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The Wax Beetle—*Platybolium Alvearium*, B in South India.

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Introduction. In August 1937 specimens of a Tenebrionid beetle found inside the hives of the Indian honey bee in Coimbatore were sent to the Imperial Institute of Entomology, London, for identification. On examination it was found to be a new genus and Blair (1938) has described it under the caption *A new genus and species of Tensebrionid beetle in bee hives in India*. In the concluding paragraph of his note he has called for more precise observations as to the status of the beetle in the hive. A study was therefore made of the beetle with special reference to its status and this paper gives information on the observations made so far.

Description of Adult. Blair has described the beetle as follows :—

"Rather more than twice as long as wide, dark castaneous, rugose-punctate above. Eyes above obliquely transverse, canthus as wide as lateral length of eye ; frons densely rugose-punctate and raised in a small elevation above each eye; clypeus more finely and sparingly punctate ; antennae with third joint scarcely longer than its apical width, fourth wider and strongly transverse, fifth to eleventh yet wider, subequal in width, set with large deep punctures interspersed with fine setigerous punctures. Thorax rugosely, punctate throughout, the expanded margins redder than the disc. Elytra each with nine carinae, the eighth and ninth abbreviated about the level of the base of the last abdominal segment, the fifth at about the same level, the fourth and sixth usually uniting behind it ; intervals between carinae densely punctate, but less coarsely and closely than the thorax, obscuring the striae. Under side more shining than above and except on the prosternum, finely and more sparsely punctate. Length 5·6 mm."

From the external appearance of the beetle it is not possible to distinguish the sexes.

Ghosh (1936) mentions a beetle—*Bradymerus* sp. found in the hives of the Indian bee. According to him, the beetle and its grubs infest the combs and are quite at home with the bees in the hive. Further, he states that the beetles eat the combs especially somewhat old ones. As named specimens of the beetle are not available in the Coimbatore collections it is not possible to say whether *Bradymerus* sp. mentioned by Mr. Ghosh is the same as *Platybolium alvearium* or not.

Life History. *Eggs :* Eggs are laid in groups in crevices between the brood chamber and the base board or between the super and the brood chamber. The maximum of such groups was observed to be 13 and the minimum 3. The egg is white, smooth and shiny and elliptical in shape. It is just over 1 mm. long and about 0·25 mm. broad. The incubation period is from 4 to 5 days. The beetles are sparse egg layers and take long intervals for laying eggs.

Grubs. Soon after hatching the grubs scatter themselves in various directions and begin to feed upon the wax particles on the floor board. The newly hatched grub is about 2 mm. long and 0.2 mm. broad. The head capsule is coppery in color and the remaining portion of the body pale white. The full growm larva is 11 mm. in length and 1.5 mm. in diameter and yellowish red in color. The head capsule is much narrower than the body and deeply coppery, the mandibles being brown. The body is only slightly hairy but hairs are long and pale white in color. The whole larva is more or less cylindrical. Generally the grubs are seen very close to the portions of the floor board where the brood chamber rests. The larval period is pretty long and varies from 103 to 120 days, the average being 112 days. All these grubs were fed with the normal food (particles of wax, etc., found on the floor board). The grubs when fed with pollen removed from the food materials stocked in combs were found to thrive better than on wax and such grubs looked better and healthier than those fed on wax and the development was also much more rapid. Such larvae were observed to have attained the pupal stage in the course of 36 to 42 days the average being 39 days.

Pupae. The larva, two days before pupation, is found to be inactive. The pupa is 6 mm. long and 2.5 mm. wide. It is pale yellow in color when first formed but undergoes changes of coloration and on the 5th day becomes coppery in color. The pronotum is highly prominent with a number of short hairs. The femora and tibia of the front and middle legs are visible over the elytra whereas those of the hind legs are locked under them The apex of the abdomen has two pairs of spines, one curved upwards and the other almost straight and shorter than the first. The dorsae surface of the pupa is smooth; the ventral surface has a number of short hairs. The pupal period lasts 6—7 days. The total life cycle varies from 113 to 132 days in the case of larvae fed with normal food and 46 to 54 days in the case of larvae fed with pollen only.

Longevity of Adults. The adult beetles fed with normal food (wax) live for a longer period varying from 100 to to 180 days, the average being 148 days. They were also fed with pollen; among such adults the longevity was reduced and the average life was only 43 days. Adults when fed with cholam powder did not live for more than a month. Adults without food did not survive for more than 18 days.

The Nature and Extent of Damage. It has already been mentioned that the beetle grubs breed mainly in the particles of combs and powdery matter on the floor board. The grubs therefore do not actually attack the combs. The beetles are seen on the grooves of the brood chamber as well as those of supers where frames rest. They feed on the combs and bore into the cells. When they remain motionless in such places they will very often be overlooked due to their color which resembles that of the old combs coated with propoli

The extent of damage done by the beetle varies depending on the number of beetles found. Though found practically throughout the year they are not observed in large numbers and in a strong colony very little damage is done by the adults. In weak colonies and in hives without bees the beetles do some damage by feeding on the combs. As a result of examination of large number of hives the authors have come to the conclusion that *Platybolium* should be considered only as a minor pest of the bee colonies though it is capable of doing some damage to stored combs and those kept in hives without bees.

Control Measures. Hives should be examined regularly once a week and the eggs, grubs and pupae destroyed by cleaning the floor board thoroughly by means of a brush or by wiping it with a piece of cloth. The beetles can also be handpicked without difficulty and destroyed

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References.

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