

## AMERICAN FOUL BROOD

### Cause

American foul brood is caused by a spore-forming bacterium called *Paenibacillus larvae*. Young honey bee larvae become infected when they consume *P. larvae* spores in their food. The spores germinate in the gut; bacteria then move into the tissues, where they multiply enormously in number. Infected larvae die after their cell is sealed, and millions of infective spores are formed in their remains. These remains dry to form 'scales' which adhere closely to the cell wall and cannot easily be removed by bees. Consequently brood combs from infected colonies are inevitably severely contaminated with bacterial spores.

The spores are very resistant to extremes of heat and cold, and to disinfectants. They retain their powers of germination for many years in honey, in old combs kept in store, or in derelict hives, skeps or boxes.

Once a colony is infected the disease will progress until most of the brood is affected. The colony then becomes unable to replace the ageing adult bee population, causing it to become weakened, and finally to die out. The disease may develop for months before the colony succumbs, and death may occur at any time of the year.

### Spread

The beekeeper is the chief spreading agent of the disease. If combs, honey or hive equipment are transferred from an AFB-infected colony to a healthy colony, it becomes infected. The disease is also transmitted by bees robbing honey from infected colonies. Swarms from infected colonies may also carry infection with them and become diseased after they are hived.

### Control

AFB is a notifiable disease under the Bee Diseases Control Order 1982 and is subject to official control by a programme of apiary inspections and compulsory destruction of infected colonies. For confirmation of AFB a sample brood comb is sent to

the NBU laboratory where larval remains are examined microscopically for the presence of the causative bacteria.

Infected colonies are destroyed by burning under the supervision of a bee inspector. The bees are killed, and together with the combs are burned in a deep pit (fig. 11).

Hives and appliances can be sterilised by thoroughly scorching them with a blowlamp. Gloves, overalls, footwear and the smoker are washed in hot soapy water.

Methods of control of AFB using antibiotics that are used in some overseas countries are not effective, as they suppress signs of the disease without eradicating it, and they are not permitted in the UK.



Fig 11 Destruction of AFB infected colony and sterilisation of hive boxes

