

BEEKEEPING

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A SEASONAL GUIDE



THE
CLASSIC
WORK
ON BEES

RON BROWN

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RON BROWN, OBE

BATSFORD

CONTENTS

Beginning With Bees

Why keep them?

Bees and neighbours

What to buy

Drones, workers and queens

Spring: The Great Awakening

Spring management

Beginners, second year (March)

Beginners (April)

Beginners, second year (April)

Beginners (May)

Early Summer: Much Ado

Beginners (May and June)

Improvers and experienced beekeepers

Working for spring honey (improvers)

Finding the queen

Queen-rearing

Making nuclei and raising queens (improvers)

A mini-nuc system

A simple two-queen system (not for beginners)

Banking queens (not for beginners)

Early Summer: Swarming

What is swarming?
Swarm control
Making the most of a swarm
Making an artificial swarm
Taranov's swarm board

High Summer: Long Days and Busy Bees

Drones
Working for honey in the comb
Reading a comb
First year beginners
Supersedure
Heather honey

Autumn: The Annual Harvest

Harvesting the crop (beginners)
Harvesting the crop (improvers)
Queen introduction
Mead from cappings
Ivy honey in October
Bee driving
Bees: final preparation for winter

Autumn: Honey and Other Hive Products

Honey
Beeswax
Pollen
Propolis
Bee venom
Royal jelly

Winter: The Cosy Cluster

The bees in winter

Beekeeping thoughts in winter

Stockpiling materials

Work for beekeepers in winter

Making your own equipment

Queen excluders

Making products for sale

Attending beekeepers' meetings

The New Year: Health Checks and Bee Care

Beginners (January)

Experienced beekeepers (January)

Emergency feeding (February)

Liquefying honey

Healthy honeybees

On the horizon

Apocalypse Now: Fighting Back

Beekeeping advisory services

Bees and the law

Equipment and book suppliers

Useful organizations

Bibliography

Further reading

Publications

Index

❧ BEGINNING WITH BEES



— WHY KEEP THEM? —

Most people say ‘To get honey, of course’, and they are right, but there is much more to it than that. Firstly, the honey that you will get will be far, far better than most of the honey you can buy. If you choose to eat your own honey, unstrained and unheated (or in the comb) it will contain pollen and propolis, and be a most valuable health food; indeed, *The Secret of Staying Young* (see bibliography, [here](#)) established a connection between the intake of pollen and healthy longevity in five different parts of the world where unusual numbers of centenarians are found.

A fair estimate of the amount of honey that you might reasonably expect in a poor-to-average district, year in and year out, would be about 9–18kg (20–40lb) per hive, so that two hives would keep a family in honey all year round, with a surplus for Christmas presents, swaps with neighbours who have spare apples and vegetables, and so on. Then there is beeswax as a byproduct, not much in your first year, but afterwards perhaps 0.5–1.5kg (1–3lb) annually from your two hives; enough to make all the cold cream, face cream, lipstick and furniture polish your family will need. If you want to go in for candle-making then you must have more hives, or buy in wax from beekeeping colleagues.

Your fruit trees (and those of your neighbours) will yield more heavily, as will beans, gooseberries, raspberries, and so on, but above all you will be launched into the most fascinating hobby and will make lots of new and interesting friends. In our bee clubs we have

social outings in summer, and dinners and games in winter, quite apart from bee talks and demonstrations.

An additional but very important reason for keeping bees today is that they need our help if they are to survive. The recent arrival of new pests and diseases from abroad and the increasing use of agrochemicals has led to the loss of most feral colonies and many hives managed by beekeepers. Careful husbandry and a knowledgeable approach by beekeepers to their colonies is of utmost importance if the bees are to remain healthy enough to give us the products we value and to provide their important service as pollinators to agriculture.

THE SNAGS

Don't they sting people? Well yes, they can sting, but unlike wasps they die when they do, and so normally they go happily about their business. For years I have had at least a dozen hives in my garden in the middle of Torquay and am still on excellent terms with my neighbours. The strange thing is that if bees see moving humans most of the time, they seem to learn to accept them. I often work around my hives in summer wearing only shorts and shoes, resting seed trays on hive roofs and forks or rakes against hives, but would not dare to do this in an out-apiary, perhaps visited only five or six times a year. At home the family cat snoozes on hive roofs, but woe betide the dog if he should desecrate a hive! Bees are very clean creatures and I saw what happened to our black Labrador some years ago – he hasn't done it again since. If the site be well chosen and where necessary screened by a hedge, woven wood fencing panel or even quick-growing tall plants, you can keep your bees anywhere. Lots of people even keep them on flat roofs in the middle of busy towns and cities. Are hives very expensive? Yes, but it is possible to make them yourself, or buy them second-hand. Even beekeepers grow old eventually, and there is a great deal of valuable material in attics and garden sheds, or even in the middle of patches of nettles at the bottom of gardens.

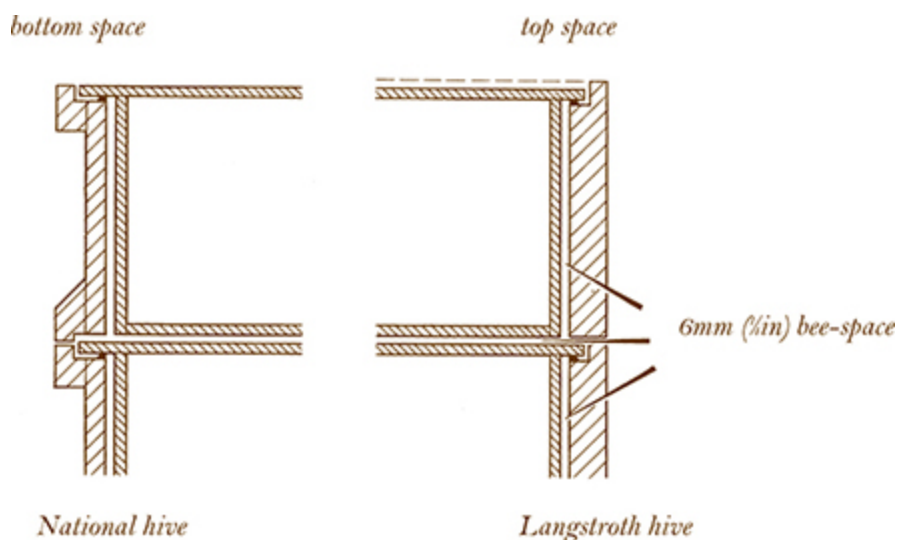
Many county beekeeping associations have an auction each year (usually in spring) of bees and a huge range of used beekeeping equipment. It is unlikely that you will not find the basic items to start you up in your new hobby, but ensure that any bought-in equipment is cleaned thoroughly before being put into use. The auctions also will give you a chance to meet many beekeepers from far afield who look forward to such occasions as part of the social calendar. After a while you will begin to recognise these people at other auctions and you will soon be hearing from them about the problems and successes that they are experiencing in their own part of the country and pick up some useful beekeeping tips. If an auction isn't taking place in your vicinity, or you are anxious to get your equipment quickly, make an internet search for your county beekeeping association. Such sites usually have a list of equipment for sale, or you could write to the secretary asking to place a wanted advertisement.

Making a hive is tricky; for most people by far the best way is to beg, borrow or buy a brood box and copy it, using an empty frame to make sure of a bee-space around it as you work.

THE BASICS

Bees need a dry living space of about 36 litres (8 gallons) for their nursery or brood, as it is called, plus additional room for storing honey, with some ventilation; they don't care whether it is a hollow tree, a straw basket or an expensive new hive. For the beekeeper's convenience it should be a hive of standard design with the bees building their waxen combs in moveable frames, having a 6mm (1/4in) 'bee-space' all round the set of frames, between them and the box. If the space be less than this, they will glue everything down with propolis; if more they will build wild combs of beautiful but eccentric shape and the whole mass will be immovable. Get it just right and combs on wooden frames can be lifted out and manipulated at will.

Above the nursery (or brood box) there is a queen-excluder, a metal screen with slots 4mm ($\frac{3}{16}$ in) wide so that worker bees can pass freely through to store surplus honey (for you) in boxes called 'supers' placed above. Drones and the queen are too large to pass through, so no eggs get laid in these top boxes and no grubs are reared in them. In a hollow tree the queen may be laying almost anywhere, and honeycomb will be mixed up with patches of brood comb. At the end of the summer, take the honey above the queen-excluder (never from the brood chamber) and feed sugar syrup in September, if necessary, to top up the bees' winter stores.



The all-important bee-space.

FIRST STEPS

This book attempts to describe the first steps a beginner should take, month by month, and goes on through different techniques and possible development to commercial or semi-commercial beekeeping. Be content to make haste slowly, and do not take on more than two or three hives until you have gained at least two years' experience. You are bound to make mistakes and it is better to make them on two hives than on twenty.

WHEN AND HOW TO START

Without any doubt the answer is late autumn, after joining the nearest bee club (addresses can be found via the internet). Most bee clubs have a programme of lectures, film shows and social functions during winter, and also courses of instruction for beginners in January, February and March. They will probably also have a lending library of bee books, but above all they will give you the opportunity to talk about bees with other, more experienced beekeepers. Your county beekeeping association will certainly have its own regular journal or newsletter, but in any case a subscription to a national bee journal will be worthwhile (see publications, [here](#)).

Although the hope of your own honey in the first season is attractive, many prospective beekeepers have been put off for life by the difficulty of managing a strong colony with no previous experience. On the other hand, a four-frame nucleus (nuc) with a young queen is very gentle and easy to handle, and as it grows in strength the new beekeeper is growing in confidence, experience, practical knowledge and manual skill. Starting with a swarm is by far the cheapest method, but swarms cannot be guaranteed and, in competition with other newcomers, one might lose a whole summer. Moreover some swarms will be headed by old queens who may fail during winter and leave an inexperienced owner with a difficult problem. It all depends on the individual, but a very strong recommendation is to begin by buying a four-frame nucleus from an established beekeeper in your district, for delivery in early summer with the promise of a visit a few weeks later for ‘after-sales service’.

— BEES AND NEIGHBOURS —

The main points that put so many people off keeping bees (apart from fear of stings) are the possibility of neighbour trouble and perhaps also the thought that bees are creatures of the country and

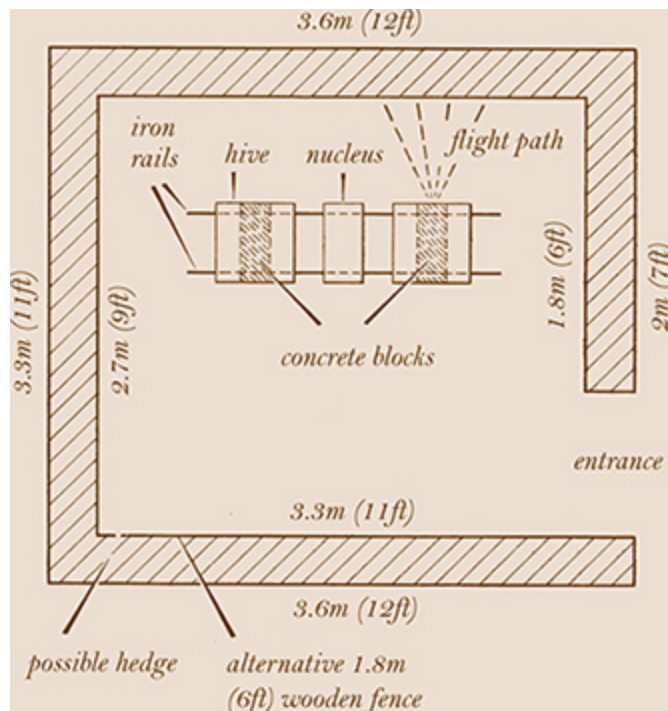
should be kept on a farm or in a large orchard, at least a mile or two away from the nearest house. On the second point the truth is that these days an urban or suburban site is usually better for honey production (on a small scale) than a farm. More people have money to spend on gardens than ever before, and honey gathered from a variety of trees, shrubs and flowers has more flavour and character than most honeys from a single crop. On the other hand, the destruction of hedges to create larger fields, and more efficient farming practices generally, have reduced the honey productivity of agricultural land, except for oilseed rape and possibly field beans (see [here](#)).

If the garden is large enough, it may be possible to locate the hives so that neighbours will not even be aware that you have bees, and there will be no problem. However, most people have small gardens, or none at all, and in any case it is best for the sake of the beekeeper's family to do everything possible to keep bees good-tempered.

SITING AND SCREENING

In general terms it is more important to study the welfare of your family and neighbours than the supposed needs of the bees. Whether a hive entrance faces north, south, east or west is unimportant, but if, for instance, you intend to do most of your beekeeping after work, then have the site open to the west to give you the maximum light during inspections. Is there a place in your garden where hives could remain almost unnoticed, perhaps between a garden shed and a fairly tall boundary hedge? Can you spare an area perhaps of 3 x 2.75m (10 x 9ft) which could be screened with woven wood panels, a quick-growing hedge or even a thick row of Jerusalem artichokes or stick beans? The latter would at least be most effective at a time in summer when screening is most needed. A quick-growing evergreen climber like a decorative ivy or perpetual honeysuckle on open wire mesh can be effective. Screening should be not less than 1.8m (6ft) high to make bees fly up to get away, and deter them from cruising

near ground level on approach to landing. Above all, hives should not be placed where the flight path will cross a much-used footpath. For more on siting a hive, see [here](#).



A small home apiary.

THE BEES THEMSELVES

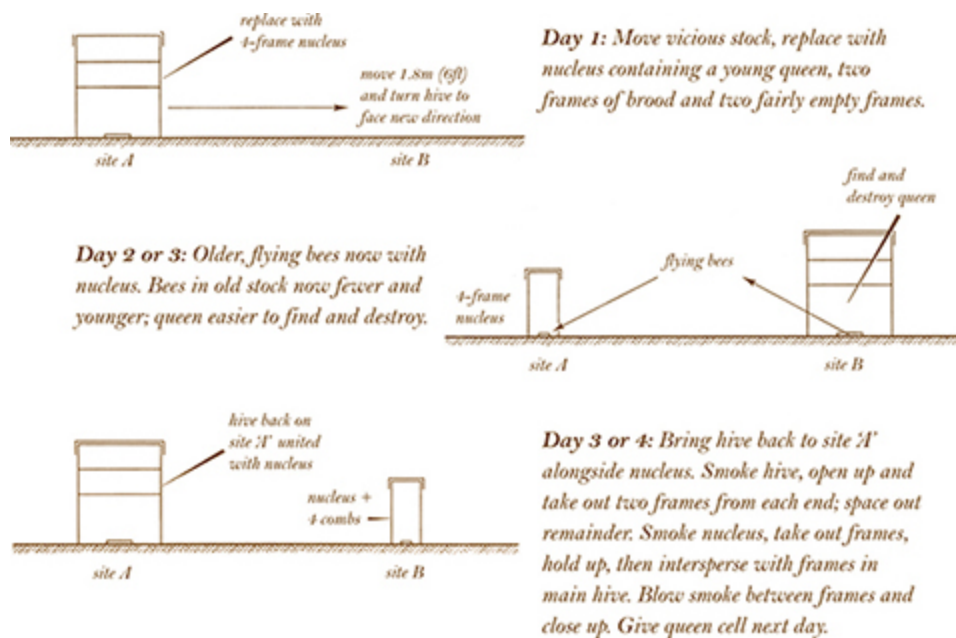
As already explained, it is always best to start with a four-frame nucleus in early summer rather than a powerful second-hand full hive. The nucleus will give no trouble at all for the first summer and, as the weeks go by, the possible fears of people next door will die away, especially if you invite them or their children to 'come and see the bees'. The expense of a spare veil will be well worthwhile. However, a nucleus expands into a full hive by late summer, when neighbours are likely to spend most time in their gardens, and, to be realistic, some bees are better tempered than others – you might have a stock of the 'others'. Genetic bad temper is rare, but sometimes no methods of management will deal with the trouble and the only answer is to requeen (get an experienced beekeeper to help

you do this). Some books suggest that the benefit of requeening comes only five or six weeks later, when the new queen's offspring begin flying. My own experience is that a great change can take place within 24 hours, and I am convinced that the quality and quantity of 'queen substance' (pheromones secreted by a queen) play the major part in this.

ENVIRONMENTAL FACTORS

Occasionally even the nicest bees are short-tempered. If a promising nectar flow is cut off by a sudden drop in temperature, for example, or a main honey flow naturally comes to an abrupt end, then foraging bees are frustrated and ready to be aggressive. If there is a thunderstorm, even in the distance, bees can be bad-tempered and are best left alone.

Sometimes a strong colony, or even a nucleus, can be irritable when short of food. If a colony develops bad temper, try feeding with warm syrup the evening before you intend to manipulate. A full colony should never have less than 4.5kg (10lb) of food reserves at any time. For a really bad-tempered hive, re-queening may be the only solution (see below).



Re-queening.

Another important factor is whether the bees are accustomed to seeing humans near their hive most days. Almost any moving object near a hive will be investigated by bees from a strong stock, and if consistently found to be harmless will be accepted as normal. Thus at an out-apiary one can set up a scarecrow 1.2–1.5m (4–5ft) in front of a hive, taking care that it will move in a breeze. An old overall or even a long scarf fastened to the top of a 1.8m (6ft) pole will be investigated by bees when seen to move, but lack of response and no harm from it will lead to acceptance, and on your next visit you will notice the difference. If you do not spend much time in your home garden, then set up this device there too.

Bees flying for water, especially in March and April, can be a nuisance around a neighbour's fishpond, pool or even garden tap. The answer is to provide a source of water for them at home before the end of February, or they may acquire the habit of going next door and stick to it, ignoring your special water supply given too late. A tray of wet peat placed in a sunny corner can be very effective, as well as most useful to the bees.

The smell of cut or crushed vegetation can alarm bees, probably because it suggests a predator working nearby. Cutting the grass

close to the hives is best done early or late in the year when few bees are flying.

MANAGEMENT POINTS

Dress is important: apart from a veil, gloves and bee-suit tucked into wellington boots should be worn to give actual protection and confidence. Animals like bears and skunks with brown fur or woolly coats are ancestral enemies of bees – do not dress to resemble them. Clean, white overalls are best, but, like any clothing worn for beekeeping, they should be washed between inspections. If the bees have attempted to sting through the cloth, the alarm pheromone may still be present on your next visit and unnecessarily antagonise the bees. Bees have a sense of smell and associate sweaty clothes (or even scented hairspray) with animals that might be hostile. Do not, therefore, open up and examine a hive straight from a hard day's work in the garden or from your hairdresser. Hands washed with Lifebuoy soap (giving a weak carbolic smell, itself a bee deterrent) are less likely to be stung than hot, perspiring hands. Even a wristwatch strap (especially leather) can be an irritant and focus for stinging when working a hive. All this is important to family and neighbours, as the odour of just one or two stings carries the message (via the alarm pheromone) that an enemy is at hand and needs to be repelled. Your neighbour over the fence may suffer from your carelessness.

The timing of hive inspections is obviously important. A commercial beekeeper operating hundreds of hives in several scattered apiaries has no option: the work is there and has to be done, but a beekeeper with two hives in the garden has more choice. Obviously a warm Sunday afternoon in June when the people next door are sunbathing is not the best time to open up a hive. If you have close neighbours, don't open up hives when they are working in their garden just the other side of the fence. On the other hand, there are advantages to working bees in good weather between 11am and 3pm, or even on a mild evening, so long as many bees are flying

freely. Correct use of smoke is the best way of controlling bees that might otherwise get out of hand, using as fuel wooden shavings, old soft, dry, rotten wood, rolled-up hessian sacking or, as in New Zealand, dry pine needles. Corrugated paper by itself gives too hot a smoke, but rolled up with strips of old sacking is fine (ensure that it is not the sort used more commonly nowadays for packaging, which contains adhesives that may be either too volatile in the smoke or even poisonous to the bees).

Avoid spilling honey, syrup or fragments of wet wax. Combs should not be left exposed for more than a few minutes. The unusual presence of such food can easily set up robbing, with thousands of bees flying around hunting for the source, even going in at windows next door. The actual extraction of honey, when done in July or early August, needs great care if bees are to remain unaware of it, and there is much to be gained by extracting in September or even October.

PSYCHOLOGICAL AND DIPLOMATIC POINTS

It is often said that a jar of honey works wonders, and so it does, especially if well-timed. If you hear a child next door coughing at night, offer a jar of honey as a remedy. However, much more than this can be done, and I would suggest you try to enlist the interest and support of immediate neighbours – those who are obviously going to know anyway that you have a hive of bees. Discuss with them the advantage of pollination, the better crops of all kinds of fruit, of beans and other vegetables. If the neighbours have children, get them interested; have at least one spare veil and show them the inside of a hive. Explain that the bees have tiny claws on their feet which can get entangled in hair, and that they do not seek to sting unnecessarily as they die in the process, unlike wasps (black and yellow stripes) which can fly away and sting again. It is seldom indeed that a bee will sting when away from its hive, except by accident.

A difficult hurdle is the way bees will alight on washing and leave a small brown spot, sometimes on the collar of a clean white shirt. This spot consists of pollen husks, which have to be evacuated after the contents have been digested by young bees, and facetious attempts to ascribe the soiling of washing to high-flying aircraft do not always go down well. Fortunately the nuisance is significant only in spring and early summer, when flying range is restricted by cool weather. Newly polished cars near the house can also suffer from pollen husks, which make beekeepers' cars easily identifiable at these times. There is not much that can be done about this, except perhaps to set a limit of two hives at home, so located that neighbours' washing is not in the main flight path.

If a beekeeper wishes to expand to more than a couple of hives, it might be prudent to start up a small out-apiary, not too close to houses, where up to a dozen hives might be kept without neighbour trouble, and where troublesome hives could be moved at short notice if necessary. But even the smallest of gardens could certainly take a couple of nuclei, so that the advantage and pleasure of walking out of the house and watching the bees at work could be retained. A couple of hives can be kept on a flat rooftop even in the centre of London and do quite well, with neighbours often unaware of their existence.

— WHAT TO BUY —

PERSONAL EQUIPMENT

This is expensive but very necessary, and prospective beekeepers should not rush in and buy a full outfit until they are quite sure that they mean to go on despite having received the occasional sting. As a spectator in the first instance at apiary meetings, just a light veil with hands kept in pockets will probably be enough, and even the veil could be borrowed, or home-made. A pair of ordinary gloves will be protection enough for holding a frame of bees handed round to

demonstrate stages of brood, and the difference between workers and drones and between sealed honey and sealed brood. However, when opening up a hive it is important to be well protected, and the regulation outfit of a white boiler suit tucked into wellington boots is sensible. The veil must be tucked in under the suit, and should also have a net or gauze panel standing out away from the face; gauntlet gloves are also needed, and then one can face any hive with confidence. The light veil will not be wasted and will always be useful in the garden if weeding close to the hive on one of those days (hopefully rare) when bees show their lack of understanding of gardeners.

A good smoker will last for so many years that it is wise to get the best available, made of copper and of a sensible size. My own was bought 20 years ago and remains a faithful friend, though dented and stained. There are two types of hive tool, the J-type and the scraper, both equally useful, and a slot on the back of the smoker to hold either tool when not in use is well worth making, as is a wooden plug fastened by a wire to the smoker itself, so that the chimney may be blocked at will. Usually the fuel will smoulder on for a good hour after use. If the chimney is blocked, and if you visit more than one apiary, can be coaxed into life and smoke at the next call by pulling out the plug and working the bellows. By the same token, it is important not to leave such a smoker in a car boot or garage, but always to leave it outside after use, as a sensible precaution to avoid the possibility of starting a fire. For more information on smokers, see [here](#).

There are two schools of thought as to whether or not gloves should be worn, but by beginners they most certainly should. Later on, bare hands and sleeves rolled up will impress others, and also impose the discipline of very careful handling, but when opening up a number of hives the fingers get sticky with propolis, making it difficult to pick up a queen should this be necessary. So in the end one comes back to gloves, taking them off for queen-handling, queen-cell implantation and other delicate work.

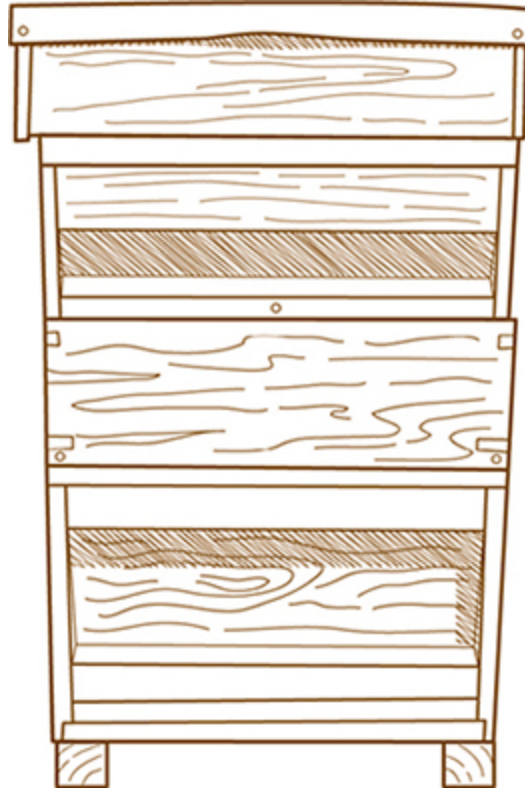
BEEHIVES

In Britain these come in various sizes and patterns, and the main point here is that they are for the convenience of the beekeeper, not the bees. Bees are just as happy in a hollow tree or straw skep as in an expensive modern hive, but the advantage to the beekeeper of moveable frames in a series of square or oblong boxes is overwhelming. Any modern hive consists of a nursery and a pantry separated by a queen-excluder, a grille through which workers can pass with ease, but not drones or a queen. Within the nursery the queen can range over her brood combs in one (sometimes two) boxes, and above the excluder the honeycombs are housed in a series of boxes called 'supers'. This way the honeycombs are never bred in and remain clean; they can be used over and over again for twenty years or more. In the brood chamber, combs have a limited life, cells getting smaller as they are lined with successive cocoons and pupa cases.

In particular, the cell bases thicken as layers of neatly wrapped faecal pellets are deposited by pupating larvae. In many countries, combs are not renewed so often as in Britain, and the bees will break down the cells and rebuild them. However, this can lead to higher levels of endemic disease, and there are definite advantages to regular comb renewal. In nature the bees themselves do just this. I have found wild colonies moving laterally or upwards as space permits, building new combs and abandoning old ones every year.

Over most of the beekeeping world the rectangular Langstroth hive is used, but in Britain most beekeepers (over 90 per cent) use either WBC or National hives (both taking the same British Standard frames). The Scottish Smith hive is simpler in construction and uses similar frames, but with shorter lugs. The British Commercial hive is gaining in favour in the UK and is compatible with National supers, having virtually the same external dimensions. It has larger brood frames which provide 7,000 cells each, as against the BS 5,000, so that five Commercial 40 x 25cm (16 x 10in) frames give as much room as seven smaller Standard frames. Thus a full box of 11 British

Commercial frames provides the same brood space as 15½ British Standard frames. Modified Dadant frames are even larger, but not so easy for beginners to handle.



A National hive with three supers for honey.

Choice of a hive is a personal matter, but bear in mind that in Britain, National equipment is easier to buy or sell second-hand, and nuclei are also much more easily obtainable on BS frames, which will only fit into WBC and National hives. Whatever choice of equipment is made, be consistent and stick to it; hives in the same apiary with non-interchangeable parts are a nuisance.

— DRONES, WORKERS AND QUEENS —

A normal, healthy colony of bees will have a population varying from 10,000 or less in winter to 50,000 or more in high summer. There will be a queen and workers only for most of the year, but for the summer months also drones, usually just a few hundred. The queen can live for three years, sometimes even four, but is normally fully efficient only in her first two years. The lifespan of a worker, like that of a car, depends more on mileage than age; at the height of summer with long working days it may be as short as five weeks, but in autumn, winter and early spring up to six months. Drones normally live only three or four weeks and are usually thrown out at the end of summer; earlier in a bad season or if a newly mated young queen is present. Recognition of adult queen, drone and worker bees, and the cells that they are raised in, is easy, but the recognition of brood at various stages is harder, and it is necessary to learn and remember the basic facts of bee life if one is to ‘read a comb’ and understand what is happening when ‘going through a hive’ (see table below).

<u>GESTATION PERIODS</u>				
	Egg	Open brood	Sealed brood	Total
Queen	3	5	7	15 days
Worker	3	5	12	21 days
Drone	3	7	14	24 days

WORKER

The jobs a worker bee performs in its short summer life are many and varied. The table opposite, showing the duties usually carried out by bees of different ages, is only an indication. If need should arise the older bees can regress and carry out the tasks of younger bees, which in turn can take over the duties of older bees earlier than

usual should this be necessary. In late autumn and winter worker bees are mobile food reserves and carry protein and fats stored around their glands and in layers of ‘fat bodies’. They consume stored carbohydrates to maintain warmth and bodily activity, and use the other food reserves in spring to manufacture brood food when the queen resumes egg-laying on a larger scale. Worker bees live longer if confined to the hive for several days.

DUTIES OF WORKER BEES OF DIFFERENT AGES

<u>AGE OF WORKER</u>	<u>DUTY</u>
0–4 days	Cell cleaning and incubation
3–12 days	Feeding larvae
About 4th day	Power of stinging fully developed
Between 6th and 10th day	First nursery flights, usually around midday
6–15 days	Wax-making and comb-building
8–16 days	Reception and storage of nectar; packing of pollen in cell
14–18 days	Entrance guard, debris clearance and funeral-bearer duties
19th day	Begins to pay attention to bee dances
18–30/35 days	Foraging for honey and pollen
25–30/35 days	Collecting propolis

DRONES

Drones, the male bees of the colony, arise from unfertilized eggs, which pass the spermathecal duct without receiving sperm. Thus drones have a mother but no father. This is called parthenogenesis.

A queen will normally lay in drone cells some time in April, seeking out existing drone cells in order to do so, and often bypassing available empty worker cells in the process. If there is no drone comb available, the workers will build clumps of it at the base of existing combs, or tear down areas of worker comb and rebuild it to create drone cells; sometimes they will squeeze drone cells in odd places between the woodwork of frames. This can make the inspection of hives in May a messy business, and also result in areas of good worker comb being spoiled so far as the rest of the year is concerned, with knobbly areas of once-used drone comb thickened with propolis and wax. This can be avoided by inserting a composite worker/drone comb about one frame in from the side, giving the bees what they need at the time they need it. Another method is to give space under the brood frame by inserting an eke (basic type of frame) about 5cm (2in) deep, or by using brood chambers deeper than usual. The existing worker comb is then preserved as such, and the bees build extensions of drone comb beneath some of the frames. This may be removed at the end of each season for wax production, or left on for next year. Some of the extension comb built below will be of worker cells, if the colony needs more room.

The production of drones does not mean that a colony is necessarily going to swarm; it seems to be an insurance policy taken out in case the need to swarm should arise later. Young drones normally fly about the sixth or seventh day after emergence, but are not usually virile until the eleventh to fourteenth day. Flying drones are readily accepted and fed in hives other than their own and may join any swarm. Towards August the drones are driven out of hives, even when food is plentiful, but are retained by queenless stocks or stocks with a failing queen. Thus the presence of drones after this time can be a signal warning of queen failure, either actual or

- queen cells 52, 56
 - artificial 48
 - building unit 53
 - cups 67
 - direct use 52, 56
 - gentle handling 52–3
 - grafting 53
 - methods of raising 48–50
 - protection of 52
 - supersedure 47, 93
 - transport of 52
- queenless stock 141, 142, 144
- rape, oil-seed 41, 43
- reading a comb 89–91
- regression of workers 16
- reinforcing workers 43
- re-queening 45, 52, 56, 57, 62, 64
- ripe honey, check for 100
- robbing 13, 160, 166, 173
- royal jelly 135–7
 - production of 136–7
 - uses of 137
- screening, apiary 10, 148
- section honey 87
- shook swarm 42, 184
- siting, of hives 10, 31–3
- small hive beetle (*Aethina tumida*) 177
- smells, bees irritated by 12
- smell of fear 36
- smoker cartridge 33
- social aspects 6, 7, 9
- solar wax extractor 120, 148, 153
- spermatheca 83

- spray dangers 6, 171–2
- spring 21–33
 - arrival of 21
 - feeding 23
 - first inspection 22–3
 - honey flow 26
 - management 21–2
- starting with bees 9
- starvation 166
- sterilizing combs 25
- steroids 133
- stings
 - avoiding 38
 - diagram of 131
 - pheromone 12, 133
- study groups 157
- suburban sites 9
- sucrose, inversion of 117
- sugar syrup 28, 36
- supers
 - at out-apiaries 40
 - arranging combs in 40–1
 - at right angles 41
 - clearing 98–9
 - putting on 40
 - storage of 114
 - warming before extraction 103
- supersedure queen cells 47–9, 93–4
- swarms 65–82
 - artificial 79–81
 - absconding 66, 76
 - behaviour 76–7
 - calls 73

- catching 68–9
- causes of 66
- control 68–73
- chimneys 70, 72
- cups 68–73
- diseases from 76
- hiving 72, 75, 76, 78
- identifying swarmed stock 71–2
- making the most of 74–8
- management to reduce 67
- stock left 75
- types of 66
- weight of bees in 69, 77
- tangential extractor 102
- Taranov, artificial swarm 68, 81–2
- terramycin, uses of 173
- thymol, use in syrup 113, 116, 168
- temper, bad 10, 11
- temperature, for extracting 103
- thixotropic honey 94, 95, 97
- tobacco smoke, use of 171, 174
- top-bar hives 179–80
- tropilaelaps mite 177, 183
- two-queen system 59–63
- uncapping honey 103
- uniting stocks
 - directly 61
 - through sheet of newspaper 115
- urban sites 9
- vandals, hive hazard 142
- varroa 174–6, 183
- veil 10, 12, 13, 14
- venom, bee 131–4