BRACHYMERIA EXCARINATA, GAHAN (FAMILY CHALCIDIDÆ) A PUPAL PARASITE OF PLUTELLA MACULIPENNIS, CURTIS IN SOUTH INDIA.


(From the Madras Agricultural Department.)

Received January 4, 1938.

Introduction.

Plutella maculipennis Curtis commonly known as the Diamond-back moth is a pest of cruciferous plants, especially cabbage and cauliflower in many parts of the world. In the course of the studies of this pest in South India the authors have for the first time observed two natural enemies, viz., Brachymeria excarinata Gahan and Tetrastichus sokolowskii Kurdj, parasitising the pupa and larva respectively. The present paper gives an account of the former.

Life-History of the Pest.

A brief account of the pest is attempted here so as to point out clearly the activities of the parasite. Adult moths are greyish brown in colour and measure about 12–14 mm. Eggs are laid singly on the underside of the leaves of the host plant. They are greenish yellow in colour and measure 0·5 mm. The eggs hatch in 3 days and the tiny caterpillars which emerge from the eggs are pale white in colour with a brownish head. They feed on the leaves of the host plant and grow in size. When full fed they are dull green in colour and about 8 mm. long and 1·5 mm. broad. Before pupation they construct lace-like cocoons of white silk and pupate inside these. The larval period is about 8–11 days. The pupa is 5–6 mm. long and 1·5 mm. broad. The pupal period is about 4 days. The whole life-cycle from egg to adult in September and October 1937 under Coimbatore conditions is about 15–18 days. The temperature and humidity are noted in Table VI. Dusting with pyrethrum powder has been found to be a very effective remedy against the pest. The parasites mentioned above are also found to play an important part in the reduction of the numbers of the pest. Marsh¹ has given a detailed account of the moth in his paper on "Life-history of Plutella maculipennis, the Diamond-back moth".

History of the Parasite.

Brachymeria excarinata belongs to sub-family Chalcidinae, family Chalcididae. It was first recorded from the Philippine Islands as parasitic on
Cnaphalocrocis medinalis and described by Gahan in his paper on "A Second lot of parasitic Hymenoptera from the Philippines". As far as the authors are aware this is the first time that the parasite is noted in India although Dutt mentions in his paper on "An annotated list of Ichneumonidæ in Pusa collection" two other parasites Angitia fenestralis Homlg. and Diodromus collaris Grav. on Plutella from North India.

Description of the parasite.—Gahan's description of the parasite is given below:

"The carina separating the face from the cheeks runs straight to the eye margin and is without the backward directed branch present in most members of the genus. In this respect it agrees with ovata Say, but it differs from that species by lacking any suggestion of a tooth or tubercle on the underside of hind coxae, the abdomen is more acuminate at apex, and the sixth tergite is less coarsely sculptured. Both hirtifrons Ashmead and prodeneic Ashmead lack the carina on the cheek. The former differs from the new species by being far less coarsely punctate on the dorsum of the thorax, the mesoscutum and scutellum being finely shagreened and shining with widely separated, small, round punctures; by having the first tergite distinctly finely and closely punctate; and by having the abdomen very blunt at apex. The species prodeneic is much smaller than the new species, its sixth tergite is not longer than the fifth and the hind tibiae are almost entirely black.

Female:—Length 4 mm. Occiput shagreened; vertex umblicitely punctate; frons lateral of the antennal groove, face, cheeks, and temples rugulose; clypeus shining with a few shallow punctures; antennal groove polished within; antennal flagellum nearly of the same thickness throughout; funicle joints subequal in length and quadrate, none of them transverse; pronotum above, mesoscutum, scutellum and axillae with close umbilicate punctures, the scutellum margined at apex but not bilobed; propodeum with coarse irregular rugose-reticulate sculpture; submarginal vein nearly two and one-half times as long as marginal; post-marginal a little less than half as long as marginal; hind femora with nine small teeth on the ventral margin, the three nearest base of femora considerably broader but not much longer than those toward apex; abdomen as long as the thorax, pointed ovate, not bluntly rounded at apex as in many species; first tergite polished impunctate; second to fifth shining but weakly punctate or shagreened over most of their surfaces; sixth sub-opaquely shagreened but without coarse punctures, fully twice as long as the fifth tergite and about twice the length of the seventh; tip of ovipositor barely showing.

Black; antennæ black, the apex of club brownish; tegulae, small apical spot on all femora, front tibiae outwardly for their whole length, middle