

## Special Feature

# “Are They Like Chickens?”

When about to give a talk on beekeeping, I was asked: “Does beekeeping take up a lot of time? Are they like chickens -like having to be cleaned out every day?”

This quaintly-put but very sensible question brought home to me that, although most people know about bees foraging for nectar and pollen, many are understandably ignorant of what beekeeping really involves and few know much about life inside the hive. For therein lies much of the fascination of this craft and a knowledge of it is at the heart of beekeeping.

### Honey Bees at Great Risk

A beekeeper friend observed that: “there are beekeepers and keepers of bees”. The former, concerned for other beekeepers and the public at large, care for the health and behaviour of their bees; the latter place one or two hives, hope that they will produce some honey and then - sometimes literally - criminally neglect them, ignorant of bee diseases and unconcerned for the dangers to neighbours and the public that a bad tempered colony can present. Early, and again late, in the twentieth century disease almost exterminated honey bees in the United Kingdom. Initially new strains were imported. Thereafter, in spite of other diseases persisting and new diseases arriving, the bee population recovered and survived;

thanks largely to an increasing knowledge of bee behaviour and to increasingly sophisticated scientific research. This has led to successful



Queen with attendant workers

beekeeping depending on time-consuming, sometimes complex, and usually expensive control processes. For example, one type of: “foul brood” - the beekeeping equivalent of foot-and-mouth - imposes a **statutory** requirement on a

beekeeper to report its symptoms to a Bee Inspector who, if confirming the infection, will have the hive and its bees destroyed and will inspect and place a “stop” on all known hives in the neighbourhood. A “keeper of bees” will probably have been ignorant of those symptoms.

### Life in the Royal Brood Chamber

The focus of a beekeeper’s hive management is the brood chamber. Here, one is uniquely privileged to observe in intimate detail the life of a wild animal which is at liberty to depart at any time. So our hives simulate the conditions which, in the wild, honey bees would favour for building their nest. In this lower part of the hive the queen lays her eggs, a thousand or more a day; and her pheromone is carried throughout the colony, unifying it. These are her sole purposes. Fed and groomed by her workers she does no work and issues no commands. The female worker bees do all the work and, particularly the mature and older among them; communally

“govern” the colony. The male drones do no more than mate with any virgin queen they find on the wing.

### **The Remarkable Virgin Queen**

A virgin queen takes to the wing a few days after emerging from her cell. On one or two flights she mates on the wing with several drones from her and any other colonies in the vicinity and stores for life the semen which she receives. She spends the rest of her life in the nest. A honey bee colony of, say, sixty thousand bees contains barely a thousand drones and I marvel at how the male/female proportions are determined. The cell for an egg to grow into a drone must be larger to accommodate the drone's extra width; therefore the proportion of drone to worker cells in the nest will broadly determine the number of drones in the colony. When laying, the queen measures the cell with her forelegs, then inserts her abdomen and lays the egg. She has the remarkable ability to fertilise an egg as she lays it, thus creating a worker; or to lay an unfertilised egg to produce a drone. Therefore a new-born worker has the genes of her mother and father whereas her brother has the genes only of his mother. This is the basis of queen-breeding, whose aim is to produce bees with desirable characteristics; such as hardiness, disease-resistance, good temper, disinclination to swarm, vigour, fecundity in queens, and more; for it is the queen who imparts to the colony all her inherited characteristics which will determine virtually every aspect of its behaviour.

In the spring the winter bees soon die and the queen must create a new colony, with constant replacements, for summer workers only live for about six weeks,

the first three weeks being spent as house bees. A queen can live for perhaps four years but her egg-laying capacity - usually fades after two years. The workers soon detect a declining queen, through the fading of her pheromone. One of its purposes is to suppress the workers' inclination to lay eggs. They are capable of doing so, but if unrestrained, being unmated, they will produce drones; deformed creatures growing in worker cells. A warning sign to the beekeeper.

### **And Is There Honey Still For Tea?**

The workers will, however, already have decided to replace their unsatisfactory queen. They will feed a few selected eggs with specially enriched food and will build larger cells in which queens will grow. They will then allow the queens to emerge and the strongest to prevail or they will swarm. When swarming they leave behind all the brood of yet-to-emerge bees, immature nurse bees to feed the larvae, some guard bees and flying bees and some queen pupae sealed in their cells. These ensure that a replacement queen will create a new colony. The swarm will take with it the old queen and will consist mainly of mature flying bees, but also, importantly, some house bees in their prime as wax-makers to build the new nest. This is how the species perpetuates.

The more a beekeeper learns the less he feels he knows. Scientific knowledge of bees continuously increases and over the ages countless volumes have been written on beekeeping. Unfortunately the bees have not proof-read any of them! Honey bees are constantly fascinating, bewildering, challenging. One can sum up beekeeping with: “Bees never do anything invariably”

**Martin Seth Smith**