SECTION 7 – BEEKEEPING EQUIPMENT

Protective clothing

The beekeeper should be protected from bee stings, although in a warm climate this can present problems and make work in the apiary very hot.

It is most important that the face and head are protected because a sting in the mouth could impair breathing or a sting in the eye could permanently affect vision. Many beekeepers, of long standing, do not take these precautions. Certainly no beginner or interested observer should be allowed near an open hive without a hat and veil as the minimum protection.

Various patterns and designs are available but essentially the headgear needs to be of a cool material and the veil should be kept clear of the skin.

The lower edge of the veil must be fixed so that bees cannot get inside. There are various kinds of ties for this and sometimes the veil is fastened to a bee suit or coverall.

FIG. 64. Another way to keep the veil away from the head is to wear a hat with a wide rim.

FIG. 63. Suits can be purchased or made using local materials. It is important that the veil is kept away from the head. Here this is done using hoops of wire.

FIG. 65. Suitable protection can be made by imaginative use of local materials — here a vegetable net bag over a sun hat makes a good veil.

If a coverall is worn, again the material needs to be light in colour, light in weight and of a smooth texture, but still thick enough to prevent the sting of a bee penetrating it and the skin. Nylon material can be used but this is hot when compared with cotton and can rapidly melt if accidentally brought into contact with a hot smoker, thus cotton is much better.

Many general-type overalls are usable providing all openings are dealt with – here zips or velcro fasteners are much better than buttons – and wrists and ankles need to be elasticated. In a confined space bees tend to move upwards, so shorts, skirts or loose legged trousers can cause problems.

Whatever is worn it should be washable and washed frequently to remove dirt, possible infection and any odours that could aggravate the bees.

Many beekeepers prefer to work with bare hands. Others, particularly beginners, are prepared to sacrifice 'feel' and some fine manipulatory ability for the protection of gloves. These should be of the gauntlet type so that there is an overlap with the overall sleeves and again the top should be elasticated to prevent bee penetration. The 'hands' of the gloves should be made of leather or canvas. However, it is difficult to get the right thickness for protection without making them too thick which leads to awkward and clumsy operations.

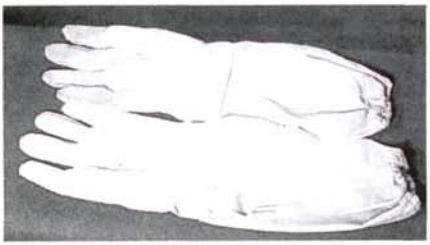

FIG. 66. Gloves need to be thick enough to give protection but thin enough to allow a sense of touch for fine jobs.

Gumboots of the type that are not too wide at the top are appropriate beekeeping gear whatever the weather. Trouser legs, which are ideally elasticated, should be tucked into the gumboots. If there is still a big gap around the top then it may be worth inserting something additional such as material or dry grass, to prevent entry by the bees.

Remember you cannot adjust your protective clothing or put more on once you have started working with the bees. Get it right to start with. It is better to over-estimate your need for protection than to underestimate. It can be hot. Do not work for too long in the apiary.

The smoker

The first piece of equipment necessary when thinking about opening a hive is the smoker. Smoke has been used as a pacifier all over the world for thousands of years. The reasons for this are:

- At the first whiff of smoke the bees become deeply occupied eating honey (engorging). A bee with a full honey sac is less likely to sting than a bee with an empty one.
- The smoke pacifies them in that fewer fly off the comb or behave as guards so making them less inclined to sting.
- Smoke repels them, they move away from it.
- Smoke masks certain odours and so reduces the reaction of the bees to this form of communication.

In its simplest form, the smoker is just a handful of dry, smouldering vegetation which can be blown to give off smoke in a certain general direction.

FIG. 67. The Smoker. This is an important piece of equipment as it helps to keep the bees calm during hive operations.

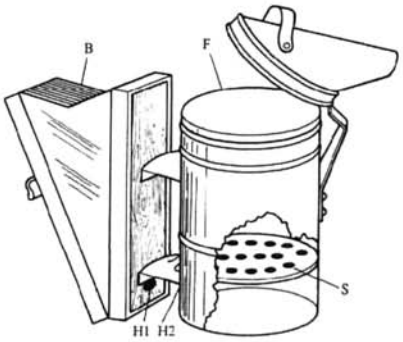

FIG. 68. Diagram of a smoker. B – Bellows; H1 and H2 – Air holes; F – Fire box; S – Shelf for fuel. This is the most vital piece of equipment for opening hives and removing frames that have been stuck in with propolis.

It is not difficult to manufacture some equipment which produces a more constant and efficient stream of smoke. The basic design, which has been around for over one hundred years, consists of a fire box which has a hinged lid shaped like an offset cone. There is a hole in the lid through which the smoke can be directed. A metal mesh provides a shelf at the bottom of the fire box on which the fuel can stand. Air is blown into the small area below and, afterwards, through the fuel by a simple bellows attached to the side of the fire box.

Often smokers are too small and run out of fuel in the middle of a task which is not a satisfactory situation. The minimum size for a fire box is 250 mm (10 inches) high, and 100 or 120 mm (4 or 5 inches) in diameter but when working with particularly aggressive bees requiring much smoke, a fire box 400 mm (16 inches) high and 150 mm (6 inches) wide has much to commend it.

A huge variety of materials can be used to create the smoke, providing they fulfil the following requirements:

- Easy to ignite.
- Open texture to ensure even burning.
- When the smoker is left upright, the fuel continues to burn.
- When the bellows are operated, a steady stream of smoke is given off.
- It does not have a smell to which the bees or beekeeper might object.
- It must not be of any chemical or toxic nature.
- Does not have a high tar content which blocks the nozzle of the smoker and creates smuts in or on the comb.
- Has not been treated with pesticide or insecticide.
- Is not plastic.

Hive tool

The other essential piece of equipment is the hive tool. This is a strong metal bar about 250 mm (10 inches) long. One end is chisel-shaped and can be used for separating boxes glued together with propolis and loosening

FIG. 69. The hive tool.

top bars. The other end is slightly turned up and sharpened for scraping propolis and wax off wooden surfaces. A slightly different type has a chisel end while the other end is stepped with a hook so that it can be used as a lever on one frame and under another. It is tempting to use a screwdriver but these are too narrow and damage the wood of frames and boxes.

The first operation when harvesting honey is to get the bees from the comb. In any movable-frame hive the bees should be removed by jolting the comb so the bees fall back into the hive. This is the practice with frames but not so easy with top bars where it is all too easy to break the comb. Remaining bees can be brushed or smoked off. Excessive smoke does leave a taste on the honey and therefore can reduce its value.

Every effort must be made to keep the combs bee-free before placing them in a clean container which can be covered with a tightly fitting lid. In this manner, the harvest can be removed from the apiary and taken away for honey extraction and rendering of wax.

Brush

Bees can be removed from a comb by brushing them back into the hive. Soft brushes are available for this; a handful of very soft grass or the large wing feathers from big birds can serve just as well and at little cost.

Containers

In all beekeeping it is essential to have a number of clean, uncontaminated plastic buckets, pots or containers that have fitting lids. These are necessary to put the honeycomb or frames into when removed from the hive and the apiary. Even bits of wax and propolis scraped off when examining the hive should be collected, not thrown on the ground as this encourages robbing and can spread infection amongst colonies.

Uncapping knife

The first stage in extracting honey from the combs is to uncap them. Combs can be uncapped by using a long-bladed knife which has been heated, by dipping it in boiling water. A tray needs to be placed below the combs that are being uncapped to collect all that falls as this is the best beeswax and must be saved.

The extractor

A honey extractor removes honey by rotating the combs at high speed so that the honey is thrown out of the comb on to the wall of the extractor and then runs down to the bottom of the drum. Honeycomb built inside a wooden frame is not damaged by this process and when empty can be returned to the hive. The extractor consists of a metal drum containing holders in which the frames are placed. There is a tap at the base of the container so that honey can be run out. Honey should always be strained as it runs out of the extractor so that any pieces of wax capping are removed.

Honey can be extracted faster and more completely at higher temperatures but the combs become soft and break.

FIG. 70. Honey extractor. This provides a mechanical method for removing honey from combs. In this device two, three or four combs are placed in the drum with their surfaces towards the walls. When the handle is turned they spin and the honey from the uncapped combs is thrown onto the walls of the drum. It runs to the bottom and then can be poured out using the tap. It usually stands on a bench so that a bucket can be placed under the tap.

Stings

Hives should be sited so as not to cause a nuisance to neighbours. As stated earlier, anyone working with the bees or close to the hives should wear protective clothing. Bees may burrow into hair that is not covered, while some scents and cosmetics can provoke a sting. The best way to avoid stings is to walk calmly away from the bee or bees and seek shade and vegetation or enter

FIG. 71. When a bee stings the stinger is left in the skin and should be removed straight away as it continues to pump venom. Removal is best done by scraping with a finger nail or the edge of the hive tool.

a building. Excited or wild flapping only serves to attract more bees and present a better target.

When a worker honey bee stings the sting only just penetrates the surface but as it is barbed the bee cannot retract it. The bee pulls free and the stinging apparatus is torn from her body so that she dies shortly afterwards. The venom bulb is left pulsating on the sting so it is best to remove it straight away. This is done by scraping it away with a finger nail or the edge of the hive tool.

Normally the sharp pain at the site of the sting only lasts a short period. It is followed by some itching and perhaps some local swelling.

The severity of the reaction will depend very much on the individual. Some beekeepers build up a resistance and totally ignore being

stung. However, if a non-beekeeper or learner is stung this should be treated sympathetically. Any sting in or near the mouth or eye should have medical attention as vision or breathing can be impaired.

There are some simple treatments that can be used immediately. These usually involve the application of a cooling agent to the area of the sting – cold clean water, very dilute vinegar or ice. Antihistamine creams, sprays and tablets are becoming more widely available. If nothing else is available then a little honey could be applied to the area.

When a bee stings an alarm pheromone is released. This encourages other bees to sting and attracts them to the site of the first attack. Tropical African bees can react very rapidly to this pheromone, and as more and more sting, the pheromone can even be noticed by humans as there is a smell in the air similar to that of ripe bananas. Before this situation is reached, the beekeeper should close the hive and take cover until the bees are calm and all traces of the pheromone have disappeared.

For people that are hypersensitive, or have an allergy to stings, just one sting can cause major problems. Multiple stings can be dangerous for anyone and an excessive number of stings can be fatal.