ON TWO NEW SPECIES OF THE GENUS *SQUILLA* FABR., WITH NOTES ON OTHER STOMATOPODS IN THE COLLECTIONS OF THE ZOOLOGICAL SURVEY OF INDIA.

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INTRODUCTION.

Although the Indian Stomatopods have been studied fairly intensively by Kemp[1], and later by Kemp and Chopra[2], and Chopra[3], we have still found a part of the material, accumulated in the Zoological Survey of India since the publication of Chopra's (*loc. cit.*) account of the Stomatopoda collected off the mouth of river Hoogly, of considerable scientific interest. This material includes a new species, *Squilla bengalensis*, obtained from the Salt Lakes, Lower Bengal. It is also found that *Squilla raphidea* Fabricius, as defined at present, actually consists of two closely allied but distinct species, one of which is *S. harpax* DeHaan, uptill now regarded as a synonym of *S. raphidea*. *Lysiosquilla multifasciata* Wood Mason, which has so far not been recorded from the Bay of Bengal, is now known to occur in this region and is represented in the collections by a single example from Cox's Bazar, Chittagong (East Pakistan). The rediscovery of *Gonodactylus gyrosus* Odhner in the Andamans, after it was first described from the Gilbert Island by Odhner[4], is also of interest.

In addition to Indian material, notes on three species of Stomatopods collected by Dr. S. F. Light from coastal waters of Amoy (S. China) have also been added. It appears that these specimens were left behind when the Light collection was passed on by Dr. Kemp to Dr. Waldo L. Schmitt[5]. Among these, *Squilla microphthalma* H. Milne-Edwards has been recorded for the first time from Chinese coast and additional remarks on the structural features of *S. costata* DeHaan and *S. scorpio* Latr. have been added.

ACKNOWLEDGMENT.

We acknowledge with deep sense of gratitude, the assistance which Dr. L. B. Holthuis of Rijksmuseum van Naturlijke Historie, Leiden gave us in confirming our opinion regarding *S. raphidea*, after a close scrutiny of deHaan's cotypes of *S. harpax*, and examination of the entire '*raphidea*' material of Leiden Museum.

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[1] Kemp, S., *Mem. Indian Mus.* IV, pp. 1-217, pls. i-x (1913).

[2] Kemp, S. & Chopra, B., *Rec. Indian Mus.* XXII, pp. 297-311 (1921).

[3] Chopra, B., *Ibid.* XXXVI, pp. 17-43 (1934).

[4] Odhner, T., *Goteb. Vetensk. Samh. Handl.* XXVII, No. 4, pp. 1-16 1 pl. (1923).

[5] The collections made by Dr. S. F. Light from Southern China were first submitted for study to Dr. S. Kemp, who was at that time connected with the Indian Museum. As Dr. Kemp could not complete this work, on account of other engagements, before taking over charge of the "Discovery" Expedition he sent on the collection, along with his notes, to Dr. W. L. Schmitt who worked it out and published a report on it.

Systematic Account.

Squilla microphthalma H. Milne-Edwards.

1913. *Squilla microphthalma*, Kemp, *Mem. Indian Mus.* IV, p. 31, pl. i, figs. 17-20.

1941. *Squilla microphthalma*, Holthuis, *Temminckia* VI, p. 242.

A single female from Amoy, measuring 39·0 mm., agrees with the description and figures of this species given by Kemp, except in the following features :—

(i) The base of rostrum is somewhat broader than in the typical examples. (ii) The lateral spine on the fifth thoracic segment is acute and strong. (iii) The intermediate carinae on segments 6-8 are sharp and well-defined. (iv) First five abdominal somites bear faint but distinct submedian carinae which are complete on the fourth and fifth segments.

This example is registered as under :—

C.2991/1 .. Santu, N. Fukien, Amoy, China. Dr. S. F. Light 2-1-24. 1♀, 39 mm.

The easternmost limit of this species was so far Samarinda, East Borneo (Holthuis, 1941). Its presence on the Chinese coast, besides constituting its first record from this region, extends its range further North Eastwards. This species appears to be rare.

Squilla merguiensis, sp. nov.

While doubtfully referring a male specimen from Mergui to *Squilla microphthalma* Milne Edwards, Kemp and Chopra[1] enumerated the following features in which this particular specimen differed from other typical examples of this species (Text-fig. 1*a*) :—

(i) The rostrum is much narrower and is about one and a half times as long as wide.

(ii) The cornea is decidedly more expanded, its breadth being contained about two and a quarter times in the total length of the eye.

(iii) The eye reaches well beyond the end of the basal antennular segment and fully to the middle of the ultimate segment of the antennal peduncle. In typical *S. microphthalma* the eye does not nearly reach the end of the basal antennular segment and barely reaches the base of the ultimate segment of the antennal peduncle, much as in Brooks' figure of *S. chlorida*[2].

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[1]Kemp, S. & Chopra, B., *Rec. Indian Mus.* XXII, pp. 299-300 (1921).
[2]Brooks, '*Challenger*' *Rep. Stomatop.*, pl. ii, figs. 1, 3 (1886).

(iv) The lateral process of the fifth thoracic somite is short, stout and directed strongly forwards, whereas in typical *S. microphthalma* it is directed straight outwards.

(v) The raptorial dactylus bears five teeth (the terminal one included), all of which are well developed and evenly spaced. The proximal tooth is not greatly reduced and does not lie close against the next of the series as in those specimens of *S. microphthalma* which possess the same number of teeth.

(vi) There are clear indications of a pair of submedian carinae on the fifth abdominal somite.

In addition to the above-mentioned differences recorded by Kemp and Chopra, we have found the following further characters which distinguish this specimen from *S. microphthalma* :—

(i) The inferior surface of fifth thoracic somite is provided with a spine in its lateral part on each side. In *S. microphthalma* this spine is absent, and the inferior surface of fifth thoracic somite is smooth.

(ii) The following abdominal carinae end in spines :—

Carinae.	Abdominal somites.	
	Mergui specimen.	*S. microphthalma.*
Submedian	6	6
Intermediate	3, 4, 5, 6	5, 6
Lateral	(3[1]), 4, 5, 6	5, 6
Marginal	5	3, 4, 5

Kemp and Chopra have further stated, " It perhaps represents a species hitherto unknown, but the resemblances to *S. microphthalma* are so great that we hesitate to describe it as new." We, too, might have been of the same opinion, but for such definite characters as the spinuous undersurface of the lateral part of the fifth thoracic somite, and the striking difference between the spines on abdominal carinae. In our opinion these characters, combined with those enumerated by Kemp and Chopra, justify our assigning this specimen to a new species, *Squilla merguiensis.*

Holotype.—♂, 40 mm., Regd. No. C. 302/1, Zoological Survey of India.

Type-locality.—4 miles N. N. E. of Kabusa Is., Mergui Archipelago, 33 fathoms (collected by R. I. M. S. "Investigator").

This species is obviously closely related to *S. microphthalma,* from which it differs in the characters mentioned above. According to Kemp and Chopra "it differs from Brooks' account of *S. chlorida* (i) in the form of the rostrum, (ii) in the length of the eye compared with that of the antennal and antennular peduncles, and (iii) in the direction of the lateral process of the fifth thoracic somite".

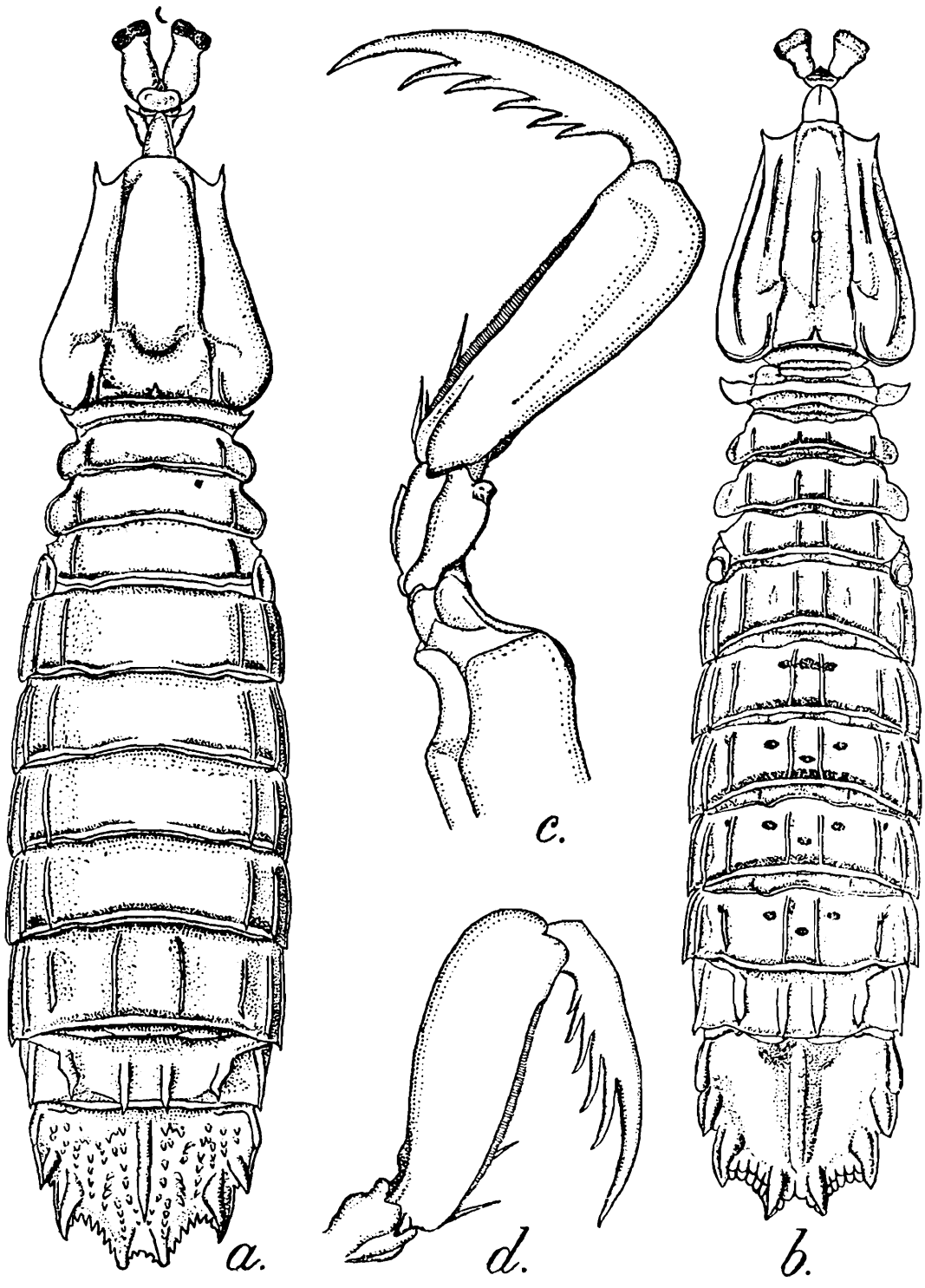
In having a spine on the inferior margin of the fifth thoracic somite, *S. merguiensis* resembles *S. decorata* Wood Mason.

[1]On one side only.

Squilla bengalensis, sp. nov.

This species closely resembles *S. scorpio* Latr. and *S. scorpio*, var. *immaculata* Kemp. It can, however, be distinguished from these by the following characters (Text-fig. 1*b*) :—

Carapace is distinctly more than half as long as its breadth behind the antero-lateral angles. There is no blunt lobe beneath each antero-lateral spine of carapace. Rostrum, as in *S. scorpio*, var. *immaculata*, is about as long as broad. Eye is small and elongated. Cornea, which is obliquely set on the eyestalk, is wider than the length of eye.



Text-fig. 1.—*a. Squilla merguiensis*, sp. nov., entire specimen in dorsal view ×3½ ; *b. Squilla bengalensis*, sp. nov., entire specimen in dorsal view : ×1 ; *c.* Raptoria claw of *S. bengalensis* : ×2 ; *d.* Raptorial claw of *S. scorpio* : ×2⅔.

Antennular peduncle is about two-thirds as long as the carapace.

Mandible bears a three-jointed palp.

The dorsal carina of carpus of the raptorial claw is entire. The outer margin of raptorial dactylus is convex, but the proximal lobe characteristic of *scorpio*, and its variety *immaculata* is obsolete. The inner edge of the dactylus bears six teeth (Text fig. 1*c*) including the apical one.

Only first two pairs of thoracic appendages bear epipodites.

The last three thoracic somites possess distinct, though weak, submedian carinae and strong intermediate carinae. The pair of lobes on the inferior margin of fifth thoracic somite is more acute and pointed. The lateral lobe on the fifth thoracic somite is broad and less acute.

The number and disposition of abdominal carinae agree with those in *scorpio* but the spine formula of the carinae is different. The following abdominal carinae end in spines :—

Carina.	Abdominal somites.
Submedian	6
Intermediate	5, 6
Lateral	(1), (2), 3, 4, 5, 6
Marginal	(1), 2, 3, 4, 5, 6

The prelateral teeth on the telson are strong and clearly marked.

In general, the scheme of coloration agrees with that of var. *immaculata*. The lateral projections of the fifth thoracic somite are without black spots. The second abdominal somite has a transverse band of black between the submedian carinae in the anterior region. On each of the following somites there are three patches of black pigment, a posterior patch between the submedian carinae, and one each between the submedian and intermediate carinae, anteriorly. There is a deep patch of black on the basal region of the outer uropod, and a suffusion of light black on the inner uropod.

Holotype.—Male, 121·4 mm., Regd. No. C 3013/1, Zoological Survey of India.

Type-locality.—Salt Lakes, Lower Bengal ; Coll : Dr. T. N. Poddar.

Besides the holotype, one more specimen of this new species is present in the collections, registered as under :—

C.3014/1 .. Piali River, Uttar- bhag, Lower Bengal. Dr. S. L. Hora. 23-5-1934. 1♂, 55·5 mm.

Remarks.—The presence of a three-jointed mandibular palp, and six teeth on the raptorial dactylus distinguish this species from *scorpio* and its variety, from which it also differs in the spine formula of the abdominal carinae.

Squilla scorpio Latreille.

1913. *Squilla scorpio*, Kemp, *Mem. Indian. Mus.* IV, p. 42, pl. ii, fig. 30.

1929. *Chloridelta scorpio*, Schmitt, *Lignan Sci. J.* VIII, p. 133.

C. 2992/1 .. Guanto, near Foo- chow, (Amoy). Dr. S. F. Light 21-1-24. 1♂, 71 mm.

This specimen belongs to the Light Collection from South China. Its raptorial dactylus bears six teeth (Text-fig. 1*d*.) (cf. *S. bengalensis*, sp. nov., *vide ante*), differing in this respect from typical examples of *S. scorpio* in which there are only five teeth. The submedian carinae on the last three thoracic somites are also strong. The marginal carinae on the fourth and fifth abdominal somites end in spines.

In the number of teeth on the raptorial dactylus this example resembles *S. bengalensis* but the absence of a mandibular palp and other characters definitely assign it to *S. scorpio*.

Squilla costata De Haan.

1913. *Squilla costata*, Kemp, *Mem. Indian Mus.* IV, pp. 84-86, pl. vi, figs. 70-72.

Two examples, one male and another female, of this species, like the previous one, belong to the Light Collection. Schmitt[1], in his report on this collection, has not made any mention of this species. These two specimens (Text-fig. 2*a*, *c*, *d*, *f* & *h*) agree in almost all details with the Japanese examples of *S. costata* (referred to by Kemp) except that the number of tubercles on the body is less and the dorsal carinae on the abdominal somites are fewer in number. In the shorter example the portion of abdominal somites between the marginal and lateral carinae is free from tubercles and the spines on the external margin of uropodal peduncle are nine in number.

The specimens bear the following numbers :—

C 3025/1 .	Amoy .	Dr. S. F. Light	♀, 71·2 mm.
C 3026/1	Amoy .	Dr. S. F. Light	♂, 48·3 mm.

Squilla, sp. prox. **costata** De Haan.

Kemp[2] referred an aberrant example from Burmese Coast to *S. costata*. He, however, enumerated certain features in which this example differed from the typical examples, a Japanese specimen of which he was able to secure for comparison. Later on Kemp and Chopra[3] recorded another example from the Burma Coast, which agreed with the example earlier mentioned, except in certain minor features. We have re-examined this specimen, compared it with the Japanese specimen, and also with those from Amoy. Besides the features mentioned by Kemp, and Kemp & Chopra, this specimen shows the following additional points of difference :—

(i) The anterior end of rostrum is narrow and rounded (Text-fig. 2*b*). In the examples from Japan and China the anterior end of rostrum is broad and truncated.

(ii) The carapace (Text-fig. 2*b*) is comparatively narrow, the ratio of its length to breadth being 2·6 in this example, as against 2·3 in the typical specimens.

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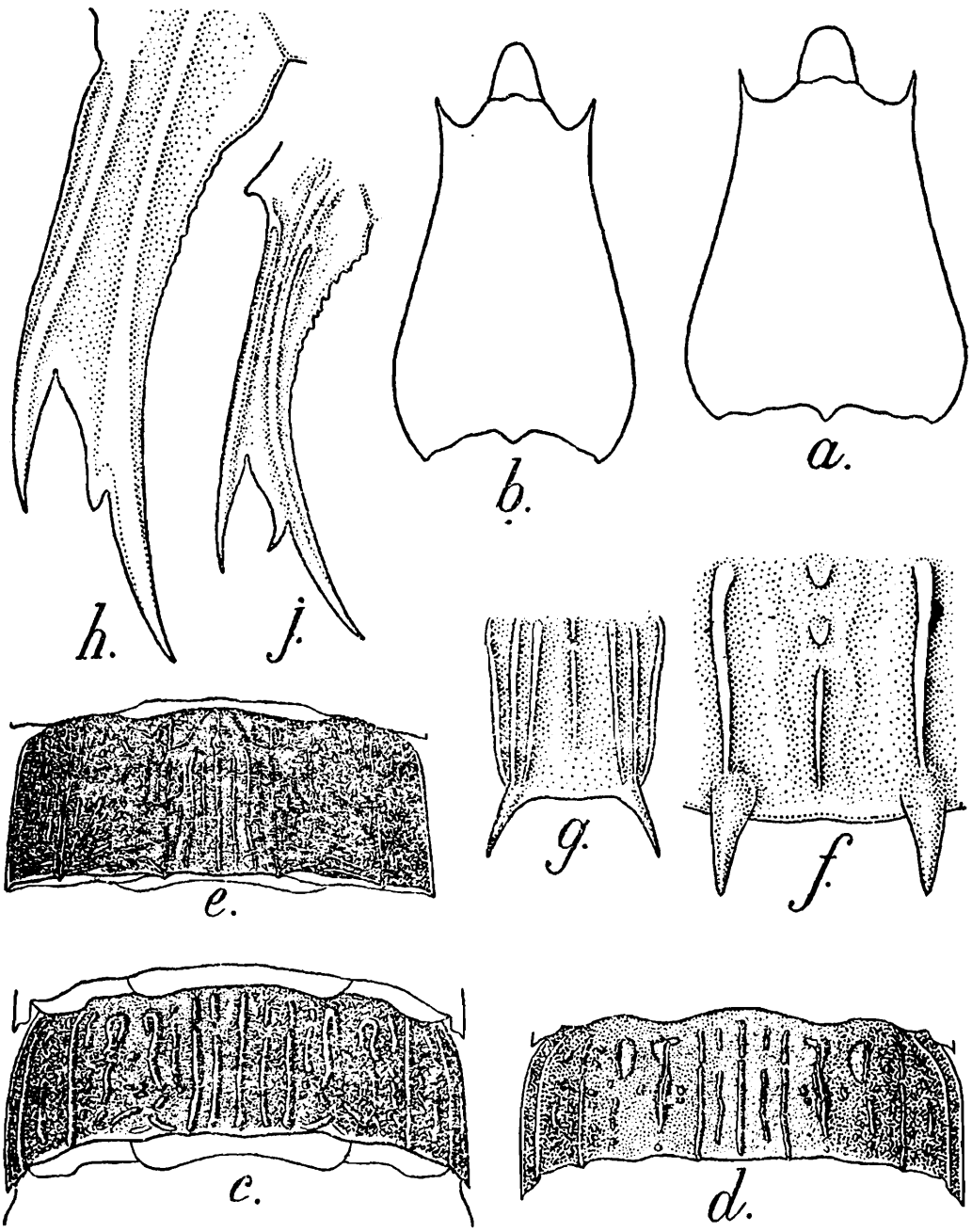
[1] Schmitt, W. L., *Lignan Sci. Jour.* VIII, pp. 127-148, 4 pls. (1929).
[2] Kemp, S., *Mem. Indian Mus.* IV, pp. 84-86, pl. vi, figs. 70-72 (1913).
[3] Kemp, S., & Chopra, B., *Rec. Indian Mus.* XXII, p. 303 (1921).

(iii) The sculpturing of second abdominal somite (Text-fig. 2*e*) is different.

(iv) The lateral lobe on the external margin of the inner spine of the bifurcate base of uropod (Text-fig. 2*j*) is long and acute and its edge is distinctly concave.



TEXT-FIG 2.—*a. Squilla costata* deHaan, dorsal view of carapace and rostrum in a specimen from Amoy, China : ×3⅓ ; *b. Squilla*, sp. prox. *costata*, carapace and rostrum : × 4⅔ ; *c.* Second abdominal somite of *S. costata*, Chinese example : ×3⅓ ; *d.* The same in a Japanese specimen : ×4⅔ ; *e.* The same in *Squilla* sp. prox. *costata* : ×8 ; *f.* Posterior margin of sixth abdominal somite in the Chinese example of *S. costata* and, *g.* in *Squilla* sp. prox. *costata* : ×14 ; *h.* and *j.* Bifurcate process of uropodal peduncle in *S. costata* and *Squilla* sp. prox. *costata* resp.: ×8.

In all probability the Burmese specimens represent a race of *S. costata*. In the absence of more material, however this question has to be deferred.

Squilla raphidea Fabricius.

1901. *Squilla raphidea*, var. *africana*, Balss, *Abh. Klasse K. Bayer. Akad. Wiss.*, Suppl. Bd. II, Abh. 2., p. 8., figs. 2*a-b*.

A re-examination of the material, named as *Squilla raphidea* Fabr., preserved in the Zoological Survey, shows that this consists of a mixture of two distinct but very closely allied forms which can be distinguished from each other by the breadth of cornea, presence or absence of a spine on the lateral margin of fifth thoracic segment and the condition of submedian carinae. Prof. L. B. Holthuis of Rijksmuseum van Naturlijke Historie, Leiden, to whom we referred this, also confirmed our view[1] after an examination of the entire named material of *Squilla raphidea* in the Leiden Museum, and of cotypes of *S. harpax* DeHaan. As was suspected by us, one of these two forms belongs to *S. harpax* DeHaan[2], and this is also corroborated by Prof. Holthuis.

Fabricius'[3] description of *Squilla raphidea* applies equally well to both these forms and his types are no longer extant. It is, therefore, impossible to judge as to which of these two forms his material belonged. Under the circumstances the views of DeHaan, who first revised this species, have to be accepted. DeHaan (*loc. cit.*, p. 221) in his key distinguished under "*S. raphideae*, n." two species, *viz.*, *S. raphidea* Fabricius and *S. harpax*, n., on characters of telson and thoracic legs. He identified as *S. raphidea* the specimen figured on pl. 324 of *Encycl. Method.* This figure, according to Prof. Holthuis, shows distinct submedian carinae and thus is identical with one of the forms distinguished by us. We, therefore, propose to revive the name S. *harpax* DeHaan for one of the forms while retaining *S. raphidea* Fabr. (although not strictly in the sense in which Fabricius used it) for the other.

As the common characters of these two species have already been described and figured by Kemp[4], we shall content ourselves with giving such characters of these two forms, as will serve to differentiate them from each other.

The following are the distinguishing features of *S. raphidea*:—

(i) The apex of rostrum is generally long and acute and the lateral edges bordering it are sinuous. (Text-fig. 3*a*.)

(ii) The cornea is narrow (Text-fig. 3*a*). The ratio of the median length of carapace to the breadth of cornea varies from 3·8 to 5·3 (average, 4·3).

(iii) Lateral margin of fifth thoracic segment bears a spine (Text-fig. 3*c*) on each side.

(iv) Submedian carinae (Text-fig. 3*c*) on 6-8 thoracic somites are sharp and well defined.

(v) Intermediate carinae of at least the seventh and eighth thoracic somites end posteriorly in spines.

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[1]Prof. Holthuis writes, " ..... .I have examined all our material assigned to that species. I entirely agree with you that there are here two species, especially the characters afforded by the carinae and the spines on the thorax and abdomen are distinct. There are also some differences in the shape of the rostrum."

[2]DeHaan, W., in Siebold's *Faun. Japon. Crust.* p. 222, pl. li, fig. 1 (1849).

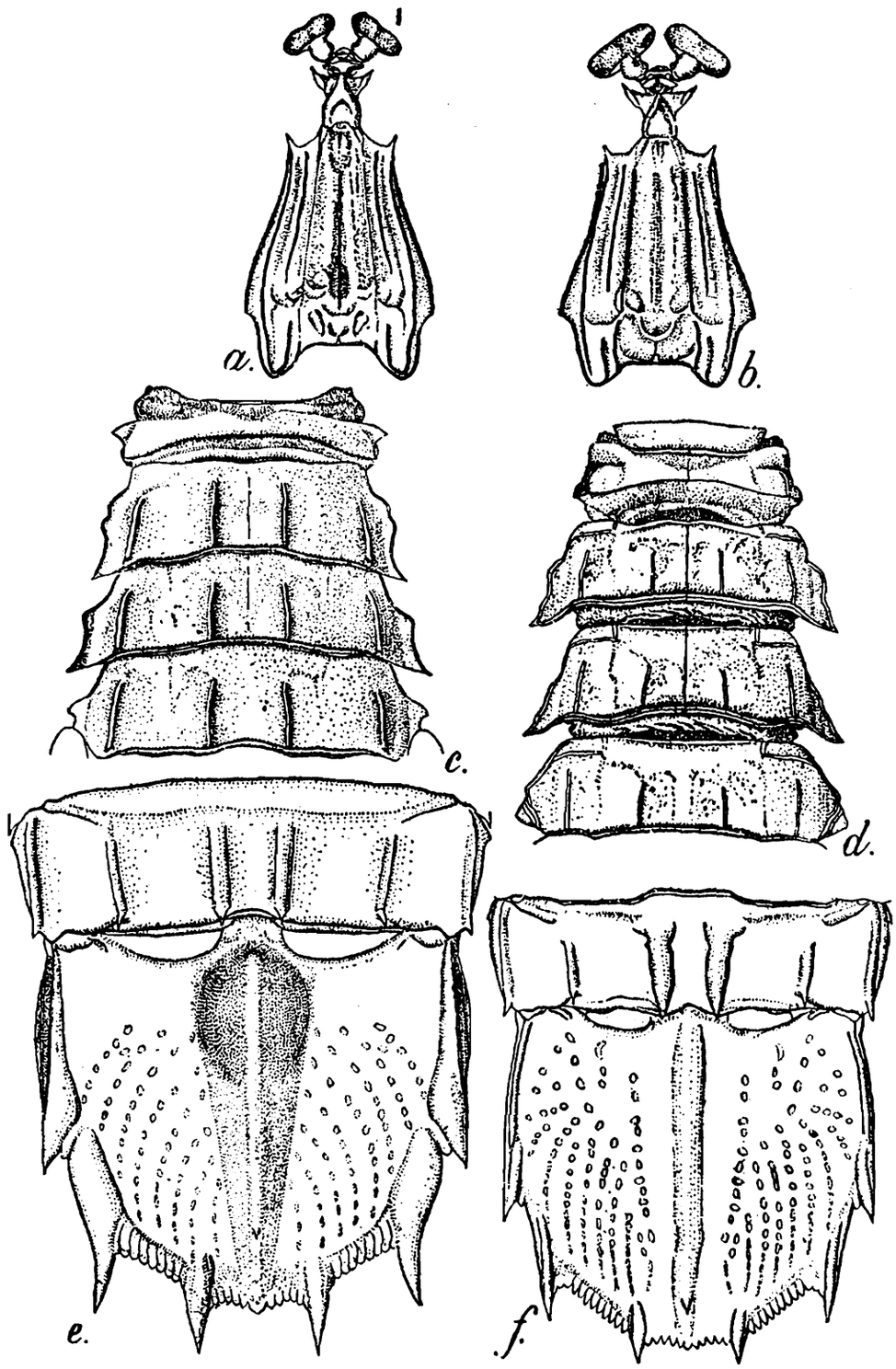
[3]Fabricius, J. C., *Ent. Syst. Suppl.*, p. 416 (1798).

[4]Kemp, S. W., *Mem Indian Mus.* IV, pp. 88-92, pl. vii, fig. 77 (1913).

(vi) Submedian carinae on first five abdominal somites are sharp and distinct.

(vii) Carinae supporting the marginal teeth of telson are strong and massive (Text-fig. 3*e*) and in very large specimens sometimes obliterate the marginal denticles.

(viii) This species attain a large size, very large examples measuring more than a foon in body length.



TEXT FIG. 3.—*a.* Anterior region of *Squilla raphidea* Fabr.: ×¾ *b.* The same in *S. larpax* DeHaan : ×17/20 ; *c.* and *d.* Thoracic somites of *S. raphidea* and *S. harpax* resp. ×1½ ; *e.*, and *f.* Telson of *S. raphidea* and *S. harpax*, resp. ×1½.

In characters of the carapace, antennule, antennae, raptorial claw etc., this species agrees with Kemp's description.

Balss' *S. raphidea*, var. *africana* appears to be identical with this species, as is apparent from his description and figures.

This species is represented in the collections of the Zoological Survey of India by the following material :—

7318-20/10	Off Puri	"Golden Crown"	1 ♂, 272 mm., and 1♀, 237·5. mm.
C 3011/1	Chandipur, Balasore	5-3-39	3♀♀, 181 mm. 233 mm.
C 3012/1	Bay of Bengal, N. & S. of Eastern Channel.	"Lady fraser" March' 24.	2♀♀, more than 250 mm.
765/10	Off Saugor Island		1♀, 269 mm.
3097/5	Sandheads, mouth of the R. Hooghly	"Lady Fraser"	2♂♂, 264 mm-265 mm.
C 2475-6/1	Ditto	Ditto . .	2♀♀, 221 mm., 270 mm.
8031/9	Ditto	R. M. Daly	1♂, 275 mm.
C 324/1	Sunderbans	Abdul Rahim .	1♀, 243 mm.
C 3027/1	Calcutta Bazar .	..	1♀, 230 mm.
C 323/1	Tale' Sap, Siam .	N. Annandale 21-1-'06 .	1♂, 196·5 mm., 1♀, 254 mm.
4746/9	Singapur .	Raffles Mus. . .	1♀ 241 mm.
C 2479/1	Kuching Fish Market, Sarawak.	Sarawak Mus.	2♀♀, 160 mm. and 190 mm.
4726/10	No locality .	..	1♀, 211 mm.

Squilla harpax De Haan.

1849. *Squilla harpax*, DeHaan, *Faun. Japon. Crust.* p. 222, pl.li, fig. 1.

This species was so far regarded as a synonym of *Squilla raphidea* Fabr.

The characters of this species mentioned by DeHaan on pp. 222-223 of *Faun. Japon. Crust.* are very vague and cannot serve to distinguish this species. We, therefore, enumerate below the diagnostic features of this species :—

(i) Rostrum generally ends in a short, acute apex (Text-fig. 3*b*). The lateral margins bordering the apex are concave.

(ii) Cornea is wide (Text-fig. 3*b*). Ratio of median length of carapace to the width of cornea varies from 2·7 to 3·2 (average, 2·9), this ratio for *S. raphidea* being 3·8-5·3 (ave. 4·3).

(iii) The lateral edge of fifth thoracic somite is not armed with a spine (Text-fig. 3*d*).

(iv) Submedian carinae on the thoracic somites and the first five abdominal somites are obsolete.

(v) The intermediate carinae on the thoracic somites do not end posteriorly in spines.

(vi) The carinae supporting the marginal teeth of telson are not massive (Text-fig. 3*f*).

(vii) Telson is proportionately longer than in *S. raphidea.*

(viii) This species does not attain a large size, the largest specimen in our collection, a female from Sandheads, measuring 172·5 mm. Among DeHaan's cotypes of this species the largest example is 193 mm. long.

The fact that this species is smaller in size than *S. raphidea* might suggest that this is only a growth stage of the latter. Breadth of the cornea and the condition of thoracic and abdominal carinae suggest this explanation. But the presence of a spine on the lateral margin of the fifth thoracic somite in *S. raphidea* only, cannot be accounted for by growth. Moreover, in same-sized specimens of the two species these characters are very distinct.

The specimens of *S. harpax* in the collections of the Zoological Survey of India are from the following localities :—

C 3022/1	Off Bombay, 20-25 fathoms.	S. T. William Carrick	2♂♂, 110·5 mm. an 114 mm. 1♀, 129 mm.
7323/10	Madras Presidency	" Golden Crown "	1♀, 153·5 mm.
C 2476-7/1	Sandheads, Mouth of R. Hoogly.	P. V. " Lady Fraser "	3♀♀, 138 mm-175 mm.
C 3023/1	Ditto	Ditto	1♂, 133·8 mm. 10♀♀, 131·5 mm.-172·5 mm.
C 3112/5	Ditto	A. Miller	1♀, 136·5 mm.
C 2478/1	Port Blair	R.P. Mullens, June, '18	1♂, 144 mm. 1♀, 148·5 mm.
C 3021/1	Singapore	Capt. Hutchinson 19th April, '14.	2♂♂, 83 mm. and 132 mm.
3328/9	Hongkong	G. Dennys	4♂♂, 145 mm-157·5 mm. 2♀♀, 143 mm, and 155 mm.
9834-9/6	Ditto	Hongkong Mus.	4♂♂, 108 mm.-135 mm. 2♀♀, 112 mm. and 115 mm.
4849/9	Ditto	G. Dennys	1♀, 138 mm.

Lysiosquilla acanthocarpus Miers.

1934. *Lysiosquilla acanthocarpus*, Chopra, *Rec. Indian Mus.* XXXVI, pp. 30-31.

This rare species is known from the Bengal coast through a single specimen, collected by the " Lady Fraser " from Sandheads, off the mouth of river Hooghly (Chopra, *loc. cit.*). The unnamed collections

contain another specimen from the Bay of Bengal, this time from the Chittagong coast in East Bengal. This specimen is registered as under.

C 2996/1	Sandy Beach at Cox's Bazar, Chittagong (East Pakistan).	Dr. B. N. Chopra, 14-24.II-'38.	1♂, 60 mm.

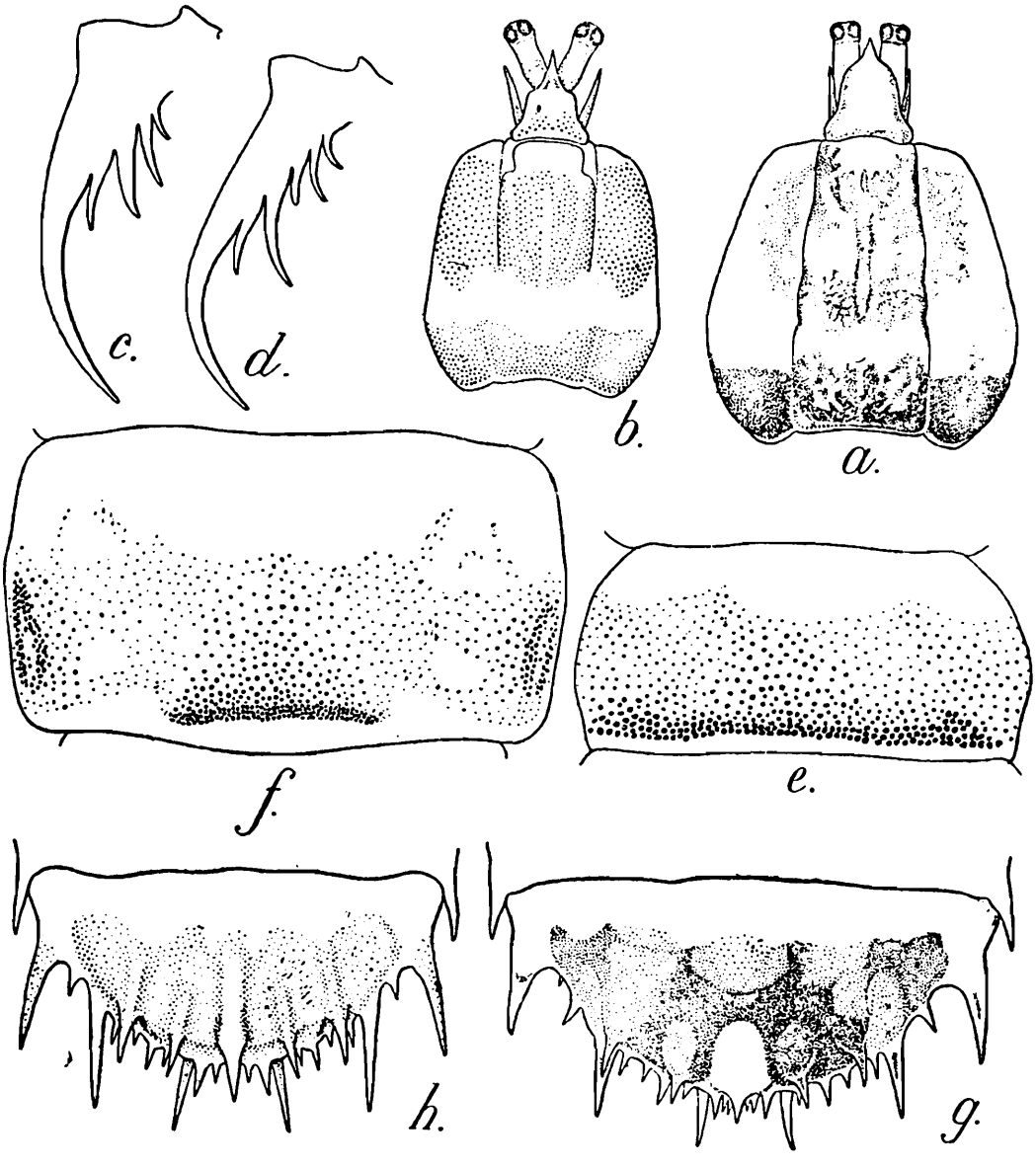
Other records of this species from Indian Region include both the coasts of Peninsular India, Trincomali in Ceylon and the Andaman Islands.

Lysiosquilla multifasciata Wood Mason.

1913. *Lysiosquilla multifasciata*, Kemp, *Mem. Indian Mus.* IV, pp. 122-124.

1939. *Lysiosquilla multifasciata*, Chopra, *Sci. Rep. John Murray Exped.* VI, No. 3, pp. 162-165, text-figs. 8, 9.

A single male specimen from Cox's Bazar, Chittagong, measuring 50 mm. is referred to this species. On comparison with Wood Mason's



Text-fig. 4.—*Lysiosquilla multifasciata* Wood—Mason *a*. Carapace and rostrum in a specimen from Bombay : ×2 ; *b*. The same in Cox's Bazar example : ×2 ; *c* and *d*. Raptorial dactyli of Bombay and Cox's Bazar examples resp. ×4 ; *e*. A thoracic segment, and *f*., an abdominal segment of Cox's Bazar example; × 4 ; *g*. Telson in Bombay specimen : ×4 ; *h*. The same in Cox's Bazar example : ×4.

type of this species from Bombay, and with the Philippine examples preserved in the Zoological Survey,[1] this specimen shows the following differences :—

(i) The eyestalks are long and narrow (Text-fig. 4*b*), the eye extending up to end of second segment of antennular peduncle. In the typical examples the eye extends only as far as the end of first segment of the antennular peduncle (Text-fig. 4*a*). Chopra (*loc. cit.*) has recorded numerous variations in the shape and size of the rostrum in relation to eyestalks.

(ii) The base of rostrum is broad. Its lateral margins are sinuous at the base and they converge gradually towards the apex which is produced into a long spine extending as far as the middle of eyestalks. In the type-specimen of *L. multifasciata* the lateral margin of rostrum is feebly sinuous and the apex extends up to the corneal region of eyes.

(iii) Raptorial dactylus bears six teeth, (Text-fig. 4 *d.*)

(iv) The dorsal as well as the marginal spines of telson are longer (Text fig. 4*h* ; cf. also fig. *g.*). There are only two pairs of denticles between the movable submedian teeth, as in one of Nobili's[2] examples from the Red Sea.

(v) The pigmentation of the body is also different. Unlike the type specimen. there are no dark transverse bands of dense pigment, but only suffusions of scattered pigment granules, which are denser in the basal region of the thoracic and abdominal somites, but rarer towards the sides and in front. The scheme of coloration on the carapace, thoracic and abdominal somites and telson can be best understood by reference to Text fig. 4*a*, *b*, and *e*, *f*, *g*, *h*.

The present specimen is registered as under :—

C 3024/1	Cox's Bazar (purchased).	Dr. Chopra 18-2-38.	♂, 50 mm.

Lysiosquilla multifasciata was originally described from Bombay (Wood Mason[3]). It is known from waters around Japan (Komai[4]), China (Schmitt[5]), the philippines (Kemp[6] ; Roxas & Estampador[7]), Borneo (Nobili[8]), Gulf of Oman, Arabian sea (Chopra, *loc. cit.*) and Red Sea (Tattersal[9] ; Dolfuss[10] ; Holthuis[11]). This species was so far not known from the Bay of Bengal and the present is its first record from this region. Alikunhi[12] in an unpublished work has, however, recorded eleven larval specimens of this species from the Madras Plankton.

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[1]These specimens have been dealt with by Kemp, *vide* Kemp, S., *Philippine J. Sci. Manilla* X, p. 175, pl. i, figs. 2, 3 (1915).

[2]Nobili, G., *Ann. Sci. nat. Zool. Paris* (9) IV, pp. 326-342 (1906).

[3]Wood Mason, H., *Figs. and Descr. of* 9 *Squillidae* p. l, pl. i, figs. 4-7 (1895).

[4]Komal, T., *Annot. Zool Japon*, XVII, p. 271 (1938).

[5]Schmitt, W. L., *Lignan Sci. J.* VIII, p. 144, pl. xix, figs. 15-18 (1929).

[6]Kemp, S., *Philippine J. Sci. Manilla* X, p. 175, pl. i, figs. 2, 3 (1915).

[7]Roxos, H. A., & Estampador, E., *Natural & Applied Sci. Bull. Manilla* I, p. 113 (1930).

[8]Nobili, G., *Boll. Mus. Torino* XVIII, No. 447, pp. 28-32 (1903).

[9]Tattersal, E., *J. Linn. Soc. Zool.* XXXIV, p. 359. pl. xxviii, fig. 6 (1921).

[10]Dolfuss, R. P., *Mem. Inst. Egypt.* XXXVII, p. 203, fig. 11 (1938).

[11]Holthuis, L. B., *Temminckia* VI, p. 274 (1941).

[12]Alikunhi, K. H., *Rec. Indian Mus.* XLVIII (in press).

Gonodactylus lenzi Holthuis.

1905. *Protosquilla glabra*, Lenz, *Abh. Seneckcnb. Naturf. Gesellsch.* XXVII p. 388, pl. xlvii, fig. 13.

1913. *Gonodactylus glaber*, kemp. *Mem. Indian Mus.* IV, p. 182, pl. x, fig. 121.

1941. *Gonodactylus lenzi*, (new name for *G. glaber* Lenz), Holthuis, *Temminckia* VI, p. 288.

One male specimen (Regd. No. C 2994/1) measuring 16 mm., from Ross Island, Andamans (Shore collection, 19th May, 1930) is referred to this rare species. This species has already been recorded from Great Coco Islands, N. Andamans by Kemp. It is also known from Zanzibar and Ceylon (Lenz, *loc. cit.*), the Bay of Batavia (Holthuis, *loc. cit.*) and the Philippines (Kemp[1] ; Roxas and Estampador[2]).

Gonodactylus glyptocercus Wood Mason.

1913. *Gonodactylus glyptocercus*, Kemp, *Mem. Indian Mus.*, IV. pp- 186-187.

C 2993/1	Nancouri Harbour, Andamans. Stn. No. 702.	Marine Survey 12-1-26.	1♂, 21·5mm.

This species is not known from localities West of the Andamans. It extends up to Oceania and Japan. So far it has not been found in the costal waters of India.

Gonodactylus gyrosus Odhner.

1923. *Gonodactylus gyrosus*, Odhner, *Goteb. Vetench. Samh. Handl.* XXVII No. 4, pp. 11-13, pl. i, figs., 4, 5.

We refer to this species a single female (Text-fig. 5) from Brooksabad, Andamans, which, while agreeing with Odhner's (*loc. cit.*) description and figures in general, shows the following differences :—

(i) Rostrum is somewhat longer than that of the type specimen. It is fully four times as long as its undivided part. It slightly exceeds the cornea and extends as far as the end of basal segment of antennular peduncle. The lateral spines of rostrum reach almost up to the middle of eye stalks.

(ii) Eyes are long, being slightly less than a third of carapace length and reaching up to the middle of second joint of the antennular peduncle.

(iii) The pattern of pigmentation of the abdominal somites and telson is also somewhat different from that of the tyye.

C 2995/1	Brooksabad, Andamans.	Dr. H. S. Rao, 3-1-34.	1♀, 28·3mm.

This example was caught in "holes and crevices amidst dead coral between tide marks.

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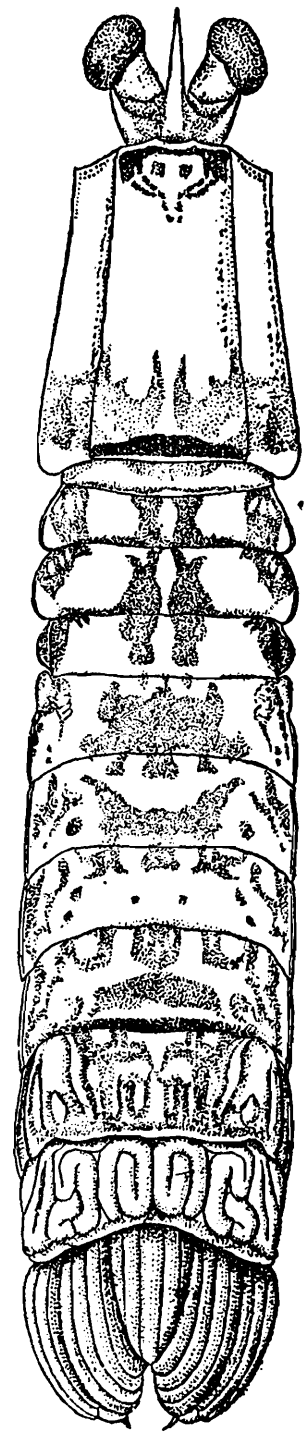
[1]Kemp, S., *Philippine J. Sci. Manilla* X, p. 186 (1915).

[2]Roxas, H. A. & Estampador, E., *Natural and Applied Sci. Bull Manilla* I, p. 124, pl. iii, fig. 5 (1930).

G. gyrosus was originally described from the Gilbert Island. The only other record of this species, known to us, is by Ward[1] from Diego



TEXT-FIG. 5.—*Gonodactylus gyrosus* Odner.

Garcia, Chagos Archipelago. Ward's material consisted of " one female measuring 57 mm. in maximum length"

The occurrence of this species in the Andamans is, therefore, very interesting.

[1]Ward, M., *Mauritius Inst. Bull.* II, pt. 2, pp. 49-108, pls. v, vi. (*Gonodactylus gyrosus*, p. 56).

MGIPC—M—7 ZSI—14-10-52—450.