

II. — ILYOPLAX DELSMANI N. SP., A NEW SPECIES OF OCYPODIDAE.

BY DR. J. G. DE MAN — IERSEKE. (WITH 12 TEXTFIGURES).

This new species that I have the pleasure to dedicate to Dr. H. C. Delsman, Director of the „Laboratorium voor het Onderzoek der Zee” at Batavia, finds its nearest ally in *Ilyoplax lingulata* (Rathb.), probably also in *Il. tenella* Stimps. and *Il. formosensis* Rathb. *Ilyoplax lingulata*, described by Miss Rathbun in: Proc. Biol. Soc. Washington, XXII, 108, 1909 and, with figures, in: Kgl. Danske Vidensk. Selsk. Skrifter, 7. Raekke, Naturvidensk. og Mathem. Afd. V. 4, København, 1910, p. 323, under the name of *Cleistostoma lingulatum* from an immature female found in the Gulf of Siam, was afterwards redescribed by Dr. Stanley Kemp in 1919 in his valuable Monograph of the Scopimerinae, this author having obtained two adult males and an ovigerous female from the Mergui Archipelago (Stanley Kemp, Notes on Crustacea Decapoda in the Indian Museum. XII. Scopimerinae. Calcutta, July 1919, p. 344 [Records of the Indian Museum, Vol. XVI, Part V, N° 22]). It is on the authority of Miss Rathbun in: Proc. Biol. Soc. of Washington, Vol. 34, p. 156, 1921, that this new species is referred to the genus *Ilyoplax* Stimps., because in this paper the genus *Tympanomerus* Rathb. is considered by herself as identical with Stimpson's genus.

Ilyoplax Delsmani is a species of somewhat larger size than *Il. lingulata*, the largest of the 44 male specimens, that are lying before me, presenting a

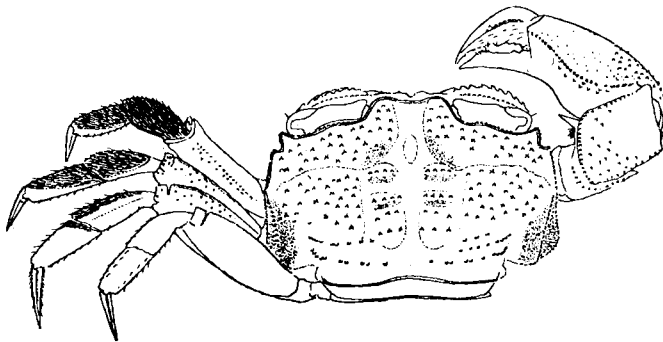


Fig. 1.

greatest width of carapace of 8,8 mm., while this number was only 5,4 mm. in the larger one of the two males of *Il. lingulata*: female specimens were not sent. As regards the general aspect of carapace and legs, both

species agree with one another that is also proved by the measurements. The carapace, the greatest width of which is almost one and a half as great as the length, is distinctly convex longitudinally, so that the front is obliquely deflexed like also the posterior region of the carapace which is situated between the posterior margin of the latter and the transverse crest; transversely the carapace is but slightly arcuate. The anterior margin of the front measures nearly one-third the distance between the outer orbital angles or about one-fourth the greatest width of the carapace; both in a dorsal view and when the carapace is looked at from before, the front appears widely and rather deeply emarginate in the middle; outer angles of the front obtuse. A rather broad, smooth and deep median furrow extends from the smooth anterior border of the front backwards until to the small cardiac region; at the limit of the anterior third of the carapace at either side from this furrow a transverse groove, as deep but a little less broad, extends to the lateral border of the carapace, the two transverse grooves forming with the median sulcus a distinct cross.

Orbits moderately oblique like in *Il. lingulata*; the slightly divergent, smooth, lateral margins of the front pass with a regular curve into the distinctly granulated, upper margin of the orbits. The granulated upper surface of the front at either side of the groove does not present above the edge the oval cavities, characteristic of *Il. lingulata*. The smooth, transverse ridge, which, like in other species of this genus, runs posteriorly parallel with the posterior margin of the carapace, projects in the middle a little more forward than laterally, when looked at from behind; the region, lying between this ridge or crest and the posterior margin, is smooth, though finely punctate. Smooth, though shallow grooves separate the gastric region from the cardiac and branchial regions; the gastric region is subdivided by two transverse grooves, on each side of the median furrow, into three parts, of which the two posterior together are one and a half as long as the anterior; the branchial region, finally, is usually divided by a transverse groove into a larger anterior and a smaller posterior portion. The upper surface of the carapacial regions is covered with *isolated*, rounded granules, near or on each of which a few very short, feathered setae are implanted; the smaller anterior lobule of the gastric region bears, however, a transverse row of 4 or 5 granules and on the outer part of the posterior branchial lobe one observes two curved rows, situated behind one another, each consisting of 6 or 7 granules, and often on this lobe two granules are placed abreast.

External orbital angle subacute, separated by a deep notch from the likewise subacute, epibranchial tooth, which therefore is quite distinct in a dorsal view, both teeth are tipped with a granule; when the cara-

pace is looked at from above, this notch appears semicircular (Fig. 4). The angle on the lateral margin of the carapace in front of its middle

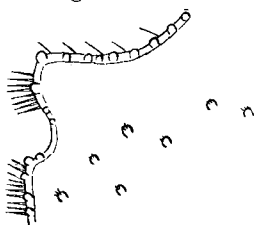


Fig. 4.

point is little prominent, projecting much less outward than in Miss Rathbun's figure 7, so that the greatest width is but little larger than the distance between the outer orbital angles. The antero-lateral margin of the carapace between that angle and the epibranchial tooth bears closely-set sessile granules; from the angle two rows of granules extend backward to near the bases of the ambulatory legs (Fig. 1). The intervening triangular facet, which is probably smooth, though bearing a few short setae, and about twice as long as broad at its base, is distinctly visible in a dorsal view, while in *Il. lingulata* it is invisible. Miss Rathbun considers the superior of the two rows of granules as the true postero-lateral margin of the carapace, for she says "Below the postero-lateral margin there is a subtriangular and nearly vertical facet", but in *Il. Delsmani* the *inferior* row of granules should be considered as the true postero-lateral margin. In a lateral view of the carapace indeed the antero-lateral margin with its close-set sessile granules distinctly proves to continue into the inferior row of which the granules are similar, but the granules of the superior row are larger, higher, *distinctly isolated*, *distant from one another*, and less numerous, only about 20 in number; at its anterior extremity this row does not unite with the angle at the end of the antero-lateral margin, it runs slightly curved to near the bases of the penultimate and last pair of legs, while on the lateral deflexed part of the branchial region and quite posteriorly it curves inward to unite with the lateral extremity of the transverse ridge which runs parallel with the posterior margin of the carapace. The true, cristiform, postero-lateral margin that makes an obtuse angle of about 135° with the antero-lateral one, runs straight backward to the base of the antepenultimate legs and projects considerably beyond the lower surface of the carapace, being much prominent. Immediately below the extra-orbital and below the epibranchial tooth one observes a short fringe of 10 or 12 feathered setae, the former runs vertically, the other, below the epibranchial tooth, obliquely downward.

Looked at from before (Fig. 2) the granulated infraorbital margin runs like a S, its internal extremity ends in a small triangular lobule, while the lateral extremity is separated by a triangular notch from the extraorbital tooth; along its internal half the lower wall of the orbit is thickened and provided with two parallel approximate rows of granules,

of which the anterior is a little shorter than the posterior, reaching medially not so far, while the 9 or 10 granules of the anterior row are a little smaller than the 14 or 15 of the posterior; between the anterior row and the lower border of the orbit one observes an elongate, triangular, smooth facet. Immediately behind the thickened wall of the orbit and separated from it by a deep groove, this species bears a *transverse row of eight or nine teeth* (Fig. 2 and 3)

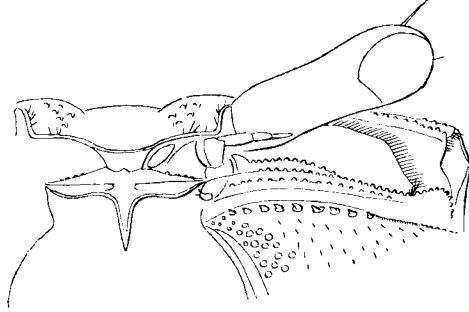


Fig. 2.

at equal distances from one another which are as broad as the teeth themselves; the subacute tips of these teeth are directed towards the epistome, the teeth are *much larger* than the granules of the infraorbital margin and of the thickened wall. A little beyond the middle of the infraorbital margin this row of teeth continues into a finely denticulated and setiferous ridge that reaches

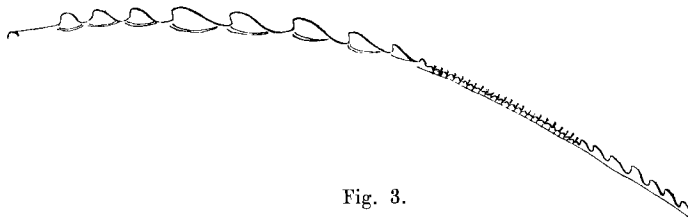


Fig. 3.

as far laterally as the infraorbital margin i. e. to the level of the epibranchial tooth and the lateral extremity of this ridge is united with the extraorbital angle by an angular line; on the internal half of this ridge the acute denticles are microscopical, on the outer half they are larger, though measuring only $\frac{1}{3}$ or $\frac{1}{4}$ the size of the nine large teeth. From the antero-lateral angle of the buccal frame a short groove proceeds obliquely backwards on the pterygostomial region, reaching almost to the end of the row of nine teeth. The pterygostomial regions are covered with short setae, which perhaps are implanted on small tubercles or granules.

Of *Il. pusilla* (de Haan), *Stapletoni* (de Man) and *orientalis* (de Man) specimens are lying before me. In the male of *Il. pusilla* an anterior

secondary row of small granules is observed between the eyepeduncle and the finely granulated infraorbital margin, with which it is united a little beyond the middle, and the intervening facet is quite smooth; a posterior secondary row of granules does not exist and the posterior row of large teeth, continued into a finely denticulated ridge, is likewise wanting. Different from *Ilyoplax Delsmani* the postero-lateral margin of the carapace is formed by the superior row of granules like in *Il. lingulata*.

Il. Stapletoni agrees with *Il. pusilla*: there is a narrow anterior facet but the anterior secondary row of granules does not really unite with the infraorbital margin; the secondary row indeed does gradually approach it as far as the lateral extremity of the infraorbital margin, though not uniting with it. The two posterior rows are wanting. In *Il. Stapletoni* the postero-lateral margins of the carapace are ill-defined, but the short fringes on the lower side of the extra orbital and of the epibranchial tooth are as conspicuous as in *Il. Delsmani*.

In *Il. orientalis*, finally, a species described by me in 1888 under the name of *Dioxippe orientalis*, the infraorbital margin that laterally ends in a large projecting lobe, is perfectly smooth, like also the anterior boundary of the triangular facet between the infraorbital margin and the eyepeduncle; the two posterior rows are wanting like in the two preceding species.

Pits of the antennulae oblique and separated by a comparatively broad septum. Medial tooth on the epistome prominent, triangular, subacute, twice as long as broad at base.

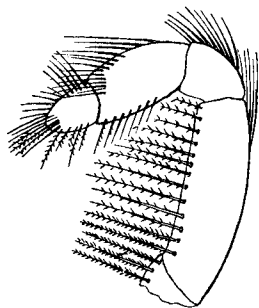


Fig. 6.

The second maxillipeds (Fig. 6) resemble those of *Il. gangetica* (S. Kemp, l. c., p. 308, text-figure 1b). Measured along their outer margin the joints present in the specimen N^o 6 of the Table of Measurements the following dimensions. Merus 1,1 mm. long, 0,33 mm. broad in the middle, $3\frac{1}{3}$ -times as long as broad; length of the carpus two-fifths that of the merus, one and a half as long as broad distally; propodus one and a half

as long as the carpus, its greatest width a little behind the middle just half the length; terminal joint half as long as the propodus and nearly one and a half as long as its posterior margin is broad, narrowing towards the rounded tip. Exopod nearly 2 mm. long, projecting beyond the endopod, narrowing towards the distal extremity; flagellum tapering, half as long as the stalk of the exopod and with long feathered setae at the tip.

Of the outer maxillipeds (Fig. 7) of the same specimen the ischium, 1 mm. long, appears one and a half as broad anteriorly as it is long; the angles of its anterior margin project beyond it, the antero-internal angle twice as far as the antero-external. Merus 1,4 mm. long, almost one and a half as long as the ischium and posteriorly as broad as it is long; it is much narrowed anteriorly, the anterior margin measuring $\frac{2}{3}$ of the base; the merus has a deep sulcus close to and parallel with the inner margin, another proceeds from the antero-external angle and soon bifurcates into a shorter one that reaches about to the middle of the joint and a longer one that runs not far from the outer margin until near the base; the convex outer surface is somewhat granular and uneven. Exopod with long flagellum and entirely concealed. The buccal cavern, which is completely closed by the outer foot-jaws, is one and a half as broad posteriorly as long.

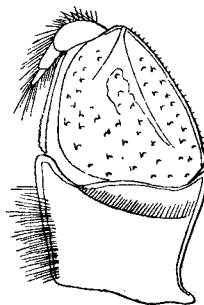


Fig. 7.

The abdomen of the male (Fig. 5) much resembles that of *Il. Stapletoni* (J. G. de Man, in: Records of the Indian Museum, Vol. II, Part III, N^o 24, Calcutta 1908, Pl. XVIII, fig. 1d). The measurements of the segments of the abdomen in the specimens N^o 4 and N^o 7 of the Table on page 26, in which the carapace presents respectively a greatest width of 8,2 mm. and 7,4 mm., are the following (the numbers in parentheses belonging to N^o 7). The first or basal segment is 0,2 mm. (0,16 mm.) long, 2,65 mm. (2,45 mm.) broad, laterally its length gradually increases, while in the second segment, which is 0,36 mm. (0,32 mm.) long and 2,42 mm. (2,25 mm.) broad, on the contrary it decreases; third segment 0,82 mm. (0,78 mm.) long, distinctly shorter than the four following, 2,36 mm. (2,4 mm.) broad, the greatest width near the base, posterior margin slightly concave, anterior straight except near the extremities; fourth segment 1,1 mm. (1,06 mm.) long, nearly as long as the three following, with curved lateral margins, the posterior margin that articulates with the fifth segment, 1,3 mm. (1,14 mm.) broad, the anterior 2 mm. (1,98 mm.); fifth segment 1,12 mm. (1,1 mm.) long, as long as the terminal segment, hexagonal, 1,54 mm. (1,5 mm.) broad just behind the middle, postero-lateral margins straight, antero-lateral slightly concave near the fourth segment, so that the anterior margin that articulates with the latter and that is 1,24 mm. (1,06

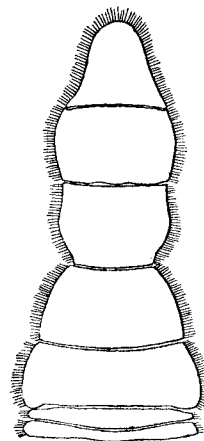


Fig. 5.

mm.) broad, appears distinctly less broad than the posterior of which the width is 1,32 mm. (1,36 mm.); sixth segment 1 mm. (1,05 mm.) long, about as long as the terminal one, 1,72 mm. (1,64 mm.) broad in the middle, one and a half as broad as long with convex lateral margins; terminal segment 1,24 mm. (1,1 mm.) long, with rounded tip, the slightly concave anterior margin 1,44 mm. (1,36 mm.) broad, $\frac{1}{4}$ broader than the segment is long.

Chelipeds of the male equal, rarely in the adult unequal; when equal, they are short, about twice as long as the distance between the external orbital angles. Outer surface of the merus (Fig. 10) one and a half as long as broad, covered with sharp spiniform granules; upper border finely granular, the slightly arched infero-external border beset along its whole

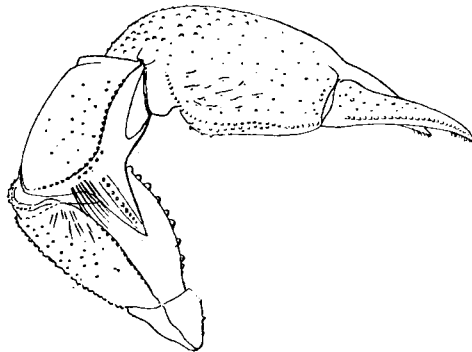


Fig. 10.

length with 18 or 19 acute, rather large, conical tubercles, that are 0,13 mm. high, the distal margin, articulating with the carpus, beset with small acute granules, inner margin granular. Carpus short, its rhomboidal upper surface, which is nearly one and a half as long as broad, smooth, somewhat excavate or grooved close to and parallel with the distal margin, slightly wrinkled on

the proximal third, margins finely granular; the smooth inner surface is armed with a long, acute, strongly compressed spine or tooth, placed perpendicularly to the upper surface; the arcuate, upper margin of this tooth is longitudinally grooved, the lower margin nearly straight and a tuft of setae runs from the posterior surface of the tooth, at its base, parallel with the proximal border of the upper surface of the carpus. In those adult specimens, in which they are equal, the chelae are a little longer than the carapace, while they are almost half as high at the finger-cleft as long (Fig. 8). The immobile finger is at its base a little deflexed downward, but the distal half is slightly turned upward, so that the tip is situated in the same horizontal line as the proximal part of the lower border of the palm; measured horizontally, the length of this finger from the articulation to the tip proves to be $\frac{2}{3}$ the length of the palm. The upper border of the palm that regularly curves to the carpal articulation, bears on the inner side a row of subacute granules, of which 3 or 4 terminal ones are visible when the chela

is looked at from the outer side; on the posterior half of the upper surface I observed in one of the three not yet full-grown, brick-coloured specimens a few short, elevated lines (Fig. 9), in the others, however, not, while the lower part of the outer surface appears granulate from the carpal articulation to the base of the immobile finger. The rounded lower border of the palm bears a granulated

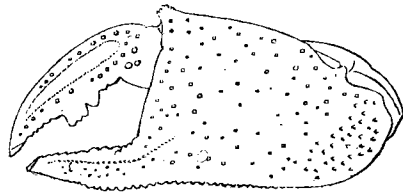


Fig. 8.

line, that begins at some distance from the carpal articulation and that is continued to the tip of the immobile finger; the sharp granules, at first exceedingly small, gradually increase in size, so that on the base of the finger (Fig. 8 and 9) they are much larger, but towards the tip they again decrease in size. The distal border of the outer surface of the palm is slightly oblique, straight, smooth and the lower border of the chela appears a little concave below the finger-cleft. An oblique elevated line, somewhat granular proximally, runs on the outer side of the immobile finger, twice as far distant from the lower border than from the prehensile surface; the outer border of this surface is granular at its base, the granules low and small, and on the surface itself there is a sinuated row of small granules that runs near the outer border from the base to the tip; these granules are near the base of the finger a little larger than the rest, but such large teeth or tubercles as exist in *Il. lingulata*, do in *Il. Delsmani* not occur. The inner surface of the palm is convex with a few small granules in the middle, some occur also near the upper border and inferiorly near the carpal articulation, while the rest is smooth, punctate; also on the inner side of the immobile finger an elevated line,

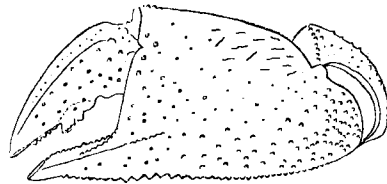


Fig. 9.

somewhat granular proximally, extends from the palm to the tip. The fingers meet only at the tips that are slightly excavate and turned inward, leaving a large hiatus between them that proximally appears almost twice as high as the immobile finger and almost one and a half as high as the dactylus. The compressed dactylus appears a little higher at its base than the immobile finger, the smooth, punctate, outer surface is longitudinally furrowed from near the articulation to the tip, the arcuate upper border appears externally smooth, but carries at the inner side along its whole length a row of about 30 acute granules that

from the base to the tip gradually decrease in size and of which the 8 or 10 distal ones are in adult specimens often inconspicuous. On the smooth, though coarsely punctate, inner surface of the dactylus an elevated line runs from the tip to the middle of the finger; the prehensile edge is armed externally (Fig. 8 and 11) with a large triangular lobe or tooth, nearly twice as long as high, somewhat oblique, that occupies the middle third part of the edge and the free border of which is cut into 5 or 6 teeth, which from the 1st or proximal one to the last become gradually smaller; the form of these teeth is, however, somewhat variable. Between this large tooth and the tip are situated 6 or 7 very small, sharp teeth and near the articulation the dactylus bears a low oblique ridge, indistinctly divided into two obtuse teeth of which the inner projects as a rounded lobe on the inner side of the finger.

In younger specimens (Fig. 9) the dactylus is often comparatively a little higher at its base than in the adult, the hiatus between the two fingers appears then less high.

Sometimes, even in adult individuals, the two chelae are unequal, either the right or the left being the larger; the larger chela of such specimens agrees with the above-given description, but the smaller measures about $\frac{5}{6}$ the length of the other; the fingers are in the smaller chela hardly shorter than the palm and more approximate, so that the hiatus



Fig. 11.

appears then very narrow.

The ambulatory legs that much resemble those of *Il. Stevensi* (Kemp), are of a stout shape, those of the penultimate pair (Fig. 12) are one and a half as long as the distance between the outer orbital angles. Meri broadened, those of the penultimate pair twice as long as broad, those of the last pair less broadened; upper border finely serrulate, lower margin armed with acute granules of unequal size, that are usually larger, especially on the distal half, than those of the upper, except the last pair in which the lower margin appears smooth. The upper surface of the meri is covered with a few acute granules on the upper half and the granules are, near the upper border, partly arranged in short transverse rows; lower surface smooth. As a rule tympana on the meri of the ambulatory legs are wanting in this species: among the 44 specimens (all males) examined only in three not yet full-grown, brick-coloured specimens small oval tympana were observed, as a great exception, on the proximal half of the lower surface, except on those of the last pair of legs. The carpi and the propodi of the two first pairs of ambulatory legs are thickly coated on their outer surface with short woolly hair, in

a lesser degree also those of the penultimate pair; a longitudinal row of small granules runs on the upper surface of the carpi of the penultimate pair. The triangular, acuminate dactyli, which are a little shorter than the propodi, are laterally compressed, longitudinally sulcate in the median

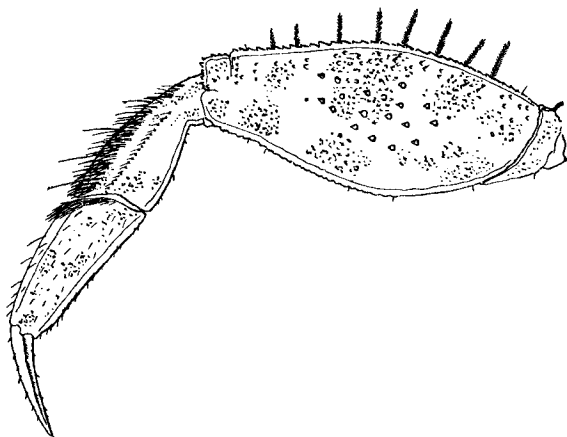


Fig. 12.

line of their upper surface and their margins are fringed with rather long setae.

Excepting the three, in which tympana were observed, all the specimens, preserved in alcohol of 70 °/o, did present the following colouration. The upper surface of the carapace, including the orbits, shows a rather dark slate colour, the granules being paler, like the lower surface; chelipeds and ambulatory legs of a pale gray colour, but looking rather dark on the upper side and on the outer surface of the chelae by very numerous, irregular, small spots of the same dark slate colour, that are often crowded together. On the carpi of the chelipeds these spots are sometimes arranged in reticulating lines, near the distal border of the palm they are less numerous and they disappear almost entirely on the fingers; the meri of the walking legs appear on the upper side sometimes marbled, when the small dark spots are irregularly scattered. The carapace of the three above-mentioned specimens shows on the upper side a light brick-colour, lower side lighter, while the chelipeds and the other legs are more or less ochraceous. It is from these brick-coloured specimens that the figures have been drawn by me, excepting the figures 8 and 12, that were taken from slate-coloured specimens — but, apart from the tympana, the former agree for the rest entirely with all the other specimens, so that they should be considered as an individual

variety: the coincidence of the tympana with the different colour appears nevertheless remarkable.

These small crabs occur, amidst the colonies of *Gelasimus*, in the Bay of Batavia constantly, like the latter, in little holes and use to „call” not by one but by both their chelipeds, moving them continually to and fro. They look, as Dr. Delsman wrote me, in nature like small white crabs, because, when they are calling, the light-coloured lower surface of the carapace and of the legs is turned towards the observer and in consequence of the contrast between the dark muddy soil, on which they live, and the strongly enlightened crabs, for, just like the species of *Gelasimus*, they only leave their holes during sun-shine.

Ilyoplax tenella Stimpson from the river near Canton, China, the type species of this genus, differs from *Il. Delsmani* by the carapace presenting transverse setiferous rows of tubercles („superficies striis transversis sub-tuberculatis setosis ornata”) and by the slender deflexed fingers of the chelipeds; the lateral margin of the carapace is described as „latere parce convexo, linea acuta breviter setosa postice bifurcata marginato”, the quite distinct epibranchial tooth of *Il. Delsmani* is therefore apparently wanting in that species from the river near Canton.

Ilyoplax formosensis Rathb. from Formosa, finally, which was described by Miss Rathbun in 1921 (l. c.), differs by the nearly transverse upper orbital margin, by the carapace being rough with distant clusters of fine granules, the broadly rounded front, the slightly deflexed immovable finger and by the very hairy first and second ambulatory legs, while the carapace is shorter in proportion to its greatest width.

MEASUREMENTS OF EIGHT MALES IN MILLIMETERS.

	1	2	3	4	5	6	7	8
Distance between the outer orbital angles	8,1	7,8	7,6	7,3	7,1	6,8	6,7	5,5
Greatest width of carapace	8,8	8,8	8,5	8,2	7,65	7,6	7,4	6,4
Length of carapace, without epistome	6,4	6,3	6	5,9	5,36	5,2	5	4,5
Width of the anterior border of the front	2,6	2,5	2,5	2,5	2	2	—	1,65
Length of the chelipeds	15	14,5	13,5	15	14	12,75	12,5	9
Length of the penultimate legs . . .	11,5	11	11	11,5	10,5	—	—	8

Nº 5—7 are the brick-coloured specimens.

EXPLANATION OF THE FIGURES.

- Fig. 1. Male of *Ilyoplax Delsmani* n. sp. (N^o 6 of the Table of Measurements), $\times 5$.
Fig. 2. Front, epistome, left orbita etc. of this male, $\times 12\frac{1}{2}$.
Fig. 3. Row of strong teeth continued into the microscopically serrulate ridge behind the wall of the orbit, $\times 25$.
Fig. 4. Left antero-lateral angle of the carapace of this male, $\times 25$.
Fig. 5. Abdomen of the male N^o 7, $\times 10$.
Fig. 6. Second maxilliped of the male N^o 6, $\times 25$.
Fig. 7. Outer maxilliped of this male, $\times 15$.
Fig. 8. Left chela of a slate-coloured male (greatest width of carapace 8,3 mm.), the slate-coloured spots are not drawn, $\times 7\frac{1}{2}$.
Fig. 9. Left chela of the brick-coloured male N^o 5, $\times 7\frac{1}{2}$.
Fig. 10. Cheliped of this male, $\times 7\frac{1}{2}$.
Fig. 11. Prehensile edge of dactylus of this male, $\times 12\frac{1}{2}$.
Fig. 12. Left leg of the penultimate pair of the male N^o 4, in which specimen the teeth or granules on the lower border of the merus are not larger than those of the upper, $\times 10$.
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