

Telenomus demodoci, sp. n.

♂♀.—A slightly larger insect than the three species discussed above, about .8 mm. (fig. 1 b).

Head: vertex not so sharply angled between the posterior ocelli as in *ullyetti*. *Antennæ* (fig. 3 b). *Thorax*: mesonotum slightly less shining, and its sculpture more definite, than in *ullyetti*. Hind wing by no means parallel-sided, its fringe only about two-thirds to three-fourths the greatest width of the wing.

♂.—*Antennæ* yellowish brown; segments 7-11 of the funicle slightly transverse. *Genitalia* (fig. 2 b) very distinctive, longer and narrower than in *ullyetti* and *thestor*, besides differing in details.

UGANDA: Kampala (*H. Hargreaves*): 5 ♀♀, 2 ♂♂, bred from eggs of *Papilio demodocus* on various dates in October and November 1929.

LIX.—On *Psollicucumis Heding* and its Allies.

By HUBERT LYMAN CLARK and ELIZABETH DEICHMANN.

THE discovery of a new genus and species of dendrochirote holothurian from off Timor, viz., *Psollicucumis apneumona* Heding, reported in this journal (1), was of so great interest that the Museum of Comparative Zoölogy sought an exchange with the British Museum, where the types belong, and also secured, from the Zoological Museum in Amsterdam, the loan of Sluiter's material, used in describing *Cucumaria nocturna* (now referred to *Staurocucumis* Ekman 1927 (2), to which Heding's new species seemed closely allied. Indeed, the study of the excellent description and exquisite figures immediately leads one to question whether this supposedly new form represents anything but large individuals of Sluiter's species in which the respiratory trees have been lost. The lack of distinct anal papillæ and the feeble development of the cloaca, as indicated by Heding's figures, made this hypothesis seem reasonable.

Direct comparison of Sluiter's and Heding's material, side by side, shows that the two forms are identical. It was an error to describe *S. nocturna* as having two smaller ventral tentacles; they are all equally large, but in some cases two were partly hidden in the mouth,

so they gave the impression of being smaller. Sluiter's material (5 specimens) ranges from 8-22 mm. in length (a sixth specimen from much shallower water, 204 metres, and hard coral sand measures 26 mm., has much heavier spicules and a larger number of dorsal appendages; it may possibly represent an ecological variety. Sluiter's record of 32 mm. length may possibly refer to a seventh specimen, not sent to us). The specimens of *Psollicucumis* from the British Museum measure 32 mm. in length and represent a stage probably less than a year older; the gonads are slightly larger than in Sluiter's material.

Externally all the specimens agree well: the numerous ventral feet, the few papilliform dorsal appendages, all restricted to the radii, and, in the case of mature specimens, the pear-shaped form of the body, caused by the size of the gonads. The spicules also are identical to a notable degree (except in the specimen of *nocturna* from shallow water, already mentioned, where they are somewhat heavier and apparently exclusively short-armed; see Sluiter's figure, pl. viii. fig. 2).

Internally there is also notable agreement: the shape of the calcareous ring, the short retractors, the course of the intestine, etc. In the case of the larger individuals of *nocturna* the gonads are also hermaphroditic as in Heding's material. Incidentally this is also the case in the closely related form *S. abyssorum* Théel, where also the calcareous ring is of the same type as in *Psollicucumis*. As for the respiratory trees, most of the specimens of *S. nocturna* show signs of having regenerated the anal end or having recently suffered injury, as the anus is small with no distinct anal papillæ and in some cases no well-defined cloaca. In one specimen, however, the bases of two large respiratory trees are present (presumably the specimen which Sluiter examined), and that individual shows also a large anus with well-developed anal papillæ (individual from Sta. 284).

The name *Psollicucumis apneumona* Heding must therefore be relegated to the synonymy of *Staurocucumis nocturna* (Sluiter). Very likely Ohshima's species, *S. sluiteri*, from south of Honshu, 800-1200 metres, may also prove to be a synonym of *S. nocturna*. It was based upon specimens 11 mm. long. Ohshima saw the close resemblance to *S. nocturna*, but, as Sluiter's species

was supposed to have small ventral tentacles and coarser knobbed crosses besides the smooth long-armed ones, he felt that these were sufficient differences to warrant a new species. Both *S. sluiteri* and *S. nocturna* were placed in *Staurocucumis* by Ekman in 1927, close to *S. abyssorum*.

The question which naturally presents itself is whether *abyssorum* and *nocturna* are different species or possibly represent two varieties, viz., a continental form and an abyssal form. It is well known that young individuals of *S. abyssorum* have almost smooth crosses with long arms (var. *hyalina* Théel, 1886; see also Ludwig, 1894), while older individuals have mostly coarser, short-armed deposits with spines. A similar change is found in *S. nocturna*, and seems to be the normal course of development in the genus *Staurocucumis* (see Ekman, 1927, diagnosis).

No specimens are available to us of the young form of *S. abyssorum* (*hyalina*-stage), the smallest individual which we have examined measuring 4-5 cm., but critical study of the material in hand results as follows:—

The abyssal form, *S. abyssorum*, reaches typically a length of about 10 cm., while the continental form, *S. nocturna*, measures less than 5 cm.; the former has the feet arranged in distinct double or zigzag rows on all the ambulacra, at least in specimens 4-5 cm. long, while even the largest *nocturna* has few and widely-spaced dorsal appendages, though with crowded ventral feet. The internal anatomy of the two forms is practically identical; *abyssorum* (large specimens) has much longer tubes in the male portion of the gonads than has *nocturna*; the ovaries seem on the other hand to be about equally large. The calcareous ring is of the same type in both forms, with the peculiar "windows" in the radial pieces described by Heding. Also the course of the intestine, the length of the retractors, and the position of the gonads show close similarity. The respiratory trees are well developed in *abyssorum* and firmly attached to the dorsal muscle-bands. In *nocturna* it seems as if these organs are more delicate, with few branches (*vide* Sluiter), and most likely never well attached to the integument. Comparison of the spicules shows that *abyssorum* has larger, more irregularly developed crosses with tendency to very eccentric placement of

the outer projection, the latter often reduced, and one arm of the cross spinous; in the feet the supporting rods are formed by modification of crosses as if the two arms had moved closer and closer until united to form one short arm with a basal perforation; the tentacles have rods similar to those found in the feet. In *nocturna* on the other hand, the crosses are regularly developed; the feet have delicate curved rods, simple or with a slender arm, and the tentacles have besides the characteristic enormous thick smooth curved rods (described by both Sluiter and Heding) smaller spicules of the same type, sometimes with a short simple projection.

Although it seems clear, from this detailed comparison, that the two species are closely allied, they are evidently best treated as distinct. As far as now reported, *abyssorum* comes from many localities in the Indo-Pacific (Théel, Ludwig, Clark) and also from the Atlantic Ocean, where the specimens hitherto reported seem to have been small with "hyalina" spicules only [Marenzeller, Grieg, Mortensen ("*Cucumaria ingolfi*" Deichm., from south of Iceland)], from depths of 2470 to 4025 metres. Ekman's specimens from the Antarctic (1927) seem slightly different from the typical form. On the other hand, *nocturna* is known from the Malay Archipelago, 204 to about 1200 metres (Sluiter, Heding), whereas *sluiteri* was taken south of Honshu, Japan, in about 800-1200 metres (Ohshima).

The genus *Staurocucumis* has no special affinities with the genus *Psolidium*. Heding's suggestion that *P. arcuatum* and *convergens* Hérouard resemble *Psolicucumis* "to a rather striking degree" is simply inexplicable. Those species have numerous feet dorsally, scattered over the whole surface, and the spicules are of an entirely different type. The appearance which "recalls that of a *Psolus*" in the specimens which Heding named *Psolicucumis* is accidental, caused by uneven contraction of the body-wall and the unusually forward position of the large gonads. By no means can one say that the trivium is "flattened to a creeping-sole" in any specimens of *Staurocucumis* that we have seen, the word creeping sole being taken in the sense in which it is used in the typical members of the genus *Psolus*, *Psolidium*, *Thyonepsolus*.

REFERENCES.

- (1) HEDING, S. G. 1934. "On a new Dendrochirote Holothurian from off Timor." *Ann. & Mag. Nat. Hist. ser. 10, vol. xiii.* pp. 456-464, pl. xvi. 2 text-figs.
- (2) EKMAN, S. 1927. "Holothurien der Deutschen Sudpolar-Expedition," vol. xix., *Zool. 11*, pp. 361-419, 18 text-figs. (Gives references to the papers mentioned in this review, except Mortensen's Handbook of the Echinoderms of the British Isles, 1927, Oxford Univ. Press.)

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LX.—*New Species of Nusalala (Neuroptera, Hemerobiidæ)*. By D. E. KIMMINS, Department of Entomology, British Museum (Natural History).

THROUGH the kindness of Dr. L. Berland, I have been able to examine the type of *Nusalala erecta* Navás, which is the type of the genus *Nusalala*. Contrary to the diagnosis given by Navás, I find that in the costal area of the anterior wing there is a small but definite recurrent vein. Esben-Petersen's genus *Haarupiella* was differentiated from *Nusalala* by the presence of a recurrent vein. Consequently there is now no character with which to separate the two genera, and *Haarupiella* must therefore be placed in the synonymy of *Nusalala*.

This combination of the two genera brings the number of described species of *Nusalala* up to thirteen. Many of these species are known from the female sex only, and in no case has any attempt been made to use the genitalia for diagnostic purposes. Examination of a series of species reveals that there is considerable variation in venation, particularly in the number of cross-veins in the gradate series, even on opposite sides of the same insect.

Thus it is very probable that some, at least, of the described species will prove to be synonyms when more is known of them. Good specific characters may be found in the male genital structures, and possibly in the female also. Examination of these structures necessitates the removal of the abdomen and its treatment with KOH, but the characters so obtained are more than worth the trouble involved. The drawings in the paper have been made from specimens so treated, whilst still in fluid and before mounting in Canada Balsam.