ON THREE CHALCIDOID PARASITES OF COTTON BORER-BEETLES FROM SOUTH INDIA.

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While studying the bionomics of the Cotton Borer-beetles, *Sphenoptera gossypii* Kerr. and *Pempheres affinis* Fabr., in South India, the senior writer bred, among others, three interesting Chalcidoid parasites of these beetles. One of these, *Euderus gossypii* Ferr., is the well known parasite of *Sphenoptera gossypii* Kerr. in Sudan and Punjab ; and the other two are new to science. In an earlier paper[1] Ayyer gave a brief account of the biology of the parasites and also discussed the possibilities of using them as natural control of the Cotton beetles, and in this paper the new species are described together with additional notes on all the species.

Family PTEROMALIDAE.

Genus **Neocatolaccus** Ashmead.

1864. *Catolaccus, (partim)*, Ashmead, *Bull. Ohio Expt. Sta.*, I, p. 161.
1904. *Neocatolaccus*, Ashmead, *Mem. Carnegie Mus.*, I, (4), p. 320.
1909. *Neocatolaccus*, Schmiedeknecht, *Gen. Ins.*, fas, 97, p. 356.
1909. *Neocatolaccus*, Masi, *Boll. Lab. Zool. Portici*, III, p. 138.

The genus *Neocatolaccus* was erected by Ashmead in 1904 with *Catolaccus tylodermae* Ashm. as the type. Since then five more species have been described from different parts of the world : *australensis* Gir.[2] from Australia, *subviridis* Gir.[3] from Paraguay, *livii* Gir.[4] from Porto Rico, *syrphidis* Gir.[5] from Trinidad and *sphenopterae* Ferr.[6] from Sudan. No species of the genus has so far been described from India.

According to Ashmead and Schmiedeknecht there are in this genus *three* ring joints in the antennae in *both* the sexes. On behalf of Masi[7], Crawford re-examined the type specimen of *N. tylodermae* (Ashm.) in the U. S. National Museum, Washington, and found only *two* ring joints in both sexes. Masi erected the genus *Pseudocatolaccus* for forms having three ring joints in the female and two in the male. Ashmead describes *Neocatolaccus* as having a distinct median carina on propodium, while according to Masi *Pseudocatolaccus* is without a carina. Females of the closely related genera *Metapachia* Westw. and *Parapteromalus*

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[1] Ramakrishna Ayyar and Margabandhu, *Madras Agric. Journ.*, XXIV, pp. 102-107, (1936).
[2] Girault, *Mem. Queensland Mus.*, II, p. 306, (1913).
[3] Girault, *Archiv Naturgesch.*, LXXVI, A, Heft 6, p. 56, (1913).
[4] Girault, *Insec. Inscit. Menstr.*, IV, p. 112, (1916).
[5] Girualt, *Ent. News*, XXVII, p. 403, (1916).
[6] Ferriere, *Bull. Ent. Res.*, XXII, p. 130, (1931).
[7] Masi, *Boll. Lab. Zool. Portici*, III, p. 138, (1909).

Ashm. have two ring joints and one propodial carina. Males of *Parapteromalus* have also two ring joints but no propodeal carina. In *Diglochis* Först. there are two ring joints and one propodial carina in both the sexes. It is possible that several of these genera might prove to be synonyms. Both *N. sphenopterae* Ferr. and the new species described below agree with *Pseudocatolaccus* in having three ring joints in the antennae but differ in the median carina on propodeum. As it has not been possible to correctly define the exact limits of these closely related genera in the absence of types, the new species is provisionally referred to the genus *Neocatolaccus*.

Neocatolaccus indicus, sp. nov.

This new species bears a general resemblance to *N. sphenopterae* Ferr. but differs in the following characters:

Frons reticulately sculptured, the striations which diverge upwards from the lower border of clypeus rather sharply defined and prominent; antennae inserted just at the level of the lower borders of eyes; club of antennae longer than the two preceding segments combined; parapsidal furrows continue a little beyond the middle of mesonotum, though not reaching its posterior edge; spiracles on propodium small and almost rounded; fore wings with a slight discal ciliation at base; marginal vein less than half the length of submarginal vein.

Female.—2·7-3·0 mm. long. Head very dark green, almost black; rounded in the front view; frons swollen; sculpture closely reticulate; striations of clypeus very prominent; cheek large, almost as broad as eyes; the front ocellus placed at the apex of scapal furrows, the lateral ones closer to the front one than to the eye border. Antennae generally brown, inserted just at the level of the lower borders of eyes; scape yellowish brown, thin, very slightly curved; pedicel stouter apically than basally, about twice as long as wide; ring joints three, the first two small and the third much wider and almost twice longer; first funicular segment about twice the length of pedicel and somewhat stouter; second funicular segment about half the length of first; the following three segments somewhat shorter, but each nearly equal, and gradually growing wider apically; club triarticulate, stouter and somewhat distinctly longer than the two preceding segments combined.

Thorax very dark green; pronotum reticulately sculptured; mesonotum wider than long, reticulately punctate, with parapsidal furrows reaching beyond its middle though not actually touching the posterior edge; scutellum a little shorter than its posterior breadth, sculpture similar to that of mesonotum; propodium shiny green, with prominent median carina and lateral spiracular sulci, spiracles small and almost rounded. Fore wings with a slight discal ciliation at base; marginal vein somewhat less than half the length of the submarginal; post marginal narrower and shorter than the marginal; stigmal about two thirds the marginal. Legs generally brown or yellowish brown.

Abdomen oval, much pointed posteriorly, longer than thorax, third segment not short.

Holotype.—One female dissected on three slides, in the collections of the Zoological Survey of India, Indian Museum, Calcutta, No. 1572/H 3. Coll. T. V Ramakrishna and V Margabandhu, Coimbatore, 1932.

Host.—*Pempheres affinis* Fabr.

Family EULOPHIDAE.

Euderus gossypii Ferriere.

1931. *Euderus gossypii*, Ferriere, *Bull. Ent. Res.*, XXII, p. 132.

This species was originally described by Ferriere from Sudan, Africa and Lyallpur, Punjab, as parasitic on the larva of *Sphenoptera gossypii* Kerr. in cotton stems. It is recorded here for the first time from South India; it was bred from the same host at Bellary in the month of February 1932.

Euderus pempheriphila, sp. nov.

This new species is easily distinguished from the closely related *E. gossypii* Ferr. by the relatively stouter and longer club of antenna of female.

Female.—About 2 mm. long. Head very dark green, almost black, often more or less metallic green or blue, purplish on the vertex, transverse, rounded in front view, sparsely punctate and pubescent. Antennae inserted at the level of the lower borders of eyes; pedicel dark green; ring joint very short and transverse; first segment of funicle nearly equal to pedicel, but very slightly broader, somewhat longer than broad; the following three segments nearly equal to the first; also second as long as broad, third and fourth very slightly broader than long; club about one and half times the combined length of the third and fourth funicular segments, much broader, triarticulate, the third segment conically produced and with a small nipple-like spine apically.

Thorax dark green, shagreened; scutellum distinctly broader than long. Propodium very short in the median line and with a distinct median carina; spiracles rounded. Marginal vein slightly longer than submarginal, somewhat thicker basally than apically; post marginal vein distinctly longer than stigmal vein.

Holotype.—One female dissected on a slide, in the collections of the Zoological Survey of India, Indian Museum, Calcutta, No. 1573/H 3. Coll. T. V Ramakrishna, Coimbatore, 1932.

Host.—*Pempheres affinis* Fabr.

Note.—Ballard[1] refers to a Chalcid grub parasitising the larva of *P. affinis* at Coimbatore; it is possible he is referring to the larva of this species.

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[1] Ballard, *Mem. Dept. Agric. Ind., Ent. Ser.*, VII, p. 245, (1921); *Rep. Proc. Fourth Ent. Meet. Pusa*, p. 24, (1921).