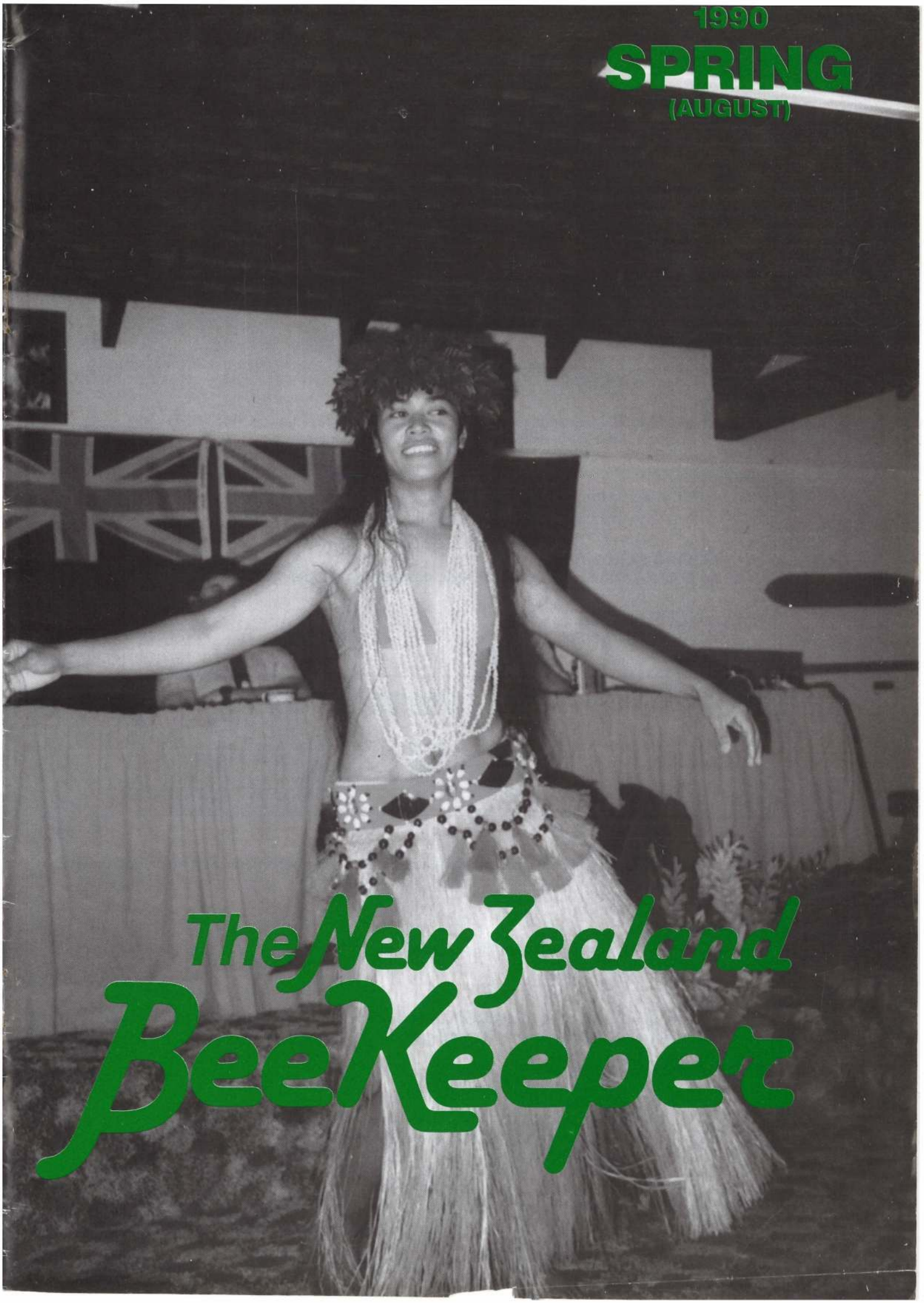

1990
SPRING
(AUGUST)

The New Zealand Bee Keeper

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 $33.75 a year (incl. GST) which also includes membership of the National Beekeepers' Association of NZ Inc.

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Photo: Mary-Ann Lindsay

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PROMOTE TO SELL

By Ham Maxwell

"Is your honey pure? You don't add anything to it do you?" These are the questions people most often ask when face to face with a live beekeeper selling honey direct. That people should even think that honey might be adulterated worries me as a beekeeper. I also hope it worries those engaged in making their living from the industry.

Now that the clean, green, image is predominant we should pull out all the stops to tell people just how good our product really is. Just as the dairy industry has to educate the masses that milk is really made by cows and is put into bottles or cartons afterwards and for their convenience, we also have an uphill battle in convincing those masses of the purity of our product. The fact that honey is sold to the public 'pure' i.e. 'clean', is not generally known. People ask: 'If your product is as pure as you say then why is some liquid, some solid?'

We do not produce a green honey as in Australia, but our product does come from a green environment. Are we exploiting this factor enough in our promotion as an industry? Perhaps overseas, but the local market seems to be poorly educated about the sources of our product. The fact that education starts at primary school level should not be overlooked. Pressures on today's learning packages require more and more to be learned earlier and earlier. With the addition of something new something old has to be dropped off the schedule offered our children. Maintaining some of the information that was taken for granted in days gone, long gone some might say, is not an easy task; yet we constantly find that what to our generation is a common fact, is something new, something to wonder at for the younger generation.

Food additives are now commonly accepted, but recent publicity tells us that they are not necessarily good. That has aroused suspicion in the minds of many people; they suspect us because of the differences in our product on the supermarket shelves. Natural granulation of honey is well known within the industry. Creaming of honey, developed to a fine art in this country many years ago, produced a saleable product accepted by people as a convenience food, easy to spread on toast at breakfast. Honey which will stay liquid forever on the supermarket shelves is with us as a regular product; yet which is the more 'natural'? Solid, creamed, or liquid?

Some beekeepers use the outside of their cartons to explain the differences in the types of honey they market. On smaller containers, space limitations exclude such explanations so separate little pamphlets are used. Full marks for both. So would it not be possible for our promotion people to produce such a pamphlet for all members of our Association to use?

At the local supermarket I see such promotional material used more and more for other products, often incorporating recipes. To date I have seen no such material for honey.

Some will say we are at the mercy of the supermarket for such promotion. However my local supermarket seems to go out of its way to present such promotional material to me. When I unpack the groceries I usually find a pamphlet extolling the virtues of some product or other. I notice the better half always keeps those with a recipe incorporated.

Perhaps this observation is out of date. I hope so, and that our publicity machine has already anticipated my thoughts and done something. Advising from the sideline is easy, very easy, but as a beekeeper I would gladly actively participate in a programme designed to help sell my product. It is in my interest.

Late News Flash from Rarotonga Conference

A modest endeavour was made at Conference to raise enough funds to buy an expensive book by Dr Eva Crane recently published. About $270 was the target. However more than $360 was donated towards this memento of a very special occasion. Further particulars and acknowledgement of donation in next issue.

John Heineman

NOTICE

The next applications for trust funds close at the office of the NBA, P.O. Box 4048, Wellington, on 28 September, 1990.

LETTERS

Dear Sir,

We are keen readers of the "NZ Beekeeper" and regret we have over looked our 1990 subscription. Enclosed is $33.75. Please can you reinlist us as we don't want to miss any issues. We think the NZ Beekeeper is first class. Special praise goes to the Editor for his excellent work in making this Bee mag. one of the best in the world.

We look forward to the next issue.

Surrey Earl

Dear Sir,

May it be made known to all beekeepers and those connected with the industry, that, to obtain an HONEST and TRUE statistic of honey crop production on a hobbyist, commercial or national level, one has to subtract the white sugar fed out during the year, from the total honey harvest weight. This can be done on a per hive, per apiary site, or on a national scale. This type of calculation is called **ECOMATHS** and gives a true unfalsified statistic. So next time you see or hear some figures, have another think about it please.

You may decide to scrap white sugar altogether and leave the bees with enough honey for themselves. After all they deserve it don't they?

Many thanks for such a fine quality magazine. Wish you well for the future.

B. King

Dear Sir,

We would greatly appreciate a sample copy of your New Zealand Beekeepers Magazine.

In the Philippines we are just starting to develop beekeeping and we can still learn a lot from other countries. New Zealand is relatively close to the Philippines, and why not learn just from the neighbour?

My Institute has started to establish a small apiary for training and demonstration purposes and we are planning to expand it during the next months. The Farming Systems Institute is considering beekeeping as an additional option for small-scale farmers to obtain an extra income. Under the Philippine conditions where the landownership is still a serious problem in agriculture possibilities for an income have to be developed which do not require a lot of land. Beekeeping is such an option. We are very interested to obtain from a professional beekeeper from New Zealand queens and package bees from A.mellifera ligustlea. Hopefully your magazine can help us to find the right supplies.

Since it is not enough to obtain just queens and bees to start successfully beekeeping, we are also very eager to get in touch by correspondence as a first step with a beekeeper in New Zealand, who could give us practical advice, and perhaps could at a later stage accept one of our staff members for a practical training.

Ludwig C.A. Naegel
Associate Professor
Farming Systems and Soil Resources Institute, University of the Philippines at Los Banos, College of Agriculture College, Laguna — 4030 Philippines
Tel. No. 3229/2459

Dear Sir,

Concerning the current outbreaks of American Foul Brood in North Canterbury and Poverty Bay, also the general delay of action in density with it plus poor management (ie storage of uncovered supers in the open.) I feel it is time for some direct action to be taken in both or either of the following ways.

A) publication of the names of those with infected hives, or if this is not possible, then

B) publication of the area, ie: name of road or suburb in which the outbreak has occurred.

While I appreciate that those with infected hives may not be at fault, as in the Poverty Bay case, it would warn other beekeepers that they are in an infected area. This is especially necessary since the MAF Apicultural Service doesn't have the manpower to check or warn those in danger.

While I am only a large scale hobbyist with 40 hives in three widespread locations, I have one in a high density and migratory area. I would find it most soul destroying and financially hard to see five years of work building up apiaries with new gear into an intensively worked and producing system (including my own queen rearing requirements) to see it all go up in smoke due to someone else's negligence.

While I try to check all my brood nests on an average of 10-20 times a year, and to limit the movement of supers, feeders etc between my own apiaries, I have been appalled at some of the management practices and standards of gear, I have seen in the industry, at both the professional and hobbyist level.

I would appreciate a reply from the Association or National Executive through our magazine on the legality and desirability of such an idea.

Roger T. Orchard
Christchurch

Dear Sir,

With the results of the 1990 queen quality competition in this issue, perhaps I can claim space to reply to "Don Gibbons View" in the winter edition.

The competition is indeed useless to Don, but only because he has chosen not to take part in what is essentially a cooperative learning venture. I have a great deal of respect for Don's experience, but I hope he does not believe that there is nothing left to learn after 30 years.

Don offers us a method that he believes would produce a winner, yet as it is clearly not commercially viable he presumably uses some other method himself. He suggests virtually destroying two good hives to produce 10 queen cells. Then having produced (perhaps) a virgin beauty queen as perfect as the genetics of its other allow, he tells us to ruin it with an inter-racial mating.

For sure, a black drone will be up there in the mating zone while an Italian is watching one of those adult videos to get in the mood. But don't underestimate Italian lovers, Don. And don't let your daughters loose in Rome either. Dr Szaboo has published sperm counts in the 9 to 11 million range under controlled conditions with only Italian drones present. And from my own research this year, I know that average counts over eight million are possible without resorting to cross-mating. **But** these high sperm counts can only be achieved with large vigorous queens with average spermatheca volumes of 1.20 cu.mm. or more. The purpose of the competition is to discover commercially viable methods that will produce such queens as the norm rather than the exception, without sacrificing the all important genetic qualities.

Advances come as much from exposing myths, as from new knowledge. Don has offered us a mythical method of producing large queens. I'm offering him something better — a bottle of best Marlborough champagne — if he can win next year's queen competition using the method he described.

With that said I would like to commend Don for putting forward a very good idea, for a competition based on field evaluation at Telford. I would only add that the best performing queens should be sent for physiological testing at the end of the trial, so we can discover whether their production is linked to physiology or genetic factors.

We have good queen stock available, but it is not improving fast enough for my satisfaction. One of the reasons is that producers compete on price to the point that they cannot afford any investment in research. There should be no compromise whatever on quality to achieve a low selling price.

Reg Clarke
Sunflora Apiaries
Blenheim

Dear Sir,

Would you please "Air Mail" a copy of your journal to the above address. Enclosing costs involved either in $A or $NZ as we intend subscribing for the journal on an annual basis for use in our library.

At the moment we (club members) are particularly interested in "Ross Rounds" and wooden sections so hope bee suppliers advertise in your journal.

Ken Greenwood
Forestville, NSW

Tara Hills

It has been a tremendous season for honey production in Otago, particularly at MAF's Tara Hills research station.

Tara Hills officer-in-charge, Dr Bruce Allan, says eight and a half tonnes of vipers bugloss honey from the station's hives was a big turnaround from last year's poor season, caused by dry weather.

Vipers bugloss is an introduced biennial plant with a deep tap-root, providing some grazing in drier parts of the high country. It is also a very good source of nectar for bees, producing sought-after dense, clear honey with a unique and subtle flavour.

Dr Allan says early indications were this honey season would also be poor, with exceptionally dry weather until December. However heavy rain over January turned the season around, and Dr Allan says an average of 85 kilograms of honey from each hive was very good.

Tara Hills has been researching honey production for four seasons, with royal jelly research now the main area of work.

However, Dr Allan says they have completed a trial comparing requeening hives in spring and autumn, and have found no difference in honey production. He says this is good news for beekeepers, who can now choose between spring and autumn for putting the queen to the hive, knowing honey yields won't be affected.

Another trial still continuing at Tara Hills, on grazing management of vipers bugloss, has had some interesting results.

The study aims to see whether it's possible to integrate honey production with grazing, and after three years, Dr Allan believes they are starting to get a good picture of the effects different grazing methods have on maximising honey yield. He says spelling the plant from grazing at critical times during summer flowering allows bees to gather enough nectar for honey production while still allowing farmers to keep the paddocks in production.

He says contrary to traditional opinion, some grazing produces more flowers on the vipers bugloss than no grazing, showing controlled grazing can enhance honey production on low-altitude sunny faces.

NEW PRESIDENT

Retiring President, Allen McCaw, congratulates Dudley Ward on his election. Photo Mary-Ann Lindsay

After six years on the Executive Dudley Ward has been elected President.

Dudley began beekeeping as a hobbyist before the war but when he married in 1947 became a producer-packer. Now his eldest son is in partnership with him and together they own 3,500 hives, packing their entire crop under the 'Kintail Honey' brand. They also buy in honey from smaller producers.

For some years Kintail has produced Ling Heather Honey and has established a reliable market for it in Germany. They invite smaller producers to join them and so ensure an export market.

Kintail also supplies Finland with bulk honey which is marketed under its Finnish label as 'New Zealand Clover Honey'. Finland also takes its favourable wax. The Company also does some pollination and raises its own Queens, some of which it exports.

Dudley believes the NBA must strive to maintain a good price for honey on the home market and should discourage weak sellers. It is important that honey should be recognised as a valuable food source, he says.

NUT BREAD

½ cup shortening
½ cup sugar
½ cup honey
1 egg
3 cups sifted flour
3 teaspoons baking powder
1 teaspoon salt
¾ cup milk
1 cup chopped nuts

• Cream together shortening and sugar. Add honey and mix thoroughly. Add egg, beating well. Sift together flour, baking powder, and salt. Add to creamed mixture alternately with milk. Add nuts. Bake in greased loaf pan in moderate oven (350°F.) 1¼ hours. Yield: 1 loaf.

LET'S LOOK HARD AT OURSELVES

By Russell Berry

Russell Berry and wife Annette. Photo Mary-Ann Lindsay

What credentials do I have to speak on this subject? Nothing officially, but I have been beekeeping for over 30 years and our family has been beekeeping for over 50.

History was one of my hated subjects at school, surpassed only by English, but strangely, I think the history of New Zealand beekeeping over the last 50 years holds the answers to where beekeeping should be going in the future.

We have all been so busy trying to survive the financial pressures, maintaning our jobs, tryng to build up our businesses, trying to move on to greener fields in someone else's beekeeping area, or going to industry planning meetings, that we have spent little time looking backwards.

My gut feeling is that if we look back fifty years and examine the number of man hours it took to produce one tonne of honey, then take into account the man hours you use indirectly in power, fuel, motor vehicles, sugar and accountancy, etc, and compare it with the number of man hours it takes to produce one tonne of honey now, with all our increased efficiencies, we would find that it takes the same number today to produce that one tonne of honey as it did fifty years ago.

Let's look at the rest of the food industry. After all, it does not really matter when you are hungry, whether you eat bread and jam, bread and honey, bread and peanut butter, or a glass of milk, or chicken, or even eggs. The world population tends to buy what it can afford to sustain life, then if there is money over, it buys luxuries.

Let's look at the man-hour costs of producing some of those other foods in the past fifty years. Bread, jam, peanut butter, milk, chickens, and eggs. It does not take a computer to tell us that these products and of course many more, cost but a fraction of the man hours that it cost to produce them fifty years ago. I would suggest only one tenth.

It doesn't really matter if our competitors produce 10 times, five times or 15 times the amount of food per man hour than they did fifty years ago. The results will indicate a **dismal failure of the beekeeping industry to move away from a cottage industry belonging to the distant past!**

You don't believe me? So look at a few examples: the dairy, poultry, and beekeeping industries. We will not try and go into too much detail as it is not required for this exercise.

The Dairy Industry:

My mother and father milked 40 cows fifty years ago and had little time for anything else. A husband and wife team today is very capable of milking 300 cows in a modern cowshed and probably produces twice as much milk per cow.

The Poultry Industry:

Fifty years ago a one-man unit looked after a maximum of 300 to 400 fowls, now it can look after nearly 20 times as many fowls per man, with a three-man unit looking after 20,000 fowls and producing more eggs per fowl and, I suspect, at a lot less capital investment per fowl.

The Beekeeping Industry:

Keith Herron's father at Gore, fifty years ago, looked after 300 hives of bees and produced an average of 15 tonnes of honey per year and fed no sugar. You would have to look after 3,000 hives of bees and produce an average of 50kg per hive, giving you a total crop of 150 tonnes working by yourself and feed no sugar, just to keep up with your competitors in the rest of the food industry. Are we doing this? We certainly are not. Not because we are not working hard, but because not enough emphasis is being put world-wide into producing a tonne of honey in less man hours. A good starting point would be to look at what main changes other food industries have made in the last fifty years.

Dairy: Transportation, stock control and movement, feeding, innoculation, breeding and mechanisation.

Poultry: Complete change of concept in this industry. Birds are now treated as if they were machines, genetic improvement of stock, health of the stock controlled.

If this Beekeeping industry, and that means you and I, does not tackle this problem now, we will soon be in no position to prosper, or even survive the pressure of competitive foods or honey from other countries of the world.

New Zealand leads the world in many fields. Let's show the world how to produce a tonne of honey in half the man hours, three quarters of past costs, sell it at the same price, and make ten times the profit!

LOAF CAKE

⅔ cup shortening
1½ cups honey
3 eggs
3 cups flour
3 teaspoons baking powder
½ teaspoon salt
1 teaspoon cinnamon
1 teaspoon mace
½ cup fruit juice
1 cup seeded raisins
1 cup chopped nuts

• Cream shortening, add honey gradually. Blend well. Add well-beaten eggs. Sift dry ingredients together. Add alternately with the fruit juice. Stir in raisins and nuts. Pour into 2 loaf pans lined with well-greased waxed paper. Bake 1 hour in moderate oven (350°F.).

The MAF is Protecting Beekeeping

By Andrew Matheson, Apicultural Consultant, MAF

New Zealand has an interesting way of welcoming tourists. When you come into the country you could be stopped from leaving the aircraft until uniformed personnel walk the length of the cabins, spraying insecticide and opening overhead lockers.

If you don't see this happen, it's certain that your transport has been pretreated with residual insecticide. Both these treatments are safe, and approved by the World Health Organization.

What you're seeing is the first of many measures taken to protect one of the healthiest agricultural industries in the world. Beekeepers will be pleased to know that their industry is also being looked after by MAF — the Ministry of Agriculture and Fisheries.

Your next view of MAF's agricultural security system is the bright green amnesty bins in the airport's arrival hall. That's the place to drop off the sachets of honey you purloined on the aircraft, the delicious salami you brought as a present for Aunt Myrtle, and those pollen pellets you need for your morning tonic. Sorry, you'll just have to get envigorated by New Zealand's fresh air and great scenery.

Once past the bins, you haven't finished with MAF yet. You completed an agriculture declaration card while on board the aircraft, and you'll give this to a staff member either in the red or green lanes. Based on your card and answers to a few verbal questions, you'll either be directed to leave straight away or to quickly show some of your goods for inspection.

But don't worry — the whole process is very quick and painless. It's also vital to protect the clean bill of health that New Zealand enjoys for its agricultural, horticultural, and beekeeping industries.

The motto is: "If in doubt, declare it". MAF staff will quickly give you an answer on what is and isn't allowed in, or what needs to be kept for treatment. If visitors turn up with a jar of honey from another country which they really want for the folks back home, they can even have it kept at the airport in bond until their departure.

Surveillance

What you see at the airport is like the tip of the iceberg — there's a lot more going on behind the scenes to keep New Zealand clean and green. MAF's apiculture services have two other programmes in place: active surveillance of hives for exotic diseases, and a plan of action for responding to exotic disease outbreaks.

If an exotic disease or pest does slip into the country, we need to know as soon as possible to have a chance of eradicating it. MAF has a surveillance programme to check hives at random and take samples to be analysed in a laboratory. The sampling programme has been worked out to give a statistically significant chance of finding new pests and diseases, should they become established.

Active surveillance for exotics is additional to all the "passive surveillance"

The Hidden Effects of Pesticide Poisoning

By Andrew Matheson, Apicultural Consultant, MAF

Pesticide poisoning of honey bees is a problem that many beekeepers have to live with, especially if they're doing contract pollination. We don't see bee deaths now on the scale of some years ago, but colonies are still being harmed.

Beekeepers can see dead bees at the hive entrance, and often talk about the bees which die away from the hive — we usually don't know how many workers die unseen.

There are other types of poisoning which are even harder to quantify, but have been the subject of recent research.

What are the consequences of exposing colonies to low levels of pesticides over a long period?

One particular class of pesticide is the systemic one. These chemicals are applied to plants, and move around inside the plant to the place where they work. Some of the chemicals could end up in nectar on pollen — what effect will this have on bee colonies foraging on the treated plants?

Fiona Ferguson of Queensland Agricultural College looked at the results of exposure to different pesticides on honey bee colonies. She spoke about her research at the Australian international beekeeping congress two years ago, and the proceedings of that research has just been published. Nuclei were fed sugar syrup containing dilutions of pesticides from five parts per million (ppm) down to 0.1 ppm. Pesticides were also applied at recommended field rates to flowering crops of sunflower and oil seed rape. Other bee colonies were monitored — pollen being collected from traps and from bees foraging on the flowers.

The chemicals tested were all organophosphate systemic insecticides, except for the herbicides 2,4-D (Tordon) and Roundup.

Before looking at the results, it's worth emphasising that these experiments show only what happens when some chemicals are applied under certain conditions. The same pesticides used in New Zealand could be different in their effect — either more or less serious. Other pesticides will also have different consequences.

TABLE 1: EFFECTS OF FEEDING PESTICIDES IN SUGAR SYRUP

Common trade names	Concentration in syrup (ppm)	Results
Monitor, or Tamaron[1,3,4] Rogor[13] Folimat[3]	2.5, 5	Brood mortality within six days. No live brood. Some adult deaths, colonies died.
	0.1, 0.5, 1	Larval mortality in 14-40d. Several brood cycles affected. Colonies eventually recovered.
Supracide[1] 2,4-D Gusathion[2] Nemacur	2.5, 5	No larvae present in 17-25d. Effects generally not as severe as for the group of chemicals listed above.
Roundup	0.1-5	No effects on brood or adults.

Feeding pesticides in sugar syrup produced the results shown in table 1. Even at levels too low to cause noticeable adult mortality, the consequences were pretty serious. Brood died quite quickly, and this mortality often continued for long enough to wipe out a couple of cycles of brood and thus kill the colony.

Queens were also affected, going off the lay for up to 52 days in the case of Monitor. Adult workers also displayed symptoms such as limited foraging, lack of response to smoke, disorientation, non-defensiveness, and consuming all the food stores.

(These trials also confirm that Roundup is a safe herbicide to use around beehives.)

So much for feeding pesticides in syrup. Surely that's an artificial situation — how does it compare with poisoning under field conditions?

The other half of these trials was to spray flowering crops at normal application rates, and see how much pesticide ended up in pollen. Table 2 shows the results — at least for those samples tested so far.

Continued from page 9

(or just being alert) that goes on when inspectors and beekeepers are checking for AFB".

Response procedures for exotic diseases

MAF has procedures already worked out for a plan of action to take effect if exotic pests or diseases are found in New Zealand. This plan details each step in a long chain of events, and also what equipment and personnel are needed.

If an exotic disease or pest of the honey bee is found, the first step in MAF's response will be to halt all hive movements near the affected area. The teams of MAF staff and beekeeper volunteers will inspect all beehives, and colonies living in the wild, within a given radius of the first find.

This survey will show how far the pest or disease has spread, and will indicate what action to take next.

If the disease is in a well-defined area that contains a reasonable number of hives, all hives will be destroyed to eradicate the disease. If eradication isn't feasible, or is too costly, beekeepers will be allowed to treat their hives to lessen the disease's impact, but New Zealand will have to live with the new problem from then on.

These response plans are currently being finalised and negotiated with the beekeeping industry. They need industry support and cooperation to be effective.

Clean bill of health

In New Zealand we're free of the external parasite mites *Varroa* and *Tropilaelaps* as well as the tracheal mite. We also don't have European foulbrood, *Braula* or the Africanized honey bee. Keeping these pests and diseases out is important to maintain our bee export trade, and to keep our bees producing honey and doing valuable pollination.

So when you're forced to wait another five minutes on board your aircraft, or have to queue for a few minutes in the airport, remember — you're doing it for your fellow beekeepers in New Zealand.

Pollen collected from bees foraging on a treated crop contained enough pesticide to kill brood. The initial levels were quite high, but decreased rapidly over about two days, though much of the damage might already have been done by then.

Many beekeepers have noticed a lower than expected honey crop after moving hives straight from pollination to a flow. In the past this has been put down mostly to loss of field bees, but these experiments point to another possible cause.

Feeding low levels of systemic pesticides can have the same effects as a break in nectar and pollen availability — blood mortality and a cut in egg laying. Worker populations in these hives might appear normal, but the break in brood rearing and behaviour changes associated with low-level poisoning result in reduced honey production through their effect on future populations.

If there's enough time before the honey flow, and beekeepers recognise the symptoms, colonies can be built up by feeding sugar and pollen, boosting with a nucleus, or requeening (in the case of Monitor or Tamaron).

Beekeepers should adopt management practices to minimise pesticide damage and its effects.

* Liaise with local fruitgrowers as an NBA branch or pollination association.
* Talk to your grower clients about the need for care with insecticides.
* Have nucs and stores of sugar and pollen on hand, in case they're needed to boost colonies coming out of orchards.

TABLE 2: EFFECTS OF SPRAYING PESTICIDES ON CROPS

	Maximum levels detected (ppm)		
Pesticide	Pollen from bees	Pollen in traps	Nectar
Afugan	2.4	1.5	N/T
Monitor, Tamaron	2.5	0.1	N/T
Rogor	1.3	N/T	0.5
Supracide	N/T	2.7	N/T

N/T = not tested

REFERENCE:

Ferguson, F. 1989. Long term effects of systemic pesticides on honey bees. In: Rhodes, J.W. (ed). *Proceedings of the Second Australian and International Beekeeping Congress, pp 137-141.*

The full proceedings of the congress, over 300 pages long, are now available. Themes covered are: bee biology, bee pathology, pollination in practice, nectar and pollen sources, tropical beekeeping, temperate beekeeping, beekeeping technology and equipment, bee toxins and apitherapy, beekeeping economy, marketing apiary products.

The production and presentation of the proceedings is of a high standard. Limited stocks can be bought for $A40 plus postage from:

Pender Beekeeping Supplies, PPMB19, Maitland, NSW 2320, Australia, Phone (0061) 49 327 244, Fax (0061) 49 327 621

Other effects:

1. Colonies disorientated and unresponsive to smoke. Foraging activities limited. Some bees hanging out on front of hive.
2. Hives with "less vigour", fewer stores and less burr comb.
3. Reduced hive strength, hives prone to robbing.
4. Queens stopped laying and their abdomens shrank to worker size. Some queens recommenced laying (after 35-52 days); some of their colonies recovered with sugar feeding but others were too far gone.

WAFFLES

2 cups flour
3 teaspoons baking powder
½ teaspoon salt
1½ cups milk
2 tablespoons honey
2 eggs
½ cup melted shortening

• Sift dry ingredients. Combine milk, honey, egg yolks, shortening, and add to dry ingredients. Fold in stiffly beaten egg whites. Bake in hot waffle iron. Serve with the following: Heat 1 cup honey in top of double boiler. Add 1/8 to 1/4 cup butter and 1/4 teaspoon cinnamon, if desired. Serve warm

THE PRESIDENT'S REPORT

Upon taking up the position of President of this association in 1986, I had not anticipated remaining for a four-year term. Nor had I ever imagined the possibility of delivering my final address to an annual conference convened on a tropical island. It is most encouraging to note the large attendance and number of new faces present this year, and I trust this may be a sign of a developing interest in the affairs of the NBA, as much as in the added attractions of the conference venue here in Rarotonga.

Looking back over a total of seven years as an Executive member, I believe the development and achievements of our Association in that time have been quite significant. There is of course, much remaining to be done, which I also believe can be achieved with continued effort and application from us all.

Over the latter half of last decade our country has undergone a period of dramatic economic and social readjustment, and our industry has certainly not been immune from the effects of these. Even without the usual fickle behaviour of our climate, the economic changes alone would have provided a formidable hurdle for most of us to overcome.

No less difficult has been the task facing the NBA Executive during this time. For the last five or six years we have concentrated upon setting up the necessary systems and structures for the development of our association as the principal administrative body for the beekeeping industry in the future.

We have strengthened our capability in education, in research, in marketing and promotion, in public relations and communication, and in improved NBA administration. And the saga of funding disease surveillance and advisory services has continued on. I would like to take this opportunity to briefly discuss some of these developments, and speculate a little on what the future may hold.

NBA ADMINISTRATION.

Our association's administration has been further enhanced through the interim appointment for one year of an NBA Executive Officer. Mr Ted Roberts was appointed to this position, and has provided valuable input through the preparation of reports for Executive, and assessment of numerous legislation changes currently being made. It is intended to make a permanent appointment at the beginning of 1991, following our assessment of the first year's activity.

A further extended planning meeting was held at Flock House in March, and the 1990 Industry Plan has been circulated to members. This provides a blueprint of the main intentions for executive activity during the coming year. Our monthly NBA newsletter "Buzzwords" has been valuable in providing up-to-date information on progress towards achieving the objectives set.

DISEASE SURVEILLANCE, FUNDING AND MAF SERVICES.

Following the complete restructuring of many of the Government servicies and systems we have previously depended upon, and often taken for granted in the past, we have been faced with a number of very difficult decisions. It is now for us to decide exactly which Government services our industry needs, and which of them we are willing to pay for.

Seeking answers to these questions has occupied a considerable amount of Executive's time, and has certainly not assisted progress in other important activities of our association. Because disease surveillance, border control, and the apiary register are fundamental to our livelihood, I believe this is one question we cannot ignore, and must continue to seek a solution for.

Nothing I have seen during my term on Executive has presented a long-term, viable alternative to maintaining a disease surveillance and control programme, utilising existing MAF expertise and systems. The fact that we have not yet achieved a solution is a direct indication of the complexity of the issues involved.

There are no simple answers, and we must proceed with caution and careful planning in every step. We must also continue to maintain whatever pressure we can to ensure we receive adequate consideration in the drafting of necessary legislation, such as the Commodity Levies Bill.

The opportunity exists now for us to strengthen the valuable working relationship that exists between our industry and MAF advisory services. MAF provides us with a number of regulatory, diagnostic, research and advisory services. By contracting directly for the provision of some of these services, we gain the advantages of the rest and retain the expertise and knowledge of a number of beekeeping specialists.

HONEY PRODUCTION, PRICES AND MARKETING.

Honey production for the 1989-90 season has been estimated at around 8,500 tonnes — a considerable improvement over the previous year of around 6,000 tonnes. Stocks of honey proved adequate during 1989, and the current production rate confirms my past assertion that the success of our exporting effort is a major factor in maintaining overall honey price stability.

For the year ended December 1989, our recorded exports of honey totalled 1,040 tonnes, to an FOB value of $3,684,000. This equates to an overall average price for all honey types of $3.54 per kg. So far for the first five months of 1990, we have exported a total of 460 tonnes, at an average of $4.04 per kg. which means we are on target to achieve a similar level of exports to last year, at an increased average value.

Noteworthy again is the export performance of specialty products, and the ongoing development of organic honey markets. It is encouraging to see that more beekeepers are accepting that their responsibility for selling their product does not cease as soon as they screw the bung on their honey drums.

Recent reports from exporters are indicatng slow sales and low prices being offered for bulk clover-type honey at present. This situation is contrary to market expectations, as world honey stocks are believed to be at low levels, production in some major countries has been markedly reduced, and consumption in some importing countries has risen significantly.

Why then are we not seeing a significant increase in world honey prices and demand? One suggestion is that by means of continuing their honey price support scheme, and providing export promoton incentives, the United States is effectively holding down the world market price of honey thereby settng a value which guarantees cheap supplies of honey for their own markets, to the detriment of exporting countries.

The NBA Marketing Committee, in co-operation with Mr Percy Berry, have taken up this issue and approaches have been made to Government trade officials both here and in the US to address the inequities of these policies. We have also continued contact with the International Honey Exporters' Association which is working to maintain liaison between a number of honey exporting countries around the world.

It is to be hoped that as the year proceeds, export sales of bulk honey will be more favourable to avoid the detrimental effects of excess production being forced on to local markets at low prices. In recognising this possibility, I fully support the proposal before this Conference from the Honey Packers' Association for the formation of a Honey Exporters' Organisation in New Zealand.

On the local market, prices have been steady over recent months, with an increase in the NZ Retail Price index for honey of almost 5% since January this year. Concern has been expressed from the Marketing Committee that the overall consumption of honey in New Zealand may have declined against other spreads in recent years. The committee are presently investigating this aspect by seeking statistical data from a major marketing organisation, although this is being hampered somewhat by a lack of available funding.

It is very obvious that honey is under siege in the spread market, with considerable television advertising being dedicated to promoting alternatives such as jams, marmite, and peanut butter. Many of these are advocating the natural, healthy aspects of their products — attributes which we know are inherent in honey, but many consumers still need to be made aware of.

There are a number of manufacturers using honey as a positive selling point for their products. These include breads, biscuits, breakfast cereal, meat glazes, meusli bars, cosmetics, soap, hair shampoo, fruit drinks and chocolate bars. Why not also promote honey in its own right for these same virtues and receive the credit and increased value our natural products deserve?

Effective promotion costs money and requires a financial commitment from the industry for which I see very little support at present. We remain individualistic in our approach to domestic marketing, and mistrusting of any attempts to promote a co-ordinated marketing effort. Meanwhile, our position in the retail market may be slipping away from under our noses.

We cannot afford the luxury of complacency in the de-regulated environment which now exists in New Zealand. With CER a reality, perhaps it will take an importation of Australian honey on to our market to force us into positive action. Perhaps we may then be willing to make a commitment to a solid marketing strategy for our products. Perhaps by then it may also be too late.

RESEARCH

The beekeeping industry must also decide the extent to which it will financially support its research programs. Research funding in organisations such as ours is not always considered essential, particularly if times are tough, when there is a strong temptation to reject research as irrelevant, or too expensive.

But serious thought is rarely given to the effects of funding cuts, or the future long-term need for research information and research capability. Research is a worthwhile investment which can assist us to improve the efficiency and performance of our beekeeping, and to cope with changes in our environment.

The NBA is the best vehicle to fund and co-ordinate research on behalf of the industry. The Executive has accepted this responsibility by establishing an Apicultural Research and Advisory Committee, including members from a number of organisations with which we presently have links.

This committee is charged with providing advice to the Executive on appropriate research programmes for funding, initiating research amongst beekeepers and researchers according to industry needs, and assisting in

securing additional sources of funding for industry research.

In particular, there is a great need for funding for marketing research. Executive has submitted a remit to Conference which proposes an additional levy specifically for research purposes. The response from members to this remit will be seen as a measure of the commitment you wish to make to research in all of its possible forms.

ACKNOWLEDGEMENTS:

I leave the NBA presidency with mixed feelings, ranging from personal satisfaction in some achievements, to a degree of disappointment in goals strived for, but not yet attained. But I firmly retain my belief in the value of our national association, and the importance of the functions we perform on behalf of the beekeeping industry.

Contrary to some opinions, the NBA cannot take responsibility for every individual beekeepers' financial viability or profitability. We can however continue to strive for the best possible environment for this industry to function in, but this will not be achieved without the full support of us all.

As that old saying goes: "Ask not what your Association can do for you — rather ask what you can do for your Association."

In looking ahead I see a lot of hard work still to be done, and I also see opportunities waiting to be taken up. I am encouraged by the enthusiasm of many beekeepers in supporting the NBA, and have every faith that this will carry the organisation forward to a positive, bright future through this decade and into the next century.

It is very difficult to personally acknowledge all of the people who have assisted and supported me over the past four years. My sincere appreciation must go to all the other Executive members, past and present; to Steuart Goodman and Olive Hebron from Wellington headquarters; Michael and Elisabeth Burgess; and Murray Reid and his team of MAF advisors, past and present.

Thanks also to the many individuals who have volunteered to serve in a variety of capacities for our organisation, including NBA branch officers, the Industry Trustees, NBA Librarian, and members of various committees. Last but not least, I would like to acknowledge the support and tolerance of my wife Marie, my family and business associates, who have indirectly carried a good deal of the responsibility and commitment that goes with the position of NBA President.

I look forward to serving at least one more year on your Executive, and the opportunity to meet many of you again informally at future NBA Conferences.

Allen McCaw

LIBRARY REPORTS TO CONFERENCE

The library has continued to serve it's purpose, by providing material to NBA members, branches, beekeeping clubs, some non-members, and schools.

Financially we have held our own thanks to some interest received from the small investment account, voluntary labour, and by keeping overheads to the very minimum.

The books lost in the Levin house fire have at last been replaced through the good services of Apimondia. The one irreplacable item has been photocopied from a book we have been so lucky to borrow from a Southland beekeeper. The cost of replacing these items was adequately covered by the insurance pay-out ($200.00).

We have purchased "Beekeeping in the year 2000", the Australian Congress 1988 Proceedings This involved $76.00.

On order are the additions to Graham Kleinschmidt's Research Papers of which the library holds the original collection.

Many thanks to our Editor, Messrs Reg Clarke, Malcolm Scrivener and Andrew Matheson for books, papers, and a video passed on or donated to the library.

John Heineman

BOOK REVIEW

By John Heineman

Mr Burgess, our editor, just passed on a real treasure to the library: "THE HUMBLE BEE, it's life-history and how to domesticate it", by F W L Sladen, 1989-237 p.-UK. The Humble Bee=The Bumble Bee.

Mr Sladen was a well-known English naturalist. He wrote, printed, and published his first little book by this title at the age of 16 years. It drew a lot of interest. This was in 1892. This was later followed by a text under the same title but covering a far wider field of observation and research. He became a professional beekeeper and manufacturer of equipment, was a commercial queen breeder and went to Canada where he was employed as "Dominion Apiarist". He died at the early age of 45 when taking a dip in Lake Ontario after a day's work at one of the research apiaries and mating stations situated on one of the islands. Today he is regarded as the Father of Bumble Bee Research.

He must have been endowed with a great ability for observation for he found out how bees gather pollen, pack it into the pollen basket, and transport it home. He also put forward the theory of the bees chemical senses (nasanov gland, pheromones) which later research has proved to be correct.

There is a New Zealand connection with Mr Sladen as he sent fertilised bumble bee queens to our country for pollination of red clover.

This book is a reprint of the 1912 publication and also includes a copy of the text he wrote as a boy. It contains the story of his trials and errors, attempts in establishing nesting sited and domestication, anatomy and identification of the different species. It is a classic but very easy to read and today still a "must" for students of the bumble bee. Colour plates, photos and drawings are first class. Well bound hard back with a very attractive dust jacket. Foreword by Professor J B Free.

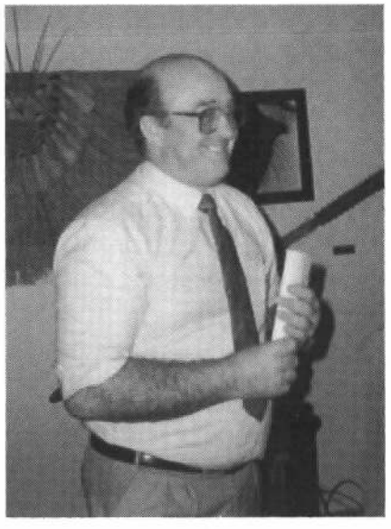
The publishers have on purpose chosen a good quality recycled paper for as they say the modern farming practices involving the removal of trees, hedges etc. have done a lot of harm to the environment suited for bumblebee nesting. The use of this paper is their small gesture towards better use of our resources.

It is a fine addition for our library collection and it is thoroughly recommended reading for anyone, beekeeper, nature lover, high school student or a would be bumblebee specialist. For anyone who wants to buy it:

LOGASTON PRESS, Little Logaston Woonton Almeley, Herefordshire HR3 6QH, UK. Price Sterling 14.95 + 3.15 postage which translates to approx. NZ$55.00.

BEEKEEPING IN THE TROPICS

By Gavin McKenzie, Apiculturist and Tutor at Telford



Beekeeping in tropical climates is, in some ways, similar to temperate regions. As far as the hive performance and requirements are concerned, the three essentials of feed, a young queen, and freedom from disease hold true, and are the important ingredients for successful production.

My experience with tropical environments now dates back over 14 years when I became involved in the development of apiculture in Papua New Guinea.

I shall endeavour here to explain a little of the differences, and give a few tips from my experience that may be of interest.

This involvement followed my long interest in tropical apiculture, as I am sure many of you in this room also have had. New Zealand Beekeepers with interests in this field date back approximately 70 years, when an early beekeeper from New Zealand used to go to the tropics to raise queen bees in the winter, and return with them in the New Zealand spring to install in his hives. This idea appealed to me as an ideal way to avoid the winter and to set up hives in the spring, but I guess quarantine laws in New Zealand have stopped that.

I have followed with interest the different projects undertaken from New Zealand, and to mention a few:

- Mack McKissock in Nule Island,
- Kintail Apiaries on Tonga,
- Allan Morrison and Gary Jefferies in Fiji

and recently Bryan Evans in the Solomon Islands.

There have also been many studies of potential and small inputs by New Zealanders. To most South Pacific countries in general I think that New Zealand has been very much a pioneer in this work and has established a good measure of success and goodwill.

In October 1976 my wife, two sons, and myself ventured to the Highlands of Papua New Guinea to conduct a two-year research programme to test the viability of beekeeping on a commercial scale. This programme was funded under a New Zealand-Papua New Guinea Bilateral Aid programme and was set for two years. The programme involved the construction and site establishment of 500 hives and the training of 13 indigenous people in beekeeping.

This project was somewhat different to other tropical regions in that the Highlands of Papua New Guinea are approximately at five to eight thousand feet high. This means it is much cooler than at sea level, and thus the problem of high-moisture honey does not exist; but we will discuss that later.

In contrast to the Highlands' development, I also conducted a research programme in coastal beekeeping in 1980 to 1982 with 500 hives whilst developing the Highlands' industry base. What I experienced on the coastal regions was quite different to the Highlands, so in discussing tropical beekeeping, it is important to note that there are significant differences in climate, depending on altitude as well as latitude.

The climate variation in the tropicals is that of a wet season and a dry season with little variation in day length and temperatures.

The wet season is usually between the months of November and April, depending on the latitude of the country, with a dry season in between. During the wet season very little honey surplus is stored, and the main honey flows are at the beginning of the wet season and after the wet season; with the middle of the dry season lower for production.

Because of this long drawn out almost continuous honey flow constant hive manipulation is required to successfully produce the maximum surplus honey.

I found that working bees early in the day, was preferable to later, in that the bees were easier to handle before noon,

but as the day progressed they became more aggressive. I put this down to climate as the day usually begins calm and fine; but as the cloud builds through, it usually culminates in a thunderstorm towards the evening. The ability of bees to determine weather patterns has been well documented, as has their ability to become aggressive during thunderstorms.

I was intrigued with the activity of imported queen bees and subsequently their offspring. They instantly adapted to tropical conditions after being sent from New Zealand in the late autumn. The climate obviously triggers bee behaviour as imported queens begin to lay on arrival and build up a colony of workers, completely at home in their new environment.

The queens laid throughout the next several months, which would be the New Zealand winter, and went about their business as though they had always been in this environment.

The other feature I observed was that a hive in the tropics would build up only to approximately 50,000 bees whereas in New Zealand the same colony would produce 70-80,000 bees by being pressured under seasonal urgency.

The pace of activity slows dramatically in a tropical hive and bees work away in a busy fashion, but not at the almost panic pace of bees in temperate climates on a good honey flow. So from this you can see that climate plays an all important role in the behaviour of honey bees, and that they have the ability to adapt to a new environment with remarkable speed and ease. I suggest further study of this ability could be useful in understanding and managing bees for profit.

Concerning tropical vegetation and honey production. The natural reaction from a New Zealand beekeeper is to presume that bush areas (as they are in New Zealand) must be the best for honey production. In fact, the reverse is the case in tropical forest. The main honey plants tend to be ground weeds in open areas of country, or specific trees, such as coconuts and lucena shade trees, and not the bush which is basically broadleaf, and does not flower or rely on insect pollination at all.

Honey bees are not indigenous to these regions, but the open grassland areas can be a field of wildflowers and yield good quantities of honey.

On average five tonnes per 100 hives is attainable, but in all countries because of hurricanes and dry weather patterns, failures are a possibility, making the establishment on a commercial scale without good financial resources a difficult and risky business.

There appears a definite five-year cycle of honey production in the tropics. In that five years, there are generally three very good seasons, and two not so good or failures, making planning of development over at least a five-year period a must if you are to gain a fair indication of what to expect.

Also one must be careful in assessing potential to take into account that generally the average production per hive will reduce as the hive numbers are increased, and the often high production figures achieved over four or five hives can be very misleading.

Hive management in the tropics differs quite a lot from our temperate systems, in that the honey flows tend to be steady and over a very long period. This has the effect of hives not building up to great strengths, but a good steady population of worker bees is essential for a long continuous honey flow.

Because of the slow honey flow bees tend to pack honey into the brood nest and crowd out the queen, with the result of a diminishing supply of new worker bees, if left alone.

I have found that a three-box hive is very suitable for beekeeping in the tropics as opposed to our four-box system in New Zealand, but more labour is required to get results.

Tied in very closely with this system are control measures for predators which we will deal with a little later.

To proceed with the hive management, I will discuss the systems developed for honey production.

Because of the slow nature of the honey flow, the use of queen excluders is not recommended as they act as a barrier and compound the problem of honey, restricting the brood nest and as a result reduce the egg laying of the queen. In the normal three-box hive, the brood nest occupies most of the two bottom boxes with the third box acting as the honey storage super.

I have found that a monthly visit programme works well for harvesting and the manipulation of hives, with the occasional more frequent visit at the height of a good honey flow. This system is also very easy to teach, as it is quite repetitive and quickly adopted by the unskilled beekeeper.

A typical visit would entail removing the top two boxes from the hive, taking frames of honey from the bottom box but leaving the brood and replacing the honey combs taken with empty combs to increase the area for the queen to lay. When this is completed, all honey is removed from the second box and replaced with empty combs alongside any brood combs. Then the third box has any sealed honey removed, and in this box all unsealed honey frames are placed, and any remaining area filled with empty combs. This, then leaves all sealed honey removed to be taken home for extraction. The unsealed honey in the top of the hive is left for maturing and removal next time round.

This system allows the queen to keep laying and fresh storage combs in the second and third boxes to cope with the honey flow. A note here, is that during periods of "no-flow", then more honey stores are left to provide adequate feed for the hive to carry it over. Because the hive is being manipulated in this way, it provides a good chance to inspect the brood for disease and to check the laying performance of the queen regularly.

In all apiaries I like to have three or four top nucleus hives, because these provide bees and brood combs to even up weak hives and young queens to replace failing ones as identified. As these nucs are used, they are replaced from a central queen breeding and mating apiary, to ensure good quality and temperament, and so the cycle continues monthly.

There is an obvious financial advantage in this system as a reduced capital outlay in hives, through one less box, and a queen excluder is possible, but it is more labour intensive. The use of labour in most island states is preferable to the use of capital, invariably in short supply, so this system sits well with the environment.

Due to the increased production, possibly it may be timely to look at it in the warmer New Zealand areas, at least, and in particular with the advent of the greenhouse effect on honey flow duration in New Zealand.

As mentioned earlier, this system is tied into the control of predators, and one of the worst, if present, is the wax moth.

These pests flourish in the tropics and can destroy a hive very quickly if given the chance. For this reason no boxes are stored away from the hives for more than is necessary for extraction as they will be infested and destroyed in a month or two. If surplus boxes need to be stored, for example, when honey flows cease, then they can be safely stored on top of a hive above a division board with a hole in the centre. In this position the bees will keep them free of wax moth.

For the control of predators and ease of lifting, I adopted the Australian eight-frame hive, and this is very suitable to tropical countries, particularly where wax moth are present.

The size of the eight-frame box means that the bees utilise all the combs inside, and can cover them with

bees to deal very effectively with wax moth invasion. I found on the 10-frame box (that due to the smaller bee numbers in tropical hives) the wax moth was able to establish itself on the outside combs. Once there, it would totally decimate the hive in a short time, particularly if the hive was a little weak.

Changing to the eight-frame box solved this problem and so was adopted as the standard hive for Papua New Guinea. Again, the narrower box width meant the bees could better guard their entrance against wasps and hornets, and prevent them from entering up the outside combs in the bottom box, which is the case with wasps in New Zealand.

Wasps and hornets can be troublesome in some areas. In fact, where they are bad you are left with no option but to remove the hives to another location.

In Papua New Guinea and the Solomon Islands the large cane toad is present. These toads sit at the entrance to hives and eat incoming and outgoing worker bees.

I did some research on these, and through dissecting and counting, established they could average 70 odd bees each over an eight-hour period. This multiplied by the hundreds of toads present, meant a large loss of bees.

With experimenting to establish a suitable hive stand, it was established that if the hives were a minimum of 409 millimetres, 16" off the ground, then the toads no longer presented a significant problem.

Another problem is ants; particularly the bull ant in Papua New Guinea. These large and strong ants will completely kill a hive if allowed the opportunity. This problem was overcome by smearing ordinary car grease around the legs of the hive stands, thus preventing the ants access as they will not cross a barrier of grease.

Also make sure no branches from trees are touching the hives to allow ants access.

The hive stands referred to are of simple wooden construction, and quite cheap to make. I have the plans for them should anybody require them. They hold two hives and the great advantage is that no bending is required when working hives, and with wind not being a problem in tropical areas, then stability is not a problem either, particularly as the hives are at the most three boxes high.

Apart from those predators discussed, there are birds that eat bees in some areas; but in my experience, they have not caused a significant problem in those Islands of the South Pacific I have visited.

I will at this stage discuss the internal parasites and diseases of bees found in the hives in tropical countries. You will all be aware that Varoa and Tropolealaps Mites have been discovered in Papua New Guinea. With them has come apis cerana bees and American foul Brood disease (Bacillus Larvae).

This, we believe, has been caused by the introduction of apis cerana bees to West Irian, which borders Papua New Guinea.

These apis cerana bees, their mites and bacillus larvae have been discovered in the West Sepic region of Papua New Guinea, close to the border, in small, but significant numbers. Dr Denis Anderson recently conducted a study in Papua New Guinea and estimated that they could move through the country in two or three years and eventually affect the hives in the Highlands.

To anticipate their arrival a surveillance programme has been initiated along with an awareness

campaign for the beekeepers of the Highlands.

Research will also be carried out to establish a suitable treatment programme for hives in which New Zealand is assisting through the Ministry of Agriculture and Fisheries via Murray Reid.

If these pests do eventually reach the Highlands' hives, they could destroy them but with controls, treatment and training, it is expected that the industry will survive and learn to manage and cope with these pests.

These mites are now widespread, particularly in the tropical belts of the world, and a great deal of research is being carried out to find suitable treatments. Hopefully long term there will be a cure.

I wish to make the point that very strict quarantine on imports of bees or honey to your country is the best way to ensure you do not get these problems.

American Foul Brood disease is present in some South Pacific Islands. If the incidence is low then inspection and destruction of infected hives is probably the best course of action. Only if this fails to contain it or, if other exotic diseases are present, such as European Foul Brood, should antibiotic treatment of hives be contemplated. Drug feeding does not cure the disease, it merely suppresses it. Use it and continuous treatment is necessary from then on.

I mentioned earlier high moisture honey which is common in coastal tropical countries. This can tend to spoil honey if fermentation is allowed. It is not uncommon to find honies which have a moisture content of 21% or more in high rainfall, high humidity areas. In fact, I had one case of honey that was 28% moisture and fermenting so badly that it blew the cappings of the sealed combs in complete sheets. This area had a rainfall of 200 inches plus a year and was totally unsuitable for honey production.

In general if the honey is in the region of 20%, then with care it can be dealt with and will not cause many problems. In most cases where consumption is close to production, then no problem arises.

Where honey needs to be stored or shipped, then temperature and length of storage can cause fermentation problems.

With expensive dehumidifying equipment the honey can be dried to a safe level of 18% or less, but the cost of this plant is beyond the reach of the smaller producer. A system I found very effective and cheap was to wrap an electric blanket around a 200-litre drum of honey and loosen the large bung before switching on. I found that with the steady heat from the blanket, a drop of 1% moisture per 24 hours was possible and if humidity was still a problem, then the heating could be carried out with great effect in an air conditioned room.

I believe electric drum belts are available and which work on the same principal, but they heat only a strip of six inches or so around the top of the drum, this driving off the moisture as it rises to the top of the honey.

I would appreciate the address of where these belts can be bought, so I can pass it on to people who require them.

A refractometer is also essential to gain accurate information when dealing with honey moisture levels. Honeys from tropical countries, when properly cared for, are well received on world markets. With the trend to organic food production the South Pacific Islands could very well market honey and other produce at premium prices because they don't use pesticides and artificial fertilizers.

This point is of great importance when planning agricultural development.

Other products of the hive can also be significant: such as pollen, propolis, royal jelly, queen bees. With plenty of native timber in many Islands, beehive equipment can be constructed both for local use and for export; but most of these ventures require a high degree of skill and can only be developed as expertise permits.

I see a future for beekeeping in some South Pacific Islands and one which will provide much-needed income and employment for the people along with a healthy renewable food resource. As New Zealand beekeepers have in the past assisted their neighbours I am sure they will continue to do so in the future.

Queen bees need replacing annually if the best is to be achieved from hives because they lay over long and extended periods. This could be true in New Zealand also. Particularly, in the warmer North Island where extended honey flows are quite normal.

The importance of well-bred young queens and their frequent replacement in tropical beekeeping cannot be stressed enough. This is the single most important factor in high honey production. Having enough room for expansion, but not too much, is the other important management skill. A hive free from disease and predators and with ample food supplies completes the programme.

In assembling beehive equipment for use in the tropics, a good wood preservative is advisable. It extends the life of beehive bodies. Although native Island timbers are heavier than New Zealand pine, they are more durable and quite inexpensive.

In making up new combs, I recommend that foundation be waxed in position by pouring liquid beeswax along the top bar of the frame on either side of the new sheet of foundation wax. This is a precaution against the foundation slumping through heat and ensures a strong well-built honey comb when drawn out by the bees.

Hive entrances of 9mm is all that is necessary. It allows the bees access and enables them to defend their hive well.

I have used inner cover division boards under the lids. That helps inside temperature, but I do not believe lid ventilators or holes bored in boxes for air serve any useful purpose. In fact, I believe the effect is counter-productive to the bees' needs. I have heard it said that this type of ventilation lets air in the hives and stops the condensation.

More important, in my experience, is never to paint or wax the inside of your boxes. That allows the timber to absorb and discharge moisture from condensation, and provides the hive with an environment as close to nature as possible which the bees can control by adjusting humidity and temperature.

By restricting outside atmosphere contamination, as is the case of a wild hive in a tree or building, the bees are best able to provide their own environment.

Light shade for the apiaries in the tropics is desirable, which brings me to apiary sites for hives.

As in all countries, apiary sites should be free from undergrowth, accessble to transport, and fenced from stock. Unlike colder climates where hives are placed in gullies, behind banks or in hollows to protect them from the weather, the opposite is desirable in tropical high humidity.

An apiary should be positioned on a small rise rather than in a hollow, or in a breeze rather than in shelter. Always provide light shade where it is available, the hives will better deal with humidity and dry their honey.

Light shade conserves the energies of bees by cooling the hive in the heat of the day and thereby releasing them to gather more honey.

Queen breeding and mating is possible all year round in the tropics but is easier during good honey flows. For this reason it is possible, if well organised, to have an adequate supply of young queens on hand to replace all queens once a year.

Concluded on page 29

RESEARCH REPORTS

From Helen Giacon

Nosema and Half Moon Disorder

This season, in cooperation with Denis Anderson, I set up an experiment to examine the role of nosema in the development of half moon disorder.

Half moon disorder is known to be related to poor nutrition, and nosema is a gut infection which undoubtedly impairs the nutrition of infected bees, thus it may be that nosema infection could predispose a queen to half moon disorder.

In this experiment, queens were exposed to nosema either in the breeder colony or the starter/finisher, or both, then put out into hives which were then monitored for half moon symptoms.

The effects of nutrition were also examined by caging some of the queens with nurse bees, which had either had pollen to eat or had not, for six days before putting into hives.

The problems encountered in this experiment taught me a great deal more about beekeeping than science in some respects.

However, the failure of cells reared in nosema-infected colonies and their link with KBV infections has provided possibilities for further investigation. High losses during or just after mating have reduced statistical information and any queens showing abnormalities will now be removed and fixed for examination by light and electron microscopy.

This will tie in with Denis' present work on queen morphology.

Diagnostic Work

I have continued routine disease diagnosis in conjunction with ongoing experiments. Screening of bee semen from Australia, imported royal jelly for EFB, and the continuation of MAF's Diagnostic Service during Brian Milnes' absence has also been carried out.

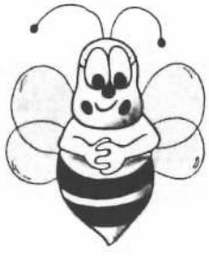
In the next year I will be furthering my technical skills in AFB and EFB detection and culture with a planned trip to Australia.

Leafcutter Bees

The report of work on the 'Destruction of Viable Chalkbrood in Export Honeys and on Leafcutter Bee Nest Material in New Zealand' has now been completed by Denis Anderson. This work was done in connection with the import of New Zealand leafcutter bees into Australia. Methods to improve the sensitivity of detection and the effects of hypochlorite over time, and in varying concentrations and pH levels, were investigated.

The results set a standard for testing and negotiations with Australia will lead to further work in this field.

Helen Giacon (left) and Louise Malone. Photo Mary-Ann Lindsay



From Louise Malone and Helen Giacon

Attempts to Prevent Germination of *Nosema apis* Spores

The effects of some simple salts on the germination of nosema spores were tested in the test-tube.

Spores were suspended in solutions of magnesium sulphate, calcium chloride, potassium permanganate, sodium chloride, or calcium proprionate, and then they were treated with a very weak solution of hydrogen peroxide (this usually causes at least 70% of spores to germinate.)

Only magnesium sulphate was able to lower this percentage, to about 50%. The other salts had no effect.

We plan to conduct more experiments along these lines, using different concentrations of magnesium sulphate, and trying out some other compounds.

Effects of Sugar Syrup Additives on Nosema in Caged Bees

In a second series of experiments, we tested these salts for their effects on nosema infections in caged bees.

Compounds tested were the same as in the test-tube experiments, with the addition of potassium chloride and a virus-killing disinfectant called "Virkon".

New bees were taken from healthy hives, dosed with nosema, plus the additive compound, then caged in groups of 20 and supplied with clean pollen, water and sugar syrup with the additive mixed in. After 14 days, we checked the numbers of survivors and dissected the guts from every bee. The number of infected bees from each cage and the number of spores per gut for each infected bee were calculated.

Our conclusions were:

1. Potassium permanganate may kill bees (85% killed).

2. None of the additives had any clear effect on nosema infection, except for Virkon in one trial, where none of the bees were infected. Unfortunately, we could not repeat this result.

3. None of the additives reduced the total number of spores per bee. This figure varied considerably, even in the controls.

We plan to repeat the Virkon experiment in the spring.

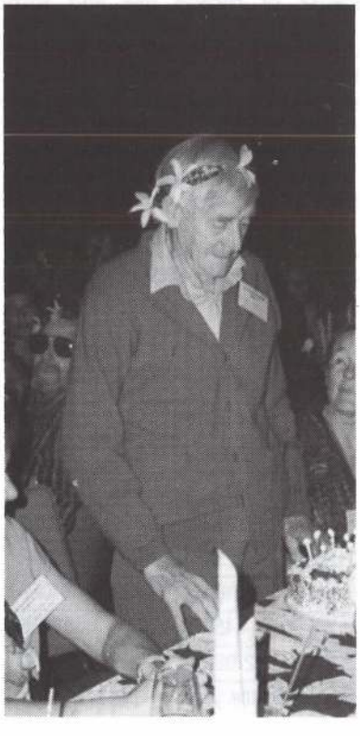
BUZZING AT CONFERENCE

Left: Poona Samuel, Agriculture Quarantine Officer, Rarotonga, trying to out-fungus Ted Roberts. You pick the winner.
Below: Heather and Steve Olds.
Photos Mary-Ann Lindsay

Above left: Mark Berry and Linda Imms from Arataki.
Left: Reg and Jean Clarke.
Photos Mary-Ann Lindsay

CONFERENCE

Above right: This here is young Olive Hebron wot thumps the Editor and the Executive Secretary when they don't behave. Above: Chris and Margaret Bromell. Below left: Ray Clarke contemplates his 85th birthday cake. Below: Doug Purdie and Oliver Vercoe. Photos Mary-Ann Lindsay



MAF Quality Management Report

From Murray Reid

ORGANISATION

The National Apicultural Business Unit (NABU) became part of the Animals' Business during the year instead of the Plants' Business. This is mainly an administrative re-organisation and no changes in business activities were required.

STAFFING: NATIONAL APICULTURE BUSINESS UNIT

Clive Vardy, Apicultural Advisory Officer, Gore, resigned during the year and Matthew Sole, Field Officer, Alexandra, assumed some of the regulatory roles formerly held by Vardy. A decision was made by Regional Management South Region to advertise for an Apiculture Services Manager to be based at Lincoln. To date the positon has not been advertised.

Apiary registers and systems were maintained and disease control programmes operated by Apicultural Advisory Officers at Whangarei (Derek Bettesworth) Hamilton (Murray Reid) Tauranga (Andrew Matheson) and Palmerston North (Ted Roberts). Field Officers were employed at Ashburton (Mike Mcphillips) and Alexandra (Matthew Sole) and a Livestock officer at Blenheim (Dave Grueber).

Brian Milne (Lynfield) continued to provide a disease diagnostic and queen quality evaluation service.

BEEKEEPING STATISTICS

Beekeepers, Apiaries and Hives

There were 6,210 beekeepers owning 318,203 hives of bees at 31 May 1990. (Figure 1). Beekeeper numbers declined by 485 or 7.2% over last year and hive numbers declared also declined by 12,135 or 3.7%. There is no single explanation for this trend.

Honey Production

The total honey crop was assessed at 8,752 tonnes (27.5 kg/hive) compared with last year's crop of 5,752 tonnes, (17.4 kg/hive) and the six-year average of 8,688 tonnes (26.7 kg/hive) (Figure 11).

Prices remained similar to last season's and realised $1.70-2.20 kg with most early sales falling in the $1.80-2.00/kg range.

For the year to December 1989 New Zealand exported over $4 million worth of honey and beeswax to over 22 different countries (Fig III). The major markets were Germany, Japan, the UK, Australia, Taiwan, and the Netherlands.

American Foulbrood Disease (AFB)

The 3,831 diseased hives found by MAF, or reported by beekeepers, was an increase of 155 over last season. The number of infected apiaries also increased by 130 from 1,530 to 1,660. Fig IV. The increase in diseased apiaries can be traced to hive management for kiwifruit pollination and undue levels of disease in hives owned by a few irresponsible commercial and semi-commercial beekeepers. MAF took a prosecution as a test case against one of these beekeepers but a trial date has yet to be set. Over 216 MAF officers and beekeepers appointed as temporary inspectors again examined hives for AFB. These teams inspected just under 15,000 hives (4.8%) in 1966 apiaries (8.0%) and found 664 hives of disease. Figure V.

Beekeepers again proved willing to offer their vehicles and time to inspect hives. Working as teams on "diseaseathons" appears to be the most effective system and will need to be continued if the target of 10% of apiaries inspected is to be achieved.

Queen and Package Bee Exports

A second shipment of drone semen was imported from the Western Australian Department of Agriculture's Bee Breeding Programme. The semen tested negative for exotic diseases. The inseminated stock were kept in a MAF controlled quarantine apiary before being cleared for release.

New Zealand producers exported 30,743 queen bees worth NZ $300,000 (fob) and 9,591 1 kg equivalent packages worth NZ $320,000 (fob). Most of these went to Canada but shipments were also made to the UK, Japan, France, Israel, Portugal, and to some Pacific Islands. Package bee exports were the same as last year but queen bee numbers were down by 10,000.

POLLINATION

The largest pollination group, the Kiwifruit Pollination Association, moved to a systems audit as well as an end point hive check. Based on a questionnaire, personal knowledge of the individuals operation and statistical tables MAF prepared inspection specifications for the KPA's own hive auditors. This meant that beekeepers with a poor, suspect, or unknown business and hive management system had more of their hives examined than those with a good record. MAF also continued to audit hive quality on a contract basis for both beekeepers and growers. In all cases permission to check the hives was obtained from the beekeepers concerned.

Beekeepers and growers in Canterbury began to set hive standards and audit procedures for berry and pip fruit pollination. An estimated 1,500-2,000 hives were placed in orchards in Canterbury last season.

The use of sugar feeding, Hicane (cyanamide), and artificial pollination continued in kiwifruit orchards. Growers required even more hives because of Hicane use and some beekeepers attempted to use the same hives twice, firstly in Hicane blocks for 6-10 days then into later flowering orchards. This operation wasn't always successful and showed that negotiation and carefully worded contracts between beekeeper and grower are essential. Where hives were used twice, bee-

FIG I: BEEKEEPERS APIARY AND HIVE STATISTICS FOR NZ APIARY DISTRICTS AS AT 31 MAY 1990

	Beekeepers		Apiaries		Hives	
	1990	1989	1990	1989	1990	1989
Whangarei */Auckland	1580	1840	3576	4257	33982	40029
Hamilton	659	671	3107	3055	47596	46506
Tauranga	656	693	3664	3826	54764	59889
Palmerston North	1398	1437	4064	4165	39728	38959
Nelson	548	561	2052	2223	23713	25457
Christchurch	783	901	4848	5100	59677	61072
Gore	593	592	4475	4456	58743	58426
Total	6210	6695	25786	27082	318203	330338

* Whangarei and Auckland districts were amalgamated during the year.

FIG II: NEW ZEALAND HONEY PRODUCTION, IN TONNES
AS AT 31 MAY ANNUALLY

Year	Northland, Auckland, Hauraki Plains	Waikato, King Country, Taupo	Bay of Plenty, Coromandel, Poverty Bay	Hawkes Bay, Taranaki, Manawatu, Wairarapa	NORTH ISLAND	Marlborough, Nelson, Westland	*Canterbury /N. Otago	South & Central Otago, Southland	SOUTH ISLAND	New Zealand	Yield per Hive (kgs)
1985	1502	1697	1550	1088	5837	685	1650	2142	4477	10,314	33.3
1986	1498	1492	1150	887	5027	871	950	2623	4444	9471	29.0
1987	1122	1506	1450	1012	5090	966	1070	2965	5001	10,091	29.7
1988	480	1298	976	834	3588	807	1503	1850	4160	7748	23.1
1989	379	730	401	530	2040	621	1290	1801	3712	5752	17.4
1990	660	1154	1296	894	4004	471	2774	1503	4748	8752	27.5
6 year average	940	1304	1137	874	4255	737	1540	2147	4424	8688	26.7

* Includes 342 tonnes honeydew

keepers heavily discounted each "drop" and this caused some concern amongst other pollinators.

Beekeepers acting as brokers continued to provide a useful service and one fulltime professional broker employed his own hive auditing system independent of the Kiwifruit Pollination Association and MAF.

MAF SYSTEMS

Exotic Bee Disease Response

Work continued on writing manuals, job cards, and specifications for regions to deliver this service. MAF expects to control or eradicate any exotic disease by using a mobile task force of MAF officers and teams of local beekeepers. Thorough training of these people is continuing.

Apiary Registration and Inspection Fee (ARIF)

This fee was to be collected by the beekeeping industry to fund MAF's activities in registration and hive inspection. The proposed fee of $20 for the first apiary and $6 for each oother apiary owned was to be levied on all beekeepers under the Commodities' Levy Bill. This Bill did not get introduced to the House and is not expected to be passed until the New Year.

MAF will continue to fund the registration costs but cost recovery for hive inspections will require further negotiation.

A computer programme was developed so the apiary register programme could be used to administer the collection of the fee.

Surveillance

MAF continued to operate a diagnostic laboratory at Lynfield under the care of Brian Milnes. A small number of specimens were submitted for suspect European foulbrood but all tested negative.

A significant number of beekeepers in the restricted zones in Coromandel and Eastern Bay of Plenty did not observe their special permit conditions. Warnings were issued to the offenders and all complied eventually. A number of beekeepers didn't appreciate how serious the toxic honey problem can be.

Training manuals for Border Protection Officers were written and two courses run in Auckland. The objective is to have at least two members on every quarantine team in the country skilled in recognising imported bees or bee products, to make the correct decision over entry of those products and to take any follow-up action required e.g. prosecution, exotic disease alert, and so on.

The Border Protection Service screened 1,700,000 passengers on 12,000 aircraft last year. Of these, 700,000 declared quarantine items but another 188,000 passengers were found to have undeclared quarantine goods. Over 2,700 bee products were taken off air passengers. A large number of vessels were also cleared, including yachts, all of which had honey on board.

At least one prosecution was taken against an importer for illegally importing honey as part of a consignment of other foodstuffs.

Market Access

Numerous submissions were made to the United States' Department of Agriculture and the Agricultural Quarantine and Inspection Service for New Zealand bees to be allowed access to the US. This resulted in a proposal to allow importations being published in the Federal Register.

A number of American beekeepers submitted objections to the proposal, all of which were addressed by MAF. A final decision is still pending.

Australian beekeepers and State Officers continued to lobby to have honey from chalkbrood countries banned. Submissions from MAF sought a compromise whereby honey would be allowed entry if certified as being heat treated to 70°C for two hours and/or tested free of viable chalkbrood by a laboratory test. Negotiations are continuing with New Zealand exporters over their ability or desire to meet these conditions.

Legislation and Policy

A large number of pieces of legislation or policy documents were reviewed or drafted during the year. Progress on legislation change however has been limited to industry consultation and preliminary law drafting. The bottleneck is in Parliament which currently has over

FIG III: EXPORT FIGURES FOR HONEY, HONEYDEW AND BEESWAX
FOR THE YEAR TO DECEMBER 1989

Product	Tonnes	NZ$ (FOB)	No. of Countries	$/KG
Bulk honey	582.25	1405730	10	2.41
Retail honey	264.04	105699	22	3..81
Comb honey	162.30	1085922	10	6.69
Honeydew	31.34	106997	8	3.41
TOTAL Honey	1039.93	3604348		
Bees Wax	85.51	457895	11	5.36
TOTAL Honey and Wax Exports		$4062243		

NEW ZEALAND BEEKEEPER, APIARY & HIVE STATISTICS BY APIARY DISTRICTS AS AT MAY 31 1990

	1-5 Hives		
	Beekeepers	Apiaries	Hives
Whangarei	1176	1324	2538
Hamilton	417	479	967
Tauranga	365	426	855
Palmerston North	923	1019	2088
Nelson	356	418	761
Christchurch	479	585	1040
Gore	337	384	742
NEW ZEALAND	4053	4635	8991

6-50 Hives		
Beekeepers	Apiaries	Hives
334	747	4696
179	395	2646
191	397	3313
398	867	5750
134	368	2192
189	526	3083
153	340	2468
1578	3640	24118

51-250 Hives		
Beekeepers	Apiaries	Hives
41	379	5116
32	321	4294
56	496	7099
40	459	4449
31	291	3496
63	633	7499
48	539	5794
311	3118	37747

	251-500 Hives		
	Beekeepers	Apiaries	Hives
Whangarei	14	265	5364
Hamilton	7	154	2857
Tauranga	15	317	5322
Palmerston North	15	489	5656
Nelson	13	348	4905
Christchurch	22	401	7542
Gore	116	486	5932
NEW ZEALAND	102	2460	37578

501-1000 Hives		
Beekeepers	Apiaries	Hives
10	492	8389
11	390	8175
16	600	13219
9	353	5647
11	436	8082
13	790	9533
22	1070	15952
92	4131	68997

More than 1000 Hives		
Beekeepers	Apiaries	Hives
5	369	7879
13	1368	28657
13	1428	24956
6	877	16138
3	191	4277
17	1913	30980
17	1656	27855
74	7802	140742

	1-50 Hives		
	Beekeepers	Apiaries	Hives
Whangarei	1510	2071	7234
Hamilton	596	874	3613
Tauranga	556	823	4168
Palmerston North	1321	1886	7838
Nelson	490	786	2953
Christchurch	668	1111	4123
Gore	490	724	3210
NEW ZEALAND	5631	8275	33139

More than 50 Hives		
Beekeepers	Aparies	Hives
70	1505	26748
63	2233	43983
100	2841	50596
70	2178	31890
58	1266	20760
115	3737	55554
103	3751	55533
579	17511	285064

Totals		
Beekeepers	Apiaries	Hives
1580	3576	33982
659	3107	47596
656	3664	54764
1391	4064	39728
548	2052	23713
783	4848	59677
593	4475	58743
6210	25786	318203

FIG V: NUMBER OF APIARIES AND HIVES WITH AMERICAN FOULBROOD DISEASE FOUND BY MAF OR REPORTED BY BEEKEEPERS TO 31 MAY 1990 (1989 FIGURES IN BRACKETS)

	No. Apiaries	No. Hives	%Apiaries Inspected	%Hives Inspected
Inspected by MAF	889	8728		
Inspected by beekeeper inspectors	1077	6040		
Total Inspected (216 inspectors)	1966	14768	8.0	4.8
AFB found by MAF or beekeeper inspectors	181 (191)	644 (438)		
AFB Reported by Beekeepers	1479 (1348)	3167 (3228)		
Total AFB	1660 (1530)	3831 (3676)		

240 pieces of legislation before it. The documents considered include:

- the Commodities' Levy Bill (gives powers to industries to levy members)
- the Agricultural Security Bill (deals with disease controll and will include parts of the Apiaries Act)
- Primary Products' Bill (considers aspects of food quality and will include the other part of the Apiaries Act).
- Apiariies' Act
- Honey Export Act
- Animals' Act
- Regulation of Agricultural Compounds
- Regulation of Weed and Pest Management
- National Agricultural Security (Border protecton)

FIG IV: AMERICAN FOULBROOD DISEASE LEVELS IN APIARY DISTRICTS TO 31 MAY 1990 (1989 FIGURES IN BRACKETS)

Apiary District	Diseased Apiaries				Diseased Hives				% Apiaries Inspected by MAF Inspectors	
	No.		%		No.		%			
	1990	1989	1990	19989	1990	1989	1990	19989	1990	1989
Whangarei/ Auckland	175	(235)	5.0	(5.6)	521	(643)	1.5	(1.5)	4.7	(10.3)
Hamilton	390	(293)	12.5	(9.6)	641	(491)	1.3	(1.1)	14.6	(8.7)
Tauranga	362	(358)	9.9	(9.4)	863	(681)	1.6	(1.1)	7.0	(5.1)
Palmerston Nth	136	(184)	3.3	(4.4)	253	(732)	0.6	(1.9)	7.7	(5.6)
Nelson	242	(160)	11.6	(7.2)	497	(427)	2.0	(1.7)	1.4	(13.0)
Christchurch	209	(147)	3.6	(2.9)	694	(421)	1.1	(0.7)	5.6	(6.1)
Gore	146	(153)	3.3	(3.4)	362	(281)	0.6	(0.5)	6..3	(7.8)
Total	1660	(1530)	7..0	(5.6)	3831	(3676)	1.2	(1.1)	8.0	(8.3)

- Food Administration in New Zealand (who licenses food premises including honey houses?)
- Pesticides: Issues and Options for New Zealand.

Consultancy

MAF continued to earn income from external clients to supplement work paid for from the agriculture vote. These included:

- auditing pollination systems as well as hives
- production of "Buzzwords" and the "NZ Beekeeping Industry Profile"
- secretary to the NZ Queen Bee Producers' Association
- Executive Officer to the NBA Executive
- import and export certification and quarantine inspection
- general consultancies including an overseas aid project in Papua New Guinea.

HONEY FRENCH TOAST

2 eggs
1 pint milk
¼ cup honey
½ teaspoon salt
a sprinkling of mace or nutmeg
6 or 8 slices of bread several days old

• Beat eggs until light. Warm the milk slightly and blend well with the honey. Add the salt, mace, and beaten eggs and stir well. Cut bread about one-half inch thick. Dip each slice into the milk and egg mixture and place on a hot well-greased griddle. Brown well on both sides. Serve with honey.

Diseases and Disorders of Queen Honey Bees

By Dr Denis L. Anderson, CSIRO Division of Entomology, Australia

Background

This brief progress report on a research project that is concerned with examining aspects of diseases and disorders of the queen honey bee is as presented to Conference. The project, which will continue until 1992, is being conducted by me at the CSIRO Division of Entomology in Canberra and receives funding from the Honey Research Council (HRC), the New Zealand National Beekeepers' Association (NZNBA), the Australian Queen Bee Breeders Association (AQBBA) and the CSIRO.

As we are all aware the queen bee is the most important individual in a colony. She influences the eventual size attained by a colony, and hence the amount of honey and pollen it produces. Colonies headed by queens with high rates of egg laying usually attain large population sizes, produce copious amounts of honey, and collect more pollen. Australian and New Zealand beekeepers usually re-queen their colonies at regular intervals with young vigorous queens obtained from commercial queen producers. It is often reported that many of these purchased queens perform unpredictably; some lay very high numbers of viable eggs (good performing queens) while others lay low numbers of eggs or do not lay at all, or are killed and superceded soon after being introduced to colonies (poor performing queens). Colonies that supercede their queen during spring and summer, or are headed by poor performing queens, yield less honey and have reduced pollen collecting ability than colonies that do not supercede or are headed by good performing queens and are therefore a financial liability to the beekeeper.

Furthermore, countries that import Australian and New Zealand queens have complained of their high levels of supercedure. It is also a fact that both Australian and New Zealand commercial queen producers frequently encounter unexplained death and abnormalities during the production of queens. Thus there is a need for a better understanding of the pathology of queen bees.

The specific objectives of the project reported here are to determine the types of diseases and disorders affecting all life stages of the queen honey bee *Apis mellifera* and to ascertain the causes and possible control of those diseases and disorders determined to be most severe or common. The general aim is to be able to identify factors which have a detrimental effect on the production of queen bees. This will enable queen producers to consistently produce better quality queens.

Several commercial queen producers from Australia and New Zealand are assisting in the project by supplying information and specimens.

The Projects

The project consists of four sub-projects.

The first is concerned with examining the performance, morphology and physiology of normal, healthy queen bees as they age. To be able to recognise an abnormal individual of any animal it is necessary to know some detail of the appearance, physiology, and behaviour of a normal healthy individual. At the present time an abnormal queen is recognised solely by examining her behaviour. However, a knowledge of the appearance of healthy organs and tissues of queen bees is also necessary when attempting to locate the cause of a particular abnormality. At present the appearance and physiology of queens as they age has been poorly studied. However, it is known that certain tissues of a queen change colour as she ages. For example, all queens become darker in appearance as they grow old, mainly due to darkening of the fat bodies which are located directly under the queen's cuticle. Why and how these fat bodies darken is not known. The aim of this subproject is to examine the relationship between physiology, morphology, and performance of normal healthy queen bees as they age. This will provide a solid platform from which to investigate abnormal queens.

In the second sub-project the major causes of death of queen larvae in rearing colonies is being investigated together with the death of young adult queens in mating nuclei and queen banks.

The third sub-project is determining the major causes of queen supercedure in Australian bee colonies.

The final sub-project is determining the types of diseases and disorders that affect all life stages of the queen honey bee. With this knowledge the causes and possible control of those diseases and disorders determined to be most severe or common will be examined.

Progress To Date

Firstly, to examine the performance, morphology, and physiology of normal, healthy queen bees as they age, approximately 40 colonies have been established in ten-frame Langstroth hives. Each colony was re-queened during January of this year with identically reared and mated sister queens. Four (4) of these queens were then removed from the colonies for laboratory physiological tests and electron microscopy examination (1) prior to the queens being mated (2) shortly after the queens were mated and (3) at four months of age. During the next three years further groups of four queens will be removed from these colonies and similarly tested. Early results indicate that certain tissues that were reported to change colour in aged queens only change colour immediately queens begin to lay. Electron microscopy studies of these tissues are currently determining the cause of these changes, but it is obvious that the changes are a natural part of the aging process in queens and are not related to the presence of pathogens.

To test for the major causes of death of queen larvae in rearing colonies and young adult queens in mating nuclei and queen banks specimens have been received from several commercial queen producers. These are currently being tested for all pathogens.

Studies determining the cause of queen supercedure will begin this coming summer as colonies presently being used in the 'normal healthy queen experiments' become available.

Several behavioural abnormalities have so far been detected in adult queen bees. These are currently being examined and will be reported later.

In conclusion, I would like to acknowledge the assistance of those New Zealand beekeepers involved with this project. I would also like to thank the NBA and the Trustees for their support.

WISH TO RAISE YOUR OWN QUEENS?

From John Heineman

When you have been looking after your hives for a few years and have gained sufficient confidence in dealing with the wonderful creatures you will realise that they have become a true source of interest and pleasure.

You must have talked with fellow beekeepers at branch or club meetings and hopefully you have been able to attend some field days. You are starting to feel the urge to try something else, go a step further. That's only natural for any person with an inquisitive spirit, and I think that anyone taking up beekeeping must be endowed with that type of mind. It would not be surprising if you do think that the time is ripe to try your hand at raising a few queens.

You might have been discussing and reading about the merits of requeening hives as an anti-swarm measure, replacement of old or failing queens, improvement of the strain etc. Then when you think about ordering a few queens you get a shock when learning that the queen breeder charges from $12 to $15 per queen.

Well, if that is the main reason for wanting to raise your own queens better think again. That $12 to $15 represents to the queen breeder a return which is not out of the way. Seeing the amount of work he puts into it, the risk of failures through bad weather at critical times, and his capital outlay he needs it just to keep his head above water. As Don Gibbons says in his letter to the Editor in the previous issue of this magazine: "It compares favourably with the dole except that the working conditions are somewhat different apart from the seven-day week". Our Don has a way of making his opinion clear with some humour thrown in. But he is right, you know.

What you receive for your money, if you have ordered from a reputable queen breeder, is at least good average laying queens which will head your colonies for the next two years. This saves you all sorts of worries, you will be hard pushed to improve their quality and the amount of money involved represents the value of approximately two 2kg pots of honey. That you will probably recoup in the first season thanks to better performance of the colony. Less chance of swarming, better production.

So I am not advocating that you try to raise a few queens to save yourself some dollars. If your purpose for raising a few queens yourself is to improve your strain, forget it. I am sure that it is most unlikely that someone with a few hives to pick a breeder from, probably surrounded by other hives which may or may not be of desirable quality, not forgetting feral colonies, will have a greater chance that the proverbial snow ball in that dreadful hot place to improve on the quality of queens supplied by a good NZ queen breeder.

However, if after considering all this it is still your desire to try out this aspect of beekeeping, please have a go. It is fascinating, challenging, probably frustrating, but most satisfying if you can say in the end: "that colony is headed by a queen raised by myself and she is doing a fine job."

BEGINNERS' NOTES

I doubt if there is an aspect of beekeeping which has appeared in print more often over the years than the one of raising queen bees. The number of books and articles we have in the NBA library on this subject is substantial. It becomes very confusing for the inexperienced to choose from such a collection of different authors, numerous systems and techniques the one which would suit best. Professional queen breeders will all develop their own ways, all differing a little, adapted to varying circumstances and conditions.

However if one wants to raise 1,000 or only three queens the basic rules are the same.

a. the best possible queen mother is the one you want off-spring from
b. the conditions for raising good cells must be just right, that is plenty of tucker, both honey and pollen, coming in. If nature does not co-operate you will have to provide by feeding syrup and pollen supplement to your queen mother colony, the cell raiser and drone producer(s), and later to the mating nucs
c. there must be plenty of mature drones about from top grade colonies to subsequently mate with the virgin queens
d. colonies with undesirable qualities anywhere in the vicinity will prove to be a curse. Murphy's law says if something can go wrong it will and that applies to mating with unwanted drones
e. you must be able to plan the operation properly and stick to your timetable right throughout the entire operation.

without having to transfer grubs from combs into wax or plastic cell cups. That is a considerable advantage if you are making your first attempt.

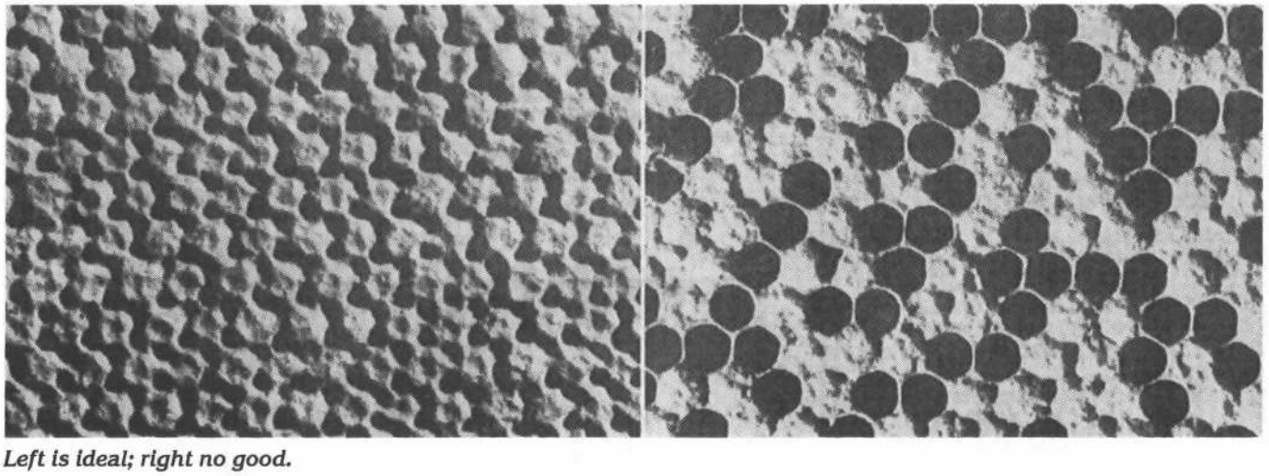
In selecting your breeder queen you will have to look for certain qualities and that can only be done by observing and recording the relevant facts of colonies over a period. One season may seem to be sufficient but I think that two is much better for then you will get a far better impression of a colony's behaviour over a longer period and consequently of that particular queen's characteristics.

Qualities to look for:

1. Your breeder queen should be the mother of bees which have shown their ability to gather a surplus crop of honey (relative to the weather) and a good supply of pollen. Some colonies start earlier in the day and carry on longer in the evening and show more activity under marginal conditions than others which are obviously important factors.
2. The colony should be one of the prudent types, meaning that it looks after its stores instead of turning it all into brood at the wrong time (too early in spring or too late in autumn). There is no benefit in breeding from a colony which has given you two full supers surplus and was left with plenty of stores in autumn but then needs a whole bag of sugar to make it till the honey flow.
3. The bees should show a good even colour, not necessarily a very bright yellow. If there is a marked variation in the colour of the bees in the same colony, lighter and darker, it is a sign that the queen has been cross mated. The drones of the same colony should also show this even colour. However one may frequently see a few darker drones wandering around. They are probably interlopers from other colonies. That happens often, but it is a sign that there are drones about you would prefer not to have around when mating has to take place.
4. The worker bees should be large, reasonable to handle, and should not scamper all over the place when the hive is being manipulated.
5. The brood pattern should be solid and even, the queen having laid in every cell. A scattered pattern with too many cells left unoccupied is definitely undesirable. Of course some of the cells will be empty again after the bees start hatching. A well filled brood comb where the queen has supplied an egg to every cell but for those filled with honey or pollen is a sight to behold.
6. Health is of course a most important factor when selecting a breeder. We don't need to say anything about B.L. You know! But have a thorough inspection for other things like Nosema, Sac brood, Chalk brood, or Paralysis or anything else you may not recognise but looks abnormal. This is how a disease we have not got in NZ at present, but which could enter the country in the future, may be first found.

Having selected your breeder colony you must pay thorough attention to the other colonies on your site. One nasty mongrel can spoil all your efforts and, as said before, there are neighbouring hives and perhaps feral colonies with drones ready to do their bit when the time comes.

How are the conditions? Does your breeder have a copious amount of honey stores and pollen? Is fresh honey



Left is ideal; right no good.

There are a few methods suitable for the beekeeper who wants to raise a small number of queens. This can be achieved without an elaborate set-up. It can be done without grafting: that is,

and pollen coming in? If not you will have to start feeding. It will be a case of boosting the hive so use a thin syrup (1 part sugar (honey) to 2 parts water). This will induce royal jelly production by the nurse bees. 500 to 600ml per day. Extra combs with good pollen may have to be supplied. The best of course is when the colony can profit from a nice natural flow so that both fresh pollen and nectar is coming in.

Young queens can be raised in spring, summer, and early autumn. But don't start too early for drones must be about and they need some time to become mature. At the same token virgin queens mated very late often turn out to be duds.

First method. The least involved but also restricted to raising only one or two daughter queens from your chosen breeder. It means just the making of a couple of nuclei using brood from the breeder. The breeder should be strong with plenty of bees and brood. Make up one or two supers with brood combs, at least one solid comb of feed honey, and another with good quality pollen ready to receive the brood from the breeder. I find it advantageous to have eight combs to the super and also put in a small feeder.

Take from your breeder hive a comb with very young larvae and a comb with brood near the hatching stage. Shake adhering bees off and place into the nuc super. In the centre with honey on one side and pollen on the other side. Followed on both sides with empty brood combs and the feeder. You have now two empty brood combs which have to go into the breeder to fill the gap. Place the super with the nuc on top over an excluder. Cover up. After a couple of hours or the next morning plenty of bees, including young nursing bees, will be in the top box. Put in your division (split) board and block up entrance with some green grass. Filling the feeder with syrup will be a good thing.

If your breeder hive is strong enough you can make two nucs at the same time but the second one goes on to another hive which will supply the necessary bees for it if you again place it over an excluder.

Entrances of the nucs should be fairly tightly plugged or the green grass will wither and the bees release theselves. If not out after three days you better pull the plug. In this way there will be a minimum of drifting back of bees to the parent colony. This will of course be avoided altogether if you take your nucs away far enough to another location and leave them there for mating. If you do that remember drones are needed and watch the surrounds.

If you do wish to make use of four or five frame nuc boxes instead of full-sized supers the procedure is the same but with one difference. You will have to shake bees into the nuc boxes as you cannot place them over an excluder. So you will have to look for the queen first which may make it a little more complicated.

It is possible that more than one queen cell will be raised by such a nuc. You could use the extra cell(s) by cutting them carefully from the comb with a piece of comb adhering. Only use a good looking large cell. Don't bother with anything undersized. Not worth it. If you want to make use of those extra cells to give to another nuc or for requeening purposes you have to be in time. Once one cell hatches any others will be lost.

So there our time table comes into play. I would give it a week or eight days before opening up the nuc to find out what has been created. That would be the time to take the extra cells out. That will still give you one or two days up your sleeve before those cells will be ripped down.

Then it is a matter of waiting for mating to take place. It depends very much on the weather when this is going to happen. If after about three weeks the virgin queen has not mated the chances for getting a good performing queen diminishes rapidly. Normally you should by that time find a patch of eggs and young larvae. Wait a bit to see what the pattern is like before you use your home raised girl for the purpose you want her for.

In the next issue I hope to continue this series of raising small amounts of queens without resorting to artificial cell cups and grafting.

Library Notes

Received from MAF: PRIMARY PRODUCTS ACT — Proposed legislation.

From Mr M Reid: Video with three films of 10 minutes' duration each (total ½ hour).

1. SO THAT THE BEES MAY LIVE (Varoa)
2. NO FLIES ON US (Fruit Fly)
3. AFRICANIZED BEE ALERT

On order: additional papers to the collected GRAHAM KLEINSCHMIDT RESEARCH PAPERS.

Library material is available to all NBA members or non-members at the discretion of the Librarian.

Catalogue + supplement $3.75 + postage. Send $5 with your first request to cover loan fee and postage. The balance will be held in credit for future borrowing.

BOOKS, BOOKLETS, and MAGAZINES, PAPERS, STUDY PRINTS, SLIDES, and VIDEOS.

NBA TECHNICAL LIBRARY, BOX 112, MILTON.

Hon. librarian: John Heineman

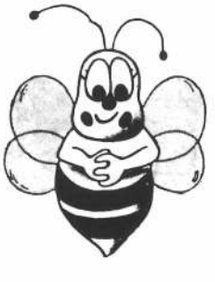
TROPICAL BEEKEEPING

CONCLUDED FROM PAGE 18

Because of the long periods suitable for mating queens, an apiary of 60 single-storey nucs will adequately supply the needs of 500 hives for queens, brood, and bees. With a low capital outlay in these nucs and a sound monthly production cycle, a steady organised replacement programme is possible, against our temperate panic replacement in spring and autumn in New Zealand. If this could be adopted in our warmer regions of New Zealand, it would enhance production and spread work loads and pressure points over a greater part of the year to obvious advantage.

To sum up I trust I have given food for thought as we progress towards an ever-changing world and that, what has been learnt in the tropics, may well give us in New Zealand a lead as we face the seemingly inevitale global warming from the greenhouse effect.

I think the bees will adapt quickly, but I am not so sure about beekeepers.



FROM THE COLONIES

Nelson

July is half gone and the weather has been colder than for several winters past which have been fairly dry. The bees seem to be finding generous amounts of pollen: amazing where at this time of the year!

The recent honey harvest appears better than that for the few previous years. It should ensure the winter feed supply and a good start for the spring. As soon as this present cold snap is over there will be a lot of sheltered spots that will benefit from the sun; that is becoming noticeable already, a month from the shortest day.

We learn from up north that the sugar price is now mere cents per kg., but the price here is around $1,000 per tonne. Is that the mark-up, may one ask, or a rip off? No wonder the industry is struggling!

Before this goes to print our Branch will have had its social event, the date of which was altered from around kiwifruit pollination time to July. It remains to be seen whether or not the change brings more people.

The St Arnaud fixture was greatly enjoyed by those who attended.

Spring is just around the corner and wasps will be our next concern. Last year I found very few in my area: in fact, not one nest, and that was not for want of looking.

Ron Stratford

Poverty Bay

June and July could be deemed the quiet months in the beekeeping calendar. The annual rushes are past and planning can be made for the future. It's a time to catch up on maintenance and in my own and two other cases pack cut comb honey.

Not much is being done with the hives apart from checking on food stocks and the growing wasp problem we have here.

The first of the pussey willows are out and tagasaste (tree lucerne) is beginning its annual three months of flowering.

Barry Foster

Waikato

The Waikato Branch over the last months has been preoccupied with arranging the 1990 National Conference which as everyone knows was held in Raratonga. That the Conference was an outstanding success is now common knowledge and this is due to in no small measure to the efforts of our President, Russell Berry, his wife Annette, and staff from Aratata at Waiotapu.

Some comments from Conference: "I think we were hijacked by Waikato but how pleasant it has been. Pity so and so was unable to attend as he missed so much."

The final tally of people taking part came to 225 and in spite of the attraction of sun, sea and entertainment the seminar, Conference and remit meetings were better attended than at most Conferences I have attended over the last few years.

Thoughts from Conference. Remit thoughts expressed by several people were: firstly why is it that year after year there are on the agenda several remits basically on the same subjects, and why is there not some mechanism for the branches concerned to get together and produce a single recommendation? Secondly it is obvious that the subject matter of some remits is already under action by the Executive who could, and probably should, outline the executives position on the remit? In one instance at this year's Conference the president outlined the executives position and quickly and succintly provided the answer sought. Over the years I have heard little or no comment from executive members on subjects raised at Conference and a certain delegate would be better able to make decisions should the executive give a lead.

On the local scene the past season's crop was not at all up to expectations. At the middle of January there was little or no honey in the tanks. However there was a good flow for the last two weeks of January and a great deal in March. The average crop would be between 2 and 2.5 tonnes.

How do those people who forward ordered their sugar fare now?

The year had one good feature in that the wasp depravation were relatively low when compared with the previous couple of years.

Finally a tribute to Roy Robinson who has written these notes for many years, he won't say how many. What a fine job he has made of them.

Ross Blackburn

Northland

Winter is with us once more with gales and wet weather to send us out into soggy paddocks picking up fallen hives and blown off roofs. It still amazes me to find upside down and soaking wet hives still full of healthy bees. Tip them right way up, give them a frame of honey, and they are full of fight at the August/September spring inspection.

It is gratifying to find that manuka is now the top priced honey.

George Nichols

Westland

Winter so far has been rather damp with little opportunity for cleansing flights. With brood-rearing just commencing, adding to the stress already existent, it would be fair to say all is not well within the hives. Under these circumstances it is always difficult to decide what one's hive management should be; for no matter what one does the result is further stress and subsequent increased loss of bees. But then, there's hope. Spring is just around the corner and surely we will get an improvement in weather. However, don't bank on it!

Apart from the occasional surfacing of Branch members for meetings, little else has been seen or heard of them. Perhaps this prompted the call for a get-together at a Branch dinner-evening, an occasion which some years' ago was an annual winter affair.

The local District Council recently posted out honey-house registration renewal forms, i.e. for food-handling premises: the first time since devolution. It came as quite a shock: the increase in registration fee amounting to 560%. Surely this is the 'devil you shun'? Oh, but never fear, our political leaders assure us that under devolution we will be better off in the long run!!!' It looks like some ultra marathon!

Sandy Richardson

Bay of Plenty

Well, it's that time of the year where most beekeepers have their feet up to some degree: those that haven't large maintenance programmes that is. Spring is only around the corner though, and the diligent beekeeper has probably been in touch with some or all of his kiwifruit clients by now.

The weather in the Bay has mainly been cold and wet but when it's fine, we have had beautiful clear blue days.

The Bay of Plenty Branch had a mid-winter Christmas party at Dave and Prue Debrecenys place on July 14. It was very well organised by Dave Warr and Dave Debreceny with Roy Hyde as Santa. A great night was had by all. The Branch had two delegates at Rarotonga for Conference: John Brown and Norm Dean. They had a great time with Norm staying on for extra time. Apparently this is the coldest winter we have had since 1982 so maybe we have a similar season as '82. Anyway, as usual, we should all strive for a bumper year.

Karl Christophersen

Hawkes Bay

Congratulations to our new President for his efforts in running two field afternoons and capturing swarms embedded in willow trees. It was perhaps unfortunate that the days clashed with other important functions, however for those who were able to attend one or both afternoons they were very beneficial outings. The same man proved that with all the necessary equipment and a couple of older beekeepers with the "know how" the whole operation was a fairly straightforward exercise. We shall not mention the fact that one of our senior members had some difficulty in finding the place. We are told he now knows most of the "no exit" roads in the Raukawa district.

It was pleasing to see a large contingent of supporters from the Branch were able to journey to Rarotonga for Conference and the festivities. One can assume that the season just passed has been somewhat better than most of us realised. At the time of writing members were only just arriving back but first reports indicate a great time was had by all.

The committee is hopeful that as many members as possible will be able to support our stall at the A. and P. Society's Show in October; but we are conscious of the fact that a number of members will be very involved with pollination at that time.

Gordon Sutton

Southern North Island

(South Western Districts)

Short days, wet days, winter has come upon us. Everything slows down, even honey pours slowly into a customer's container. Perhaps that is why I don't achieve much when the days are cold. But winter is always a good time to start thinking about the new season ahead: planning, budgeting, revising seasonal finance requirements with the banker; ordering sugar and spring queens.

I think it a great idea to have a complete break from the bees. We go back fresh to a job that once again demands a busy schedule of field work as spring approaches.

We are planning another spring field day for our region in October. This time our hosts will be Kevin and Margerie Kibby at their honeyhouse in Wanganui.

John Brandon

Marlborough

Just back from Conference and having trouble settling into those winter jobs again.

Conference was very relaxing. Thanks to all those organising it.

It never ceases to amaze me the speed with which debate gets lost. We may be forgiven perhaps when I gather the marketing subcommittee lost itself on the problem of disappearing gorse. A highlight was the debate about hoardings around football grounds. Nick Wallingford tried to direct the debate with the following (as my memory recalls). "Advertising is what beekeepers do when they put a sign at the gate which says 'Honey' or 'Honey For Sale'. Promotion is when a beekeeper provides information on how to use honey with the aim of increasing consumption. Marketing is the use of these and

QUEEN QUALITY COMPETITION, 1990

Queens were examined by the MAF Qual laboratory at Lynfield, Auckland. The results given below are average values for two queens, and rank order is determined by the average reproductive index value. That figure is the sum of: ovariole number + (spermatheca volume X 270) + (sperm count X 40). That gives approximately equal weighting to the three values.

Results.

	Ovarioles (total)	Sp'theca volume	Sperms (millions)	Nosema	**Reprod. Index**
First:-Sunflora Apiaries.					
	355	1.39	8.58	nil =	**1075**
Second:- Daykel Apiaries.					
	354	1.225	8.59	nil =	**1028**
Third:- Ashburton Apiaries.					
	332	1.06	6.26	neg. =	**868.6**
Comparative Data.					
World Maxima.	405	1.52	11.8	-	**1286**
N.Z. Maxima	376	1.48	9.86		**1170**
Good Av. Q's	300	1.00	5.0		**770**

Comments. All queens had been well mated and contained between 6 and 7 million sperms per cubic millimetre. Nosema in escort bees was well controlled. In one case only, a very low (negligible) level was detected. Fumagillin treatment was used by all entrants. All contestants openly disclosed their methods, which were variations of the queenless starter/queenright finisher system. The methods were normal commercial practice, rather than contrived for competitive purposes.

The contestants have received a detailed analysis, based on the questionnaire they all completed. There were several clues to the way results may have been influenced by technique, which should help the contestants to improve.

other marketing tools in a planned campaign to achieve a predecided market goal."

The weather this winter is following the same pattern as the last few. The summer dry broke late, then a kind of warm spell, then several cold snaps. But in general the winters are milder and drier.

Coming events on our calendar include Saint Batholomew's celebration. This has become an annual event and helps prepare one's mind for the coming season. It is on Saturday August 25 at 7.30pm at Rod McKenzie's house, 13 March Street, Spring Creek, BYOG.

Our annual disease inspection day will be on Saturday September 15. This is slowly evolving and additional benefits are showing up. Unregistered hives are being located. We are learning the location of hives and which ones are likely to be neglected. Most bees are tolerable and some a delight to work. After several years' of inspection, some owners have come to expect the inspection with the attitude of "saves me the job".

On Saturday October 7 we are holding a spring management day covering finding queens, putting out cells, queening, and preparing pollination hives.

Anybody keen on whitebaiting will be interested in the latest beekeeping fashion. A swarm arrives on a farmer's workbench. Being some distance from town and with no beekeeper to relieve him and hay making on his agenda he has to remove them bees! Some bright spark suggested a whitebait net as being similar to a bee veil. So one evening, a whitebait net tied around his waist and wife holding the handle, he boxes the swarm into a draw and shifts it outside just beyond the door without problems. A mate with a few hives and after some persuasion says he'll be up in a few days and remove the draw and lid. More than a few days go by, no mate so he dresses up again in the white bait net and moves the box yet further away. A few strays hung round a day or two but soon found their new address. Feeling very confident with bees now — no stings — he was last seen in Wrightsons looking at bee equipment. So we can now call whitebait nets beekeeping equipment.

James Jenkins

Otago

The shortest day is here but winter till now has not been severe. Mind you, July is usually the coldest month. Now and then a bit of rain has fallen bringing some very welcome late autumn growth, but overall the soil is still very dry and a lot more moisture is needed before next season.

With a very meagre honey crop in many districts of the province a lot of hives will need early attention in the spring as they have not been wintered down as heavily as one would like.

Our May branch meeting was made more interesting by the manager of one of the supermarkets telling us about marketing and consumers' expectations.

Queen's Birthday week-end was A&P Society Winter Show time in Dunedin. A modest number of entries found their way into the honey section. A greater number would be much appreciated. Makes it more interesting for competitors and public. After all it is a good way of putting the product in front of the public.

The Tuesday after we hosted the Otago-Southland beekeepers' convention in Dunedin at Federated Farmers H.Q. A real good programme indeed. BNZ rep. on finance; a private Pest Consultant from Christchurch about the wasp problem; someone from the Otago University Zoology Dept. on a study on the effects of pollen supplement upon the food glands and development of colonies at high country locations. Then we devoted some time discussing industry policies re emergency procedures should an outbreak of exotic diseases occur. Followed a couple of videos which took us into wasp country and the battle against the blighters. The evening session closed with a sumptuous supper and the customary chinwag.

Talking about wasps, some of our members made a job of rooting out a number of nests round the Port Chalmers area. It was more or less meant as a PR activity. Schools had been approached previously so as to gather information through the children and their families about nest locations. The number of nests reported was not as great as was expected. Perhaps we were a few weeks late.

Last Friday a Branch meeting was held to consider the Conference remits. As charges for our usual meeting place keep climbing we had been looking for an alternative venue. We found hospitality at the Tecpac Plastic factory. A fine solution and fund saver too. Many thanks to Tecpac. By the way, we like their products and thoroughly recommend the honey containers they manufacture there.

John Heineman

Auckland

July, a month of inactivity for the bees but I can't say the same for those beekeepers who went to the Conference at Rarotonga. A grand time was had by all as there was something organised for each hour of each day. I would say that this Conference will not be the last on Rarotonga. One branch member had a liking for bananas so helped himself to some. The evening of the dinner the law caught up with him and he was informed that self help was not tolerated on the Island. Then he was given a green banana: the one he had dropped. Hey Rob!

Not much to report — most beekeepers seem to have had an average or better crop. A combined field day will be held in August by the Northland and Auckland branches. Dates and place later.

Dave Young

A certain beekeeper has suggested that the subject of this photo constitutes research material and therefore more conferences should be held in Rarotonga. Photo Mary-Ann Lindsay

From flying Things to Flying things

From Reg Clarke (under pressure)

The Editor has laid a hard one on me this time. He wants an autobiographical piece, which is not my scene. But perhaps there is a certain crude justice in it. For having so many queen bees dissected, I must now put myself under the microscope.

The scene of my childhood was a small Suffolk village, not much changed today, over 60 year later. Arable farming was the main activity, powered mostly by magnificent Suffolk Punch draft horses. The village school was a forbidding grey Victorian mausoleum, of which I remember little but the smell of unwashed bodies on a wet day, and the squeak of slate pencils on slate. Playtime was vigorous and undisciplined. Our favourite game was called — in the broad Suffolk dialect — "runnin' arter", which was rather like the Sydney rugby league, with contestants armed with thorn cudgels from the hedgerows. But some spark must have been lit, for I won a rare scholarship to secondary school, and still have thirst for knowledge.

My parents had a small farm and milling business. Local grain, organically grown — there was then no other way — was stone ground for stock feed. Incredibly, we never ate this wonderful product, but bought white flour from the grocer!

Market day was important. Dad would attend the corn exchange, held in an elegant 18th century building that is now an art gallery. The ritual of buying and selling was probably medieval in origin. Come to think of it, that was a **real** market; not like the inefficient way we trade in honey. It satisfied the essentials for an efficient market: an organised, regular place and time for buyers and sellers to meet, and a set of mutually respected rules.

The first air raid warning of WII sounded on my first day at secondary school. And before the last "all clear" I was already in RAF uniform, but saw no action other than the occasional random bombing of the village.

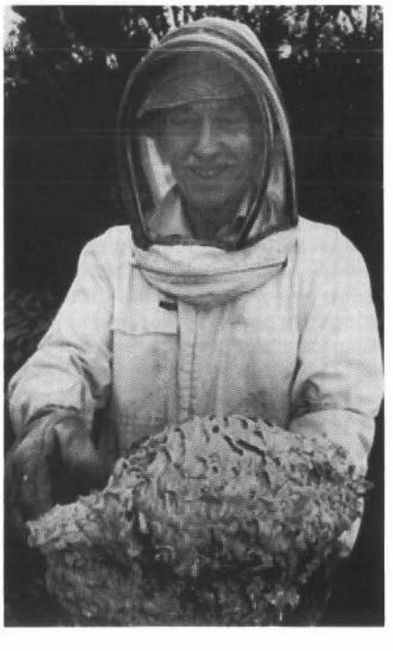
The Air Force gave me a good technical education as an aircraft engineer, but saw little return for it, as I was off to pilot training in 1951. I soon found that I didn't function very well upside down, and spent my service years on transport aircraft. The more interesting times included flying to primitive airstrips in the Yemen, a spell on VIP duties, and a small part in several Farnborough Air Shows.

Sixteen years later it was time for a new start. I retired from the Service, and emigrated with my wife and two small children to New Zealand: that was one of my better decisions. The transition from "pommie immigrants" to Kiwi citizens was easy, and for me, there was no lack of excitement. Flying Bristol freighters in and out of "Windy Wellington" I was often close to being upside down again in turbulence. That filled the next eighteen years. We enjoyed them — and still do — the pleasant lifestyle of one of New Zealands' nicest small towns.

Retirement comes early in the airline business. I was 56 years old, fit and active from 10 years in veteran grade athletics. Was that due to "runnin' arter" I wonder? Anyway, I needed new challenges, not retirement, and had planned ahead. Already I had found an enjoyment in beekeeping. It offered independence after so many years in disciplined professions. And it takes me out into the countryside where the rhythm of the seasons takes the place of clock and roster.

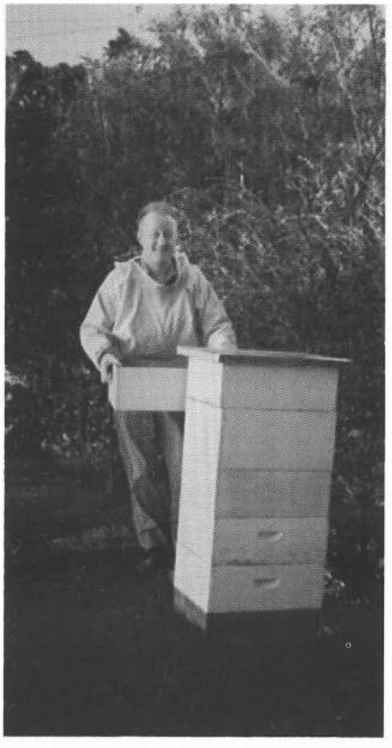
And so, full of optimism, I became a commercial beekeeper. My background made it natural for me to read all the books, and to treat them as infallible technical manuals. So it came as a surprise to find that the bees don't read them, and follow their own timeless rhythms, quite oblivious of us. The second surprise was to find that the books contain a good deal of untested opinion and mythology. Doubtless you have all gone down this path, but we may differ in our reactions. Many beekeepers come to distrust books; while I prefer to test them, then keep what is reliable, and re-write what is not.

As bees pass through their life stages — larvae, pupae, and imago — so do we. Thus the callow village youth grew up to range the skies in powerful aircraft. The slate pencil was replaced by the word processor and hive tool. And admiration for mankind's vast and arrogant machines, gives way to awe as I come to understand the wondrous complexity of the humble honey bee.



THE MAN BEHIND THE PEN

By Michael Burgess



Ham Maxwell says he's retired: something of a misnomer because he spends his days keeping bees, catching wasps, building houses, writing for the NZ Beekeeper, and entertaining editors to lunch.

Complete with stomach I duly appeared on Ham's doorstep at the appointed time clutching notebook and pencil ready to write for my nourishment. Naturally Ham had honey on the table. A very nice comb honey indeed. In fact it got in the way of what Ham was telling me. I had to force myself to listen.

It seems Ham has an inquisitive mind. He has always been interested in things radio and electronic, except that nothing was electronic when he was a lad so he sort of grew into that side of things. He began by working as a Civil Aviation cadet back in 1948 but in his early twenties he left the Government for the commercial field. Among other things all round the country, he spent three years as a cinema serviceman. However in 1958 his wife got him by the short and curlies and he felt the urge to settle down.

And how he settled down! Of all things he chose to train as a teacher, but not through a trade course. He chose primary teaching.

He spent about a year at that then, with Tv coming in, working his way back into industry. In 1964 he became an instructor at Petone Tech. teaching the Tv class. So hairy were things in those days that when exam time came he turned up too. No, to the surprise of his pupils, he was not the examiner. He was there to take the examination. Ham makes the point that one of his pupils got seven more marks than he himself.

Later Ham took two advanced trade exams and ended up with The Certificate in Engineering. So armed he taught electronics until 1975, apart from the Principal the only so qualified teacher at Petone Tech. Thereafter Ham became involved with staff training for various firms and government departments until his retirement in 1987.

All of which has nothing to do with bees. Ham's interest in bees is the fault of his daughter Carolyn. It appears the family has a property at Ohau where, incidentally, Ham is now building. Ham suggested that Carolyn put a hive up there. Carolyn replied in a typically female manner by saying that when Ham had learned enough to look after it then she would. Fired by that the family bought Ham a subscription to the WEA course in beekeeping.

From there on Ham was stung figuratively and no doubt also literally. Following the WEA course he took the Beekeeping Course from the Bay of Plenty Community College. Four years ago he owned ten hives. Last year it was 65 scattered from his front lawn to Ohau. For the past three years he has been President of the Wellington Beekeeping Club.

The wasp eradication business snuck in the back door. From there it growed like Topsy. Ham did one job on request, then that word of mouth thing got into the act, then someone suggested he put an ad in the local rag. It now really keeps Ham out of the pub. It seems wasp eradicators, like undertakers, never suffer a depression.

A final word: Ham's honey. He has a good variety because of the variety of his sites. One of the best, he says, is the hive on his front lawn because of the profusion of flowers in Korokoro, where he lives. Certainly the honey he gave me when I left is some of the finest I have ever tasted.

REFLECTIONS ON A WINTER'S DAY

From Reg Clarke

Winter for beekeepers is a time for taking stock, for analysing past efforts, and making plans for the season to come. So it is for me. Not only is there a business to plan for; there is also the challenge of trying to push back the frontiers of our knowledge a little

Last season the time available was mainly taken up with a study of the influence of diet on queen physiology. That is all written up now — 16 pages of data and discussion, and copies are available for $4.00 including GST and postage. Besides that, a lot of data was accumulated on the rate of weight loss in caged queens, and other weight data on pupae and queens. Most of the latter was not done with sufficient care for publishing, but it does serve to indicate promising lines for further investigation.

For a part-time prospector like me there are an embarassing number of gold seams showing in my chosen field of queen physiology. To start with the vitamin and mineral supplement needs some fine tuning, as indications were this past season that some ingredients may not have been beneficial at the dose levels used.

From a national point of view there is the important question of whether the performance of our hives is being affected by low or deficient levels of some important minerals. There is insufficient data or knowledge to address this question intelligently at present. Firstly, my own pollen samples — from a single site — are the only analyses available. Secondly, there is only the most sketchy information as to bees' nutritional requirements. But lacking better evidence my assumption would be that needs are broadly comparable with those of higher animals, on which we do have good data. That guess is supported by thorough studies showing the amino acid requirements of bees to be very similar to those of man, rats, and some other species. However, we should not underestimate the ability of bees to adapt to their environment. The scale of work needed to answer those questions is beyond my resources, but a start could be made if there was a collective will to do so.

The next project, which is more in my league, is to study the factors that causes such a wide range of physiology in any one batch of queens. The top end of this range seems to press against some physiological barrier: reduction is easy, but upward progress difficult. We should first concentrate on the easier task of raising the lower end of the range. If the number of small, inferior queens can be reduced, then it follows that the average standard improves. From a commercial beekeepers' viewpoint, a high average standard is more important than a few exceptional queens, whose main value is as breeders for the next generation. We can anticipate a complex interplay of factors; some genetic, some behavioural, and others from the techniques used by the beekeeper. With a clearer understanding it should be possible to produce queens of more uniformly high quality than is possible at present.

There is a closely related aspect on which I already have some useful data. This concerns the different mean pupal weights that are evident when pupae from one finisher hive are compared with another. The simplistic view is that this is due to the volume of royal jelly provided and if cells have a residue of food at pupation then all is well. But it appears not to be so simple. The cell length should be seen as showing the balance between supply and consumption (appetite). If supply is just sufficient and the appetite large then a heavy pupae may be found in a short cell. Conversely if supply is generous and appetite smaller, then a very long cell is built, containing a pupae of below average weight and much surplus food. And of course every intermediate variation is possible. If this hypothesis can be confirmed, then it follows that finisher hives should be selected not on cell length, but on mean pupal weight. That may seem a lot of trouble, but the indications are that a poor finisher hive may produce queens with reproductive indices 150 points lower than those from a good hive. This is about twice as great as the effect of improved nutrition. If this proves to be due to genetic causes, rather than some transient influence, then it should remain for the life of the queen. A genetically superior finisher hive, once identified, could give two years' service, and it may be possible to selectively breed for this quality.

More gold seams beyond these lure me on, though some will be but fool's gold. But the cold winter twilight closes in, and reflections must give way to the urgent need to fetch in the firewood.

York — the confectioners' choice

The worldwide Nestle group is to build a £6 million confectionery research development centre in the northern England city of York.

York, an ancient walled city, has been a centre for confectionery for some 175 years with companies such as Rowntree, Terry and Craven making it their home.

Now Nestec, the scientific and technical arm of Nestle and the parent company of Rowntree, is to carry out a major extension of the existing Rowntree research centre there.

The new centre will house some of the most technically advanced equipment available today. Research will range from innovative ways of making existing brands of confectionery to developing what are described as "exciting new products and ingredients."

Scientists from many countries will be based at the York centre, working on projects that will meet the needs of all countries of the world. New staff will include some experts from Dijon in France where the existing Nestle laboratories will be closed.

The expansion at York is part of a multi-million pounds investment programme being undertaken by the company, which earlier this year unveiled plans for a £15.5 million Polo mints plant in York.

HONEY DIVINITY

2 cups sugar
⅓ cup honey
⅓ cup water
2 egg whites
½ cup chopped nut meats

• Boil sugar, honey, and water until sirup spins a threat (278°F.). Pour sirup over well-beaten egg whites, beating continuously. Just before mixture starts to set, add chopped nut meats. When mixture crystallizes, drop with a spoon on waxed paper.

Variation: Candied cherries or candied rhubarb may be added.

YOU CAN'T WIN

By "BEEKEEPER"

Our mate Jerry is a good fellow, always willing to help out, you know the kind, but at times he goes a little too far in helping out, and tends to inflict his assistance upon you.

So when I found that some hives had to be moved, I naturally looked toward my mates for assistance. Trying to move a five-super-hive is no picnic, particularly when the truck is in the garage having a new diff. fitted. That of course meant that the hoist was not available as it is securely fixed to the tray of the truck. With Fred away for the day it was natural to turn to Jerry for assistance, if only because he has a flat tray truck. Now Jerry is not a beekeeper, never has been, never likely to be either. Yet Jerry has an uncanny ability, he knows just what is needed to do a job, however big or small, and this has stood him in good stead over the years.

My hives were sited on a farm out of town, and to get to them from the road means crossing a rather rudely constructed bridge over a stream. This was no bother to my lightweight truck, so I mentioned to Jerry that the bridge might not take the weight of his truck, and it might be necessary to barrow the hives across the paddock and bridge to the truck. He made no comment as we set off, and our arrival at the farm gate was uneventual: except that it had started to rain. Jerry got out and went over to the bridge, looked it over and came back to the truck. He then slowly crossed the bridge and crawled up the slope to the paddock, stopping next to the hives.

Lifting heavy things is never an enjoyment for me. Something usually gives way, leaving me suspended and doing a balancing act in order to stop something toppling over. To lift the hives on to the truck tray Jerry had brought his elevating barrow: one of those with a manually-operated hoist built into its design. The hives were duly sealed, strapped, and ready for the lift. Loading the hive started with the positioning of the barrow, and after removing a grass clump or two we managed to move to the end of the truck tray.

Mechanical advantage is one thing I am sure never to understand; but whoever designed that barrow surely did, and it raised that hive with little effort. So far so good, except that with the slope of the paddock, the truck tray tended to stick up in the air somewhat, needing the barrow hoist to be raised to its limit. This is where we came unstuck. No way were we capable of moving that hive from the barrow platform to the tray. With the hive raised we were unable to exert enough pressure to move the hive, and being suspended it tended to tilt more and more with each heave we gave it. Add to this the tendancy for the barrow to move also and it was not long before I was standing at one side wondering how long it would be before the hive obeyed the forces of gravity and came crashing down around my ears. Jerry saved the day by promptly lowering the barrow platform.

Shifting the position of Jerry's truck saw an improvement in the access to the tray. We had another go at loading, and this time managed to get the barrow platform over the truck tray, and load the hives, all 10 of them. That was the easy part. Jerry decided that there was no need to strap the hives, as we were on relatively flat paddock, so we set off. On arrival at the bridge, the path down the slope to the bridge was well saturated by the rain to the extent that the truck started to slide. The tyres on the truck were fine for town sealed roads, not for wet paddocks. Despite his best efforts, Jerry was unable to stop the slide, and the truck slewed at an angle, coming to rest at almost right angles as the bridge approached, and at an angle almost enough to topple the hives.

There we were, straddling the track, and unable to get those tyres to grip anything. Movement was impossible, and our efforts only increased the angle of the tray, making the hives almost certain to topple off. This was where Jerry saw fit to light up and look intently at the truck, saying nothing for a long time. Still without a word he rose, went over to the truck and kicked the front tyre, three times. Nothing budged, the hives remained in place despite the acute angle of the truck tray. He then removed the loading barrow and went round to the front of the truck, collecting a rope from the storage box under the tray.

After attaching the rope to a hook on the front of the tray, he played it out toward the bank at the side of the track, taking the loading barrow with him. After wedging the barrow between two Manuka trunks, attaching the rope to the tray of the barrow, he wound the winch handle and took up the tension on the rope.

Winding the winch handle brought the front of the truck slowly back toward the centre of the track. As the movement of the barrow tray was limited, it meant that the rope had to be unhooked, the tray returned to its starting point, the rope reattached, and the winch handle wound to continue the shifting of the truck. My job whilst all this was going on was to locate suitable rocks and place them under the rear wheels to prevent the truck from sliding down the slope as the front of the truck pointed down toward the bridge.

All this took a long time, but finally the truck was pointed in the right direction. Jerry then went down to look over the bridge before returning to the truck, climbing aboard, and gunning the motor. In best aviation tradition it was "chocks away" with the nod of his head, and me doing the risky bit, reaching down to pull the rocks clear.

Away they lurched: truck, Jerry, and the hives, with me standing there stupified, my heart in my mouth. They all shot over that bridge so fast that I doubt there was time for any stresses and strains to register any form of serious overload on its structural members. My equilibrium was in a state of serious overload, however, as I pondered in those few fleeting moments just what would be involved in recovery of the truck should it crash through the bridge.

Worse still would be the recovery of the bees after 10 hives smashed themselves into oblivion. With Jerry not wearing any protective clothing whatsoever, he would be a sorry sight by the time I got to him.

A shout from the other side of the creek brought me back to reality, and I gathered that Jerry had no intention of waiting around much longer for me, especially as it was now time for our daily "choir" session downtown. There he was, straightening the placement of the hives on the tray, as if it was just a routine load. I lumbered off, and crossed the bridge, well, I nearly did, except that the mud which must have come off the truck tyres and fallen on the decking happened to be where my foot got placed. Down I went, over the side and into the water. It was then I was reminded that it was not the weather for swimming, and as I was so covered with mud and weed, it would be better for me to remain out on the tray for the trip back to town. Naturally it was me who clambered down to open and shut the gate on the way out to the road, repeated of course when we arrived at the other yard to drop off the hives. With the wind whistling past me all the

way down the road my temper was a little short, and my temperature near freezing on the outside, near boiling on the inside. In no time at all the hives were unloaded, placed in two semi-circles on the new site and off we went into town. I again rode on the tray, Jerry refused to let me ride inside the cab as I was "ripe", and as he had to take his missus out later on she might object to the smell.

What could I say? The thanks for helping with the hive movements would naturally be taken care of with a few jugs at "choir" practice, but in the meantime I had to get home and clean up

That shower was one of the most enjoyable ever. It warmed up my body, softened my temper, and made me feel good about having friends like Jerry. The 'phone call I took just as I was leaving to pay my dues to my mates was from the farmer. He was sorry if his request for me to move the hives had been a bit hasty on his part, but it turned out that his kids were not stung at the farm after all, like he thought. They were stung up at the school yard, so it would be alright for the hives to stay on the farm after all!

Barrel washer reaches awkward spaces

A compact device for cleaning small plastics, stainless-steel or wooden containers used in food and process industries has been developed by a British company.

The Barrel Washer, from Breconcherry Steel, is only 38mm in diameter. It may be inserted through a narrow opening and can be used for cleaning inside pipes, in difficult recesses and in the interiors of coils. The unit is suitable for portable use on the end of a hose, or as part of a cleaning-in-place system.

The washer uses a rotating disc to produce a dense spray of cleaning fluid, up to 1m in diameter. The disc is both driven and lubricated by the cleaning fluid, so that no separate power supply or lubricant is needed.

With only one moving part, maintenance of the washer is low. Its all-stainless-steel construction makes it especially suitable for hygiene-conscious applications in the food, beverage, dairy and pharmaceutical industries. It can be used with a variety of chemicals and detergents at temperatures up to 120°C.

The Year of the Extractor

By Pamela Nichols

After fifteen years as school librarian I had a year being "just a housewife". I am not a bowler, I enjoy my garden, and I helped at the playcentre but I felt sidelined. My husband George set up the beekeeping business on early retirement and my youngest son Brendan is a partner. Commercial beekeepng really requires two workers but our business could not afford to employ anyone. My husband was asked to teach electronics on Access and felt the salary would boost the beekeeping business. This would leave Brendan without assistance in the extracting room. A new experience for me: life begins at 60! After all my husband had set up the business at 58.

My first difficulty was an occasional adverse reaction to bee stings so I visited the doctor and was shown with the aid of an orange how to inject myself with adrenalin. I was also given tablets. George was able to train me before he started work in the New Year. He worked the manuka pricker while I wommaned the uncapper and loaded the extractor with the pricked combs. The extractor was first to play up by losing one of the rubber bands that ensured the proper return of the swinging baskets. Bend down, pull out the basket and tie the rubber elastic band to a wire loop on the basket, replace the basket, return to work hair sticky from a neighbouring basket. George meanwhile improves the pricker altering the size and position of the needles. He also controls the comb with a forked stick instead of his thumb! He knows I will take it over after Christmas and has graphic pictures in his mind of me impaled on a dozen needles thumping up and down!

At the end of each day the box that holds the pricked combs must be up ended on the uncapper tray as must also the pricker bed — make sure the auger is switched off. If the pricker slid into it — chips off the blades at least! At intervals through the day wipe the floor and everything you touch, otherwise there is danger of slipping, and switches gummed up with honey and wax don't work. The cappings extractor has to be cleared first thing in the morning, and after lunch you run the extractor for an hour and also at the end of the day to clear the honey from the wax. The stainless tin for wax cappings is full; take it outside to the oven, add a bucket of water and switch on, taking care to turn a notice on the outside door to ON. Three and a half hours later turn off and pour the boiling wax into the mould tin which has a fine filter tied across the top. Another job that comes at the end of the day is the changing of filters from capping and ordinary extractors: manuka honey is a jelly that hangs heavy in the filters so you need to shake them before hanging them from a knotted rope over the reservoir in the 'pit'. In the morning collect the hung filters in a bucket, hang elsewhere and 'milk' them of most of the honey before washing in cold water. Empty the wax then turn them inside out for another rinse. Later in the season or in colder weather put the filters in a slow oven made from a fridge with a top range element in it. Two more filters to be changed are the main tank filters. Climb the steps, wedge open the lid of the stainless milk vat, and untie the filters. Put them into a bucket resting round your neck so you don't drop it!

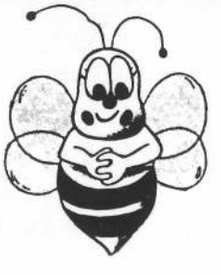
My last difficulty is that I become allergic to honey and get dermatitis, my wedding ring must be cut off and I wear rubber gloves cotton lined and make myself plastic elastic cuffs. George now finds everything sticky. My hands don't remind me! Incidentally, the tablets controlled my reaction to stings.

Extracting is now over, clean up is nearly finished, packing remains my responsibility but I have enjoyed the work. Full combs bring satisfaction and I feel I have achieved something at the end of each day.

HONEY TWISTS

½ cup honey
1 cup sugar
½ cup milk
¼ teaspoon salt
1 teaspoon vanilla extract

• Combine ingredients and cook over a low heat until when tested a hard ball is formed in cold water (260°F.). Stir occasionally. Pour into a shallow greased pan. Pull until light and firm as soon as it is cool enough to handle. Twist into rope form and cut in one or two-inch lengths. Wrap in waxed paper and store in a cool place



BUZZING AT CONFERENCE

Left: Young Stewart Goodman and Supreme Commander Norma.

Right: Dr Mark Goodwin, scientist.
Photos Mary-Ann Lindsay

Dudley Ward, Heather Bray, Heather Ward, and Jasper Bray.
Photo Mary-Ann Lindsay

Gavin and Linda White.
Photo Mary-Ann Lindsay

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