Report of the Biological Survey of Mutsu Bay.
10. Brachyura and Crab-shaped Anomura.*

By

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The collection made by the survey during the three years 1925–1927 adds considerably to the knowledge of our Crustacean fauna, not only of that in Mutsu Bay itself, but also of its distribution in our waters. The collection examined contains 36 species referable to 30 genera, and of these species 6 referable to 6 genera belong to Anomura, while the remaining 30 species referable to 24 genera are true crabs or Brachyura. Among these species three are new to science, namely *Brachynotus brevidigitatus*, *Oregonia mutsuensis* and *Halicarcinus septentrionalis*. Of these species the last aroused a great deal of my interest, as all the other species of the genus *Halicarcinus* have hitherto been known from the southern hemisphere only. Another interesting fact is that one specimen in the collection, referable to *Parapinnixa affinis* Holmes, which, so far as I know, has never been collected after it was originally described by the author from Dead Man's Island, California; and moreover the genus *Parapinnixa* seems to have been believed to be confined to America.

Among the species of Mutsu Bay, *Oregonia gracilis* is known from California, Bering Sea, Kurile Isls. and the northern part of Honshû, Japan; and I suppose the species such as *Oedignathus inermis*, *Telmessus cheiragonus*, *Parapinnixa affinis* and *Pinnixa occidentalis*, which are known from America and Japan, are distributed northwards as well as *Oregonia gracilis*. On the other hand, the following species are distributed southwards and are mostly known from the southern coast of Honshû, Kiushû, and Loochoo Isls. or sometimes from the Bonin Isls.; and in these species Mutsu Bay seems to be the northern limit of the distributions. *Galathea acanthomera*, *Paradromia japonica*,

*A contribution from the Marine Biological Station, Asamushi, Aomori-Ken.

Trigonoplax unguiformis, Pugettia minor, Pugettia incisa, Cancer bullatus, Neptunus trituberculatus, Charybdis japonica, Pilumnus hirsutus, Pinnotheres pholadis, Asthenognathus inaequipes, Scopimera globosa. As to the rest of the species, their localities are so few in number that we can not determine the distributions of these species.

In the pursuance of this study I am much indebted to Prof. K. KISHINOUYE, who was so kind as to give me valuable advice; and I also wish to express my thanks to Prof. S. HÔZAWA, Assist. Prof. S. KOKUBO and Mr. S. TAKATSUKI of the Asamushi Marine Biological Station for their kindness in helping my study in various ways.

ANOMURA.

Family **Galatheidae** DANA.

Genus GALATHEA FABRICIUS.

1. **Galathea acanthomera** STIMPSON.

Galathea acanthomera: STIMPSON, 1858, p. 252; 1907, p. 232; DE MAN, 1907, p. 402; BALSS, 1913, p. 2, Textfig. 1.
Gal. orientalis: ORTMANN, 1892, p. 252, Pl. 31, Figs. 14, 15.
Gal. longimana: STIMPSON, 1907, p. 237.

Loc. Between Cape Futagozaki and Moura Isl. 12,5 fms. Sandy mud, July 2, 1926. 1 male and 1 female;
Off Kanita. July 23, 1927. 6 males and 5 egg-bearing females.
General Distribution: Bonin Isls. Japan: Kadsiyama, Sagami Bay, Kagoshima, Tanagawa, Maizuru.

Family **Lithodidae** DANA.

Genus HAPALOGASTER BRANDT.

2. **Hapalogaster dentatus** (DE HAAN).

Lomis dentata: de HAAN, 1850, p. 219, Pl. 48, Fig. 2.
Hapalogaster dentatus: ORTMANN, 1892, p. 323; STIMPSON, 1907, p. 198; BALSS, 1913, p. 71.

Loc. Yunoshima Isl. Gravels. July 12, 1926. 3 males and 1 female;
In the neighbourhood of the Asamushi Mar. Biol. Stat. Under gravel. 1 male;
Between Tsubakiyama and Higashitazawa. 21 fms. Sandy mud. July 31, 1926. 1 male.

General Distribution: From Nagasaki to Hokkaido; Korea Strait; Wladiwostok. Prof. BALSS believes that this species is probably distributed more northward.

Genus OEDIGNATHUS BENEDICT.

3. **Oedignathus inermis** (STIMPSON).

Hapalogaster inermis: STIMPSON, 1860, p. 243.
Dermaturus inermis: BALSS, 1913, p. 71. (cited other previous literatures and synonyms.)
Oedignathus inermis: SCHMITT, 1921, p. 151, Pl. 19, Fig. 1.

Japanese name: Ibo-gani.
Loc. Yunoshima Isl. Under gravel, June 23, 1923. 1 male;
Ôshima Isl. Rock and gravel, July 16, 1926. 1 male and 2 females.
General Distribution: From Unalaska to Pacific Grove, California; Japan: Tsushima, Aomori, Shinamaki, Hokkaido.

Genus CRYPTOLITHODES BRANDT.

4. **Cryptolithodes expansus** MIERS.

Cryptolithodes expansus: MIERS, 1879, pp. 21 and 47; Rathbun, 1902, p. 32, Textfig. 1; BALSS, 1913, p. 71, Pl. 1. Figs. 6 and 7, Textfig. 55.

Japanese name: Menko-gani.
Loc. Off Cape Hanaguri-zaki. 12–13 fms. Sandy mud. July 19, 1926. 1 male;
On the line between Aomori and Cape Futago-zaki, off the Mar. Biol. Stat. 22 fms. Sandy mud. July 23, 1926. 2 males and 1 egg-bearing female;
Off Cape Hanaguri-zaki, Shirasu. 18 fms. Sandy mud. August 2, 1926. 1 male;
On the line between Benten Isl. and Cape Kurosaki, off Shukunobe. 16 fms. Mud. August 10, 1926. 1 female.
General Distribution: Japan: Rikuzen, Aomori.

Family **Porcellanidae** HENDERSON.

Genus PACHYCHELES STIMPSON.

5. **Pachycheles stevensii** STIMPSON.

Pachycheles stevensii : STIMPSON, 1858, p. 242; 1907, p. 187, Pl. 23, Fig. 6; MIERS, 1879, p. 242; ORTMANN, 1892, p. 294; BALSS, 1913, p. 32.

Loc. Coast of Yunoshima Isl. Under gravel. June 23, 1923. 3 males and 2 egg-bearing females.

General Distribution : Japan : From Hokkaido to Tokyo Bay and Nagasaki ; Wladiwostok.

Family **Dromiidae** ALCOCK.

Genus **PARADROMIA** BALSS.

6. **Paradromia japonica** (HENDERSON).

Cryptodromia japonica : HENDERSON, 1888, p. 6, Pl. 1, Fig. 2.
C. canaliculata : ORTMANN, 1892, p. 545.
C. asiatica : PARISI, 1915, p. 105, Pl. 2, Fig. 3.
Paradromia japonica : BALSS, 1922 a, p. 108, Text-figs. 3, 4.

Loc. Between Higashitazawa and Tsubakiyama. 21 fms. Sandy mud. August 2, 1926. 1 male and 1 egg-bearing female ;
Off Cape Hanaguri-zaki, Shirasu. 18 fms. Sandy mud. August 2, 1926. 1 male ;
On the line between Benten Isl. and Cape Kuro-saki, off Shukunobe. 16 fms. Mud. August 10, 1926. 1 egg-bearing female in company with *Pinnixa tumida*.

General Distribution : Japan : Tokyo Bay.

BRACHYURA.

Family **Hymenosomidae** ORTMANN.

Genus **TORIGONOPLAX** MILNE-EDWARDS.

7. **Trigonoplax unguiformis** (DE HAAN)

Ocypode (Elamene) unguiformis : DE HAAN, 1835, p. 71, Pl. 29, Fig. 1, Pl. H.
Elamene (Trigonoplax) unguiformis : ALCOCK, 1900, p. 387.
Trigonoplax unguiformis : DE MAN, 1907, p. 396.

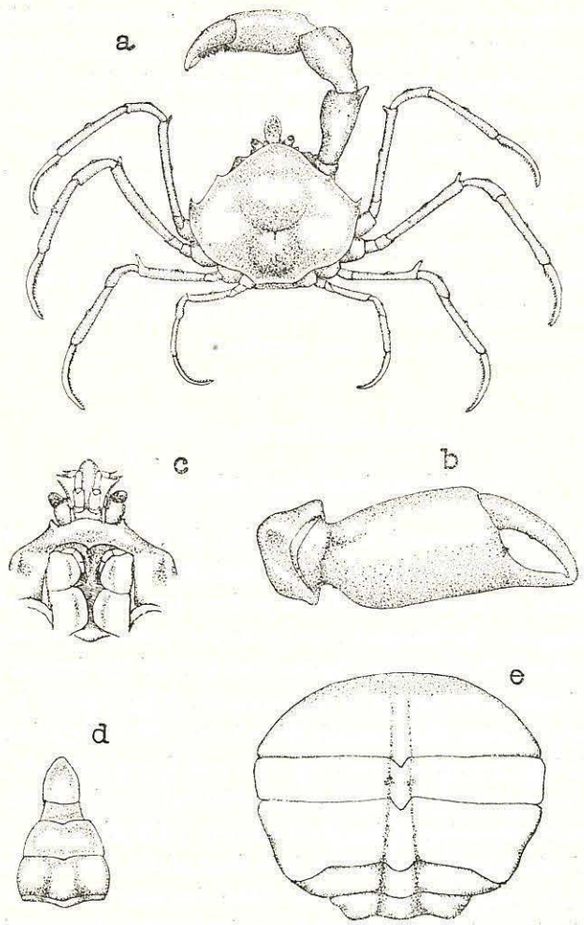
Loc. Off Tsuchiya. 8–9 fms. Sand. July 17, 1926. 1 male.

General Distribution : Japan : Tokyo Bay to Kagoshima.

Genus **RHYNCHOPLAX** STIMPSON.

8. **Rhynchoplax messor** STIMPSON.

Rhynchoplax messor : STIMPSON, 1907, p. 148.



Text-fig. 1. *Rhynchoplax messor* STIMPSON.
a, entire animal. b, chela of right side, view from outside. c, antennal and buccal region, ventral view. d, abdomen of male. e, abdomen of female. (a ×4; b, c ×6; d, e ×8).

In the male specimen the carapace including rostrum is nearly as long as wide, measuring the distance between the tips of the lateral spines of the carapace, that is 6 mm. I examined many of this species through the courtesy of Mr. HIROAKI AIKAWA, who collected the specimens at low water mark at Yenoshima, Kanagawa-ken; and I could ascertain the proportions between the length and width of the carapaces are individually variable in some extent. In other points the specimen generally coincides with the description given by STIMPSON, but the meros of the cheliped is armed with two or three tubercles above, instead of "four or five teeth on the superior edge."

I give here some figures of this species, as the original description of STIMPSON wants them.

Loc. Cape Takaisozaki, near Sai Bay. August 17, 1927. 1 male.;
The entrance of Sai Bay. August 17, 1927. 1 female.

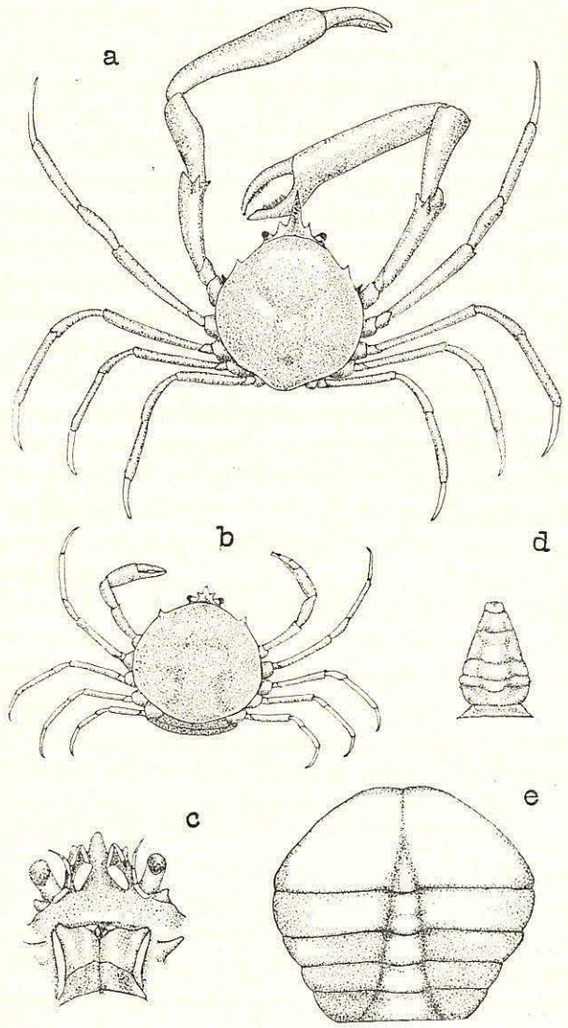
General Distribution: It is known from Shimoda by STIMPSON. Yenoshima and Aomori are new localities.

Genus HALICARCINUS WHITE.

9. **Halicarcinus septentrionalis,** n. sp.

The body is depressed and its surface is covered with short hairs. The carapace is subcircular in shape and areolated, anteriorly armed with a rather strong rostrum, which projects beneath the frontal margin of the carapace. In the male, not only the rostrum is longitudinally furrowed above, but is much longer than that of the female, and more than one-fourth of the length of the carapace. The rostrum is tridentate, armed with a spine on each side of its base. The base of the rostrum is extended backwards beyond the eye and forms a minute postocular spine. One acute tooth is on the antero-lateral margin of the carapace. On the pterygostomian region there are two pairs of rather conspicuous spines, of which the posterior one is in front of the base of the cheliped.

The eyes are of moderate size. The first pair of antennae is well developed, situated more or less apart from each other; and the basal segment is stout, but not lodged in a specially formed fossa. The peduncle of the second antenna is free from the carapace and is very slender. The epistome is rather long, and the external maxillipeds



Text-fig. 2. *Halicarcinus septentrionalis*, n. sp.
a, male animal. b, female animal. c, antennal and buccal region, ventral view. d, abdomen of male. e, abdomen of female. (a ×4; b ×5; c ×14; d, e ×10).

fill the buccal area, which is subquadrate. In the external maxilliped the exognath is furnished with a flagellum, and of the endognath the

meros which is larger than the ischium is distally truncated or rather concave. The three segmented palp is articulated at its antero-inner angle. The first pair of legs or chelipeds differ in shape in the two sexes. In the male, they are much longer than the succeeding pairs of legs. The meros is distally armed with two spines, one on the upper and another on the lower margin. The carpos is as long as the meros and is armed with no spine on the inner extremity. The chela is somewhat compressed and the palm is about twice the length of the finger, both of which are curved and similar in shape. It forms a very wide notch at the basal part of the finger, and at the distal extremity of the notch there is a very small tooth, which lies near the tip of the finger. Along the margin of the said wide notch it is furnished with hairs. The cheliped of the female, however, is much more slender and weak, and scarcely extends beyond the extremity of the next leg. The spines at the extremity of the meros are very small and scarcely noticeable to the naked eye. Of the chela the palm is as long as the finger, which is nearly straight and not marked with a conspicuous notch as seen in that of the male. The succeeding four pairs of legs are slender and bear the curved dactyli, which are furnished with a series of minute spinules on their inner margins. Of these four pairs of legs the first is the longest and the following pairs are successively diminished in length.

The abdomen is five segmented in the female, while in the male it is composed of seven segments; the basal segment occupies the whole width of the sternum between the basal segments of the last pair of legs.

The length of the carapace of the male including rostrum....5,5 mm.
The width of the carapace of the male 4,1
The length of the carapace of the female including rostrum..4,2
The width of the carapace of the female 3,8

Mr. HIROAKI AIKAWA collected many of this species from Yenoshima together with the preceding species, *Rhynchoplax messor;* and I was able to examine them through his courtesy.

Loc. Cape Takaiso-zaki near Sai, August 17, 1927, 1 egg-bearing female;
Ômashimote, August 18, 1927, 1 male.

Family **Inachidae** MIERS.
Subfamily Leptopodiinae MIERS.
Genus **PARATYMOLUS** MIERS.

10. **Paratymolus pubescens** MIERS.

Paratymolus pubescens: MIERS, 1879, p. 45, Pl. 2, Fig. 6; ORTMANN, 1893, p. 34, Pl. 3, Fig. 2.

The carapace is 11,8 mm. long and 6,7 mm. broad. Besides this one, I examined many specimens of this species collected by me with a bottom tow net from a depth of about 5 metres near Ushimado, Okayama-ken. The shape of the carapace somewhat differs between the sexes, i. e., it is more dilated at the hepatic region in female.

Loc. Ôma Bay, August 18, 1927. 1 male.

General Distribution: Japan: Kagoshima, Okayama, Matoya.

Subfamily Inachinae MIERS.
Genus **OREGONIA** DANA.

11. **Oregania gracilis** DANA.

Oregonia gracilis: DANA, 1852, p. 106; atlas, 1855, Pl. 3, Fig. 2 a-c; RATHBUN, 1925, p. 71, Pls. 24, 25, Text-figs. 19, 20. (cited other previous synonyms and literature.)

Japanese name: Kesen-gani.

Loc. West of Ôshima Isl. 23 fms. July 9, 1926. 1 male and 1 female.

Between Cape Futagozaki and Moura Isl. 12 fms. Sandy mud. July 21, 1926. 1 male and 1 female;

On the line between Aomori and Cape Futagozaki, off Mar. Biol. Stat. 23 fms. Sandy mud. July 23, 1926. 1 female;

On the line between Aomori and Cape Futagozaki, off Itanozaki. 27 fms. Sandy mud. July 24, 1926. 1 female;

Yomogita. 32 fms. Mud. July 21, 1926. 1 male;

On the line connecting Ôshima Isl. and Cape Futagozaki, off Yunoshima Isl. August 29, 1927. 1 male;

Off Cape Hanagurizaki, Higashitazawa. 18 fms. Sandy mud. August 2, 1926. 1 male;

On the line between Futago Isl. and Cape Hanagurizaki, off Itanozaki. Sandy mud. August 5, 1926. 1 female;

On the line between Benten Isl. and Cape Kurosaki, off Shukunobe. 16 fms. Mud. August 10, 1926. 1 female;
About 1500 m. off Jôgasawa. 11 fms. Sea-weeds. August 11, 1926. 1 female;
Off Arito. 19 fms. Sandy mud. August 22, 1926. 1 female.

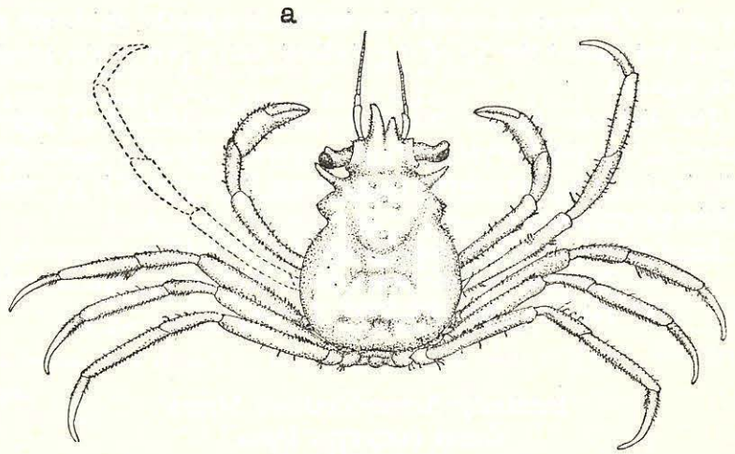
General Distribution: From Bering Sea to California; Japan: From Simushir Isl. to Kinkasan.

12. **Oregonia mutsuensis,** n. sp.

The two specimens here dealt with are of small size, the carapace measuring from the base of the rostral horn is 7,7 mm. long and 5,8 mm. broad, and in another specimen it is 6,4 mm. long and 5 mm. broad.

The body is covered with soft downy hairs. The carapace is subpyriform and somewhat flattend above, and anteriorly projects to a rostrum, which constitutes of two horns and is about one fourth as long as the rest of the carapace. These horns of the carapace are almost parallel, but not in contact with each other; while in the specimen from Kosawa the left horn is longer than the right, and they are directed slightly outwards from their bases. The carapace just behind the postorbital spines is about three-fifths as wide as at the branchial region. Behind the postorbital spine the hepatic region is strikingly well developed and limitted from the branchial region by a shallow furrow. The tuberculation on the carapace is not so prominent as those of the other two known species of this genus, *O. gracilis* and *O. bifurca*. There are six small tubercles on the gastric region; of these tubercles two are on the medial line, an anterior and a posterior. The other four tubercles are arranged around the said anterior one, forming a group, and the posterior one is a little removed from the anterior group of the tubercles. On each side the cardiac region is anteriorly indistinctly tuberculated, while posteriorly a pair of tubercles stand close together in the middle line.

The eye-stalk is of moderate length and provided with one or two tubercles near the extremity. Not only the basal peduncle of the outer antenna is devoid of spines or tubercles, but its lower surface is flat or rather longitudinally furrowed. In the external maxilliped the



Text-fig. 3. *Oregonia mutsuensis*, n. sp.
a, entire animal. b, antennal and buccal area. c, abdomen. (a ×4; b, c ×8).

exognath is narrow and furnished with a rudimentary flagellum. The surface of the endognath is rather smooth. The meros is distally truncated and at its antero-inner corner is inserted a palp in three segments. The cheliped of the male is short and slender, and its surface is not tuberculated. The meros is subcylindrical, while the palm is somewhat laterally compressed and its upper and lower margins are bluntly carinated. The finger is as long as the palm, and straight; and there is no space gaping between the two fingers. The other

four pairs of legs are long and slender, the first pair of which are the longest and exceed the tip of the cheliped with a part of the penultimate segment.

The abdomen (in the male) is rather like that of *O. bifurca* RATHBUN, but the last segment is terminally obtusely acuminated, while in the two other species of the genus this segment is terminally slightly emarginated.

Loc. On the line between Benten Isl. and Cape Kurosaki, off Kosawa. 24 fms. Sandy mud. August 9, 1926. 1 male;
Off Tairadate. July 24, 1927. 1 male.

Subfamily Acanthonychinae MIERS.
Genus **PUGETTIA** DANA.

13. **Pugettia minor** ORTMANN.

Pugettia minor: ORTMANN, 1893, p. 44.

Loc. The coast of Yunoshima Isl. August 25, 1927. 1 female;
Off Cape Hanaguri-zaki, Higashitazawa. 18 fms. Sandy mud. August 2, 1926. 2 egg-bearing females;
Off Arito. 19 fms. Sandy mud. August 22, 1926. 1 male;
The coast of Tsuchiya. August 29, 1927. 1 young male and 2 young females.

General Distribution: Japan: Sagami Bay and Maizuru.

14. **Pugettia incisa** (DE HAAN).

Pisa (Menaethius) incisa: DE HAAN, 1835, p. 98.
Pugettia incisa: MIERS, 1879, p. 23; ORTMANN, 1893, p. 44.

Loc. About 700 m. off Tozawa. 14 fms. Sandy mud. August 11, 1926. 1 egg-bearing female.

General Distribution: Japan: Hakodate, Aomori, Tokyo Bay, Yokosuka, Corea Strait.

Subfamily Microrhynchinae MIERS.
Genus **DOCLEA** LEACH.

15. **Doclea bidentata** (A. MILNE-EDWARDS).

Libinia bidentata: A MILNE-EDWARDS, 1873, p. 253.
Doclea orientalis: MIERS, 1879, p. 28, Pl. 2, Fig. 1.
Doclea bidentata: ORTMANN, 1893, p. 48.

Loc. Off Tsuchiya. 8–9 fms. Sand. July 17, 1926. 1 female.;
On the line between Benten Isl. and Cape Kuro-saki, off Shukunobe. 11 fms. Mud. August 10, 1926. 1 female.;
Off Karibasawa. 18 fms. Sandy mud. August 22, 1926. 1 female.;
Off Yunoshima Isl. July 4, 1927. 1 male.

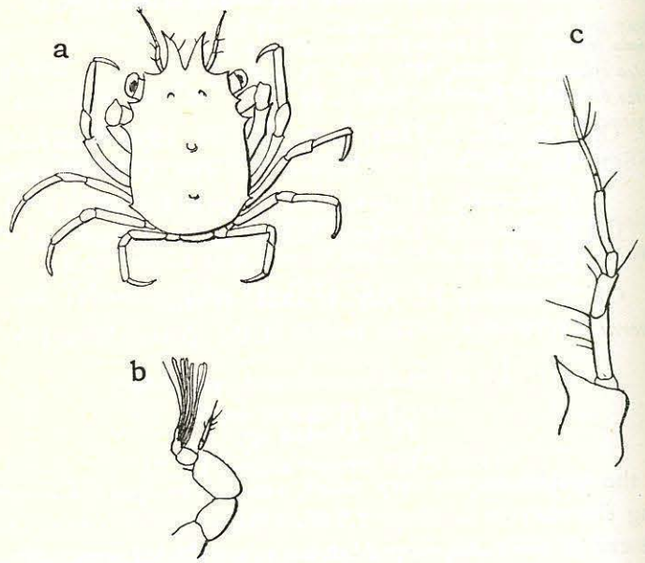
General Distribution: The mouth of the Amur River; Northern Japan.

16. **Doclea** sp.

All the specimens are very small, and the carapace of a specimen including the rostrum is about 2,6 mm. long.

The carapace is subpyriform, but not much dilated posteriorly. The rostrum consists of two horns, which are distally divergent from their bases. The eye, which is of considerably large size, is guarded with an anterophthalmic tooth and with two teeth behind the eye. The lateral margins are nearly smooth, but a pair of small spines are on the margins of the branchial regions. The surface is hairy, and on the gastric region there are three tubercles, of which two form a pair behind the rostral horns; and another tubercle is almost in the middle of the carapace. The cardiac region is also represented by a tubercle.

In the first antenna there are six segments. Of these segments the basal three are stout and bent at the articulation between the second and the third segments. The latter bears a small endopodite. It is composed of two segments, the basal one of which is short, while the terminal one bears a number of hairs. The expodite is three segmented, the basal two segments are stout but short, while the distal segment is elongated. The first of these segments does not bear sensory tubes or aesthetascs. The latter arise on the two distal segments. The second antenna has seven segments, the basal one of which is the widest and externally produced to a spine. The succeeding two segments are wider than the others and bear hairs on the outer margin.



Text-fig. 4. Doclea sp.
a, entire animal. b, first antenna. c, second antenna. (a ×11; b, c enlarged).

The fourth is short and the three distal segments long. The sixth segment bears distally three long smooth hairs. The segments above and below also bear hairs.

The specimen as described above is evidently a larva, and I cannot identify the specific name with certainty. I suppose, however, the specimen may be a young individual of *Doclea bidentata* MIERS.

Loc. In front of Jizô near the Marine Biological Station. July 29, 1927. 7 specimens.

Family **Maiidae** MIERS.
Genus **SCYRA** DANA.

17. **Scyra compressipes** STIMPSON.

Scyra compressipes : STIMPSON, 1857, p. 218; 1907, p. 17, Pl. 3, Fig. 4; MIERS, 1886, p. 63, Pl. 7, Fig. 4.

Japanese name : Kattai-gani.

Loc. On the line between Benten Isl. and Cape Kuro-saki, off Shukunobe. 16 fms. Mud. August 10, 1926. 1 male.

General Distribution : Off northern Japan.

Family **Cancridae** ALCOCK.
Subfamily Cancrinae ALCOCK.
Genus **CANCER** LINNÉ.

18. **Cancer bullatus** BALSS.

Cancer bullatus : BALSS, 1922 b, p. 95, Pl. 1, Figs. 2, 3.

Loc. Off Okunai. 20 fms. Sandy mud. July 31, 1926. 1 male.;
Between Tsubakiyama and Higashitazawa. 21 fms. Sandy mud. 1 female;
On the line between Benten Isl. and Cape Kurosaki, off Shukunobe. 16 fms. Mud. August 10, 1926. 4 females;
About one and a half miles off Ôminato Harbour. 11 fms. Mud. August 11, 1926. 1 female.

General Distribution : Japan : Aomori, Fukuura, Sagami Bay.

19. **Cancer pygmaeus** ORTMANN.

Trichocarcinus dentatus : MIERS, 1879, p. 34.
Cancer pygmaeus : ORTMANN, 1893, p. 426, Pl. 17, Fig. 4; PARISI, 1916, p. 189; BALSS, 1922, p. 94.
Cancer amphioetus : RATHBUN, 1898, p. 582; SCHMITT, 1921, p. 223, Pl. 36, Fig. 1, 2.

Loc. The coast of Tsuchiya. August 29, 1927. 1 male.

General Distribution : From Corea and Nagasaki to Hokkaido; California.

Subfamily Acanthoecylinae ALCOCK.
Genus **TELMESSUS** WHITE.

20. **Telmessus cheiragonus** (TELESIUS).

Telmessus cheiragonus : BENEDICT, 1892, p. 224, Pl. 25, Pl. 26, Figs. 2, 3, 4; HOLMES, 1900, p. 69; PARISI, 1916, p. 189; SCHMITT, 1921, p. 235; BALSS, 1922 b, p. 98.
Cheiragonus cheiragonus : ORTMANN, 1893, p. 420; DOFLEIN, 1902, p. 657.
Telmessus acutidens : BENEDICT, 1892, p. 228, Pl. 26; RATHBUN, 1902, p. 28; STIMPSON, 1907, p. 88.

Japanese name : Kuri-gani.
Loc. Off Asamushi. 5–6 fms. Sea-weeds. May 12, 1926. 3 young specimens. ;
Yunoshima Isl. 4–5 fms. Sea-weeds. May 19, 1926. 2 females and 2 young specimens ;
The coast of Namiuchi. Sand, gravel and sea-weeds. July 17, 1926. 3 young specimens.;
Ôma Bay. August 18, 1927. 1 male ;
Off Nakanogô. July 24, 1927. 1 male.
General Distribution : Northern Pacific coast, Japan and America. In Japan Tokyo Bay is the southern limit of the known localities.

Family **Portunidae** Dana.
Genus **NEPTUNUS** de Haan.

21. **Neptunus trituberculatus** Miers.

Portunus pelagicus : de Haan, 1835, p. 37, Pls. 9, 10. (not N. pelagicus (Linné)).
Neptunus trituberculatus : Miers, 1876, p. 221.
Neptunus (Neptunus) pelagicus var. *trituberculatus :* Ortmann, 1893, p. 74.
Portunus trituberculatus : Rathbun, 1902, p. 26.

Japanese name : Watarigani ; Gazami.
Loc. Station and data of collection are missing. 1 male.
General Distribution : China ; Japan : from Hakodate to Formosa.

Genus **CHARYBDIS** de Haan.

22. **Charybdis japonica** (A. Milne-Edwards).

Goniosoma japonicum : A. Milne-Edwards, 1861, p. 373: Ortmann, 1893, p. 81.
Portunus (Charybdis) 6-dentata : de Haan, 1835, p. 41. Pl. 12, Fig. 1.
Charybdis japonica ; Rathbun, 1902, p. 27; 1906, p. 872, Pl. 13, Fig. 2; Parisi, 1916, p. 173; Balss, 1922 b, p, 200.

Japanese name : Ishi-gani.
Loc. The coast of Asamushi. Rocks, gravel and sea-weeds. July 2, 1926. 1 female.
The coast of Tsuchiya near Asamushi. Sand and sea-weeds. June 23, 1926. 1 male.
General Distribution : Japan : Tokyo Bay, Kochi, Kagoshima ; China ; Hawai.

Family **Xanthidae** Ortmann.
Genus **PILUMNUS** Leach.

23. **Pilumnus hirsutus** Stimpson.

Pilumnus hirsutus : Stimpson, 1858, p. 37; 1907, p. 69, Pl. 9, Fig. 1; Miers, 1879, p. 31; 1886, p. 154; Ortmann, 1893, p. 437.

Loc. On the line between Aomori and Cape Futagozaki, off Itanozawa. 27 fms. Sandy mud. July 24, 1926. 1 female.
Off Tairadate. July 24, 1927. 2 females.
General Distribution : Northern China Sea ; Liuchoo Isls. ; Southern Japan.

Family **Pinnotheridae** M.-E.
Subfamily Pinnotherinae Alcock.
Genus **PINNOTHERES** Latr.

24. **Pinnotheres pholadis** de Haan.

Pinnotheres pholadis : de Haan, 1835, p. 63, Pl. 16, Fig. 7; Tesch, 1918 b, p. 252; Balss, 1922 b, p. 139.
P. pisoides : Ortmann, 1894, p. 698, Pl. 23, Fig. 11.

Loc. Yunoshima Isl. 12–13 fms. Sandy mud. July 4, 1926. 1 female. ;
Off Asadokoro. 16 fms. Hard sandy mud. August 22, 1926. 1 male.
General Distribution : Japan : Tokyo Bay, Sagami Bay, Nagasaki.

Genus **PARAPINNIXA** Holmes.

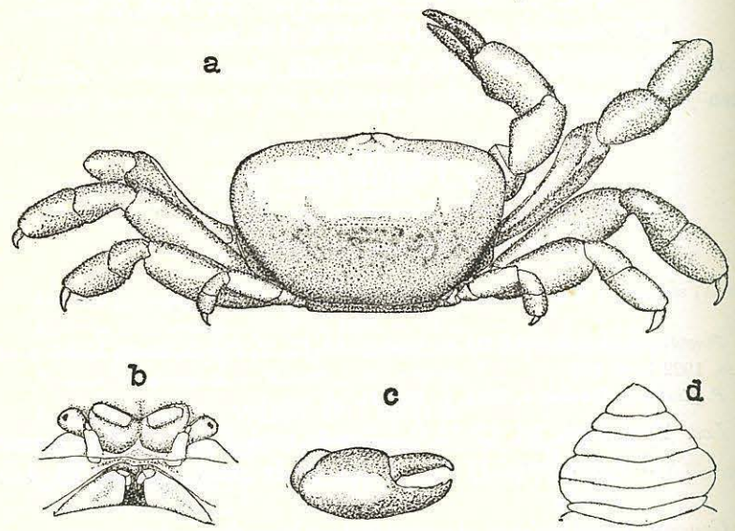
25. **Parapinnixa affinis** Holmes.

Parapinnixa affinis : Holmes, 1900, p. 95.

The specimen before me referable to this species, is of small size ; the carapace is 6,3 mm. long and 10,1 mm. broad.

The carapace smooth and shining, transversely ovate and its antero-lateral corner dilated so as to make a straight line at the anterior margin. The front is broad, triangular in shape, but strongly deflexed and does not project in the dorsal aspect. The orbit is oval in shape, and its inner hiatus is wide and partly filled by the basal segment of the

outer antenna, which is very small in size. The peduncle of the inner antenna is obliquely plicated. The epistom is rather long. The buccal area is rather small and is broadly triangular in shape, while its posterior portion is partly covered by a projection of the sternum. In the outer maxilliped, the ischium is rudimentary, while the meros is of rather large size and triangular in shape; at its antero-inner corner a palp in three segments is articulated.



Text-fig. 5. *Parapinnixa affinis* HOLMES.
a, entire animal. b, antennal and buccal area. c, chela. d, abdomen of female. (a ×3; b ×6; c, d ×4).

The legs are covered with very short hairs. The first pair or cheliped are rather short, but stout in feature, and the surface is smooth. The meros is a little longer than the carpos. The chela is somewhat laterally compressed; and the finger, which is nearly as long as the palm, is armed with a series of very minute teeth on the cutting edge and slightly hooked at its extremity. Of the said teeth one or two near the extremity are enlarged in the movable finger. Of the next pair of legs the terminal two segments of the left side are unfortunately missing in my specimen, the right leg is stouter and longer

than the succeeding pairs of legs, and the surface of the meros is smooth and anteriorly concave so as to rub against the posterior surface of the cheliped; the succeeding two segments are stout and it terminates in a short dactylos. Other pairs of the legs are successively diminishing in length. The last leg is very small and the tip scarcely reaches to the distal end of the meros of the penultimate leg. In the posterior three pairs of legs, the meros is compressed and rather broad.

The abdomen of the female is seven segmented and widest at the third segment, behind which it is triangular and the tip is rounded.

Loc. On the line between Benten Isl. and Cape Kurosaki, off Shukunobe 16 fms. Mud. August 10. 1926. 1 female.

General Distribution: The species is recorded from Dead Mans Isl., California, and has never since been collected anywhere else.

Subfamily Pinnotherelinae ALCOCK.
Genus **PINNIXA** WHITE.

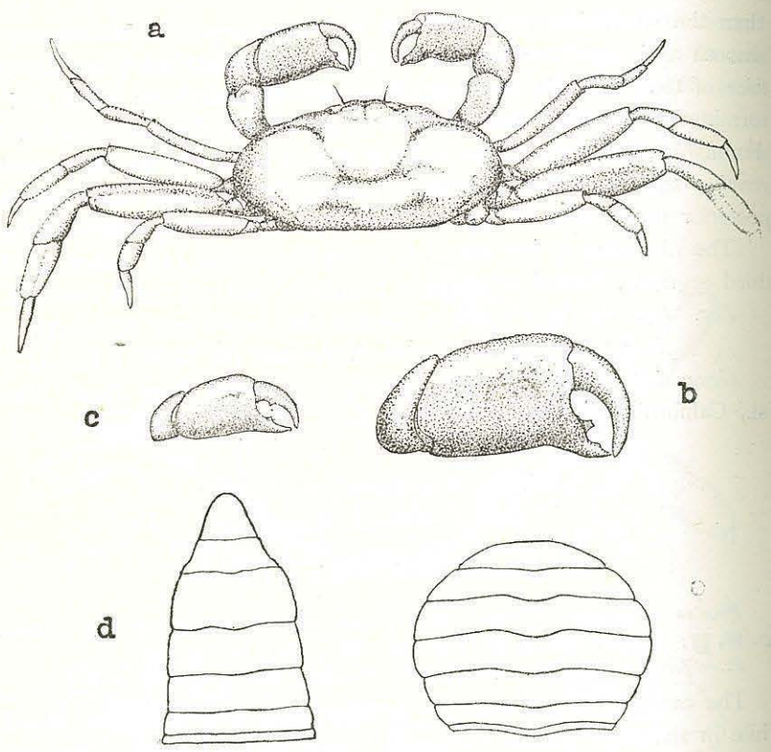
26. **Pinnixa occidentalis** RATHBUN.

Pinnixa occidentalis: RATHBUN, 1893, p. 248; 1917, p. 155, Pl. 34, Fig. 1, Text-figs. 96, 97; HOLMES, 1900, p. 89; SCHMITT, 1921, p. 262, Text-fig. 156.
P. californiensis RATHBUN, 1893, p. 249; HOLMES, 1900, p. 90.

The carapace of the male is 6.1 mm. long and 12.8 mm. broad, while in the three female specimens before me, the carapace measures 6.6, 4.8, 4.3 mm. in length and 12.3, 7.9, 7.5 in width respectively; and measurements of the carapace given by RATHBUN (1917) are 9.5 mm. long and 19.5 mm. broad in male and 10.5 long and 20.5 broad in female. That is in the male carapace seems to be somewhat broader than twice the length of the carapace, while in the female somewhat narrower.

The abdomen of the male is different in some points from the description and the text-figure of RATHBUN (1917), in my specimen the sixth segment is much narrower than the fifth.

Loc. Futago Isl. 34–35 fms. Sandy mud. July 2, 1926, 1 male.;
On the line between Ôshima and Aomori, off Itanozaki. August 10, 1927. 1 female;
On the line between Yokohama and Kanita, off Tsubakiyama. July 17, 1927. 1 female;



Text-fig. 6. *Pinnixa occidentalis* RATHBUN.
a, male animal. b, chela. c, right chela of female, view from outside. d, abdomen of male. e, abdomen of female. (a ×3; b—e ×6).

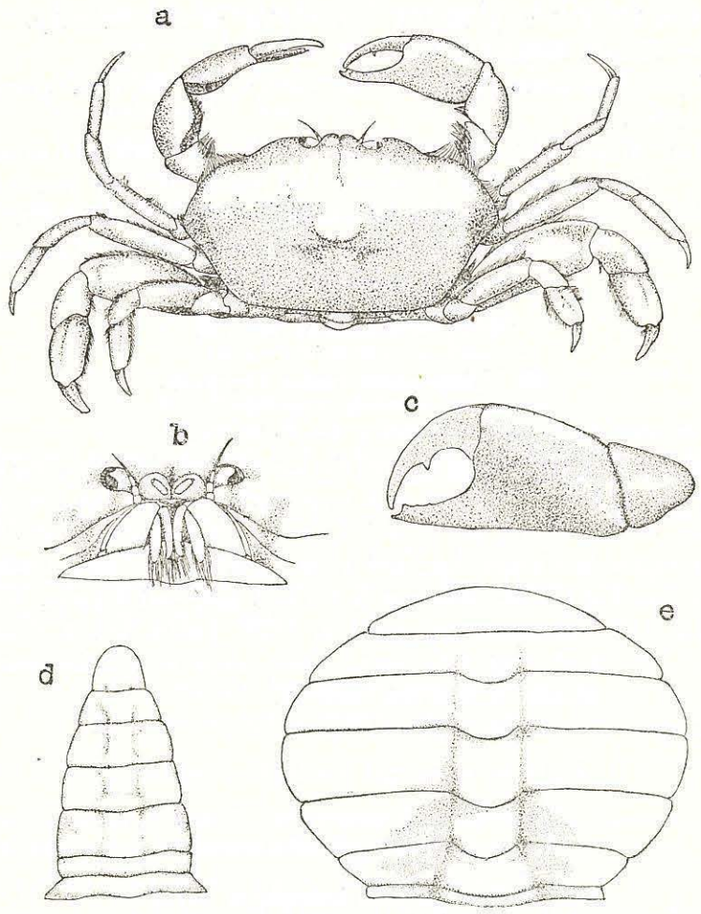
On the line between Yokohama and Kanita, off Cape Hanagurizaki. July 25, 1927. 1 female.

General Distribution: Pacific coast of North America. New from asiatic coast.

27. **Pinnixa tumida** STIMPSON.

Pinnixa tumida; STIMPSON, 1907, p. 143.

The species strictly coincides with the description given by STIMPSON in female, in a specimen the carapace is 6.3 mm. long and 11.5 mm. broad. Of the male it has not been described by STIMPSON; in



Text-fig. 7. *Pinnixa tumida* STIMPSON.
a, entire animal. b, antennal and buccal region. d, abdomen of male. e, abdomen of female. (a ×4; b—e ×6).

the two male specimens before me, the carapace is smaller than that of the female, measuring 5.4 and 5.5 mm. in length and 9.5 and 10.0 mm. in width respectively. Unfortunately altogether, missing their cheliped, the male specimens are similar in all other respects to the female, except in the narrowness of the abdomen, which is also seven-segmented. Of each abdominal segment of the male, the basal one is

the broadest and very slightly narrowering to the extremity. The last or seventh segment is terminally rounded.

I give here some figures as the species has not been given by the author.

Loc. Moura. September 10, 1926. 2 males and numerous females; August 10, 1227. 1 female. This species is very common in the cloacal cavity of *Caudina chilensis* (J. MÜLLER).

General Distribution: It has been known from the Bay of Hakodate.

Genus **PINNAXODES** HELLER.

28. **Pinnaxodes major** ORTMANN.

Pinnaxodes major: ORTMANN, 1894, p. 697, Pl. 23, Fig. 10.

In the two egg-bearing females the carapace is 10,25 mm., 9,0 mm. long and 10,8 mm., 10,5 mm. wide respectively, while in the remaining female, on the ventral side of which a species of *Sacculina* is attached, the carapace is 8,6 mm. long and 9.0 mm. wide. The male specimen is the smallest and the carapace is 6,5 mm. long and 6,9 mm. wide.

Loc. Off Yunoshima Isl. April 8, 1928. 1 male and 3 females, 2 of which bear eggs. They occur as a commensal in *Mytilus*, a bivalved Mollusca.

General Distribution: Japan: Tokyo Bay.

Subfamily Asthenogathinae STIMPSON.

Genus **ASTHENOGNATHUS** STIMPSON.

29. **Asthenognathus inaequipes** STIMPSON.

Asthenognathus inaequipes: STIMOSON, 1907, p. 140; DE MAN, 1907, p. 292, Pl. 31, Figs. 4, 5; BALSS, 1922 b, p. 141.

Tritodynamia japonica: ORTMANN, 1894, p. 193, Pl. 23, Fig. 5.

Japanese name: Yokonaga-pinno.

Loc. Moura Isl. 12–13 fms. Sandy mud. July 20, 1926. 1 male;
Between Cape Futagozaki and Mourakozima Isl. 12,5 fms. Sandy mud. July 21, 1926. 1 male and 1 female;
On the line between Aomori and Ôshima Isl., Off Itanozaki. 27 fms. Sandy mud, July 24, 1926. 1 female;

On the line between Cape Futagozaki and Ôshima Isl., off Urata. 24 fms. July 30, 1926. 2 egg-bearing females;
Off Aburakawa. 13 fms. Bottom mud. August 7, 1926. 2 males and 2 females;
Off Jûsanmori. 14 fms. Mud. August 7, 1926. 6 males and 2 females.

General Distribution: From Tokyo Bay to Inland Sea of Japan.

Family **Ocyopodidae** ORTMANN.

Subfamily Scopimerinae KEMP.

Genus **SCOPIMERA** DE HAAN.

30. **Scopimera globosa** DE HAAN.

Scopimera globosa: DE HAAN, 1835, p. 53, p. 11, Fig. 3; TESCH, 1918 a, pp. 46, 97, Pl. 3, Fig. 3; PARISI, 1918, p. 97, Text-fig. 2; BALSS, 1922 b, p. 145.

Loc. The mouth of the Tanabu River. Mud. August 11, 1926. 8 males and 2 females, one with eggs.

General Distribution: Japan: Sagami Bay, Tokyo Bay, Shimoda, Nagasaki; Hongkong; Ceylon.

Subfamily Macrophthalminae DANA.

Genus **MACROPHTHALMUS** LATR.

31. **Macrophthalmus japonicus** DE HAAN.

Macrophthalmus japonicus: DE HAAN, 1835, p. 54. Pl. 15, Fig. 2; ORTMANN, 1894, p. 746; 1898, p. 343; BALSS, 1922 b, p. 145.

Loc. The coast of Asadokoro. July 13, 1927. 1 male.

General Distribution: Kiautschau; Singapore; Futschau; Japan: Nagasaki, Tsushima, Nagasaki.

Family **Grapsidae** DANA.

Genus **BRACHYNOTUS** DE HAAN.

32. **Brachynotus longitarsis** (MIERS).

Heterograpsus longitarsis: MIERS, 1879, p. 37, Pl. 2, Fig. 3; ORTMANN, 1894, p. 715.

Brachynotus longitarsis : Balss, 1922 b, p. 151.
Eriocheir misakiensis : Rathbun, 1919, p. 593, Pl. 23.

Loc. Yunoshima Isl. January 18, 1927. 1 male ;
Off Cape Futagozaki. 34 fms. Sandy mud. July 21, 1926. 1 egg-bearing female ;
About 1500 m. off Jôgasawa. 11 fms. Sea-weeds. August 11, 1926. 8 males and 16 females.

General Distribution : Hokkaido, Tokyo Bay, Misaki, Nagasaki, Corea Strait.

33. **Brachynotus sanguineus** (de Haan).

Grapsus sanguineus : de Haan, 1835, p. 58, Pl. 16, Fig. 3.
Heterograpsus sanguineus : Kingsley, 1880, p. 208; Doflein, 1902, p. 664; Parisi, 1918, p. 101.
Brachynotus sanguineus : Tesch, 1918 a, p. 105; Balss, 1922 b, p. 151.

Loc. Near the Mar. Biol. Stat. August 8, 1925. 16 males and 5 females ;
Near the Mar. Biol. Stat. August 10, 1927. 6 males and 5 females, of which one bears eggs ;
The coast of Ôshima Isl. Rock and gravel. July 16, 1926. 2 females. ;
The coast of Benten Isl. Rock and gravel. August 9, 1926. 6 males and 2 females ;
The coast of Ôminato. Sand. August 11, 1926. 11 males and 7 females.

General Distribution : Japan : from Hokkaido to Formosa ; Wladiwostok ; China ; Hongkong ; Amoy ; Hawai ; Australia ; Neuzealand.

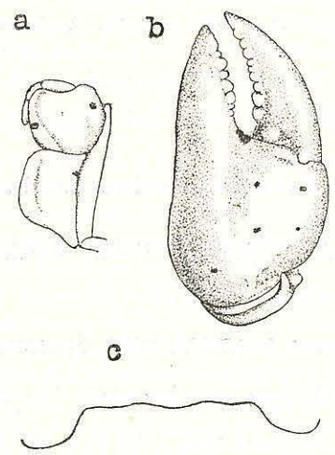
34. **Brachynotus brevidigitatus** n. sp.

The species is much allied to *Brachynotus penicillatus* (de Haan), but the differences from it are as follows :

The surface of the carapace is more uneven than that of *B. penicillatus ;* and the frontal margin is slightly sinuated, while in the latter it is almost straight.

The finger of the chela in the male is rather short and stout, i. e., it is a little shorter than twice the length of the palm and a little

shorter than four times of its width, while in *B. penicillatus* it is a little longer than the length of the palm and a little longer than four-



Text-fig. 8. *Brachynotus brevidigitatus,* n. sp.
a, third maxilliped of the left side. b, chela of the left side. c, frontal margin of the carapace. (All ×6).

times the width of the finger. The palm in the male, is inflated and furnished with a patch of long fine hair at the distal end of the inner surface and with a very small patch of hair on the outer surface. The chela of the female is rather lean and devoid of the patch of hair.

The meros of the third maxilliped is more convex externally so that it partly covers the exognath.

Loc. The eastern coast of Yunoshima Isl., under gravel. August 9, 1927. 1 female ;
The neighbourhood of the Mar. Biol. Stat. August 10, 1927. 1 male ;
The coast of Moura. Sand. August 10, 1927. 1 female ;
Sai Bay. August 17, 1927. 1 female. ;
Cape Takaisozaki near Sai. August 17, 1927. 1 male and 1 egg-bearing female.

Genus ERIOCHEIR DE HAAN.

35. Eriocheir japonicus DE HAAN.

Eriocheir japonicus : DE HAAN 1835, p. 59, Pl. 17; TESCH, 1918 a, p. 107, (cited other previous literatures); PARISI, 1918, p. 101; BALSS, 1922 b, p. 152.

Japanese name : Kegani, Mokuzo-gani.

Loc. Fukikoshi. 22 fms. Sand and gravel. August, 23, 1926. 1 female;

Aburakawa. 3 fms. Sand and sea-weeds. September 11, 1926. 1 female.

General Distribution : Japan: From Hokkaido to Formosa; Wladiostok.

Genus PLATYGRAPSUS STIMPSON.

36. Platygrapsus depressus (DE HAAN).

Platynotus depressus : DE HAAN, 1835, p. 63, Pl. 8, Fig. 2;

Platygrapsus depressus : STIMPSON, 1858, p. 104; 1907, p. 128; MIERS, 1879, p. 37; KINGSLEY, 1880, p. 211; ORTMANN, 1894, p 716; DOFLEIN, 1902, p. 665; RATHBUN, 1902, p. 24; DE MAN, 1907, p. 392; PARISI, 1918, p. 102.

Goetice depressus : BALSS, 1922 b, p. 150.

Platygrapsus convexiusculus : STIMPSON, 1907, p. 128.

Japanese name : Abura-gani, Hiraiso-gani.

Loc. Near the Mar. Biol. Stat. Gravel and sea-weeds. May 9, 1926. 3 males and 4 females.;

Near the Mar. Biol. Stat. Gravel and sea-weeds. August 10, 1927. 2 males.;

The coast of Ôshima Isl. Rock and gravel. July 10, 1927. 3 males and 2 females.;

The coast of Namiuchi, Nishihiranai. Sand, gravel and sea-weeds. July 17, 1926. 1 egg-bearing female.;

Sai Bay. August 17, 1927. 1 female.

General Distribution : Japan: From Hokkaido to Formosa; Bonin Isls.; Hongkong.

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