Social behaviour in Honey bee

The honey bee is the best known social insect. It lead a colonial life. Its single colony may contain about 40,000 - 50,000 individuals. Individuals show polymorphism. It exhibits caste-system and three types of individuals can be distinguished :—

1. Queen or fertile female with fully developed sex organs - diploid.
2. Workers or sterile females with vestigial sex organs - diploid.
3. Drones or fertile males - haploid.

It is the queen which lays eggs. The queen and workers develop from the fertilized eggs but the

Appointments

MAY 2004

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males or drones develop parthenogenetically from the unfertilized haploid eggs. Development in all the cases is the same except that there is a difference in the food provided to the developing larvae.

The life-history can be studied as under:—

(a) Swarming:-

During the spring or early summer swarming occurs to avoid overcrowding in the hive. The old queen, several thousand workers and a few drones come out as a dense swarm and reach the already constructed cells. Therefore, leads to the formation of new colonies. Left behind in the hive are young workers and several new queen still developing inside their cells.

(b) Nuptial flight and copulation:-

About a week after emergence the new queen takes her first aerial flight followed by a swarm of drones. Mating occurs in mid-air and queen receives the spermatophore from the drone.

The sperm are stored in the spermatheca of queen and are utilized in fertilizing the eggs throughout the life of queen.

(E) Eggs and Egg-laying :-

Egg laying starts 3 or 4 days after copulation. The eggs are of two types - fertilized eggs developing into queen and workers and haploid eggs developing into drones and are laid into separate chambers or cells.

(2) Development and cast system :-

During favorable conditions the egg hatches into the larva within 3 days. The larva is small and without limbs and eyes. It is known as grub. The larvae are fed by the workers. For first two days all the grubs are fed upon the royal jelly composed of honey and pollen mixed with the glandular secretion of workers inside their mouth.

The drone groups are fed upon honey. At the approach of winter, the drones are pushed out of the hive and only the queen and workers live there to pass over the unfavorable period feeding over the stored honey and pollens. The drones are either stung to death by workers or die of cold and hunger. On the commencement of spring the activities are regained.