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ON TWO NEW GENERA AND FIVE NEW SPECIES OF XANTHOID
CRABS FROM THE COLLECTION OF HIS MAJESTY THE EMPEROR OF
JAPAN MADE IN SAGAMI BAY

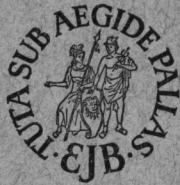
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EJM

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ON TWO NEW GENERA AND FIVE NEW SPECIES OF XANTHOID
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This is the third of a series of papers dealing with the crabs collected by His Majesty The Emperor of Japan in Sagami Bay, the first and second being published respectively in vols. 3 and 4 of this journal. This paper is concerned with five new species referable to two previously known and two new genera of the family Xanthidae, viz.

Paratergatis longimanus gen. et sp. nov.

Medaenus serratus sp. nov.

M. planifrons sp. nov.

Micropanope obtusidens sp. nov.

Neoactumnus convexus gen. et sp. nov.

The type specimens of these new crabs were collected by His Majesty himself during his biological research in Sagami Bay, and will be deposited in the Biological Museum at the Imperial Palace.

Paratergatis gen. nov.

The carapace is broadly semi-elliptical, and its dorsal surface is flat from side to side, almost smooth and sloping fore and aft; the regions are ill-defined. The frontal margin is almost straight, the median emargination distinct but shallow and the lateral angles not lobulate at all. The upper orbital margin is entirely continuous with the lateral frontal angle, i.e. no preorbital tooth or hiatus may be found.

The antero-lateral borders extend obliquely backwards, are thin and cristate, marked with two vestigial fissures; the lateral angles are rounded. The postero-lateral borders are moderately concave.

The antennal flagellum arises directly from the antennal hiatus towards the orbit, and does not stand out close to the preorbital hiatus, as in other related genera. The efferent branchial ridges are confined to the posterior part of the palate; they are subparallel with each other and rather rectangular against the anterior ridge of the buccal frame.

The chelipeds are very slender, the merus long and rather narrow, the carpus

very small, and the propodus also slender and distally broadened, much longer than the dactylus. The ambulatory legs are very thin and slender. The abdomen of both sexes has the terminal segment longer than the penultimate.

The new genus seems to be intermediate between *Atergatis* de Haan and *Liagore* de Haan. In *Atergatis*, however, the carapace is convex in both directions, and the frontal margin is sinuous and the lateral angles markedly lobulate; there is a sinus between the lateral frontal lobule and the preorbital margin, whence the antennal flagellum arises. The antero-lateral borders are markedly convex and cristate. The chelipeds and ambulatory legs are very robust, each segment being markedly broader than long. The efferent branchial ridges are oblique and parallel to the lateral ridges of the buccal orifice; the penultimate segment of the abdomen is distinctly longer than the terminal segment.

In *Liagore* the carapace is also convex in both directions but the antero-lateral borders are entire and not cristate. The front-orbital margins are just like those of the new genus, but in *Liagore* there is a short and shallow sinus between the lateral frontal angle and the supra-orbital margin. The chelipeds are robust and heavy; the ambulatory legs are very slender as in the new genus, but the merus is not cristate along the anterior margin. The ratio of the lengths of the terminal and penultimate segments of the abdomen is the same as for the new genus.

Type species: *Paratergatis longimanus* sp. nov.

***Paratergatis longimanus* sp. nov. (fig. 1)**

- 1 ♂ (holotype), west of Jyogashima, 60-85 m, collected by His Majesty.
 2 ♂♂, 2 ♀♀ (one of which is designated as allotype), off Mimase, Tosa Bay, 120 m, collected by K. Sakai.
 1 ♂, 1 ♀, trawled off Mikawa, Atchi Prefecture.

The carapace is very broad and semi-elliptical; the dorsal surface is smooth and only faintly areolated, flat from side to side or rather upturned towards the lateral angles, declivous forwards in the anterior half and backwards in the posterior half. The front is less than one third the breadth of the carapace, its anterior margin is not sinuous and medially notched, and each of its lateral angles is rounded and continuous with the upper orbital margin, which is entire; the lower orbital margin is also entire. The basal antennal segment just touches the ventral prolongation from the front, its flagellum arises freely from the antennal hiatus towards the orbit, not standing close to the preorbital hiatus as usual in xanthoid crabs.

The antero-lateral borders extend obliquely outward and backward, are not very convex, and their margin is cristate, with two vestigial closed fissures and their lateral angle is rounded, not sharp or toothed. The postero-lateral borders are markedly concave.

The efferent branchial ridges are rather obscure, restricted to the posterior half of the palate; they are parallel with each other and rather rectangular against the anterior ridge of the buccal frame.

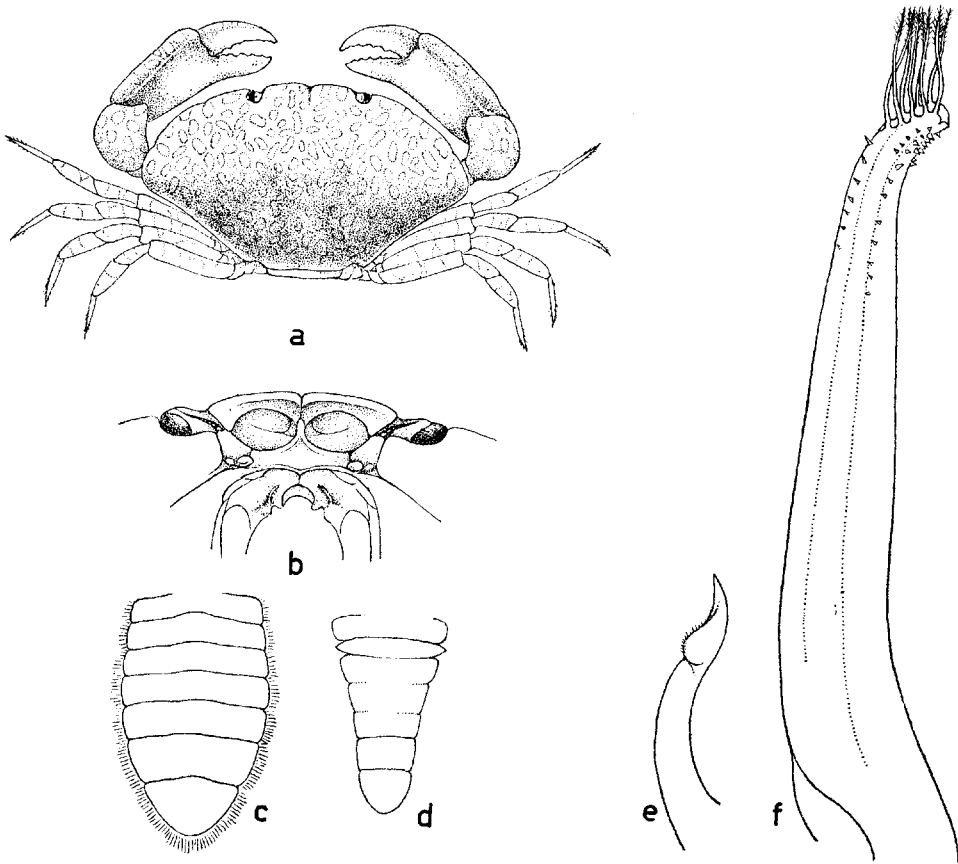


Fig. 1. *Paratergatis longimanus* sp. nov. a, male holotype in dorsal view; b, anterior portion of carapace viewed from ventral side; c, female abdomen; d, male abdomen; e, second pleopod of male; f, first pleopod of male. a, $\times 2.5$; b, $\times 4.4$; c, d, $\times 3.5$; e, f, $\times 23$.

The chelipeds are very slender, the merus is markedly longer than broad and the carpus small, while the propodus is also strongly compressed and distally broadened and its upper inner ridge is obscurely cristate; the dactylus is distinctly shorter than the propodus. The ambulatory legs are very slender, the merus of each has the anterior margin only slightly cristate, while the posterior margin is bicristate throughout its whole length; the carpus, propodus and dactylus are very thin, the latter being furnished with a few longish hairs.

An unusual feature is that in both sexes the second abdominal segment is not narrower than the first and the third, and the terminal segment is longer than the penultimate one. The first and second pleopods of the male are figured in fig. 1 f, e, the latter is not typically tubular in the distal portion, being furnished with an obtuse process near the tip.

Measurements. Male holotype, length of carapace 12 mm, width of same 20 mm.

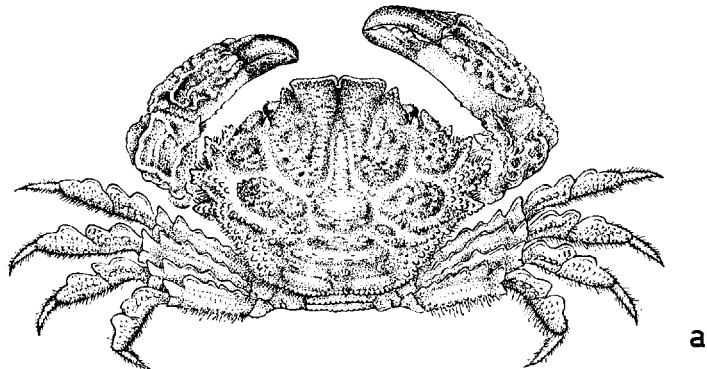
Medaeus serratus sp. nov. (figs. 2 a, 3 a, b)

2 ♂♂, 3 ♀♀ (one male and female of which are designated as holotype and allotype respectively), Kannonzuka-dashi, 85 m, collected by His Majesty.

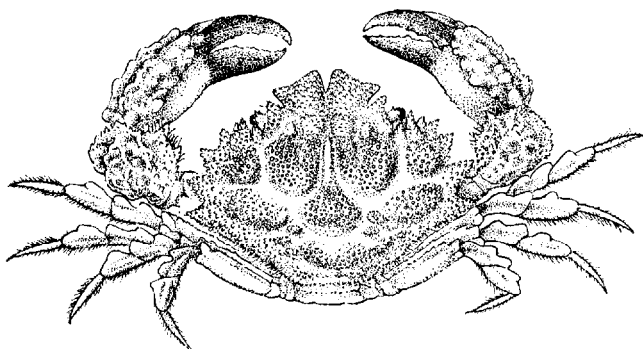
1 ♂, 1 ♀, west of Jyogashima, 65 m, collected by His Majesty.

1 ♂, Sakai-Hama, Kii, collected by Mr. M. Ozaki.

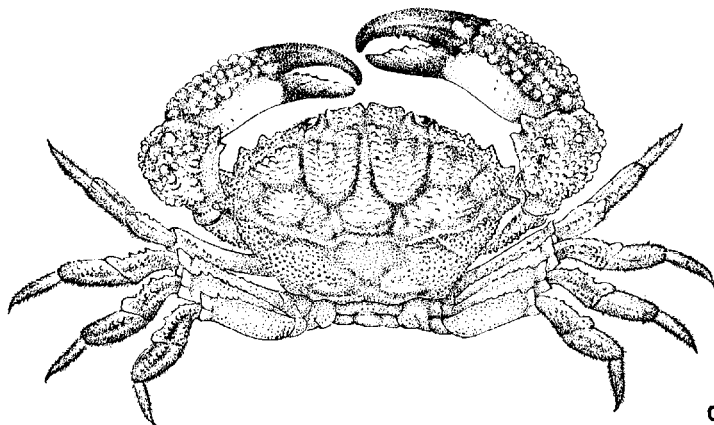
2 ♂♂, 2 ♀♀, off Mimase, Tosa Bay, 60-80 m, collected by K. Sakai.



a



b



c

Fig. 2. a, *Medaeus serratus* sp. nov., male holotype; b, *Medaeus planifrons* sp. nov., male holotype; c, *Micropanope obtusidens* sp. nov., male holotype. a, $\times 2.4$; b, $\times 4$; c, $\times 1.5$.

The carapace is subhexagonal and the dorsal surface is strikingly areolated, each areola is covered with granules and depressed facets — the former being tiny and continuous, forming transverse or vermiculate series, and the latter appearing rather eroded. The front is subtruncate and double-edged, the median sinus U-shaped, with its bottom closed. The preorbital tooth is prominent, deeply separated from the frontal edge by a deep notch; there are two well-cut orbital fissures on the upper orbital margin. The outer orbital tooth is very thick and obtuse, covered with granules; the two suborbital teeth are prominent.

The antero-lateral borders are armed with four strong teeth, which are triangular in shape and dorsally carinate. Of these four teeth, the three posterior ones are on the level of the branchial region, while the anterior one is on the subhepatic area located on the ridge leading to the antero-external angle of the buccal frame. No distinct tooth on the true antero-lateral border behind the outer orbital tooth besides a few tubercles.

The chelipeds are massive and slightly asymmetrical; the merus is rather slender and prismatic, its upper border is armed with four teeth; the carpus is massive and its inner angle armed with a strong tooth, below which another small one may be found, and the upper and outer surfaces are granulated and eroded; the propodus is rugose and also eroded, and its upper inner border is armed with three or four granulated teeth. The black colour of the fingers does not extend onto the propodus.

The ambulatory legs are compressed, the merus, carpus and propodus elegantly crested along the anterior border; the crest of the merus is cut into four or five teeth, and that of the carpus into two lobes, while that of the propodus is marked with a large proximal one.

The male abdomen consists of seven distinct segments as in the female. The first and second pleopods of the male are represented in fig. 3 a, b; the former has its tip flat and spatulated.

Measurements. — Male holotype, length of carapace 11 mm, width of same 15 mm.

Medaeus planifrons sp. nov. (figs. 2 b, 3 c, d)

3 ♂♂, 2 ♀♀ (one male and female of which are designated as holotype and allotype respectively), South Amadaiba, off Hayama, 85 m, collected by His Majesty.

Compared with the preceding species, the carapace of this species is narrower and the dorsal surface clearly areolated and granulated. The protogastric areolae are divided into two lobules in the anterior half, the hepatic and branchial areolae are well delimited but never subdivided; the granules found on the anterior portion of such areolae are somewhat large and thick.

The front is unusually prominent and is divided by a deep median V-shaped sinus into two obliquely truncated lobes. The inner anterior angle of each lobe is rounded, the posterior triangular one is separated by a deep sinus from the preorbital tooth. There are two fissures in the upper orbital margin and the external

orbital tooth is prominent and acuminate. The two inferior orbital teeth are rather large and are visible in dorsal aspect beyond the eye.

Of the teeth on the antero-lateral borders, the posterior three are large and triangular, located on the level of the branchial surface, while the anterior two are small and subhepatic, situated on the ridge leading to the antero-external angle of the buccal frame. The postero-lateral borders are rather concave; the inner surface of these borders is covered with raised granules interspersed with plumed hairs.

The chelipeds are massive and long; the merus is rather thin, the carpus is massive and marked with small shallow facets enclosed by series of tiny granules and its inner angle bears a rather prominent tooth, followed by a few small accessory ones; the propodus is also massive and granulated, dorsally sulcate and its thin inner edge is armed with about four teeth; the dactylus is dorsally keeled, its prehensile edge is armed with about four teeth; the tips of the fingers are sharply pointed, not hollowed.

The ambulatory legs are very thin and compressed, and the anterior border of the merus, carpus and propodus is carinate; the carina of the merus is very indistinctly dentate with a deep subterminal sinus; that of the carpus has two broad lobes, while that of the propodus has a large proximal lobe. The posterior edge of these segments is finely granulated and plumose. The dactyli are very slender and as long as the propodus, and their tips are acuminate and curved.

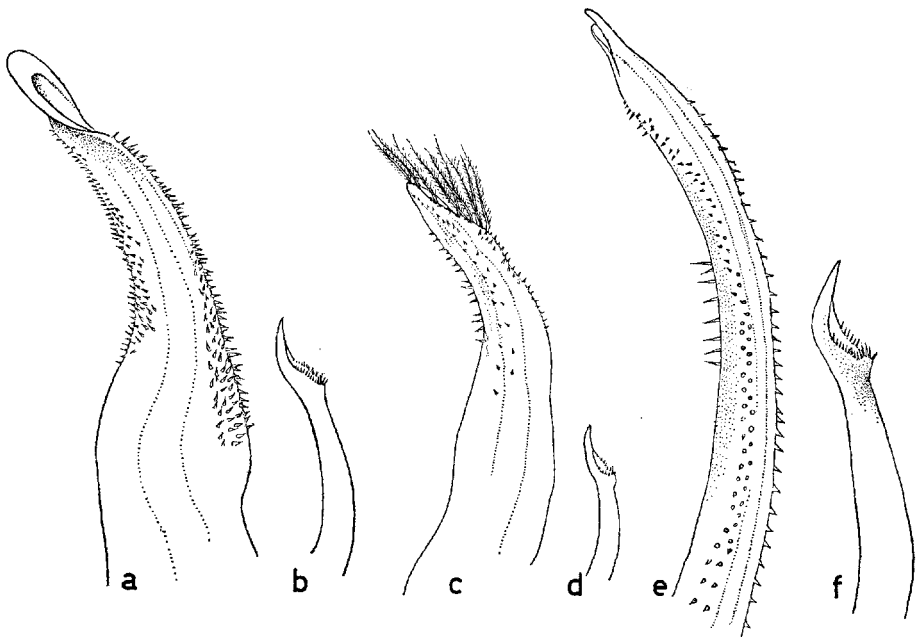


Fig. 3. a, b, *Medaeus serratus* sp. nov.; c, d, *Medaeus planifrons* sp. nov.; e, f, *Micropanope obtusidens* sp. nov. a, c, e, first pleopod of male; b, d, f, second pleopod of male. a-f, $\times 28$.

The anterior and posterior pleopods of the male are figured in fig. 3 c, d, the oblique apex of pleopod 1 bears several longish feathered setae.

Measurements. — Male holotype, length of carapace 8.5 mm, width of same 10 mm.

***Micropanope obtusidens* sp. nov. (figs. 2c, 3e, f)**

1 ♂ holotype, west of Jyogashima, 80 m, collected by His Majesty.

1 ♀, allotype, Amadaiba, 65 m, collected by His Majesty.

3 ♂♂, 2 ♀♀, off Mimase, Tosa Bay, 80-100 m, collected by K. Sakai.

3 ♂♂, 2 ♀♀, Kii Nagashima, 20-30 m, collected by S. Tanaka and T. Yamamoto of Nagashima High School.

The carapace is transversely suboval, with the dorsal surface sloping down in the anterior one third and rather flat in the posterior two thirds. The areolae are well defined and covered with granules, of which those on the gastric, hepatic and branchial areolae are mostly arranged in transverse or oblique rows of various lengths; the remaining areolae are dotted with tiny granules. The protogastric areolae are divided into two areolets, the inner one of which is continuous with the well defined epigastric areolet, while the outer one is again obscurely subdivided; the hepatic areolae are also anteriorly subdivided.

The front is half as wide as the carapace, divided into two lobes by a rather deep median sinus; each lobe is double-edged, the upper edge being granulate and the lower one sinuate with its inner angle markedly lobulate and its outer angle also lobulate and deeply separated from the preorbital angle. The upper orbital border has two fissures, the outer orbital tooth is low and rather obscure, and the lower orbital border is armed with two suborbital teeth, which can be seen from the dorsal side.

The antero-lateral borders are continuous with the antero-external angle of the buccal frame and armed with four prominent teeth, of which the posterior three are on the level of the branchial area, projecting sideways, backwards and upwards at the tip, while the anterior one is rather small and located on the subhepatic area. Behind the outer orbital tooth, the true antero-lateral border is represented by a granulated ridge leading to the second antero-lateral tooth. The postero-lateral borders are just as long as the antero-lateral, the surface inside of these borders is covered with studded granules. The posterior border is straight, slightly broader than the fronto-orbital width.

The chelipeds are asymmetrical, the right one being the heavier. The merus is rather thin; the carpus is massive and covered with tubercles of various sizes, its upper surface sulcate and its inner angle armed with an upper and a lower process; the propodus is also tuberculate and sulcate and there are four or five large tubercles on the upper inner edge. The black colour of the fingers does not extend onto the propodus.

The ambulatory legs are covered with tiny granules; the anterior border of the merus is armed with a series of tubercles of various sizes, the carpus is medially sulcate, and its anterior border marked with three or four tubercles, the terminal one of which is the largest. The propodus is not armed.

The anterior male pleopod is bifid at the tip as shown in fig. 3e.

Relationship. — Among the Indo-Pacific species of *Micropanope*, *M. cumatodes* (MacGilchrist), *M. alcocki* (Rathbun) and *M. tuberculidens* (Rathbun) are most closely related to the present species.

In *M. cumatodes* (originally *Xanthodes cumatodes* MacGilchrist, 1905), the carapace is narrower, the areolae of the carapace are more simple, and the frontal margin is straight and not sinuate as in the new species. The carpus of the ambulatory legs of *M. cumatodes* has no distal lobule on the anterior margin.

In *M. alcocki* (originally *Xanthias alcocki* Rathbun, 1902), the areolae of the carapace are ill-defined and the granules found on each areola are tiny and indistinct, and moreover, the merus and carpus of the ambulatory legs are not markedly tuberculate on the anterior border.

In *M. tuberculidens* (originally *Xanthias tuberculidens* Rathbun, 1911), the last of the antero-lateral teeth is directed sideways, not upwards and backwards as in the new species. The anterior pleopod of the male is also quite different from that of the new species (cf. Barnard, 1950: 243, fig. 44 e, f).

Measurements. — Male holotype, length of carapace 15 mm, width of same 22 mm; the largest male from Tosa Bay, length of carapace 26 mm, width of same 39 mm.

Neoactumnus gen. nov.

The new genus is founded upon a curious tiny crab obtained by His Majesty off the coast of Hayama, Sagami Bay, together with one female from Manazuru, Sagami Bay, and one male from the Kii Peninsula. It is obviously related to *Actumnus* or *Pilumnus* in the subfamily Pilumninae (cf. Balss, 1933: 10); however, the peculiarity in the frontal and upper orbital margins seems to justify the setting up of a new genus for this crab.

The carapace is nearly as long as wide, and the upper surface is smooth and markedly convex, not areolated. The wide front has no median emargination and no lateral lobule. In *Actumnus* or *Pilumnus* the frontal margin is medially emarginated or notched and the well-marked preorbital tooth or lobe is more or less distinctly separated from the lateral frontal lobule by a notch. The orbits and eyes are large.

The antero-lateral borders are slightly concave. The chelipeds are slightly asymmetrical, and the carpus and propodus are massive, the latter furnished with longitudinal rows of tiny granules on the upper and outer surfaces. The ambulatory legs are slender, and the merus, carpus and propodus are not much depressed, the dactylus is sharply hooked at the tip.

The basal antennal segment does not touch the ventral prolongation of the front; it is thin, loosely filling the antennal hiatus. The abdomen of both sexes consists of seven distinct segments.

Type species: *Neoactumnus convexus* sp. nov.

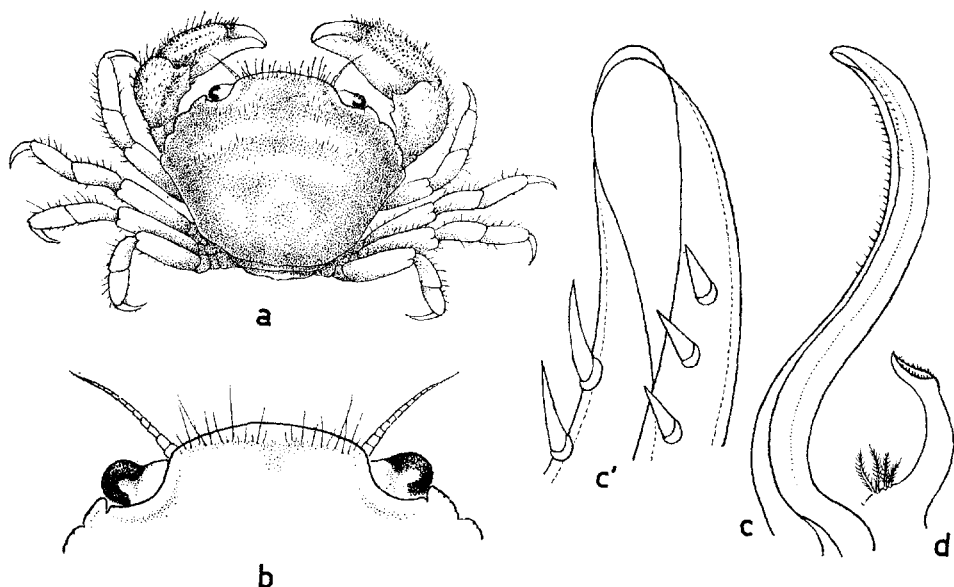


Fig. 4. *Neoactumnus convexus* sp. nov. a, male holotype in dorsal view; b, front and orbital areas in dorsal view; c, first pleopod of male; c', apex of first pleopod of male; d, second pleopod of male. a, $\times 2.4$; b, $\times 4.3$; c, d, $\times 38$; c', $\times 230$.

Neoactumnus convexus sp. nov. (fig. 4)

- 1 ♂, holotype, west of Kameki reef near Hayama, 40-42 m, collected by His Majesty.
 1 ♀, allotype, east of Manazuru Peninsula, Sagami Bay, 25-30 m, collected by K. Muraoka of the Manazuru Marine Laboratory.
 1 ♂, Sakaihama, Kii Province, shallow water, collected by Mr. M. Ozaki.

The carapace is nearly as long as broad, and the dorsal surface is strikingly convex in the middle, smooth and without trace of areolation, covered with a very fine tomentum. The front is low-triangular in shape, its anterior margin entire, without any trace of a median emargination or lateral lobulation. Just above the frontal margin is a transverse row of sparse hairs, interrupted medially (fig. 6 b). The orbits are circular, the upper orbital border is entirely continuous with the frontal margin, i.e. without preorbital tooth or hiatus; there is an indistinct notch near the outer orbital tooth, otherwise the orbital margins are entire.

The antero-lateral borders are cut into four lobes including the outer orbital one; these lobes are low-triangular in shape, each separated by a very shallow sinus. The postero-lateral borders are almost as long as the antero-lateral, slightly concave, but the concavity does not accommodate the last pair of ambulatory legs as in the related genus *Actumnus*. The basal segment of the antenna is short and sub-cylindrical, not firmly fixed, and not touching the prolongation of the front; the flagellum is thin and rather long.

The chelipeds are slightly asymmetrical, the right chela being the heavier; the

carpus is massive, its inner corner is armed with a tooth and an accessory lower one; the propodus is swollen and its upper inner border obtusely ridged, its upper surface is sparingly covered with tiny granules and the outer surface furnished with five longitudinal rows of tiny granules. The fingers do not gape very much, are not hollowed at the tip, and have no black colour; their prehensile edges are armed with four or five teeth.

The first and second pleopods of the male are as figured (fig. 4 c, d).

Relationship. — This new species seems to be most closely related to *Actumnus simplex* Rathbun (1911) from Amirante. In *A. simplex*, however, there is a median frontal emargination and two notches in the upper orbital margin; the outer surface of the propodus of the chelipeds is described as granulated. In *Neoactumnus convexus* there is no median frontal emargination, only one notch in the upper orbital margin and there are five rows of minute granules on the outer surface of the chela.

Measurements. — Male holotype, length of the carapace 4.0 mm, width of same 4.5 mm; female allotype, length of the carapace 6.0 mm, width of same 7.5 mm.

ZUSAMMENFASSUNG

Zwei neue Gattungen und 5 neue Arten der Familie Xanthidae (Decapoda) werden beschrieben. Sie sind alle vom Japanischen Kaiser selbst gesammelt worden, und zwar in der Sagami Bucht.

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