

SOCIAL BEHAVIOUR IN INSECTS

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INTRODUCTION — Among the gregarious number of various organisms living in this gigantic animal world, man thinks himself to be the master. Because he has specialized in a diverse way. But insects do not lag behind in specialization of these diverse ways and this is the reason that insects also in parallel with human beings have a masterly command over the universe.

During the course of evolution these insects have migrated in so many ways for their successful living. Among their migrations and adaptations the most peculiar is their habit of social behaviour.

DEFINITION — A true social insect may be defined as one in which the two parents live longer so as to come in association with many generations of their progeny and many females mutually co-operate, so that one female looks after an egg laid by another female.

Insects exhibit one of the most highly developed and

classic example of social organization among animal species.

FEATURES OF SOCIAL LIFE — These insect societies have many common features —

- (i) A comparatively larger population comprising mutually co-operating individuals.
- (ii) Division of labour.
- (iii) Parental care.
- (iv) Construction of more or less elaborate nests, and
- (v) More extensive and more continuous supply than is available in non-social insects.

All insects including the developmental stages are members of the colony and all activities are collective. The social structure is obligatory for the perpetuation of the species. The societies thus accept usually the members of other colonies of insects of the same species.

Among insects — Bees and Termites are very common exhibiting social life.

BEES (APIS) — The three species — *A. indica*, *A. florea* and *A. dorsata* found in India exhibit this social

way of living and it can be studied in the following manner.

(b) The bee hive or comb is a remarkable creation of the combined labour of the worker bees. The comb consists of two layers of hexagonal cells made by bee-wax secreted from the abdomen of the worker bees. The upper layer comprises storage cells containing honey and pollen. The central and lower portion in the comb are occupied by "brood cells" containing the young stages.

The size of the brood cell varies depending upon the caste of the individual to be as follows - Worker, Drone and Queen.

The size of the brood cell is the basis of sex determination as the queen lays fertilized eggs in the workers of queen cells only. Whereas the drone developed from unfertilized egg by the mechanism of parthenogenesis.

(ii) Castes in the colony - A colony may have 50,000 to 80,000 individuals.

males. In a colony division of labour accounts for the presence of 3 castes -

Queen bee - Only one in a colony.

Drones - A few hundred in a colony.

Workers - The rest of the members of the colony.



- 1. THE WORKERS BEES** - Sterile, the smallest members of the family. The industrious workers after all the duties of the hive. The outdoor workers bring food for the colonies which is stored properly by the honey bees. Among the indoor workers, some attend to the queen and tend the brood. The builders build the

new combs of the hive. Repairers cover up cracks and splits of the comb. Cleaners remove the wastes from the cells, the farmers beat their wings constantly to ventilate the hive, the guard bees serve as check for intruders.

2. **THE DRONES** — They are the idle members of the colonies. Their only function is to inseminate the queen. Drones are killed or driven out by the workers after they have served their purpose.

3. **QUEEN** — Queen is a specialized and degenerate individual with small brain. The ovaries are very highly developed. Her only function is to lay eggs for the entire colony. She may live up to three years.

Colonies are maintained from year to year, if the population of the hive increases the queen accompanied by a few workers leave the hive and established a new colony.