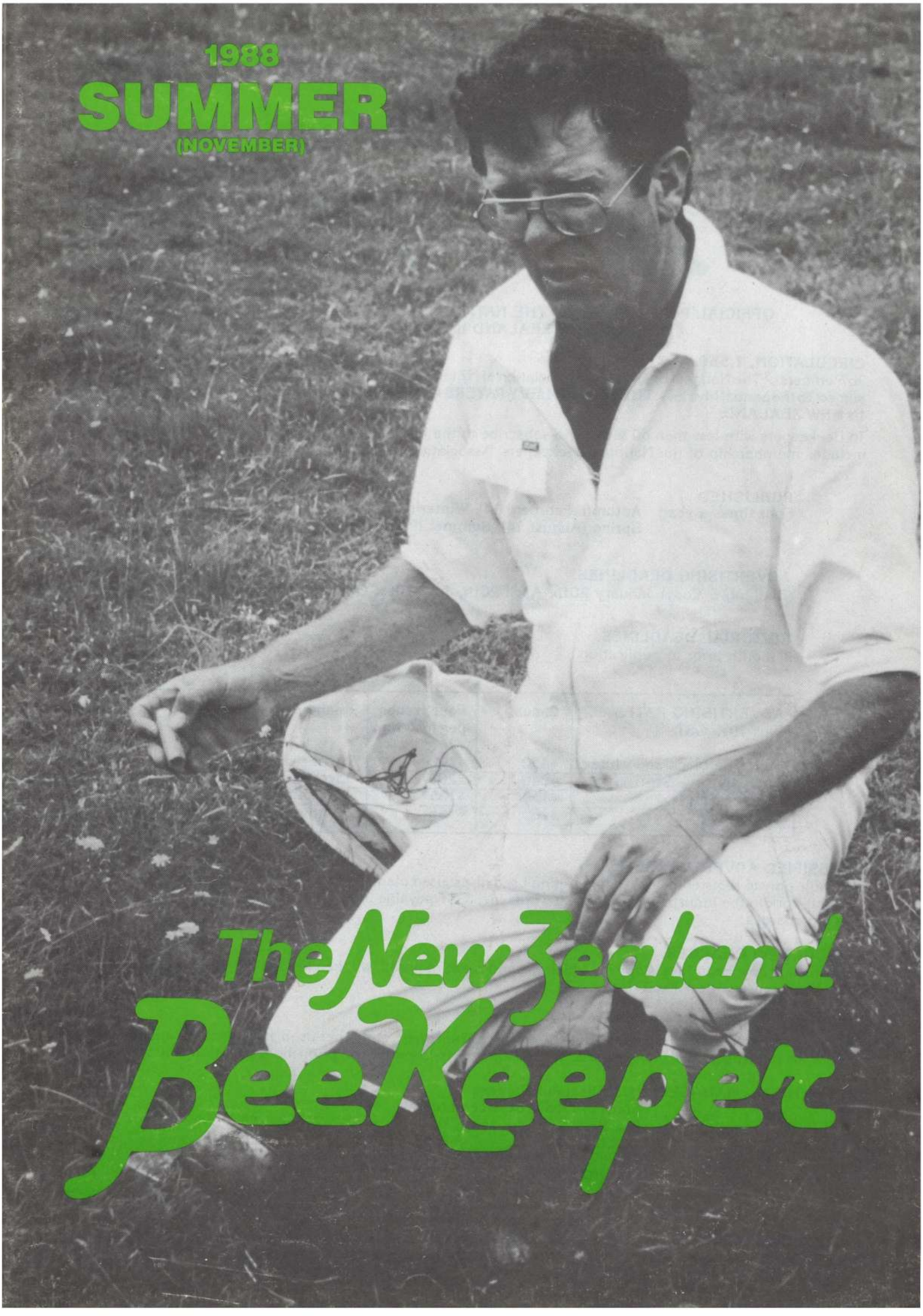

1988

SUMMER

(NOVEMBER)

# The New Zealand BeeKeeper

# The New Zealand BeeKeeper

OFFICIAL PUBLICATION OF THE NATIONAL BEEKEEPERS' ASSOCIATION OF NEW ZEALAND INCORPORATED

**CIRCULATION, 1,550. . .**

To Members of The National Beekeepers' Association of NZ Inc. who own more than 50 hives each and so are legally subject to the annual hive levy. **THESE HIVE-LEVY PAYERS OWN APPROXIMATELY 87% OF ALL BEEHIVES IN NEW ZEALAND.**

To Beekeepers with less than 50 hives who subscribe to the journal at $22.00 a year (incl. GST) which also includes membership of the National Beekeepers' Association of NZ Inc.

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SUMMER 1988
No. 200

# The New Zealand BeeKeeper

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FOOTROT FLATS.

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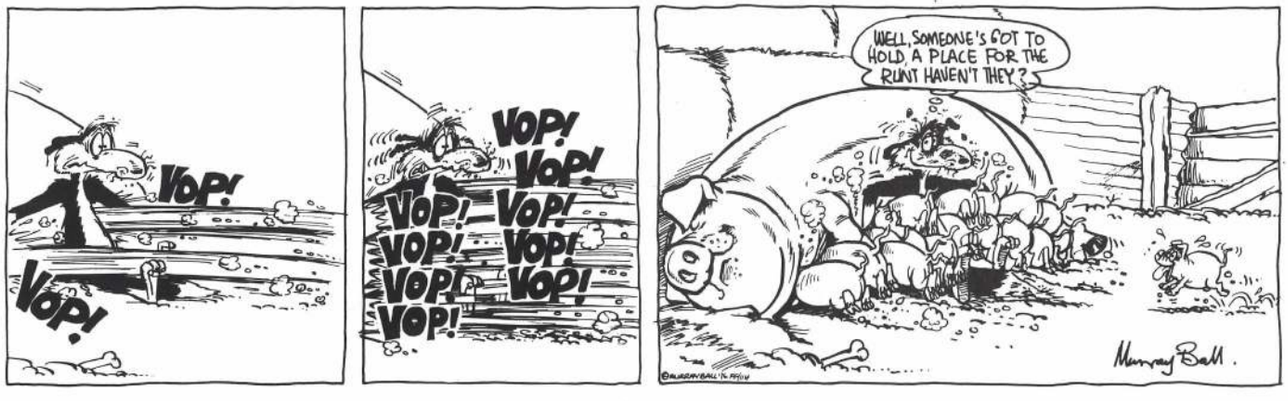


**FRONT COVER: Paul Marshall, Telford's Beekeeping Manager, prepares to light a smoker.**

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# To bee or not to bee — a lay view of bees and their keepers

*From Jeanette Grey*

**Thank goodness for Winnie-the-Pooh. His buzz-song, "Isn't it funny how a bear likes honey", causing so many small people to follow in his footsteps — or should it be to follow his mouthfuls?**

Met a youngster with a different approach. The conversation went something like this:

"I don't like insects", said small person.

"But surely you like honey from bees?"

"Oh yes, but what's that got to do with insects?"

Such a profound interplay of words did occur in the big city, but it does make you wonder what the word "education" really means.

Living next door to a beekeeper was like being on the edge of a mini-airport. Gardening on a sunny spring day meant weaving amongst innumerable flight-paths as the small bodies hurtled, laden, on beelines back to their hangars. Beekeepers ARE a weird mob . . . possibly even slightly potty. I mean who on earth would want to keep a gang of prickly bees anyhow? Then there was an apparition, like a spaceman, who used to walk through the next door garden with a weapon at the ready. Turned out a beekeeper all dolled up in protective gear with a little smoke puffer. Woe unto him who lifts the veil! (apologies to Goethe). Just as well those bees had no sense of humour; they would have died laughing. By the way, those little piles of wooden letter-boxes in the paddock are actually where the bees live.

City people today can be forgiven for knowing so little about bees and honey. There is no publicity. Have you noticed the honey advertisements on television? No? There aren't any. They are not even in the newspapers. Yet the marketing possibilities are endless. Here is a natural healthy food with no additives. How did the National Heart Foundation overlook this non-fatty, non-cholesterol-producing food? Shame on them. Honey promoters could amaze all those urban dwellers by telling them that a thimbleful of the precious stuff requires 60 full bee-loads of nectar, involving at least 1,200 visits to flowers. The enticing 900 gram jar of honey represents five million individual journeys by a bee, made only on fine days in a beautiful world of colour and scent. (Waxing lyrical)

The bees themselves are the greatest public relations agents a honeyman could wish for — except when you tread on one. Of course occasionally, the bees overdo the PR exercise by arriving as a menacing, buzzing heap of overstimulated excited insects swarming in trees, or worse, still, in the house. At least a panicky phone call to the right place usually brings a keen collector to remove the dear little things. However, meeting a swarm on the golf course is a very different matter. It becomes a

case of "absence of body is better than presence of mind." In fact, the twelfth and thirteenth holes were left unplayed that day.

The bee world seems to have a slightly sexy connotation in the minds of the general public. There is the old aphrodisiac legend (some still swear it is not a myth). And there's the queen bee business; no equality of the sexes in the hive. It's all a bit vague in the average mind until the jar of honey materialises on the shelf . . . or some intriguing little waxy packets of honey. My mother says it is B--- expensive; but then she remembers when it was only three pence a pound. It is not really expensive when you think of all the costs of production . . . IS it? The alternative would be to find a tree like Pooh Bear did; but obtaining the free honey is fraught with hazards. Does the ACC pay out when you fall out of the tree whilst trying to get the honey away from its natural wild owners?

Now this hexagonal business; a wax cell, you say? Made by the workers. It all sounds a bit political. It is one thing for bees to build hexagonally, but when a man did so, the inhabitants of his colony could have been forgiven for wondering about the minds of beekeepers. Some years ago, a New Zealand beekeeper did build a whole house with hexagonal everything-that-is-possible. The whole expensive structure turned out a work of art, even if the glaziers went almost mad, making the hexagonal windows. Rumour has it that the unique house has been pulled down. Now that IS sacrilege.

Wandered wondering into a quaint little Auckland shop called 'Beekeeper's Supplies;' bought some delicious honey. Everything there, from the stuff itself to strange technical devices like "bee escapes" and "feeders". Then there were the books: "The Queen And I" . . . I ask you! As if that wasn't enough, there exists an advertisement for "Call-A-Queen Service"; Mind boggling. And there are Italian bees (gentle to man); still can't quite fathom out how you are a New Zealand Bee Keeper if you keep Italians. Well, anyhow, the shop shelves carried a fascinating variety of what-the-best-dressed-keeper is wearing this year. Very striking it was too. The ventilated pith helmet . . . well — then there was propolis on another shelf; heard of the Acropolis, but this was something different. So off to the dictionary, but no luck. This IS like a cult.

Guess there must be lots of apicultured keepers around; but why aren't apiculturists as gregarious as their bees? A little bee told me that they do not have well-attended annual conferences. Always thought they were a bunch of individualists, but it is a wonder they don't stick together with all that sticky stuff around. Wonder why they DO keep bees? Perhaps like Pooh Bear, "It all comes of LIKING honey so MUCH."

**LEOKUCKEN**

4 eggs
1/4 pound sugar
1/4 pound honey
1/2 pound flour
2 teaspoons soda
3 teaspoons cinnamon
1/2 teaspoon cardamon
1/2 teaspoon cloves
1/8 pound orange peel
1/4 pound citron
grated rind of ½ lemon
1/4 pound shelled almonds

• Beat whole eggs until very light, add sugar and honey and sifted dry ingredients. Beat well. Add fruits and nuts. Bake in moderate oven (350°F.) in two 10 x 16-inch pans. Ice with powdered sugar and cream.

Dear Sir,

The proposals outlined in the September 1988 NBA newsletter for maintaining the apiary registers and disease inspection systems are discriminatory, inequitable, and prejudicial to the development of beekeeping in New Zealand.

The proposed fees discriminate against hobbyists and small-scale beekeepers who are asked to shoulder the main financial burden of the new system.

It is inequitable because it means the bigger commercial beekeepers will be paying far less per apiary than the majority of beekeepers.

It prejudices the development of beekeeping in New Zealand by discouraging new independent beekeepers by loading them with the highest fees; and it encourages hobbyists to hide their hives to avoid expensive registration fees, to the detriment of the whole industry.

I believe the proposed scale of registration fees is scandalous. It looks like a device by big commercial beekeeping corporations to restrict and inhibit private operators, and ensures they are subsidized by them.

Equity in the beekeeping industry requires two fundamental principles:

Every beekeeper should pay the same annual registration fee for each apiary.

Every commercial beekeeper should pay the same annual hive levy.

Equitable registration fees will help ensure that small-scale beekeepers do not try to maintain an excessive number of apiary sites with only a few hives, while large operators will be able to economise with more hives at each site.

The setting of fees for apiary registration and disease inspection needs to be based solely on the number of apiary sites. Taking the number of apiaries in New Zealand during the past few years as a benchmark, the annual apiary registration fee for the first year would be $10 per apiary.

If it is argued that the initial cost of registration for small scale beekeepers and hobbyists exceeds these levels, a case can probably be made for introducing a beekeeping license, on a lifetime basis just like the new motor vehicle system. This would have the added benefit of ensuring that all beekeepers know the rules and regulations; but this is a separate issue and should be assessed separately.

Finally, the NBA hive levy has nothing whatsoever to do with funding the new registration and disease inspection system. It is little short of dishonest to add hive levy figures with registration fees to make it look like big beekeeping operators are paying their way. To proceed in this manner will serve to divide the industry and provoke an unprecedented level of disharmony and distrust which we can ill afford.

**V. & H. Tane**

Dear Sir,

We'd like to subscribe to the New Zealand Beekeeper. Please find enclosed international money order for $US14.00 which we understand will allow for airmail delivery. Our address is:

Vicki & Bill Steigner
4001 11th Ave NW
Olympia, Washington
USA, 98502

We are planning to visit your country sometime next year. Any information you could send us regarding local beekeeping associations or beekeepers, large or small, who might be interested in showing their operation to a couple of visitors from the US would be greatly appreciated.

**Vicki Steigner**

Any beekeeper care to write to Mr & Mrs Steigner? **Ed.**

Dear Sir,

While most New Zealand families sit down to their third meal of the day, millions and millions of families throughout Africa, India, Asia, and America are lucky to get one undernourished meal a day, and millions no food at all.

Let's face it — the world's human population is over five billion **NOW** and increasing rapidly yearly.

UN Environmental Studies conclude that one percent of the world's remaining farmlands become deserts each year, a direct result of 40 years of increasing usage of artificial fertilisers, herbicides, ground spraying, crop insecticides, continual tillage, no proper crop rotation, overgrazing of domestic hooved animals, deliberate high country burnoffs, burning field straws and the over-use of irrigation.

Mono/culture, animal/grain farming practices **ARE** destroying the world's precious environmental farmlands and forests **NOW** and New Zealand mono/culture animal farming is too —

# LETTERS

i.e. massive erosion in the east coast high country of the South Island (caused by overgrazing and burning-off); i.e. massive landslides east coast hill country North island (caused by clearing vegetation, tillage and overgrazing).

With the human population increasing and farmlands and forests decreasing, it is every wonder that we all should be greatly alarmed.

**YOU** as an **individual** or **family CAN HELP** by not supporting the mono/culture animal/grain farming practices by not buying and eating their produce.

1) Become food self-sufficient, if you have access to land.

2) Eat plant and tree food only — less area needed to be self-supporting.

3) Plant food trees for your children's children's future.

4) Take up beekeeping.

*"So what has this got to do with beekeeping?"* you ask . . .

Bees do a great job at pollinating plants and trees, so are a very VITAL link in the environmental web.

Beekeeping is a VITAL part of feeding world human populations, directly with honey and pollen, and indirectly by producing high germination of future food crops' seeds — all done without polluting or destroying any of the world's precious environment.

**The Pyramid Valley**
**Organic Bee Farm Staff**

Dear Sir,

I am a Canadian beekeeper living in the province of Nova Scotia and I am presently the Vice-President of the Nova Scotia Beekeepers' Association. During the period 15 December 1988 to 15 March 1989 my wife and I will be touring New Zealand. We intend to explore both North and South Islands. I have prepared a one-hour lecture on beekeeping in Nova Scotia and I am prepared to deliver this lecture, free-of-charge, to any Branch of the New Zealand Beekeepers' Association. During this lecture I will be able to provide information on the NZ Queens and packages which we have been using during the past four years. If any Branch would like to accept my offer, please contact me at my Canadian address prior to 1 November 1988 or after that date at: 6 Evans Pass Road, Sumner, Christchurch, c/o Mr L. Morgan.

**Norm Donovan**
**RR6**
**Kingston,**
**Nova Scotia**
**Canada**
**BOP1RO**

# BOOK REVIEW

I have been given the rough copy of a booklet (45 pages) written by Mr. Oliwinski Tradeusz B.HP. for review. The author is a Polish researcher of methods of Apitherapy and with apparently a good deal of practical beekeeping experience. The booklet is to be distributed here in New Zealand by Mr. C.A. Stratford, c/o Comvita Laboratories Ltd., Te Puke.

Mr Tradeusz describes his methods of treating bee diseases using mainly extracts of plants readily available in nature together with small doses of certain drugs. He also claims that his methods do stimulate colonies to such a degree that substantially larger honey surpluses result.

He may well have discovered and developed ways by which we can improve our management and hopefully control or cure certain conditions.

The book is especially aimed at amateurs (as it emphatically states on the front cover) and herein lies a great danger I feel. In the first place why so specially the amateur for every beekeeper should always be interested in improvements. In the second place (my opinion) it is not the amateur but the expert and scientist we need to do the necessary research, and well based field trials to substantiate or otherwise these claims. It just won't do for every Tom, Dick, and Harry to play around in a field trapped with mines.

It also needs to be pointed out that the author advocates the treatment of B.L. in a manner which is illegal in this country. I sincerely hope that the distributor will include an appropriate note with the book pointing out this fact.

Going by this rough copy I suggest that some thorough editing is called for as the author's English could lead to some misinterpretation and confusion. That is not meant as a criticism for I am sure that his English is a lot better than our Polish.

**John Heineman**

## MAF GOES INTERNATIONAL

The Ministry of Agriculture & Fisheries has produced a brochure offering the following expertise, both at home and overseas.

- Introducing honey bees to new regions.
- Establishing beekeeping industries, from village to commercial levelf. Supply of equipment and healthy bees of good stock. Providing trained project managers.
- Market evaluation and development.
- Legislative services: drafting legislation and developing bee disease control programmes.
- Bees pest and disease surveys.
- Development of quarantine systems to ensure a country's high bee health status.
- Design of extension services for local conditions.
- Training beekeepers and project managers in their country or in New Zealand. We can provide specific training progammes to suit your needs.
- Disease diagnostic and honey analysis services, and training local technicians in these skills.

# LIBRARY NOTES

We have purchased the collection of RESEARCH PAPERS by Graham J. Kleinschmidt. These papers cover a period of some 18 years 1967-1985. Mr Kleinschmidt is a very well known personality in Australia's beekeeping world, especially Quensland, where he works with the Queensland Agricultural College. Many of us Kiwi beekeepers will remember Graham as he has delivered some very interesting addresses in this country.

A great variety of subjects has been covered in these research papers and much of it is relevant to New Zealand beekeeping.

**Loss of Books**

Disaster has struck. Through a fire a member of our Association lost his home with contents. Also a number of books he had borrowed from this library. A conservative estimate shows that NZ$300 will be needed for replacement. We hope to be in the position when the next issue of the Beekeeper arrives to state that insurance has covered this loss.

In the meantime the following books will not be available for lending:

Apimondia. 25th and 26th Congress proceedings.

Apimondia. Hive Products: Food, Health and Beauty.

Apimondia. Research in Apitherapy.

Apimondia. III 'eme Symposium International d'Apitherapie.

Yoirish. Curative Properties of Honey and Bee Venom.

# IMPROVING BEE NUTRITION (TWO)

*By Reg Clarke*

**Since writing the last article on bee nutrition, I have been able to search all the published material on the subject at the International Bee Research Library. There was less than I had hoped, but enough to suggest that it is time to move from academic study towards practical application.**

Briefly, the position is this: In Western countries, the emphasis has been on artificial diets for laboratory work with bees, and also on pollen supplements and substitutes. Laboratory diets do not yet seem to be fully satisfactory, as a result of incomplete knowledge of bee nutrition, but progress is being made. A practical result of this work is the widely used "Beltsville" pollen supplement of lactalbumin and brewers' yeast.

For some reason, it is mostly the Eastern European countries and Russia that have shown interest in nutritional supplements as a way to improve colony performance. Much of that research has been inaccessible behind barriers of language and perhaps ideology also. Several vitamins and minerals have been reported to increase production of honey or royal jelly. Of these, cobalt is perhaps the most important to us because of the widespread deficiency of cobalt in NZ soils. Note that cobalt availability is classified in relation to the needs of grazing animals, and is lowest in spring and summer when peak demand occurs. Bees probably have a higher need than grazing animals, and are less able to cope with seasonal supply fluctuation.

Some of you may remember that Bob Walsh made a trial of cobalt feeding in the Waikato, during 1971/72, which did not show any clear benefit. However there are several good reasons for not accepting that as the final word on the subject. Firstly, not enough hives were used. Two autumn fed, four spring fed plus two control hives. Reliable data can only be obtained by using much greater numbers of hives, because of the wide natural variation in honey crop between hives. Secondly, the cobalt dose was not recorded. Finally, the soil cobalt status was not tested. Changes in beekeeping since 1972 are also important. There are now far more hives, many in areas of marginal suitability where no cobalt top-dressing will have been done. There is also the pressure for rapid build-up for kiwifruit pollination, leading to routine sugar feeding, to which nutrients could easily be added.

Beekeeping has seldom had a greater need for increased hive performance or less money for research. So I have tried to devise a project of minimal cost that will look at several aspects of the effects of vitamins and minerals on both honey production and queen quality. Most of the work can be done on a D.I.Y. basis, but some funding assistance is needed for laboratory analyses, and it is not yet clear whether all of it can go ahead in the coming season.

The function of cobalt in bee nutrition is far from clear. We need only about five micrograms per day — a minute amount — and grazing animals seem to need a rather greater quantity. Yet bees seem to respond to a relatively huge dose of eight mg per hive per week. This is four times as much as is needed by a sheep of 10 times the body weight, assuming five kg of bees per hive. So it is likely that cobalt has some function other than, or additional to, vitamin B12. On that question the research offers no more than a hint of a role as an anti-oxidant, in which case any benefit might occur as increased resistance to stress, aging or disease. The importance of vitamin B12 in larval nutrition is equally unclear, as the published data is inadequate.

The proposed trials will compare royal jelly content of cobalt and vitamin B12 with the amount of cobalt available in the bee forage. This should be repeated in areas of low and normal cobalt, and compared with a further sample where the bees are fed additional nutrients including cobalt. Queens produced both with and without added nutrients will be submitted to MAF Lynfield for quality assessment. That should help us to understand the role of cobalt in larval nutrition. To test for effect on honey production, hives will be fed with all the nutrients (including cobalt) that overseas research has shown to be effective. That is a practical rather than scientific approach, aimed at securing the desired result as quickly as possible. That means of course that any increase in honey crop cannot be attributed to any single ingredient, and further research would be needed. Several Marlborough beekeepers have volunteered their help to ensure that a sufficiently large sample of hives is tested.

This was written prior to Conference '88, so the future of MAF services (including research) is not clear. But it seems likely that we shall have less service for more money, and beekeeping will not yield a fair return until we sort out marketing problems. In those circumstances we need to pool resources and work together in ways in which we have not been good at in the past. This nutrition project is based on cooperation and a minimum cost "do it yourself" approach, so is perhaps a step in that direction.



**TEA SANDWICH**

• With a biscuit cutter cut circles from bread slices. Spread circles of bread with softened butter and top with cream cheese softened with honey. On this spread red raspberry jam. Place a dot of cream cheese mixture or whipped cream in the center.

# Sugar syrup feeding to improve kiwifruit pollination

*By R. Mark Goodwin and Anton ten Houten*

**Feeding sugar syrup to honey bees has long been advocated as a means of improving the pollination of a wide range of crops. The methods fall into three main categories;**

1) Attracting foragers by spraying syrup directly onto the crop.

2) Directing foragers by feeding scented syrup outside hives.

3) Converting nectar collectors to pollen collectors by feeding syrup inside hives.

Methods two and three are sometimes combined by feeding scented syrup inside hives.

**Attracting foragers to crops**

Spraying syrup on to crops has been found to be effective in attracting foragers to crops, however, these foragers spend more time visiting leaves and branches than they spend visiting flowers (Free 1965a). As a result of this it can actually reduce the number of foragers visiting flowers.

**Directing foragers to crops**

To direct foragers to a particular crop, sugar syrup scented with flowers from the crop in question is fed to foraging bees. The syrup is usually fed outside the hive but can also be fed inside. The foragers collecting the syrup are supposed to return to the hive and dance, thus recruiting new foragers to the crop. The method has however received varied success (Free 1958) which suggests that it is unreliable. Much of the success with the method may be because the scented syrup was either fed inside the hive or fed outside in such a way that it converted nectar collectors to pollen collectors. As well as being unreliable the method has the problem that it can cause robbing when the syrup is fed outside.

**Converting nectar collectors to pollen collectors**

Feeding unscented syrup to colonies in hives is thought to convert nectar collectors into pollen collectors (Free 1965b) so that bees collecting nectar from a crop would collect pollen from it instead. Although this change in foraging behaviour would not increase the total number of foragers visiting a crop it was thought to improve pollination as pollen collectors are usually better pollinators than nectar collectors.

Syrup feeding is hypothesised to work by creating a shortage in the number of workers (house bees) available to accept nectar loads (Free 1965b). Nectar foragers usually pass their loads to house bees when they return to their hive. However, when a colony is fed the house bees consume the sugar syrup instead of waiting at the hive entrance to accept nectar loads. This lack of house bees available to accept nectar loads is hypothesised to discourage nectar collecting. The nectar collectors are then thought to switch to collecting pollen which they pack into cells themselves.

Feeding syrup inside hives was tested on several crops in the 1960s (Free 1965b). Free found a 2.16 fold increase in the collection of sweet cherry pollen, a 3.27 fold increase in field bean pollen collection and a 5.2 fold increase in the collection of red clover pollen following sugar syrup feeding.

A single trial conducted in 1984 (Goodwin 1986) suggested that feeding sugar syrup to colonies may be a relatively simple way of improving the pollination efficiency of colonies in kiwifruit orchards. The trial also demonstrated that syrup feeding could increase the number of foragers visiting a crop. There are no nectar collectors visiting kiwifruit flowers as they do not produce nectar so the increases in kiwifruit pollen collection must have been due to new bees being recruited to visit kiwifruit flowers.

Trials were conducted last season to investigate several of the parameters controlling the effect of syrup feeding and to gain more information on the levels of response that can be expected. The parameters tested were the frequency and the time of feeding. The trials were conducted in a 10 hectare kiwifruit orchard with a stocking rate of eight hives per ha. When fed, each colony was given 1 litre of sugar syrup (1:1 sugar and water) in division board feeders.

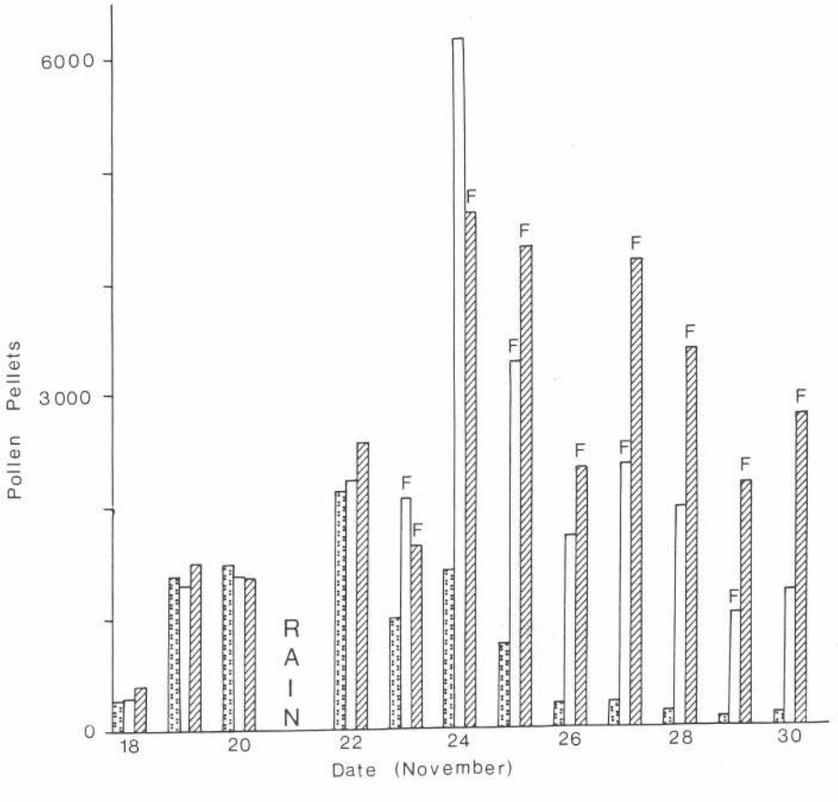


***Figure 1***
***Histogram of the average number of kiwifruit pollen pellets collected each day by three groups of ten colonies (Dotted bars = control; clear bars = fed every second day; hatched bars = fed daily; F = days when fed).***

**Frequency**

The trial was conducted with three groups of 10 colonies. One group was fed daily, one fed on alternate days and the third group (control group) was not fed at all. The colonies were fed between 0900h and 0930h. Feeding syrup resulted in an increase in the amount of both kiwifruit and non-kiwifruit pollens collected. However, the increases in the amount of non-kiwifruit pollens collected were not as pronounced as the increases in the amount of kiwifruit pollen.

Both groups that were fed collected significantly more kiwifruit pollen than the control group from the day after feeding started till the end of the trial (Figure 1). The actual amount of kiwifruit pollen collected by all three groups declined over the course of the trial. As the amount collected by the control group declined faster than the other two groups, the proportional difference between the control group and the fed groups increased during the trial. On the last day of the trial the group fed daily collected 43.6 X more kiwifruit pollen than the control group. Overall, they collected 7.88 X more kiwifruit pollen than the control group.

The group fed daily collected more kiwifruit pollen than the group fed every second day. The largest difference between the two groups was on the 29th of November when the group fed daily collected 2.16 X more kiwifruit pollen. Between the 25th and 30th the colonies fed daily collected 1.57 X more kiwifruit pollen than the colonies fed every second day. Even though feeding every second day was not as effective as feeding daily, the increases achieved were large enough to make it a viable alternative to daily feeding.

**Time of Day**

As in the previous trial, three groups of 10 colonies were used. One group was fed at 0900h and one at 1300h while the third group was not fed and acted as the control. The colonies were fed on three consecutive days (Figure 2). The amount of kiwifruit pollen collected increased with each days feeding and on the day after feeding was discontinued. The decline in the amount collected on the 26th was due to rain. There was no significant difference in the amount of kiwifruit pollen collected by the colonies fed in the morning or in the afternoon. However, both groups of colonies did collect significantly more kiwifruit pollen than the control group from the second day of feeding till the end of the trial, four days after the feeding was discontinued.

**Conclusions**

From these trials it can be seen that the results achieved in the initial trials conducted in 1984 are repeatable. The largest increase achieved in the previous study was 2.16 X whereas increases up to 43.6 X were achieved in this study. It must however be noted that the increases recorded in these trials are probably artificially enhanced as the control and fed groups were not completely independent.

As there were a large number of colonies being fed towards the middle and end of the flowering season there was a lot of competition for the available kiwifruit pollen. Therefore, the fed colonies were probably out-competing the control colonies for the available kiwifruit pollen and thus enhancing the difference between the fed and control groups.

There are a number of important questions that still require an answer with regard to syrup feeding. The first is whether any benefit can be derived

from feeding syrup when the colonies are at their maximum stocking rate, i.e. they are already removing all the available kiwifruit pollen from an orchard on the day that it is made available. The results from last season suggest that there may still be a benefit even in this situation. It was noted that in conjunction with very high bee densities on kiwifruit flowers, the bees normal partial constancy to male and female flowers had disappeared. This resulted in a much higher level of crossing over between the two sexes of flowers which would have improved pollination. However, further trials will have to be conducted to be certain of the connection between high forager densities and reduced floral sex constancy.

Also unknown is whether sugar syrup feeding will be effective where there are very high levels of competition from other pollen sources. Although the results to date suggest that it will still be effective, it has yet to be fully tested in such situations.

The most obvious question to be answered is whether it is possible to reduce the number of honey bee colonies required for kiwifruit pollination by feeding sugar syrup. From the results acquired so far this appears a distinct possibility, however not enough is known about syrup feeding as yet to be confident of the result of such action. Also, by far the largest potential for syrup feeding must be in improved pollination rather than the relatively small savings in pollination costs.

The magnitude of the increases in kiwifruit pollen collection are very significant and needs to be placed in perspective. There are a number of other management techniques advocated for honey bee colonies used for kiwifruit pollination. These include the timing of introductions into orchards, colony placement, distribution, pollination units etc. All these other methods are aimed at achieving increases in kiwifruit pollen collection of up to about 50% whereas syrup feeding can produce increases of over 500% on top of the increases achieved with the other methods. Therefore, if these results are readily achievable in most orchards, which now appears likely, then the method has enormous potential for improving pollination.

There are a number of recommendations that can currently be made concerning how sugar syrup feeding is carried out. Some of these recommendations have experimental data to support them. However, most are derived from the methods used in the trials that have been conducted and thus have been shown to work. These will probably be extended or changed when further trials have been conducted.

**Recommendations**

1) The sugar syrup must be fed inside the hives

2) The colonies should be fed daily or every second day

3) The syrup should be fed between 0900 and 1200h (NZDST)

4) One litre of syrup should be fed to each colony

5) The syrup should be 1:1 sugar and water

6) The feeder used should permit large numbers of bees to have access to the syrup at the same time.

7) The feeder should be in the top super of the hive

8) At this stage syrup feeding should not be used as a way of reducing colony numbers in orchards.

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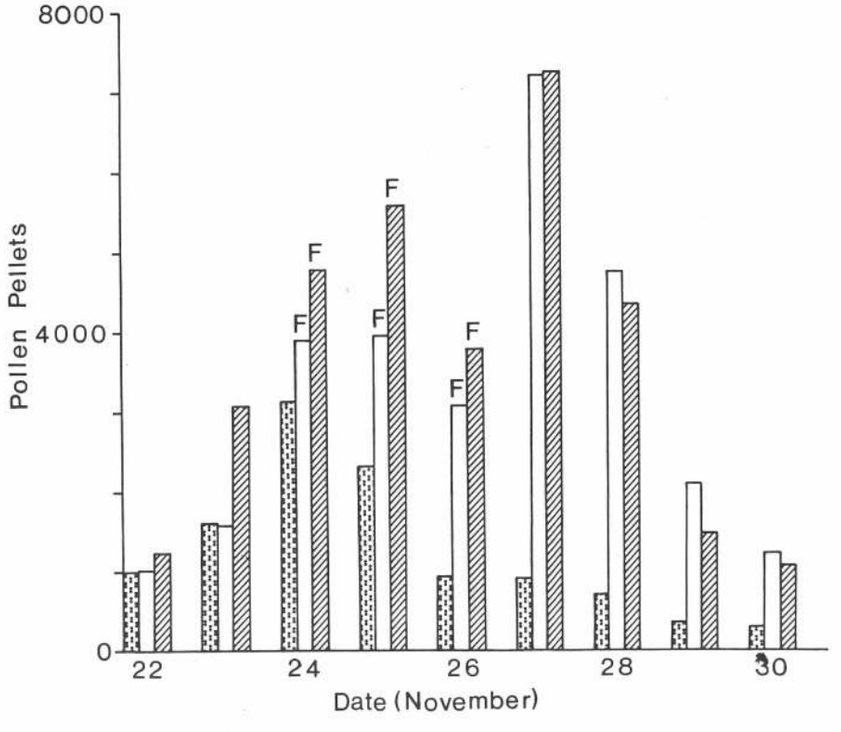



*Figure 2*

***Histogram of the average number of kiwifruit pollen pellets collected each day by three groups of ten colonies (Dotted bars = control; clear bars = fed at 1300h; hatched bars = fed at 0900h; F = days when fed).***

### TOASTED TEA SANDWICH

• Use circles cut from bread as in above recipe. Toast until brown on both sides. Spread with honey butter. Sprinkle with chopped nuts. Place under broiler until nuts are slightly browned and serve while hot.

### HONEY FRENCH DRESSING

½ cup honey
1 cup salad oil
½ teaspoon salt
⅓ cup chili sauce
½ cup vinegar
1 medium onion grated
1 tablespoon Worcestershire sauce

• Place all ingredients in a quart jar and shake well. Serve this dressing on the lettuce and place a portion of the frozen salad on top. This dressing may be used on other salads.

# PLANNING IS IMPORTANT

*By John Heineman*

**Since taking over from "Skep" I have tried to fill this column in such a manner that its contents can be of practical help to those who have recently embarked on keeping one or a few beehives and are struggling to do the right thing at the right time and who are trying to understand all the hows and whys.**

If you started at approximately the time the Spring Issue 1987 appeared you will just have completed your first year as a beekeeper. At that time you knew that you had to call yourself a beginner. Nothing wrong with that, every beekeeper has after all been a beginner. Now if you are wise regard yourself a starter for a while longer. It takes a number of seasons to become conversant with all the pecularities of our little buzzers. Above all it takes time, more or less dependent on the individual, to achieve a measure of confidence in handling the colonies. It is really no thrill to feel your adrenalin run rampant each time when you have to open up your hives. The bees seem to jolly well know it, like most other animals they feel and smell fear. It applies to dogs, cows, horses, etc. Be sure that bees react in similar manner.

Once you get to the point where you have gained the necessary confidence, where on a nice day you dare to abandon all that hot and cumbersome protective gear such as overalls and gloves, perhaps even stay in your shorts, not to have to bother and get upset about the odd sting or two, you will have won a battle. From that moment on the pleasure you derive from your interest will at least double. Don't be impatient, it'll come to you bit by bit. Then there will come a time that you too can work your hives in that easy, smooth and efficient way. The bees will notice that.

Now some of you who read these beginners notes may not be such very beginners any longer. You have gained your confidence and you know what you are doing. You may have had some decent crops of honey. I hope so. But that is the point where trouble could begin. For with those good crops of honey the temptation comes to make a move. Increase the number of hives so that there will be more honey, more money in the pocket. Nothing wrong with that. But please think before you begin. What can you manage properly? Too often it grows out of hand. One has to hold down a job, do things round the house, spend time with the kids (they are not children for that very long and the opportunity does not return!). Looking after too great a number of hives then becomes a real burden. It may lead to domestic strife, finally to neglected apiaries, loss of investment and great disappointment. Just watch it, know where you want to go without hurting yourself, the ones near to you, and also your beekeeper neighbours. They too would be affected, for rough, ready, and slap-dash beekeeping harms

many more people than just yourself.

**POLLEN.**

Honey and pollen pretty well completes the bee colony's larder. As long as there is plenty of both in the hive we can rest assured that starvation won't be a problem and that the conditions are right for good development. Of course there are many other factors playing a roll in the well-being of a colony.

After gathering nectar bees will deposit it in the combs. The "ripening" process takes place, meaning that the moisture content is lowered and certain chemical changes occur. The end product is honey. Made up mainly of sugars (carbohydrates) it is the source of energy. This enables the adult bee to do its different kind of jobs inside or outside the hive and of course provides the fuel for the heating system.

Pollen of course originates from the same source as honey: the flowers. The bees pack it into their pollen baskets as little pellets, carry it home and store it in the cells of combs. A good supply of pollen is really just as important as good honey stores. For it provides the necessary protein, vitamins, minerals, fats, and trace elements all needed for body building.

A hive can be short of either of these two essentials. We know what to do when a hive is threatened with starvation. If no supplementary feed is supplied by the beekeeper in the form of honey or sugar at such a time the hive will be a goner. And that no matter how many nice heavy pollen combs are present in the hive.

Then a colony could have stacks of feed and still it is not the way it should be. There is little or no brood while there should be according to the time of the year. This of course can be due to several reasons but pollen shortage is one of them. In some areas the country side is just too "clean." Weeds have been sprayed out, gorse has been done away with, and the catchment board has removed the willows. Another, and likely cause is a prolonged spell of bad and cold weather which has kept the bees confined to the hive. They have just not been able to go out and gather even if there is plenty about.

This results in the severe slowing down of brood rearing. it also has a negative bearing on the life span of a bee generation and of course the general condition of the colony. It is impossible to rear good, young queens without plenty of feed including ample pollen.

The importance of pollen to the bees is well illustrated by a few figures. For every 10,000 bees produced in a hive 1 kg pollen will be consumed. (+). An average size colony will collect some 30 to 40 kg over a 12-month period.

It has been found that a worker-larva after it hatches from the egg grows (believe it or not!) to 242 times its original weight in the next five days (=). That is just staggering. It takes some feeding.

So if we want a colony in an all-round good condition let us keep an eye on that all important aspect of pollen supply.

Supplementary feeding of pollen is possible and is done by a lot of beekeepers. There are times of abundance and by using pollen traps we can catch a surplus to be used again when the need arises, or it can be sold on the health food market if it means disposing of a real surplus to the bees requirements.

There has been over the years, a lot of research to find a good substitute for pollen and with good results. In general the substitute is mixed with a proportion of natural pollen and fed to a hive as patties on top of the frames above the broodnest. That's O.K. for the bloke with a fair number of colonies but not so practical for him or her who cares for a few hives. The easiest way then, if you feel that there could be a need for feeding extra pollen at some stage (spring most likely) is to take out a few good pollen combs when a hive has really plenty of it. But don't get too carried away with these so-called pollen-clogged combs. The figures quoted say enough. Good pollen is fresh pollen, not old dried out stuff and certainly nothing with any sign of mould. The bees keep pollen near the broodnest and often the pollen is covered with a layer of honey and then capped. A great way of preserving. If you want to store some spare pollen combs you will also need to preserve them. Pouring honey or thick syrup over them won't do any good for you won't be able to put the wax cappings on the cells. Both honey and syrup will draw moisture resulting in fermentation. Just keeping them in a box is not very good for a little mite will attack the pollen, in some places the wax moth will do it's bit, and also drying-out will happen. You would finish up with combs of no value as to pollen.

Pollen will keep well in the deep freeze. So if you can twist the boss's arm there may be room for a few combs in a plastic bag.

Another way is to preserve them in sugar. Take a box lined with a large plastic bag. First a layer of sugar (say 2-3 cm thick), sprinkle sugar into one side of pollen comb and place that side on to a layer of sugar in the box, again a layer of sugar, then comb two and so on. Top up with sugar so everything is covered. Tie the bag, keep in cool dry place till required. The sugar is of course fine for feeding, those bits and pieces of wax, pollen etc. don't matter.

Remember pollen can spread disease; B.L. especially, so make sure before taking it from the hive.

Don't keep these combs for too long because pollen will deteriorate with age.

Pollen traps are available from bee equipment supply firms. If you want to have a go with making your own there are plans (MAF or NBA Library). But it is not such a simple piece of equipment to make. But, of course you can do it.

*(+) Todd, Gleanings Nov. 1972. (=) Andrew Matheson, Practical Beekeeping page 15.*

# CALENDAR

The calendar on the opposite page is meant as a summing-up of what has been discussed in Beginners Notes in the four previous issues. It is only an indication of a simple way of management and relevant activities. Adjust the time periods in accordance with climatic conditions prevailing in your district.

1) SPRING DWINDLING as such is not a disease. Cold temperatures and strong winds in spring take their toll of field bees which are compelled to go in search of that much needed nectar and pollen. Those bees are often the overwintered ones, getting old. No super in this society. They work till they drop.

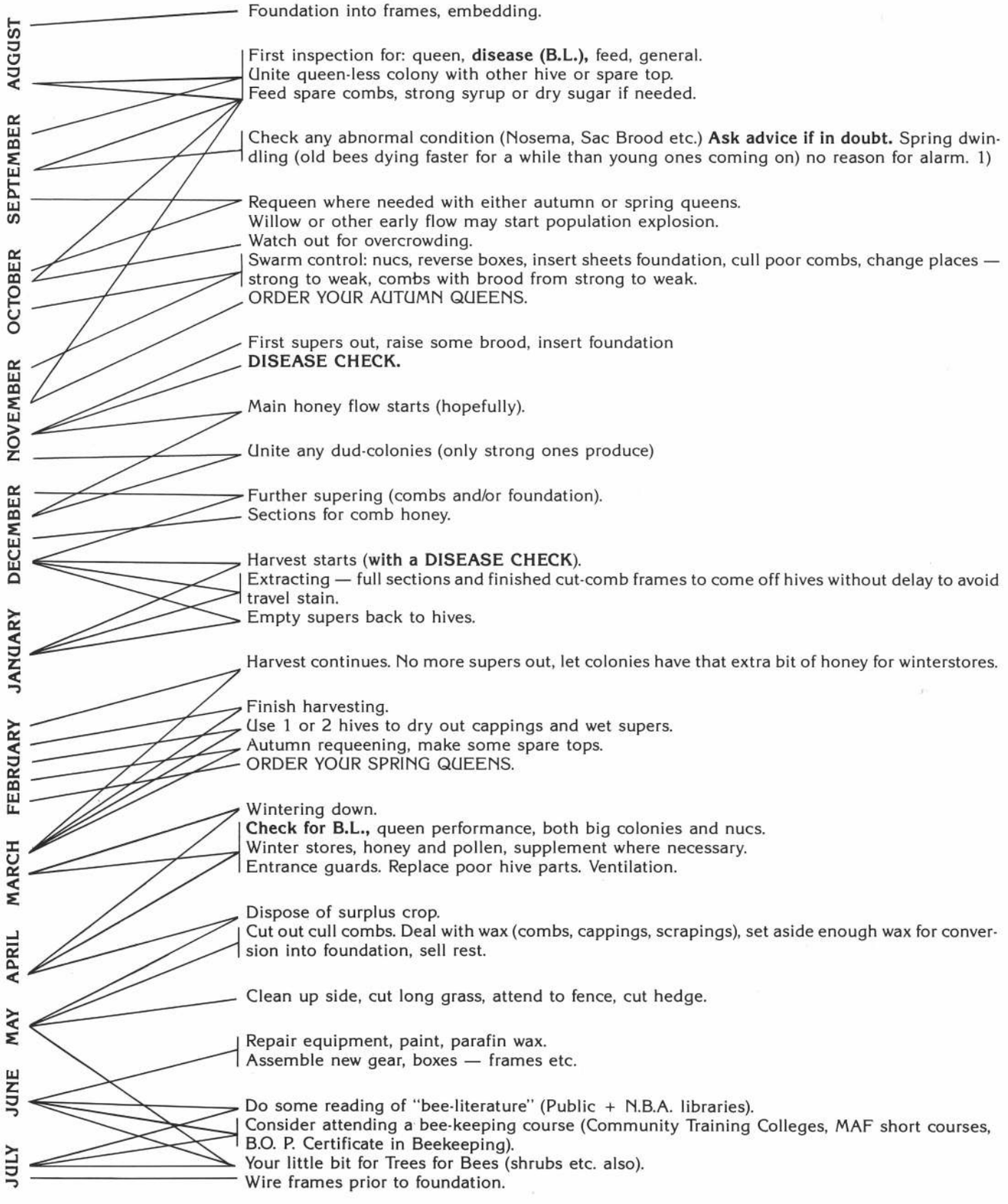
This spring dwindling can be aggravated if the colony suffers with dysentery, nosema, or bee-paralysis. Then of course you should start to worry and if possible do something about it. More about these diseases in the future.

**CHRISTMAS COOKIES**

2 cups brown sugar
½ cup honey
¼ cup shortening
1 egg
2½ cups flour
3 teaspoons baking powder
1 teaspoon cinnamon
2 ounces of citron, ground very fine
juice of ½ orange and grated rind and juice of ½ lemon
½ cup almonds, blanched and chopped

• Cook sugar and honey until sugar is dissolved. Add shortening and cool. Add beaten egg. Sift the dry ingredients and add to the syrup. Add chopped fruit, fruit juices, and nuts. If necessary, add just a bit more flour to handle it easily. Roll 1/8 inch thick and cut into fancy shapes. Bake on greased cooky sheet at 350°F. for 10 minutes.

# THE BEEKEEPERS YEAR FOR OUR PART OF THE WORLD




## PLANNING IS IMPORTANT

# TELFORD TRAINING INSTITUTE

*By Paul Marshall*

**The new students stood in the yard by the fuel pumps. Phillip Hutton, Francis Callaghan, and Grant Fryer; all uncertain as to what was expected of them. Other students, old hands at the system, having started at Telford back in February, were beginning to appear out of the darkness. Although 8am both the North Islanders, Phillip and Francis, couldn't get over the fact that it was still so dark. The cold was also a feature of their first day at Telford, late in May. It coincided with an early fall of snow during the night. Its whiteness had changed the scenery into one of all-pervading cleanliness.**

Suddenly the calm of the morning changed to one of chaos. Someone scooped up a handful of snow, tossed it towards a group of students. All hell broke loose. Snow was hand shovelled into convenient heaps. Staff and students divided into two camps. The new comers looked on with disbelief as snowballs rained.

Some start to the beekeeping course, and life at Telford.

Phillip Hutton from the Manawatu, and Francis Callaghan of Inglewood, Taranaki, had come a long way to Telford which is near the South Otago town of Balclutha. The place was unknown to them, and they had to find it on a road map. Grant Fryer, from Invercargill, was not so badly off: he was only a couple of hours from home. They were attending Telford's 'Year Beekeeping Course' to get an in-depth knowledge of bees in a "hands on" learning situation. Both North Islanders had worked at least a season with beekeepers since leaving school. Both owning a few hives, they had some knowledge of bees. Grant on the other hand was fresh from school, and had gained his experience keeping a couple of hives in the backyard. All three wanted to move out of the 'fetch and carry' stage of employment, to where they could assume a level of responsibility with future beekeeping employers. Telford's course offered the best way to reach this goal.

For all three boarding at Telford was a new experience. Sharing a room, showering, and eating with a bunch of strangers took some getting used to. But homesickness faded, friends were made, and the Beekeeping Manager was sussed out, along with the work

*Field trip to MAF's Tara Hills Station in the MacKenzie Country. Dr Bruce Allan (second right) explains high country beekeeping.*

sheets that have to be completed each week, as well as the various other duties expected of them in their training and hostel environment.

Each week sees a change in training skills for each student. They range from beekeeping, practical and theory, horticulture, engineering, mechanics, carpentry, and forestry. Other skills such as dairying or general farm work to shearing can also be tackled. In the case of shearing a Learner Certificate is issued by the Wool Board to those who pass the course. In addition to these skills, students also undertake an Otago Polytec course in Basic Motor Mechanics, Motor Electrics, and First Aid. In turn, agricultural students also spend time on the beekeeping unit, for experience as well as for an appreciation of what bees are about.

For the beekeeping student, the theoretical side of the course is done during the colder, winter months. A fact much appreciated by all when frost can still be seen on the ground as late as midday. A warm class room is most attractive those days. Come spring more and more time is spent in the field. Estimating queen performance, population size, feed supplies and feeding of colonies, queen rearing, disease control, and hive manipulation are all features of the training programme.

For students the spring months are the most exciting with competition between them in queen rearing, increasing hives, and establishing top splits. Before one realises it, it's time to put on honey supers and the Christmas break has arrived. The "bee boys" say goodbye to the agricultural group, whose year has finished. It's time to swop addresses for future visits.

On their return in January the beekeeping students meet the new agricultural intake, found standing around not knowing what's expected of them. It's the beekeeping students turn to be, and feel, like the old hands around the place.

However, they do not stand around. Their interest turns to the bees and the results of last term's colony management. How did the hives turn out? What honey came in?

The final term is the crunch one. There are long hours ahead with autumn requeening and crop harvest. Long hours are spent in Ivan Dickinson's honey house at Milton on extraction work. More and more responsibility is placed on them. They're no longer raw and inexperienced students. As the term passes they start looking forward to finishing the course, and to seeking employment.

As new recruits they started in the May of the previous year with all the reserve engendered by the unknown. They will now leave having completed the Telford Year. A full honey season experienced at first hand, with all the trial and tribulations that it brings. They will leave, as others have done before them, with increased maturity and confidence along with the added bonus of friends and contacts throughout New Zealand.

*Photo 1. Agricultural student, Reo Iti, checks out the queen cells during his work experience on bees.*
*Photo 2. Students Grant Fryer and Francis Callaghan lighting their smokers. Milo, the goat, seems to like the smell.*
*Photo 3. Peter Cox of Otematata tells Phillip Hutton, Grant Fryer, and Francis Callaghan how to deal with broken lugs.*

# FROM THE COLONIES

## Otago

In general colonies have wintered well. The winter started early and we have had several falls of snow and especially some severe frosts inland. But all in all it has not been a very cold winter.

September has been dry with many fine days, the willow has done some good and a large number of hives are now lined up in Central waiting for the thyme.

The Branch held its post-conference meeting. Not very well attended. Next time Branch members will have their work cut out as the 1989 Conference will come our way. The venue and accommodation possibilities are now being investigated.

**John Heineman**

## Northland

Spring inspection is more than half completed; no foul brood but many of the colonies have traces of chalk brood with white cells rather like pollen or with black mummies on the floor. It is very odd the difference between apiaries, one is solid with brood and has eaten itself into starvation, the next apiary is full of honey and has a sensible-size family. We take honey from the sensible bees to care for the profligate and think political thoughts. The weather has turned hot and humid but hasn't it been poor ever since we had new forecasters on TV?

**George Nichols**

## Poverty Bay

Well, what are we to expect next! Spring in Poverty Bay, Eastland, Tairawhiti, or Gisborne, depending on who you are dealing with, has been perfect and that's a little unsettling. It will also be rather embarrassing if our next complaint is of a drought and water shortage. It's not as if we haven't had enough water this year.

Several members have invested in the wasp parasite under the new user pays "heavily" scheme.

Our equivalent of J.R. Ewing has turned his last season's honey crop into alcohol. Lion Breweries may need to watch out for a future corporate raider. "Honeywood" has become a really attractive boutique winery for weekenders, selling honey fruit wines, honey, and tastefully selected art and craft accessories.

The district's beekeepers will be in a variety of predicaments this spring, which of course is not unusual. Some will be scratching to make up numbers, others will have lost contracts, all will be worried about getting paid. Hives are already in Nashi blocks but these are small by comparison with kiwifruit. Far from being left behind by technology our Tolaga Bay arm has installed his own fax machine. This leaves you on the end of the phone feeling you have mistakenly dialed Cape Canaveral while our man works out how to shut it down.

**Noel Croft**

## Nelson

By and large, temperatures have been rather warmer for the time of year, and it seems to be wetter just when there is a bit of extra nectar on tap. Just now, as the barberry is beginning to flower, the rain is also doing its best.

Due to the milder weather a lot of colonies turned stores into bees on the early side of spring so some starved.

Now the MAF stands on the distant hill from our place, Dave Grouber came to see us about the disease inspection and we had a very successful day.

From recent reports of kiwifruit sales competition in the world market seems to be causing the growers problems which in turn is passed on to the beekeepers.

One of the arrangements being considered is for growers to call tenders for polination hives. I can visualise fun in such setups. However let's have fun, there is none too much money to be too excited about, in fact — it is almost a breadline occupation.

**Ron Stratford**

## Auckland

As I write this it is the 1st of October and beekeepers around the country will be thinking of kiwifruit and making ready their hives for the great migration into kiwifruit orchards next month.

Have heard a few very different thoughts on the feeding of liquid sugar to the hives during pollination, but I guess only time will sort those out.

Here in the Auckland Branch we have started inspection for AFB again by part-time inspectors. To date the result has been very gratifying in its only ½% of diseased hives. If we keep to this figure as we progress we will be very pleased. The good work done by Colin Rope and his helpers last autumn seems to be paying off. The rate then got as high 10% of hives diseased.

**Dave Young**

## Hawkes Bay

A great comfort to our committee to have an excellent attendance at our Spring Field Day at Paul and Jacqui Ashcroft's Honey House on September

10. An enjoyable and interesting afternoon. The line-up of labour-saving gadgets was undoubtedly one of the highlights. The one-man semi-automatic hive-loading trailer took first prize in what must have been a very close finish.

While nobody suggested there are many neglected or run down hives in our area, Lynda and Paul showed spectators just how you can rebuild a hive that is a bit sad. The one thing we did not discover is where Lynda acquired the giant-size hive tool she so expertly used.

It was especially pleasing to have Ken and Lynne Perkinson of Mahurangi Hiveware, Warkworth, with us to show us their products along with local displays. Our thanks to all who helped in any way, the speakers and of course, Paul and Jacqui for their hospitality.

By the time this goes to press pollination will be mainly behind us. Reports suggest it has gone very well this year. Obviously it was mapped out by the successful workshop the group held earlier in the winter. Unfortunately the spring gales have thrashed the fruit trees about a little when they did not need it.

Also by the time this is printed, our third annual hive inspection day will have come and gone. Planned for Saturday, November 5, weather permitting, the areas surrounding Hastings and Havelock North get the treatment this year. We shall learn the pleasing results at our branch meeting on Tuesday, November 29.

Finally partygoers, Saturday, December 17 is branch party night. Remember last year? Chris still reckons the pool was ever so refreshing and sobering!!

A Happy Christmas to you all.

**Gordon Sutton**

## Marlborough

This spring has been very kind with warm, balmy days during the willow flow. Hives are strong and are consuming food fast. The first swarms were reported in the last week of September. One big advantage for us hard-working beekeepers is that the rush started so much earlier, so hopefully we will have more time to get our hives ready. The 'hopefully' is that we need a decent rain or there will not be a honey flow as the spring flush of grass growth has not happened yet.

Our club held its pre-season St Bartholomew party, a time to think about acting as well as talking. On September 17, MAF, with our assistance, held a disease inspection day. Of the hives inspected, 1.8% were found diseased. We covered most of the "under 50" hive group. A very successful day with our thanks to Dave Grueber of MAF who organised it and has completed the necessary follow-up work.

Our spring-management day was not well attended, but those who went enjoyed what Arthur Day showed us. A quick successful way to requeen, set up starters, etc.

We have had another dumping of bee equipment at our local borough dump. This time the dump dozer covered almost all the equipment, but . . . bees quickly found the small entrance. An ex-beekeeper-queen rearer, telephoned MAF to admit that he was the culprit. He assured MAF that for the last 15 years of his beekeeping he had had no disease. Beekeepers disposing of unwanted equipment need to learn how to dispose of it correctly.

**James Jenkins**

## Southland

We have had a long winter. It started on January 1 with a four degree frost which effectively finished clover-honey production. However, spring arrived earlier this year. September's temperature is the highest since records have been kept.

Hives in general opened up strong with early brood production, but this left some short of stores. As I write a howling westerly is blowing with passing showers. Temperatures are not cold, just unpleasant. These conditions have been known to last all October. With weather like this, one starts thinking about "El Neno" and how it will effect us this season.

The willow flow has been slightly more successful than average, and some native sources are flowering earlier than usual. Perhaps the glasshouse effect will be active in Southland this year. Southland's Annual Field Day is on February 4 at Lees Apiaries, Balfour.

**Alister Lee**

## North Otago

At an informal meeting at Duntroon, Peter and Derrice Cox reported on Conference. They were not impressed by the way Ralph Maxwell, Under Secretary for Agriculture, replied to questions after his speech.

This also raised the point as to whether other branches are lobbying their MPs, as we do, about the problems of restructuring our industry. It would seem that the NBA Executive could do with a hand to push our case.

One of our members, Algie Lawerance, was commended by the meeting on his honey promotion at Oamaru's Expo trade fair in August. Well done Algie.

An excellent willow flow for North Otago, the best for five years but, what's the old saying: good willow, poor honey crop? (Good news for the surplus).

This may also be true because of the drought. It hasn't rained for six months on the coast. Farmers are busy destocking, paddocks have no crops in at all, and no one knows what will happen when it rains. Welcome back, Clive Vardy and family. I hope your holiday was a good one and nobody tried to entice you to stay in Canada. We need our advisor in the South Island.

**G.R. McCallum**

## Waikato

The Waikato has experienced a very mild winter and hives have used their stores early, even in areas where there are normally no feeding problems. So we have reports of dead hives, weak hives on their last legs, or very strong hives, too strong for this time of the year. The weather for the last few weeks has been unpleasant, strong gusty westerlies and showers.

Because of the weather, it is hard to get queen cells started even with feeding and, like last year, it may be a poor queen-rearing season.

Barberry has a good budding and, if the weather improves, there should be help with feeding problems in those few areas where the barberry hedges are left uncut. Pasture growth is strong, but one wouldn't like to predict clover growth or production of honey at this early stage.

The Tawari has the heaviest budding for many years. If we got a good crop of Tawari, I wonder where we would sell it? Overseas buyers don't like it as they apparently don't believe it is honey because it contains little or no pollen and when they do a pollen count, they can't identify the source.

Perhaps one could gather a couple of handfuls of clover flowers and shake them vigorously over a tank of tawari honey to make them think it is a really good line of clover honey.

Kiwifruit growers are hardening their attitude to beekeepers who provide hives for pollination, and prices as low as $50 per hive are being quoted. Beekeepers will be hard pressed to show a profit from the work of building up strength in hives, taking them to the orchards, and sugar feeding several times while hives are in the orchards. If the kiwifruit industry does fail, then the beekeepers who are in the industry solely for the provision of a pollination service will be in deep trouble. They will have invested many thousands of dollars into beekeeping for no income. What bothers me is that there could be large numbers of abandoned hives all over the countryside.

Which again brings me to our disease problem, looming much worse than last year with BL increasing over a wide area. This is a very worrying situation.

We can only hope all the factors causing our industry's many problems change for the better soon so we can all prosper again.

**Ray Robinson**

## Westland

One definition of spring, according to the Oxford Dictionary, is to 'well up from below ground'. However, in this day and age, with all its uncertainty, we should be prepared for just about anything because this year's Westland spring has 'welled up' in the sky above and descended upon us. September has been the wettest on record, and tied in with the least number of sunshine hours for 20 years.

Needless to say, spring work in preparation for summer has been rather bogged down. Mild as it has been, the bees have moved ahead quite well but have consumed considerable feed, which has necessitated another round of getting wet, getting stuck, and eventually getting feed out. And now I hear in the news that some Bank of New Zealand official is saying that it's time that New Zealanders started thinking and acting more positively to what he sees as encouraging signs in the nation's economy. Great stuff! How far removed from reality can you get when sitting behind a desk? While Westland is floundering, over the hill in Canterbury they are kicking up dust and it has been reported that one sage has predicted continued wet weather for Westland until January. Really encouraging! The Maori called New Zealand the land of the long white cloud. I can well understand why.

Oh, and just to add a little more to the lot of the New Zealand beekeeper, I just heard a report of a local beekeeper being presented with a gift of Australian honey, much to his chagrin. So, it seems this one at least regretfully, slipped through the Customs' network. Still, at least it fell into the right hands. one can't help but wonder how long we can keep out the unwanted.

Oh WELL, when it's raining it can only get better. Now, how's that for a positive attitude?

**Sandy Richardson**

## Bay of Plenty

Wet windy weather has made spring hive work difficult this year. Hives that came through the winter with good stores are now getting hungry. Lots of sugar has already been fed to those that had inadequate stores.

Preparations for kiwifruit pollination are in full swing. This year sees the widespread acceptance of sugar feeding hives during pollination with various systems being prepared to make the job easier. With the great concentration of beehives in the area, I hope that those feeding sugar will take care to avoid spillages and leaks which could create a massive robbing frenzy with all the attendant risks of stingings to residents and orchard staff and of disease. To complicate matters further, many orchards are applying cyanimide to manipulate the timing of flowering which could cause all kinds of problems with the timing of pre and post blossom insecticide spraying.

Once again hives are being offered for pollination at ridiculously cheap prices. At $60 either the beekeeper will go broke very quickly or the orchardist will receive very poor quality hives. Both have happened in the past. Meanwhile good beekeepers are losing contracts and are being put under heavy stress while the beekeeping industry is brought into disrepute.

There seems to be a kind of madness in the beekeeping industry. A few people seem determined to cause as much damage as possible to themselves and everyone else by plonking hives right next to someone else's apiary sites, undercutting to get pollination contracts, and selling honey at below cost. What other branch of agriculture carries on in such a way? We all know the costs of producing a good quality pollination hive and that honey could double in price and sell just as much so why cut our own throats by accepting less?

**Peter Townsend**

**FRUIT FILLING**

¼ cup each dried prunes, dates, figs, orange peel
1 tablespoon candied ginger
¼ cup honey
• Chop fruit and blend with honey. Use between slices of buttered bread.

## South Western Districts

**(Southern North Island)**

I marvel at the survival ability of bees, how they can come through such a wet winter with few flying days, in fact not many hours of calm sunny weather for the last three months.

As a consequence, all those spring chores — checking hives, feeding hives, requeening, hive divisions — are taking longer with vehicles having to be parked on a driveway, a paddock or two away from each apiary.

About 70 Nucleus colonies are being donated and leaving this week for Gisborne. We hope they arrive in good condition to fill the gaps left by Cyclone Bola.

This Saturday October 8 also saw our spring Field Day, staged at Stan and Joyce Young's Oakura Honey House, near New Plymouth. Hive lighting and loading gear was the main demonstration in the morning. Various hive handling procedures were shown in the afternoon, and a good panel discussion was enjoyed by about 60 people.

So now it's just a few weeks away from kiwifruit pollination. Then the honey season once again. A dairy farmer tells me that because of all the rain and warmth, all is set for a great clover year, so we'll wait and see what happens.

**John Brandon**

**FROZEN FRUIT SALAD**

4 ounces cream cheese
3 tablespoons mayonnaise
2 tablespoons honey
1 cup pitted white cherries
3 slices of pineapple
½ pint whipping cream
• Mix cream cheese with mayonnaise, add honey and mix well. Add cherries and pineapple and fold in whipped cream. Place in freezing tray.

**SALAD DRESSING FOR FRUIT**

1 egg
1 tablespoon cornstarch
pinch salt
2 tablespoons honey
1 cup pineapple juice
2 tablespoons lemon juice
• Put slightly beaten egg, cornstarch, salt, and honey in top of double boiler. Add juices. Cook slowly over hot water until mixture thickens.

# SOUTHERN NORTH ISLAND'S SPRING FIELD DAY AT STAN AND JOYCE YOUNG'S, OAKURA

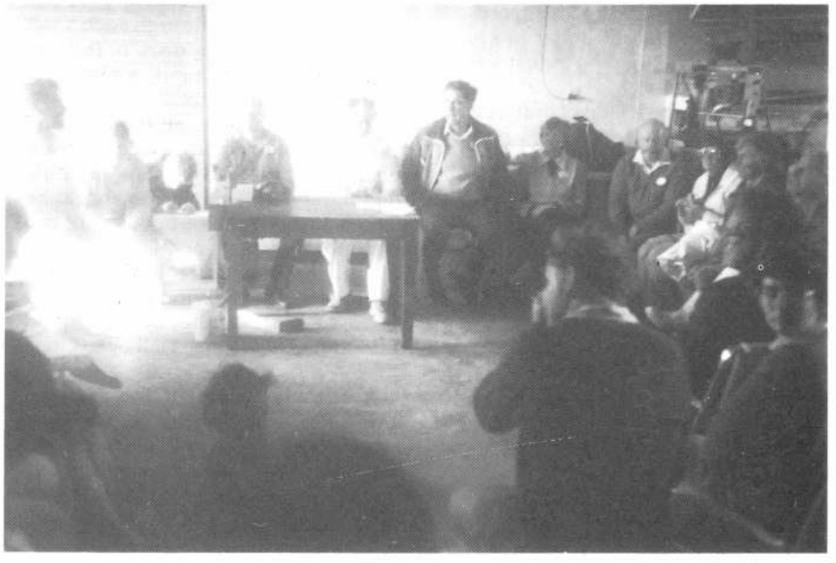
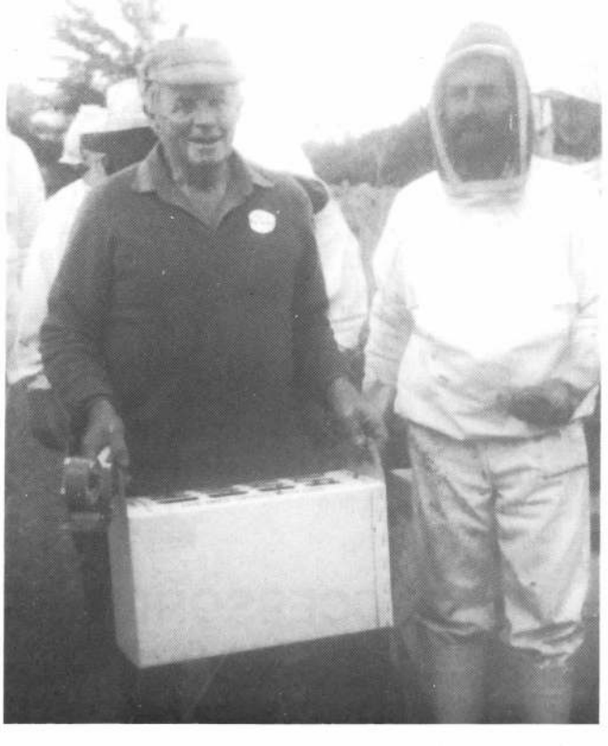


*Photo 1. Left above. Ted Roberts demonstrates how to inspect for disease.*
*Photo 2. Bottom left. Stan Young with one of the nuc boxes to be donated to the victims of Cyclone Bola.*
*Photo 3. Right above. The time for theory.*
*Photo 4. Bottom right. How to save your back.*



# LET'S PREPARE YOUR CASH FLOW BY COMPUTER

*From Ken Trevathan*

**How did you get on last issue with the spread sheet for honey crop estimating? You may have had good reason for being confused as the numbering of the second and third diagrams were reversed by mistake. Maybe you were smart enough to work that out for yourself or maybe you have already decided computers are not for you. I hope not.**

This issue we will look at budgeting and cash flows using the same programme as last time but of course with a different template. Do you remember about the computer programme called a spread sheet? If not, re-read last issue first to familiarize yourself with the concept.

No doubt in these rapidly changing times all commercial beekeepers are aware of the need to be able to accurately forecast their future financial position in advance. If you haven't then I am sure your bank manager will have been bringing it to your attention. So how can the computer and a spread sheet programme help you?

Look at the diagram one and you will see a template for a complete cash flow for an imaginary beekeeper. The figures used are not important and in fact are unlikely to bear any relationship to your own business as I have simply made them up to illustrate the relationships in the spread sheet. At the top is the name of your business and in cell A3 you entered the date that the cash flow was last updated. This is important because you will find that the great thing about preparing cash flows using a computer is that you can make alterations to your predictions as things change. Without this date you don't know how current your estimates are.

The general pattern of the body of the spread sheet is that the descriptions are on the left in column (A) while columns (B) to (M) contain your estimates for each month with the totals for the year in column (N). This work sheet is set up for a beekeeper with a financial year starting on April 1 and ending on March 31. My months therefore start in April but you can of course change the order of the months to match your own financial year. Moving down the work sheet you will see that the first section in the block of cells from B5 to M11 is your expected income month by month under various categories with the monthly totals in row 13. The template is set up so that these totals are calculated automatically by the computer. Every time you make an adjustment to one of the figures inside this block the totals are corrected for you.

Next comes your expenditure in the block of cells B5 to M31 with their monthly totals in row 33. Similarly these totals are calculated by the computer automatically for you. The difference between your income and expenditure for each month and for the year is shown automatically in row 35. The year total here is important as this is the profit or loss you expect to make for the year excluding depreciation. The reason that depreciation is not included in this cash flow is that it is not a cash item because this money is not paid out of your bank account to anyone.

From here down you include items of a capital nature — items that do not affect your profit or loss for the year but do affect your financial position. Under this section you will see repayments of loans: the principal only, not interest which is included in the section above in row 26, and taxation and the purchase of new assets like a new truck. Note also that this is where your drawings are shown along with any income generated off the property by yourself or your wife. In row 46 the computer has automatically totalled up your profit or loss from column 35 and has added to it these capital items to arrive at your net cash movement for each month.

Finally in row 48 is the result you and your bank manager are interested in: your expected bank balance month by month for the current year. Does it look horrible? Better to know now than after it has happened don't you think? Time now to review your estimates to see if any alterations are possible or in fact necessary. Maybe your overdraft climbed above your authorised limit one month. Can you move an item of expenditure to another month to correct the problem or maybe it is necessary to put off doing those alterations to the honey house. Maybe the results show that you have plenty of cash and that a new truck can be purchased this season but not till February. This is the great advantage of this programme. Make an alteration and you can see instantly the result on your bank balance.

Up to now we have only looked at the cash flow that you print out for your own use and for your bank manager, but this cash flow in its final form could have been made up using results calculated elsewhere on the same spread sheet. To illustrate this point have a look at example two which is another

part of the same work sheet. It comes from down the page a bit in the area of cells A50 to N60, and while it is not the part that you print out it does the calculation of your interest payments — due for you. These are then automatically added up into row 60 for use in the original spread sheet in row 26.

This area is interesting as it interelates with the overdraft figures contained in row 48. If the expected overdraft increases in row 48 as a result of an alteration you make to one of the expense items, then the bank interest in row 57 increases automatically and therefore the total in row 60, which in turn increases the interest row in the expense area. This is of course row 26. But be careful, as your computer makes it's calculations automatically from the top to bottom of the spread sheet, it will be necessary for you to ask the computer to recalculate this figure a number of times until the answer is the same after each recalculation.

Another item you could have in another part of the spread sheet which provides information to the main template is the number of kilograms of sugar you expect to feed each month multiplied by the price per kilogram. This information would then automtically transfer to row 20. What about the number of queen bees multiplied by their price? I am sure that if you put your mind to it you will think of other items that could be calculated this way.

So let's move to the template itself. The formulas are much more complicated this time, but let's start at the top and work down. We really only need to look at one month as all months are the same in principle. The first formula is in cell B13 and it simply adds up the amounts in cells B5 to B11. Next comes the instruction in cell B26 telling the computer to use in this cell the total from cell B60. Similar to the first formula, cell B33 contains the instruction to add up all the amounts in cells B15 to B31. Next comes cell B35 which contains the formula instructing the computer to use the difference between cells B13 and B33.

Moving now into the capital section you will find cell B46 containing the formula asking for cell B35 and the cells between B39 and B44 to be added together. Finally cell B48 contains the opening bank balance plus the contents of cell B46. Moving across this row you will find that cell C48 contains the formula adding B48 and C46 together, and so on.

This only leaves us the interest section. Cell B60 is straight forward. It contains the formula to add cells B52 to B58 together. That only leaves us with the formula in cell B57. This is the one that calculates the interest on the bank overdraft. The formula itself is IF(B54)0,SUM(b54*.22/12)). This may seem somewhat complicated but what it is in fact doing is checking to see if cell B48 is in overdraft and if it is multiply it by the overdraft interest rate to arrive at the interest for the month. This calculation is not completely accurate as you will be aware bank overdraft interest is calculated on a daily basis but it is near enough for estimating purposes.

Some of the above you may have found difficult to understand but for those of you who have a computer and wish to try this template out I would be more than happy to provide a copy of the template to save you the trouble of entering it into your computer. Copyright precludes me from providing you with a copy of the programme but if you forward me a disk and a self addressed envelope I will send you a copy of the data file. Send your disks to Oban Street, Lawrence.

Next issue we will have a look at computer cash books and how they can help you to reduce your accounting fees and provide you with information to make better decisions for your business.

## BELIEVE IT OR NOT

*From T.H. Goddard*

The judge said it was the first case of patricide he had encountered. In view of the exterminating circumstances and the grief I was suffering he felt justified in handing down a suspended sentence.

My father, like all beekeepers, was always experimenting with new products. He developed a yellow powder which when placed in a lighted smoker had a shrinking effect. That is to say, you puffed the smoker at the person whom you required to shrink and hey-presto!

My mother knitted him a woollen overall with yellow and black stripes and six black legs and two black feelers. With this on and shrunk to size, he looked quite bee-like; apart from the fact that he was standing upright. Anyhow, it fooled the bees, and he walked nonchalantly into the hive through the bee entrance.

That was in early evening. He felt that at that time of day the bees would be more receptive.

I was leaning on the hive when a rather irate inspector arrived. He asked where my father was, and when I told him that he was in the hive, he thought I was being facetious. He then informed me that due to the high incidence of foulbrood in this apiary, we had to burn all the hives. I asked him the best way to go about this. He told me to grab a nearby can of petrol and pour a liberal amount into the top of the hive. I did. Then he told me to stand well back and throw a lighted match at the hive. The second match found its mark. There was an explosion. Flames shot into the air. I was admiring the conflagration when I realised it was the hive my father had gone into.

VERY SAD!

*"Here honey lends refining touch*
*if not too spare or not too much."*

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | MY APIARY PARTNERSHIP ACCOUNT | | | | | | | | |
| 2 | Revised 03-05-88 | | | | | | | | | | | | | |
| 3 | | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Total |
| 4 | | | | | | | | | | | | | | |
| 5 | Sale of Bulk Honey | -11150 | -5300 | -6400 | -6400 | | | | | -15500 | -3000 | -8000 | -2800 | -58550 |
| 6 | Sale of Pack Honey | -500 | -500 | -500 | -500 | -500 | -500 | -500 | -500 | -500 | -500 | -500 | -500 | -6000 |
| 7 | Sale of Comb Honey | | | -5750 | | | | | | | | | | -5750 |
| 8 | Sale of Wax | | | | | -4460 | | | | | | | | -4460 |
| 9 | Pollination | | | | | | | -5000 | -5000 | | | | | -10000 |
| 10 | Contract Processing | -3000 | | | | | | | | | | | -2700 | -5700 |
| 11 | Interest Received | | | -120 | -70 | -70 | | | -40 | | | | | -300 |
| 12 | | | | | | | | | | | | | | |
| 13 | Total Income | -14650 | -5800 | -12770 | -6970 | -5030 | -500 | -5500 | -5540 | -16000 | -3500 | -8500 | -6000 | -90760 |
| 14 | | | | | | | | | | | | | | |
| 15 | Extracting Costs | 500 | | | | | | | | | | 510 | 600 | 1610 |
| 16 | Hive Levy | | | | | | | | | | | | 240 | 240 |
| 17 | Packing Materials | | 600 | | 600 | 200 | 600 | 200 | 600 | | 600 | | 600 | 4000 |
| 18 | Queens Purchased | | | | | | 680 | 680 | 680 | | | 1360 | | 3400 |
| 19 | R & M Bees | | 980 | 1400 | 1000 | 500 | 100 | 110 | 160 | 50 | 100 | 100 | 50 | 4550 |
| 20 | Sugar Purchased | | | | | | | 2860 | 2860 | | | | | 5720 |
| 21 | Wages | 1000 | 798 | 798 | 798 | 798 | 798 | 960 | 960 | 960 | 960 | 1200 | 1200 | 11230 |
| 22 | Electricity | | 680 | | 480 | | 480 | | 450 | | 450 | | 610 | 3150 |
| 23 | Freight | 100 | 50 | 200 | 285 | 50 | 50 | 100 | 285 | 50 | 100 | 50 | 50 | 1370 |
| 24 | General Expenses | 570 | 180 | 300 | 140 | 70 | 640 | 240 | 240 | 240 | 240 | 240 | 240 | 3340 |
| 25 | Insurance | | | 279 | | | 1750 | | | | | 850 | | 2879 |
| 26 | Interest | 371 | 991 | 905 | 369 | 991 | 681 | 510 | 1235 | 824 | 448 | 1151 | 780 | 9255 |
| 27 | Rates | | | | | | | | | | | 770 | | 770 |
| 28 | R & M General | 140 | 280 | 420 | 210 | 140 | 350 | 140 | 140 | 140 | 140 | 140 | 140 | 2380 |
| 29 | Telephone | 155 | | 155 | | 155 | | 155 | | 155 | | 155 | | 930 |
| 30 | House Repairs | | | | | 150 | 100 | | | 100 | | | 100 | 450 |
| 31 | Vehicle Expenses | 900 | 900 | 900 | 900 | 900 | 900 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 11400 |
| 32 | | | | | | | | | | | | | | |
| 33 | Total Expenses | 3736 | 5459 | 5357 | 4782 | 3954 | 7129 | 6955 | 8610 | 3519 | 4038 | 7526 | 5610 | 66674 |
| 34 | | | | | | | | | | | | | | |
| 35 | Balance | -10914 | -341 | -7413 | -2188 | -1076 | 6629 | 1455 | 3070 | -12481 | 538 | -974 | -390 | -24086 |
| 36 | | | | | | | | | | | | | | |
| 37 | Capital Movements | | | | | | | | | | | | | |
| 38 | ---------- | | | | | | | | | | | | | |
| 39 | Bank Loans | 32 | 32 | 1295 | 32 | 32 | 357 | 32 | 32 | 1295 | 32 | 32 | 357 | 3560 |
| 40 | Rural Bank | | 386 | | | 386 | | | 386 | | | 386 | | 1544 |
| 41 | Drawings | 900 | 900 | 900 | 900 | 900 | 900 | 900 | 900 | 900 | 900 | 900 | 900 | 10800 |
| 42 | Tax | | | | 2196 | | | | 2196 | | | 3866 | 2196 | 10454 |
| 43 | Wages — Wife | -250 | | -250 | -250 | -250 | | -250 | -250 | -250 | | -250 | -250 | -2250 |
| 44 | Capital Purchases | | | 2000 | | | | | | | | | | 2000 |
| 45 | | | | | | | | | | | | | | |
| 46 | | -10232 | 977 | -3468 | 690 | -8 | 7886 | 2137 | 6334 | -10536 | 1470 | 3960 | 2813 | 2022 |
| 47 | | | | | | | | | | | | | | |
| 48 | Bank Credit/OD | -2491 | -1514 | -4982 | -4292 | -4300 | 3586 | 5723 | 12057 | 1521 | 2991 | 6950 | 9763 | |
| 40 | | | | | | | | | | | | | | |
| 50 | Interest | | | | | | | | | | | | | |
| 51 | ---------- | | | | | | | | | | | | | |
| 52 | BNZ House | 364 | 364 | 364 | 364 | 364 | 364 | 364 | 364 | 364 | 364 | 364 | 364 | 4368 |
| 53 | BNZ Term Loan 1 | | | 299 | | | | | | 199 | | | | 498 |
| 54 | BNZ Term Loan 2 | | | 242 | | | 224 | | | 207 | | | 190 | 863 |
| 55 | Rural Bank 1 | | 332 | | | 332 | | | 332 | | | 332 | | 1328 |
| 56 | Rural Bank 2 | | 295 | | | 295 | | | 295 | | | 295 | | 1180 |
| 57 | BNZ Overdraft | 0 | 0 | 0 | 0 | 0 | 66 | 105 | 221 | 28 | 55 | 127 | 179 | 781 |
| 58 | AMP Society | 7 | | | 5 | | 11 | 21 | | | | | 11 | 55 |
| 59 | | | | | | | | | | | | | | |
| 60 | | 371 | 991 | 905 | 369 | 991 | 665 | 490 | 1212 | 798 | 419 | 1118 | 744 | 9073 |

# AN IMPROVED HONEY KNIFE

*By George Nichols*

**Many years ago I had the idea of a honey plane made from a hacksaw blade; this would be very robust and fast heating. The great difficulty was to control the temperature since the temperature sensing elements, thermistors, were rather large and had to be fitted into the brass tubes which conducted the current to the blade. When I first switched on everything worked well, the short blade heated to 85°C in two seconds and switched itself off. As soon as I started to uncap the comb the blade cooled slightly and switched itself on very briefly. However, after about five minutes, the brass tubes had become hot, the thermistor inside was kept hot and the circuit remained off with all of the blade cold except the two ends. I could think of no better way to control the temperature and left the project.**

In the meantime I bought an electric honey knife which worked on 240 volts. This lasted about six weeks before the frail element burned out. Temperature was controlled manually by a knob in the handle but the blade became too hot when not cutting and blackened the honey. It then occurred to me that the remains of the honey knife could do the job that my hacksaw blade could not. In the intervening years the thermistors had become very much smaller and could now be buried inside the knife blade.

Now, for the beekeepers who have forgotten the electricity they did at school, here is lesson 1. Horribly basic, but I hope any electrical engineers will forgive me.

**Lesson 1.**

1. Voltage is electrical pressure.

2. Current in amperes is many, many millions of negative charges flowing every second. With a car battery these negative charges pour out of the negative terminal, through the head lamp, and back to the positive terminal. This sounds back to front but the terminology was used long before the negative charge of the electron was discovered.

3. Resistance, measured in ohms, is opposition to current flow.

These are all beautifully combined in mathematics as:—

Volts=Amperes multiplied by Ohms so if you want 12 amperes to flow through 20 ohms you need

12 x 20 = 240 volts.

Let us do it again. Your car has a 12 volt battery and a six ampere bulb so:—

12 = 6 x 2 ohms.

**Lesson 2.** (for those who are still awake).

Power is the amount of energy delivered every second and is measured in watts. Very sensibly:—

Volts x Amperes = Watts.

240 volts x 1/2 ampere = 120 watts.

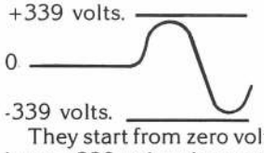
1/2 volt x 240 amperes = 120 watts.

This line is very clever, remember it until you have finished lesson 3. It means that a 240 volt heating element has a high resistance so that only 1/2 ampere flows and a 1/2 volt element has a low resistance so that 240 amperes flow.

Something else to remember. A one bar mains heater in your sitting room is rated at 1 kilo watt which means 1,000 watts. It glows a nice comfortable red. (Very important to remember how red.)

**Lesson 3.** (It gets difficult now, so you do not have to read this.)

Alternating mains voltage look like this:—




They start from zero volts, rise rapidly to +339 volts, decrease to zero, go to -339 volts and back to start at zero. This is one cycle. The change from + to - only means that the negative charges have changed direction. This all takes 1/50 of a second so we have 50 complete cycles in one second.

By the way, if something goes from +339 volts to -339 volts the average is zero volts. Try sticking your finger on the mains if you want to find out what zero volts feels like, but do not tell the coroner I said so.

This does not look much like the 240 volt supply you thought you were paying for. Now, remember your 1,000 watt heater glowing red. If you attach twenty 12 volt batteries in series with your sitting room heater it will glow red hot and if you attach the +339 to -339 alternating voltage to your heater it will glow just the same red, so we cheat and call it 240 volts alternating.

The next thing is if you switch on and off at 339 volts there will be loud clicks on your radio and on your neighbour's if he is near enough. Switch at 100 volts and there will be quieter clicks. Switch at zero volts and there will be no clicks and your neighbour will not be annoyed, this can be achieved by building a piece of apparatus called a zero voltage switch.

The advantage of alternating voltages is that you can use a transformer to step up and down in voltage. This is not my small grandson's idea of a transformer which, to my surprise is some sort of space man who turns into a car. No, this is not the story of the actress who turned into a motel, the Beekeeper is not that sort of magazine.

Right, I choose a nice small safe voltage for my honey knife, 1 volt is easy mathematically and if I want 100 watts to heat the blade:—

1 volt x 100 amperes=100 watts.

Also 1 volt=amperes x 1/100 ohm.

Now I am cheating slightly, I can measure one volt easily, but it is far more difficult to measure a very low resistance of 1/100 ohm. Anyway I had a transformer made for me to reduce the 240 volt mains to one volt but I have no real accurate measurement of the resistance of the blade.

**The Honey Knife**

The honey knife is constructed of two thin sheets of stainless steel with a heating element encased in insulating material as the meat in the sandwich. The sheets are welded together at the

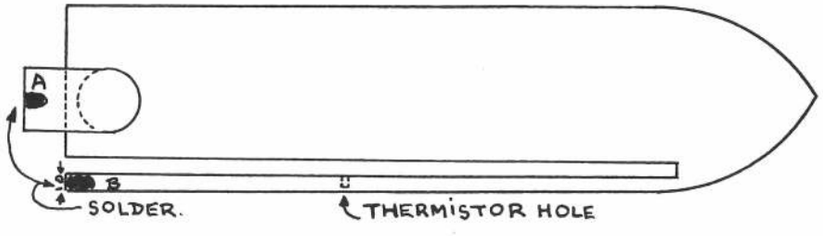



Fig 1. Knife blade. Not to scale.

edges and the lower edge is sharpened. I took my old honey knife and cut a slot in it using two hacksaw blades leaving a strip 10 mm wide as shown in Fig. 1, this strip now became my low resistance heating element. Heavy electric-welding cables were soldered to tube A and blade B using phosphoric acid as flux for the stainless steel. (Brazing may be preferable but I have no apparatus for this.) The other ends of the cables went to the one volt terminals of the transformer. When the transformer was switched on the heavy current warmed up the thick very low resistance part of the blade a little but most of the heating occurred in the thin sharp and rather higher resistance part of the blade. From cold it reached 80°C in four seconds.

Now to control the temperature. A thermistor is a device which is of high resistance when cold and low resistance when hot. I made my original experiments when the only thermistors available were 60 mm long and two mm dia. Since those days technology has caught up and thermistors can be lost under your thumb nail. I scraped the remains of the heating element out of both sides of my saw cut leaving a long empty slot. The slot in the narrow part of the blade was just wide enough to take the thermistor with a little help from a drill of the same diameter. It was mounted half way along the blade. Now the two wires coming from the thermistor are terribly fragile and have to be supported. Also the wires have to be soldered to two conductors so that the change in resistance can be used to switch on and off as required. A piece of printed circuit board was just the thing, this is a piece of bakelite with long strips of copper "printed" on the surface and holes for any wire that you wish to poke in before soldering. Fig. 2 shows what I mean.

The bakelite strip was used to fill the long gap which I had cut with the two hacksaw blades. I put the thermistor into its hole with a minute blob of thermo-grease on its sensitive tip to conduct the heat as rapidly as possible from the sharpened blade, coated both edges of the strip with Araldite epoxy resin, and slid it into position. Of course, in the process, I got Araldite on my fingers, touched the thermistor

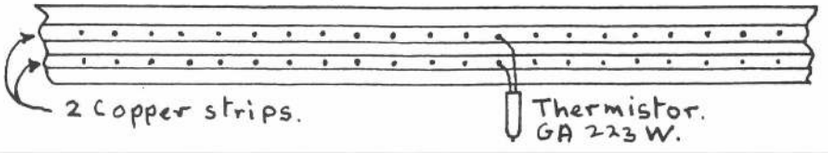
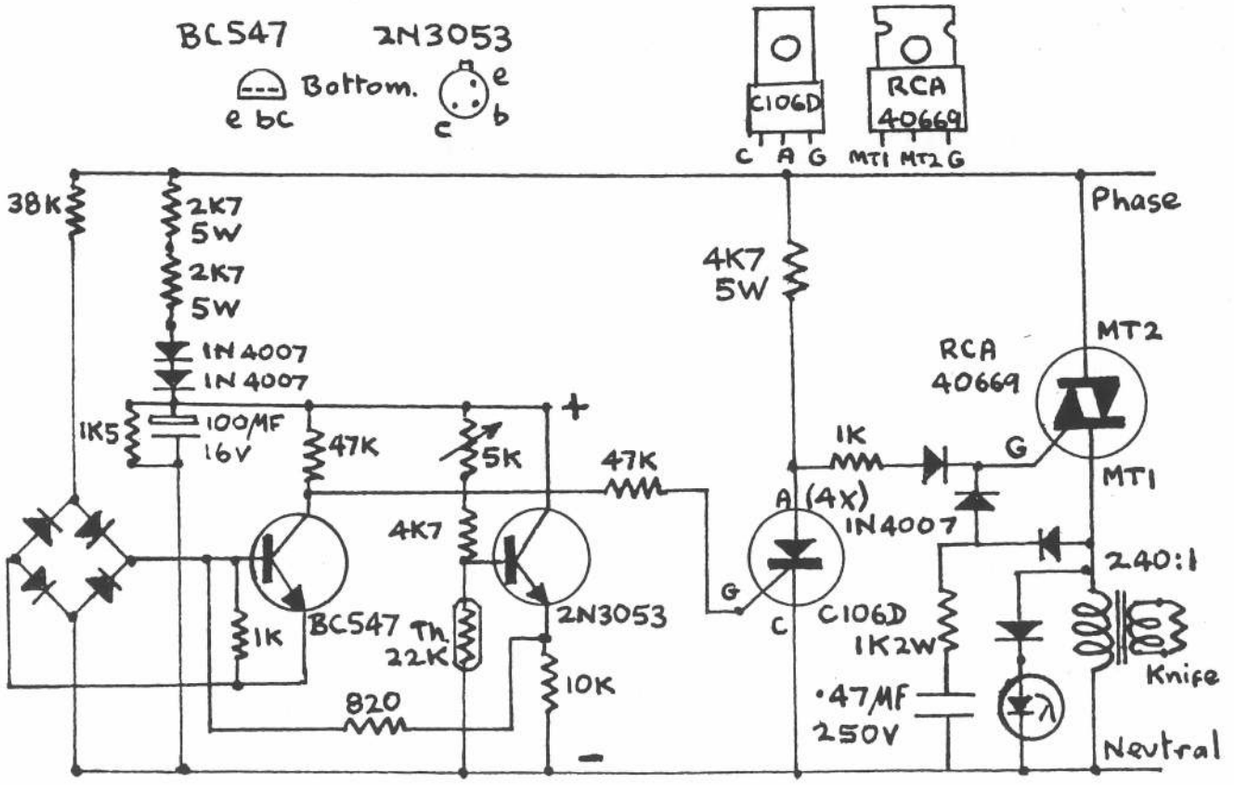



Fig 2. Printed circuit board. Not to scale.




Zero crossing detector. Temperature control. Solid state mains switch.

Fig 3. Electronic circuit.

wires and they came off. Do you remember the Aberdonian who went to London briefly? "I hadn'a been there thirty minutes when bang went saxpence." Well, at $8 each I was more careful next time.

**Electronics**

There is an integrated circuit specially built for temperature control, the R.C.A. CA3059. This does an excellent job but by the time I had blown up two of them expensively I had another think. Its small size was no advantage since it was surrounded by large high wattage resistors, big capacitors, and a transformer, so I found out what was inside it and duplicated the circuit using separate transistors and resistors to make a more robust circuit. See Fig. 3.

Consider the solid-state mains switch on the right hand side. If the silicon controlled rectifier (SCR) C106D is OFF, the gate of triac RCA 40669 is driven positive on positive half cycles of the mains, the triac switches ON for a complete cycle and the knife is heated via the transformer.

However, if the SCR is switched ON by a positive pulse at the beginning of a positive half cycle it remains ON for this half cycle, holding its anode and the triac gate at a positive voltage too low for the triac to switch ON. (If the triac misses its positive half cycle it is unable to switch ON for the negative half cycle, since the .47 uf capacitor in the timing circuit has not received a charge.)

Now consider the zero crossing detector. Only at the zero crossing points of a mains cycle does the base of the transistor BC 547 receive zero volts via the bridge rectifiers switching this transistor OFF. The collector is pulsed positive and the positive pulse, which is applied to the SCR gate, hold the SCR ON for a positive half cycle and the triac off. At any positive or negative part of a mains cycle the bridge rectifiers give a positive bias to the base of transistor BC 547 which switches ON, keeping the collector of this transistor at a very low positive voltage. This is applied to the SCR gate and would hold the SCR OFF, had it not already been switched fully ON for a half cycle at the zero crossing point. The triac is still unable to switch ON.

This is where the temperature control comes in. If the knife blade is cold the thermistor is cold and its resistance is high, the base of transistor 2N3053 is positive and hence the top end of emitter load 10k resistor is also positive. This positive voltage is fed back via the 820 ohm resistor to the BC 547 base over riding the zero crossing conditions, thus holding the SCR OFF and allowing the triac to switch ON heating the blade. The thermistor becomes hot, its resistance decreases and at a temperature determined by the 5k variable resistance the 2N3053 switches OFF, the voltage at the top end of the 10k emitter resistor falls to zero and no longer over rides the zero crossing detector. The triac switches OFF briefly until the blades starts to cool.

**Results and Conclusions**

The honey knife is held at 80°C well within + and - 1°C when measured in a water bath.

In air it reaches operating temperature from cold in four seconds and holds there with an occasional single cycle of the mains to reheat.

When cutting honey comb it switches on and off occasionally during the cut.

This system of low voltage high current heating would be excellent for the Pender uncapper blades or for soil warming in horticulture.

There are no patents involved, anyone has my full permission to manufacture this apparatus. I have never yet managed to invent anything that sold in thousands for a fat profit.

# STRANGE BEE-HAVIOR *By Audrey Walker*

Away in a beehive, beside some barbed wire,
An elderly queen was about to retire,
She had tattered antenna, and six aching legs,
And had just laid her last special half-dozen eggs.

She thought of the swarms she had lead through the trees,
And the drones who had fathered her thousands of bees.
She remembered the combs that her workers had filled,
And the young would-be queens who'd had to be killed.

She watched as the nurse bees removed the last batch
To queen cells, to feed them until they could hatch.
She knew when that happened that she would be slain,
So she buzzed off and threw herself under a train.

Well, the first queen to hatch eloped with a drone,
Collected a swarm and took over the throne.
The second queen out, whose name was Bee-gonia,
Fell in the fish-pond and died of pneumonia.

Thw third queen, she hi-jacked a small helicopter,
And managed to coax the darned thing to adopt her.

A real silly bee was queen number four,
She got herself squashed in an old dunny door.

The fifth queen decided that she would be free,
And joined a wild swarm in a big hollow tree,
And when careless travellers wanted to pass,
She'd nip out and give 'em a sting on the grass.

Now Huneybum, the last royal daughter,
Had heard that far across the water
There stood a beehive unlike any other,
Because there was no residing Queen Mother.

So she set her course, and made up her bee mind
And soon the old drones were left far behind,
Except one who presence was essential,
If young bees were to be eventual.

The nuptual flight was long but merry,
For they hitched a ride on the Picton ferry
And zoomed around on the public decks,
Stinging folks on their cheeks and necks.

Arriving on the other side,
Our eager queen and drone espied
The giant Beehive standing there,
Not full of honey, but hot air!

The noise was like a million drones,
For no-one spoke in honeyed tones,
But each one shouted down his neighbour,
Or bellowed like a cow in labour.

"If this is how the humans swarm,
I do not care much for their form,
Let's go and find ourselves a rose",
The queen said, turning up her nose.

Alas, the little bees were spied
And squirted with insecticide.
They buzzed around in desperation,
With painful gasping respiration.

The drone, with one last gasp of glee,
Expired in Roger's cup of tea,
And the queen made sure her sting did meet,
With David's ministerial seat.

Their frantic grabs at throat and britches,
Had the sitting house in stitches,
So Jim and Robbie crossed the floor,
And voted for a quick encore.

*"A drop or two of Nature's sweet*
*Will give a better taste to meat."*

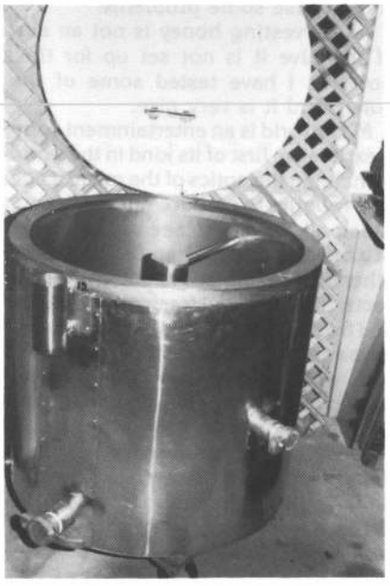
# SAFETY

*By Norman Finlay*

**How often have you read in a newspaper or Beekeeper Magazine of the loss by fire of a honey shed belonging to some unfortunate beekeeper?**

Much money, sweat, and hard work goes into beekeeping. It is heart breaking to watch it go up in smoke and have to start over again. I suspect many of these fires are caused by the ignition of bees wax in the reducing process from cappings.

Hot tops, pyrotenics, ovens, or the like make dangerous bedfellows for melting wax.



There had to be a safer way I thought after arriving morning after morning at the honey shed, each time to see with relief that it was still standing.

Why not use hot water? But how? I ask myself. Look what my friend Ray has. Does it work? "Yes," says Ray, "but the middle takes a long time." Then why not use thermo cycling? Let's put a centre tube up the middle and cycle the hot water to the outside via a smaller tube, as can be seen in the photograph.

So we make a stainless tank with an electric element and two thermostats in the base cavity, and we mount it on a four-wheel trolley for manoeuvrability. Place an aluminium skirt around the outside with 25mm clearance and fill with endurathane 2525 foam and you have a simple and efficient Cappings Melter. Something which is no more dangerous than your household hot water cylinder.

There is always some honey to be melted out of cappings and here is one easy way of recovering it without too much discolouring.

To operate the melter all you do is fill the unit with the day's cappings from a spin dryer or the like. Turn the power to the low setting 70°C and forget it until morning when the honey will be separated from the wax and can be run off the bottom tap.

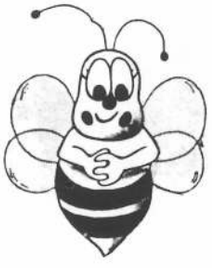
When all the honey has been recovered, add hot or cold water to float wax above the side tap and turn to the high thermostat. The water will absorb dead bees, pollen, and propolis, allowing pure clean wax to float off through the top tap.

*"A drink that tastes of honey sweet*
*Will always make a gracious treat."*

FROZEN FRUIT SALAD

4 ounces cream cheese
3 tablespoons mayonnaise
2 tablespoons honey
1 cup pitted white cherries
3 slices of pineapple
½ pint whipping cream

• Mix cream cheese with mayonnaise, add honey and mix well. Add cherries and pineapple and fold in whipped cream. Place in freezing tray.



# MICROWORLD

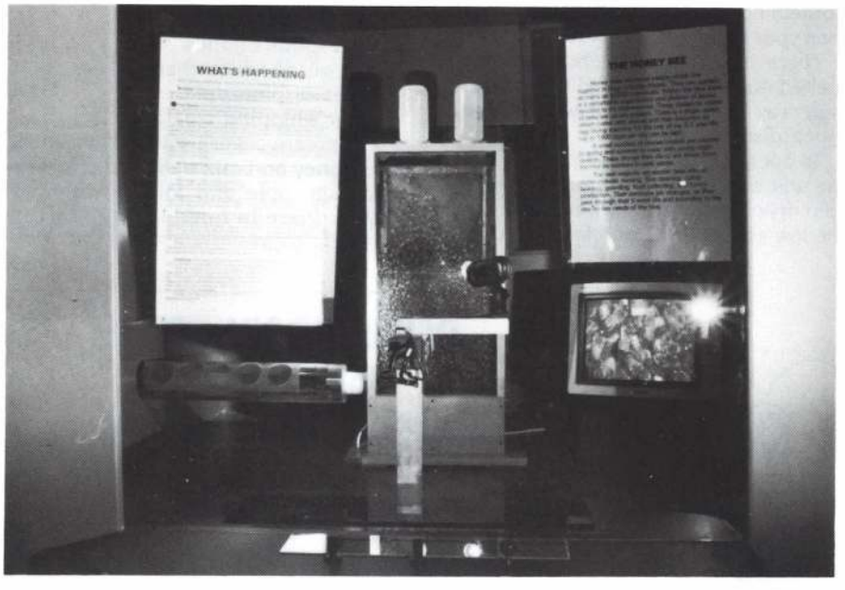
*By Maria Krausse*

**As I sat at the lights to come off the motorway into the heart of central Auckland, a bee landed on my windscreen and I wondered whether it came from the hive approximately a kilometre away (as far as the bee was concerned) at Microworld. The bee's stay with me was only short-lived as the airspeed soon dislodged it.**

I do not know where or over what range the bees in our hive forage — most of the area around is a concrete jungle but you may be surprised by the number of pockets of green to be found in the city. It would be an interesting exercise to tag the bees and determine exactly where they are foraging.

Our hive is observed by many people each day with each viewer being able to get a close-up view of the hive and its occupants by driving a camera around to a suitable spot and then zooming in on it, magnifying the bees to about 18 times their natural size. This image can be seen on a video monitor.

The hive is lit using high-intensity halogen bulbs. The bees themselves seem little bothered by the light, coming and going through their exit tube and performing all the normal hive activities. The exit hole of the hive is situated in a fork-joist yard and in the height of the honey flow bee droppings 'paint' one of their trucks which sits near the hole.




The hive is heated in winter with a low-wattage bulb in the base, and sugar solution is fed from the bottles at the top. The front piece of glass is changed weekly to allow a clean, clear view for the dirt-seeking camera. The queen will also be changed this spring as a swarm of bees in central Auckland could cause some problems!

As harvesting honey is not an aim of the hive it is not set up for this. However, I have tasted some of the honey and it is very nice.

Microworld is an entertainment complex. It is the first of its kind in the world combining the optics of the microscope with robotics to produce our machinery which allows one to see the workings of a beehive at closehand as well as 18 other living exhibits, including other insects, a marine and freshwater system, and frogs, geckos, and spiders. We also have another machine, housed in a console, which allows the viewer to magnify up to 400 times the objects we have on display or what they bring in.

The Microworld Complex is educational and there is plenty to explore and understand in the microscopic world. Perhaps you might visit Microworld sometime.

## Letter from the Auckland Beekeepers Club Inc.

**To: Hon Ralph Maxwell MP, Parliamentary Under Secretary of Agriculture**

Dear Mr Maxwell,

I write regarding the proposals currently under discussion to fund a nationwide hive inspection service to replace the service previously provided by MAF.

My committee has been concerned to learn of a proposal to fund the service by imposing a minimum levy of $40 per annum on all beekeepers, regardless of the number of hives they operate. In our view such a proposal would be extremely difficult to enforce and could have serious consequences by actively discouraging hobbyist and part-time beekeepers from registering their hives with the consequent increased risk of disease remaining undetected.

The Auckland Beekeepers' Club is a member group of the National Beekeepers' Association and has put forward a proposal to cover the inspection of hobbyist activities. Our suggestion is that recognised clubs should be required to be affiliated to the National Beekeepers Association and should be given the authority to appoint honorary inspectors from within their membership to inspect club members' hives. Such inspectors could also be used to monitor hives belonging to hobbyists who were not members of a recognised club. The proposal would have the added advantage of making use of local knowledge together with the experience of hobbyist beekeepers who have previously assisted MAF as honorary inspectors.

Our club together with other hobbyist clubs conducts an active education programme to encourage beekeepers in disease control and prevention and we share the concern of the industry regarding the need for an effective nationwide inspection service. We feel however that any proposal which financially disadvantages the hobbyist or part-time beekeeper will actively discourage participation in such a scheme and will work against the best interest of all concerned.

I would welcome further information on the proposal under consideration together with your comments on our suggestion outlined above.

**Yours faithfully**
**E.H. Legget**
**President Auckland Beekeepers' Club**

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CHRISTMAS FRUIT NUGGETS

1 cup shortening
1½ cups honey
2 eggs
3 cups sifted cake flour
3 teaspoons baking powder
¼ teaspoon salt
½ teaspoon each cloves, cinnamon, and nutmeg
½ cup milk
½ cup candied pineapple
1 cup candied cherries
1 cup candied raisins
1 cup English walnuts

• Cream shortening. Add honey and cream together. Beat eggs and add. Sift together cake flour, baking powder, salt, cloves, cinnamon, nutmeg, and add alternately with milk. Chop pineapple, cherries, raisins, and walnuts. Mix all together well. Drop by teaspoonfuls either upon greased baking pan or into tiny paper cups. Bake in moderate oven (375°F.) for about 15 minutes.

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