

Chapter 7

The Annual cycle of Beekeeping: Setting up as a beekeeper

7.1 The year's work in outline

Summarising how the various techniques described earlier fit into an annual cycle which in turn fits into the natural cycle of the honeybee colony described at the beginning gives us the following calendar for local conditions here.

- **August:**— Start of the beekeeper's busiest period. Honey removed after the main summer flows must be dealt with and beeswax processed. If heather honey is sought, then at the beginning of the month strong colonies headed by young queens must be prepared with some reserve stores but also ample empty combs for the moors, and transported to a site which must have been previously arranged and prepared. Ensure the hives will not be knocked over by grazing sheep or cattle.

Some swarm control inspection may still be needed, but the swarming season ends by the middle of this month at latest. Many hives now cast their drones, so try to ensure that all young queens are mated and laying by then, or mating may be unsuccessful. Queen rearing must now stop for that reason.

As the queen's laying starts to be reduced, now is the moment to check for heavy late-summer *Varroa* infestation by checking natural mite drop. Measures taken under Integrated Pest Management should have prevented a large build-up, but once this check is complete, this is the ideal month for starting treatment against *Varroa* where it is needed, applying any treatment exactly as recommended. Some methods can be continued until October.

- **September:**— the busiest month. Assess all stocks and unite weak ones in preparation for winter. Feed with sugar syrup those low in stores. Continue processing honey and wax. In the middle of this month, hives at the heather must be brought back, the honey removed and processed, and these stocks fed. ALL AUTUMN FEEDING SHOULD BE OVER BY THE END OF SEPTEMBER to allow the bees to ripen the feed and seal it before the cold weather begins, or else the stored syrup may ferment leading to dysentery among the bees. Remember to check heather stocks for *Varroa* on their return from the heather, and hope that no late-starting treatment against the mite is needed as it will be less effective now, but must be done if infestation is heavy. Hefting of hives to check for adequate weight of stores should continue periodically till the end of October, as sometimes in mild autumns bees can consume much of their winter stores during this time.
- **October:**— Put mouse guards on all hives at the beginning of the month and make a final check of winter security. Finish processing late honey and wax.

Ideally treatment for *Varroa* should be over by the end of this month.

- **November:**– A quiet month. Periodically check hives have not been disturbed by weather or vandals. Do not disturb the bees.
- **December:**– As November. If treatment for *Varroa* with oxalic acid is to be done, this is the month for it. If correctly done it involves minimum disturbance. Hefting of hives to check for stores is needed for all stocks or quick visual checks under the crown board every two to three weeks. Feed candy or fondant to any stocks short of stores.
- **January:**– As December. Do NOT remove snow from hive entrances, but clear it off roofs. Bees are best left lightly imprisoned in bright snowy weather, or many may come out and be chilled on clear frosty days. Continue checking for food reserves by hefting or quick inspection under crown boards.
- **February:**– Brood rearing will usually re-start this month. Again check quickly for honey reserves and feed solid sugar as candy, fondant or dampened sugar bags as necessary. A good month to check natural mite drop of *Varroa* in case some spring treatment is needed for heavily infested colonies.
- **March:**– Some time this month check food reserves in ALL hives. Syrup may now be fed if the weather is mild, but solid sugar may still be safer if it is cold. Where reserves are adequate, do nothing. When weather warms up remove mouse guards to allow unrestricted gathering of pollen.
- **April:**– If foul weather persists, feed solid feed or syrup to all stocks. This is the month of greatest danger of starvation. When fair weather occurs, make spring inspections. Willow should be yielding early nectar which will be seen in combs, as well as plentiful pollen which will also be seen on the hind legs of returning foragers. If so, feeding is unnecessary.
- **May:**– Spring inspections should be complete by mid-month and regular swarm-control inspections begin now. Also any spring treatment against *Varroa* involving chemicals should be brought to an end. If such a treatment is used, then spring honey should not be harvested for human consumption. Biotechnical methods can be used continuously if necessary.

A disease inspection of each stock some time this month is advisable.

As soon as the major honey flows from sycamore and oil seed rape begin, put honey supers over queen excluders on well-developed stocks. Do this too soon rather than too late. Be prepared to start taking swarm control measures towards the end of this month, and if possible take the opportunity to rear early young queens if the weather allows. Keep adding supers, when the top one is about half full. You may remove full supers for extraction, but it is a good policy to leave at least one half full super on each hive throughout the summer to tide the stock over a spell of bad weather.

- **June:**– The main swarming month: ideal for queen rearing. Sometimes there is a gap in the honey flow this month with adverse weather. If young *mated and laying* queens become available, some stocks preparing to swarm may be re-queened to dissuade them from it. A good month to check drone brood for any unexpected build-up of *Varroa* requiring urgent action. Wild drone comb on *Varroa* check combs must be cut out when sealed, or the drones will emerge and the new young *Varroa* mites will all emerge with them to give your hive a really heavy infestation!
- **July:**– Swarm control continues but the risk is less now. Late swarms this month will do little good this year. The main honey flow should occur now, weather permitting. Keep adding supers as necessary, but if weather is bad you may even have to feed! More re-queening may become possible.
- **August:**– completes the cycle again.

7.2 Setting up as a beekeeper

• A Choosing an apiary site

The site should be open and sunny but sheltered from strong winds. Fresh water from a source nearby where bees can safely drink is an advantage. Avoid frost pockets and damp areas. Hives must not be subject to vandalism and should be screened by trees or fencing from human passers-by to keep both bees and passers-by happy. If the apiary is away from home, convenient vehicular access is important to avoid the necessity of carrying heavy honey-filled supers over long distances. Most important of all as regards an apiary site, the surrounding area should contain an ample supply of seasonal nectar bearing plants, to enable the colonies to survive, and to ensure that a honey crop may be obtained.

• B Setting up hive stands

Hives must not be set unprotected on the ground, or the damp will quickly rot the floor away, and vegetation will grow up and block the hive entrances.

Wooden stands are often used, but they must be stoutly built as hives when full weigh 50 to 100 kg (100 to 200 lb). Another good and simple solution is to set each one on a concrete slab — or better a stack two high of two concrete slabs. Using part slabs for the upper layer leaving a central ventilation channel under the hive floor from side to side is a useful refinement. Even WBC hives last longer if their legs are placed on stone, not earth. Bees' natural inclination is to choose a site quite high off the ground, so lifting them up about a couple of feet is good for them, and good for your back too when you are working the hives.

The ground in front of the hives must either have the vegetation regularly cut down to leave a clear flight path for the bees, or be treated so that nothing grows there — tarmac, weedkiller, or corrugated sheets are three possibilities. You will be able to think of others.

As the beekeeper should work the hives from behind, a space should be left behind the hives which gives the beekeeper convenient access. If the space there is level and wide enough to accommodate roofs and stacks of supers etc., lifted off during inspections, working the hives is much easier.

It is generally believed the hives work best if the entrances face south or south-east. However this is not a matter of first importance.

Check that each stand you construct is

- solid and firm and not rocking;
- level from side to side;
- sloping slightly from back to front with the front lower than the back.

Time spent on these details *before* the bees are on your hands will save much labour and heartache later.

C Obtaining equipment

This has already been dealt with in detail in Chapter 2 so will only be briefly dealt with here.

First decide on a hive type, then do your best to stick to this one type and acquire no other. The simplest in Britain are probably National and Smith, as Langstroth extracting equipment is not so readily available as equipment to handle British Standard frames. National and Smith are certainly the most widely used locally, though we had until recently also users of WBC, Glen and Wormit Commercial hives, as well as some private oddities of no recognisable type. At the end of this chapter is an Appendix, giving details about assembling and preparing hives for use.

Some of you may have inherited or be going to acquire bees already in hives. In this case, provided the hives are sound and of a single orthodox kind, I would advise sticking to that kind, at least to begin with.

The next decision to make is how many hives to stock. I would always advise starting in a small way, with one or at most two hives. In the second or third season it would be sensible to expand a little. I personally feel that 3 hives is the minimum to keep in the long run, as the loss of a queen, perhaps during the winter, can then be made good by splitting another stock, or perhaps by robbing one of the other hives of a frame containing worker eggs from which the queenless stock can rear a new queen. Even with two hives, it is all too easy to end up with both hives hopelessly queenless, and then the only remedy is to appeal for help to another beekeeper, or else to hope that you may find a swarm to take during the summer.

Later when you have learned by experience exactly what is involved, it will be time enough to consider any further expansion. Note that it is important to be ruthless about uniting stocks in the autumn, or your successful experiments in queen rearing can quickly lead to uncontrolled creeping expansion, which soon gets as out of hand as rabbit breeding.

• D Acquiring the bees

Bees can be bought from many different sources, but at the present time, demand outstrips supply so they are quite expensive to buy. Acquiring bees from outwith your own local area has attendant risks attached of possibly bringing in diseases from elsewhere, which could be a disaster for you. Also local bees are almost certainly better adapted to your own local conditions, so if it is possible I would advise acquiring bees locally.

There are four different ways to acquire bees, and I will enumerate them from dearest to cheapest, explaining how to start in each case.

1. Buying a nucleus stock or package from a commercial dealer.
 2. Buying a full stock in a hive locally.
 3. Buying a nucleus stock locally.
 4. Acquiring a swarm — either from a local beekeeper who will probably want something for it, or by your own catching of a stray when it is FREE — but of unknown origin and disposition and a lucky break if you get one that is of a mild-tempered and hard-working strain.
1. A nucleus bought from a supplier is just like one bought locally and both are to be treated alike. A package is in essence an artificial swarm — though the queen may be caged when you get it. Treat it like a swarm, following the seller's instructions about the queen. Note however that in these days when varroasis is present throughout most of Britain and all of continental Europe, the availability of stocks of bees for commercial sale is very limited, and *you should definitely not bring into a Varroa-free area a stock from an area that is not guaranteed free from Varroa*. Save your money and get your bees locally.
 2. If a full stock is bought, or inherited, then you save yourself the cost of buying a hive separately. Simply start the annual cycle according to the month. Spring is the best time to start as the stock has safely wintered and can be checked at a spring inspection before you buy. "*Caveat emptor*" — "Let the buyer beware" — applies.
 3. If you acquire a nucleus reasonably early in the summer (and such a thing is unlikely to be available earlier as they do not winter well), it should build up into a strong stock by autumn, but will probably not yield much surplus honey in its first season. It will consist of 4 to 8 British Standard combs with honey, pollen, brood, bees and a *mated laying queen*. See her before you buy.

The demand for nucleus stocks in recent years has far outstripped the supply. Our Dunblane and Stirling Beekeepers' Association, like many other local beekeeping Associations is strongly encouraging its members to rear nuclei for sale, and in good years you should be able to purchase a nucleus locally. Their value has greatly increased, and you must be prepared to pay a reasonable price for one.

Acquiring bees locally is in my view always a sound policy, since it avoids the risk of bringing in disease or bees not well adapted to local conditions from elsewhere.

A nucleus will come to you in a closed travelling box. The box still belongs to the seller and should be returned promptly. The contents are all yours once paid for.

When the nucleus arrives, place the box on your hive stand, loosen whatever is holding the roof on, put your veil on and open the doorway of the travelling box to let the bees fly. Then leave them to settle for an hour or so, or even for several days if the weather is bad.

Then, when the weather is good, put on your protective clothing, light your smoker and go to them again.

Lift the travelling box gently over to one side of the hive stand, and put the floor and empty brood box of your own hive on the stand.

Now smoke the nucleus lightly and remove the lid of the box. Carefully lift the combs from the travelling box one at a time, and place them in the same order in the brood chamber of your hive. Give them one or two extra frames of foundation and then a dummy. Fill the space beyond the dummy with crumpled rags or newspaper so the bees don't start to build wild comb there. Bump any bees remaining in the travelling box down on to the tops of the frames in the hive. Put on a feeder. Give them a feed and cover the hive appropriately ending with the roof. Close the entrance of the hive to about 2 cm (1 inch) using a strip of foam rubber or the entrance block, and leave them alone for a week.

Check their development weekly, and as they expand to cover the new frames, give them more frames one or two at a time till the brood box is full. Feed as necessary but do not over-feed or the combs they build will get clogged up with stored sugar syrup and the queen will have no room to lay. At the same time gradually widen the entrance as the strength of the guard bees gradually builds up.

Ultimately you may be able to give them a super or at least a "cap" for a limited honey harvest.

4. If you acquire a swarm or a package, follow the instructions on hiving a swarm given earlier, or if you prefer simply bump the bees down through an *empty* super on to the tops of the brood frames in your prepared hive, let them settle directly into the brood box and remove the super. Then feed them generously until they have good drawn combs, and check their development as for a nucleus. Note that even in mid-summer it is probably a good idea these days to treat any newly-hived swarm against *Varroa*, since there will be no brood being capped for a full eight days, and no supers on the hive, and in this way you can ensure that they do not build up a heavy infestation in their first season.

Once you have acquired bees, you have taken a major step in becoming a beekeeper, and the bees themselves will be your best instructors if you watch and interpret what you see in the light of what you know. All the methods and ideas I have presented are workable ones and will give you a good practical start, but be prepared to read books, to listen to and watch other beekeepers, and then to try different methods for yourself. In this way you will gradually find the regime that suits you.

7.3 Mutual support of beekeepers

In some countries where beekeeping is an important part of agriculture, government support is available for beekeepers. Such support in Scotland is very limited. However the Scottish Beekeepers' Association (SBA) and a network of local beekeeping associations provide a valuable resource of assistance for small-scale beekeepers. Indeed these notes have been prepared for the Dunblane and Stirling Beekeepers' Association, but they are also made freely available to all beekeepers in Scotland through the Scottish Beekeepers' Association. The Scottish Beekeepers' Association also provides many other services for

beekeepers including a monthly magazine, an education programme, insurance for members relating to their beekeeping, an excellent library and a disease monitoring service.

Within the last two years also the SBA has been encouraging beekeepers in Scotland to register (free!) with BeeBase, through the Food and Rural Affairs (FERA) National Bee Unit web-site, which was originally organised in co-operation with the British Beekeepers Association (BBKA) for beekeepers in England and Wales.

If you become a beekeeper in Scotland, it is wise to avail yourself of the services these organisations provide at a cost which is very modest in comparison with the other costs involved in beekeeping. When you join your local association and the SBA you will also make good friends, and have the opportunity to contribute yourself to your local and national support network for beekeeping.

For details of how to join either the SBA or BeeBase, ask your beekeeping teacher, or look on the SBA's web-site at

<http://www.scottishbeekeepers.org.uk>

or the BEEBASE web-site at

<http://www.nationalbeeunit.com> .

7.4 Appendix — Details of hive assembly

7.4.1 Introduction

This short section goes into the detail of assembling a hive and its components for use, explaining some of the snags to be avoided.

7.4.2 Top and bottom bee-space

Difficulties of compatibility of equipment are compounded by inconsistency in using *top bee-space* or *bottom bee-space*. Langstroth's principle requires there to be a 6 mm ($\frac{1}{4}$ inch) bee-space between ALL separable parts, and in particular between the tops of the frames in a lower box, and the bottoms of the frames in the box above. *Either* the top bars may lie flush with the top of the box, and the bottom of each box must protrude 6 mm ($\frac{1}{4}$ inch) below the bottoms of the bottom bars of the frames it holds (bottom bee-space), *or* the top bars fit 6 mm ($\frac{1}{4}$ inch) down from the top of the box, and the bottoms of the frames in the box above hang flush with the bottom of the box they are in (top bee-space).

The original Langstroth design, the WBC hive, the Wormit Commercial and the original and modified National designs used the first arrangement. Most others use the second, which is thought by many beekeepers to be slightly more convenient for the beekeeper. All modern Langstroth hives and some modern National hives have gone over to this second arrangement of top bee-space. Before buying additional equipment, make sure it matches yours in this regard, because mixing these types leads to a well and truly gummed up hive in working which you are almost bound to kill many bees unavoidably.

The usual National hive design uses bottom bee space and the Smith hive uses top bee space.

7.4.3 Assembling hive boxes and roofs

If hive boxes and roofs are being bought new, some money can be saved, and transport made easier, if they are bought “in the flat”. They then have to be assembled, which is a reasonably straightforward job with hammer and nails, though for knocking together the joints on Smith or Langstroth type hives, hammering the parts through a piece of scrap wood avoids the bruising of the hive wood that direct hammering will cause. Glueing the joints with PVA woodworking adhesive as well as nailing them is recommended. The instructions that come with the boxes are fairly clear, but more detailed instruction will be given in a practical evening which follows the week when this chapter is presented.

The top quality traditional hives are of western red cedar and are best left unpainted. If any wood treatment is applied, then

- only apply it to the *outside* of the boxes where the bees don't walk much;
- make sure it is a type which does *not* contain an insecticide as protection against woodworm. That would kill your bees in short order! The manufacturers of beekeeping equipment sell a recommended type, though many beekeepers successfully leave western red cedar boxes totally untreated, and they last for many years.

As stated earlier, the outsides of polystyrene hive parts must be painted with standard exterior gloss paint before they are used out of doors.

7.4.4 Assembling frames and foundation in which the bees will build combs

The frames for the bees to build their combs in, of whatever design, are best bought in pieces for assembly at home. When frames are assembled the parts fit snugly together and many beginners think that friction with added propolis is all that is needed to keep them together. Don't make that mistake, or you will one day lift a comb by its top bar to inspect it, only to have the whole thing suddenly detach itself to fall in a hopeless mess at your feet of squashed bees (maybe including the queen!), spilled honey,

broken comb, and destroyed brood. Even worse, you may find that when you prise out the top bar with your hive tool, the top bar is all you get, and the comb and the rest of the frame is still in the hive, and totally impossible to get out. Frames **MUST** be securely nailed, and frame nails are readily available.

Before fully assembling the frame however, remember that *wax foundation* must be secured inside it.

Foundation is the name given to the sheets of beeswax embossed with the pattern of honeycomb cell bases which appliance dealers sell, and which is fitted inside each new frame before it is placed in the hive. It can be purchased with wire reinforcement inserted for additional strength in the brood nest, or for combs that will be spun in a centrifugal honey extractor. Alternatively thin unreinforced sheets can be bought if you decide to harvest your honey in the comb. Foundation is what guides the bees to build their comb where **WE** plan and not where **THEY** fancy, which might well be spanning three or four of the wooden frames, making it impossible to lift out individual combs for inspection, thus defeating the whole Langstroth philosophy. In assembling a new frame therefore, the order of operations is as follows.

First remove the wooden wedge from the top bar, which is held there by a sliver of wood, and clean away that sliver with a sharp knife or your hive tool. Then assemble the top bar and the side bars, by fitting the side bars to the top bar, knocking them right home after making sure that the slots in the side bars are facing *inwards*, and then securing each with two frame nails hammered in *across* the frame, *not* downwards from the top. Make sure the frame remains square.

Next fit the bottom bar on the side of the frame away from the wedge and nail it in place. Before nailing ensure that each end of the bottom bar lies flush with the outside edge of the side bar so that the side bars will hang truly parallel and at right angles to the top bar. If the frame is not to be given to the bees immediately, next fasten the wedge and the other bottom bar to the frame with sellotape and leave it like that until the day it is to be given to the bees. Foundation put into a frame quickly loses its attractive aroma of beeswax and goes stale, and then bees will not build satisfactory comb from it. Foundation kept in its air-tight plastic wrapper will keep in good condition for several years, provided you don't let mice get at it. This is another good reason for assembling frames yourself, and not having it done when you buy the hive.

When inserting foundation into the frames, choose a warm day or a warm room to work in so that the wax is not too brittle. Carefully slide the foundation along the slots in the side bars, orienting the sheet if it is wired so that the loops on the zig-zag wires (bent by you at right angles away from the sheet of wax) fit into the gap where the wedge came out. Then lay the wedge back into the place it came from and use it to nip the top of the sheet of foundation and to trap the ends of the wires, securing it with three nails. Finally insert the remaining bottom bar in the frame, ensuring that the bottom edge of the foundation can slide freely between the two bottom bars to allow for expansion when the bees warm up the wax, and finally nail that second bottom bar in place.

It is worth making sure you get all this right. Frames which have not been correctly assembled will put both you and the bees thoroughly out of temper, probably on a day when you are both already fed up because the weather is bad.

7.4.5 Spacing frames in the hive

The standard frames with straight side-bars (Thornes DN1 or SN1 frames) must be spaced apart in the hive by some sort of spacer. The traditional modern British spacer is the "plastic end", which is fiddly but works well enough on a National standard frame but can slide off the short lugs of Smith frames at embarrassing moments. Most users of the Smith hive prefer the alternative of self-spacing Hoffman frames (Thornes DN4 or SN4), whose side-bars are thickened at the top so that they are in contact over a short distance when the frames are correctly spaced. If like me you dislike fiddling with plastic ends, then Hoffman frames can also be used in a National hive. The bees do propolise the contact area, but it is small enough to be tolerable. Alternatively Hoffman converter clips in plastic can be nailed to the side bars of conventional frames to do the same job. In the honey supers, straight-sided Manley frames

in contact throughout their depth are excellent, since they hardly ever have to be inspected, and so the fact that they get propolised hard together does not matter, since they only need to be dealt with away from the bees at harvest time. These Manley frames are a little more expensive, as they use more timber, but they are very strong, hang beautifully straight in the honey extractor, and last for many years.

Another spacing alternative in honey supers is to use ordinary straight-sided frames without any attached spacer, but to fit *castellated spacers* inside the super, which are metal strips looking like the battlements on a castle, and into the gaps of which the frames fit neatly. Modern National supers are made with a slot to receive these castellated strips. They must *never* be used in the brood box however, since they prevent the frames from sliding along and make inspecting the brood box very difficult.

The National and Smith hives are designed to take 11 frames in a box at plastic-end spacing. Some modern Hoffman frames give a slightly closer spacing — 35 mm ($1\frac{3}{8}$ inches) instead of 38 mm ($1\frac{1}{2}$ inches) — and it is then possible to squeeze a twelfth frame in. This is inadvisable as the frames jam hopelessly after a little propolis has been added by the bees. It makes for much easier working if the end space is filled with a *dummy* — a simple wooden board cut into the shape of a frame, and easily made at home from an off-cut of shelving. (In the WBC hive the same argument arises between using 10 frames and a dummy rather than a squeezed in 11th frame).