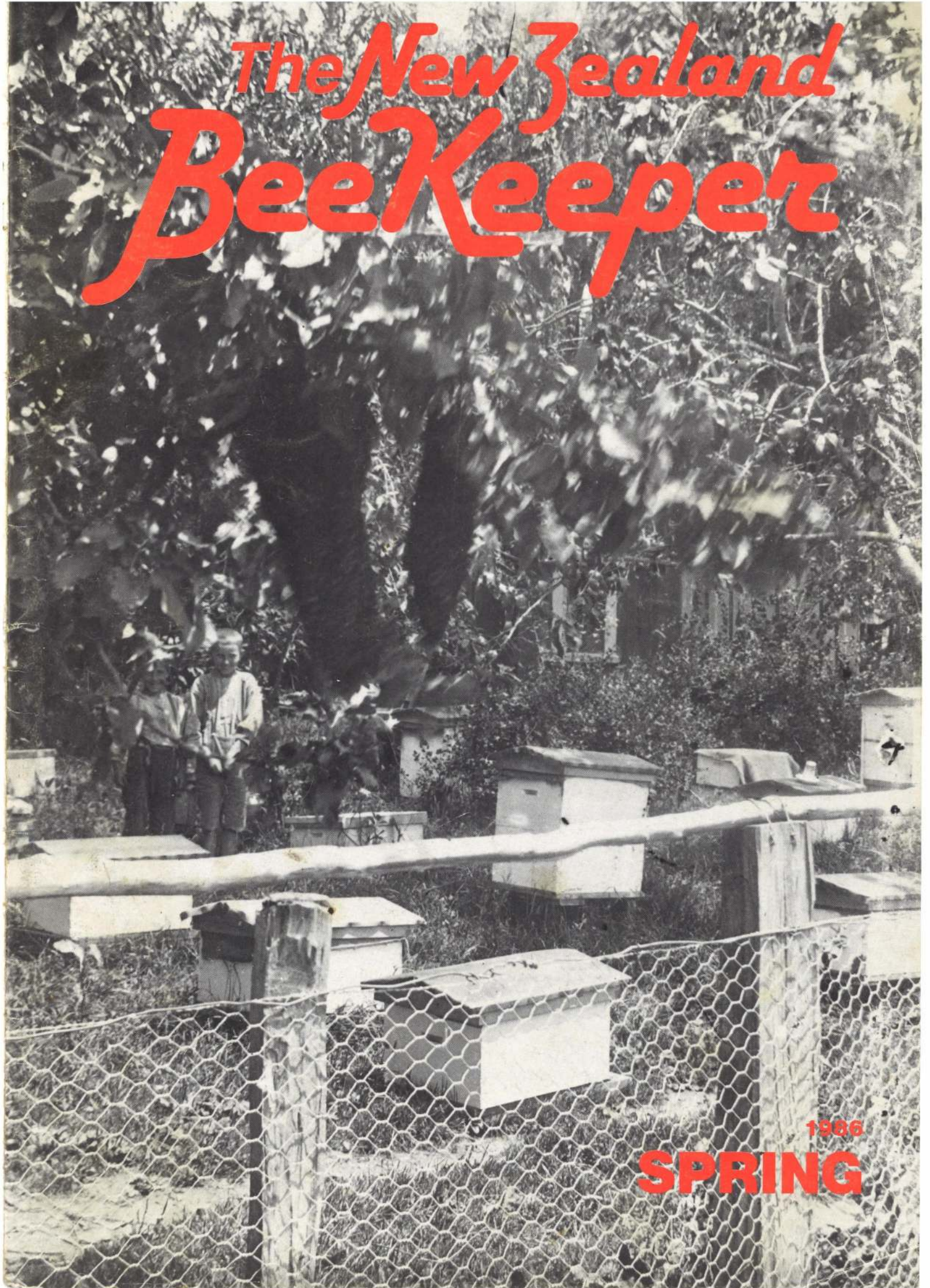


The New Zealand **Beekeeper**



1986

SPRING

The New Zealand BeeKeeper

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

CIRCULATION 1,450

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The New Zealand Beekeeper

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Footrot Flats

By Murray Ball



FRONT COVER

In the last century bees swarmed just the same.
Photocourtesy: Frank and Mary-Ann Lindsay.

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Its all done with mirrors

Scientists have an important role in our society. They invent, develop new techniques, simplify the old. They make life easier for all of us.

However, once a scientist has invented, say, a mechanical hen that lays ten eggs a day, the invention is of little more than curiosity value while confined within the wall of the laboratory. To be of consequence thousands of mechanical hens must be manufactured and the world told of their existence. That means factories must be tooled up and a massive advertising campaign mounted to sell mechanical hens; all of which costs a great deal of money and many people from factory owners through advertising agencies to process workers have a vested interest in the product's success.

The mechanical hen (should it ever be invented) may well turn out to be the greatest thing since sliced bread. It may halve the price of eggs. On the other hand its initial cost and maintenance may prove to be far more than that of ten normal hens and so of value only to someone living in Antarctica or in a first-storey cold-water flat with a landlord who bans squeaky fountain pens let alone pets.

The classic example of this kind of thing is the motor bus. For years most cities and towns ran trams. Trams did not damage the road because they ran on their own tracks. Electric, they did not foul the atmosphere. Relatively sturdy, they lasted for years provided you licked them with paint occasionally and periodically wound some fresh wire around one or other of their bits. A tram carried far more people than a bus. If you wanted to carry even more you merely stuck one or two trailers on the back. Many communities had fleets of neat, clean, efficient trams that made a profit from reasonable fares.

Everyone was happy except some motor vehicle manufacturers, tooled to build and sell millions of buses and who saw no reason why they shouldn't.

A huge sales and marketing campaign was mounted in the English-speaking world. Billions of dollars went into selling the idea that buses were the thing, that trams were out. Trams, it was said, were archaic, Victorian. Why, they were confined to their tracks while a motor bus could go anywhere a road existed. Besides, trams created congestion in busy city streets, and given a few more years they would clog them completely. These points, and others, were hammered home time and time again until many city fathers were convinced that they had no option but to rip up the tram tracks and switch to buses.

To be fair these statements were true, but they were only part of the truth. Trams were Victorian, old fashioned, but being old fashioned is not necessarily a condemnation. Little is more old fashioned than the wheel but no one has improved on that yet. Trams were indeed restricted to their tracks which limited their destinations, but tracks were laid to destinations where business warranted. Trams did congest busy city streets, but in the few English-speaking communities where the campaign was resisted this problem was solved by separating the routes of trams and motor vehicles. Also not mentioned in the campaign was that the life of a motor bus was considerably less than that of a tram and that its running costs were higher.

Many city fathers, having ripped up their tram tracks and saddled their ratepayers with the evermounting losses of a fleet of buses now realise, and admit, that the change was a

great mistake. In Western Europe (untouched by the campaign and still using trams) the sole capital city not running them is Paris, served by an exceptionally good subway system.

All of which has nothing to do with bees . . . or has it? We now learn that bees have a competitor . . . artificial pollination. A campaign to sell that system to orchardists and horticulturists has been mounted. No doubt the system has some merits, and used in conjunction with bees it may have some value. But it is very new, and during its trials surely bugs will appear? (Remember the Pill was to eradicate unwanted pregnancies, instead the illegitimate birthrate shot up?)

Beekeepers should study this system, learn as much about it as they can, its costs, the side effects it might have, anything. Then they should get alongside their fruit-grower customers and make sure that they understand also, and are able to view the system in perspective. It could well be that a slightly higher investment in hives at pollination time would give a far better result than any artificial method. Anyway, its up to you as beekeepers to learn the facts, then make sure your fruitgrowers also know them.

Michael Burgess

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Winter cover

Dear Sir

Would you mind sending me some information on the cover picture of the Winter issue? Perhaps the mag. could have a few lines somewhere about cover pictures? The magazine itself is a great piece of work. Looking forward to the next issue. Hope you can help me.

N. Pattinson
R.D.2
Waipu, Northland

Many thanks for your kind remarks about the Beekeeper. There was indeed a caption for the cover photo at the bottom of page three under the Footrot Flats cartoon. The photo itself came from the MAF archives and that caption was unfortunately all the info. that came with it. However, someone may know more about this piece of equipment and it would be nice to hear from him or her. — Editor

Dear Sir,

I wonder if you can do me a favour. On the front page of The NZ Beekeeper, Winter 1986, is a photo of a hand-operated mechanical hive loader.

Can you tell me where I can buy or obtain one because I have been looking for a similar type for a long time.

L. van Greevenbroek
Cape Foulwind
Westport R.D.2

If anyone can help would they please get in touch with Mr van Greevenbroek. — Editor.

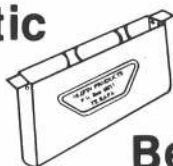
Advice wanted

Dear Sir,

We are seriously considering emigration to Australia, but have been wondering if we should not also make some inquiries about the prospects for beekeeping in New Zealand. We have been full-time beekeeping in S.A. for the past 14 years, with 600 hives. We have also bottled and marketed our own honey.

Do you think you could possibly give us some answers on the following questions? If not, could you perhaps pass them on to someone from the National Beekeepers' Association of New Zealand?

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What sort of work is entailed in such a job?
Are there ever any second-hand beekeeping businesses for sale?

What is the price range?

How much does it cost to rent a small-holding?

How readily available are they?

Can one get hold of second-hand equipment? At what cost?

Do beekeepers in New Zealand usually trap wild swarms or buy nucs?

Do you think it would be very difficult to start up with bees?

Are the beekeeping areas overcrowded already?

We would certainly appreciate it very much if you could find the time to answer our questions.

Barry and Ruth Robertson
Robertson's Apiaries
P.O. Box 168
Kwambonambi 3915
Republic of South Africa

Opportunity?

Dear Sir

I recently met Professor M.T. Zen of BPP Teknologi, Indonesia who expressed interest on behalf of Indonesian concern(s) (un-named) in bee-farming. He is keen to learn of any New Zealand company or organisation which is willing to enter into a joint venture involving (i) honey production and (ii) assisting with pollination techniques (I presume that the plants of main concern will be palm trees). For further details I would suggest that interested parties contact Prof. Zen directly:-

Prof. M.T. Zen
Deputy Chairman for Natural Resources
Agency for the Assessment and Application of
Technology (BPP Teknologi)
Jalan MH, Thamrin No. 8
Jakarta Pusat
Phone: 324255

Norman Lodge
Scientist-in-Charge
D.S.I.R.,
Singapore

Thanks

Dear Sir,

I wish to thank the Association and the DSRO for the help and the follow up with my query on a particular bee.

I appreciate the details set out in the Beekeeper, also receiving the magazine and having read it, I think it is a very good publication.

I am not an apiarist but have been associated with bees as a youngster. Some of my relatives were experts in the field for many years.

Once again thank you to all those concerned.

R.B. Emmett
P.O. Box 69
Baulkham Hills, 2153
Australia

Artificial Pollination of Kiwifruit — some history and observations

By Nick Wallingford

Beekeepers have every right to be "Hopping" mad! The spectre of artificial pollination of kiwifruit has been hanging over the beekeeping industry for a number of years.

We have heard repeatedly that in a few years there will not be enough bees for kiwifruit pollination so it is essential that an alternative be developed. We have heard that bees do not do a very good job of pollination anyway, and so should be replaced. We have heard that artificial pollination is now a viable alternative for the grower, giving a clear cut increase in export sized kiwifruit over bee pollination.

This article is written to detail some of the history of the development of kiwifruit artificial pollination. It is written to put meaning into some of the statistics and costs of kiwifruit pollination. Finally, it is written so that beekeepers will be able to effectively expose some of the misleading or false statements about bees and pollination.

Let's start with some claims made so often in the media that they are accepted as true.

"... by 1985/86 there will be a minor shortfall, based on current MAF recommendations of hive stocking rates, in the number of beehives available for kiwifruit pollination. . . This could have the effect of reducing export income by \$22 million in 1986 rising to \$234 million in 1990." (1)

This statement came from the Development Finance report into the pollination of kiwifruit, back in March 1982. The author made a number of wrong assumptions. The worst was that the number of hives in the North Island would increase at a rate of 2% per year, since this was the growth rate in the past. In fact, the increase of hives available has been far greater than that. Last season there were 31,000 hives in the Bay of Plenty region alone. According to one of the papers on artificial pollination (2), we should have had a shortfall of approximately 30,000 hives last year! In that paper, it was claimed that 46,500 hives would be needed, with only 14,000 available.

Beekeepers, within reason and with adequate finance, can expand their hive numbers to meet the foreseeable needs of the kiwifruit industry.

Dr Murray Hopping who has developed the artificial pollination process for kiwifruit over the last eight years or so has never been shy about stating his intentions. He probably knows more about the biology of the kiwifruit flower than anyone else. To his credit, he has also been involved in the breeding of the 'M series' of male kiwifruit vines which appear to give better fertilisation through the production of high quality pollen.

His statements about his artificial pollination work make very interesting reading. I here repeat my comment to him at the Te Puke Horticultural Field Days last year: 'I admire your enthusiastic presentation, especially since it must be so difficult to maintain through so many years with few real results'. Let me quote a few examples of statements made by, or credited to him.

'The spray should be available commercially this year (1980)' (3)

'Dr Murray Hopping is confident that artificial pollination of pergola trained kiwifruit will be an efficient

and economic reality by Christmas (1984)' (4)

'But Murray still has high hopes that he will meet his deadlines and get the spraying mechanism into commercial operation by 1985.' (5)

Dr Hopping's research programme initially had three goals:

1. Develop a medium in which pollen could survive without osmotic shock.
2. Extract pollen from the male flowers
3. Develop an electrostatic sprayer to drive through the orchard.

In the process, he has also examined hand pollination, spray pollination using a knapsack sprayer, and spray pollination using a boom sprayer. The process which has been recently sold to Turners and Growers is based on the knapsack sprayer. The unit has been presumably 'improved' but is in fact not really different from that developed about five years ago.

It would appear to me that Dr Hopping, unable to deliver goods he anticipated, has fallen back on a previous development. He has now



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Mr B. Rawnsley, Dept. B. J. Sherriff N.Z.B., Happy Valley Apiaries, Mill Road R.D., Manurewa.

Artificial Pollination (cont.)

developed the method into a package, including pollen gathering technique and equipment and the knapsack sprayer, that can be sold to orchardists. Little regard has been paid to economics of the venture, relying rather on vague promises of 'additional return of \$5000 per hectare'.

After that last sentence was published in a local newspaper in the Bay of Plenty a representative of Turners and Growers rang me complaining that it simply was not true. They had been honest about the economics, he said, and that articles detailing costs and expected benefits will be appearing in future issues of *The Orchardist* and *The Kiwifruit Journal*. If you ask orchardists their impression of the new artificial pollination package, you will get a faulty idea of what the package has to offer. I contend that the publicity that I have seen so far has not fully explained the economics and has been to that extent misleading.

Let's look at some of the economics of artificial pollination.

Initially a grower will pay \$20,000 for the 'package', which includes all the equipment and 'know-how' to pollinate 10 hectares of kiwifruit. This cost would presumably be shared between several orchardists, so for the sake of this costing, let's give it the benefit of the doubt and leave it out entirely!

Yearly costs as estimated by Dr Hopping and confirmed by Mr Jeremy Meehan of Turners and Growers are:

30 workers for 12 hours/day
for 10 days to collect pollen
15 workers for 12 hours/day
for 10 days to spray pollinate

Total: 4,500 hours of labour, at (let's assume) \$6 per hour equals \$27,000.

This costing has been made on a 10 hectare area of kiwifruit canopy, so the costs of artificial pollination on a yearly basis would be \$2700 per hectare.

The standard recommendation for beehives for kiwifruit pollination is five hives per hectare, varying up to eight or down to three depending on specific requirements. The degree of shelter, age of vines, and competition from other flowers are examples of things that can vary the requirement.

At the upper end of this recommendation (eight hives per hectare) and at the upper end of the prices charged by beekeepers (\$85 per hive), the costs to pollinate with bees is \$680 per hectare. Quadruple the

hive numbers and it is still cheaper than artificial pollination!

So what is the beekeeper's problem? It comes from the misinformation circulated about bee pollination. It comes from the orchardists' worry that if the weather is bad, the bees won't work the kiwifruit. It comes from making total unwarranted assumptions (as did the Development Finance Corporation report). It comes from the dangling of a magical technological carrot of artificial pollination to cure all the woes of pollination, without really discussing limitations or implications.

For example, just what does the statement "... (Dr Hopping) sees the system being used 'either independently or in conjunction with natural bee pollination' " (6) really mean? Does it mean that in the long term his research indicates that bees may be completely unnecessary in the orchards? If there is any indication of that, why are beekeepers still being encouraged to increase the hive numbers necessary for the continuing growth of kiwifruit? Dr Hopping did not get a very good reception from beekeepers three years ago when he reassured us at the Nelson conference that (at that time, anyway) we did not need to worry about his work doing away with bees, at least not immediately. It might be 10 years or more down the track... That was very reassuring wasn't it.

But, according to Turners and Growers, orchardists are not going to be advised to reduce their hive numbers at all! Their glossy advertising brochure has, as its most prominent feature, a drawing of a honey bee working a kiwifruit flower! It has, incidentally, yellow pollen in its pollen baskets, not the white or cream pollen of kiwifruit...

Finally I would like to throw around a few figures associated with hive numbers, cost and benefit to the orchardist. With eight hives per hectare (a reasonable density of hives) at \$85 per hive (somewhat on the high side for the Bay of Plenty), pollination costs are \$680 per hectare. That actually works out to about nine cents per tray (assuming 6,000 trays per hectare production). Compare that with the other costs of orcharding and you see that pollination is by far the best value for money!

If an orchardist did have pollination problems and wanted to improve pollination by increasing the bee density, the beehive numbers could be doubled to 16 per hectare,

a very high density indeed. To recover this additional cost, assuming a cost of production of \$5 per tray (the cost up to the point of harvesting), the grower would only need to produce an additional 136 trays of kiwifruit of exportable standard! When you work with production figures of about 6,000 trays per hectare, you can see that this amount of increase is extremely small.

In terms of possible benefit versus cost, increasing hive numbers must surely be the most effective way of using money in the orchardist's control. The 'problem areas' in orchards, outside rows, overly sheltered areas and overly exposed areas, would in all likelihood not be a problem in an orchard saturated with good pollination hives.

Of course, other factors of orchard management must be considered as well. There must be adequate numbers of male vines. Dr Pat Clinch pointed out the poor results of the old 1:8 male:female layouts. Visiting Canadian bee researcher Dr Cameron Jay backed these findings with the observation that bees work primarily up and down rows, not across them. Proper placement of adequate numbers of high quality males must surely be the pollination priority for many orchards. Some of the poor pollination results blamed on the beekeeper in the past can be traced to these and other aspects or orchard management.

So, again, why are we as beekeepers concerned about artificial pollination? If all the facts are laid out fairly on the table, we really have little to fear, it would seem. The trouble appears to have come from selective reporting about a questionable process.

Its worth mentioning that of the handpicked orchardists who used this process last season, less than half showed any additional benefits through the use of artificial pollination. Of course Dr Hopping and Turners and Growers have explanations for the lack of performance; but to my mind they do not hold up.

I hope this article provides beekeepers with some facts and figures about artificial pollination. I make no pretense of being completely unbiased; I admit to being quite frustrated at the need to repeatedly react to false, misleading, or incomplete statements about kiwifruit pollination.

David Butcher, Under-Secretary for Agriculture, said at the recent



Art. Pollination (concluded)

National Beekeepers Association Conference that the whole process is now over to the orchardists to evaluate and that it should stand or fall on its merits. I tend to agree with this, and hope all future statements extolling the virtues of artificial pollination are tempered with reality, both scientific and economic. I think we as pollination beekeepers have little to fear from artificial pollination, so long as all the facts are known and fairly presented.

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2. Hopping, M.E. 1982: Spray pollination of kiwifruit. NZ Agric Science 16: 46-48.
3. Horticulture News 1980: Kiwifruit crop can be spray pollinated.
4. 1984: Confident about artificial pollination. NZ Kiwifruit December, 1984: 5.
5. Christian, Glenys 1983: Are limitations bees or varieties? Straight Furrow 42 (50): 3-4.
6. 1986: Artificial pollination arrives. Horticulture News 7 (12): 9.

Meteorologists to charge for some services

The move is in response to the directive for cost-recovery by government departments.

Last year the Service earned about \$1 million, or six percent of its budget, and those figures will more than double this year.

It aims to recover 35-40 percent of its annual costs within about four years.

Public forecasts will still be available to the news media without charge, but the Service will now sell a wide variety of special forecasts and weather information to special-needs clients and it will go after new business.

The service already has a number of major clients: offshore oil and gas companies, the aviation industry, companies which need weather and pollution data before siting industrial plants, and firms engaging in growing crops.

New President

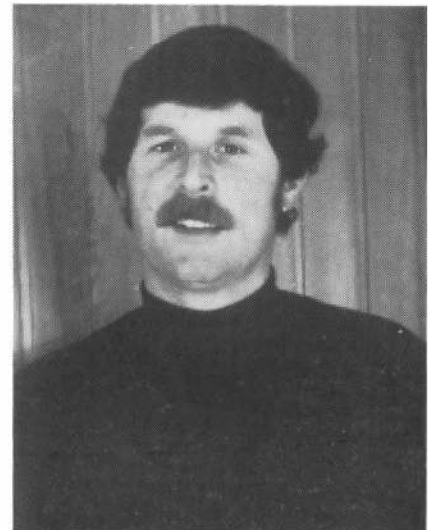
Your new President is Allen McCaw of Milburn Apiaries Ltd, Milburn, which we understand is somewhere in the nether regions of the South Island, usually marked on Auckland maps as "only partly explored" or "here be dragons".

Allen tells us he is 36 years old, was born in Dunedin, and is married with two girls and a boy. He attended Tapanui District High School, West Otago, and Taieri High School, Mosgiel, and then Otago University from which he graduated with a BSc (Chemistry) in 1972.

Before becoming a beekeeper Allen worked for three years as a laboratory technician at the Otago Medical School, and then as a social worker with the Department of Social Welfare. Some nine years ago he bought a half share in Milburn Apiaries when John Heineman, our Hon. Librarian, retired. Neil Walker, his brother-in-law, owns the other half.

Milburn Apiaries has 1,400 hives and produces a small amount of comb honey but mostly packed and bulk honey.

Allen has been Vice President of the Otago Branch for three years, and a member of the National Executive (and Vice President) since 1983. He believes strongly in an effective Association for the well-being of the Industry, and is dedicated to spending as much time as possible in furthering the Industry's aims.



President McCaw

to spending as much time as possible in furthering the Industry's aims.

He enjoys music, is Chairman of the local school committee, and plays squash.

We hazard that running up and down the country as President will keep him a lot trimmer than the odd evening at squash. Welcome, Allen, we are sure you will make a job of it.



President McCaw with wife Maria and (from left) daughters Carlee and Debbie and son Nicholas.

Comment

From John Heineman

It has been said that little has changed in beekeeping methods and hive management in this country since the introduction of the moveable frame hive and the honey extractor. That is open to argument.

In the first decade of this century, beekeepers were still groping in the dark for the cause and possible treatment of B.L. and the origin of that awful honey which would not extract from combs. The area North of Auckland was regarded as absolutely unsuitable for beekeeping. An annual report and a paper delivered at one of the conferences held in the early 1920s shows a great deal of enthusiasm, a vision of the honey industry equalling the dairy industry for export earnings.

It took a man like Isaac Hopkins to push the industry in the right direction. Regular requeening with Italian queens, the use of decent hive equipment, how to deal with disease etc, and perhaps above all the passing of the Apiaries Act, were steps in the right direction.

A team of apiary inspectors was appointed. Dedicated men they must have been. So many changes took place in a relatively short time. But the dream that honey would earn as much as dairy products has stayed a dream. Or has it? Looking at the one product that is so, but with the development of the country, the replacement of bush by clover pasture, and later the enormous expansion of horticulture, the value of the beekeeping industry to the nation overall must have been enormous. Even if we beekeepers receive pollination fees, sell queen bees, honey and wax, the returns for these products and services will amount to only a fraction of the wealth beekeeping has given — and will give — to this nation. Without the little buzzers, and their keepers, our agriculture and horticulture would not have made the large strides it has.

Look at another facet of our industry: marketing. We again see constant change. Those first few tins which went to London, fetching probably a shilling or so per pound, left the producer with perhaps a few pennies for his troubles. After a period of stumbling and falling some people came to the conclusion that banding together could help solve problems. So over the years we have seen the creation of different organisations: NZ Honey Cooperative, IMD, HMA and now back to a producers' coop, and a free-for-all. Each body has served a purpose for its particular era, but as conditions change we have to adapt to circumstances and seek ways to match requirements.

And we are all very much aware of the large and rapid changes that have taken place on the financial scene, affecting beekeepers as it does everyone. Not many years ago it was difficult to raise finance for a beekeeper's undertaking. Gradually that changed. The Rural Bank and other institutions have become more forthcoming and many a beekeeper shows a debt in his books which would make our forefathers shudder. But this goes for most businesses and is, after all, relative. Returns for products are higher in dollar terms and in many cases pollination services are paid for. So we have received some recognition of the value of our industry and in general our credit worthiness has improved.

We also pushed to be regarded as farmers and to receive the same concessions and subsidies. That is, until recently. Luckily we didn't get them, and so didn't receive the same jolt when the props were kicked away. However if our farmers suffer we will suffer. Given a prolonged period during which development is stopped and inadequate topdressing and oversowing takes place, beekeepers will feel the results. For that matter our whole community will.

Changes have come in our part of the MAF services. From apiary inspectors we have moved to apiary advisory officers, more emphasis has been given to beekeepers' education, and the onus of disease control has been more and more put on the shoulders of beekeepers. Now with further savings in the Public Service under the principle of "user pays" further adapting will be necessary.

Our own organisation, the NBA, is also different from years ago. Latterly we have heard complaints from some who think it a waste of time to attend Conference; they feel our AGM has become merely a social gathering. We must admit that the in-fighting seems to have disappeared, although that was good entertainment at times, it served little purpose and tended to fracture our fraternity. Most of us will agree that the present more positive attitude is much to be preferred. At least we have better communication, active involvement in education (BOP courses, short courses etc.), industry planning and involvement in research. Those blokes (girls not yet?) we have voted for as members of the NBA Executive are really not doing too bad a job considering the time involved, the personal sacrifices made, and the abuse they sometimes receive instead of thanks.

For a long time we have lived with high inflation coupled with extraordinary rates of interest. Beekeepers who borrowed money for starting, expanding, or improving their businesses have faced an ever-rising interest bill, the same as many another Kiwi. It is those who borrowed to the hilt when especially land values were at a peak who find themselves in difficulties. The idea that inflation would continue and so automatically increase the dollar value of properties has proved false. Our farmers bear witness to this. So not only has the advantage of the hoped-for capital gain gone with the wind, but operating costs have risen, and standing charges such as interest, rates etc., have become tougher.

If returns for the product stay static or, worse, drop, or the crop is small or disastrous, people will find themselves in deep trouble. In extreme cases it will mean the end of the road. It makes one ponder about the laws of supply and demand and about the basic fact that in the end the value of a certain unit, may it be sheep, cow, kiwifruit, fishing boat or bee-hive can only be truly determined by what it will produce in the way of life's necessities. Events on the financial scene and in economic husbandry in New Zealand probably constitute the biggest change we beekeepers have had to cope with in the past three decades. They have been sudden and vicious and frequently call for a deal of adaptation. However there are a few things that have not changed over the years, and they will stay the same no matter what we or any government try to do about them. The vagueries of the weather, for instance, will always be with us. So will the stress and strain that must inflict pain in beekeepers who have the same feelings as everyone else.

I wish you peace of mind.



The President's Report

The first Annual Conference of the NZ Beekeepers' Assn was held in Auckland on 20 March 1885, over 101 years ago. Since then our industry has seen many changes, but I doubt there has ever been such a rapid growth in the number of beehives as during the past few years. To me this indicates that the industry is in good heart and that the policies adopted by your National Association during recent years have been sound.

The Honey Crop. Although some members had a poor honey crop and the season did not live up to its early promise, honey production this season was the second highest on record. That means that over the past two seasons we have produced the two biggest crops of honey on record in New Zealand. That is partly due to the fact that New Zealand now has more beehives than ever.

Honey Marketing. In spite of record production, the high value of the Kiwi dollar and generally low prices for other agricultural exports, honey prices have not only been maintained but considerably improved. An increase of about 20% in the in-tank value of clover honey paid by exporters this year has helped lift honey prices on the local market. With the keen competition developed between exporters for the limited quantities of honey available, care will be needed to ensure the

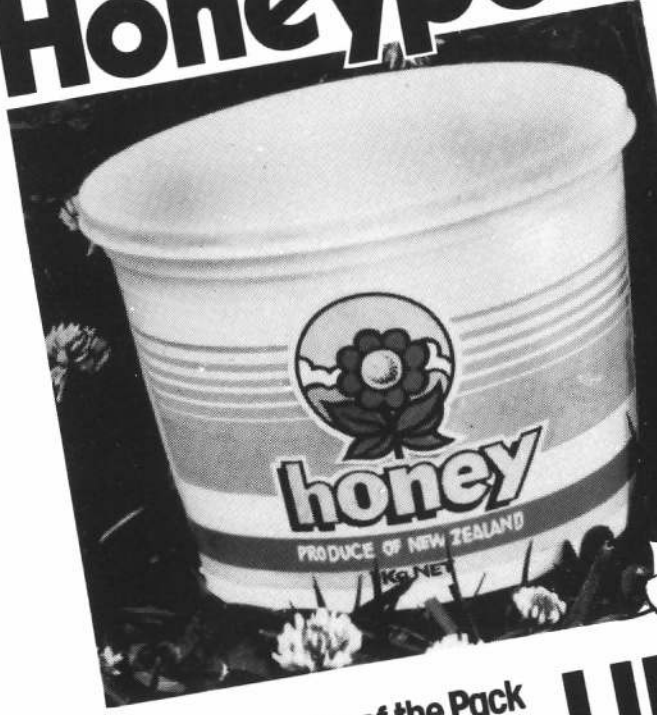
New Zealand market is not left short. This could increase pressure for importing honey, with the certainty of bringing in EFB. Recent reports seem to indicate the present stocks of honey in New Zealand are about right to see us through to the new season.

Orchard Pollination. The number of hives hired out to orchardists for pollination of kiwifruit, apples, and stonefruit was an all-time record last season. It seems likely that more hives will be needed for pollination this spring in spite of the widespread advertising of the MAF Research Division's claim that bees are now redundant for orchard pollination. We are so used to hearing claims that bees are about to be replaced by spray pollination, bumble bees, etc, that we have now become rather cynical about each new claim. However, we should remember, that in the unlikely event of the establishment of some more effective and economical means of pollination than honeybees, it would certainly have a devastating effect on those beekeepers who have built up hive numbers primarily to meet the needs of the kiwifruit growers. It pays to spread your risks and not depend too heavily upon any one source of income from your bees.

Funding of Disease Inspection. One of the main subjects discussed at Conference. Under the Government's "user

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The President's Report (conc.)

pays" policy we could lose our present system of apiary registration and disease inspection unless we pay for it. That raises several questions. The first, do we need a register of beekeepers and apiary sites? The answer must be yes if we want to maintain our present system of AFB inspection and if we are to have any chance of eradicating an outbreak of exotic disease. The second question is, do we want to keep our disease inspection at the present level or should we raise or lower it? There are about 1% of NZ hives destroyed each year because of AFB; that is about 3,000 hives which at \$100 per hive represents an expense of about \$300,000 each year. If we could cut this by half it would save about \$150,000. However, if the disease level rose to 2% it would cost us an additional \$300,000 a year. I understand the level in Western Australia has recently risen to about 10%. I believe most beekeepers feel we should at least maintain the present standard of disease inspection and, if it can be done without excessive cost, improve on the present situation. If we must ask ourselves how much money do we need, when, and where should it come from?

Industry Trust Funds. The accounts for the Trust Funds at 31 December 1985 show a balance of \$875,000 and a tax paid income for the year of \$63,000. The largest allocation from the Trust Funds so far has been our commitment to fund the appointment of Bee Pathologist, Dr Denis Anderson, with DSIR, Mt Albert, for \$37,500 over three years. Half of this amount has now been paid.

The Industry Plan. As a result of a meeting at Flock House in May between the NBA Executive, Murray Reid and two of

his team, and Nick Wallingford complete with computer, all hive-levy payers will now have received a copy of our 1986-87 industry plan. The 1984-85 plan proved a useful tool in running our industry and the experience gained was a big help in putting together this new plan. A lot of work has gone into these two plans, but we now have industry planning on a continuing basis.

Branch Meeting Times. At least one of our larger branches has a problem with a division between those members who can attend branch meetings during the day and those who can only attend meetings at night. In this case splitting into two branches will probably be the solution but this same problem affects all branches. Daytime meetings held during working hours mean most hobbyists and part-time members are unable to attend, while night meetings mean some commercial members are reluctant to attend because of having to travel long distances late at night. There is no simple answer but branches should keep this problem in mind when setting meetings.

The Future. While the outlook for beekeeping in New Zealand must be considered bright, there are several reasons why it would seem likely that the recent high rate of growth will, at least, slow down. Export values may decline if bigger crops are harvested in the Northern Hemisphere. The threat of the DSIR's biological control programme to several of our main nectar and pollen sources, especially nodding thistle and gorse, is of grave concern to many beekeepers. The risk of EFB being brought in from Australia or other countries, in a pot of honey smuggled past agricultural quarantine, is a constant threat and one to which your Association has given a lot of attention and, I suppose, we must concede there is a chance that MAF Research might find a way to make a few of our bees redundant. We have, however, much going for us. The fact that our industry has not been built on artificial supports such as SMP's or cheap government money, means we have not had those props knocked from under us. Also the fact that our exporting was deregulated about four years ago and an increasing number of exporters are opening up new markets overseas for New Zealand honey is to our advantage. The number of hives used for pollination is almost certain to increase dramatically in the next few years and the new developments in exporting of package bees, as well as queen bees, point towards a sound future for our industry. Beekeeping in New Zealand has never been a quick or easy road to big money, it probably never will be, but I suggest there will be a good living to be made by those who are prepared to put the necessary thought and effort into their beekeeping businesses for well into the future.

In conclusion I would like to thank all those who have made my three years as President such an interesting, satisfying and enjoyable experience. Also special thanks to my wife Pat, Stuart Goodman and Olive Hebron, the five members of the Executive, Murray Reid and his team, and Michael and Elisabeth Burgess. While I will not be accepting nomination for President this year I look forward to serving at least one more year on your Executive.

IAN BERRY



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For further information please contact

**EXECUTIVE SUPERVISOR
P.O. BOX 104
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Librarian's Report

The Library continues to fill needs, as shown by the number of requests for items throughout the year. Borrowing has been much on a par with last year. Besides servicing beekeepers we have also assisted students working on beekeeping projects and lately we extended some help to the Library of the NSW Beekeepers at Geelong.

A supplement to the catalogue, covering additions from the time of the first print (June 1983) up to the present, has been completed and photocopies are available at cost. This list indicates the growth of the collection.

Approximately \$160 has been spent buying books. Other items have come our way as review copies. The Otago Branch has allocated a sum of up to \$60 towards the Library fund. This will be spent in the near future on some suitable books.

The filing and listing of papers and pamphlets has been completed in such a way that one can now locate any particular item without difficulty, which will save a lot of time. Magazines have been stored in corrugated cardboard files fashioned from used boxes at no cost. They do not appear classy but serve the purpose. A parcel with photos has been received from Mr Chris Dawson. They have been passed on to the Executive Secretary for safe keeping and I understand that a plan exists to make good use of these photos, and of others the Association already has.

I shall endeavour to fill any gaps in the ranks of the most popular beekeeping magazines by asking publishers for back issues and perhaps by appealing to NBA members. There could also be an opportunity for exchange as the library has a number of doubles of some magazines.

Financially we are holding our own but, only just. That does not take into account the insurance premium paid by headquarters. It will be necessary to review the amount paid initially by borrowers. Three dollars is now not enough to cover loan fees and postage for the average parcel.

The problem of "overdue" borrowers is still with us. People hanging on to books for four to six months or longer without long-term loan arrangements are a nuisance. Extra time and postage are involved with reminders and above all other borrowers are kept waiting. It would be pleasant if those who are guilty would show a little consideration.

John Heineman
Honorary Librarian

P.S. Are your books overdue? If so, please return them. Someone else is waiting.



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Wallaceville Apicultural Section Annual Report

Staff

The Apiculture Section now consists of Mr Pat Clinch (Scientist, Section Leader) and Mr Anton ten Houten (Technical Officer).

KIWIFRUIT POLLINATION

Location of orchards and effect of competing pollen sources for honey bees

The pollination of kiwifruit flowers requires multiple visits by honey bees. That is difficult when colonies have easy access to flowers of competing plants in pasture and waste land. Our previous research has shown that where there is a large monoculture of kiwifruit, such as exists at Te Puke, competition is minimal.

In 1985 research at Te Puna, Tauranga, showed that even in the middle of much smaller areas with a monoculture of kiwifruit, such as at Te Puna West, there was little competition. In contrast, orchards surrounded by pasture in the same district received severe competition from white clover *Trifolium repens*. From the standpoint of pollination it therefore appears advantageous for kiwifruit orchards to be located in groups together rather than in isolation.

Level of pollination that occurs daily through the blossom period

In order to estimate the number of honey bees required to pollinate kiwifruit crops, it is necessary to determine the level of pollination that occurs daily with varying weather. For this reason, in 1985, kiwifruit flowers in an orchard at Te Puna were bagged just before they opened. They were then unbagged and exposed to honey bee and wind pollination for periods of one, two, or three days. The vines were trained on T-bars and had a male:female ratio of 1:8.

The weather during the 11-day blossom period was poor with much rain. Consequently, on three days no fruit of export weight (70g or heavier) was formed from flowers exposed for one day only. The highest percentage of flowers exposed for one day that produced fruit of export size was 71% and the mean 30%. Fruit formed from flowers exposed for two days was sometimes of lower weight than would be expected when compared with that formed from two lots of flowers: one exposed only on the first day, and the other only on the second, of corresponding dates. The highest percentage of flowers forming fruit of export weight after two days

exposure was 67% and the mean 43%. Flowers exposed for three days also frequently gave fruit of lower weight than expected; the highest percentage of these flowers forming fruit of export size was 83% and the mean 59%.

Only 62% of flowers marked but left unbagged, and therefore open to bee visitation throughout the blossom period, developed into fruit of export weight compared with 75% that were hand pollinated. However, after hand pollination, 95% of flowers would be expected to produce fruit of export size. These results therefore confirm that the weather or other factors during the season (possibly low pollen viability) did not allow normal fruit growth.

Effect of hand pollinating only a few stigmas in the female flower

Honey bees rarely scabble in a complete circle around all the stamens of a female flower and thus cannot contact all the stigmas. The effect of pollinating only a few of the 35-44 stigmas was therefore investigated. Flowers, bagged just before they opened, were pollinated by a fine paint brush with a mixture of dry pollen from several male flowers. Only the tips of either four, eight, or 16 stigmas, all together on one side of the flower, were pollinated.

Five percent of flowers in which four stigmas were pollinated produced fruit of export size, compared with 50% and 65% of flowers in which eight and 16 stigmas, respectively, had been pollinated. Even when only four stigmas on one side of a flower had been pollinated, seed was spaced evenly around the fruit, which was round in cross-section. Thus it appears that if sufficient pollen is applied to only $\frac{1}{4}$ - $\frac{1}{2}$ of the stigmas, a high percentage of correctly-shaped fruit of export size will result.

The number of seeds required for kiwifruit to reach export size

Kiwifruit requires the presence of seeds, from which the fruit derives hormones to enable normal growth to take place and for fruit to reach export weight (70g). The number of seeds required varies from year to year. In an experiment near Tauranga about 525 seeds were required in 1979, about 580 in 1980 and about 740 in 1981. Preliminary results for 1986 suggest that at least as many as in 1981 may have been required.

It is not known why in some seasons more seeds than in others are required, but the weather is thought to be the

controlling factor. Obviously the more seeds that are required, the better must be pollination. In the 1985 blossom period the weather at Tauranga restricted bee activity, and thus adversely affected pollination. Thus it is not surprising that in 1986 a higher percentage of fruit than usual failed to reach export size.

EXPORT OF QUEEN BEES

Test for hoarding behaviour

It is desirable to know the honey-gathering ability of lines of bee for export. Comparing different lines by field tests would be very expensive. A laboratory test that compares the "hoarding behaviour" of honey bees has been suggested as a much cheaper alternative.

Initial tests at Wallaceville comparing the progeny of two queens have indicated that the method does not have the precision expected. However, further tests will be conducted using the progeny from several queens of each line instead of that from only one. It seems vital to develop a suitable laboratory test, because this could allow quality control of one of the major performance characteristics of export queens.

The mite *Mellitiphis alvearius*

This mite is known to be present in Europe and New Zealand. From time to time it is found in consignments of queen bees being exported from this country. Nothing is known of its life history, but its presence has never been associated with any adverse effects on colonies.

Progress in determining its life history has been hampered because so few mites have been found in colonies. The examination of frames of honey, pollen and brood, the bees on them, and on the bottom boards of seven colonies at Wallaceville, revealed an average of only one mite per hive. None of the sampling sites was found more likely than any other to harbour the mites.

In Europe, tobacco smoke has been found to be effective for detecting the mite *Varroa jacobsoni*. A sheet of card is placed on the bottom board prior to smoking in the evening, and in the morning contains mites killed by the treatment. The method was tried at Wallaceville and found to be effective for detecting *Mellitiphis*. Only three hives were sampled. One, that revealed only two mites in the earlier examination, gave 11 and 15 mites after two smokings six days apart. Two other colonies, that



New National Life Members

Wallaceville Report (conc.)

revealed no mites in the earlier examination, gave six and four, and one and five mites, respectively, for the two smokings. Obviously the treatment did not kill all the mites and so cannot be used to disinfect colonies. However, it will be useful for detecting infested colonies and thus could lead to the discovery of the life cycle of the mite.

EFFECT OF PESTICIDES ON HONEY BEES

Pesticides that may be applied to kiwifruit during flowering

Our small-scale field test has been used to determine the risk to honey bees of two new insecticides. These are **Bactospeine**, a new strain of **Bacillus thuringiensis**, and **Applaud**, a growth regulator type of compound. As immature stages will be most at risk, small colonies of honey bees in cages were fed pollen contaminated with the insecticides. Results are currently being evaluated.



Heini Belin

Heini Belin, Auckland, has been made a National Life Member. Heini began beekeeping in 1943 for the very good reason that he likes honey and at the time found it difficult to buy.

He started with one hive and a wheelbarrow and gradually built up into the 2,000-hive Waitamata Honey Co, in which he sold his major interest some 18 months ago to become semi-retired.

Heini began exporting comb honey in 1954, which triggered the general exports of comb honey and brought about the Northern Comb Honey Producers' Association of which he was Secretary of the Committee for many years. He was also Secretary of the Auckland Branch for a long time.

Scientist Pat Clinch began his professional career in Britain researching the pros and cons of pesticides, but since he arrived in New Zealand in 1964 to work with the MAF at Wallaceville, he has had a great deal to do with bees.

Not only has he applied his original bent of pesticides expert to discovering how the various chemicals affect bees, but he has been in the front line of bee-disease and pollinisation research, much of the time involved in original and exploratory work.

Why, of course, on his imminent retirement, the NBA has made him a life member.

Not that he will be entirely eschewing the birds and the bees in his retirement. A keen gardener, he plans to do much with flowers, to the extent that his wife Anne is left with the vegetables.

Pat is also a member of the Model Railway Society, and will be working on the restoration of the Fell locomotive at Featherston. The Fell, or "H" class of locomotives hauled trains over the Rimutaka incline before the tunnel was opened in 1955. Pat will also shortly become Publicity Officer for the Community Gallery next to the Civic Centre, Upper Hutt: a role that will surely prevent time from hanging on his hands.

Wife Anne, apart from keeping the vegetables flowing, is a Home help with the Wellington Hospital Board. Currently she is Provincial Commissioner for the Pencarrow Province of the Girl Guides.

Pat Clinch and wife Anne



Bay of Plenty Community College Report

As many of you know, I administer the Certificate in Beekeeping Course, now well into its second year. We have about 120 students working through the course. At the end of this year, the first intake of students is expected to complete the course, and a number of certificates will be presented. If you looked back over the years of groundwork carried out by the National Executive to obtain this educational opportunity, I think you'll agree that will be a momentous occasion.

At the end of last year I prepared a complete set of reports on the progress of the Certificate in Beekeeping students through the year. This report has a fairly comprehensive analysis of the types of students taking the course, including hive numbers, NBA membership, geographic distribution and so forth.

Last year you may recall I joked about 'distance education' being the current catchword among educationalists for correspondence courses. This year I introduce another word and relate it to you as beekeepers and members of your national organisation, the National Beekeepers' Association.

That word is 'validity'. In its most basic educational use, it means that as a tutor I am teaching a course that actually manages to impart information and skills that the industry considers relevant to its needs.

By checking on the 'validity' of a course, an industry can

ensure that the course will certify people as having reached a level of skill and knowledge that will have a very real and very practical impact on their day-to-day activities.

In an industry with a proper apprenticeship programme, validity is easy to maintain. With students dealing daily with employers, employers are quick to point out any variance with the industry's needs.

Our Certificate in Beekeeping course is somewhat different, since many beekeepers may not know about the course's contents or effectiveness. To maintain validity, we have chosen instead to involve the industry in the assessment and evaluation of the course. Yes, I know these are two more educational catchwords, but I won't go into their 'deeper' meanings.

In the case of the Certificate in Beekeeping course, a number of commercial beekeepers are being asked to serve as assessors for the students. My main objective in this report is to allay your fears about what this involves.

The course was designed to involve beekeepers as assessors to ensure that the course remains valid, that you as the industry representatives can actually see some of the handiwork of the course. Acting as an assessor is not really as intimidating as it sounds. It means a student has an opportunity to visit a commercial beekeeping operation. A marking guide leads you through the questions to ask and the skills you are measuring. All serve to keep the industry aware of some of the material covered in the course.

I will be calling on other beekeepers in the future. Should you have reasons for not assisting, there's no problem. But I hope you will see it as an opportunity for industry input, a way of maintaining the validity of the Certificate in Beekeeping course.

The facilities for the beekeeping industry at the Bay of Plenty Community College are up and running. While most of my time has been spent writing and producing the course, I have also helped set up a demonstration apiary and honey house at the College. The classrooms have been used extensively for short courses, seminars, and meetings of beekeeping groups such as the Bay of Plenty Branch and the Kiwifruit Pollination Association.

The demonstration honey house has recently had its first major extraction effort. The equipment and layout of the honey house is standard. We have avoided the tendency to equip it with expensive and unavailable equipment so ordinary beekeepers may relate to process and equipment. It should form an integral part of many of the short courses run at the College. It will also perform a very important role in the education of non-beekeeper groups about bees and beekeeping.

I hope these facilities will be fully used in the future by the industry, providing an opportunity for both research and public relations.

Nick Wallingford



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Bee Pathologist's Report

I have now been employed at the DSIR in Auckland, as a bee pathologist, for just 15 months. The bee pathologist position was originally created after discussion and consultation between members of the National Beekeepers' Association, the DSIR, and MAF. The general consensus among beekeepers at the time of my appointment was that New Zealand honey bees were considered to be relatively free of major pests and diseases. Hence it was considered that the prospect of the New Zealand honey industry increasing its footage in overseas honey markets, and package-bee and queen markets, looked promising. In order to take full advantage of these potential markets it was considered important that the New Zealand bee industry be seen by the rest of the world to be actively involved in bee disease research, as such an involvement would increase the confidence of importing nations. Furthermore, it was also known at that time that a disorder in New Zealand bees called 'half-moon syndrome' needed investigating, not because it was a serious problem to the local bee keepers and domestic honey production, but because it might jeopardise overseas live bee exports.

Fifteen months on, the same concensus generally applies and the prospect of our overseas markets growing are still very bright. However, our knowledge of disease in New

Zealand has changed for the better over the last fifteen months. For example, much more is known about the occurrence and distribution of bee diseases in New Zealand. This has mainly come about from the results obtained from a nationwide survey for bee diseases which I am currently undertaking. The results from this survey should also point to those areas which require immediate or further research.

For this survey, 70 beekeepers, evenly distributed throughout the North and South Islands, send brood and worker bee samples to me for analysis once every three months. The participating beekeepers always send the samples from the same colony which they originally chose at random for their apiaries. The beekeepers were chosen by the regional MAF apicultural advisory officers.

The received samples are analysed for protozoan bacterial, fungal mite, and viral infections.

This survey is continuing but will finish this coming spring. That final spring sample should enable me to estimate the yearly variation that occurs in the occurrence of certain diseases.

Such an extensive survey could not succeed without the involvement and cooperation of the beekeepers and the MAF apicultural advisory officers. I would like to take this opportunity of thanking all of the participants and each of the



SPRING 1986 — AUTUMN 1987

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- OUR QUEENS PRODUCE
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- HARD WORKING HONEY HUNTERS
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Available October through to March
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1-9 \$10.50ea 10-49 \$9.50ea
 50-149 \$8.00ea 150 plus \$7ea (includes postage —not GST)
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- December-January delivery \$1.00 less per Queen.
- GST to be added after 1.10.86

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 WHANGAREI.

I require No.
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 the month of
 (choose October through to
 March).

I enclose \$
 payment in full — includes GST.

NAME:

POSTAL ADDRESS:

.....

TELEPHONE:

Whiteline Queens

TELEPHONE 893, MANGAKAHIA
 TELEGRAMS: WHITELINE, WHANGAREI.
 PAT and TERRY GAVIN

Bee Pathologist's Report (concluded)

apicultural advisory officers, and I can only say "you're not a bad mob of blokes". I'm sure the published results will be the envy of most overseas honey industries, particularly that one across the Tasman.

As previously mentioned, when I first arrived in New Zealand the health status of New Zealand bees was presented to other countries as being relatively 'disease and pest free'. This status rested on the assumption that New Zealand bees were free of European foulbrood, Kashmir bee virus, Varroa, and Acarine mites, and the Africanized bee. Now, after thorough searches have been conducted for these pests and diseases, we can confidently say that our bees ARE relatively free of the major diseases and pests, even though I have found Kashmir bee virus in New Zealand bees. This finding has so far had positive consequences because its presence has dramatically changed the way the virus is viewed. For example, Kashmir bee virus was first found in 1977 by Dr Bailey in England. He isolated the virus from adults and larvae of the Eastern hive bee *Apis cerana*, which were sent to him from India. Because he had not isolated the virus from honey bees (i.e. *Apis mellifera*) from Europe or the UK, he assumed that the virus must have been specific to *Apis cerana*. Hence the virus became known as an exotic bee-virus disease. A year later, in 1978, Dr Bailey isolated Kashmir bee virus from Australian honey bees (i.e. *Apis mellifera*) and he argued that it must have got into the Australian bees from *Apis cerana* possibly by way of a native insect species which was common to Asia and Australia. The finding of Kashmir bee virus in Australia led to export bans being placed on Australian bees by Canadian and UK authorities. Shortly after this, major research efforts into bee diseases in Australia began, and it soon became apparent that Kashmir did not come from another insect but was indeed specific to *Apis mellifera*.

My findings of Kashmir bee virus in New Zealand, and more recently in Canada, suggests that the virus may be common to *Apis mellifera* throughout the world. The reason why it does not occur in England, which had imported Australian honey bees and which still imports New Zealand bees, is difficult to explain. Perhaps Kashmir bee virus cannot become established in UK bees because of certain environmental conditions or alternatively it may be eradicated when introduced into the UK, perhaps because of the selection pressures exerted by other microorganism present in UK bees. One possible microorganism is acute bee paralysis virus which is not present in New Zealand or Australian honey bees, but appears to occupy a similar ecological niche to that of Kashmir bee virus in Australian and New Zealand bees. Whatever the reasons, this example stresses the need for local-based ongoing research into bee diseases.

So much for Kashmir bee virus. Other research has begun on half-moon syndrome and other disorders which affect our bees. This was discussed at the Beekeepers' Seminar. This research, which is essential to the unhindered growth of our export markets, will continue and intensify throughout the coming spring and summer.

Some of the other duties which I have been involved in over the last 15 months include the educating of quarantine officers to the dangers of importing exotic and dangerous bee diseases, attending and addressing field days, seminars and bee disease courses, and the training of a MAF personnel who will be involved in the proposed MAF diagnostic service.

Almost all of my work in New Zealand has been done with no technical help, but that has recently changed and I now have the temporary services of a very competent and conscientious laboratory technician. I sincerely thank those sections of the industry which contribute financially to keeping this technical help going.

To sum up this brief report. As I see it, our bee industry is in the enviable position whereby it is aware of most of the

diseases and disorders which affect our bees, even though it is clear much more research is needed in particular areas. Nevertheless, the present position should enable us to quickly recognise any 'new' disease or disorder which may suddenly appear and it also should ensure that if an accidental import of any 'known' exotic or dangerous disease, such as European foulbrood, does occur, we can rapidly recognise it and take immediate and appropriate steps to confine or eradicate it. Very few other countries are in a similar position.

Dr Dennis Anderson

Pesticide Board Report

The Pesticides' Board's principle functions are the promotion of prudent safe and effective use of pesticides and their control by means of registration, regulation and education. The board has 12 members, each representing one of the following organisations: Ministry of Agriculture and Fisheries, NZ Vegetable Growers' Federation, Ministers of Science, Wine Institute of NZ, Agricultural Chemicals and Animal Remedies Manufacturers' Federation, Ministry of Health, NZ Fruit-growers' Federation, and the National Beekeepers' Association. An Executive Committee of six meet monthly while the Board has five meetings a year. The Pesticides Board has a permanent staff of seven based in Wellington.

Bee Poisoning Reports. It is pleasing to report there were only three minor cases of pesticide poisoning of bees reported to the Board during the past year. While there may have been a few other cases not reported this is very satisfactory and I believe due mainly to the "Toxic to Bees" warnings which now appear on labels of all pesticides which could poison bees.

Mirex. The difficulty of obtaining this product for controlling wasps has concerned many beekeepers during the past year. Enquiries I made at the Board meeting two weeks ago give little hope of Mirex being available in the future. Mirex is one of the organochlorine group along with dieldrin, DDT, and lindane, and because of their persistence in the food chain and their possible carcinogenic properties the use of organochlorines is being actively discouraged.

Honey Disease. The unfortunate naming of this disease, which kills grass grubs and which lead to at least one bold newspaper heading stating "Honey disease kills grubs", resulted in a letter of concern from the NBA to the person concerned. However in the June 1986 Agrisearch we find numerous references to "honey disease" in statements such as "the bacteria which cause the killer honey disease in grass grub can certainly sweeten the life of many farmers." As the scientists are developing these bacterias as a biological pesticide, Pesticide Board approval must be obtained before sales are made. The board has given me an assurance that the word honey will not be approved on any label relating to this product.

In conclusion I would once again like to express my thanks to members of the Pesticides Board and the Secretariate for their help and interest during the past year.

IAN BERRY

ASD Report

Organisation and Staffing

All nine apicultural advisory positions were filled for the first time in a number of years. Mr Ted Roberts, formerly Senior Lecturer in Agronomy at Massey University, joined our section and has been a valued addition to the team.

Over 42 field officers, livestock officers, and 58 beekeepers were engaged as part-time inspectors. Many beekeepers didn't seek remuneration for their efforts and this is appreciated.

Mr Brian Milnes, Field Officer, Auckland, began training as a bee pathologist and will shortly be offering a diagnostic service based at the MAF Plant Protection Centre, Lynfield, Auckland.

Beekeeping Statistics

a) Beekeepers, Apiaries, and Hives

There were 6,934 beekeepers owning 328,961 colonies of bees at 31 May 1986. Beekeeper numbers have remained static but hive numbers have increased by 19,348 or nearly 6%.

Significant increases in the number of beekeepers and hives in the 51-250 group occurred in several regions. This mainly reflected a growth in hives supplied for kiwifruit pollination.

(b) Honey Production

The total crop was assessed at 9,471 tonnes (29kg/hive) compared with last year's production of 10,314 tonnes.

The record 1984/85 crop took a long time to clear and many beekeepers faced severe cash flow problems. Overseas buyers were active late in 1985 and continued to make good offers for the 1986 crop. These early sales of the current seasons production were welcomed by the industry with prices for dark honey ranging from \$1.35-1.67/kg net, light honeys from \$1.65-\$1.85/kg while some white honeys were reported as fetching a late season premium of \$2.00-\$2.10/kg.

American Brood Disease

Levels of American brood disease are of concern to MAF, particularly in the Auckland region where several bad outbreaks occurred. Beekeepers continue to split, sell, and move diseased hives contrary to the Apiaries Act and MAF policy.

Chalkbrood

Chalkbrood disease continued to spread but there are still many areas in New Zealand apparently free of the disease. A survey was carried out in Northland on the incidence of chalkbrood and MAF's policy towards the disease was prepared. These have been reported in the NZ Beekeeper 190 Winter 1986: 8-10 and 29).

(Cont. page 22)

District	Beekeepers			Apiaries		Hives
	1986	1985	1986	1985	1986	1985
Whangarei	659	657	1849	1640	17867	18265
Auckland	1197	1467	2953	2715	27450	18594
Hamilton	726	739	3100	3272	46288	45466
Tauranga	833	801	3661	3355	52324	48329
Palmerston North	1393	1395	3851	3793	39434	36274
Nelson	596	583	2268	2133	25907	22775
Christchurch	804	780	3816	3528	48751	45169
Oamaru	360	355	3189	3455	41730	46006
Gore	366	326	2179	2199	29210	28735
NZ TOTAL	6934	7103	26866	26090	328961	309613

Fig. 1)

	Whangarei	Auckland	Hamilton	Tauranga	Palm. Nth	
1984	300	300	731	682	495	
1985	572	930	1697	1550	1085	
1986	402	1096	1492	1150	887	
	Nelson	*Christchurch	Oamaru	Gore	Total	Kg/hive
1984	800	1150	1100	560	5818	21
1985	685	1650	1352	790	10314	33
1986	871	950	1473	1150	9471	29

*Christchurch figure includes honeydew

Fig. 2

Description	Year Ended June 1985		9 Months Ended March 1986	
	Tonnes	\$NZ fob	Tonnes	\$NZ fob
Bulk honey	830	1,646,012	1370	2,778,769
Retail packs	175	552,493	183	521,258
Comb	258	1,621,987	90	519,309
Honeydew	661	1,336,385	308	660,817
Total	1924	5,156,877	1951	4,480,153

Fig. 3

Apiary District	Diseased Apiaries		Diseased Colonies		Apiaries Inspected MAF or MAF Agents
	No.	%	No.	%	%
Whangarei	65 (48)	3.5 (2.9)	141 (107)	0.8 (0.5)	10.6
Auckland	177 (63)	5.0 (2.3)	740 (152)	2.7 (0.8)	17.0
Hamilton	127 (165)	4.1 (5.4)	218 (220)	0.5 (0.5)	12.7 (14.4)
Tauranga	163 (268)	4.5 (8.0)	454 (676)	0.9 (1.4)	7.0 (10.4)
Palm. Nth	112	2.9	344	0.9	11.0
Nelson	141 (153)	6.2 (7.2)	287 (340)	1.1 (1.5)	6.1 (7.5)
Christchurch	56 (40)	1.5 (1.1)	145 (303)	0.3 (0.7)	11.0
Oamaru	107 (88)	3.4 (2.6)	284 (188)	0.7 (0.4)	10.0 (8.8)
Gore	102 (129)	4.7 (6.2)	307 (296)	1.1 (1.0)	9.3 (8.5)
Total	1050	3.9	2920	0.9	10.5

Target 10% MAF staff inspected 1440 apiaries, beekeepers (paid and unpaid) also inspected 1440 apiaries.

Fig. 4

Buzzing at



(Left) Don Bates, Waikato, takes "five" in the fresh air during Conference.

(Opposite above) Linda White, Nelson (left), and Jackie Ashcroft, Hawkes Bay, woman the goodies stall in the Conference foyer. (Opposite below) Jane Lorimer, Annette Berry, and Sally Tod sort out a knotty problem at the registration desk.

(Below from left) Peter Townsend, Bruce Stanley, Roy Hyde, and Robert Brereton practice their elbow exercises in the bar.



Conference '86



ASD Report (concluded)

MAF Budget

a) Reductions in government allocations to MAF will need to be replaced by income generation if MAF is to remain at present resource levels. Some restructuring within MAF and a change of emphasis is also planned.

Beekeepers have been asked to consider funding disease control, quality assurance and export certification work carried out by Advisory Services Division (ASD). The Director-General of Agriculture has stated that where MAF has a statutory responsibility, or a monopoly, it must provide least cost services and cannot build "profits" into cost structures.

Figure 5 gives a summary of MAF expenditure on disease control, export certification and quality assurance.

Charging for services other than regulatory or export certification will be at the discretion of the local adviser and assumes he has a "willing" client.

b) Regulatory Costs

ASD incurs considerable costs in administering the Apiaries Act each year, such as inspecting for disease, keeping records, and maintaining the apiary register. MAF is also involved with aspects of quality assurance and export certification for beekeepers.

The cost to MAF for wages and vehicle running costs was \$133,414 for an average of \$14,824 per apiary district. (Range \$8,399-\$23,244). These figures, do not include office overheads or costs to operate the apiary registers except for wages, nor do they include the costs for monitoring the toxic honey areas in the Coromandel/Bay of Plenty and Marlborough regions. Current MAF costs to maintain the permit system and MAF test hive programme in the Coromandel/Bay of Plenty area are \$17,099 per year. A large number of beekeepers also gave their services voluntarily last year for hive inspection work.

	No. used	Km	Km Cost \$	Days (8 hr)	Wages \$
MAF staff	53	40,674	15,213	900	102,500
Beekeepers (paid)	33	12,540	6,091	136	9,610
Beekeepers (unpaid)	25				
Total	141	53,214	21,304	1,036	112,110

Fig. 5

	No. Apiaries	No. Hives
Found by MAF or MAF agents	276	1204
Reported by beekeepers	774	1716
Total	1050	2920

Fig. 6

On a per beekeeper basis a licence or registration fee of around \$20 would be required to meet the current minimum level of expenditure.

It is difficult to put a value on MAF's inspection service but a recent MAF estimate put a value of \$144 (range \$103-\$176) on a hive destroyed through having American brood disease. If 25% of the 1204 diseased hives found by MAF were dealt with properly by their owners, then these 301 hives would only need to infect another three hives each at \$144 per hive to cost the equivalent of what MAF spends on disease control and export certification for the whole country.

Advisory Activities

a) Study Tour to NSW

Eight apicultural advisory officers spent five days in NSW in April 1986 examining aspects of Australian beekeeping and government legislation. Talks have been presented to branches on the tour and a report has been made available to executive.

Export of Bees and Queen Bee Producers Associations

Production of package bees for Canada continued to grow with 16,480 1 kg equivalent packages being exported. In addition to these packages an extra 25,700 queen bees were also exported to over 10 countries. The combined value of the packages and queen bees was estimated at \$NZ681,788 (fob).

MAF assisted queen bee breeders to form an association; the NZ Queen Bee Producers Association (NZQBPA) during the year. The NZQBPA formulated a charter of membership, a code of ethics, and sent a quarterly newsletter to members.

A survey of queen bee quality was also carried out on queen bees supplied by producers. Eight parameters were measured and the results showed a wide variation in queen quality. A national advisory programme was prepared to assist producers improve the quality of their stock.

The French Nicot no-graft system of rearing queen cells was evaluated and will be promoted for the coming season.

Negotiations continued with overseas governments to ratify or simply export certification procedures.

c) Kiwifruit Pollination

An estimated 50,565 colonies were placed in kiwifruit orchards last November-December. These returned \$3,379,940 to beekeepers by way of pollination fees (range \$49-\$85/hive) and \$213.2 million to the growers (26 million trays at \$8.20 each).

Beekeepers operating in all major kiwifruit areas have now formed pollination associations. These groups have adopted minimum hive standards based on MAF recommendations (NZ Bee-

Continued on page 32

NEW ZEALAND HONEY PRODUCTION, IN TONNES

(As at 31 May Annually)

	Whangarei Auckland	Waikato King Country Taupo	Bay of Plenty Coro- mandel Poverty Bay	Hawkes Bay Taranaki Manawatu Wairarapa	NORTH ISLAND	Marl- borough Nelson Westland	North & Central Canter- bury	South Can- terbury N Otago & Central Southland Otago	SOUTH ISLAND	New Zealand	Yield per Hive (kgs)		
1971	440	1239	671	581	2931	207	711	895	914	2127	5658	28.2	
1972	489	1247	518	1079	3333	252	406	1082	620	2360	5693	27.9	
1973	573	1069	600	551	2793	424	600	610	914	2548	5341	25.7	
1974	386	1094	680	702	2862	255	600	490	1055	2400	5262	25.5	
1975	448	1378	750	890	3466	330	1200	1300	1115	3945	7411	36.3	
1976	375	530	280	554	1739	256	1200	950	770	3176	4915	23.9	
1977	482	1433	490	704	3109	483	1000	821	665	2969	6078	29.3	
1978	450	1646	1000	1440	4536	394	950	959	1440	3743	8279	39.2	
1979	420	1360	540	835	3255	265	1050	1249	655	3219	6474	28.5	
1980	550	1129	400	810	2889	590	1750	1225	1035	4600	7489	32.0	
10 yr Ave	461	1213	603	815	3091	346	947	958	918	3169	6260	29.7 kgs	
	Whangarei Auckland H. Plains												
1981	650	1043	470	1088	3251	491	1150	1100	940	3680	6931	29.1	
1982	600	1465	1130	1020	4215	325	430	550	975	2280	6495	25.6	
1983	696	877	720	360	2653	300	1050	900	150	2406	5053	18.8	
1984	300	731	582	495	2208	800	1150	1100	560	3610	5818	21.0	
1985	572	930	1697	1550	1088	5837	685	1650	1352	790	4477	10314	33.3
1986	402	1096	1492	1150	887	5027	871	950	1473	1150	4444	9471	29

SO O.K. I'M STRESSED — WHAT NOW?

Stress Action Plan

THOUGHT	FEELING	ACTION
What shall I do?	Conflict — confusion	Examine all choices. Write them down. Weigh up the pros and cons. There may be more choices than you think. Examine them all carefully and systematically.
I don't know where to start	Overload — confusion Harassment	Examine all your tasks. Are they all really necessary? (See unrealistic expectations) Delegate tasks where possible. Make a list, don't rely on memory. Have an appointment diary and stick to it. Say 'no' more often. Get assertiveness training if necessary.
This is the last straw	Persecuted, victimised Overloaded	Isolate each component separately and deal with each individually. See how these problems interact.
There's nothing I can do	Helplessness, Panic	Examine all choices and all solutions. Pretend you are a wise friend and give yourself advice. Get some counselling.
I can't go through with this	Fear, panic	Is this fear rational or irrational? What is the worst thing that can happen? Is that so bad? Lay the ghosts or fight them. Get counselling or therapy.
Why am I/you so hopeless? I/you should be more. . . or more like. . .	Inadequacy (self or others) Anger, Frustration	Examine your expectations of yourself and others. Are they realistic or desirable? Who told you how or who you should be. Examine whether these expectations are improving your lifestyle or detracting from it.
Why can't you understand	Frustration, Anger, Resentment	Encourage open, honest feedback. Learn conflict management. Role reverse with others involved to understand their point of view. Get some counselling.
Nobody appreciates me.	Resentment.	Air your resentment. Don't assume that people know how you are feeling. They often don't Say no more often. State your needs. Role reverse with others involved to understand their point of view. This may change your perception of the situation. If it doesn't then change the situation.
I'm run off my feet.	Tiredness, Hunger Physical aches and pains	Eat regularly and sensibly. Sit down to eat. Rearrange meal times to avoid clashes. Get enough sleep. Sit or lie down occasionally. Programme rest periods into your day. Wear comfortable clothes and shoes. Use off-peak shopping and banking hours. Prepare for morning the day before. Enjoy getting to places. Waiting in a queue can be enjoyable if you use the time to relax, palm or observe. Leave earlier and take the longer, scenic route. If you are sick don't struggle on. Go to bed — pamper yourself. There are no medals for being a martyr.
Why me?	Grief, desolation, loss, panic, anger	Grief is natural and inevitable. Don't be ashamed of your feelings or afraid to show them. Ask for help. Be a friend to yourself. Many people may want to help. Make sure you let them know how you would like them to help. State your needs. Don't try to hurry or eliminate the process.
Will this change work out?	Anxiety, doubt, fear, loss.	Change is a form of grief (even positive change). Allow yourself some grief for what has passed and then be positive. Be kind to yourself. Remember — change is an adventure.



Stress (concluded)

Complete the following questionnaire and evaluate your score in the following manner:-

Yes	- 5
Frequently	- 4
Sometimes	- 3
Very Rarely	- 2
Never	- 1

Do you feel that you are working hard and getting nowhere?

Do you feel constantly tired?

Do you feel that you have too much on your plate?

Do you feel isolated from others?

Do you experience a feeling of impending doom?

Do you feel resentful or unappreciated?

Do you feel ill or under the weather?

Do you try to do everything perfectly?

Do you feel depressed?

Do you feel emotionally and physically drained?

Do you forget things e.g. appointments?

Do you make mountains out of molehills?

Do you feel angry or blaming towards others?

Are you frustrated or fed up?

Have you lost your sense of humour?

Do you run out of time for relaxation?

Do you find it difficult to wind down or relax?

Are you careless or mechanical about your tasks?

Is it difficult for you to give and take affection from your family?

Do you suffer from mood swings?

Your Stress Rating

20—40 You are not stressed at the moment. Share your secret with others.

40—55 Most people function well at this level.

55—70 Make a plan to reduce your stress. Learn some stress reduction techniques.

70—85 Get some counselling or advice.

85+

SOMETHING'S GOT TO

GIVE — GET SOME

HELP —

NOW

BEFORE

THE

TWO MEN IN

WHITE COATS

ARRIVE!

Southland Field Day



KIWI QUEENS

OCTOBER to NOVEMBER 3 SUPPLY

100 up \$8.80 each

50 to 99 \$9.40 each

10 to 49 \$9.80 each

1 to 9 \$10.60 each

Payment with order please. Please add 10% G.S.T.

NOVEMBER 3 to DECEMBER 13

— SPECIAL RATE

All charges above less \$1.00 each

PLUS

We will randomly draw one customer supplied each week this period for one free select Tested Queen. All customers will be advised of the results early January. These tested Queens will be posted early February.

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Whakatane**

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The value of Requeening

By Skep

If there is one thing that sets the beekeeper apart from the "bee-haver", its the subject of requeening. After all, why bother to replace the queen? Everybody knows that when the queen gets too old the colony will replace her through natural supercedure. Who are we to interfere with the natural course of things, anyway?

The short answer is that we are beekeepers, not "bee-havers". By taking on the hobby of beekeeping, we are saying that, through management and manipulation, we can help the colony in its job of gathering a honey crop.

And to remind you of what I said in the last column, as its most basic, good beekeeping consists of having a good young queen heading the colony, feeding it when necessary, and giving it enough room to expand naturally.

Commercial beekeepers admit the value of having young queens heading their hives, even when they do not get around to replacing them as often as they might wish. They are often limited by such things as cash flows, difficulty of supply for large numbers of queens, and the monumental task of replacing queens in a large number of hives. But the key point to remember is that all successful beekeepers will tell you of the value of young queens.

The cost of a young queen seems quite a barrier. After all, \$10 for a single bee! In fact, that cost should not deter you at all. Balance the cost against the benefits. On the bottom line, let's look at honey production.

So how old is old? Remember, queens might live for five years or even more. In a practical sense, most beekeepers will tell you to try to have all your queens less than two years old. This does not say that queens are no good after two years, but it does say that they will be less likely to perform well. As a hobbyist beekeeper, I would advise requeening at least every other year, and if you want maximum production, requeening every year if you can arrange it.

For many people, the stumbling blocks to requeening regularly are two — Difficulty in getting queens when you want them and difficulty in finding the old queen to replace her.


For the first of these I can offer only one piece of advice. Order early. By this, I don't mean just a week or two before you want the queens. I mean months before you require them. There is a tremendous demand placed on queen breeders for supply in the months of September and October. Everyone wants his or her queens at that same time. If the weather is not good at that time, it means the queens won't be able to mate properly and the delivery will be late.


If you are to get these early spring queens from a queen breeder at all, you must order six months or a year in advance. And if you don't get your spring queens until late November you'll not get the best value from them. All the


(Cont. page 27)

THREE RULES OF QUEEN INTRODUCTION

The colony should

 be **QUEENLESS**

 be **WELL FED**

 have **YOUNG BEES**

EMERGING

The \$10 that you pay for a young queen is only the value of about two to three frames of honey. In all but the very worst seasons, I think it would be fair to say that a young queen heading the hive will increase production by more than that! The difference is more often a full box of honey.

And its not just that bottom line difference, either. Keeping a young queen in your hive will make management so much easier and predictable. The hive will not have anywhere near the same tendency to swarm. Though there are a lot of factors that affect swarming, including overcrowding, weather and so forth, the age of the queen is a primary cause.

A hive headed by a young queen will develop steadily, rearing the maximum number of foragers to gather your honey crop. Unlike an old queen, the young queen will not be likely to suddenly fail at a critical time.

DON GIBBONS Crown Queens Ltd.

**ARE THEY THE BEST?
WE THINK SO,
IF YOU DON'T, TELL US WHY.**

NZ prices: \$9.50 each reducing by 2 cents per queen for each queen ordered.

Minimum price of \$6.70 from 140 queens. e.g.
15 queens would be less 30 cents per queen.
50 queens would be less \$1.00 per queen

**September deliveries plus 50 cents
Dispatch advice telegram \$4.00**

Please add G.S.T. on all orders for delivery after 1/10/86

Order early and avoid disappointment. Prices subject to change without notice. Terms: Cash with order, except by arrangement from:

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BEE PRODUCTS & NOVELTIES 1986

ITEM	COST	ITEM	COST
HONEY LINES			
Kiwifruit & Honey Tablets	\$4.76	Flower Press	\$7.95
Orange & Honey Tablets	\$4.76	Teddy Bear Broaches	\$2.99
Griffins Lemon and Honey	35 cents	Teddy Bear Magnets	\$2.99
Honey Nut Bars	59 cents	Bee Earrings	\$4.50
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Propolis Ointment 100gms	\$3.18	Faberge Handcream	\$5.95
Propolis Capsules 50s	\$3.79	Dadants Cook Book	\$17.95
100s	\$6.73	Set of Pooh Books	\$8.95
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Herbal Pollen Ointment	\$3.54	AVAILABLE FROM NTH ISLAND	
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The value of Requeening (conc.)

important build-up of the colony will have already taken place (or the hive will have swarmed!).

For this reason, I prefer requeening in the autumn. You still need to order in advance, but supplies are generally more reliable. With an increasing export of queens to Canada, this might change somewhat, but for now I have no trouble getting queens in the autumn when I need them. And by autumn, I mean requeening the hive in February and March, not in April and May!

So we've dealt with the argument that a new queen is too expensive. In fact, a young queen will amply repay you for her cost. We've sorted out the argument that it's difficult to get queens when you want them. You've simply got to plan well ahead for your needs and order early.

Now we must get the queen into the hive without having her killed by the bees. And that is indeed another problem entirely.

There are as many methods of looking for queens and replacing queens as there are beekeepers, it would seem. Ways that work for some beekeepers (or for some areas) may not work for others. Though the process might differ somewhat, let's look at some of the factors that successful queen introduction methods have in common.



Polystyrene queen mating nuclei

The three 'golden rules' for me are that the colony should be queenless, it should be well fed, and it should have young bees emerging.

The first of these should go without saying. You can't introduce your young (foreign) queen to a colony before you get rid of the old queen. Nothing to it, eh? Just go into the colony, find the old queen and squash her between your fingers!

That's right. Just go into that ill-tempered hive with frames all glued up so you need a spade to remove them, look through those 30,000 bees and find the one that looks different. Nothing to it.

If you are a beekeeper who has trouble finding the queen, there are articles devoted to helping you. I'll mention only a few of the ideas that have helped me.

I mark my queens with typist correction fluid and once so marked, have no trouble spotting them. Again, you can find more information about this in other places.

If I am dealing with a large colony, I place a queen excluder between boxes and wait about five days. Then when I look for the queen, I know at least which box she is in by finding frames with eggs in them.

I also prefer to introduce young queens into nucleus units. I make up a nucleus with two good frames of brood in all stages: two frames of extra bees and two frames of honey. If

you make the unit up a week or so before you expect your new queen to arrive, you can then return to make sure you didn't accidentally include the old queen. You should also tear down any emergency queen cells the nucleus might have started.

After successfully introducing the young queen to this unit, I can look for the old queen in the parent hive at my leisure over the next few weeks. Once she is found and killed, the nucleus is newspapered on top of the parent colony to reunite them.



Ian Berry demonstrating how to find an old queen by sieving through queen excluder.

Why do I say the colony should be well fed? All I mean is that your chances of successfully introducing a new queen to a hive are reduced when there is no nectar being brought into the hive. If you have had trouble introducing queens in the past, make a point of feeding the hive a splash of sugar syrup several days beforehand. Not much, just a liter or so. Better yet, give them a splash every few days for a week or two prior to replacing the queen.

The final rule, making sure young bees are emerging, is one very hard to break. One of the most difficult queen introduction jobs is to a hive that has gone hopelessly queenless, with all the former queen's brood already emerged.

Rather than risking your new queen in such a hive, either make up a nucleus from another hive and introduce the queen into that first, or take two or three frames of emerging brood from other hives to add to the broodless hive before introducing the queen.

It makes sense, really. The queen is fed by the young bees that have active brood food glands. If there are no such bees in the colony, the chances of a queen being successfully introduced are considerably smaller.

All in all, replacing queens in your hives is one of the most beneficial management techniques you can use. It can make your spring work easier. It can reduce swarming and it can help the colony build up its population in order to collect the maximum crop. It can reduce the stress on the colony, helping it to deal with such diseases as nosema and sacbrood. And if your colony is aggressive, requeening can completely change its temperament, turning beekeeping into the pleasant sideline it should be.

From the colonies

OTAGO

An average winter for our province, although probably a little colder with more snow inland. Too early yet to say how the hives have come through the winter. Another few weeks before we have a serious decko.

Our annual Otago-Southland Convention was held in early June at the Invermay Research Centre. Interesting programme, well attended. Four Branch members attended Conference and of course we are proud and pleased that one of us has been elected National President.

A Spring Field Day is being planned for early October at Bill Ross's, Allenton.

We are saddened by the passing of two of our very good Southland friends, Jack Glynn and Allan Ward.

John Heineman

NELSON

Autumn brought splendid weather, but for some reason many colonies failed to get much for their efforts, especially those expected to produce honey, rather than provide a pollination service.

Winter arrived on a positive note with three smart snow falls plus generous amounts of heavy rain. By early July the ground was both wet and cold making the frosts so much more severe. However, this winter does appear to have cleared the air for more settled weather.

The tree lucerne and heather are both doing their thing, so hopefully all should be well. By July 21, with warmer days, the bees were bringing in heather pollen.

With August gone all the predictions will be replaced by what actually happened, so let's say its bound to be a normal spring provided the sun shines for the willow catkins and the barberry flowers.

Ron Stratford



WESTLAND

Winter is proving hard this year. Our mild changeable autumn and early winter has given way to very cool temperatures with considerable wet periods, heavy snows in the mountains and to low levels.

From reports from both ends of this province, (and please be reminded it's a long way from one end to the other, Karamea to Haast is the equivalent distance of Auckland to Wellington) it appears winter losses will be higher than normal. The mild weather in late autumn prolonged brood-rearing and consequently stores were used more rapidly, leaving a percentage of hives lighter than desirable at this time of year. There have already been a few hives lost to starvation. Also, some have dwindled and died leaving considerable feed still on the hives. This dwindling, no doubt, is the result of their running out of pollen and subsequent stress, inducing perhaps nozema and other maladies.

It would seem many members on the Coast this winter have turned their hands to other occupations. I hear that one is rebuilding a sawmill as a tourist showpiece, and another is working a gold claim. Someone else secured a contract to replace the hot water installation at a hospital. No doubt the economic climate and high interest rate influenced their decisions. But for some, the normal routine of Winter maintenance work continued. One enterprising beekeeper has turned his hot room into a timber-drying kiln in an effort to season timber suitable for bee-gear.

During the winter the branch's AGM was held in Greymouth. The one change was the retirement of our secretary, due to family commitments, but we managed to keep her husband as president. Gary Glasson related his experiences during his working trip to north-western Canada (that's bear country!) and showed us photos.

Prior to Conference a meeting was held in Hokitika to discuss remits where, after considerable discussion and banter and the propounding of various points of view, it was decided that the more contentious remits should be left to the delegates discretion.

Westland's honey crop from last summer has been sold with little or no stock on hand in preparation for what we hope and expect will be a "Rata year" this summer. With the pussy willows not too many days away from blooming, spring appears "just around the corner".

Sandy Richardson

WAIKATO

Branch members are well pleased with their hosting of our National Beekeepers' Conference held in the Travel Lodge Hotel at Rotorua in July. The items by Howard Morrison and his family were a real hit and set the mood for the whole conference.

The acoustics in the conference room was my only criticism. Many speak softly and much of what they said was not heard and although asked to speak up, there was little change in volume. Perhaps speakers should use a microphone?

At our post-conference meeting in Hamilton on 1st August, a vote of thanks was moved to the Conference Committee for their excellent job. Special thanks was accorded to our President, Russell Berry, who had the most to do and worked very hard during conference. A vote of thanks was also passed to the ladies who manned (?) the registration tables etc. They consequently missed some of Conference.

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From the Colonies (Cont.)

The MAF Seminar the day before Conference was a great effort. The section on stress was particularly interesting. Dr Ron Kilgour drew thoughtful attention.

In general business during our meeting, Russell Berry posed the question: "What will you do to increase production this year?" Answers ranged from more young queens to more feeding efficiency which encouraged an interesting discussion.

Our area has had the highest rainfall for many winters and some very heavy frosts. In fact, a real winter for a change. We all hope this means a good summer and honey crop.

**Ray Robinson,
Waihou.**

SOUTHLAND

The Southland Branch have enjoyed an active and successful year. The highlight of the year was our Annual Field Day held at John McDonald's property, Five Rivers. It was well attended with an impressive list of speakers and a machinery display of the newest and latest. The good weather combined with an idealistic setting made the day the best for many a good year.

A first for the Branch this year was the public relations exercise at the Agriculture Field Days at Waimumu, where the Branch organised a beekeeping display with live bees in a glass observation hive and trees for bees. The Waimumu Agriculture Field Days are a small edition of the Mystery Creek display and although not well patronised because of the economic downturn in farming, the beekeepers' stand attracted plenty of interest.

Southland crop was 4.25 tons per 100 hives which is slightly above the 10 year average.

BAY OF PLENTY

We had a good turnout for a very enjoyable dinner in June. The main event of the evening was the final of the "Young Beekeeper of the Year" competition. Having received two apiary visits during the year the three finalists had to speak for three minutes on a Beekeeping topic and then answer 10 questions to test their beekeeping knowledge. The results were 1st P. Townsend, 2nd P. Steens, 3rd A. Giles. Prizes were donated by several bee supply companies and by Queen Breeder Bruce Stanley.

A number of our branch members attended both Conference and Seminar at Rotorua and found it invaluable in determining what is happening in the industry and making or renewing contacts with beekeepers from other areas. Congratulations to the Waikato branch for organising a memorable Conference and for the choice of venue.

Since its adoption by a commercial firm artificial pollination of kiwifruit has been receiving a lot of publicity recently. Some well researched articles and radio interviews by Nick Wallingford (BOP Branch Publicity Officer) have kept things in perspective.

Most orchardists have their feet firmly on the ground and will not rush headlong into unproven and expensive technology. The importance of male vine distribution and quality, pruning techniques, and nutrition, have not always been recognised in the past. This last kiwifruit harvest saw much fruit rejected as too small so these factors, as well as the quality and number of hives used, are receiving more attention.

As spring approaches the hives are rapidly eating their way through the stores and some feeding is being done already.

Peter Townsend



NORTHLAND

Preparation for next season is well underway with early areas showing active hives with an odd bit of white wax. The planning has been done, some equipment is ready to go, and we look forward to a better crop this season. From all accounts though, we would be far better to get into the "pot plant" business, no trouble in marketing there . . .!

Queen producers are encouraging a supply of drones and by the time of publication will be in production. Those interested in pollination have started preparing hives for this purpose.

The Rotorua Conference was enjoyed by all our members who attended. Thanks Waikato for your hospitality.

Pat Gavin

CANTERBURY

The season is setting itself up well. We had good rain throughout the winter, and with the late, mild autumn, clover, both pastoral and seed, has got away to a good start. However, low snowfalls on the western foothills have put paid to winter-gathered honeydew.

Generally the hives are in an excellent condition with a moderate consumption of stores. Late-flowering gorse provided fresh pollen for most of the winter and has kept the colonies healthy.

The Branch combined with the South Canterbury Branch



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From the Colonies (Concluded)

to hold a beekeeping-equipment sale. You'd be surprised how much the junk in the back shed is worth! We hope to make the sale an annual event.

R.D. Bensemam

MARLBOROUGH

The winter has rushed past with not all jobs completed.

It was interesting to hear from Andrew Matheson about the apiary advisors' trip to Australia. It was frightening to learn that the experts in the field cannot tell the difference between Half Moon Disorder and European Foul Brood.

This winter has been kinder on the honey stores than the last, warm, one. Although it has been colder the sunny days have had a pleasant warmth to them, just like the old times. That's when honey was something.

James Jenkins

SOUTH-WESTERN DISTRICTS

We had a wetter and colder winter than usual, certainly not good enough to entice the bees from the hive, except for an occasional half hour of dull winter sun.

But a quick inspection of the apiaries at the end of July reassured me that a strong honey-stocked hive survives the cold easily. Its the weaker, autumn splits and nuclei that need intensive care to prevent losses.

The implications of GST were clearly outlined to us at the pre-Conference Branch meeting at Palmerston North. Beekeepers who register as GST payers will find the two-monthly tax return a helpful discipline. Regular updates like this will mean better control and business planning throughout the year.

A larger number of hives will again be needed for pollinating kiwifruit orchards, still on their way to peak maturity and crop yield.

I know of no one in our district who has committed himself to the new spray pollination method. On the other hand many Wanganui kiwifruit orchards are investing in frost protection.

Now spring is here we are beginning the rounds of our apiaries and looking forward to the honey flow. The winter break has passed all too quickly.

John Brandon

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HAWKE'S BAY

We eagerly await our delegates' report from Conference as remit number one created a great discussion at our Branch meeting. It was the first remit for years to cause a split in the voting.

With spring under way many Branch members are taking advantage of the low sugar prices.

Our local A&P Show is held in October. This year we are mounting a display stand to be staffed by our members and with the object of promoting both Branch and pollination group. The display will include a range of honeys and bee by-products available in Hawke's Bay.

John Walker

Library Notes

From John Heineman

Queen Rearing Simplified by Vince Cook F.R.E.S., 1986, 63p, UK. Many of us remember the author as an AAO in NZ. How pleasant and profitable it was when he addressed a meeting or field day. He now has put into print the queen-rearing system he developed while here. It has proved its worth already as many of us who rear a greater or smaller number of queens are using this system, perhaps slightly modified to suit personal preferences. Clear and thorough description enhanced with b/w photos and diagrams. Not just another book about queen rearing but one of the best. Thank you Vince, not only for donating a copy to this library so many beekeepers may share your knowledge and profit by it. Cost in the U.K. £5, NZ price not known. British Bee Publications Ltd, Geddington, Northants, UK.

MAF Apiculture Section, Study Tour of NSW 15-22 March 1986, 116p. NZ. A comprehensive report of the study tour our Apiary Advisors undertook. An interesting document. The knowledge and experiences gained by the party members will no doubt prove to be of considerable value to beekeeping in our country. (Sorry to note that a certain illustration of "bare bum" beekeeping is not included.)

Beehives of the Ancient World by Eva Crane & A.J. Graham (IBRA reprint No. M11), 44R 1985, UK. Based on archaeological research, records, illustrations, and literature. Meant as a base for further research. B/w photos and drawings. Covers finds in the Maya, Mediterranean, Kashmir and Ethiopian regions, etc. Exposes some fakes and false beliefs.

Bee Diseases Slide Set, University of Guelph, Canada. Twenty-four slides together with a printed description of each slide. Normal brood, BL, EFB, Sach brood, Chalk brood, Acarine, and paralysis are shown. Recognising diseases is of the utmost importance. This set will be a great aid to branches or groups holding educational sessions.

Papers and Pamphlets.

Honey in the Treatment of Infantile Gastroenteritis by I.E. Haffejee and A. Moosa, 1985, 2p., UK.

Two-Queen Colony Management for Production of Honey by C.L. Farrar, 1958, 11p, USA. A supplement catalogue (from first print until June 1986) is now available at cost (20c). Ask for it when you request your next lot of books and dodge extra postage.

Sources of exotic honeydew in New Zealand

By Dr Barry J. Donovan

During the NBA conference at Nelson in 1983 it was asked: which insects produce honeydew in European forests, and whether these insects could be introduced to New Zealand to supplement the production of beech honeydew?

Honeydew is produced by some plant-sucking insects which belong to the Hemiptera, commonly referred to as aphids and scales. These insects pierce plants with their mouthparts, through which large volumes of sap are ingested. Special filter chambers within the insect remove nutrients essential for insect growth, and the rest is voided as honeydew (2).

Some host plants may harbour several species of insects that produce honeydew, but typically a honeydew flow is produced by one insect species occurring in large numbers and secreting copious honeydew. Honeydew may occur on a number of plants in quantities sufficient to be readily noticed by hu-

mans, particularly when colonised by fungi, e.g. "sooty mould" on manuka honeydew. Some honeydews, e.g. those on roses and oak trees, appear to be unattractive to honey bees. Honeydew toxic to people is also known, for example, that produced on New Zealand tutu.

Honeydew can be very important economically to beekeepers (2). In the eastern Mediterranean, honeydew from insects on pines can produce high yields, for example, 60% of total hive production in Greece is from this source. The Aleppo pine on the south-west coast of Turkey provides sufficient honeydew to warrant the moving of 50,000 hives to take advantage of the flow. Honeydew is especially important to beekeepers in parts of Europe, North America — and New Zealand. Apart from the New Zealand native beech source of honeydew, the 1984 Director of Important World Honey Sources (2) lists 23 species of trees from which bees may collect both honeydew and nectar. Eight of

these honeydew sources are regarded as important, as are another 13 tree species which are sources of only honeydew.

Of the 21 insect species which produce important honeydew flows, four are present in New Zealand. Two of these are associated with non-nectiferous plants, and two species with host plants that also produce nectar.

Of the first two, the Copper beech aphid *Phyllaxis fagi* occurs on introduced European beech, *Fagus sylvatica*. In mid-Europe, European beech infested with this aphid is a major source of honeydew.

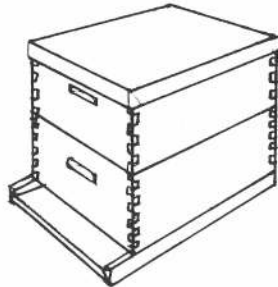
Sitka spruce, *Picea sitchensis*, was found in 1981 to harbour the aphid *Cinara pilicornis* in New Zealand (3). Norway spruce, *Picea abies*, infested with *C. pilicornis* is a major source of honeydew in mid-Europe, Schleswig-Holstein (West Germany near Denmark) and



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Sources (concluded)

Danish Jutland. The honeydew of *C. pilicornis* feeding on *P. abies* has attracted bees in East Scotland and Wiltshire. This aphid also occurs on some other spruces in Britain, including Serbian spruce, *Picea omorika*.

Of the important sources from which both honeydew and nectar may be collected by bees, the aphid *Eucallipterus tiliæ* occurs on lime trees, *Tilia spp.* in New Zealand. In mid-Europe there can be major flows of honeydew, but it may crystallise on the tree. Romanian beekeepers record yields of 6-12kg of honey per hive, produced by the bees from nectar secreted by the flowers of lime trees.

The sweet chestnut aphid, *Myzocallis castanicola*, is known from sweet or spanish chestnut, *Castanea sativa*, in New Zealand. Honeydew from this insect occurs in southern Europe and Romania, where bees frequently collect it. Bees also eagerly work chestnut flowers for nectar.

Although four important foreign insect-producers of honeydew are present in New Zealand, there seem to be no records of bees storing this honeydew. Just as certain conditions must occur for honeyflows to eventuate, so it is with honeydew flows. Not the least of these for honeydew flows is that there must be large numbers of trees of the right species. European honeydew flows characteristically occur when there are forests of the right trees. Few, if any, forest-scale plantings of the aforementioned host trees yet exist in New Zealand.

There also appears to be no definitive records of honey bees working introduced insects for honeydew. During late 1975 however, I observed honey bees, as well as queen German wasps (*Vespa germanica*) and queen bumble bees (*Bombus terrestris*) collecting honeydew near Craigieburn Forest Park. Host plants were *Pinus sylvestris*, *P. uncinata*, and *P. mugo/uncinata*. The aphid secreting the honeydew was *Eulachnus brevipilosus*.

What prospects, if any, are there for introducing honeydew-producing insects that may thrive on existing exotic

forests? Unfortunately for beekeepers, honeydew-producing insects are generally regarded as detrimental to their host plants. Insect feeding often reduces plant growth rates, distorts young growth, and may coat plants with sticky and/or unsightly mouldy honeydew and fungi. The purposeful introducing of honeydew-producing insects would almost certainly be strongly opposed from a number of quarters.

The four insect species now established were not purposely introduced but arrived as part of a continual series of accidental or natural establishments. For example, since the 1940s five species of aphids of the genus *Cinara* have been recorded (1), one of which is the already-mentioned *C. pilicornis*. The rate of colonisation suggests that possibly other honeydew-producing species can be expected to establish.

Beekeepers may benefit by observing whether or not bees are collecting exotic honeydew, and by moving hives accordingly to take advantage of honeydew flows.

Acknowledgements:

I thank Dr J. Farrell, Entomology Division, DSIR, Lincoln, and Mr R. Sunde, MAF, Lynfield Agricultural Centre, Auckland, for information on the occurrence in New Zealand of several aphid species. Mr B. Sykes, Botany Division, DSIR, Lincoln, kindly identified pine trees from near Craigieburn Forest Park.

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- (1) Baker, R.T. 1985: Aphids of the genus *Cinara* established in New Zealand. The Weta, 8:1, p.4
- (2) Crane, E. and Walker P. 1985: Important honeydew sources and their honeys. Bee World 66: 3, pp. 105-112
- (3) Sunde, R.G. 1984: New records of plant pests in New Zealand 4. 7 aphid species (Homoptera:Aphidoidea). N.Z. Journal of Agricultural Research 27: pp. 575-579

Popular Summary

Four of the 21 important exotic honeydew-producing insects and their host plants occur in New Zealand. At present, host plants are rather scattered. Honeydew flows of major economic importance to beekeepers are only likely when host plants form forests.

The purposeful introduction of additional honeydew-producing insects would probably be opposed because of the damage that can be caused to host plants. However, further honeydew-producing insects are likely to reach New Zealand of their own accord.

Beekeepers may benefit by observing whether their bees are working exotic honeydew, and moving hives to take advantage of honeydew flows.

ASD Report (concl.)

Continued from page 22

keeper Autumn 1986: 20-22) and a code of ethics. Several of the associations have also employed a consultant to evaluate members hives during the pollination period. This quality assurance is giving the growers confidence in the abilities and integrities of the beekeepers. This will be needed in the future as artificial pollination is promoted more and more.

MAF officers have carried out surveys on pollination hives in orchards for a number of years. It is pleasing to report that the quality of hives continued to improve and most hives met the recommended minimum standard (NZ Beekeeper Autumn 1986: 23-24).

Industry Plan

MAF advisers worked with local branches and the executive to help formulate and carry out aspects of the industry plan. The beekeeping industry continues to lead primary production industries in its ability to be market led, to respond to market imposed conditions, and to plan its own future. The executive has received congratulations from the Under Secretary of Agriculture and the Director-General of Agriculture for its forward looking approach and industry plan.

Apicultural advisory officers also ran strategic planning workshops for queen

bee producers, commercial honey producers, and kiwifruit pollinators.

e) Financial Monitoring

Monitoring has been going on for a number of years in some regions and three reports have been published (NZ Beekeeper No. 187 Spring 1985, No. 188 Summer 1985 and No. 190 Winter 1986). A national monitoring system has been devised and will be in place for the 1986/87 season.

f) Emergency Response Procedures (ERP) Manual

A final draft of the ERP manual has been prepared and workshops in all apiary districts have been (or will be) held with branches to discuss the implications if an exotic pest or disease is discovered.



What happens in a honey bee colony after the queen is lost?

By Andrew Matheson Apiary Advisory Officer, MAF

How does a honey bee colony behave if its queen is suddenly removed? Some of the answers have come from two studies recently carried out by scientists in Canada and the United States.

E.N. Punnett and Dr Mark Winston of Simon Fraser University in Canada recently looked at the way dequeened colonies reared queens and swarmed. They used both Italian and Carniolan colonies, and compared the results with earlier studies of African and Africanized bees.

In the European bees:

- queen cell and queen cup construction started within one day of queen loss
- only 4% of queens reared came from either eggs or larvae that were moved by the bees from worker cells to queen cells (it was 47% in Africanized colonies)
- queen cells were distributed evenly over the comb face
- an average of 15 queens per colony were reared. (However, there was no relationship between colony size and the number of queens reared)
- the colonies were without a laying queen for an average of 29 days.

R.D. Fell and Roger Morse, of Virginia State University and Cornell University, have also looked at emergency queen cell production. They removed queens from 13 colonies of mixed European races.

Colonies detected queenlessness in 6-12 hours, when scenting behaviour and queen cup construction increased. Queen cells were started as late as nine days after queen removal, but the rate was highest on the third or fourth day.

Other results were:

- most emergency queen cells (65%) were constructed over worker larvae less than two days old
- 25% of larvae selected were over three days old
- 10% of cells were built over larvae at least four days old
- only two cells out of 268 were built over eggs
- the average number of cells started was 20, and an average of 12.4 queens emerged
- mortality of worker brood was very high (44%) after dequeening.

The two Canadian scientists also looked at a phenomenon that's not talked about by beekeepers very often — swarming after queen loss. Of eight dequeened colonies looked at, six swarmed when a virgin queen emerged. Perhaps this type of swarming is more common than most beekeepers realise.

Queen-loss swarming is very different from reproductive swarming: queen-rearing is started after queenlessness, not before it; there is no congestion prior to swarming; there is a longer period without a queen.

Queen-loss swarming weakens a colony that is already weakened by a long broodless period and high brood mortality. Why does it occur? Punnett and Winston suggest that workers may not be able to detect the difference between queen loss due to death and queen loss due to swarming: hence they behave as if they were afterswarming following queen loss through reproductive swarming.

So what does all this mean for beekeepers? A common beekeeping technique has to be questioned in light of these results. All too often beekeepers divide colonies and let the queenless half raise a new queen — making what I call "pauper's splits". These result in a long

broodless period, high brood mortality, frequent swarming when the first virgin emerges and probably a poor quality queen.

At best mated queens or queen cells should be introduced when making up divisions. At worst, the effects of pauper's splitting can be reduced by adding sealed brood to compensate for the long queenless period and high brood mortality. Destroying all but one ripe queen cell prevents swarming when the first virgin queen emerges.

References:

Anon. 1985. *Colony behaviour after queen loss*. *Bee World* 66(3): 119-121 (reports the work of Punnett and Winston).

Fell, R.D.; Morse, R.A. 1984. *Emergency queen cell production in the honey bee colony*. *Insectes Sociaux* 31(3): 221-237.

Essential part of a speech given by Under-Secretary for Agriculture Butcher on 23 June 1986

The Kiwifruit Industry has a pollination program; apparently bees don't do the job all that well, especially when it's wet and windy, so the scientist has decided to lend a hand.

Fortunately for New Zealand and the Kiwifruit Industry, we have scientists like Dr Murray Hopping of Ruakura to whom this kind of problem is not only a matter of scientific interest but a challenge as well.

His investigations have extended over several years and have culminated in a proven pollination technique which is capable of commercial development and extension.

In that work he has been aided by a very capable research team, with the further assistance of an engineering group led by Mr Bob Mills at Ruakura in the development of the mechanical equipment need for this process.

Public resources have provided the research facilities required for the initial development of this technology; it is now being passed under licence to Turners and Growers Limited for its commercial development and marketing.

I think that is entirely appropriate, and within the Government's policy

for commercial development from the public sector.

As Turners and Growers were among the pioneer exporters of kiwifruit, and actually introduced that name for the New Zealand-grown Chinese Gooseberry, it could be considered appropriate that they are now to again play a pioneer role in bringing this extremely valuable aid to Kiwifruit growers.

And anything that has the potential to provide an extra profit of \$5,000 a hectare or \$4 a tray of kiwifruit, has to be an extremely valuable aid.

The problems created by poor pollination have been particularly highlighted this season, and the abundant supply of kiwifruit on the local market is evidence enough of the serious effects inadequate pollination can have on the production of export quality fruit.

We are the world's greatest kiwifruit producers; the standards we have set and which we rigorously maintain for our export fruit, are the standards by which the world measures kiwifruit quality.

This MAF-developed pollination technology will, I am sure, be decisive in maintaining that reputation.

Honey

'I am come down to deliver them. . . and to bring them. . . into a land flowing with milk and honey.' Old Testament, Exodus Chapter 3,8.

Honey is a sweet viscous material prepared by honey bees from nectar collected from the nectaries of flowers, and to a lesser extent from honeydew of plant fluids, and pollen. The foraging worker bees collect the nectar from areas up to a mile from the hive, but bees have been recorded flying distances of eight miles from the hive across barren desert to collect nectar from irrigated crops. The nectar is ingested by the bees, stored in their honey sacs, and brought back to the hive. Here it is regurgitated, taken up by the 'house' bees and subjected to the processes of enzyme action, enrichment and concentration, until honey of the right consistency and concentration is achieved for storage in the honeycombs. This honey will be the food of the majority of the bee colony. In the construction of the honeycomb in the hive, some cells are made slightly larger than the rest. These will be the 'royal cells'. The eggs laid in these larger cells by the queen bee are destined to produce future queens, if the larva therein are fed on a modified form of honey, royal jelly. This is a viscid substance secreted by glands near the mouth of the honey bee. It is of interest that by manipulating the diet of the female bee larva, i.e., by feeding royal jelly, a fertile queen bee will develop who will live some six to eight years, while her sister larva, fed in a normal manner on honey develops into a healthy, but infertile female worker bee with a life span of a few months only.

The honeycomb is made by the bees from substances which include wax, secreted by the wax glands of the bees, and an important substance, propolis, which is a sticky resinous substance exuded by the leaf buds of many plants. Propolis is collected by the bees and used in the construction, repairing, and most importantly, in the disinfecting of their hive. Propolis, because of its natural antibiotic properties, is claimed to have valuable medicinal uses (Hill, 1977).

Honey has been produced by bees since the Miocene period some 10 to 20 million years ago, long before man appeared on earth in the Pleistocene period, about 1 to 2 million years ago. Honey has been one of man's earliest foods, valued throughout the ages in almost every country of the world, by primitive man, in the ancient civilizations of Mesopotamia and Anatolia, Egypt, the Hebrew kingdoms, China, India, Greece, Rome, Arab-Muslim and the Amero-Indian civilizations. Many animal species seek out and eat honey, e.g., bears, honey badgers, certain birds and monkeys. Many religio-mystical legends are associated with the effects and healing properties of honey.

Honey is produced by many species of honey bees, *Apis*; by the tropical stingless bees, *Melipona* and *Trigona*; by the bumble bee, *Bombus*; by social wasps, honey ants and the Syrphid fly. By far, the main source of honey is the *Apis* species. It is estimated that the world's annual honey production is some 600,000 tons, but demand exceeds supply. In the U.K. honey production is low, and we import some 18000 tons annually to meet home demand, mainly from Australia, Canada, Mexico and Argentina. The chief honey exporting countries are Argentina, Mexico, China and Australia (Crane, 1975).

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Uses of honey

Honey has been used as a sweetening agent for many thousands of years before cane or beet sugar were known. In many countries it is employed commercially in baking, confectionery, preserves, spreads and syrups, in meat packing, tobacco manufacture, and in the pharmaceutical and cosmetic industries. In ancient Rome, Nero's wife, Poppea, is reputed to have used honey and asses' milk as a face lotion. Many historical beautiful women of Europe believed in the cosmetic virtues of honey. In the alcohol drinks industry, several varieties of fermented honey are available, mead, wines and honey beer. Honey is added to several liqueurs and cordials, e.g. Benedictine, Drambuie (made from scotch whisky, heather honey and several herbs), Irish Mist, and Polish Krupnik. In the U.S.A., American Krupnik (whisky and honey), and Forbidden Fruit (a cordial containing citrus fruits and honey) are well known.

Composition of honey

The composition of honey varies greatly with the type of nectar collected by the bees, climate, processing and storage conditions. Honey is the richest natural source of the monosaccharide, fructose (laevulose). Some 180 different substances have been identified in honey. It contains some 80 percent of sugars, small amounts of vitamins, minerals, trace elements, enzymes and other substances. (See Tables 1 and 2) Royal jelly contains higher quantities of vitamins, some eleven different amino acids, five sugars (including fructose, glucose, sucrose, ribose), acid phosphatase, proteins, lipids and fatty acids, and various enzymes. It is one of the richest natural sources of pantothenic acid (a vitamin of the B-complex).

Nutritional aspects of honey

'My Son, eat thou honey, because it is good; and the honeycomb which is sweet to thy taste.' (Solomon, son of David, King of Israel. 1000 B.C. Old Testament, Proverbs Chapter 24,13). The nutritional and healing properties of honey are legendary. It has been used in the prevention and treatment of many disorders in both man and animals from antiquity. The ancients believed that honey prolonged life. Sura 16 of the Koran refers to honey 'wherein is healing for all mankind', and the Muslim writer, I.B.N. Magih, quotes the prophet, Mohammed as saying, 'Honey is a remedy for every illness, and the Koran for all illnesses of the mind, therefore, I recommend to you both the remedies, the Koran and Honey'.

Honey was used as a conditioner by the athletes of ancient Greece and Rome, and is widely used today by swimmers, long-distance runners and mountaineers (Pawan, 1975). There are claims that honey is valuable to pregnant mothers, infants and the elderly (Vignec & Julia, 1954) (Herald 1970). Because of its bacteriocidal action, attributed to an antibiotic inhibine, it has been used as a topical application to burns, infected wounds and ulcers (Cavanagh, Beazley & Ostapowicz, 1970). It is reported to cleanse wounds and sores, and Hippocrates, father of medicine, prescribed honey for sores and ulcers. Blomfield (1973) and Steyn (1973) found honey to be of value in healing wounds and reducing swelling and pain. Honey has been used in various respiratory infections, digestive



Honey (concluded)

disturbances and heart conditions (Chauvin, 1968). Honey because of its high fructose content, speeds up the metabolism of alcohol and the sobering up of intoxicated persons (Pawan, 1967, 1972). In combination with orange or lemon juice (vitamin C), honey reduces the severity of post-alcohol, morning-after hangover symptoms (Pawan, 1974, 1976). Honey has been found to be of value in mild diabetes, hypertension, diseases of the liver, vomiting in pregnancy, chronic constipation, and many other conditions (Herald, 1970; Steyn, 1973). Honeycomb is reported to be of value in the treatment of hayfever, and the natural antibiotic, propolis, is said to be useful for the treatment of coughs, infections of the mouth and throat, wounds and skin disorders (Hill, 1977). Steyn (1973) believes that both honey and royal jelly, are valuable in geriatric treatment. It must be emphasized, however, that scientific evidence for many of the reputed medicinal properties of honey is lacking.

Allergy, in the form of contact dermatitis is occasionally seen in beekeepers sensitive to propolis (Burney, 1968), and cases of poisoning by honey prepared by bees from the nectar of poisonous plants have been reported (Husing, 1956). Poisons have also been detected in honey obtained from areas sprayed with insecticides or herbicides, and in honey contaminated by zinc or lead-containing apparatus and containers used in the extraction and storage of honey. Fortunately, these are rare.

Conclusion

Honey, one of the oldest edible substances known to man is a delicious, nutritious and valuable food. Scientific evidence for many of the claims about the physiological and pharmacological properties of honey is incomplete. However, modern research is beginning to confirm that there is much truth in some of the legends about honey, held by the ancients.

'Pleasant words are as an honeycomb, sweet to the soul, and health to the bones.' Old Testament. Proverbs. Chapter 16,24.

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Table 1. Average composition of Honey

100 g Honey contains the following:

Water	17.2 g	Calcium	5 mg
Fructose	38.2 g	Magnesium	6 mg
Glucose	31.3 g	Iron	0.5 mg
Sucrose	1.3 g	Copper	0.2 mg
Other sugars	8.8 g	Manganese	0.2 mg
Potassium	10 mg	Phosphate	16.0 mg
Sodium	5 mg	Sulphate	5.0 mg

Trace amounts of nicotinic acid, pantothenic acid, pyridoxin, riboflavin, thiamin, biotin, folic acid, ascorbic acid, several enzymes, traces of lipids and many other substances.

Table 2. Average vitamin content of honey and royal jelly, in microgram/g

	Honey	Royal Jelly
Thiamin	0.04	18.0
Riboflavin	0.26	28.0
Nicotinic acid	1.1	111.0
Pyridoxin	0.10	10.2
Pantothenic acid	0.55	320.0
Biotin	0.001	3.1
Folic acid	0.03	0.5

Crown Corp. expands trading activities

The Crown Corporation will expand its international marketing through a new subsidiary: Crown International Limited.

The new company will export a wide range of wool, horticultural, and seafood products and import foodstuffs for New Zealand.

The company will be headed by Terry McCloy, formerly New Zealand horticulture manager of Dalgety Crown, and will be marketing a comprehensive range of products including berryfruits, kiwifruit, onions, squash frozen vegetables, horticulture products, seafood products, foodstuffs, and honey.



Honey Recipes

Points to remember

1. Store honey at room temperature but avoid a very warm cupboard.
2. Keep the jars covered — using the screw top generally supplied with the honey. Honey must be kept dry so that it does not absorb moisture from the air.
3. Honey should be liquid in cooking. If it has crystallised, it can be liquefied by heating in a pan of hot water.
4. To weigh honey, grease the scale pan or measuring spoon/cup and the honey will slide off easily.
5. Choose a honey with the flavour of your choice — there is wide variety of colour and flavour according to the particular nectar collected by the bees.

Pork casserole

1kg lean port (spare rib or shoulder)
5 tbs honey
4tbs lemon juice, mild vinegar or cider
250 mls stock
1½ tbs Worcester sauce
2 cloves garlic (small)
4 medium sized potatoes (peeled and thickly sliced)
Cut the meat into cubes, put in a casserole and cover with the liquid made by mixing the honey, lemon juice, Worcester sauce and stock. Sprinkle in the chopped garlic and cover the casserole dish. Allow to stand for 4-6 hours. Remove the lid, add the sliced potatoes, replace the casserole lid, or cover with foil, and bake in a moderate oven (Gas 4, 180°C, 350°F) for 1½-2 hours until the meat is tender. If preferred, remove the covering for 30 minutes to brown the potatoes. Add extra stock if necessary. The liquid may be thickened by the addition of 1 teaspoon of cornflour mixed to a thin cream with some of the liquid, which can be returned to the casserole before browning the potatoes.

Chicken in wine and honey sauce

1tbs corn oil
4-6 chicken drumsticks tossed in seasoned flour
4 tbs honey
125 ml dry white wine
2 bay leaves, salt and pepper
125 ml stock
1 red pepper, de-seeded and chopped
1 tbs cornflour
Rice to serve
Heat the oil in a thick casserole or saucepan. Fry the drumsticks, turning so that they brown all over. Remove and keep warm. Pour off any surplus

oil Heat the honey and wine and add the bay leaves and seasoning. Replace the drumsticks in the liquid and marinate for 6 hours or overnight in the covered casserole. Remove the bay leaves, add the stock and chopped pepper and simmer gently for 45-60 minutes until the meat is tender. Blend the cornflour with a little water — pour over some of the liquor from the casserole, return to the meat and cook until the liquid is clear — indicating that the cornflour is cooked.

Honeyed cheese and onion spread

120 g cream cheese
1 tbs finely chopped onion, chives or syboes (spring onion)
1 tbs honey
salt to taste
Blend all the ingredients together and serve on bread, biscuits or toast. Garnish with watercress.

Crunchie biscuits

100g margarine
50 g sugar
2 tbs honey
grated rind of 1 lemon
1 egg yolk
175 g self-raising flour
Cream the fat and sugar, beat in the honey, lemon rind and egg yolk. Work in the flour to make a soft dough. Put in small heaps on a greased banking tin. Smooth over with a wet fork to make into rounds. Bake for 15-20 minutes at Gas 4, 180°C, 350°F.

Gingerbread

100 g lard or margarine
60 g brown sugar
150 g honey
2 eggs
250 g flour
1½ tsp bicarbonate of soda
1 tsp ginger
½ tsp ground cloves
½ tsp ground nutmeg
175 ml milk
Cream the fat with the sugar and honey. Beat in the eggs and alternately with the dry ingredients and milk. Bake in a greased, lined tin measuring 12½ cm square for 1 hour at Gas 5, 190°C, 375°F.

Fruit cake

200 g margarine
150 g soft brown sugar
150 g honey
4 eggs
250 g flour
¼ tsp bicarbonate of soda

2 tbs milk
450 g seedless raisins
125 g chopped peel
50 g chopped cherries
50 g chopped almonds
Cream the fat and the sugar — beat in the honey and eggs. Stir in the flour and other dry ingredients, adding the milk. Stir in the fruit and nuts. Bake in a lined tin 20 cm square at Gas 3, 160°C, 320°F, for 1 hour. Reduce the temperature and continue cooking for ½ hour or until the cake is firm to touch or when a skewer comes out clean when inserted into the middle of the cake.

Hot honey toddy

1 bottle dry white wine or very dry cider
1 lemon
1 piece blade of mace
1 cinnamon stick
2 cloves
6 tbs honey
4 tbs brandy
Warm the wine, lemon rind, lemon juice, mace, cinnamon and cloves with the honey to a temperature at which the liquid steams heavily. **Do not boil.** Cover and leave in a warm place for 1 hour. Strain the liquid and reheat to steaming point, add the brandy and serve at once.

Honey mint sauce

125 ml water
1 tbs cider vinegar
300 g honey
3 heaped tbs chopped mint.
Heat the water and the vinegar. Add the honey and bring to the boil. Add the mint. Use to baste lamb chops during cooking or as an accompaniment to chops or roasts.



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