government Fisheries Research Vessel working in the South China Sea. We regret this error and thank Dr. Bruce for calling it to our attention. A further typographical error lies in the longitude of Station #63 (p. 146) which should read 111°53'E instead of 11°53'E.

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THREE NEW SPECIES OF THE GENUS *ALPHEUS* (DECAPODA,  
ALPHEIDAE) FROM THE INTERNATIONAL INDIAN OCEAN  
EXPEDITION <sup>1)</sup>)

BY

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We are presenting three new species of the genus *Alpheus* that were taken by the United States research ships participating in the International Indian Ocean Expedition in 1963 to 1965. We have to this date examined material from these collections, revealing 7 genera and 70 species; the specimens of these known species will be reported upon in a later paper.

***Alpheus canaliculatus* sp. nov. (fig. 1)**

Holotype: 18 mm female from IIOE station number 114, trawl number 216, 20°05'N 115°11'E, taken with Agassiz trawl at 137 fathoms on sandy-muddy bottom, 22 August 1964. Only specimen known.

Description. — Rostrum 3 times as long as broad at base, tip reaching to middle of first antennular article. Rostral carina rounded, extending only slightly posterior to middle of eyes. Orbital hoods slightly inflated; anterior margins armed with narrow acute teeth reaching 0.7 length of rostrum, tips directed slightly medially. Second antennular article 3 times as long as wide, first antennular article (whose complete length is visible in this specimen) almost as long as second; third article 0.4 as long as second. Stylocerite acute and reaching to end of first antennular article. Scaphocerite with outer margins concave; squamous portion narrow, reaching to middle of third antennular article; outer spine heavy, reaching a little past end of antennular peduncle. Carpocerite reaching almost length of third article past that article. Outer spine of basicerite prominent, almost as long as stylocerite.

Large chela 2.6 times as long as broad with fingers occupying the distal quarter. Upper border with shallow longitudinal groove that begins near articulation of dactylus slightly towards the inner side of the condylean crest, which as it continues proximally gradually narrows into a thin deep groove that disappears just distal to the carpal articulation. Outer face with longitudinal groove starting at dactylar articulation and disappearing at mid-palm. Near the lower margin is another short, shallow, longitudinal groove apparently formed by the twisting outwards of fixed finger. Inner face smooth, beset with setae on lower margin.

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<sup>1)</sup> Contribution Number 304 Hawaii Institute of Marine Biology.

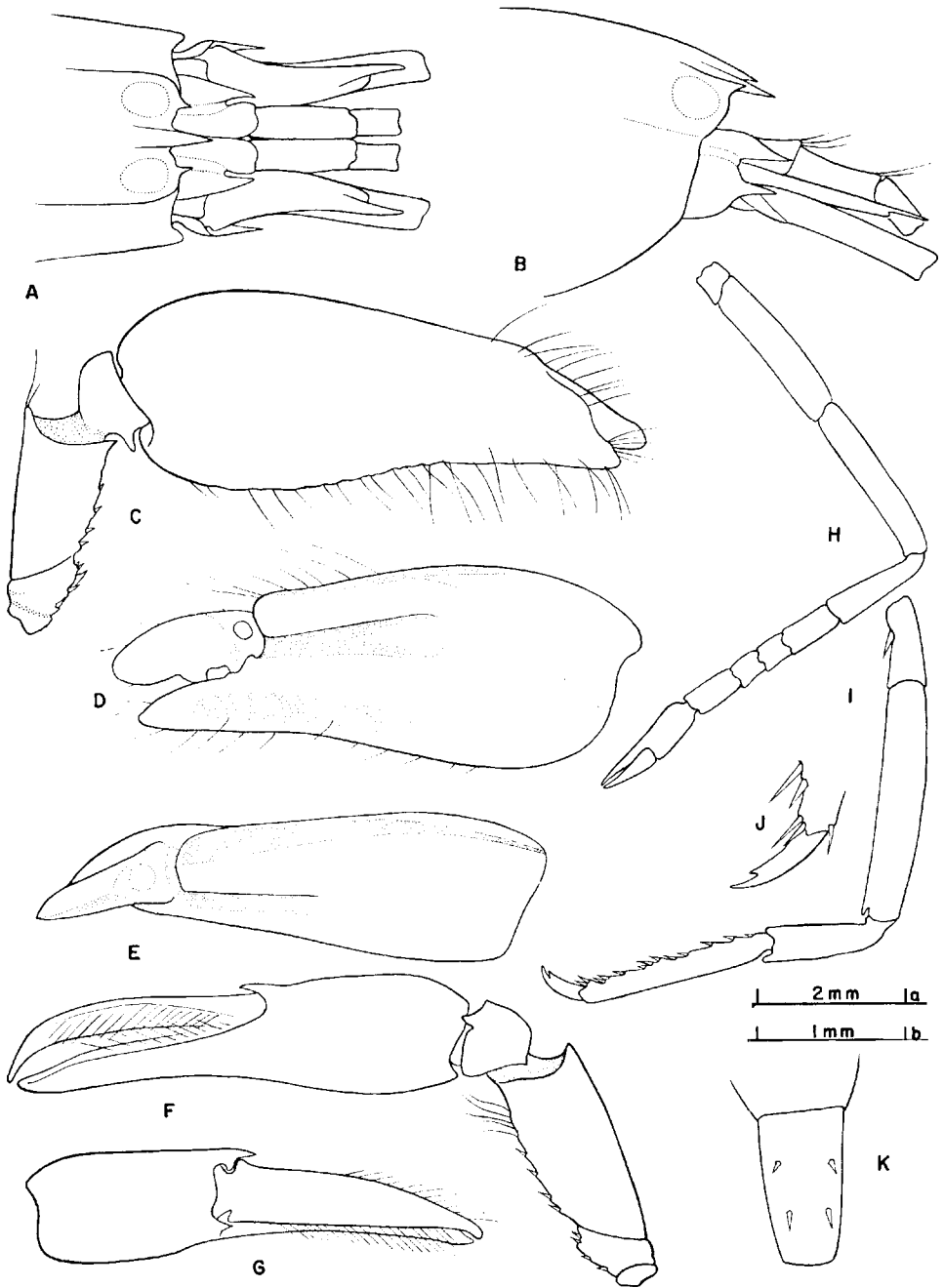


Fig. 1. *Alpheus canaliculatus* sp. nov. A, B, Anterior region dorsal and lateral aspects; C, large cheliped; D, large chela, outer face; E, large chela, upper surface; F, small cheliped, inner face; G, small cheliped, upper surface; H, second leg; I, third leg; J, dactylus of third leg; K, telson.

Dactylus articulated at slight angle to axis of palm. Merus 1.9 times as long as broad; inferio-internal margin bearing 4 stout movable spines and acute distal tooth; superio-distal margin extending as rounded projection. Inferio-internal margin of ischium also bearing 5 stout movable spinules, and outer margin carrying a heavy acute tooth.

Small chela sub-balaeniceps, 3.8 times as long as broad; fingers a little longer than palm. Articulation of dactylus flanked on each side by a strong acute tooth. Fingers crossing when closed. Merus a little over 2 times as long as wide with armature similar to that of large cheliped.

Second legs with ratio of carpal articles: 10 : 8 : 3 : 3 : 4.

Third legs with ischium 0.3 as long as merus, carrying a strong movable spine; merus 5.4 times as long as wide, inferior margin distally armed with small acute tooth. Carpus 0.4 as long as merus, inferio-distal margin inermous, upper margin produced into rounded tooth; propodus 0.8 as long as merus, bearing 14 irregularly spaced movable spinules on inferior border; dactylus bi-unguiculate, 0.2 as long as propodus with lower unguis slightly curved, 0.2 as long as upper unguis.

Telson as usual for this genus, 2.5 times as long as posterior margin is wide; anterior margin 1.5 times longer than posterior margin. Posterior margin very slightly rounded.

Discussion. — The shape of the chela places this species in the *macrochirus* group. Within this group it is most closely related to *Alpheus facetus* De Man and *Alpheus blachei* Crosnier & Forest, both of which bear a moderate rostral carina and have orbital teeth as projections of orbital margins and that slant slightly inward. It may be separated from both of these by the presence of a tooth on the merus of the third leg, and its biunguiculate dactylus. The longitudinal groove on the upper surface of *A. facetus* disappears into the inner face of the palm before the termination of the condylean crest instead of continuing proximally to the end of the palm as in this species. *A. blachei* bears no longitudinal groove on the superior margin of the large chela. It is also related to *A. pomatoceros* Banner & Banner and *A. splendidus* De Man, but in both of these the orbital teeth arise above the margin on the curved surface of the orbital hoods.

The name of the new species refers to the "canal" or the thin deep groove that appears on the upper surface of the large chela just distal to the carpal articulation.

#### ***Alpheus pustulosus* sp. nov. (fig. 2)**

Holotype: 10 mm male from IIOE station No. 31, Agassiz trawl 363, 21°N 114°E, 30 to 40 fms., mud and sand bottom. Paratypes: 3 males 10-17 mm from same location.

Description. — Rostrum short, acute, reaching to middle of first antennular article. First antennular article slightly shorter than second and third article half as long as second. Second article 2.2 times as long as broad. Scaphocerite with lateral spine as long as antennular peduncle, squamous portion a little shorter.

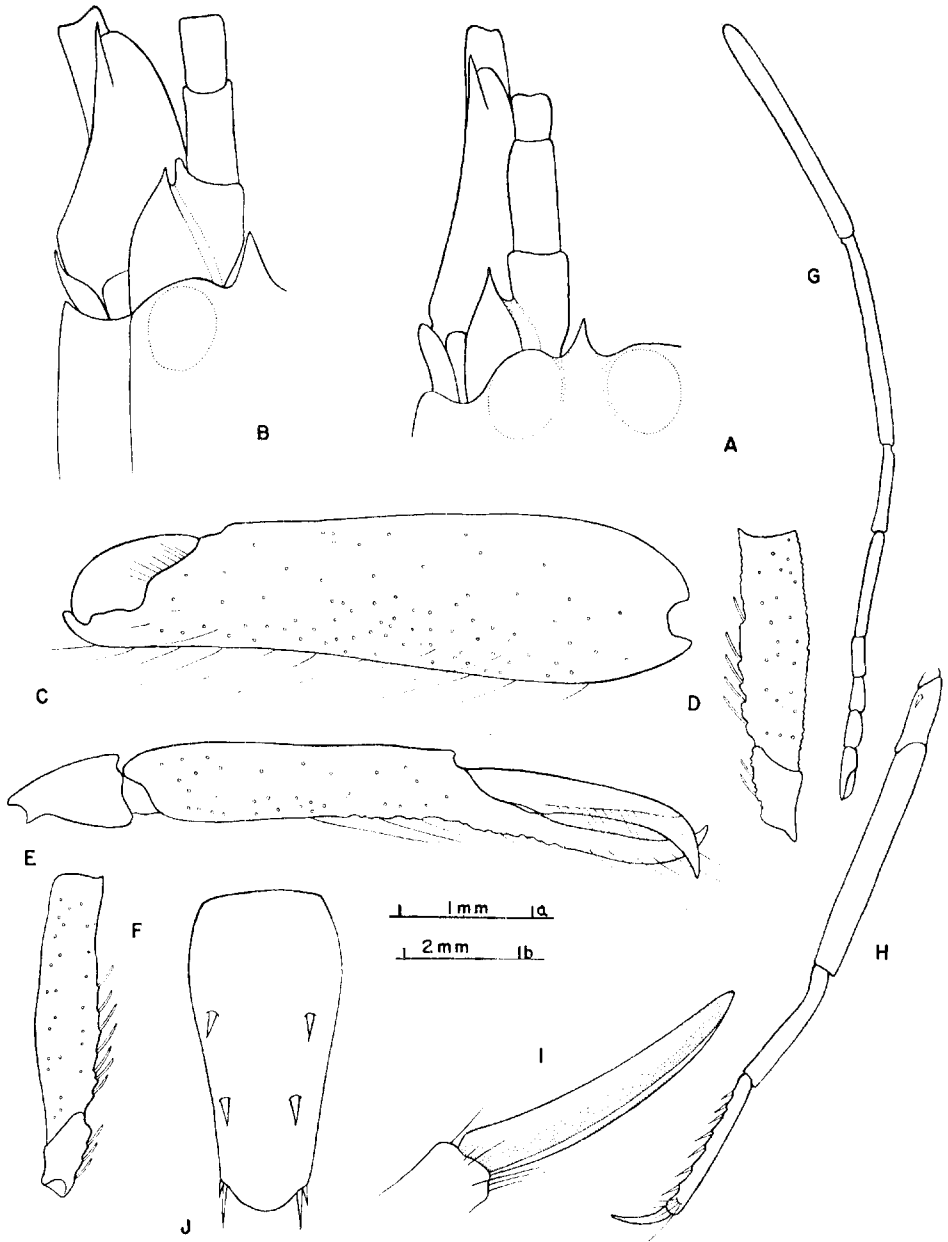


Fig. 2. *Alpheus pustulosus* sp. nov. A, anterior region, type specimen; B, anterior region 14 mm male paratype; C, large chela, inner surface; D, merus of large chela; E, small chela, inner surface; F, merus of small chela; G, second leg; H, third leg; I, dactylus of third leg; J, telson.

Carpocerite 4 times as long as broad, reaching at least half the length of third antennular article past that article. Basicerite with slender, acute lateral spine.

Large chela 4 times as long as broad with fingers occupying distal quarter, compressed, almost sub-rectangular in section with the flattened lower margin demarked from inner and outer face by almost sharp angles; upper surface rounded. Entire surface lightly punctate (small rounded knobs) with larger and more dense punctae near lower margin; lower margin with many fine hairs, upper with few. Merus 3.5 times as long as broad, punctate especially on inferior margin. Inferio-internal margin bearing 4-7 bluntly acicular spines and small, acute distal tooth. Small chela of male balaeniceps (female chela unknown) 7.8 times as long as broad, surface lightly punctate. Lower margin bearing many fine setae, upper margin only a few. Fingers a little shorter than palm. Fingers gape slightly except at point near articulation where both fingers bear a short rounded protuberance. Fingers crossing at tips. Merus similar to that for large cheliped with more acicular spines; ischium also bearing similar spines on inner side.

Second leg with ratio of carpal articles 10 : 12 : 4 : 4 : 4.

Third leg with merus 8 times as long as broad, inermous; carpus 0.5 as long as merus, unarmed; propodus 0.6 as long as merus, bearing on its inner margin 7-8 movable spinules; dactylus subspatulate, 0.3 as long as propodus.

Telson 2.8 times as long as anterior margin is broad. Anterior margin 1.3 times wider than posterior. Posterior margin broadly arcuate.

Discussion. — This species has been placed in the *brevirostris* group and within that group it is most closely related to *A. macrosceles* Alcock & Anderson. It is one of the bottom dwelling alpheidids from the *brevirostris* group that bear the broadened dactylus on the thoracic legs. These species include *A. rapacida* De Man, *A. rapax* Fabricius, *A. lepidus* De Man, *A. acutocarinatus* De Man, *A. macrosceles*, and *A. cythereus* Banner & Banner. From all the above except *A. macrosceles* it can be separated by the long acicular spines on the inferior margin of the meri of the large and small chelipeds, and the more heavy punctations on the large and small chelipeds. More specifically it may be separated from *A. rapacida* by the more slender small chela; from *A. rapax* and *A. cythereus* by the absence of transverse groove on the palm of the large chela; from *A. lepidus* by the differences in the ratio of the first two articles of the second leg; and from *A. acutocarinatus* by the lack of a mid-dorsal denticle on the carapace. This species can be most easily separated from *A. macrosceles* by the lack of strong tooth on the superior margin of the meri of the large and small chelipeds. Other distinguishing characters are given in the table below:

	<i>A. macrosceles</i>	<i>A. pustulosus</i>
Small chela --- ratio l/b	10	6.2-7.8
Large chela · · ratio l/b	6.5	3.4-4.5
Second antennular article ratio l/b	4	2.0-2.5
Carpus of second leg, ratio of 1st two articles	10:4	10:12



*A. macroseles* was dredged in the Bay of Bengal at 145-250 fathoms, a much deeper habitat than this species (Alcock & Anderson, 1894).

The name of this new species refers to the small "pustules" that appear on the large and small chelipeds.

***Alpheus spatulatus* sp. nov. (fig. 3)**

Holotype: 45 mm female from HIOE Station number 76, cruise 3/65, trawl number 317, 19°17'N 112°81'E, taken with a Granton trawl at 52 fathoms on muddy sand bottom, 19 February 1965. Paratypes: 28 mm female from Station number 63, cruise 3/65 trawl number 312, 20°15'N 11°53'E, taken with a Granton trawl at 40 fathoms on sandy muddy bottom; 38 mm female from HIOE station number 18, Cruise 371, 21°04'N 114°30'E, taken with an Agassiz trawl at 46 fathoms on mud, coral and sand bottom, 25 July 1965.

Description. — Rostrum reaching the first quarter of second antennular article, 2.2 times as long as broad at the base with broadly rounded carina. The rostrum, from tip to well behind orbital hoods where the rostral ridge begins to merge with curvature of carapace, is white and opaque, as if with deposits of carbonate salts. Orbital hoods slightly inflated, separated from rounded carina by moderately deep, narrow grooves. Frontal border of orbital hoods convex.

Second antennular article 3 times as long as broad. Visible part of first article almost as long as second; third antennular article a third as long as second. Stylocerite with acute tip, reaching to end of first antennular article. Scaphocerite with outer spine reaching past end of antennular article; squamous portion of moderate development. Carpocerite thick, 2.8 times as long as broad and reaching just past end of antennular peduncle. Outer spine of basicerite acute, small.

Large chela laterally compressed, three times as long as broad, superior margin cut by deep transverse grooves proximal to dactylus. Proximal edge of groove overhanging floor of groove; groove continued on both faces as elongate triangular depressed areas. The triangular depressed area on outer face reaching to proximal quarter of palm and on inner face apex reaching only to mid-palm. Dactylus occupying 0.3 length of entire chela, heavy, with distal margins strongly curved. Merus 3.2 times as long as broad, superior margin slightly concave, inferio-internal margin projecting distally as a small acute tooth.

Small chela slender, 5.8 times as long as broad, fingers only a little longer than palm, tips crossing. Lower margin of palm without emargination, upper margin with slight longitudinal groove proximal to dactylus. Merus slender, 4 times as long as broad, inner margins bearing a few setae.

Second leg with ratio of carpal articles 10 : 5 : 2 : 2 : 3.

Third leg with merus 7 times as long as broad, inermous; ischium 0.2 as long as merus with small movable spine on inner margin; carpus 0.4 as long as merus; propodus 0.7 as long as merus, inner margin bearing small movable spinules, one pair of movable spinules on distal end; dactylus spatulate, 0.3 as long as propodus.

Telson slender, 4.3 times as long as broad at the posterior margin; anterior margin 1.3 times wider than posterior margin.

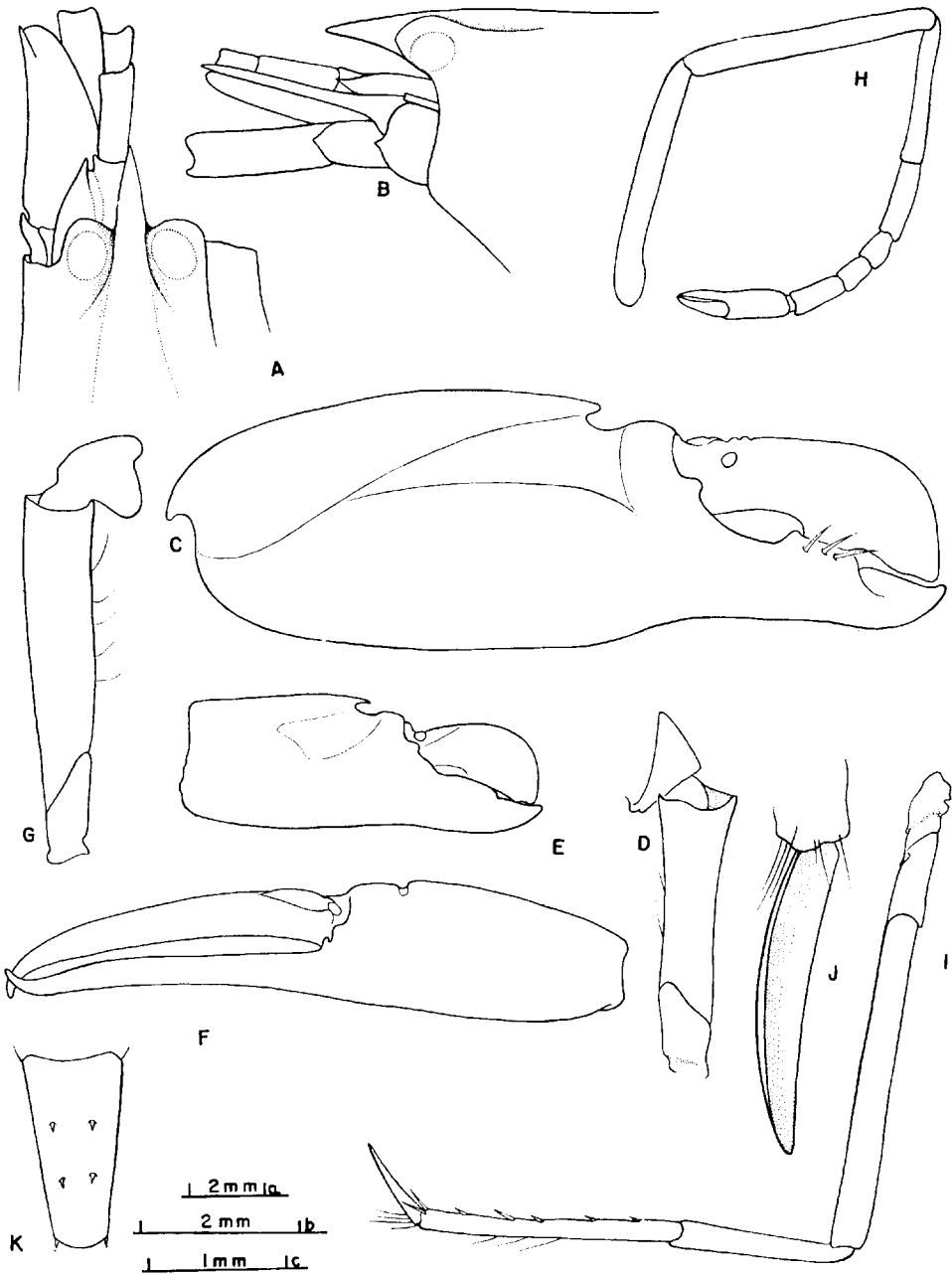


Fig. 3. *Alpheus spatulatus* sp. nov. A, B, anterior region dorsal and lateral aspects; C, large chela outer face; D, the same, inner face; E, large chela from Station 63; F, small cheliped; G, merus of small cheliped, inner side; H, second leg; I, third leg; J, dactylus third leg; K, telson.

Discussion. — The spatulate expansion of the dactyli of the third legs is reminiscent of the borrowing species of the *brevirostris* group, but the shape of the chela plainly puts it in the *edwardsi* group. Within the *edwardsi* group the only species with spatulate dactyli are: *A. malabaricus malabaricus* Fabricius, *A. malabaricus leptopus* De Man, *A. malabaricus dolichognathus* Ortmann, *A. malabaricus songkla* Banner & Banner, *A. malabaricus mackayi* Banner, and *A. euphrosyne* De Man. This species differs from all in the possession of a heavy and long rostrum and the long tooth overhanging the groove on the upper margin of the chela. In the female from station 63 this tooth is acute (see fig. 3E).

These three specimens were taken in a bottom trawl from 40-52 fathoms in the South China Sea south and west of Hong Kong. The name refers to the spatulate condition of the dactyli of the thoracic legs.

#### RÉSUMÉ

Description de trois nouvelles espèces d'*Alpheus* provenant du matériel recueilli par l'Expédition Internationale dans l'Océan Indien: *A. canaliculatus* (de 20°05'N 115°11'E, 137 brasses), *A. pus-tulosus* (de 21°N 114°E, 30-40 brasses) et *A. spatulatus* (de 19°17'N 112°81'E, 52 brasses).

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