The New Zealand BeeKeeper

1984
Winter

The New Zealand BeeKeeper

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

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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.
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FOOTROT FLATS by MURRAY BALL

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A WARNING

Now the chalk brood scare is over it is time to take a retrospective look at the pros and cons of this disease.

Everything is a mixture of good and evil. It is impossible to have God without the devil, right without wrong. Morphine is both boon and scourge. A flying ambulance can also drop bombs.

On the "good" side New Zealand is free of many pests and diseases. On the "evil" we are wide open to any pests or diseases we don't have because by the very fact of being free of them we have little or no resistance to them.

The Indians of the Caribbean were eradicated by ordinary European diseases unknown to them until the arrival of the Spanish. Along the Amazon thousands of Indians were wiped out by the common cold, again a disease unknown to them until brought by the Portuguese who, like us, had built up a resistance to it until it had become little more than a nuisance.

Seen in this light our brief epidemic of chalk brood should be taken as a warning not to push our luck.

We can imagine what might happen if a pair of cougars were loosed in Westland. Our ecology could be turned upside down in a very few years. An alien disease, once loose, could do the same in much less time and with much more lethal effect. We must see chalk brood in this perspective, prepare to live with it, so that should it take hold it can be relegated to the level of the common cold.

We should also see other alien diseases, not yet with us, in the same light. These things exist, they are part of the world, and we must learn to live with them. Because of increasingly rapid and easy means of communication we can expect visitations from more and more undesirable aliens. Let us then prepare to combat and adjust to them as they arrive.

As Mr Don Gibbons said in his letter to The Editor (NZ Beekeeper, Autumn 1984): "While we could have done without chalkbrood I believe it could be of beneficial effect in the future by making us that much more aware of the constant vigil required to keep us free of other exotic diseases".

We have now been "warned " by chalkbrood, I am sure the MAF has "heard" that warning and taken it seriously. It is up to all beekeepers to also "hear" and bear the warning in mind.

Michael Burgess,
Editor.

HONEY AND TEETH

Mr Ray Robinson, Wairoa, understands that a local dentist has been telling his patients that honey causes cavities in teeth.

Mr Robinson thinks a study was carried out in the United States on the effect of honey on teeth with the result that honey received a clean bill of health.

If anyone is able to help locate this study, or any similar information, Mr Robinson would like to know so he can draw the information to the attention of the dentist.

* * *

To the Editor

Dear Sir,

Your first issue is great. Keep up the good work . . ..

A. D. (Tony) Lorimer
Secretary,
Waikato Branch.

Dear Sir,

Greetings from a former contributor. Congratulations on the issue just published . . .

Chris Dawson
Timaru.

Dear Sir,

While I realise Mr Piers Maclaren's talk to Nelson beekeepers on "Trees and Bees" (resume N.Z. Beekeeper Autumn 1984) was based on his own opinions, certain aspects of it call for comment.

There are minor points—macrocarpa and lusitanica are rated equally, with Cypressus lusitanica receiving slight preference in the New Zealand Forest Service Special Timbers Project, rather than: "could be desirable if it is not lusitanica sold under another name". The range of available preservatives suitable for beehives is somewhat greater than his article would suggest (see e.g. McQuire et al. 1979). Metalex is spelt with one "l". Woodlife is now Woodlife II. Naturally durable timbers still benefit from painting. You may well save a kilo a box by using e.g. Western Red Cedar, rather than radiata but nails or screws tend to go through it as if through butter. However, the section I would like to discuss is his "list of alternatives in order of preference": the list of timber species he considers suitable alternatives to radiata in the manufacture of beehives.

We can list the qualities required in a good beehive timber. (Space does not allow me to elaborate but I would be happy to discuss them further in correspondence):

(a) readily available in suitably wide and clear lengths
(b) inexpensive
(c) without heavy, aromatic scents to disturb bees
(d) easily dried
(e) of average density
(f) with little density variation within or between boards
(g) with good machining and working properties
(h) of average strength
(i) adequately stable, with not too much shrinkage or swelling in service
(j) good nail, screw or fastener holding qualities
(k) glues easily without problems
(l) with natural durability as an added bonus
(m) takes preservative easily and completely
(n) paints without problems.

His preferences in order were:

(1) Native Cedar
(2) Western Red Cedar
(3) Totara
(4) Redwood
(5) Kahikatea
(6) Macrocarpa
(7) European Larch
(8) Native Silver Pine
(9) Douglas Fir
(10) Matai
(11) Rimu.

If we then add Radiata Pine as No. 12, tabulate the factors listed under (a) to (i) on a scale of 1 to 10 with 1 as poor and 10 as excellent, we can get a better perspective.

Other species may be rated in exactly the same way. To take an example from the present list, we see that Western Red Cedar is fairly readily available, is very expensive (up to $1,200 per cubic metre), has strong aromatics making it unsuitable for hives, dries moderately well if bought green, has low density and little variation in density, machines well, has low strength, good stability, poor nail and screw-holding qualities, glues only moderately well, has above average natural durability, does not take up preservative, and paints moderately well. Its rating as a beehive timber is 62, approximately half that of radiata, and one of the lower ratings of all, beaten by Kaikawaka solely in terms of availability.

On the other hand, and without prejudice, it can be seen that radiata is one of the world's great beehive timbers and no alternative or substitute species suggested comes even close in the ratings.

David Williams,
Rotorua.

(See table opposite page)

PUBLICITY

It's free, so grab it if you can.

We all discount our daily round. Because it is daily-or yearly-it's dull, of absolutely no interest.

Yet your dull routine can be extremely interesting to others. So next time you are re-queening, or using a smoker, or whatever, why not give your local paper or radio a call? Newspapers have to fill their sheets daily, and radio stations have umpteen bulletins a day. You could be surprised to learn what an interesting life you lead.

Whom to call? The Chief Reporter, never the Editor.

When you call, give a few days' notice if you can. But if your queens suddenly start spawning three-headed bees an evening paper will be interested up until noon, a morning paper from around 2pm and a radio station any time.

Remember, all publicity is good publicity and can only help the industry.

(based, in part, on Entrican et al, 1957)

FACTOR	SPECIES *(See letter opposite page)*											
	KAIKAWAKA	W. R. CEDAR	TOTARA	REDWOOD	KAHIKATEA	MACROCARPA	LARCH	SILVER PINE	D. FIR	MATAI	RIMU	RADIATA
READILY AVAILABLE	1	5	1	3	6	6	2	1	7	3	5	10
CHEAP	1	1	1	2	6	6	5	1	8	5	6	10
ODOURLESS	3	1	3	3	10	3	10	10	10	6	8	10
EASILY DRIED	1	5	4	5	6	4	4	1	8	7	6	10
AVERAGE DENSITY	3	2	4	4	8	8	8	8	8	8	7	10
LITTLE DENSITY VARIATION	7	8	8	7	6	9	5	7	3	10	4	10
MACHINES WELL	7	8	8	7	7	8	7	8	8	10	8	10
STRENGTH	3	3	4	3	7	7	8	7	6	8	8	7
STABILITY	8	8	8	7	4	7	5	6	6	7	7	5
GOOD NAIL/SCREW HOLDING	3	2	4	4	8	7	7	7	5	8	8	8
GLUES WELL	5	4	4	6	8	7	7	7	8	8	7	10
NATURAL DURABILITY	7	7	7	5	1	5	4	5	1	5	5	1
PRESERVATIVE UPTAKE	3	1	1	5	5	2	4	4	4	1	1	10
PAINT HOLDING	7	7	5	6	8	6	6	6	7	6	7	10
TOTAL NUMERICAL RATING	59	62	62	67	90	85	82	78	89	92	87	121

The President's Report

President Ian Berry NBA

THE HONEY CROP: No final figures out yet from the MAF but from my own enquiries I estimate the North Island crop to be a little above average in the best areas, to nothing at all in the worst areas, and over all well below average. In the South Island a big variation from bumper crops to very poor: probably a bit below average over all. A higher percentage than usual of the crop was white to light in colour and the darker grades will probably be scarce before next season's honey becomes available.

CHALK BROOD: The following is an extract from a letter I have received recently:

"Deart Ian,

I have followed with considerable interest the saga of the chalk brood investigation. I have taken no part in matters beekeeping since my retirement 14 years ago. However, the present controversy has intrigued me by its publicity and high priority rating by the present day MAF staff. For more than 40 years I had observed its presence in Northland but never considered it called for any more than a passing word with the beekeeper and a reference in my field notes for local office recording. I personally classed it with sac-brood but never in the same category as nosema, let alone anything more serious. I once observed a little chalk brook in the Mercer area. I worked for some years in the Waikato but never saw it there. I've worked in Taranaki and north of Gisborne and failed to see it in either place. I commenced my departmental duties in Canterbury and saw none of it there.

"I notice some of the Queen breeders up North are a little disturbed, they should not be.

"You are at liberty to quote me if you feel it would help any.

R. S. (Bob) Walsh

Ex MAF."

Bob's letter raises the question of why was there such an outbreak last spring. Was it because of the unusual weather? Do we have a new strain or perhaps more observant beekeepers? Maybe we will have the answers next spring.

DR AND MRS SHIMANUKI'S VISIT: I am sure all NZ beekeepers who had the opportunity to meet this delightful couple learned much from them, particularly in the area of recognition of bee diseases. Dr Shimanuki is from the USDA and is their expert on bee nutrition and bee diseases. He has already written a preliminary report on beekeeping in NZ and the following are some brief extracts from this report:

"Based on experiments in the US, Canada and Europe I would classify chalk brood as a minor disease. It is quite unlikely that this disease would affect the number of colonies available for pollination and honey production. Beekeepers should be urged to feed sugar syrup, pollen substitutes, improve ventilation and decrease moisture in hives and select for queens those that have progeny that show hygienic behaviour.

"In my estimation nosema disease in NZ needs more attention. This disease can reduce the longevity of adult bees by 50% and reduce yields by 40%.

"I encountered quite a bit of sac brood and paralysis disease. By selective breeding the incidence of both diseases can be reduced. It is my opinion that both diseases can be bred out of the bee population and I recommend this in all my talks to beekeepers."

NBA ELECTION: This year Mervyn Cloake and Tony Clissold from the South Island and Tony Lorimer from the North Island come to the end of their two-year term. Both South Islanders have declared they will not be standing again this year and it will be necessary to nominate new people to fill the big gap left in our team by the retirement of these long-serving and experienced members. Tony Lorimer will be available for nomination. *A question for the ladies. Why has there not been a member of the fairer sex on the National Executive for a very long time, if ever?*

EXECUTIVE MEETING 1 MAY 1984: Because of the need to tie this in with the planning meeting at Flock House and so keep down costs it became necessary to hold this meeting about one month later than normal and to reduce it to one day rather than the normal two. The full Executive and the Executive Secretary were in attendance and the following were some of the main issues discussed.

HONEY PRICES: The Executive recommends that those who were caught with their prices down during the freeze raise their prices to the appropriate level as soon as possible. Most will probably have done so already. For those who had increased their prices before the freeze the recommendation is, if any price rises are made, make them

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small ones. While it may be tempting to increase prices substantially during a period of possible shortages of honey there is no point in increasing prices to an unrealistic level in New Zealand when overseas prices continue to be rather weak.

When new price lists are issued could you please forward a copy to our General Secretary to enable us to prepare an article for the Spring 1984 issue of the "Beekeeper".

TRUST FUNDS: In spite of the indications some time ago that the winding up of the HMA and the setting up of the trust funds, were almost complete this matter continues to drag on. In discussion with Ivan Dickinson, Chairman of the HMA, it would appear that he is as frustrated with the long delays as is the Executive of the NBA. It does appear that the capital of the funds when they are finally set up will be about $600,000 for the General Trust, and $170,000 for the Charitable Trust. Unfortunately there seems little the NBA can do about the delay because it is the HMA's responsibility until the trusts are established.

INCREASED IN ADMINISTRATION CHARGE BY THE N.Z. PORK INDUSTRY BOARD: The increase has been a very large one: from $9,234 in 1983 to $17,250 for the 1984 year. Before accepting such a steep increase we had to satisfy ourselves it was justified. We felt it was, on the following grounds:

(1) The present arrangement has proved very satisfactory and we feel it is important that our administration continues to be centred in Wellington.
(2) The fee has remained the same for the past three years and six years ago the fee was $6,785, so it has obviously not kept pace with inflation.
(3) It appears that when the NBA took over the collection of the Hive levy from the HMA no additional charge was made for the extra work.
(4) Enquiries have been made which have led us to believe it will be difficult to get the job done for less than the new charge. We will, however, make further checks to ensure we are getting value for money.

1984 CONFERENCE: After the Flock House planning meeting I travelled up to New Plymouth and spent some time with Stan Young and Chris Bromwell, the two South-western District branch members who have the main responsibility for organising the Conference. Planning is now well advanced at the Branch level and details are published in this "Beekeeper". At the National level we have several new innovations which we hope will add to the value and interest of Conference. The emphasis on planning and more reports from different sections of the industry are two examples. The aim is to make the 1984 New Plymouth Conference one of the best ever. It will help the organisers to achieve this if you could let the branch know how many are likely to be attending as soon as possible.

I look forward to meeting many of you there.

Ian Berry
8 May 1984

MEDICAL ASPECTS OF HONEY

The nutritional and healing properties of honey are legendary. It has been used in the prevention and treatment of many disorders in both man and animals from antiquity.

The ancients believed that honey prolonged life. Sura 16 of the Koran refers to honey "wherein is healing for all mankind", and the Muslim writer I.B.N. Magih, quotes the Prophet Mohommet as saying: "Honey is a remedy for every illness, and the Koran for illnesses of the mind, therefore I recommend to you both the remedies: the Koran and honey".

Honey was used as a conditioner by the Athletes of ancient Greece and Rome. It is used widely today by swimmers, long-distance runners, and mountaineers.

There are claims that honey is valuable to pregnant mothers, infants, and the elderly. Because of its bactericidal action, attributed to an antibiotic inhibune, it has been used as a tropical application to burns, infected wounds, and ulcers. it is reported to cleanse wounds and sores, and Hippocrates, the father of medicine, prescribed honey for sores and ulcers.

Honey has been found useful for reducing swelling and pain, and has been used for various respiratory infections, digestive disturbances, and heart conditions. Because of its high fructose content, honey speeds up the metabolism of alcohol and the sobering up of the intoxicated. Mixed with orange or lemon juice, honey alleviate hangovers.

Honey has been found of value in hypertension, liver diseases, vomiting in pregnancy, chronic constipation, and honeycomb has been reported useful in the treatment of hayfever, and the treatment of coughs and infections of the throat.

However, it must be emphasised that scientific evidence for many of the above claims is lacking.

A MISSED OPPORTUNITY

NICK WALLINGFORD

Rarely does an Annual Conference go by without an expression of concern by beekeepers about imports of honey or bees into New Zealand. Fair enough. Our industry is remarkably free from some pests and disease prevalent overseas.

We are fortunate in having a completely "closed door" policy on imports of bees and honey. This has served us well; keeping the country free of pests such as acarine, tropalaelaps, and varroa mites, and such serious diseases as European Brood Disease.

Even cosmetics and capsules containing a very small amount of royal jelly or pollen only, are screened by the MAF to ensure they pose no threat to our industry.

When an Australian airline began to use Australian honey on flights into Auckland, beekeepers felt the potential risk great enough to warrant discussion and investigation. Out of this same concern came a request for honey to be placed on the list of declarable items by travellers coming into New Zealand from overseas.

We as beekeepers know the background and reasons for the ban on honey imports. Travellers from overseas and returning Kiwis do not. They do not realize the threat they pose to our industry by bringing in a container of "exotic" honey.

But any beekeeper who has maintained an apiary near a rubbish tip will know how easily bee diseases can be transmitted by discarded honey containers.

Why then did we not take the opportunity of the discovery of chalkbrood in Northland to get these concerns across to the public? At a time when beekeeping was "big news" we could have used the exposure to explain why imported honey and bee products pose a potential hazard to our industry.

Further, at no point did I hear a clear statement that there are no human disease organisms that can survive in honey, that no bee disease can affect humans. Rather than the somewhat defensive attitude we took, wouldn't it have been better to use the publicity to build on the image of a pure and natural product?

One positive note in the discovery of chalkbrood was the mobilization of the Ministry of Agriculture and Fisheries Advisory Services. The survey and inspection work to determine the extent of the disease's spread will serve as good practice should we be faced with one of the more critical diseases or pests. Few beekeepers realize the amount of contingency planning that MAF has done to prepare for such situations.

Worrying, however, were the numbers of hives and apiaries not registered. How can MAF provide us with the protection we need if they are hampered by such needless hurdles? Beekeepers must feel a responsibility to other beekeepers to ensure that all apiaries are both properly marked and registered. Without such work by beekeepers, emergency measures will be hindered and a possible chance to contain or eradicate a disease or pest outbreak may be lost.

Chalkbrood itself does not appear to be a major problem. From experience overseas it will likely become a minor disease that can be effectively controlled through careful management. Its affect on our industry will likely be minimal. The image of beekeepers and of honey are of more importance, and the ability to effectively respond to an exotic disease or pest outbreak should be examined in the light of recent events.

Weather forecasts and the beekeeper

By: H. W. Hill. Senior Meteorologist, NZ Meteorological Service.

Most if not all primary production, including beekeeping, depends on the weather.

The weather elements which most concern the beekeeper are temperature (15°C is low for active bee foraging); wind speed (as much as 25km/hour especially near the temperature threshold inhibits much flying); and illumination. Even the extended-range five-day forecasts contain this kind of information, although it will usually be expressed generally in such terms as: "temperature much below the seasonal average".

In a brief article it is not possible to give detailed information on weather. That would need many large volumes. But with 36 to 48 hour forecasts or those for four to five days ahead we use essentially the same processes. The first step is to gather data from as wide an area as possible both at the earth's surface and through the lowest 12 to 16km of atmosphere. We also collect data from weather satellites. These may be cloud pictures and atmospheric temperature measurements. An example of cloud imagery (pictures) from a satellite about 33,000km above the equator rotating at the same rate as the earth, is illustrated.

The data are analysed to obtain the flow-patterns at a number of levels. From the mathematics of fluids in motion it is possible to assess from the flow-patterns the upward and downward motions in the atmosphere. It is these vertical motions which are intimately associated with the weather systems on sea-level maps usually seen by the layman: the depressions and anticyclones.

While the behaviour of the system on the sea-level maps enables the forecaster to deal with the problems of comparative detail at the ground like wind, temperature, and precipitation, the meteorologist is fundamentally interested in the larger-scale wave-like patterns in the flow in middle troposphere, say between 4 and 12km above ground. These are easily seen when we analyse the radar-wind, radiosonde, and high-flying aircraft observations together with satellite-derived temperature data. They are also easily seen in many satellite cloud pictures and the illustration shows a good example of a large scale wave system between about 6 and 11km. Superimposed on the cloud imagery is the flow-pattern at about 9km. There is a trough in the eastern Indian Ocean-West Australian area, and another near New Zealand with a ridge in the longitudes of eastern Australia between them. The troughs are about 90 degrees of longitude apart. Along the eastern side of each trough is an extensive cloud band. One begins in northwest Australia and extends through the Western Australian Bight, the other lies from Fiji to east of New Zealand. These cloud bands would in common parlance be referred to as the fronts on the corresponding sea level maps.

The essence of trying to forecast the weather is to foresee the movement and changes of these troughs and ridges

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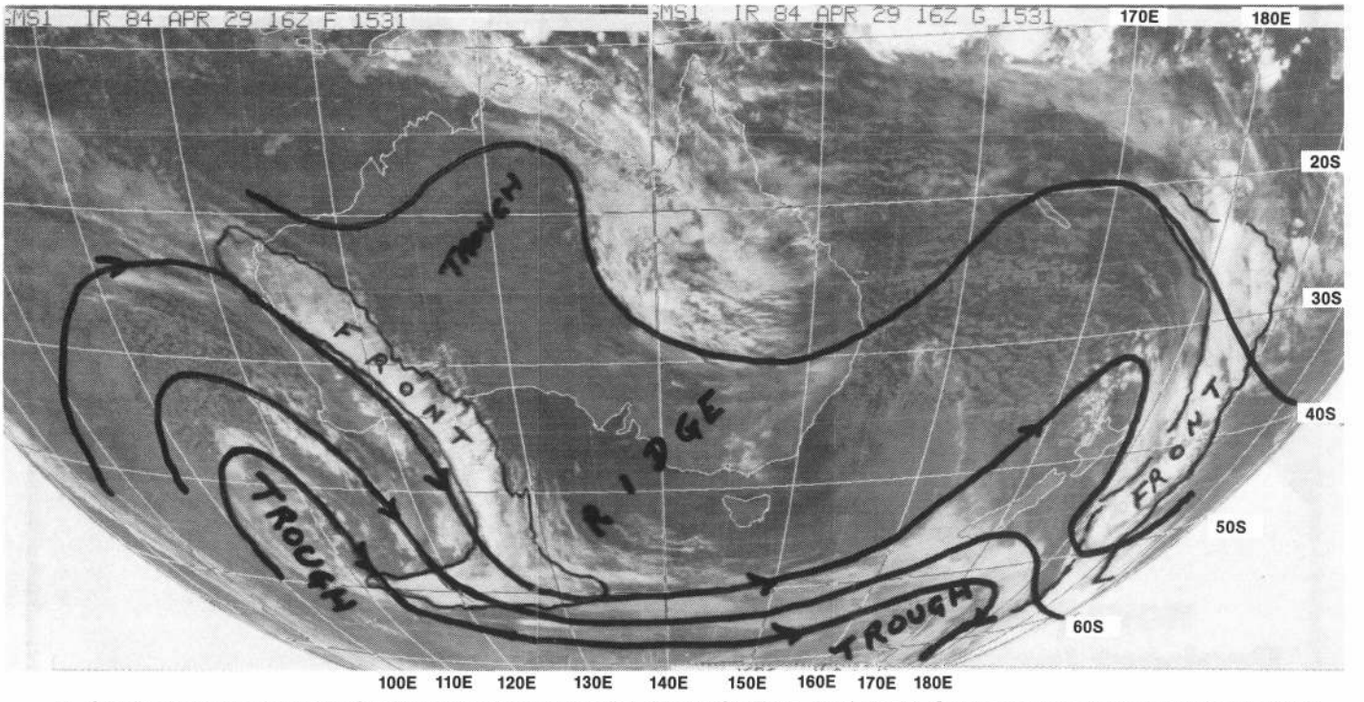

1. Satellite imagery from the GMS1 geostationary satellite for 16 GMT 29 April 1984. Superimposed on the cloud imagery is the flow pattern at about 9km. Note the troughs near Western Australia and just east of New Zealand.

WEATHER FORECASTS AND THE BEEKEEPER (CONT.)

in the upper levels. Usually the sharper the trough, i.e. the more intense the curvature of the flow around it, the stronger the upward motion in the downstream cloud band and the more likely that a surface depression will develop with it. With shorter range forecasts, say 36 hours, reasonable results will be obtained by employing subjectively the basic rules which apply to fluids in motion and other relevant rules of physics. Consideration of changes of intensity of the upper trough will often work fairly well.

If we want to extend the forecast out to four or five days it becomes necessary to have as complete a knowledge as possible of the disposition of the troughs and ridges round the Southern Hemisphere. For this, in addition to all the other maps, we draw daily a wave diagram. This hemispheric diagram shows the instantaneous positions of the axes of the troughs and ridges at 25, 35, 45, and 55S at five to six km above the ground. On such diagrams, drawn on successive days, it becomes possible to see the interactions between successive troughs and ridges and also their movements. Often, for example, downstream of an amplifying trough we find the next ridge also strengthening.

As well as the mobile, relatively shorter wave-length troughs, often linked with the sea level weather systems, mathematical analysis of the data will usually disclose very much longer waves perhaps only on or two complete wavelengths round the hemisphere. The behaviour of the shorter more mobile waves in relation to these very long waves has been the subject of much study. Relating the two sets of waves will often enable us to extend the length of a reasonable forecast to about five days.

It is possible in principle to use the equations of motion and some of the equations of physics, e.g. the thermodynamics, to construct a mathematical model of the atmosphere and then run the model forewards step by step at short time intervals and trace where the individual air particles will go for some considerable time. That is to say, produce maps of the flow patterns at future times.

This, in practice, is a complicated job and if we hope to get a reasonable answer out to five days for any one area of the earth we need to begin with all the data for the whole globe at all available levels. This requires the largest and fastest of computers yet made. There is one such machine at the European Centre for Medium Range Weather Forecasting (ECMWF) at Reading U.K. financed by most European countries. It must have Southern Hemisphere data to use in the model and in exchange makes available to Australia and New Zealand some of the forecast charts out to four or five days. These provide good guidance material for the longer terms. Together with the studies of the hemispheric wave patterns, and skills derived from long experience of the behaviour of the atmosphere on the part of the human forecaster, it enables extended-range forecasts, albeit in fairly broad terms, to be made.

GOOD PHOTOS WANTED

A good picture is worth a thousand words. The New Zealand Beekeeper is short of good photos. What we are looking for are black and white shots, preferably 8in. x 6in. or the metric equivalent. We know most people take colour photos now, but unfortunately we cannot run colour as yet. And when we reproduce colour in black and white the change in medium frequently kills the shot dead.

So how about it beekeepers? Surely you have an old box Brownie at the back of the cupboard?

* * * * *

INDUSTRY PLANNING WORKSHOP

The beekeeping industry of New Zealand has just completed its first planning workshop since 1963. About 15 hours of solid work were put in by the team which took part and we were guided through a Management by Objectives Course by the MAF. We covered the groundwork for our industry planning and hopefully we have laid the basis for an organised and continuing planning scheme for the future. A scheme in which all members will have a chance to become involved in as our programme develops.

The following is a preliminary report of our workshop held at Flock House 2-4 May 1984.

In attendance

NBA Executive	Ian Berry — Pres	Havelock Nth
	Allen McCaw — Vice Pres	Milton
	Tony Clissold	Gore
	Mervyn Cloake	Timaru
	Tony Lorimer	Hamilton
	Dudley Ward	Dannevirke
MAF	John Scott	Wellington
	Murray Reid	Hamilton
	Andrew Matheson	Nelson
	Cliff Van Eaton	Gore
	Michelle Forsyth	Hamilton
Trustees of Trust Funds:	Russell Berry	Waiotapu
	Ivan Dickinson	Milton
Education:	Paul Marshall	Telford
	Nick Wallingford	BOP Community College

Presidents Introduction

This workshop is being held because of the following remit carried unanimously at Nelson Conference July 1983.

"That this Conference request the National Executive to convene an industry planning forum. Such a forum to include a broad spectrum of industry membership to consider and outline the future direction and requirements of the industry in all its facets."

Apicultural Advisory Officer Murray Reid, in his "Waikato Bee Notes" dated August 1983, discussing strategic planning, suggests: "This exercise is an ongoing one and involves assessing our historical development, our current situation, our plan for the short-term and long-term future, how we are going to get there and what resources we need to achieve these aims."

As these are times of rapid change I think we can agree with Murray's suggestion that strategic planning for our industry must be an ongoing exercise. I look to this meeting to establish the foundations for our industry planning and then I feel it will be over the branches, the various specialty groups, the MAF and the Executive members to gather information relevant to industry planning and forward it to the Executive. Time should be set aside at each Executive meeting to discuss and evaluate this information.

The Executive's recommendations should then be sent to the Branch Secretaries and, where appropriate, published in "The Beekeeper". We should also hold an industry planning forum at each Annual Conference. Probably starting with a report from the Executive followed by some discussion and then Conference breaking up into "buzz" groups representing the various sections of interest within the industry. The leaders of each group would then report back to conference and then some more discussion could be held. This would probably involve about two hours of time at each Conference and provided the exercise was well planned it should be time well spent. It is important that the efforts put into industry planning be followed up and I would suggest that an annual planning report be prepared after each Conference for distribution to all members and other appropriate persons.

One of the things we had to decide was what we were planning for and the following was agreed unanimously:

AIMS OF N.B.A. PLANNING PROGRAMME

Basically we should plan for:

BETTER BEEKEEPING — BETTER MARKETING

To build from this base our first aim should be to:

KEEP OUR MEMBERS IN BUSINESS

To achieve this we should plan to:

HELP OUR MEMBERS AND THOSE THEY EMPLOY TO OBTAIN A GOOD STANDARD OF LIVING

We should also plan to:

HELP OUR MEMBERS PROVIDE THEIR CUSTOMERS WITH QUALITY PRODUCTS AND SERVICES AT A REASONABLE COST

Satisfied customers are a sound base on which to build any business. To achieve this we need good quality control plus cost efficient production, processing and packaging, marketing, and distribution.

It is also important we plan to:

HELP OUR MEMBERS FULFIL THEIR RESPONSIBILITIES TO THE COMMUNITY

This covers such things as, increasing exports, providing jobs, providing a pollination service to those who need it, helping school projects, assisting handicapped and underprivileged people, and looking after the environment.

After we had been through the process of a swot analysis (i.e. establishing the industry's strengths, weaknesses, opportunities and threats) we were guided through several stages until we reached six goals to plan for over five to ten years.

These were:

1 Improve industry profitability
2 Improve beekeeper education and training
3 Improve beekeeper co-operation

INDUSTRY PLANNING WORKSHOP (CONT.)

4 Improve industry public relations
5 Achieve more effective liaison with Government agencies
6 Develop a long term industry plan

How we set out to achieve these goals will be the next part of the exercise and we have already made a start on this. Members will be brought up to date on industry planning at Conference.

At the conclusion of the workshop a vote of thanks was given to the MAF team for their help and assistance and for the tremendous amount of background work they had put in which contributed so much to the success of our meeting.

Ian Berry

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DON'T PANIC

Once upon a time a bee sat on a blade of grass. A grazing cow ate both and the bee suddenly found itself in a dark, smelly, and gloomy cavern. Naturally it was frightened. It fought, kicked, screamed, did everything to get back into daylight, but to no avail. Finally, exhausted by its efforts, it fell asleep.

When it woke up it was back on the grass again.

The moral is: Why worry? Most things work themselves out.

1984 COMBINED MAF AND NBA SEMINAR

at DEVON MOTOR LODGE, DEVON STREET, NEW PLYMOUTH

on TUESDAY 24 JULY 1984

Registration starts at 8.30 a.m. on Tuesday 24 July.
This year's theme—**Better Beekeeping—Better Marketing"**

An interesting and instructive programme has been arranged with speakers on:

* Industry and Business planning
* Packaging of Honey
* Taxation as it affects Beekeepers
* Marketing, both local and export
* Queen Bee Export Potential
* Latest development in Beekeeping equipment.

It is also hoped to show a video tape entitled **"Big Business in Bees".** This film was made as part of the B.B.C. series "The World About Us" and runs for 50 minutes.

RENDERING UNIT FOR SPUN CAPPINGS

By: A. G. Matheson, Apicultural Advisory Officer, MAF, Nelson

Not many beekeepers today can say they're sitting on a gold mine; but that's exactly what Keith Detlaff of Ross is doing. His honey house is built on tailings and debris from some of the West Coast's richest gold mines, and is only a "nugget's throw" from where the largest single piece of gold in New Zealand was found.

Keith's honey house is still a gold mine — of ideas. His paraffin dipper and home-built cappings spinner have both been described in these pages before (December 1980 and September 1981).

After building his spinner Keith still had one problem — dealing with the large mountain of sticky cappings that was sitting in the corner of the shed. He wanted any rendering system to leave the honey still edible, because once he had carefully rendered spun cappings from one tonne of honey and got 19kg of wax and 23kg of honey. In a rata year any granulation in the comb increases the honey figure.

The melter he has built uses hot water to render cappings, which gives easily-controlled, gentle heating with no fire risk. The diagram gives you an idea of how it was built. The basic structure is a long trough made of galvanised iron; abut 1600mm long, 550mm deep, and 350mm wide. The dimensions were really adapted around a tubular dairy heat exchanger, which lies in the bottom. It is filled with water, and is connected to a header tank of about 6 litres capacity. Pyrotenax heating cable threaded back and forth through the heat exchanger heats the water; a 1500W rating piece connected to a thermostat in the header tank. Keith's not sure what temperature this is set at — it's simply adjusted until the unit runs correctly.

The melter unit is surrounded by 50mm fibreglass insulation ("Batts") contained in an outer casing of 12mm chipboard. The whole thing was built of temporary materials like galvanised iron because Keith wasn't sure if it would work. An earlier wax melter sitting on the scrap heap reminded him that not all good ideas turn out well in practice.

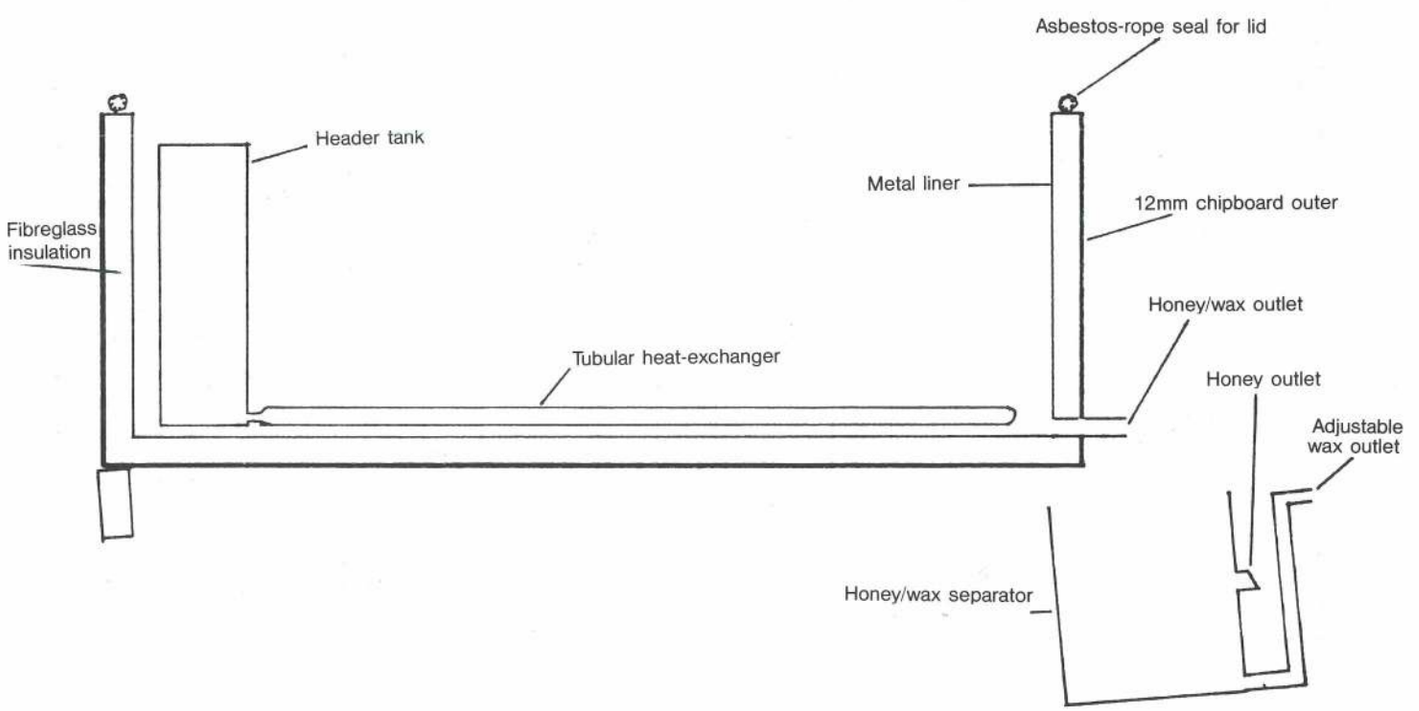
The day soon came for the melter's first trial. It was loaded up with wet cappings, the heat turned on, and after waiting for a suitable time — disaster! It didn't work, and it looked like the junk heap would claim another victim. However, the simple addition of a chipboard lid sitting on an asbestos rope seal saved the day, by conserving enough heat to make the unit run well.

The extracting plant puts through about 1½ tonnes per day. Keith's normal procedure is to save up the spun cappings from four days' operations (cappings from 6 tonnes), and then turn on the melter. It sits on a slope of about 125mm over its 1700mm length so the molten honey and wax runs out one end, and through a conventional stainless steel separator of about 15 litres capacity. This is uninsulated, but a 750W heater radiates down onto the top of the wax and keeps it molten.

An accumulation of 6 tonnes' worth of cappings is all rendered down in an afternoon, resulting in about 115kg of wax and about 90-130kg of honey, depending on conditions. The honey is slightly darkened but not tainted, and is quite suitable for mixing back with the rest of the crop.

This melter was a prototype, and if Keith was going to build it again he'd make some changes. First off, he'd have the courage of his convictions and build it out of stainless steel, now that he knows it works. Secondly, he'd make it bigger, so it could hold a week's cappings and wouldn't have to be run so frequently.

And the cost? Very little really, as virtually everything was already to hand. For a person building it themselves from scratch, the main expenses would be the stainless steel tank and the heating element.



From The Colonies

SOUTH CANTERBURY

It is always interesting when we have finished extracting the honey crop and wintered down to look back over the past season and compare it with previous seasons. Those who do this in South Canterbury will always remember the 1983/84 season as probably the most remarkable ever experienced. Over the many years I have been associated with beekeeping I am unable to recall a season quite like it.

It started off similarly in some ways to the usual but as spring progressed things soon became different. Cold wet weather prevailed, pasture growth was exceptional, bees got through stores like sugar going down a sink, but in spite of this the hives built up fairly well.

December came and went and still no honey and still hives very short on stores. Imagine bees starving after Christmas, never heard of in this area. January came and darn near went before some honey began to show up in the hives. Then it happened. A spell of fine weather in early February saw honey pour in. And thistle growth: well I have never seen anything like it! Thistles six to eight feet high in pasture where never seen before. Apart from a coastal strip and some other local areas, honey came in so fast some beekeepers found difficulty in keeping abreast of the flow.

This went on into March. Imagine putting out supers in March and getting them full. In all most beekeepers in South Canterbury, not all though, have had a great season and some record crops. In fact I understand the amount of honey gathered in the Oamaru Apiary District which includes South Canterbury could well be a record. It appears the part of South Canterbury north of Timaru did not do nearly as well. The reason for this is difficult to determine.

The local branch arranged a meeting with Dr Shimanuki while he was in the district; he was good value and from what I understand it is a pity we were unable to take full advantage of his visit.

Harry Cloake,
Timaru

SOUTHLAND

Southland, with many other areas, experienced a poor season. There was plenty of clover about but air and ground temperatures were too low to give suitable flying conditions or to allow nectar secretion in flowers.

With such poor crops many from the commercial section of the industry are finding it difficult to keep their businesses viable.

The Gore MAF is conducting a budget survey of its commercial beekeepers and hopefully it will establish the plight of those in the industry.

The January floods around Invercargill affected many hobbyists, but only about two commercial keepers' yards were damaged. At the AGM of the Southland Branch there was some discussion about the new format of The NZ Beekeeper and it appeared to meet general approval. Another point which produced discussion and concern was the attitude of some noxious weed inspectors who require the eradication of gorse from river beds. The Otago-Southland Convention will be held at the Telford Farm Training Institute on Queens Birthday Weekend. The Southland Branch will be hosting.

Les Foster,
Gore

CANTERBURY

With our hives wintered down and crop off an accurate assessment can be made.

It was very patchy. Some areas performed well but generally it was a poor year due to cold, overcast, and

rainy weather. However, hives should winter well as they have plenty of stores and are in good condition. The Branch had an interesting year including the running of a beekeeping stand at the Christchurch A & P Show in November. The aim was to promote products and the pollination service offered by beekeepers to farmers and horticulturists. We also had the opportunity to hear Dr Shimanuki talk about bee diseases and their implications on the future export of queen bees from New Zealand. At a workshop covering nosema, its identification and effects on the beehive, run by John Smith of MAF, guest speaker Cliff Van Eaton gave an interesting and informative talk on bee breeding and the export of queens. Over 80 people attended the two separate meetings and everyone felt them both very worthwhile and informative.

Tom Penrose,
Christchurch

POVERTY BAY

Poverty Bay has experienced an unusual summer with a lot of rain. It has been a good season for plant growth, but due to cold nights pastoral nectar sources have not yielded very well, therefore average honey crops have been one ton per 100 hives and in some cases lower. A few beekeepers are scratching their heads.

Kiwifruit pollination went well and orchardists obtained good fruit. The map that was set up with the aid of the MAF and the fruit federation and the media publicity made the public more aware of the vulnerability of bees to pesticides. Consequently there was a minor amount of spray damage only. Hopefully next year, if publicity continues, there will be no risk of damage at all.

Our local community college, Tairawhiti Community College, ran for the first time last year a YPTP (Young Persons' Training Programme) in beekeeping, where the unemployed were taught basic beekeeping skills. For practical experience the students worked with local beekeepers making frames, boxes, and requeening and mating up nucs, etc. This programme proved successful, benefiting both beekeepers and unemployed.

Let's hope this winter will be mild, otherwise beekeepers who can't afford to feed hives could expect a few deaths.

Peter Lamb,
Gisborne

NORTH OTAGO

Excessive rain until the second week in January had us all worried but a good spell of weather until now with a few showers in between gave us that slightly better than average crop that we were hoping for and so badly needed.

The Forrester Gallery held a harvest festival week to show what was produced in North Otago. The local branch put on a display of the products produced by the bee and illustratd with placards as well, it drew favourable comment from all and sundry. Also two of our beekeepers-Max Long and John Slater had school children visit their honey houses. It kept them on their toes answering well-thought-out questions.

The tags for "trees for bees" were well received by members present with the branch and private members ordering tags for distribution to local nurserymen. Several ideas were put forward for consideration to provide adequate trees at a reasonable cost.

This information will be reported at our next meeting. We would also extend our thanks to Mr Van Eaton for the work he has put into this project.

Our Advisory Officer, Kerry Simpson, who set up a beekeeping project in Turalu 12 months ago, is going back there with his wife and family under a VSA scheme. He will be there for two years, primarily for educational work but he will also establish a bigger beekeeping business for the community. We wish Kerry and his family well in their new venture.

G. E. Winslade,
Oamaru

HAWKES BAY

The last of the wintering down is finished for this year. Our overall crop report is patchy with some good areas of nodding thistle bringing in five boxes, down two-three frames from our dry areas which isn't even winter stores. The nodding thistle areas have made certain that HB beekeepers will survive this year, with the average being three tonnes per 100 hives.

Our AGM just past saw a change of secretary with Keith Leadley retiring after four years service to our branch. We wish him well for the future and hope he will continue to be an active member of our association.

Conference time is nearly upon us once again, so remember to attend your branch remit meetings.

John Walker,
Napier

WESTLAND

It's all over except the shouting . . . a year of surprises to say the least. Westland can boast a good crop in most areas.

As mentioned in the last issue of The Beekeeper, Southern Rata flowered again this year and, as it was finishing, out came the Rata vine, also very early, and accompanied by a fine warm February and early March, it produced a very good flow, probably one of the best vine flows for many years.

Although the season had its frustrations it's nonetheless gratifying to have a good crop in the shed. Incredible to think that the flow started way back at the beginning of December and finished around the third week in March. As one member remarked: "Mind you, I'm expecting a bit of the Rata vine". Another was overheard to say: "There will never be another year like this". And that may well be.

Most members of the branch had the pleasure of meeting and hearing Dr Shimanuki at Hokitika on March 5. It's always interesting to talk to those involved in research and discuss problems with them. Perhaps our next visitor will be the Minister of Finance!

With a little Rata vine nectar and pollen still dribbling in hives should be in good condition for wintering. Gorse is already well in bloom again, adding colour to the otherwise green countryside, and giving assurance of a winter pollen source. So here's hoping for reasonable winter weather.

Sandy Richardson,
Ahaura

SOUTH AUCKLAND

The honey season has ended once again. Here in the Auckland area it was probably the latest flow for many years. Very little nectar was gathered by the bees until January and February and even then the honey flow was not great. Some nectar was still being gathered through March. This season should have been the greatest.

In Auckland white clover was flowering everywhere one looked but it produced very little. It was a problem to get foundation drawn and where cut comb was being produced the bees seemed reluctant to move up through the excluders.

A very pleasant afternoon was had at the home of Kerry and Wilma Fountain where a discussion group of the Auckland Branch met Mr and Mrs Shimanuki. Mr Shimanuki is a research microbiologist from the Bioenfironmental Bee Laboratory, US Dept of Agriculture, Beltsville, Maryland. He discussed bee disease such as halfmoon disease, chalkbrood, and other conditions of beekeeping. We thank Mr Shimanuki and his wife for a very informative afternoon, and Wilma and Kerry for making their home available and for providing afternoon tea.

The annual meeting was held on 30 March 1984. Mr Arthur Ellis, 19 Ranwai St, Mt Wellington was re-elected President and Mrs Helen Wright, Portsmouth Rd, Bombay was elected Secretary.

Dave Young,
Drury

BAY OF PLENTY

As these notes are written, in mid-April, the Bay of Plenty is going through a very pleasant spell of weather. The last few weeks, apart from short periods of heavy rain, have been mild, almost hot at times, and bee activity has been high.

Most colonies are still actively breeding, especially smaller units made earlier in the autumn for increase. Wasps have only just become a problem. It appeared there might not be too many of them, but with the mild winter last year I guess that was just wishful thinking.

The branch was very fortunate to have had Dr H. Shimanuki and his wife Vivian visit us. Though the visit was short, I think beekeepers will be talking about issues he raised for some time to come. Trevor Bryant and the MAF are to be congratulated for bringing over such a high-value scientist who could relate so well to groups of practical beekeepers. And I hope the ball has been set rolling to allow exports of queens from here to the US.

At our last meeting we heard there were almost 20,000 hives used in the BOP for kiwifruit pollination. The coming season may involve nearly half as many again, and beekeepers are expanding accordingly. The supply of queens this autumn seems to have been good, but as always the spring demand will outstrip supply.

The beekeeping facilities at the Bay of Plenty Community College are to be officially opened in late June or early July with a "working bee", appropriately enough. Assembly of equipment and tours of the college and beekeeping buildings should provide an entertaining day. If you want further information once the date has been set, contact:

The Beekeeping Tutor
Bay of Plenty Community College
Private bag, R.D. 3
TAURANGA

Nick Wallingford,
Tauranga

► *Page 20*

NORTHLAND

The season did not live up to indications. Production was poor in most areas, with some a little better. Demand for honey has hardened with good prices being offered.

Very informative meetings in both Kerikeri and Whangarei were held with Dr Shimanuki. A field day at Titoki was well attended on March 17. Our thanks to Tony Lorimer for attending, also Auckland fellow beekeepers. We won't bother to thank the thousands of "robbers" who also graced us with their presence. A BBQ lunch was enjoyed by all and a lolly scramble and swim proved popular with the kids.

Discussions were on pollination problems, bee diseases, wasp control, and a demonstration on palletization. The afternoon concluded with two beekeepers showing us their skills in handling boom loaders by transferring 44 gal drums of honey from one truck to another.

Terry Gavin,
Whangarei

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ASTROBEES

A recent Space Shuttle carried bees into space.

The bees travelled as part of an experiment by student Dan Poskevich, Tennessee Technological Institute, one of 20 winners of the student experiment competition organised by NASA and The National Science Teachers' Association.

The experiment, "Comparison of Honeycomb Structures built by Apis Mellifera"; compared honey comb structures built by bees in weightlessness to those built under normal gravity. Some 6,000 bees took part.

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LIBRARY NOTES

Nothing fresh to report this issue, but remember that if you are a member of The NBA you have access to an excellent technical library. Mr A. G. Matheson, MAF, reports in The Beekeepers' Bulletin, May 1984, that our library contains over 350 books, as well as magazines, both bound and unbound, pamphlets, and notes from MAF courses.

The library is housed at Milburn, Otago, under the expert care of Librarian John Heineman.

To help members get the best use from the library, John has just compiled a 30-page catalogue, which lists all material held by the library, both alphabetically and by subject.

The catalogue costs $2.40 post paid, and can be kept up to date by adding 'library notes' from The NZ Beekeeper. On request John will send you full details of the lending procedure. His address is:

Mr John Heineman
NBA Librarian
P.O. Box 112
Milton
Otago

SOUTH WESTERN DISTRICTS

We have now passed through a very disappointing harvest. We would have liked five times as much honey to reach budget expectations. However, if the delicate balance of climate and nectar sources did not come together over December-January, then the weather since then has been helpful. It's been warm with light winds, though not much rain. Hawthorn hedges in Taranaki managed to yield well to full brood comb for winter stores. Apiaries in bush areas have also benefited with a good supply from these sources.

But in an aftermath of a poor and patchy summer our beekeepers will have to keep careful watch on winter stores. Some apiaries need supplementary feeding from now. Others should carry through well into spring as normal.

We look forward soon to hosting fellow apiarists at the New Plymouth Conference. It does us all good to meet personally and share problems, and to gain from each others experience.

John Brandon,
Wanganui

From the Australian Beekeeper, Dec. 1983

New Zealand is at it again with its metrication bug, this time it's not boxes it's frames.

In the November 1983 NZ Apiarist was a article by Trevor Bryant, Apicultural Research Officer, entitled "33 or 35mm end bars, that is".

The article sings the praises of a new NZ modification to end bar width, reducing it from 35mm to 33mm. It appears the most obvious benefit is that now NZ beekeepers can get 10 frames into a 10 frame box instead of the previous standard practice of nine frames to a 10 frame box.

The greatest benefit comes in the brood nest where extra space aids in increasing the population of hives simply by adding the extra cell space of one more frame without the previous problem of overtight frames.

The author claims that brace and burr comb are also reduced by the use of the thinner end bars.

The thinner end bars allow the frames to be removed as easily as the current 9 35mm end bar frames.

The article does not direct its attention to the honey super, where the number of combs can be varied to suit conditions.

I know of a beekeeper who on Salvation Jane ran short of combs and so placed only seven frames in eight frame boxes and eight in 10 frame boxes and per super got the same production of honey.

Manufacturers in NZ have got problems too, with some switching production to 33mm end bars only to find some beekeeper resistance and they now have to run a double inventory for the same product, which is not very economic we would think.

No mention is made of eight frame hives or 12 frame hives either, and the possible problems such narrower frames would mean for them.

I asked a number of large commercial beekeepers to think about the idea and a week later sought their opinions. Result: they were not very impressed and questioned the compatibility of the 33mm end bars with the remaining 50-60,000 they had in use. They appeared quite content with nine frames in a 10 frame box as standard in their apiaries.

Australian manufacturers will probably be slow to change if they change at all.

At present we have material that has been on standard design for decades and any dramatic change is not generally welcomed by beekeepers. Like many readers we shall wait and see what the comment is in NZ on the new end bars.

In the meantime if you buy NZ frames check that they have 35mm end bars and not 33mm.

CHALKBROOD

The following press statement from President Ian Berry was released on 27 March 1984.

Travellers entering New Zealand should ensure they do not bring any honey or bee keeping equipment into the country, the President of the National Beekeepers Association, Mr Ian Berry, said today.

Commenting on the effects of the recent outbreak of the bee disease chalkbrood in Northland, Mr Berry said illegal imports of bee products could place the beekeeping industry at risk from some bee diseases much more serious than chalkbrood.

Mr Berry said the Northland outbreak was unlikely to have any major impact on honey production or pollination services in New Zealand.

"It is a problem, however, which beekeepers could have done without," he said.

"What is of grave concern is the fact that somehow this disease must have been brought in from overseas."

Mr Berry said there were three very serious bee diseases which New Zealand did not have, one of which was as close as Australia.

If any of these disease were brought in with honey or bees from overseas they could cause significant economic problems, not only to beekeepers but also to those depending on honeybees for pollination.

"Unfortunately they are diseases which can take a long period to develop once they get into the beehives," Mr Berry said.

"This means the disease can become so widespread before it becomes apparent that something is wrong in the hives that eradication is impossible."

New Zealand's honeybee industry was protected by a virtual total ban on the importation of honey and other bee products as well as bees and used bee equipment, he said.

These laws were vigorously enforced at New Zealand's ports of entry, but somebody somewhere must have brought in something contaminated with the spores of chalkbrood.

"One theory put forward regarding the introduction of chalkbrood into Northland was that a yacht could possibly have brought in some overseas honey which the bees gained access to," Mr Berry said.

He said the large numbers of New Zealanders travelling overseas and the increasing numbers of tourists coming here meant there must be a slight risk of some overseas honey being brought in through ignorance of the law.

Mr Berry appealed to anyone who heard of any overseas honey which had found its way to New Zealand to advise the Ministry of Agriculture and Fisheries or their local beekeeper. Steps could then be taken to safely dispose of the honey.

"New Zealand beekeepers also ask all overseas travellers not to bring any honey, bee products, bees or used bee equipment," he said.

"Those who do will not only be breaking the law, but will be placing our beekeeping industry at risk from some bee diseases much more serious than chalkbrood."

NATIONAL BEEKEEPERS' ASSOCIATION 1984 CONFERENCE AND SEMINAR

New Plymouth 24-25-26 July

Devon Motor Lodge, Devon Street, New Plymouth.

Phone: 86-149

PROGRAMME

Monday	23 Social 'get-together' at Devon Motor Lodge 8 p.m.
Tuesday	24 Seminar. Specialty group meetings during evening
Wednesday	25 Conference. Dine and Dance Social evening. Afternoon bus trip for ladies.
Thursday	26 Conference.

COSTS

Social 'get-together' No charge-drinks own expense
Seminar Registration $10 includes morning and afternoon teas
Conference Registration $20 includes morning and afternoon teas and bus trip for ladies.
Social Evening $22-50 includes dinner, dance and entertainment—drinks own expense.

ACCOMMODATION

You are advised to book early.
50 rooms have been block-booked at the Devon Motor Lodge and the cost fo these is:
$47 for standard room, one or two persons
$57 for deluxe room, one or two persons

There are numerous motels within a short distance of the Devon Motor Lodge.

IF YOU ARE LIKELY TO ATTEND PLEASE FILL IN AND POST THE COUPON BELOW TO:—

Chris Bromell 76 Main South Road, Manaia SOUTH TARANAKI

CONFERENCE ATTENDANCE AND ACCOMMODATION

Number likely to attend

Seminar _____
Conference _____
Social Evening _____
Bus trip _____
Number requiring accommodation _____

at Devon Motor Lodge *please tick*
Standard room ☐
Deluxe room ☐

at Motel
Higher price range ☐
Medium price range ☐
Lower price range ☐

Dates accommodation required

Arrival date .....

Name .....
Address .....
.....
Phone No. .....

Please do not send any money now
All payments may be made either

23 July at the 'get-together'
24 July before the Seminar
25 July before the Conference

Hotel/Motel booking details will be sent to you as soon as possible after receipt of this coupon.

Departure date .....

USING SULPHUR

By: Dave Tozier
Alaska

Reading Ian Berry's comments on sulphur (President's Report, December 1983) I assumed he referred not to diseased hives but to unwanted or autumn kill-off colonies. Mr Berry asked for readers' experiences with sulphur. I'm plumb certain he wasn't asking a loquacious Alaskan to stick his nose in, but here I go.

I've tried the smoker system twice only. I'll never do it again unless my best enemy is beside me in his birthday suit. Smoker was fired up in great shape with billowing clouds of cool white smoke. Dumped in half a cup of Flowers of Sulphur. Pumped bellows gently. Nothing much. Pumped furiously. Superb results. Smoker literally belched Odours of Hades. Stuck nozzle into hive entrance and slowly squeezed bellows. As smoke poured into hive it took three seconds only for highly agitated bees to pour out. Where the smoke was thickest the excited bees were the meanest. Something for the horror movies to capitalise on.

Hundreds of bees died on the unbelievably hot smoker. They'd hit and stick. Scores more died with their stingers buried to the hilt in my hand before I had the sense to do some exiting of my own.

An hour and a quarter later hundred of bees were still outside the hive crawling, jumping, short flights—looking for something to attack. That was at dusk, far from dark, no bees flying, temperature about 5°F, clear, normal humidity, no prior disturbance of hives, 15 or so other colonies in the yard. In other words: all circumstances normal. I've seen such upset bees after bear attacks, but I have not seen such an eruption that was all but instantaneous.

I tried it again next evening, after the bees had settled for the night, on another colony, Fired smoker and puffed sulphur fumes a minute or so before approaching the hive. Had made a longer nozzle so I could pump faster. Same net result. As smoke entered bees left. By the hundreds, then thousands, and all looking for blood.

Summing up my smoker/sulphur fiasco, I venture these thoughts: (1) sulphur burns much hotter than any smoker fuel I've used. Nearly invisible flames (in sunlight fully invisible at times) emit from nozzle sometimes. The heat alone can probably set frames/wax afire. I know it will burn bees. Result: instant aggression.
(2) The smoker probably won't last through 20 such affairs. I think it would literally burn out. Too, the sulphur residue is all but impossible to remove.
(3) I don't think a smoker can get enough smoke into hive to kill bees unless a special "killing" entrance-reducer is used. Even then I have doubts.
(4) Hives would have to be airtight—every crack sealed—because bees start fanning like nothing you've seen at the hint of sulphur stink.
(5) A strong colony may lose a few thousand bees but I doubt it would be killed. The colonies I tried smoker on were double brood, population chased down from two deep supers into two deep Langstroth bodies the day before. Strong-lots of fanners. Packed boxes that could push all smoke out nearly as fast as a scared beekeeper could pump it in.

My two experiments were 10-frame deeps, as described, with frames in what the English call the "cold" way: endbars facing the entrance. It may work with eight-frame bodies, especially in single broods or weak colonies. But who has weak colonies at season's end?

This is how many people here kill with sulphur. Remove all honey supers. That removes honey from the permeating fumes and subsequent 24-or more-hour airing. Drape hive in hole-free plastic sheeting to make an airtight tent with sides running out only as far as necessary. Except—this is important—on the side where suphur is to be placed have plastic sheeting at least two feet above sulphur. If hives are on stands at least 12 in. high, no problem generally. If hive is on ground, more important. Where plastic rests on ground weigh down with something heavy. Seal well so air can't circulate. Pour about one cup powdered sulphur in a cone on metal tray, with lips to contain molten, often burning, sulphur. If it flows off the tray it might start a fire. Light it (not easy) in two or three places at least around the edges, and be careful not to breathe the fumes. A good whiff will do you irreparable harm. Set tray inside the tent but with the sulphur at

least two feet clear of the plastic. The intense heat of burning sulphur will melt the plastic. Close up. Go home.

We do this at night or evening when bees are settled. Can also be done on a rainy day or any time bees are at home, or cold. Killing is by suffocation. It's slow. Takes a while to displace all oxygen in tent. Say about 12 hours for a strong colony in two or more boxes. Most people leave the death chamber for 24 hours, but I usually start the clean up in about 12 hours. The occasional crawler can and will sting but is easy to guard against.

Of all types of sulphur I find crystals best. They ignite faster, burn quicker (no asset) but takes about one-third more to get the same results as powdered because crystals do not lie as close.

Probably every manner of using sulphur has been used up here, but I've heard of none successful other than the tent method. Many hives have gone up in flames when people have taken a shortcut like a can lid of lighted sulphur in a hive.

Sulphur is a messy kill. Bees suffocate as the heat increases. It must have some effect on their nervous systems. When using a smoker bees exit en masse. When using the tent 99.99 percent die in the hive. The entrance soon becomes jammed with fanners and dying bees, and dying bees fall to the bottom board. Others, smart enough to try getting out, pile up in the entrance and block it.

As the heat increases bees regurgitate in attempts to cool themselves. As initial smoke enters hive thousands dive into cells for a snootful of honey to sustain them when they evacuate. All have a lot of "coolant" in them. As they get hot they spew it out. Sticky-sticky.

Early dead bees fill the space between frame bottoms and the bottom board. As breathable air deteriorates more bees head for the entrance (to fan?). They can't reach past frame bottoms. Traffic jam. Bees pile up solidly between frames. So solidly comb is often mashed when removing frames.

Other bees, by the thousands, are head first in the cells, and deep. There they die. Great mess for next year's inhabitants to clear out. Good culture for heavy mould unless in good circulation until desiccated. All in all a big mess.

But it works. I've never seen as clean a kill.

Let's keep our Bees healthy

Murray Reid, Apicultural Advisory Officer, MAF

So you own a beehive, or perhaps a number of hives. Well, congratulations, and I hope you are enjoying your hobby or even making some money from your bees if your ambitions are a little more pecuniary.

But owning a beehive has responsibilities attached to it. It's a bit like the moment your wife brings home your first child from the hospital. Life is never quite the same again and your responsibilities have certainly increased. In the case of a hive your responsibilities are to your immediate neighbours; beekeepers can be very insensitive about the very real fear other people may have to "a few" bees buzzing around their heads. Aglink FPP 538 is called "Beekeeping in Urban Areas". It gives many helpful suggestions how to keep bees in a built up area without creating a nuisance.

The other, greater, responsibility is to your fellow beekeepers. You may not know any of them but as bees will fly up to 5-6km in the city area they will come across many other bee hives.

And that's where problems can begin. You see, bees are animals when all is said and done and they get diseases just like any other animal. Fortunately all bee diseases affect only bees, but a number of the more serious ones can be transmitted in honey. If you neglect your hive and let it starve or remain queenless then other bees will come in to rob out the last of the honey in your hive. Now what if your bees were diseased? Right. The robber bees carry the diseased honey back to their own hives and so the infection can spread very rapidly.

The disease we worry most about in New Zealand is a bacterial disease called ***Bacillus larvae*** by the scientists but American foulbrood by nearly everyone else. It is also called American brood disease. This disease affects the young bee larvae and is not peculiar to America. It is a world-wide disease but there is another similar problem called European foulbrood, also caused by a bacteria. Fortunately we don't have the European version in New Zealand yet, and this is one of

► *Page 26*

LETS KEEP OUR BEES HEALTHY (CONT.)

the reasons we don't import honey into New Zealand nor allow overseas travellers to bring honey or other bee products back with them.

There is an Aglink FPP 124 on American brood disease which describes the beastie in some detail. However, the symptoms that all beekeepers should get into the habit of looking for, are:

- Darker sunken cappings on the cells. They may not be punctured;
- Irregular or "spotty" distribution of the sealed brood;
- Small holes in the sunken cappings;
- Some larvae that have turned from the healthy white to brown. They will also lose their segmental outline;
- These brown larvae should form a very sticky mess if stirred up with a match stick. If the larval remains are gently withdrawn on the match they should string out for 10-30mm or even more in an even brown coloured thread. This is the "ropey" test and is fairly conclusive for ***Bacillus larvae***.

Some people insist that they can smell the disease, guided no doubt by the named "foulbrood". A heavy infection does smell but I want you to recognise the symptoms way before the colony gets to the "rotten" stage. I want you to use your eyes rather than your nose.

There are some other less serious diseases or disorders that specificially resemble ***Bacillus larvae***. If in doubt get in touch with the Apicultural Advisory Officer in the Ministry of Agriculture and Fisheries, and they will arrange a check inspection of your hives.

Apicultural Advisers are located in Auckland, Hamilton, Tauranga, Palmerston North, Nelson, Christchurch, Oamaru, and Gore.

The only really effective way to combat this disease is by frequently examining the brood nest of your colonies. It is essential to do this before combs are switched between hives or honey is harvested.

The onus is on the owner to keep the hives free of disease but the Ministry of Agriculture and Fisheries does carry out a check inspection of some hives every year. To enable us to locate apiaries, it is mandatory under the Apiaries Act 1969 to register every apiary. We require a reasonably full description of where your hives are, e.g. Mr I. B. Madde, 25 Ruakura Road, Te Puke, would enable us to find your hives very easily. However, P.O. Box 265, Hamilton, or R.D. 3 Albany, or Main Road, Hamilton—Cambridge, are not at all helpful.

Most beekeepers are issued with a registration number that must be painted on some of their hives or on a signpost in the apiary. When the apiary registers are put on the computer later this year, every beekeeper will have a registration number.

In August each year Statement of Inspection forms are sent out to all registered beekeepers. These require you to examine your colonies for American foulbrood and to make a declaration that your colonies are free of disease. You are also asked to update the location and number of hives in your apiaries at the same time. These forms must be returned to your local Registrar of Apiaries by December 7. If an inspector has looked at your hives you must still send in your return. That will save us having to send out not-so-friendly reminders.

I'd like to finish with a check list of ways beekeepers, and others, can help stop the spread of American foulbrood, the most serious bee disease in New Zealand. There is no cure for this disease and any hive contracting it must be destroyed.

Most overseas beekeeping textbooks recommend feeding certain drugs to control American foulbrood. This is illegal in New Zealand. The drugs only suppress the disease, and do not kill it.

AMENITY AND FARM SHELTER
TREES FOR BEES
National Beekeepers' Association

TREES for BEES

The Association has now received supplies of the "TREES FOR BEES" tags, illustrated above.

Branches requiring supplies should send their orders to the Executive Secretary, Wellington, together with payment.

The tags cost $3.00 per 100 and are packed in boxes averaging 250 each.

BEEKEEPERS NON-BEEKEEPERS

- Register all hives with MAF (Even one hive must be registered);
- Don't buy used equipment or hives without inspection and a permit;
- Don't feed honey to beehives unless you can be certain it is disease free. Use sugar instead;
- Don't sell or give away bee equipment without a permit;
- Don't remove honey from a hive without checking the brood first;
- Be careful of swarms. Contrary to popular belief swarms can and do carry American foulbrood;
- Do keep bees in boxes with movable frames and make frequent inspections of the brood;
- Do not feed drugs to control foulbrood. All diseased equipment and bees must be destroyed by fire;
- Do not put diseased bee equipment or honey in the local dump.
- Don't put out honey to feed the birds or even bees. It could contain ***Bacillus larvae*** spores. Use sugar syrup;
- Don't spray plum or pear trees with honey water to attract bees at pollination time;
- Don't throw away unwashed honey containers in the garbage cans or on the farm dump;
- Don't bring back honey queen bees or other bee products from overseas (this also applies to beekeepers);

Making your own foundation

A. M. Tromop

In the September issue of The Beekeeper I read an interesting article about foundation, how to make it, and the advice not to make it yourself.

As an amateur beekeeper for some years, as well as an engineer interested in making his own gear, I was attracted by the idea of making my own foundation. It was a challenge.

I gained some ideas from an old Dutch bee book, written in 1941, and a fellow beekeeper lent me an old set of rollers. I studied the problem for some months then set myself to manufacture exact replicas of foundation rollers.

To make a mould to take one of the original rollers, I used two halves of 3 in. boiler tube which together fully enclosed the roller. Securely bolted together they accurately fitted round the ¾ in. roller shafts. In one end of the mould I drilled two ½ in. holes for metal to be poured in and for air to escape. As silicon moulding rubber will not stick to anything, I had to secure this moulding rubber in place with several rows of self-tapping screws on the inside of the mould, but making sure that the screw heads were free of the roller surface.

The next step was complicated. I injected well-mixed green-type Silastic J RTV silicon rubber into the mould with a large-nozzled syringe extended by 10 in. of 3/16 in. copper pipe. I injected from the bottom to prevent bubbles. After allowing a few days curing time, I separated the two halves of the mould and cut the rubber with a sharp knife. I then had a perfect negative of a foundation roller.

The next step was to insert an 1¾ in. steel roller into the mould. The ends were turned down to exactly ¾ in. diameter. Several rows of holes were drilled in the surface, ¼ in. wide by 1/8 in. deep. to secure the metal. The mould was then stood on end. It helps an easy and quick pour if you have a cut-out on the roller opposite the pouring hole.

For the pour I used printing-type metal. It can be obtained from a newspaper. Make sure you melt enough metal for a complete pour. The surface of the melted metal must be kept clean. Skin it with a wooden stick. When you pour the metal do so in one go.

The cast roller can then be removed and the mould made ready for pouring another roller. It takes practice to pour a perfect roller. My first ones were not the best, but I discovered that by heating the inserted shaft first, say to 150 degrees Celsius, I managed to mould a perfect roller.

When the two rollers are cast they should be turned down neatly and assembled in a flat steel framework 100mm by 10mm. Use angle iron for feet and ½ in. steel rods to ensure a strong structure.

Slotted bronze sleeve bearings are fitted into the side frames. Gears on the shafts can be complicated so it is best to have them made by a toolmaker. One of the gears must be adjustable on the shaft to ensure that the rollers are properly positioned opposite each other. Otherwise you will not get the correct imprint of the cell bottoms.

The rollers must be adjustable so they may make any thickness of cell bottom.

To make the sheets of wax from which to roll the foundations, melt beeswax in a container large enough to take a wooden board 16¼ in. by 8 ¾ in. Keep these boards damp to prevent the wax sticking. Dip the boards twice in the wax and on the longest side. Allow several minutes between dips and dip from opposite ends to ensure an even thickness.

When set the wax plates are ready for peeling off the boards and rolling. Do the rolling in a warm room. Just before rolling, to prevent sticking, run the plates through a warm solution of soapy water or a mixture of four parts water, three parts methylated spirit, and one part honey. Another way, the Scots, is to rasp a couple of potatoes, mix with hot water, and filter off the thick starch to use as a sticking preventive.

After the sheets are rolled, wash, dry, and cut to size.

OPPORTUNITY

A Western Samoan apiarist is interested in finding a New Zealand partner. The company apparently has an impressive factory and a good number of hives in Western Samoa, but has been limited by lack of technical expertise. They are, therefore, looking for a joint venture partner who would provide technical assistance and additional capital investment, possibly under the Pacific Islands Industrial Development Scheme (PIIDS) assistance.

As well as servicing the local market, the company would also hope to export honey to the EEC, where Western Samoa is exempted from the normal 27 percent added value duty for honey under the ACP/Lome Convention.

Anyone interested should make contact direct with:

PIIDS Unit,
Department of Trade and Industry,
Private Bag,
WELLINGTON

ACTION MEN

The Bay of Plenty Branch has given Fire, Police, and the Red Cross contact lists of beekeepers who can be called upon for assistance during, say, pollination shifting if an accident happens with a truckload of bees.

BEGINNERS' NOTES

By: David Williams

Making your own Beehive Equipment: Part I

My favourite story about making your own equipment concerns a visit to a local sawmill. A worker proudly told me there were bees in the roof, and that he had made a hive for them. He had never had anything to do with bees before, or seen a hive, but a friend had drawn the plan of the boxes. Unfortunately he had little experience of reading plans. Instead of realising that the rebate cut in the top corner of the ends was to hold the frame lugs, he had taken it to indicate another board. He had some of the heaviest double-thickness brood chambers ever. It took tact to explain where he had gone wrong.

The moral of this story is that no beginner should try to make his or her own equipment at first or put bought, knocked-down equipment together without expert advice.

I made all my equipment for many years after my initial purchases. Some of those boxes and frames are still as good as the day they were made. There is something satisfying about making your own gear, even if it isn't as good or well finished as the standard.

Now for timber and equipment.

Radiata pine has earned itself a deserved reputation for versatility and general usefulness. It is strong, easy to saw and season, takes preservative well, and is of moderate density (44-500kg/m³). It nails easily without splitting, holds screws and other fasteners well, machines well to a fine finish, may be varnished or painted without problems. The knots may be large but the wide internodes are usually of adequate length for the short clear cuttings required for furniture or beehives. Shrinkage is moderate

Photo One: These, and a hundred others, I made myself.

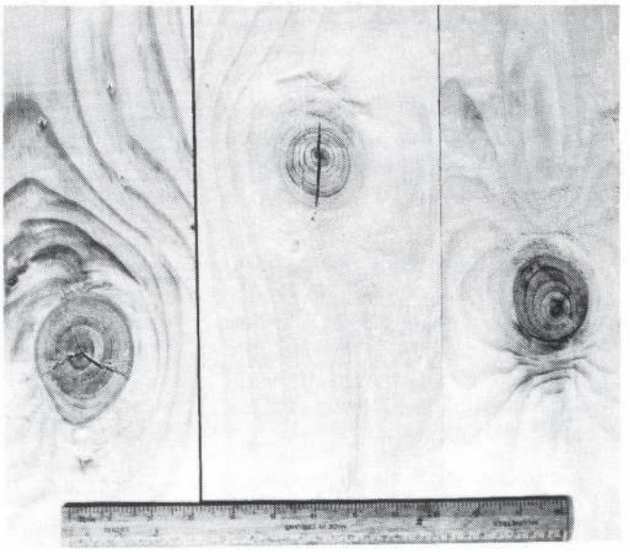

Photo Two: Typical radiata knots.

at 4% radially, 2% tangentially from green to 12= moisture content. Which makes radiata pine ideal for our purposes and especially, for the home handyman making his own beekeeping gear.

An oft-asked question is: can rough sawn timber be used for the boxes, floors, lids, frames, feeders, etc? The answer is "no". Bees do not like rough surfaces inside the hives. Manufacturing, joining, and painting is more difficult and less successful with rough sawn timber, for it is easier to get dimensions exact when surfaces and edges are smooth and straight. Just as important, a hive looks shabby and primitive when made with rough sawn timber.
Sub-floor bearers only may be made of rough sawn timber.

Consequently the beekeeper-woodworker will need the following basic items of:

a) a saw capable of both ripping and cross-cutting neatly and accurately
b) a thicknesser
c) a buzzer

If you do not have the correct equipment do not attempt to improvise.

You will also need:

a power saw, the more powerful the better
an electric drill and bits
a hammer
screwdriver
a plane
galvanised nails and screws
waterproof glue

(to be continued)

PESTICIDES

Autumn raspberries, and to a lesser extent strawberries, are a problem when considering pesticide damage to bees. The problem arises because of the very long flowering period of these crops and the need to protect the maturing fruit from mite and leaf roller damage while the plants are still flowering and being visited by bees.

It appears there is no complete answer to bee damage on these crops but the Pesticide Board and the MAF have been working on the problem and have now come up with a compromise which it is hoped will keep bee losses to a minimum while still allowing the growers to protect their fruit.

The Pesticides and Bee Toxicity Warnings List which was published in the December 1983 "Beekeeper" has been revised to help with the above problem and we now have a total of nine warnings instead of the previous five.

The following is the new list dated March 1984:

PESTICIDES AND BEE TOXICITY WARNING

(a) TOXIC TO BEES. Spray must not contact plants in flower if they are likely to be visited by bees.

Pesticides	Pesticides
Aminocarb	Azinphos-Ethyl
Azinphos-Methyl	Carbaryl
Carbophenothion	Chlorpyrifos
Cypermethrin	DDT (not pellets)
Deltamethrin	Dialifos
Diazinon (not pellets)	Ethion
Etrimphos	Fenitrothion (not pellets)
Fenvalerate	Lindane (not pellets)
Maldison (not pellets)	Methidathion
Methiocarb (not baits)	Parathion-Methyl
Parathion (not pellets)	Phosmet
Permethrin	Prothiofos
Pirimiphos-Methyl	Trichloronat
Triazophos	

(b) TOXIC TO BEES. Do not apply to strawberry or autumn raspberry flowering plants except in the evening. Spray must not contact other plants in flower if they are likely to be visited by bees.

Pesticides
NALED

(c) TOXIC TO BEES. Do not apply to leguminous plants in flower except in the evening and spray must not contact other plants in flower if they are likely to be visited by bees.

Pesticides	Pesticides
BROMOPHOS	TRICHLORFON

(d) TOXIC TO BEES. Do not apply to strawberry, autumn raspberry or leguminous flowering plants except in the evening. Spray must not contact other plants in flower if they are likely to be visited by bees.

Pesticides
DICHLORVOS

(e) TOXIC TO BEES. Do not apply to autumn raspberry or leguminous flowering plants except in the evening. Spray must not contact other plants in flower if they are likely to be visited by bees.

Pesticides
ENDOSULFAN

(f) TOXIC TO BEES. Spray must not contact plants in flower while bees are present.

Pesticides	Pesticides
Bioallethrin	Bioresmethrin
Binoseb	Dnoc
Pyrethrum	Rotenone

(g) TOXIC TO BEES. Spray must not contact plants from "X" days before flowering to petal fall if the plants are likely to be visited by bees.

Pesticides	Days	Pesticides	Days
Acephate	7	Carbofuran (not pellets)	7
Demeton-S-Methyl	7	Dicrotophos	7
Dimethoate	7	Formothion	7
Methamidophos	7	Omethoate	7
Mevinphos	3	Pyrazophos	3
Oxamyl (not pellets)	10	Vamidothion	7
Thiometon	7		

(h) TOXIC TO BEES. Do not apply to autumn raspberry plants in flower except in the evening. Spray must not contact other plants from "X" days before flowering to petal fall if the plants are likely to be visited by bees.

Pesticides	Days
Methomyl	10

(i) TOXIC TO BEES. Spray must not contact plants in flower if they are likely to be visited by bees except in the evening when the bees have stopped working.

Pesticides
Pirimicarb

Ian Berry

Classified Advertisements

Available only to registered beekeepers selling used hives, used plant, and other apiary equipment, and those seeking work in the industry; $5.00 a column cm. No discounts apply. No production charges. Maximum size: 1/6 page.

FOR SALE

This large Auckland-based company comprising 2,000 hives, mainly on pallets. An HMF set-up on one of the trucks for hive shifting. A large workshop with a range of woodworking machinery, honey house plus storage, and accommodation with offices on site.

For inquiries please write to: "Business for Sale" Box 35-233, Browns Bay, Auckland.

Hives, 300, fully equipped for cut comb production. Good sites. Exported last five years.

Please contact: Dave Wallace, Telephone: 368-586, Wellington. Evenings.

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Central Otago. Comprising 800 hives, 200 pollen traps, pollen drier, and cleaner; and all necessary extracting plant, wax press and wax dipper.

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Three-bedroom residence, honey shed, and workshop on two acres of freehold land two km from Alexandra Post Office.

For further information, Dowland Apiaries, 1 RD, Alexandra. Telephone: 7183.

Beekeeping Business For Sale

All enquiries to F. E. Woodward, 1 Kahikatea Street, Inglewood. Telephone: 67-545.

Beekeeping business

Due to retirement, and at a reasonable price. Well-established Beekeeping business in Hawkes Bay. 800 hives, which have been disease-free for at least 14 years, house, modern factory and all equipment, including truck. Takeover date, September 1985.

Write to: M. G. Gordon, P.O. Box 252, Hastings.

Beekeeping unit averaging 50kg per hive over five years: 800 hives and all equipment.

J. & C. Busby, Rotomanu, R.D. Kumara, Westland.

Tel: Rotomanu 504.

SITUATION VACANT

Experienced Beekeeper

Beekeeper, able to work unsupervised on a variety of work. For further details, write listing, age, beekeeping experience, education, and other qualifications to: Beekeeping Vacancy, P.O. Box 2412, TAURANGA SOUTH.

WANTED TO BUY

48 frame S/S radial extractor, 21 frame S/S semi-radial extractor, or similar.

Mr L. B. Feary, 3 Mawhera St, Dobson, Westland. Tel: 691 Dobson.

Wanted to buy two commercial stainless steel extractors and uncapping machine.

Reply: "Extractor", C/- NBA, P.O. Box 4048, Wellington.

OTHER PUBLICATIONS

INTERNATIONAL BEE RESEARCH ASSOCIATION

Regularly publishing new information on bees, beekeeping and hive products, for beekeepers and scientists all over the world. IBRA Representative for New Zealand: T. G. Bryant, Apicultural Advisory Officer, Ministry of Agriculture & Fisheries, Private Bag, Tauranga. Catalogues of publications and details of journals and membership $0.55; specimen copy of journals: **Bee World** $1.10. **Journal of Apicultural Research** $1.10. **Apicultural Abstracts** $1.55. INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks, SL9 ONR, England.

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Do you have questions or problems about beekeeping in different areas? Learn how to solve them by reading "Gleanings in Bee Culture", the largest circulation English language bee journal, and made up of articles by well-known professors and beekeepers, like yourself, who tell how they have succeeded in beekeeping. For Subscription rates write to:

Gleanings in Bee Culture, P.O. Box 706, Medina, Ohio 44258, USA.

BOOKS

Bees and Honey

An excellent booklet, originally produced for schools and other educational purposes by the NZ Honey Marketing Authority.

Minimum order, 5 copies: $1. Additional copies 20c each.

Write:

Bees and Honey
P.O. Box 4048, Wellington

Nectar and Pollen Sources of New Zealand

A guide to bee forage plants. An updated version of a text first prepared by R. S. Walsh in 1967.

This 1978 edition lists source plants in chapters according to the seasons in which they bear nectar or pollen. Additional chapters are also included on the flight range of bees, the function of the flower and district planting notes (originally prepared by the NBA).

$2.50 a copy, from:

Nectar and Pollen Sources
P.O. Box 4048, Wellington

OTHER PUBLICATIONS

THE APIARIST

A New Zealand Beekeeping Journal. Published every two months. Contains informative and interesting articles on beekeeping in New Zealand and overseas.

Subscriptions: Free to all registered beekeepers in New Zealand with six hives or more. $5.00 per annum, if less than six hives.

Write to: The Editor, "The Apiarist", P.O. Box 5056, Papanui, Christchurch.

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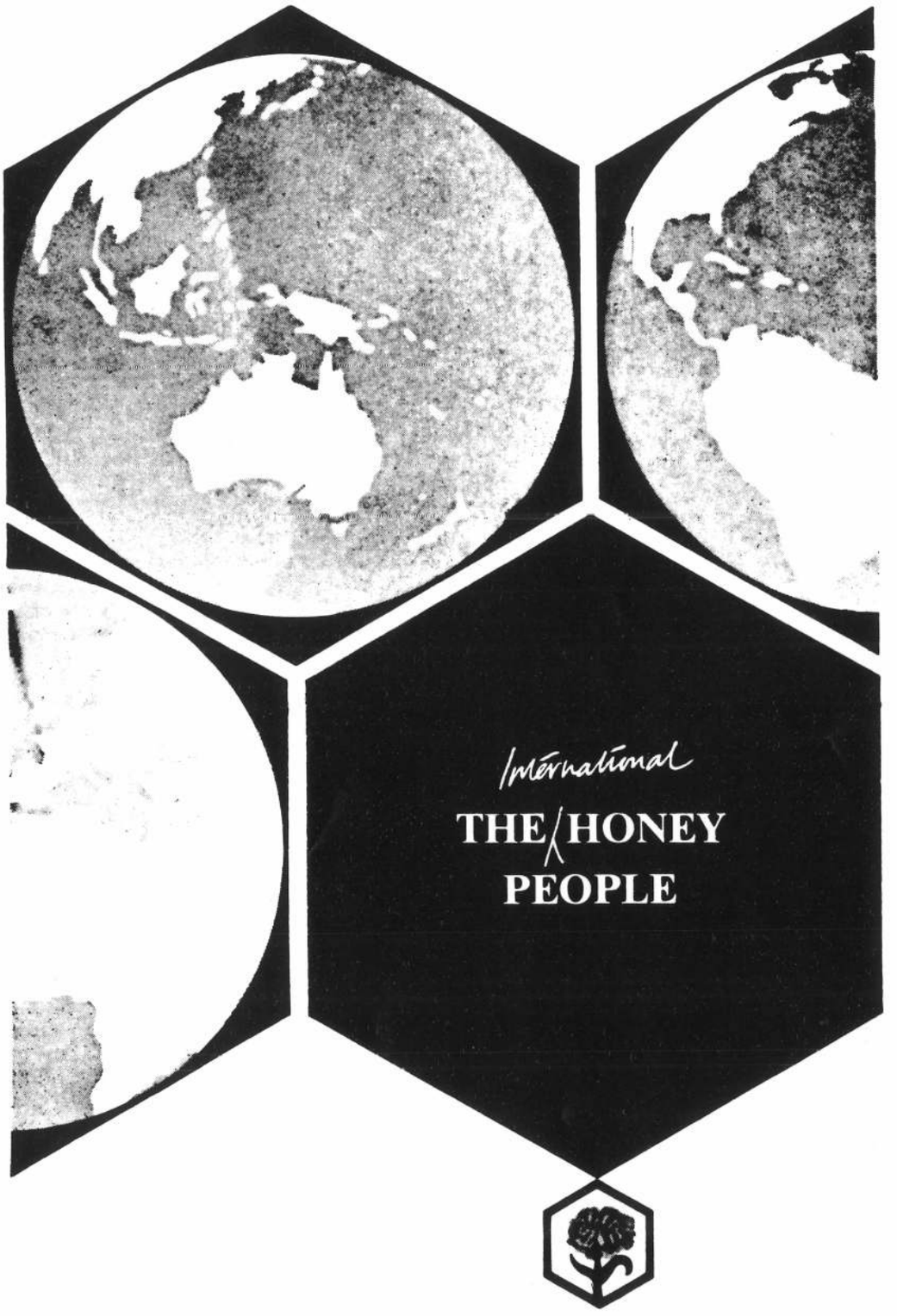

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