

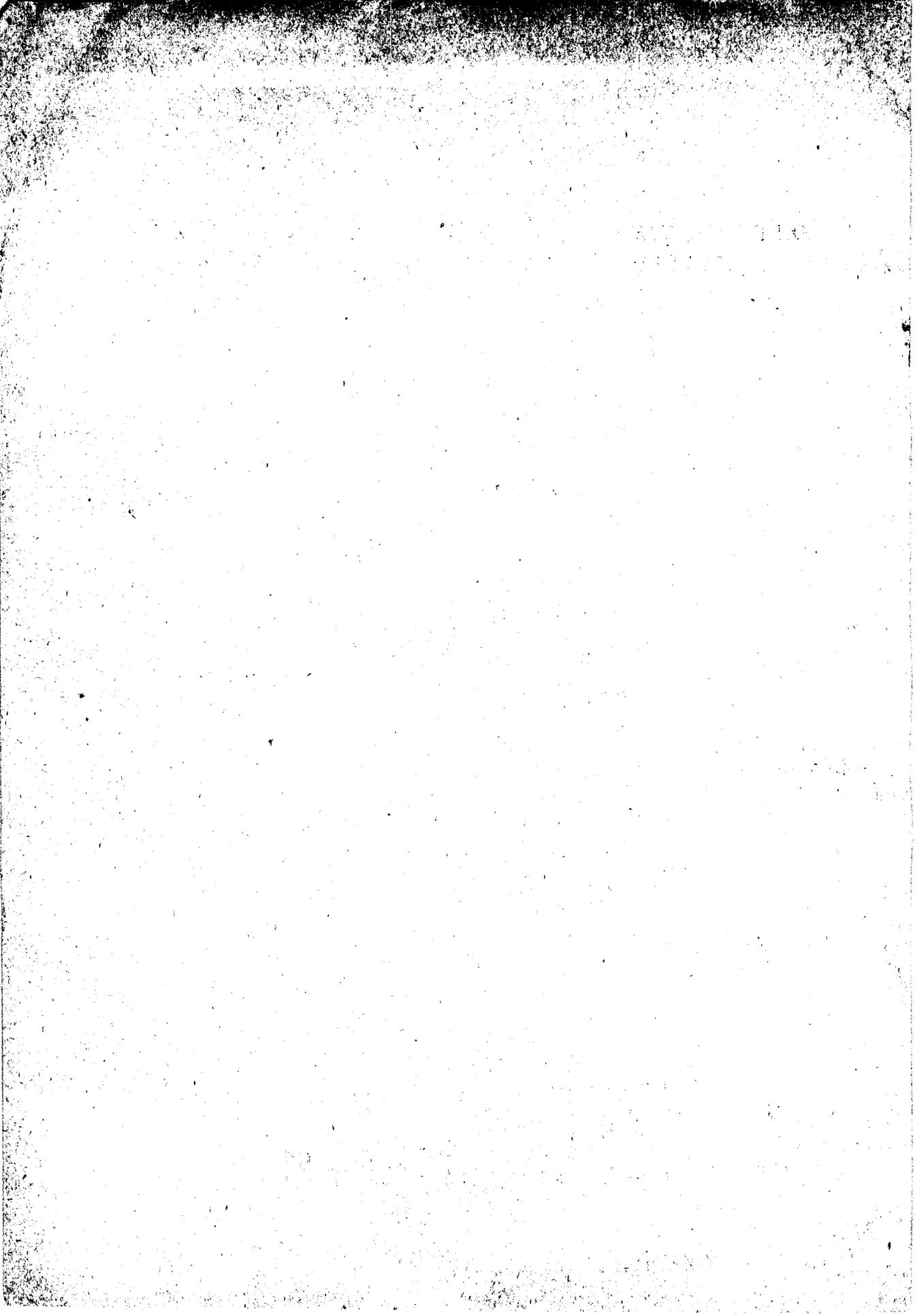
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**ON THREE NEW SPECIES OF CARIDINA (CRUSTACEA
MACRURA) FROM SOUTH-WEST CHINA**

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ON THREE NEW SPECIES OF CARIDINA (CRUSTACEA MACRURA) FROM SOUTH-WEST CHINA

BY C. J. SHEN

With Plates XII-XIII

Recently a number of small shrimps from South-West China were sent to me for determination. One sample, containing one species, was collected from Chungking, by Prof. K. Y. Wu of the National Central University, and another, containing two species, was collected from Kweilin, by Prof. L. Y. Lee of the Kwangsi Provincial Medical College. These three species proved to belong to the genus *Caridina* Milne-Edwards. Of which, ten species have been previously recorded from various places of China by my colleague, the late Mr. S. G. Yü (1938).

The three species described below are rather striking forms as far as the external sexual organs of the male are concerned. The structures of the endopod of the first pleopod and the process masculina of the second pleopod are very characteristic to each species as stated by Yü (1938, p. 275). By basing upon this point and some minor particulars, these three species are found to be very different from those already known, so they should be added as new ones to Yü's list (1938, p. 275).

The genus *Caridina* is not uncommon in south east Asia. In view of the plenty of freshwater units in this country, obviously there are still many species remained unknown. For the furtherance of our knowledge of this genus, it seems very desirable to make intensive collections of this crustacea from various localities in China.

The species of this genus are usually small in size, inhabiting in freshwater ponds or lakes with rich aquatic vegetations. They can be caught by dip nets or scissors nets. Heretofore they seem to have little commercial value, although they sometimes can be found in the market in fresh or dried form. Only the local inhabitants occasionally use them in various ways as a subsidiary food article. It may be eaten fresh, or dried or salted and made into a fermented product, or powdered and mixed with some other food stuffs as those sold at certain places of Yunnan. While in the lower Yangtze Valley, when the supply becomes abundant, the villagers usually collect this sort of crustacea to feed the domestic fowls as a protein food, which may effectively increase the flesh and egg-

production, or it may be converted into some form of fertilizer as they do in the Philippines: (Blanco, 1935).

The species *Caridina denticulata* de Haan, which occurs in Peiping, is often found in association with the species *Palaemonetes sinensis* (Sollaud) in ponds or lakes. The latter appears more abundant than the former. The egg-carrying females of both are usually present from April to June or even a little latter. The young ones can be hatched out in the laboratory and reared up to adolescent stage without much difficulty.

Besides such small shrimps, there are, in China, some other species of freshwater prawns, such as *Macrobrachium* and *Palaemon*, much larger in size, serviceable for table, and of course, with greater commercial value. But the increased demand for such delicious prawns has long been surpassing the available natural productivity, it is chiefly due to over fishing. Therefore, scientific cultivation is increasingly needed to raise the productivity and to meet the requirement of the public.

Doubtlessly the freshwater shrimp fisheries in China has great commercial possibilities and its development deserves serious study. Methods of culture should be introduced and the regulations for fishing should be enforced.

It is a great pleasure to express my thanks to Prof. K. Y. Wu and to Prof. L. Y. Lee, both of my colleagues in zoological science, for sending me the material for identification, and also to Mr. G. J. Blanco, Division of Fisheries, Department of Agriculture and Commerce, Manila, for sending me his valuable papers on the same darling subject for reference.

Caridina palmata, sp. nov.

Plate XII

Material: 5 ♂♂, 2 ♀♀, Sha-ping-pa, Chungking, 1946, Prof. K. Y. Wu, National Central University.

Characters: Body 16-20 mm. in length. The rostrum extends straight forwards and slightly beyond the antennular peduncle in female but not beyond the third segment of the antennular peduncle in male. The rostral formula for the male is $\frac{12-19}{3-4}$, and that for the female is $\frac{12-16}{2-5}$ (Pl. XII, fig. a).

The telson bears 8 spines at the apex and 5-7 pairs of teeth, arranged in two rows, on the dorsal surface. The teeth in these 2 rows are not always equal in number or very symmetrically arranged (Pl. XII, fig. b).

The carpus of the first cheliped is about $\frac{1}{2}$ as long as that of the second and

provided with a distal angle, and thus a curvature is made for the reception of the chela (Pl. XII, figs. c, d).

The merus of each walking leg is armed with a latero-subdistal spine, and followed with 2 smaller ones. Each carpus has a similar structure as that of the merus, excepting the anterior border which is terminated into a distal angle. The propodus of the third walking leg bears 13 spinules along the posterior border, of the fourth and fifth walking legs each bears 5 spinules on the upper posterior border and 12 on the lower posterior border. Dactyli of the third and fourth walking legs are biunguiculate, each is armed with 6 teeth on the posterior border, these teeth are increasing in size distally; of the fifth walking leg is uniuugulate and lined with 58 spinules on the posterior border (Pl. XII, figs. e, f).

The endopod of the first male pleopod is palm-shaped, and is covered with numerous spinules on the anterior surface, where is also marked with a spinulous ridge running straight forward from the outer angle of the base and then curving centrally. A portion of the medial border is also spinulous. The process interna small in size, lying partly behind the inner angle of the base. The process masculina, on the medial side of the endopod of the second male pleopod, is an elongated lobe, bearing many long spines; the process interna is as long as that lobe, usually situated behind it (Pl. XII, figs. h, i).

The outer ramus of the uropoda bears 16 teeth (Pl. XII, fig. j).

Caridina elongata, sp. nov.

Plate XIII, figs. a-e

Material: 5 ♂♂, 4 ♀♀, Kweilin, 20. VII. 1947, Prof. L. Y. Lee, Kwangsi Provincial Medical College, Kweilin, Kwangsi.

Characters: Body 14-15.5 mm. in length. The rostrum extends slightly beyond the antennular peduncle. The rostral formula for the male is $\frac{13-18}{2-6}$ ($\frac{16}{2}, \frac{16}{2}, \frac{12}{3}, \frac{13}{5}, \frac{16}{6}$) and that for the female is $\frac{15-19}{5-6}$ ($\frac{15}{5}, \frac{16}{6}, \frac{19}{8}, \frac{19}{8}$). The infra-orbital tooth is set on a broad base (Pl. XIII, fig. a).

The telson bears 10 terminal spines and 4 pairs of teeth on the dorsal surface (Pl. XIII, fig. b).

Chelipeds and walking legs are more or less similar to those of the preceding species. The dactylus of the fifth walking leg bears a series of 55 spinules along the posterior border.

The endopod of the first male pleopod is also palm-shaped, but it is much elongated and not so broad as that of the preceding species, the anterior surface

has not a spinulous ridge, but a part of the medial border is also spinulous. The process interna is comparatively longer and slenderer. The process masculina in the second male pleopod is closely resembling that of the preceding species (Pl. XIII, figs. c. d).

The outer ramus of the uropoda bears 13 spines (Pl. XIII, fig. e).

Remarks: This species is closely allied to the preceding one, but it differs from the latter by having a different rostral formula, 5 instead of 4 terminal spines at the apex of the telson, the endopod of the first male pleopod different in shape, 13 instead of 16 spines on the outer ramus of the uropoda.

***Caridina hofendopoda*, sp. nov.**

Plate XIII, figs f-l

Material: 3 ♂♂, 2 ♀♀, Kweilin, 20. VII. 1947, Prof. L. Y. Lee, Kwangsi Provincial Medical College, Kweilin, Kwangsi.

Characters: Body 14-16 mm. in length. The rostrum extends much beyond the antennular peduncle. The rostral formula for the male is $\frac{14-20}{4-8}$ ($14/4, 16/8, 20/8$) and that for the female is $\frac{15-16}{6}$ ($15/6, 16/6$) (Pl. XIII, fig. f). The infra-orbital angle is spiny and the pterygostomial angle is very small.

The telson bears 11 terminal spines at the apex and 5 pairs of teeth on the dorsal surface (Pl. XIII, fig. g).

The carpus of the first cheliped has not a curvature at the distal end for the reception of the chela as it is represented in the species *Caridina palmata*.

The carpus of the second cheliped is about 2.5 times as long as that of the first cheliped. The movable finger is elongate, about 1/2 as long as the carpus and slightly more than $1\frac{1}{2}$ times as that of the first cheliped.

Of the first walking leg, the merus bears 3 spines on the upper posterior border, the terminal one is subdistal in position. The carpus has a rounded distal angle, 3 spinules on the anterior border and 4 spinules on the posterior border. The propodus has numerous spinules along the posterior border. The dactylus is bi-unguiculate and armed with 5 spines on the posterior border (Pl. XIII, fig. h). The structure of the second walking leg is similar to that of the first one. Of the third walking leg, the carpus and propodus possess only a few distinguishable spinules, the dactylus is slender, uni-unguiculate, bearing a series of about 50 spinules on the posterior border (Pl. XIII, fig. i).

The endopod of the first male pleopod is hoof-like, the anterior surface, near

the free border, is covered with numerous spinules. The process interna is quite big, projecting medially (Pl. XIII, fig. k).

The process masculina of the second male pleopod is elongate and club-shaped, bearing 12-13 spines along the distal and medial borders, and a longitudinal row of 4-5 spines on the posterior surface, while the process interna is always lying behind it (Pl. XIII, fig. l).

The outer ramus of the uropoda bears 13 spines (Pl. XIII, fig. j).

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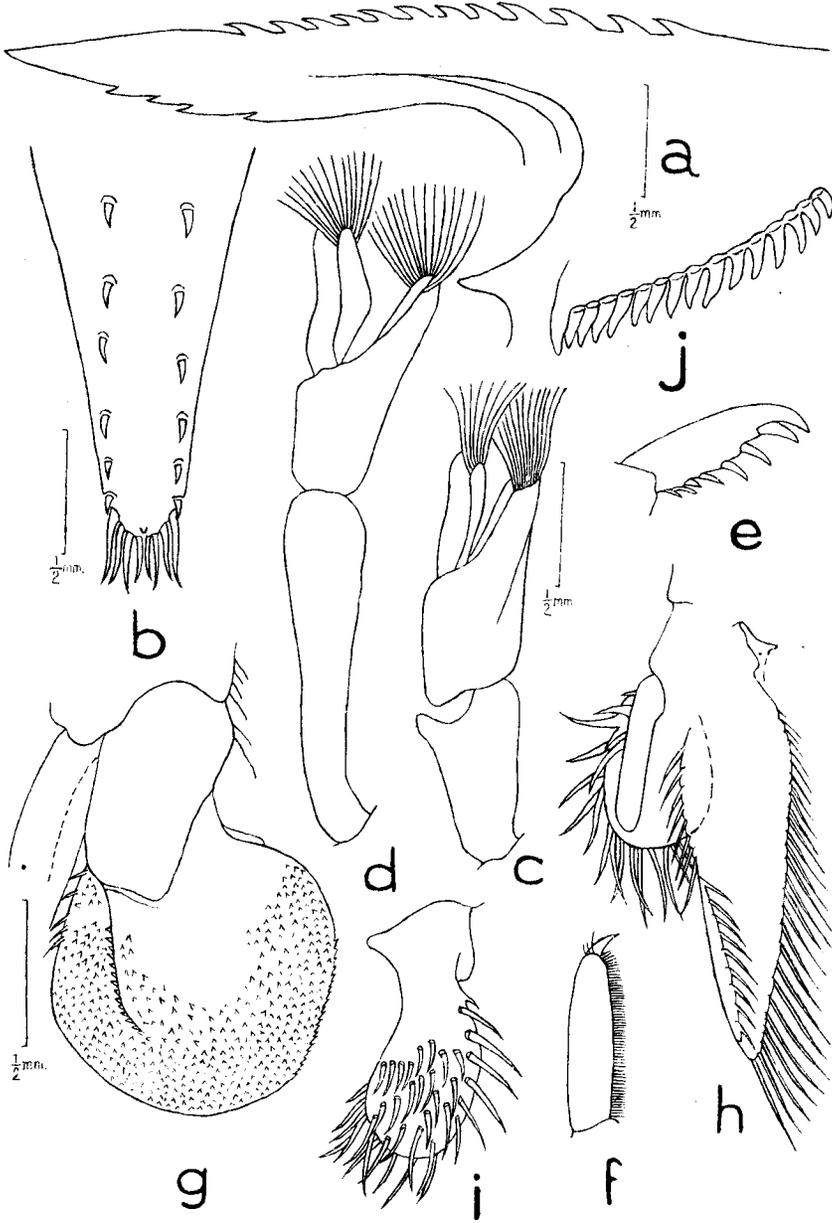
EXPLANATION OF PLATES

PLATE XII

Caridina palmata, sp. nov.

- Fig. a. Rostrum, lateral view.
- Fig. b. Telson, dorsal view.
- Fig. c. Chela and carpus of the first cheplied.
- Fig. d. Chela and carpus of the second cheliped.
- Fig. e. Dactylus of the first walking leg.
- Fig. f. Dactylus of the third walking leg.
- Fig. g. Endopod of the first male pleopod, with process interna, frontal view.
- Fig. h. Endopod of the second male pleopod, with process masculina and process interna, posterior view.
- Fig. i. Process masculina, frontal view.
- Fig. j. Uropodial spines.

(Figs. a, j; b; c, d, e, f; and g, h, i; are under the same scale of magnification represented respectively in each of the groups indicated at here).



SHEN: NEW SPECIES OF CARIDINA

PLATE XIII

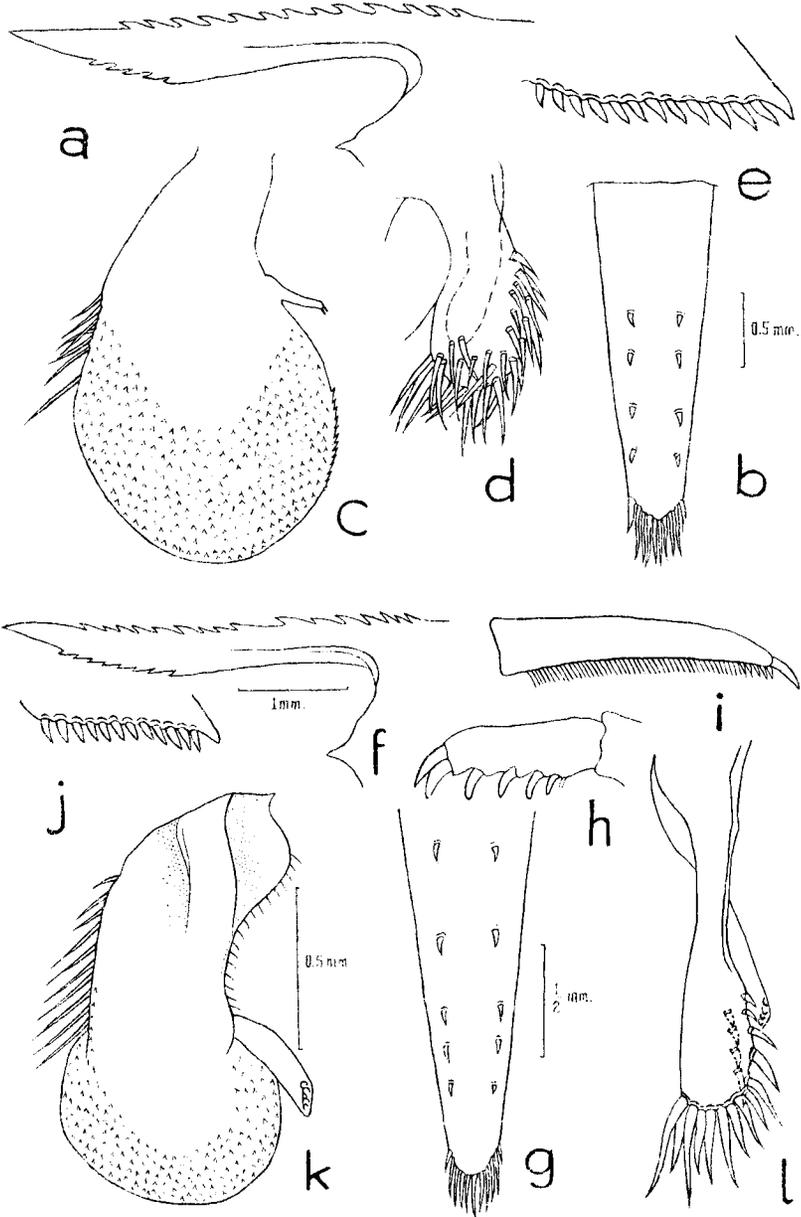
Caridina elongata, sp. nov. (Figs. a-e)

- Fig. a. Rostrum, lateral view.
- Fig. b. Telson, dorsal view.
- Fig. c. Endopod of the first male pleopod, frontal view.
- Fig. d. Process masculina of the second male pleopod, with process interna behind it, frontal view.
- Fig. e. Uropodial spines.

Caridina hofendopoda, sp. nov. (Figs. f-1)

- Fig. f. Rostrum, lateral view.
- Fig. g. Telson, dorsal view.
- Fig. h. Dactylus of the first walking leg.
- Fig. i. Dactylus of the fifth walking leg.
- Fig. j. Uropodial spines.
- Fig. k. Endopod of the first male pleopod, with process interna, frontal view.
- Fig. l. Process masculina of the second male pleopod, with process interna, frontal view.

(Figs. a, b; e, g, i; f; c, d, h, j, k, l; are under the same scale of magnification represented respectively in each of the groups indicated at here).



SHEN: NEW SPECIES OF CARIDINA



中國西南區米蝦之三新種

沈 嘉 瑞

最近吳功賢教授及李落英教授，自重慶及桂林兩地，分別寄來若干米蝦標本，委託代為鑒定其種類。經作者詳為檢查，發見其雄性第一，第二腹肢上之第二性特徵以及其他性質，與已知之種類相比較，顯然不同。故可決定其為新種無疑。

第一種 *Caridina palmata* (重慶產)，第一腹肢之內肢，呈圓掌狀，其內附肢短而粗。第二腹肢之雄性附肢，呈棗球狀，附有許多長刺。(第十二圖版, g, h, i).

第二種 *Caridina elongata* (桂林產)，第一腹肢之內肢，呈長掌狀，其內附肢長而細。第二腹肢之雄性附肢，亦呈棗球狀，惟形狀與前者略異。(第十三圖版, c, d).

第三種 *Caridina hofendopoda* (桂林產)，第一腹肢之內肢呈馬蹄狀，其內附肢強大。第二腹肢之雄性附肢，呈棍棒狀而帶刺。(第十三圖版, k, l).

