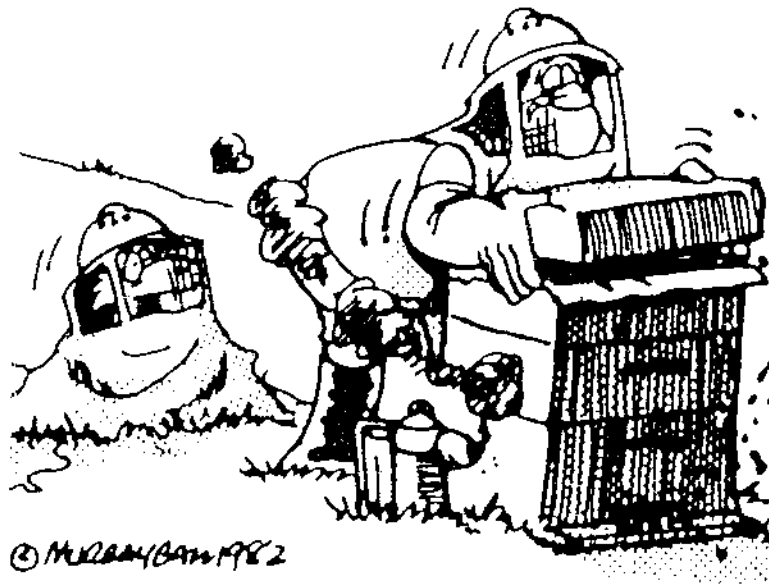


STARTING WITH BEES



Bay of Plenty Branch

National Beekeepers Association

INTRODUCTION

This booklet is intended as an introduction to hobbyist beekeeping in the Bay of Plenty and Poverty Bay. Beekeeping is a great pastime. Bees are some of the most interesting of domestic animals to keep, and can provide a wonderful bounty for the enthusiastic amateur.

Nevertheless, things can and do go wrong. Prospective beekeepers are therefore strongly advised to seek as much information as possible about bees before they purchase any hives. There is no quicker way to destroy neighbourhood relationships than to start beekeeping without a basic knowledge of both bee behaviour and colony management.

Beekeeping can be fun. No one, however, can expect to keep bees without suffering an occasional sting. Discomfort from excessive stinging is quite unnecessary and can be avoided if a beekeeper understands bee behaviour, has learned the correct way to handle the hive, and dresses properly for the job.

Although proficiency in bee handling will take some time to acquire, the knowledge that the beginner is progressing the right way will provide the confidence so necessary for success.

Edited by Trevor Bryant

for the Bay of Plenty branch, National
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GENERAL INFORMATION

In New Zealand there are approximately 6000 registered beekeepers operating over 300,000 colonies of bees. The annual production of honey ranges between five and ten thousand tonnes, depending on weather conditions and flora available. In a good area, under favourable conditions, a properly managed colony of bees should produce up to 30 kg of honey annually.

Established colonies or starter nuclei can be purchased from most reputable beekeepers or through specialty traders. Extreme care must be taken to avoid buying second-hand equipment which could be infected with the spores of a serious bee disease known as American foulbrood (*Bacillus larvae*). For more information about this disease see the colour Aglink (FPP 124) at the back of this booklet.

The purchase of bees, hive components, and essential protective clothing and equipment is rather expensive. However, most of these materials should last many years and will give the owner many hours of enjoyment and a sweet reward for effort.



HOW TO START

Anyone considering beekeeping as an occupation should work with a competent commercial beekeeper for at least two seasons.

Those wishing to keep bees as a hobby only should read a book about beekeeping and investigate their ability to cope with bee stings before venturing further. Only one or two hives should be purchased to start. Expansion beyond that number should not proceed until the owner has gained sufficient confidence and experience.

Before purchasing a colony or starter nucleus hive, make sure that the seller has obtained a permit from the Ministry of Agriculture and Fisheries. This permit is issued by Apicultural Officers warranted under the Apiaries Act. The Apiaries Act contains provisions for the control of bee diseases.

Once a colony is purchased and an apiary established, that apiary must be registered with the Ministry of Agriculture and Fisheries (a registration form is attached to this pamphlet). Details of apiary location are kept on a computerised Apiary Register and updated annually from a statement of apiary inspection completed by all beekeepers. The information in the Apiary Register is used by MAF-appointed personnel when inspecting colonies for bee diseases.

People keeping bees in cities and towns should also check with their local council office. In some jurisdictions, council by-laws control the keeping of bees in built-up areas.

SWARMS

While swarms may be a cheap method of establishing a hive, they can prove expensive in the long run because -

- There is an inherent danger that the swarm may carry the serious bee disease American foulbrood.
- The bees have already shown a tendency to swarm and the beekeeper will perpetuate the swarming impulse unless the hive is re-queened.

There is no truth to the old folk tale that swarming bees never sting.

Swarms are reasonably gentle when they first emerge from a hive. They become more aggressive, however, the longer they remain clustered in the open. It does not pay to take risks with swarms or attempt to handle them without protective clothing.



HIVE COMPONENTS

All hive components should conform to the recommended New Zealand standards as outlined in chapter 4 of *Practical Beekeeping in New Zealand*. This standard hive is designed to suit the inhabitants (the honey bees) while at the same time ensuring that work can be easily carried out by the beekeeper.

All measurements of frames and supers must be accurate because only in this way will the proper "bee space" be maintained. Bee space is the specific sized gap which bees build between combs in nature so that access is always available to all parts of the nest. Man has utilised this bee space in developing the components which make up the modern moveable frame hive.

Novice beekeepers frequently space brood nest frames evenly in the super. This is a bad practice. The brood-nest boxes are meant to contain nine or ten frames which should be pushed firmly together in the middle of the super. Only in this way can bee space between the frames be maintained. If you forget to push the frames together, the bees will soon build out the wax combs. It

will then become difficult for the beekeeper to properly manipulate the brood nest.

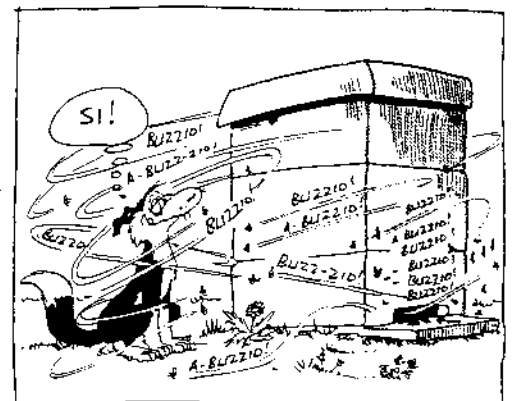
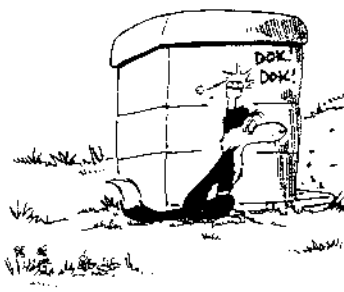
Honey supers, on the other hand, normally contain eight or nine frames which can be evenly spaced across the box. In this case the beekeeper wishes to encourage the bees to draw out the comb because the wider the frame the more honey it can contain.

QUIET BEES ARE A BEEKEEPER'S BEST FRIEND

Italian bees are the best natured variety under New Zealand conditions. Italian bees characteristically have three or more golden to leather-coloured stripes across the abdomen.

Drones (male bees) have no stings and are harmless. They are, however, noisy flyers and frequently alarm the novice.

Newly emerged worker bees are easily recognised in the hive because they are covered with downy hair. These bees, and worker bees engaged in nursery and household chores on brood frames, are generally very docile.



Bees which are gorged with honey are also usually non-aggressive. Bees are normally more amenable when there is a nectar supply (the "honey flow").

Crossbred races are more vicious than selectively bred bees. Hives that are allowed to re-queen themselves generally revert to a more vicious strain which is often darker in colour. Beekeepers should re-queen aggressive colonies with well-bred queens of a gentle strain produced by a commercial queen breeder.

Guard bees are found at the entrance to all colonies. They are alert to any interference with the normal routine of the colony and react aggressively to any disturbance. Field bees leaving and returning to the hive also dislike obstructions.

As a rule, strong colonies are more difficult to control than weak colonies, and older bees are more aggressive than young bees.

PROTECTIVE CLOTHING

Bee-tight clothing is essential to avoid stings and build up confidence.

The following items are necessary:

- a hat with a brim to hold the veil off the face. Don't use felt hats because bees will get caught in the fibre and sting.
- a commercially made gauze veil. Purpose-built veils are best because they are constructed to stand off the face. They are also made with materials which are easy to see through. Most veils come with long strings. These are used to tighten the veil around the chest and neck so

that bees cannot enter. The strings should be long enough to pass down the front, around the back, and then around the front again. Pull the strings tight and then tie them together.



Bees can sometimes crawl under the veil, especially if it is raining or when hives are shifted at night. If in doubt, put the veil on first and then the overalls over top.

- white, khaki or grey zip-front overalls with the side slits sewn up. Avoid dark coloured clothing and patches. Bees tend to focus their attention on dark colours when protecting their hive. Do not wear wool clothing. Bees get caught in the fibre and sting.
- gloves. Rubber or leather gardening or welding gloves will do the job but proper "bee gloves" are recommended because they have cotton gauntlets with elastic edges which help make the gloves bee tight. If non-bee gloves are used make sure cotton gauntlets are provided.

- **boots.** Gumboots are suitable for short periods of work. Put the legs of the overalls over the gumboots and secure the cuffs with an elastic garter or rubber band. Leggings can be secured inside thick socks, but there is a greater chance of being stung in the ankles.

HOW TO CONDUCT YOURSELF IN THE APIARY

The key to avoiding problems when working with bees is to be gentle, deliberate and steady in your movements. Never work with rough or jerky movements and avoid waving the arms about. Disregard those bees which hover about or settle on your clothing.

However, if a bee gets caught inside the protective clothing or becomes entangled in the hair, squash the bee immediately. Once the bee is in such a situation it is almost impossible to change its instinct to sting.

If you are stung, scratch out the sting immediately before it has time to inject too much poison. Take care not to squeeze the poison sac. It is a good practice to blow smoke on any exposed flesh which has been stung. This disguises the smell which was released with the bee venom during the sting. There is no effective chemical which repels stings.

Anyone who is overly affected by stings should give up beekeeping because they are taking an unnecessary risk with their health. People who show severe allergic reactions should seek medical advice. Difficulty with breathing or fainting spells following a bee sting should be treated as a medical emergency.

If a colony gets out of control it is best

to retreat and wait until the hive has calmed down. If necessary, adjust clothing and get the smoker burning well before returning to close up the hive. If you are getting badly stung and have a friend at hand, get him to finish the hive. You may have accumulated too much pheromone on your clothing from the stings. This can act to further incite the bees.



THE SMOKER

Bees cannot be worked competently without the assistance of smoke. Smoke is harmless to bees and its use in modern beekeeping is absolutely essential. **Protective clothing should never be regarded as a substitute.** You might not be getting stung, but your neighbours could be!

Smokers are available in different sizes and materials. Price is an important consideration and for hobbyist purposes a less-expensive galvanised model is probably adequate.

A range of materials can be used as smoker fuel. Clean, dry jute sacking is very suitable and gives off a good, cool smoke. Dry pine needles and straw are also good, but these materials burn

quickly and the smoker will need more frequent reloading. Chip board broken into small pieces make a handy fuel, but good supplies may be difficult to obtain. Lawsoniana clippings and wood shavings are also used 'by some beekeepers, although both are difficult to get going well.

The best way to start a smoker is to begin by lighting a crumpled piece of newspaper in the smoker chamber. Once the paper has ignited, place your fuel gently in on top, squeezing the bellows all the while. If sacking is used, place a piece of the old burnt sacking inside a roll of the new sack. The sacking will light much easier this way.

Always plug the nozzle of your smoker with a cork or green grass after use, and if you are travelling in a vehicle, place the smoker in a tin box. Beekeepers' trucks have caught fire as a result of carelessly stored smokers.

USING THE SMOKER

Before you approach the hive, make sure the smoker is operating well. Blow three or four good puffs of dense white smoke into the hive entrance. Wait for half a minute, then give the guard bees another puff.

Next, remove the hive cover while gently puffing smoke beneath it. If storeys are to be removed, prise the top one up a centimetre or two and blow a little smoke through the gap before lifting the box off.

While working the hive, keep an eye on the tops of the frames. If the bees begin to "boil up", blow a gentle horizontal puff across the top bars to keep the bees subdued. Never blow smoke violently downward between the frames, as this is



likely to stampede the bees. It may then become impossible to carry out certain operations like finding the queen.

Once a frame containing brood has been removed from the hive it is usually unnecessary to blow smoke on the comb. Worker bees attending the brood are normally the most docile bees in the hive. Smoking a brood comb may also cause the queen to fly off and become lost.

After a hive is brought under control, the rule is to use a little smoke often. Too much smoke will demoralise a colony, interrupt nectar gathering, and cause confusion in the hive.

Nevertheless, it is better for the novice to use too much smoke rather than too little. Experience will teach how much is required. And here's a final tip - if the smoke fuel starts burning too hot, put a handful of green grass in the top of the smoker. This will cool the smoker down.

THE BEST TIME TO WORK BEES

Work your bees on dry, reasonably calm days at a time when the sun is at its warmest - between 10 am and 3 pm. During this period of the day the oldest

and most aggressive bees are usually away from the hive, and when they return they are better natured because they are loaded with nectar and/or pollen.

BEES ARE TEMPERAMENTAL

Honey bees have their good days and bad days, just like we do. They are most manageable when their stomachs are full and the colony is progressing smoothly. They are least manageable when a honey flow is suddenly cut off by cold weather, rain, or a wind change. Bees can anticipate the approach of cold fronts and may become irritable even though the present weather appears fine.

Bees are irritated by animal odours and stale perspiration. Cleanliness (both body and clothing) is important. Farmers often find it difficult to manage hives because the odour of animals on their clothing and hands, which goes unnoticed by the farmer, is highly upsetting to the bees. The smell of leather watch straps, certain cosmetics (e.g. after-shave lotion, perfumes), squashed bees, and bee venom also incite aggression in bees.



Although bees seldom attack unless provoked, they will always defend their hive against interference. When confronted with a difficult hive ask yourself "what did I do to upset the bees?" Then reconsider your actions to discover where you could have been at fault.

HOW TO OPEN A HIVE

As a rule of thumb, always work hives from the side and never place any boxes or lids in front of the hive entrance.

When working the hive, be careful not to bump it or jar the frames. Always use a lever or hive tool to gently prise hive components apart. Work quickly, but not clumsily.

Place supers containing brood into an upturned lid to ensure that the queen does not become lost in the grass. Always cover bees and honey not receiving immediate attention.

When removing frames in the brood nest take care not to squash the queen. The best way to proceed is by removing the nearest side frame first. This will create a gap in the box which will allow you to easily remove and examine each brood frame. Leave this outside frame propped against the hive near the entrance while you work the box.

During some hive manipulations, and always when inspecting for American foulbrood, it will become necessary to dislodge the bees from the comb. To do this hold the frame with both hands and shake it firmly up with flexible wrist movements. Remember also that the hive will return to normal more quickly if the bees are shaken into the hive rather than on the ground in front of the entrance.

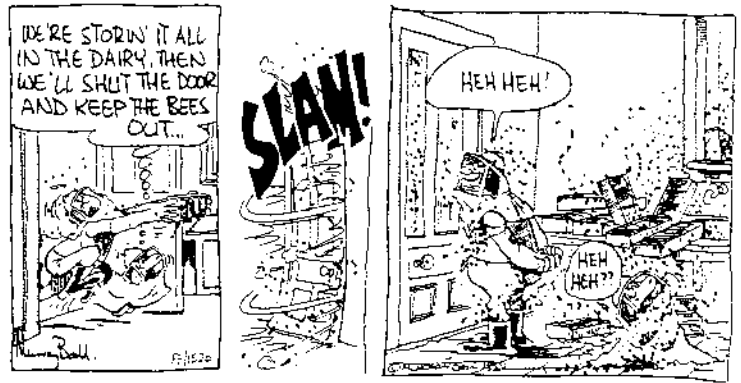
HOW OFTEN SHOULD YOU LOOK IN YOUR HIVE?

The answer is only when you feel the need. It is only natural that new beekeepers will want to look in their hives every day. However, this is not recommended. Bees work best if left undisturbed. Nevertheless, it is better to work the hive a bit too often, rather than to neglect it and let it starve.

A bee hive is at its most vulnerable in the spring when the colony undergoes rapid population growth. The beekeeper should examine hives once every three weeks between the beginning of September and the middle of November to ensure that the colony does not run out of feed. After that time most hives should be self-supporting. The beekeeper then just needs to make sure that the hives have enough room to expand and store a honey crop. Hives should also be examined when the honey is taken off and before winter to ensure that they have enough winter stores of honey and to check for signs of American foulbrood. Hives need a full box of honey to see themselves through to next spring.

If you examine the hive during winter, never disturb the bee cluster. Bees can fall off the combs and may become too cold to find their way back to the warmth and safety of the cluster.

And here's a suggestion for those of you who are fascinated by the activities of bees. Why not establish an observation hive (see *The ABC and XYZ of Bee Culture* for plans). That way you can watch your bees whenever you want and also get a honey crop!



ROBBER BEES

Robbers are those bees which have found a source of honey or sugar outside their own hive and are busy "stealing" it. Bees become aggressive in the process of seeking out such a food source and begin to examine every object that looks or smells a bit different (e.g. your neighbour mowing his lawn, the compost heap, or someone's open kitchen window down the road). As you can imagine, at times like this bees can become a considerable annoyance to the neighbourhood as well as an interference to your apiary work. They can also pose a considerable bee disease risk.

If you keep bees in a built-up area it is essential that you never let robbing get under way. Experience has shown that

almost all cases of robbing are caused by beekeeper negligence.

Robbing can be initiated in several ways:

- By placing hive equipment and honey stores in sheds or premises that are not bee-tight
- By exposing honey to flying bees while manipulating hives or by

placing freshly extracted combs back on hives during the time when bees are actively flying

- By leaving wax and honey scrapings beside the hives for the bees to clean up
- By attempting to remove honey from a colony with escape boards when the honey supers and lid are not bee-tight
- By feeding sugar syrup during the day or by spilling it over the bees, on the hive, or nearby on the ground

Scrapings of wax and honey should always be placed in a covered tin which is kept specifically for that purpose. You should also carry several clean sacks or cover boards at all times so that you have something on hand to cover spare equipment.

It is also important to always complete the work with each hive as quickly as possible, especially once the honey flow has ended. With large populations of "unemployed" bees, that is the time when hives are most prone to robbing.

WHAT TO DO IF ROBBING STARTS

If your hives are located in a built-up area, turn on a garden sprinkler and direct a gentle flow of water at the hive entrances. This tends to disrupt the robbing pattern and slow the bees down.

If you are extracting in your shed or kitchen, find the places where the bees are getting in and either close or block them up. Kill any bees that are inside before they can fly back to their hive.

If robbers are attacking a colony, reduce the hive entrance to a hole

approximately 25mm wide by 10 mm high. Grass can be loosely placed over the entrances of the robbing hives to disrupt the flight pattern of the bees.

If you often experience robbing in an out-apiary it is best to reduce the number of colonies so that they can all be worked properly before robbing starts.

And remember, as a last resort, it is always better to retreat and come back another day!

DISEASES AND PESTS OF BEES

Honey bees, like most creatures, are subject to a whole host of pests and diseases. Fortunately, bee diseases do not also affect humans and other animals. Nevertheless, they do cause serious problems for all beekeepers, and so constant vigilance is required.

Diseases and pests of bees can be divided into two types - those which attack the brood and those which affect the adult bee. The most serious bee diseases in New Zealand are the brood diseases. Fortunately Acarine disease and Varroa, two of the most devastating of adult bee diseases, have not been found in this country.



Before you can tell if a colony is diseased you need to know what healthy brood looks like. See Figure 1 on the attached AgLink.

CONTROLLING BEE DISEASES

When it comes to controlling bee diseases, the list of do's and don't has been the same for years. The list includes:

Don't

- Buy old equipment without inspecting it and sighting a permit*
- Expose honey or combs to robbing
- Distribute combs from dead colonies throughout healthy, live hives
- Worry about someone else's apiary more than you worry about your own
- Sell any used bee equipment without inspecting it and getting a permit*
- Extract honey from a hive without first inspecting the brood nest for AFB
- Remove anything from a hive without first inspecting the brood for disease

Do

- Check the brood in your colonies regularly, preferably after shaking the bees from the comb
- Register your apiary with the local MAF apicultural officer*
- Attend meetings of your nearest National Beekeepers Association branch
- Learn the symptoms of all bee diseases
- Ask for an inspection, if in doubt, by contacting your local MAF apicultural officer*
- Inform your local MAF apicultural officer immediately if any cases of disease are found*

Remember that all the actions marked with an asterik* above are requirements under the Apiaries Act 1969.

PLEASE READ THE ATTACHED BEE DISEASES AGLINK (FP124) CAREFULLY. RECOGNITION OF BEE DISEASES IS THE MOST IMPORTANT SKILL IN BEEKEEPING.