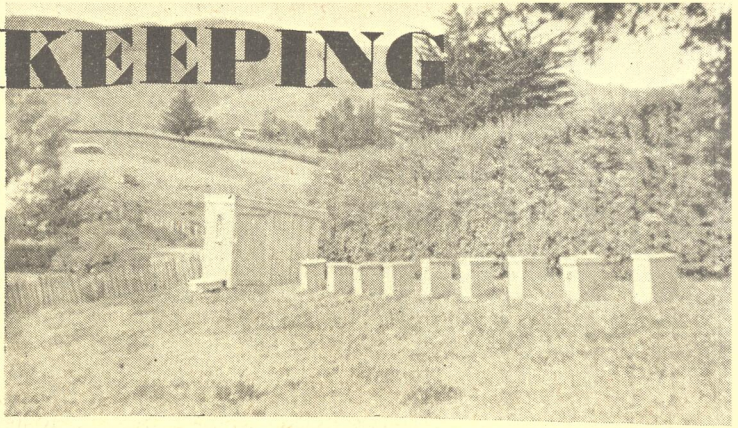


# BEEKEEPING



## How and When to Establish a Domestic Apiary

By

T. S. WINTER,

*Senior Apiary Instructor, Wellington*

**B**EEKEEPING with a few hives can be made a profitable occupation and an interesting hobby by the amateur in most localities throughout New Zealand, if conducted on proper lines with painstaking energy.

**N**EW ZEALAND, situated as it is between latitudes 34deg. south and 48deg. south, has a comparatively mild and open winter in most parts, and the country abounds with clover and other honey-producing plants, shrubs, and trees, the majority of which provide nectar in varying quantities throughout the beekeeping season—some being valuable for spring bee-feeding purposes, while others provide the main nectar flow from which the bees are able to gather and store a surplus of honey over and above their own requirements if they are kept under proper conditions. It is this surplus which is made available for table and marketing purposes.

### *Who May Keep Bees*

Any person may become a bee-keeper, but only those who are suffi-

ciently interested and will apply energetic thought, skilful planning, and, above all, promptitude and persistence, can hope to succeed as beekeepers.

All beginners suffer more or less from the effects of bee stings, but in most cases the bad effects wear off gradually as the system becomes inoculated against the poison, until finally very little inconvenience is felt from stings. In rare instances, however, there are to be found people who suffer severely from bee stings and whose system does not become immune to the poison. There are also some individuals who are too nervous to go amongst their bees with any degree of confidence. Such people should not keep bees. No person who keeps bees can escape being stung occasionally, and the sting of the honey bee generally hurts even the seasoned bee-keeper for an instant.



Honey bees are dependent upon favourable floral and climatic conditions, and also upon the attention and care they receive at critical times during the year. The beginner must, therefore, study closely bee behaviour and methods of colony management suitable to his location.

Colonies of bees should not be established by inexperienced beekeepers in closely-settled residential areas, where they may become a nuisance to neighbours, or in a locality where there is insufficient bee pasture. Bad handling of bees by one who is a beginner, especially at times when they should be left alone, may cause an orgy of stinging, and failure to give attention promptly when required may result in a loss of numerous swarms which get clear away and establish themselves in undesirable places, where they are likely to become a menace to all competent beekeepers in the neighbourhood.

Before securing bees the beginner should spend as much time as possible with a successful neighbouring beekeeper during the summer months when the bees are being attended to, and should supplement this experience by reading beekeeping literature. Suitable books are procurable for this purpose, and the "Journal of Agriculture," which is published monthly, contains seasonal notes on beekeeping. The dominating desire of every beginner should be to master the art of colony management, the fundamental considerations of which are the care and maintenance of good breeding and working stock, an adequate supply of supers and combs for all purposes, including the storage of any surplus honey, and timely brood and hive manipulations to ensure a maximum number of worker bees at the beginning of the main honey flow. When this has been achieved in some measure and is put carefully into practice, surplus crops of honey may be expected. It is a sheer waste of time to proceed with beekeeping in any other way.

### *How to Establish Bees*

There are several ways to start up in beekeeping:—

1. Full-size standard hives (complete with bees, bee-combs, and stores)

may be purchased from a neighbouring beekeeper.

2. A three- or four-frame nucleus colony complete with stores, brood, and bees (including a young queen) may be purchased from any reliable breeder, and transferred on arrival into a standard hive prepared to receive it.
3. Swarms may be caught during the summer and placed in a standard hive made ready for the purpose, subject to conditions which will be mentioned later.

In all cases where bees and used hive equipment are purchased the buyer should ascertain whether the vendor has a permit from the Government apiary instructor for the district to sell for removal. Such permits are necessary under the Apiaries Act, 1927, to prevent the indiscriminate distribution of diseased bees and appliances, and thereby the possible spread of bee diseases.

The buyer should also examine the hives to determine the condition of the equipment, the amount of honey and pollen in the combs, and the strength of each colony, or engage a competent beekeeper to do so for him, otherwise poor or worthless stocks may be purchased. The fact that bees may be flying freely from the hive entrance is not a sufficient basis in itself for judging the condition of the colony. A thorough examination of the interior of each hive is necessary.

There is an advantage in buying good stocks and hives complete early in the season, provided they have plenty of stores to carry them on to the honey flow, in that they are already established and are well away to a good start with the new season's work immediately the hives are placed on their new location. This also saves the beekeeper much time in making up new appliances, but it is not always possible readily to find beekeepers who are willing to sell hives, bees, and equipment in this manner.

### *Nucleus Colonies*

The purchase of a good strain of disease-free Italian bees in the form of nucleus colonies from any reliable



breeder is recommended as the safest plan for the beginner. These are usually made ready for transport by taking three or four combs containing brood and stores with adhering bees from a strong colony and placing them in a small hive box made for the purpose.

The original queen of the main colony may be taken with the bees or a young queen may be introduced by the usual cage method. To ensure the safe carriage of the queen during a long journey she should be placed in an ordinary introducing cage, which is then held in place between the combs accompanying the bees. This is done by first running in the queen, followed by 15 to 20 escort worker bees, as illustrated in Fig. 3. The top of the nucleus box is then covered by a screen of wire gauze for ventilation, and all is ready for transport.

Before ordering a nucleus colony of bees all the necessary hive equipment should be purchased and made ready to accommodate them. To handle bees it will be necessary first to procure a smoker and bee veil.

### *Hive Equipment Required*

All new hive equipment is sold by agents of manufacturing firms in the main centres throughout New Zealand, packed in the flat to save packing space and freight charges, and requires to be assembled by the beekeeper ready for use.

Fig. 1 illustrates the set-up of a standard two-storey extracted honey hive, consisting of the following equipment:—

- 1 floor-board.
  - 2 standard hive bodies (brood chamber and super).
  - 1 queen excluder.
  - 20 Hoffman self-spacing frames.
  - 20 sheets of medium brood comb foundation.
  - 1  $\frac{1}{2}$  lb spool tinned wire.
  - 1 flax fibre mat (or clean sacking cut to size).
  - 1 hive roof.
  - 1 division board feeder.
- Sufficient tacks, nails, and paint.

The approximate present-day (1944) cost to purchase the above materials (including a nucleus colony) to establish a hive of bees is £3 17s 2d, to

which must be added any freight and cartage charges incurred. More detailed particulars may be obtained from a bee appliance price list.

A hive of bees established in this way early in the season would require at least one extra super complete with frames and comb foundations to accommodate any surplus honey crop that season, at a cost of approximately 11s.

Fig. 2 is the set-up of a section honey hive, the present-day cost of which is approximately £3 12s 11d, including a nucleus colony of bees, and consists of the following materials:—

- 1 floor-board.
- 1 full-depth hive box (brood chamber).
- 1 queen excluder.
- 2 half-depth standard hive boxes.
- 14 half-depth section frames.
- 14 section separators.

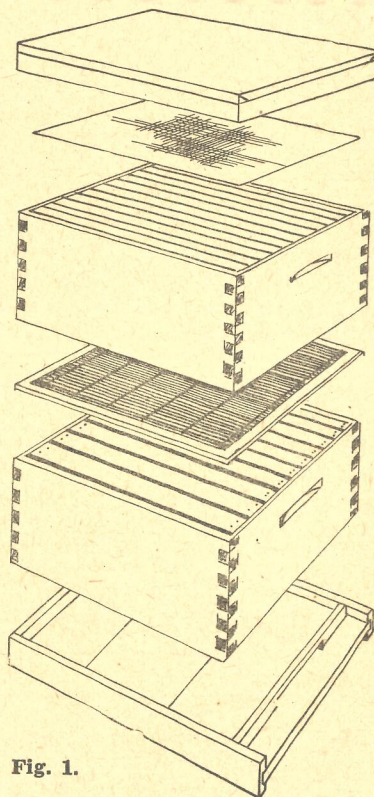


Fig. 1.



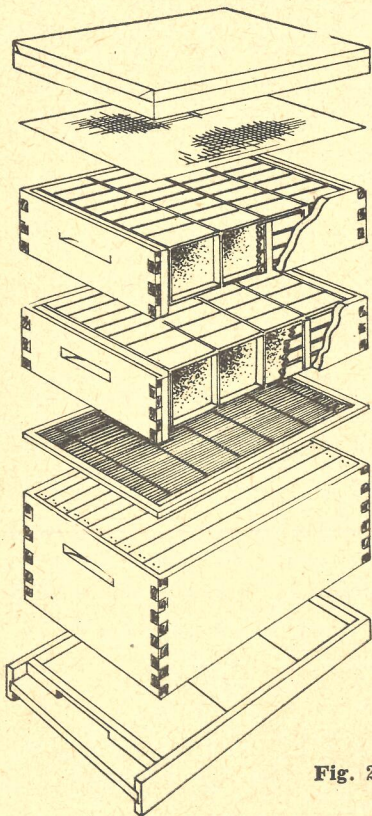


Fig. 2.

- 56  $4\frac{1}{4}$ in x  $4\frac{1}{4}$ in sections.
- $\frac{1}{2}$ lb thin super comb foundation.
- 1 hive mat.
- 1 roof (hive lid).
- Sufficient tacks, nails, and paint.

Where an extra brood chamber or a half-depth section comb honey super is required when the bees are thoroughly established these would cost approximately 11s each complete.

When section comb honey is being produced it is advisable to use a queen excluder on each hive to keep the queen away from the sections.

### Doing Own Carpentry

Where the beginner has a knowledge of carpentry and wishes to increase the number of hives kept he may be able to make his own hive

boxes, lids, and floor-boards, but great care must be taken to cut these to standard dimensions with correct bee spacing.

### Site of Hives

While hives may with advantage be placed in close proximity to fruit trees for pollinating purposes, they should not be placed directly under the trees, nor on or facing lawns or the kitchen garden. The clothes-drying area should also be avoided. An airy location, sheltered from the prevailing winds, facing approximately north, where the normal flight of the bees to and from the hives is not obstructed, would be suitable. A well-situated domestic apiary complete with suitable honey house, which is also used as a storeroom during the off season, is illustrated in the heading to this article.

### Transferring Nucleus

On arrival of the bees the box should be placed in a cool, airy, shaded, dark place for an hour or so to enable the bees to settle down quietly before handling. Meantime, the prepared hive should be placed in position on its permanent stand complete with frames fitted with wax foundation and a feeder. Carry the box to the permanent stand (Fig. 4). Use a gentle puff of smoke (from a bee smoker) over the top of the nucleus to quieten the bees. Remove the wire gauze screen and also the cage containing the queen. Take a firm grip of all three frames with the forefinger of each hand between the two outer combs to ensure a good hold on all the combs as illustrated (Fig. 5), and transfer the whole into the new hive (Fig. 6). Next place the cage containing the queen between the combs and directly over or next to the brood (Fig. 7), where she should be quickly released by the bees. Any bees remaining in the nucleus box may be shaken gently down on to the alighting board at the hive entrance or on top of the frames in the hive.

Should the queen accompanying the bees have her freedom in the nucleus box, care should be taken not to crush or otherwise lose her during the transfer. Finally, fill the feeder with luke-warm sugar syrup made to a strength



of two parts sugar to one of water (the sugar should be thoroughly dissolved), place the mat in position, and close down the hive (Fig 8).

When the bees are all inside the hive place a block of wood across the front to reduce the size of the entrance to about two inches. Keep this block in place until the bees have built up and occupied all the combs in the brood chamber. The entrance may then be gradually widened to full size according to the strength of the colony and seasonal conditions.

Feeding should be continued with sugar and water solution as previously prescribed, at regular intervals of about six days if the weather is bad, but may be discontinued immediately the bees are able to gather nectar in sufficient quantity from natural sources.

It is not good practice to feed more syrup than the bees are able to take up and store overnight. Any carry-over in the feeder may cause undesirable activity and attract the attention of robber bees, with fatal results to the nucleus colony.

Feed in the evening and take care not to spill any syrup about the hive.

When the bees are nicely established and there is a continual nectar flow, the feeder should be removed and replaced with a frame of comb foundation.

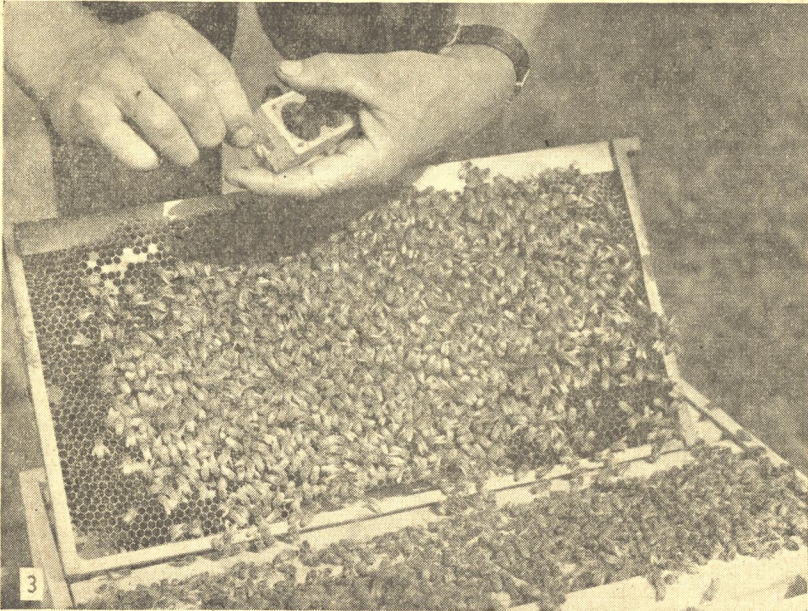
As the bees make progress and the season advances extra supers should be added as required.

### *Transport of Bees*

Although bees may be moved at any time in cases of emergency, the spring is the best time for this work. Bees may then be moved long distances with reasonable safety and minimum loss, provided they are expertly packed. It is now generally agreed that it is not desirable to move hives during the winter rest period or at times far removed from an early honey flow. Shifting bees in midsummer is not desirable because of the strength of the colonies, the large amount of brood in the hives, high temperatures, and the fact that they should be hard at work on the main nectar flow at this time of the year.

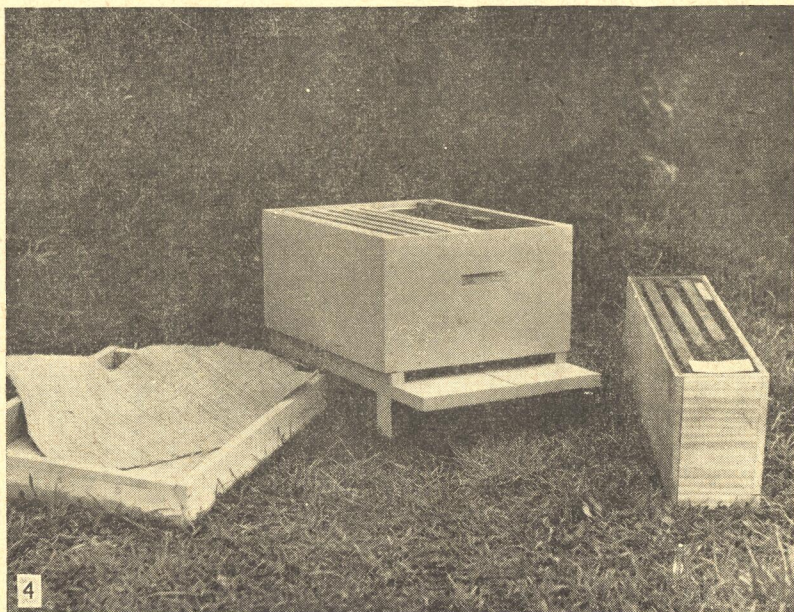
### *When to Order Bees*

Where colonies established in standard hives are required these may be

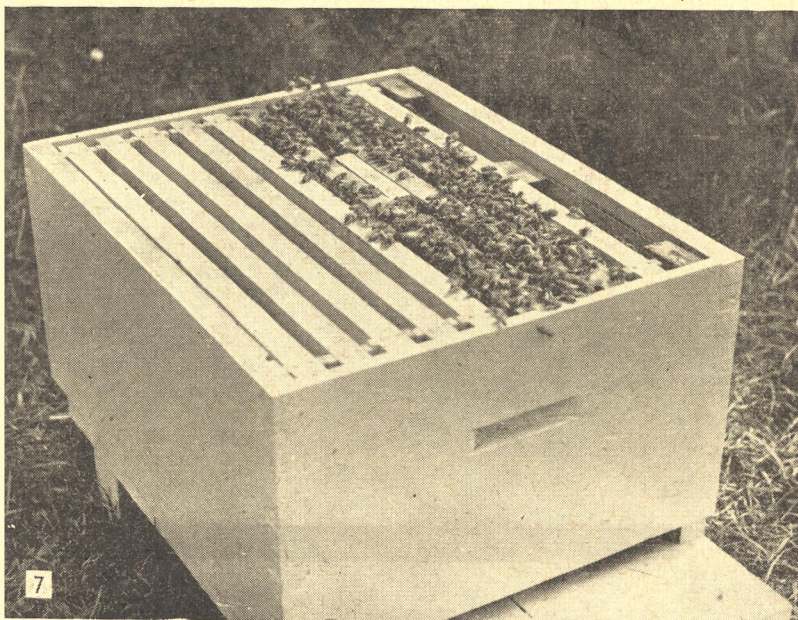




# TRANSFERRING NUCLEUS











ordered for delivery during September or October, according to location north and south in New Zealand.

Nucleus colonies with young laying queens should not be purchased by the beginner before warmer weather in the late spring, or when there is a good nectar flow during October or November, according to location; otherwise the bees will have difficulty in comb building and may need a good deal of artificial feeding.

### *Swarms*

Swarms of good size will do excellent work if hived early in the season at the beginning of the main honey flow; but only those swarms which are known to have issued from disease-free hives should be accepted by the beginner and immediately placed in a new hive.

Where a stray swarm is caught it should be allowed to remain in an empty box for at least three days before being placed on frames of comb foundation as a precaution against carrying foul-brood infection to the new hive. Any comb built by the

bees during that period should be carefully burnt. The transfer of the bees from box to prepared hive should be carried out late in the day, so that the bees will not be inclined to swarm away following this drastic treatment.

### *Young Queens Required*

The beginner and all beekeepers with only a few hives are not usually in a position to raise young queens when required.

All colonies should be re-queened at least every second season if the best results are to be obtained. Young queens of good Italian strain are best, and may be ordered from any reliable breeder for delivery during September, October, or November. Where the queen is failing the earlier the colony is re-queened the better.

The Apiary Instructor for the district may be consulted in regard to any further information and equipment necessary to operate a domestic apiary according to the number of hives it is intended to keep. Beginners should not try their hand at beekeeping with more than two or three hives to start.



## Apiary Registration

Immediately an apiary of one hive or more is established, application for registration should be made on the appropriate form (obtainable from the Apiary Instructor, Department of Agri-

culture, in the district in which the apiary is located). There is no apiary registration fee. Failure to register an apiary renders the owner or the occupier of the land on which the bees are established liable on conviction to a penalty not exceeding £20.

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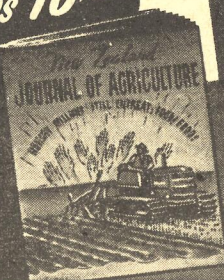
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# Home-made Hive Equipment

By C. R. PATERSON,  
*Apiary Instructor, Hamilton.*

THE manufacture of hive equipment requires up-to-date machinery and an operator who is capable of turning out thoroughly accurate work. Most beekeepers are prepared to leave the manufacture of their equipment in the hands of skilled tradesmen, but for those who wish to make up their own material, the following information may be helpful.

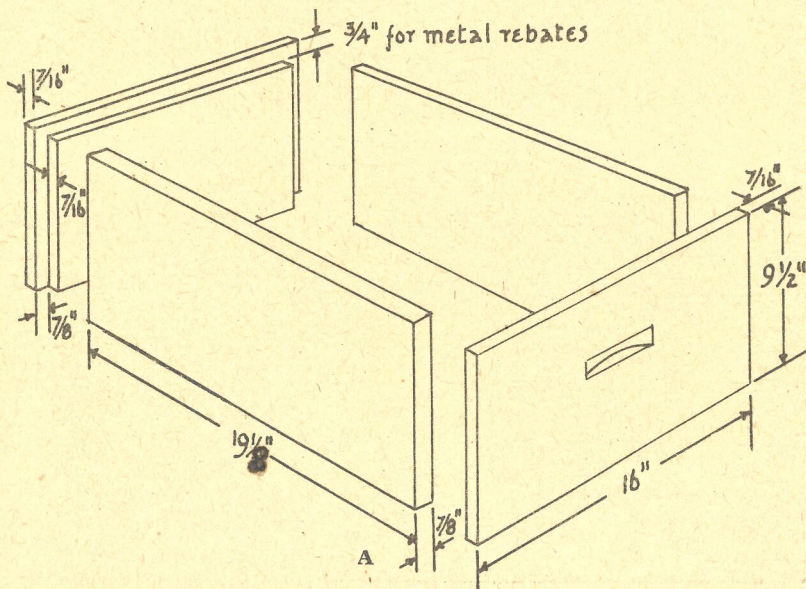
## Standard Equipment

The advisability of scrupulously observing correct measurements in the manufacture of hive material cannot be too strongly emphasised. Beekeepers in New Zealand are fortunate in that the pioneers of the industry decided to concentrate on the almost exclusive use of the Langstroth hive. This has been a great help to the manufacturers of apiary equipment, as it enables a free interchange of hive

parts whenever required between established apiaries throughout the Dominion. It is not long before the beekeeper who has departed from standard measurements when making his own equipment realises his mistake. Those contemplating the making up of their own hives and frames should adopt the motto: Accurate work and correct measurements.

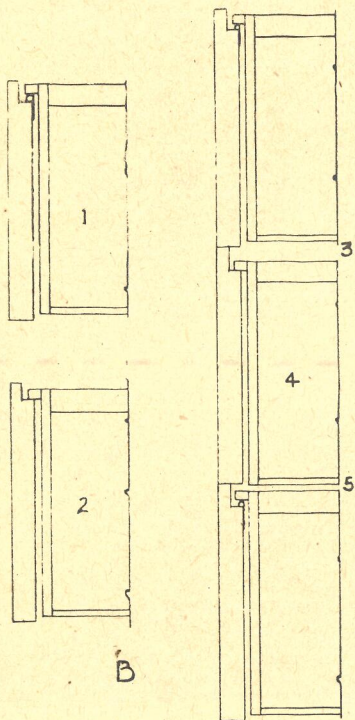
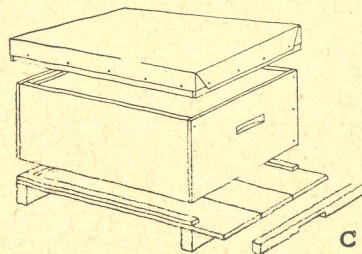
## The Saw Bench

The saw bench should be of a type that will allow of accurate cross-cutting and ripping. An electric motor of from  $\frac{1}{2}$  to 1 h.p. is most suitable for driving power; very often the motor driving the honey extractor can be used during the winter months on the saw bench. A bench with a rising top is essential for making hive material. Two saws, a cross-cut and a rip-saw of from 8in. to 10in. diameter, are most suitable for the job;





heavier saws take out too large a saw-cut, especially when ripping. Smooth, clean work can be obtained only by careful attention to the condition of the saws. They should be accurately set and always kept sharp. Remember at all times to treat the saw bench with respect, as any care-



1. Frame resting on metal rebates;
2. Frame resting on wood rebates;
3. Excessive bee space; 4. Effect of mixing supers with and without metal rebates; 5. Insufficient bee space.

lessness on the part of the operator may mean the loss of a finger or two.

### Hive Bodies or Supers

The timber used in the construction of hive bodies or supers of the Langstroth pattern may be white pine, *pinus insignis* or rimu (red pine) and, if ordered direct from the mill, the best size to purchase is 10in. in

12ft. lengths. Five superficial feet or six running feet of this timber is required for one super. When well seasoned, the timber can be dressed on both sides down to  $\frac{7}{8}$ in. for thickness and  $9\frac{1}{2}$ in. wide to allow for any further shrinkage that may take place. The standard measurements of a super ready for use are:—

Outside: 20in. long x 16in. wide x  $9\frac{1}{2}$ in. deep.

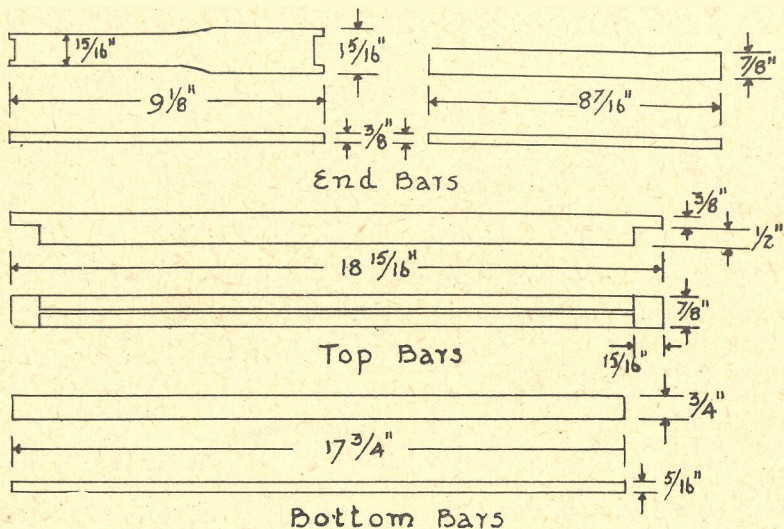
Inside:  $18\frac{1}{4}$ in. long x  $14\frac{1}{4}$ in. wide x  $9\frac{1}{2}$ in. deep.

If metal rebates are to be used, the depth of the cut taken out of the top of each end should be  $\frac{3}{4}$ in.; if not, the cut should only be  $\frac{1}{2}$ in. Fig. B shows the effect of mixing supers which have been manufactured for the use of metal rebates but have been put into use without them. Hives constructed as shown in Fig. A allow double nailing and will stand up to plenty of hard handling. The ends of the sides must be cut dead square, otherwise the hive will not sit level when assembled.

### Floor Boards

Floor boards are easily made up from odd timber as shown in Fig. C. The runners of 4in. x 2in. or 3in. x 2in. are best made of totara, if available, as it is here that the floor board makes contact with the ground. Some beekeepers prefer to make the floor boards without the wooden runners and use instead concrete blocks on which the board rests. The fillets of wood nailed on to the edges of the floor board to make the entrance are generally made of timber  $\frac{5}{8}$ in. to  $\frac{3}{4}$ in. thick. This allows a good, wide entrance during the summer months, and in the winter reduced entrance blocks should be placed in front as shown in Fig. C.

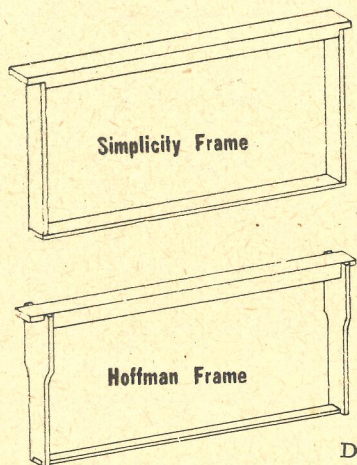




### Hive Covers or Lids

To make hive covers or lids, a rim is made of timber approximately  $\frac{3}{4}$  in. thick and 4 in. wide and of a size that will allow it to slip freely over a standard hive of 20 in. x 16 in. The ends can be half-checked similar to the supers to allow of double nailing. On this rim is nailed a wooden cover of timber of even thickness. Four strips of wood about  $\frac{1}{2}$  in. wide and  $\frac{1}{2}$  in. thick are then nailed inside the lid. These fillets allow an air space over the mat when the lid is in place, and also overcome the risk of crushing bees which may be on the top of the frames when the lid is replaced quickly.

The wooden lid should be well painted, especially the sides, before the metal cover or malthoid is tacked on. It is advisable to paint also the inside of the rim, as this will prevent moisture from reaching the hive mat through capillary action during long periods of wet weather. Lids made with narrow sides are more likely to blow off than those made with 4 in. timber. Care should be taken to tack the metal cover on neatly. Malthoid has a tendency to crack where the edges are being turned down, but if it is placed in the sun for a short time it will become pliable and the tendency to crack will be reduced.



### Frames—Hoffman and Simplicity

Hoffman and Simplicity frames should be cut from good, clean, well-seasoned timber. Accurate workmanship is required if a satisfactory frame is to be made. Fig. D gives the measurements for either the self-spacing, full-depth Hoffman frame or the Simplicity, which, as its name implies, is much easier to make up.