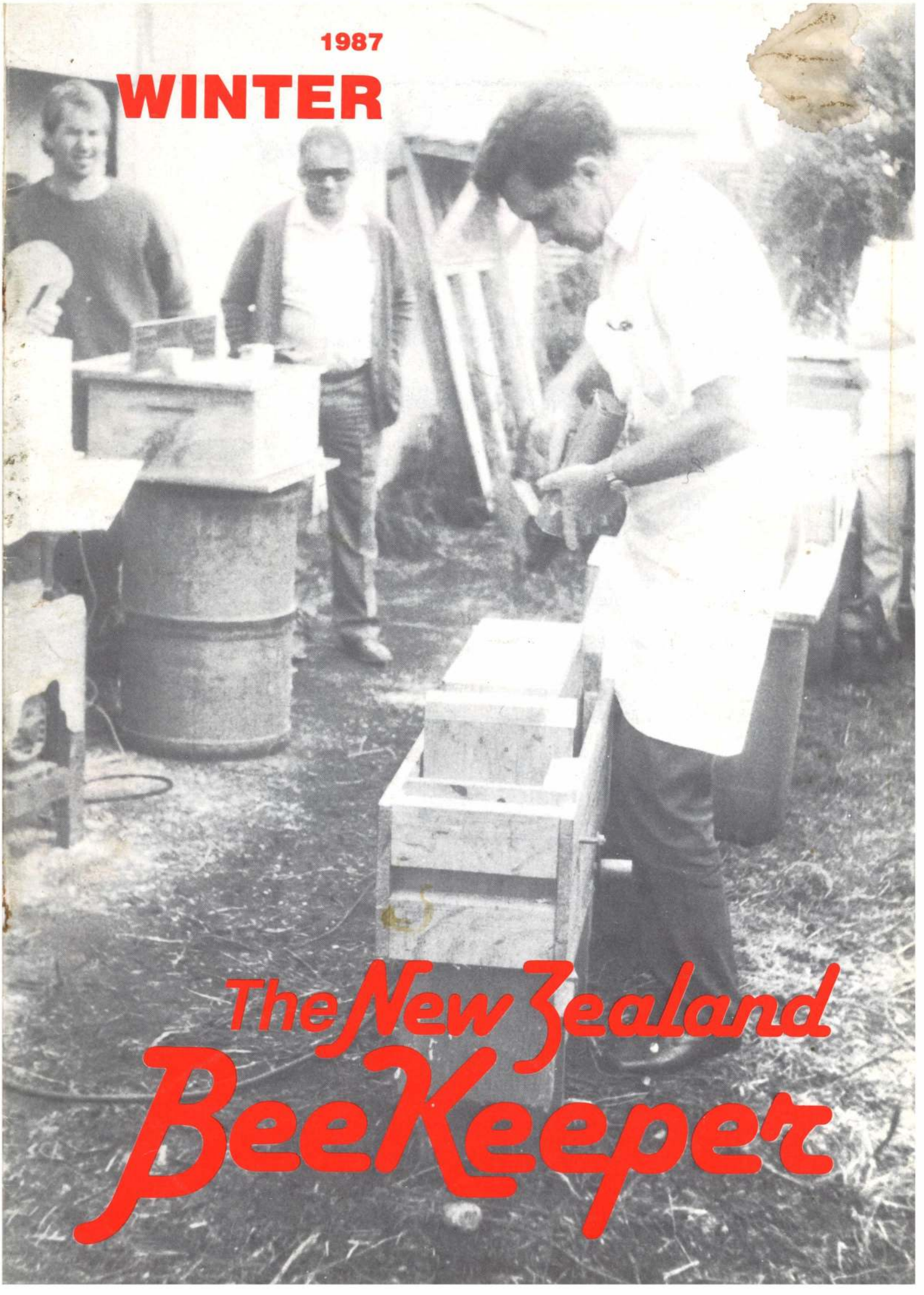
1987

WINTER



The New Zealand BeeKeeper

The New Zealand BeeKeeper

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

CIRCULATION, 1,450 . . .
To Members of The National Beekeepers' Association of NZ Inc. who own more than 50 hives each and so are legally subject to the annual hive levy. **THESE HIVE-LEVY PAYERS OWN APPROXIMATELY 87% OF ALL BEEHIVES IN NEW ZEALAND.**

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

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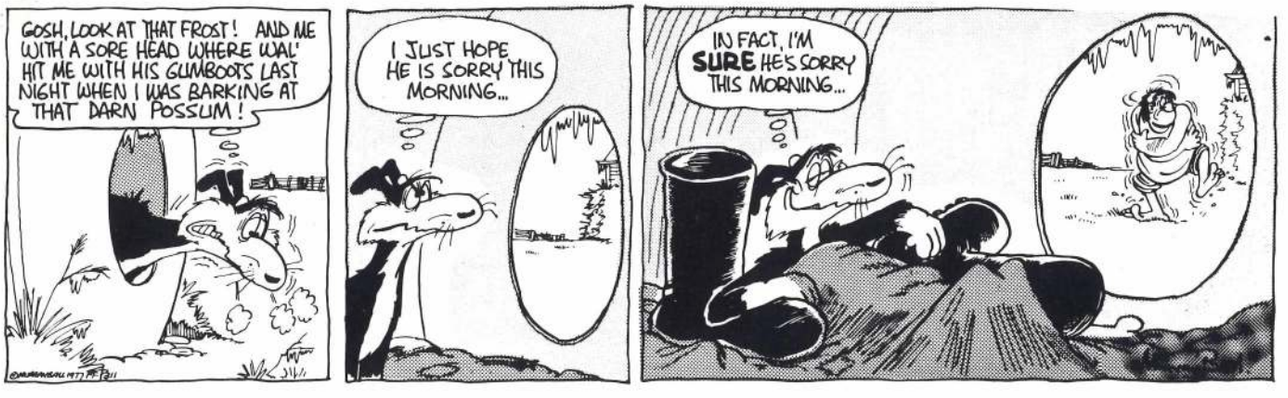

FRONT COVER — Chris (don't-blink-or-you'll-miss-me-slapping-it-together) Brommell assembling a super at South-Western's Field Day, Manaia, Taranaki, 21 March 1987.

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You can't have it both ways

Nature hold a delicate balance. In these supposedly enlightened times we should realise that we interfere with it at our peril. Yet despite that knowledge Man continuously attempts to reorganise the ecology to suit him own selfish interests.

To Man the fly is a pest to be exterminated. Yet exterminate the fly and you destroy one of the birds' most valuable food sources so the birds disappear. Without birds to spread their seed many species of tree would also disappear and so upset the moisture balance. No trees equals no rain equals desert, as man is finding to his chargin in parts of Africa.

Our luxuriant verdance is not entirely due to the fly — he has, after all, the assistance of other insects — but friend fly certainly helps. And whether you consider him a pest or not he remains part of the world's ecology, so watch it, mate!

New Zealand is probably unique in that the European markedly upset its ecology the moment he set foot. Many animals — notably deer, goats, and 'possums — were thoughtlessly introduced. In the absence of natural predators they multiplied rapidly, threatened to upset the apple cart.

But to paraphrase: one era's poison is another's meat. These erstwhile pests are now valued. 'Possum skins fetch millions in export dollars, feral goats are much sought after, we now farm deer and good stags and does cost a mint.

Fortunately for you your forefathers' lack of foresight accidentally paid off. The God Almighty dollar motivated man to replace these animals' natural enemies with himself.

Today, of course, such arbitrary introduction is impossible. The MAF rigorously controls the importation of any new species, either animal or vegetable. The concern now is for anything that sneaks in unheralded.

The wasp, for example!

The German wasp established itself around Hamilton in 1944. It soon spread to become endemic in both Islands. Now we learn a second species — *Vespula Vulgaris* — the common wasp, is now with us.

Shock, horror! How dare this pest invade our paradise! A reaction that does no more than underline Man's inate selfishness.

We bought problems when we first began monkeying with the ecology. By upsetting the natural balance we opened Pandora's Box. We forgot that good and bad (Heaven and Hell?) must coexist. In the words of the song: "You can't have one without the other".

And good and bad exists not only between species but within species, sometimes separated by as fine a line as that between bomber and flying ambulance. That must also apply to the wasp which, after all, in the natural order of things has as much right on this earth as Man himself.

Anyway, we now have the common wasp so the question of whether he should be here or not is purely academic. So why not learn to live with him? According to his advocates he has many good qualities so why not adapt these to our advantage, at least to balance (for us, at least) his disadvantages?

It appears Man has yet to learn that, despite his superior intelligence, he is interdependent with all other species, no matter how lowly. Without them he could no longer exist.

Forget The Bomb. Think instead of the points raised in *Silent Spring* by Rachel Carson. If Man rushes around much longer with his sprays, poison baits, hybrid strains, and artificial this and that the problem of The Bomb will solve itself by leaving precious little worth blowing up.

Michael Burgess

Jim Barber as a young man.

Obituary

James Richard (Jim) Barber was born in Auckland in 1910. He left college to join the Auckland Savings Bank and soon gained the reputation of being their fastest machine operator.

His interest in bees came through a Howick Bee Club, and he bought his first hives from his old headmaster at the Howick school. One thing led to another and a combination of pressure of work at the bank and his desire for a life in the country took him to Pio Pio in the late 1930s.

Mr Barber joined the South Auckland Branch of the NBA soon after his move. He served as its Secretary for four years and in the early 1950s was elected Branch President.

Later he was elected to the NBA Executive on which he served for several years, some of them as President. He was later awarded a well-deserved Life Membership.

During Jim's service on the Executive the honey industry was fragmented and disorganised and he constantly strove to establish his ambition: co-operative marketing.

Upon the formation of the NZ Honey Marketing Authority he was elected a member of the Board and so served for 12 years.

As president of the NBA he showed great wisdom, dedication, and personal sacrifice at all times. His efforts alone prevented much of the North Island being closed to commercial honey producers at one time.

His enthusiasm, drive, and lack of malice was the hall mark that underlined his beekeeping life.

As a hobby Jim represented Waikato at cricket and coached and played for Pio Pio and district.

Jim Barber's name is hallowed in beekeeping annuals and his contribution to the industry will be long remembered.

He is survived by two daughters, Helen and Jane, two step sons, and their families.

LETTERS

Acclaim

Dear Sir,

You may not remember but back in December when I had an Israeli associate here, I rang you for advice as to who he should contact for a reliable source of supply for bees for export to Israel.

I had a call from the same gentleman yesterday, from Israel, and he apologised for not telling me previously, that they had had two consignments of bees sent over and both had arrived in perfect condition. He said that Kiwi bee keepers are to be complimented on the quality and despatch of their bees which arrived in vastly superior condition to those that they have had from Australia. Nice to hear isn't it? Not a single fatality!

Sequel to this is my friend's request on the phone that I try and get him a couple of recent back issues of "NZ Beekeeper" and I'm hoping you can oblige once again.

Thanks again for your cooperation.
Keith S. Ramsay
Managing Director
The Dominion Construction Co Ltd

P.S. I can't be sure who supplied the bees but recall it was a North Auckland Apiarist. I fancy it might have been Whiteline.

Blacks v. Italians

Dear Sir,

The small item of interest on kiwifruit pollination in the letter from K. & J. Bigley in the Autumn edition 1987 drew our attention. The case, that bees from five hives (Italian stock) on a distance of 25m didn't work on the kiwifruit looks strange. Well, we combined this item with remarks from orchardists (clients) that it seems to be, that the pollination close around the hives is of less quality than throughout the orchard. We thought about this and since we have studied bees and communications between them we arrived at the following assumption:

As we know, honey bees communicate by dances, so telling each other where they have collected nectar or pollen. When they feed closer than 40m from the hive they dance the round dance. For further away bees dance the waggle dance. This dance indicates the direction of the source and the amount of energy used to reach that point. We think it is possible that these dances can be decisive for where to collect and where to forget.

We know bees work up to kilometers away from the hive, but suppose their working area is a circle with a radius of 1km. Then the area covered by the waggle dance is more than 600 times the area covered by the round dance. Only if there is an extremely large source available in the small area covered by the round dance, is it worthwhile to activate a lot of bees to go there. If there is not a large source available, it is much more efficient to send the bees to the bigger area. Perhaps kiwifruit pollen is not that attractive and abundant, so it is not efficient in the bee's minds to apply the round dance.

That could explain why the bees of the Bigley's were not working on their vines: not because they were Italian bees, but because the vines were too close to the hives.

In an orchard, where bees are not working close to their hives, that area will be covered by other hives in the area, but this will mean that in that small area the bee density is a bit down. This could mean that the pollination close around the hives is a bit poorer.

All this is just an assumption; a combination of experiences from other people and a bit of common sense. We should like to hear other beekeepers views on our theory.

Gerrit & Ineke Hyink
Katikati

Count your Blessings

Dear Sir,

Faced with heavy rains, high winds, very cold temperatures from September to December 1986, then a bad drought (no cover) during January and February 1987 followed by a plague of wasps and low honey yields — Well, I thought I'd seen it all!

But from our National Country Library Service I borrowed a certain copyright book. A chapter on "Beehive Defense" (their spelling) tells it all. They battle with ants, moths, mice, skunks, raccoons, weasels, coyotes, and black bears!

Wasps and weather problems seem small.

Karen McCarthy
Woodville

Furniture Polish

Dear Sir,

In the NZ Beekeeper, Autumn 1987, "Skep" (Beginners' Notes) asks for recipes for furniture polish. Will you please pass on to him the enclosed recipe or publish it for all to share.

Furniture Cream

Three ounces beeswax
Eight ounces turpentine
Eight ounces warm water
Liquid ammonia

I still use Imperial measures but as precise weights are not called for, it is easy to translate the above into metric.

1. Melt the beeswax.
2. Pour on the turpentine.
3. Add the warm water.
4. Drop in enough liquid ammonia to thicken to a cream.

I use a tin and stir with a scrubbed-up stick which can be discarded after use. Unless you have a pan used solely for this purpose the cleaning-up operation is almost impossible.

Ann Pharazyn
Taihape

Jobs Wanted

Dear Sir

Reading your beekeeping national journal, I found your address, and I am interested to write you.

My parents are commercial beekeepers and I already worked in Japan and in Africa for two years, I am 22 years old.

I would be very happy if it was possible to work in your farm for three months (December '87 to February '88).

Please let me know by letter if you agree to my proposal.

Thierry Fedon
Fonthevreux
87640 Raze's
FRANCE

Dear Sir,

I am very interested in a job as a beekeeper in New Zealand.

I am 25-years-old and have worked with bees for 10 years. In 1985 I acquired my master of beekeeping. At the moment I work for one of the largest apiculturalists in Germany.

Michael Mehler
Neuestr. 3
5531 Wallenborn
WEST GERMANY

Common Misconception

Dear Sir

Please would you enlighten me! Why is it, that every other person I happen to talk to about honey (in particular creamed honey) *tells* me that "they" put "icing sugar" in creamed honey? These people are *not* beekeepers but believe that that is what is done to honey to cream it.

Could you tell me if this used to be the practice of beekeepers or still is? If it is not and never was then something should be done to educate the public. There is something very wrong if people continually say this to me.

I am sure Honey sales would increase with more national promotion though I know it comes down to finance.

I am a hobbyist beekeeper and produce beautiful fine-grained and flavoured creamed honey *without* adding icing sugar. It really disturbs me to hear these comments and I look forward to hearing those of your own and colleagues. I am by the way a member of the N.B.A.

(Mrs) Susan Adams
Northcote

President Allen J. McCaw replies:

Your concern strikes a familiar chord with a very large number of beekeepers who have encountered similar misunderstandings amongst the general public.

To the very best of my knowledge, the practice of putting 'icing sugar' into honey in order to cream it has never been employed by beekeepers, and I suspect that any who may have tried to do so in the past will have been very disappointed with the result! Apart from the unsuitability of the idea, such a practice would be illegal of course, since it represents 'adulteration' of honey, unless clearly stated on the packaging, (e.g. pollen and honey mixtures, which are clearly labelled as such.)

The processes of 'creaming' honey by controlled granulation to produce a 'fine-grained' and very palatable product, with long-keeping properties, is not well understood generally, not the least amongst beekeepers themselves! This is borne out by the considerably variation in product quality which is encountered in a survey of retail shelves, where a number of so-called creamed honies would more accurately be described as granulated or perhaps 'candied'.

Exporters of packed honies from New Zealand have often reported some resistance to our creamed honey due mainly to misunderstandings by consumers. However, some very promising prospects do exist for the export of more packed and specialty honies from N.Z., and that is the area in which we should be placing more emphasis, I feel, to improve returns to beekeepers. We are quite unique in our widespread use of creamed honey in this country, and this has obvious advantages in keeping qualitites and storage.

Thank you very much for your interest in the subject, and I will be most interested to see if your letter sparks some discussion within our industry. I am inclined to agree that something might well be done in the area of public education in the use and appreciation of honey — it certainly might save some time spent at the honeyhouse door trying patiently to explain to a would-be purchaser that there is nothing in creamed honey other than pure and natural honey!

Country life fair

To be held in the Michael Fowler Complex, Wellington, 4-5-6 September 1987.

The Wellington Beekeepers' Association is manning a stand at the above exhibition to promote honey, pollination, and general aspects of beekeeping in New Zealand.

To make their display as meaningful as possible the Association would appreciate receiving honey packs, labels, posters, in fact anything attractive and visual connected with bees and honey.

If you feel you can help please send your contribution to 26 Cunliffe St, Johnsonville, Wellington by 31 July 1987.

The Wellington Association would like to take this opportunity to thank Arataki Honey and Kintail Honey for their sponsorship which makes this stand possible.

Go forth and market

From Reg Clarke

Back in the heady days of Summer, when Marlborough beekeepers still thought they would have a good season, our Branch set up a stand at the Marlborough Wine and Food Festival.

It proved a very worthwhile exercise. Not that we sold much honey — people were in a festive mood and not included to lumber themselves with something heavy that could not be consumed on the spot — we met many potential customers in the mood to taste, talk, and learn.

Enthusiasm making up for any lack of sales expertise, we took full advantage of direct contact with the consumer to promote the unique properties and virtues of honey. A wide range of honey types were available for tasting ranging from water-white lucerne through amber and manuka to what could only be described as the 'vegemite' class. Surprisingly, the two extremes were as popular as the more common mid-range types. If this reaction is typical of honey consumers generally, then we should all sit up sharply and take notice.

In the other marquees, winemakers did extra well in the afternoon heat. After a taste or two of their products, I took time out to compare their industry with ours. Both produce and natural liquid product from plant origins in which the sugar content is important, but the subtle flavour compounds more so. As with honey flavours, consumers show a wide range of taste preference, from light quaffing wines through superb chardonnay and sauvignon blanc to the rich and velvety reds. But this is where we part company with the winemakers.

Their response is to welcome opportunities created by diversity, and produce a wine for every taste and mood; some equal to the best in the world, and all marketed and promoted with skill and pride.

Our Industry takes a rather difference approach. The very light honey is exported in commodity trade where it may finish up blended with something otherwise unsaleable. The very dark or strong-flavoured honey is disparaged as suitable only for manufacturing or horse tucker.

The supermarket shelves have been dominated by honey blended to a standard flavour, the multitude of labels hiding the lack of real choice. Lately the range has extended to include the ultra-light clover. Does that indicate a genuine response to consumer demand, or is it the result of export market conditions?

If the winemakers tossed everything into one vast vat to produce a non-descript blend and then tried to export it in bulk for blending with Algerian plonk they would deservedly go broke.

The analogy should not be pushed too far in order to make a point. We have some very good marketing people struggling successfully against the tide, and they deserve our support. But as an Industry we have a long way to go yet to break away from old trading habits. Exporting via a commodity trading system in oversupply must be a mugs' game. Only honey in a retail pack can capitalise on that 'clean-green-nuclear free' image that is our best selling point. N.Z. venison was sold in Germany under a 'Black Forest' label — or at least it was — until the Chernobyl disaster. Is our honeydew marketed so that the taint of European acid rain and nuclear fallout cannot devalue it?

The domestic market is still the most important sales outlet. New Zealanders are said to be big consumers of honey, yet many (perhaps even most) eat little of none, and those that do use it exclusively as a breakfast food. Vigorous promotion could increase consumption by 50%.

We could start by offering the customer diversity. That is, a wider range of products, accenting the diverse flavours and colours, and developing more blended products with pollen, nuts, and fruit. And we could encourage diversity of use: for cooking, preserving, sweetening.

When you next dine out, aided perhaps by a bottle of excellent Marlborough wine, reflect for a moment on marketing strategies. Then complain to the wine waiter that no mead is listed, and demand honey to sweeten your coffee.

No prizes for putting names to these faces.

New weight and measures act

The 1987 Weights and Measures Act passed into law in March. It repealed the 1925 Act, and its mass of amendments. The new Act presents a clearer and more concise set of regulations. It should be required reading for any beekeeper who retails honey.

Of great significance to our industry is the deletion of all references to honey in this new Act. This means that honey may now be packed in any size container as long as the weight is clearly shown. For several years the NBA Executive has made representations to successive Ministers of Labour to this end and it is pleasing to note that those submissions have at last been acted upon. It would be helpful if the old 2lb (900g) pack disappeared to be replaced by 1kg size.

Crop and Market Reports

A further crop and Market report (no. 4) has been published through the Executive, and should have been received by all Branches and beekeepers registering 1,000, or more hives. Other interested commercial beekeepers wishing to join the list should write to the Executive Secretary, in Wellington.

It appears there are difficulties at present with our honey export markets. That has been caused by lower world prices, and the relatively high value of our dollar against the currencies of our trading partners. A good average honey crop in most areas this years means we again have a surplus for export above local consumption. The combination of lower overseas prices and high internal interest rates is exerting considerable pressure on buyers and exporters endeavouring to obtain the best possible prices for all our products.

Beekeepers must be prepared to help maintain market stability by adjusting their budgets to accommodate delayed payments for sales until the market improves. The worst possible scenario would be for our local market to be ruined by price-cutting brought about by a lack of appreciation of the present difficulties. Good communication all round is essential!!

Industry Planning Meeting, again held at Flock House

Your Executive met at Flock House, early in May to once again consider the progress of our Industry Planning, and to formulate an '87 — '88 Industry Plan. We are grateful for the assistance of Nick Wallingford and Peter Bray, and also MAF advisory officers. Murray Reid, Andrew Matheson, and Ted Roberts: all of whom contributed to most productive and informative planning session.

The '87 — '88 Plan is nearly ready and should be circulated soon. We took some new directions particularly with public relations, and with the image of our industry and our Associations' effectiveness generally. The NZ Meteorological Service will be asked to provide relevant information for beekeepers. We also intend to develop our beekeeper-education programme.

Scientist Position confirmed at Ruakura:

We learn with pleasure that Mark Goodwin (soon to be Dr Goodwin) has accepted the NBA-Kiwifruit-Authority, MAF-funded bee-scientist research position at Ruakura. Mark is due to start in late June, and will be assisted by Anton Ten Houten, who previously worked at Wallaceville with Pat Clinch. A joint research — advisory committee has been established to help decide priorities. We look forward keenly to a productive association with Mark, Anton, and Ruakura.

Those d-----d wasps!!

For beekeepers troubled by wasps over recent weeks (who hasn't been?) there are a couple of developments which may be of interest. Firstly, Dr Barry Donovan, DSIR Lincoln, is making good progress with the programme for introducing a wasp parasite. It will be ready for South Island distribution within a couple of months, and for the North Island next year. Through Trust Fund support the NBA is entitled to some packages of parasites. They will be distributed through MAF advisors during the winter. If you wish to hear more — come to Conference '87 in Christchurch where Dr Donovan will present an update on the programme.

While the parasite offers some hope for the future against this major pest, your Executive has asked the Pesticides' Board to allow the continued use of Mirex baits until a better alternative is found or developed. Mirex is no longer approved for import into NZ, but we have asked for a reprieve in view of the increasing problem, especially with the rapid spread of the common wasp, Vulgaris.

Most beekeepers are aware of the current DSIR — MAF wasp survey, which hopes to determine the spread of Vulgaris. This pest has attacked beehives in several locations, and the effect of wasps on honey-dew production is year is, reportedly, most alarming.

Importation of Beestocks, and Marketing — 1987 Pre-Conference Seminar

This year's Pre-Conference Seminar on July 14 promises to be of considerable interest. Organised by the NBA, it will consider two main topics. The morning session will be devoted to that most controversial subject: the possibility of importing bees into New Zealand for stock improvement or export markets. We plan an in-depth discussion with speakers from the industry followed by an open-forum session.

The afternoon session will be on 'Marketing' and will be conducted by Professor Steve Bridges, who holds the chair of Marketing at Massey University. He is well known for his lively and informative seminars, and those attending can be assured of ample opportunity for discussion. Come to the Seminar and share your ideas — you might even learn something!

'Beekeeper' Subscription increase

Despite the sterling efforts of our Editor to contain typesetting and printing costs for the 'N.Z. Beekeeper', they have been inexorably creeping up. We are consequently faced with an inevitable increase in subscriptions for next year. This cost will be $20 in New Zealand with corresponding increases for overseas subscribers.

On the positive side we recognize the steady rise in administration costs for Branches so increase in capitation levels has also been approved for next year.

Conference '87 — Christchurch

The Canterbury Branch is well underway with its organisation of Conference '87 which promises to be bigger and better than ever. See the advertisement elsewhere in this issue, and book in early. Apart from the seminar we hope to have reports on developments in the biological control of weeds, of progress with our education programme, and an update from bee pathologist Dr Denis Anderson on his findings from the national bee survey. There will be something for everyone — so we look forward to seeing YOU there.

Wasps in a state of balance

From The Pyramid Valley Organic Bee Farm

Those organising the wasp survey seem caught in the money-only side of beekeeping. They apparently fail to see the vital link that wasps play in the insect world which is, after all, our world.

If we poison insects beneficial to our food chain we make it harder to farm naturally so we must use more and more chemicals. On our organic bee farm we have found wasps most beneficial to natural farming. They have many relationships to our food chain.

1. Wasps eat white butterfly caterpillars **AND** the butterflies, so maintaining a balance
2. Wasps eat scale insects from fruit trees, so maintaining a balance
3. Wasps eat house flies and spiders, so maintaining a balance
4. Wasps clean up old or weak wild and domestic hives so keeping bee strains strong. That is natural beekeeping.

From our inland farm on the North Canterbury Plains we have watched the wasps for many years and have welcomed them as friends. The numbers in our area have fluctuated over the past 20 years but have never become a plague as they have in some East and West Coast beech forests, although even there their numbers vary from year to year.

The main reason for the difference in numbers between forest and plain is simply climate. Forests, where the temperatures are not so extreme, make an excellent habitat for wasps to winter over.

It is obvious that beekeepers taking hives into native forests with a high wasp population will be hammered, that weak hives will be destroyed. We think that if beekeepers move hives into forests then they should take a small number of their strongest hives only. Then the strength of the hives will balance the strength of the wasps. That way the wasps will not constitute a threat and it will be unnecessary to use chemicals to kill their nests.

Consequently beekeepers with hives all year round in areas with a high wasp population should:

1. Move weak hives as far away from the wasps as possible
2. Keep their hives strong by requeening with young, vigorous queens each year
3. Leave an extra box of honey on so hives will not suffer stress in bad weather during the spring build-up
4. Divide strong hives into two, so increasing hive numbers, instead of making four-frame nucleus
5. Requeen hives before the wasps' natural build-up.

If the beekeeper follows these practices he will find he has no wasp problem. He will not need to use chemicals, **dangerous** to both his hives and himself, to destroy wasp nests because his hives, naturally strong, will be in balance with the wasps.

That is natural beekeeping. There is **no** wasp problem, only a **human** problem with too many mis-managed hives and beekeepers greedy for bigger honey crops.

Amoeba disease confirmed in New Zealand

By Dr Denis Anderson, DSIR Entomology Division, Auckland

Summary

During September-October 1986 cysts of *Malpighamoeba mellificae* Prell, the cause of amoeba disease, were detected in the Malpighian tubules of adult worker honey bees collected from five separate widespread localities in New Zealand. Aspects of the disease are described.

Introduction

Amoeba, a disease of adult honey bees caused by the protozoan *Malpighamoeba mellificae,* has been reported from many beekeeping countries. However, it has only been reported in New Zealand from a single bee colony at Nelson in the South Island (Cumber, 1948). Since that report there have been extensive searches for the disease in colonies elsewhere in New Zealand (Palmer-Jones, 1964), but it has not been detected. This perhaps explains why Nixon (1982) regarded the presence of amoeba in New Zealand as suspect when describing the worldwide distribution of honey bee pests and diseases. Nevertheless, during September and October 1986, I detected cysts of *M. mellificae* in adult worker bees collected from Laingholm, Albany, Te Kuiti, Rangiora, and Ashburton in New Zealand. These findings confirm the presence of amoeba in New Zealand and suggest that the disease may be more common in New Zealand than once thought.

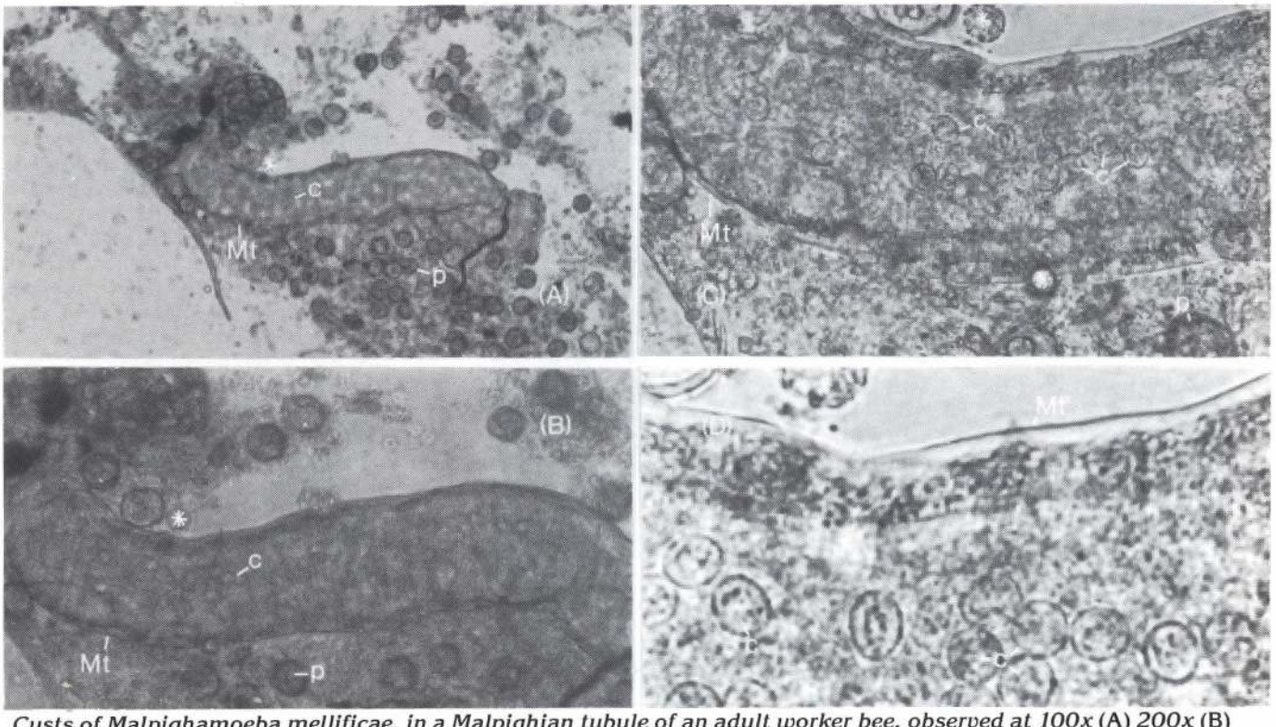
In this short paper I summarize aspects of the life cycle of *M. mellificae,* and describe how to control and diagnose amoeba disease.

Aspects of Aomoeba Disease

Very little is known about *M. mellificae,* the cause of amoeba, and what is known applies to honey bees in countries in the Northern Hemisphere. *M. mellificae* has been shown to infect queens and worker bees, but in nature queens rarely become infected. Worker bees are believed to become infected after ingesting *M. mellificae* cysts while cleaning contaminated bee excreta from combs within the colony. The ingested cysts accumulate in the hind-gut of bees where they germinate into infective, flagellated, amoeba-like organisms which are thought to enter directly into the Malpighian tubules (excretory organs, sometimes called 'bee kidney') of bees. Here they change into trophic forms and finally into spherical cysts which pass through the small intestine to the rectum of bees and are voided with their excreta. The contaminated excreta may accumulate on frames and combs within a hive, and is the main source of future infection for worker bees. It takes from 24-28 days for new cysts to develop in the Malpighian tubules of worker bees after they have ingested cysts.

The transmission of *M. mellificae,* as described above, is similar to that of *Nosema apis* Zander, a different type of protozoan, which causes nosema disease in adult honey bees. This perhaps explains why both amoeba and nosema are often found together in a single colony during spring. Nevertheless, there are many aspects of amoeba disease that are quite different from nosema. For example, the cysts of *M. mellificae* take about twice as long to develop in a bee than *N. apis* spores, and a bee infected with *N. apis* can produce about 60 times more spores than a bee infected with *M. mellificae* can produce cysts. Perhaps for this reason amoeba does not spread as readily as nosema. Furthermore, following a spring outbreak, amoeba disappears from a colony more abruptly than an

continued on page 12



Cysts of Malpighamoeba mellificae, in a Malpighian tubule of an adult worker bee, observed at 100x (A) *200x* (B) *400x* (C) *and 900x* (D) *magnifications using a light microscope.* Mt = *Outer wall of Malpighian tubule;* c = *cysts of M. mellificae,* p = *pollen grain. Note: *represents the same location at each magnification.*

continued from page 11

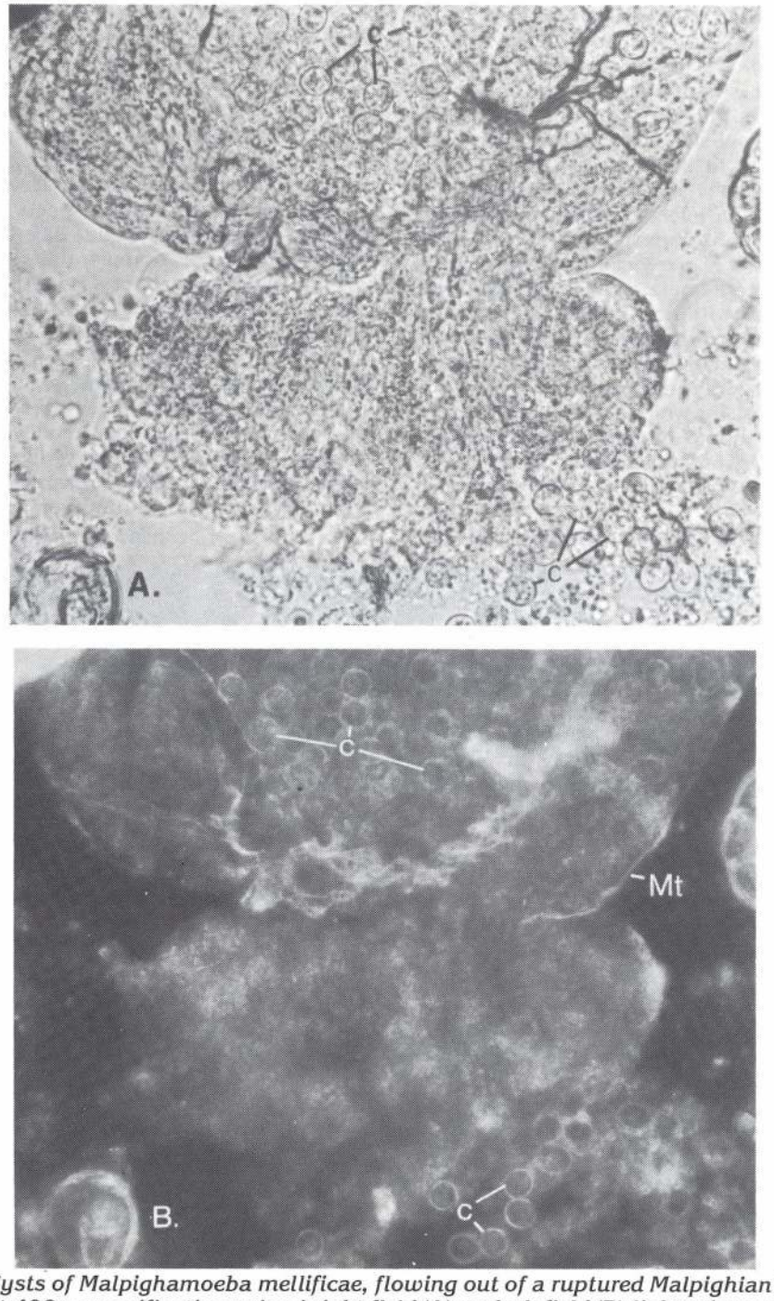
outbreak of nosema, probably because the amoeba cysts have insufficient time to form in worker bees whose life span at this time of year is reduced due to increased foraging activity.

Overwintering bees which are confined to their colonies for long periods of time probably become infected when cleaning bee excreta from combs which became contaminated the previous spring. The increased social contact between bees in a colony during winter confinement periods may also assist the spread of the cysts. Thus, many overwintering bees in a single colony may ingest cysts and become infected long before spring arrives. However, these bees remain alive throughout the winter months because the development of cysts in them is thought to be slowed, perhaps as a result of the low temperature commonly present in winter clusters (20 °C). However, in early spring when the cluster temperature rises to about 30 °C, the cysts probably resume normal development and this may explain why explosive-like increases in numbers of amoeba-infected bees are observed at this time of year.

The effects of amoeba on bee colonies remains uncertain. However, the normal functioning of the Malpighian tubules of infected bees is thought to become impaired, thereby causing a weakened condition in heavily infected colonies which may result in reduced honey yields. Very serious and even fatal infections of amoeba have been reported and some research workers have reported that mixed infections, particularly of amoeba and nosema, are more serious than infections of amoeba alone. I observed a colony from Albany in the North Island of New Zealand between October and December 1986 which displayed symptoms indicative of severe chronic bee paralysis disease, which is caused by chronic bee paralysis virus. Approximately 200 dead and dying adult worker bees were collected daily from the entrance of this hive. The dead individuals were later shown to have mixed severe infections of *M. mellificae* and chronic bee paralysis virus. When my observations began, the colony population was large and comfortably filled a three-storey, 10-frame hive. However, two months later, it was reduced to only enough bees to cover three frames in a single box. The hive was finally robbed and the colony killed by European wasps, *Vespula germanica*.

Control of Amoeba Disease

No chemical has been found that will effectively control amoeba. The antibiotic fumagillin, which is used to suppress nosema, is not effective against amoeba. Hence, amoeba is usually controlled by hive manipulative procedures similar to those used to control nosema, such as replacing contaminated combs or transferring colonies to uncontaminated combs during early spring. However, contaminated combs can also be fumigated using acetic acid or ethylene oxide (Bailey, 1981). An effective fumigation method is to douse absorbant material with an 80% concentration of *glacial* acetic acid, and intersperse the material between boxes of frames in a fumigation chamber. This method of fumigation must be carried out at temperatures below 15 °C and hence is best done during the cooler months. The fumigation chamber can actually be formed from the bee boxes containing the frames to be fumigated, provided they stack tightly and are sealed off at the top and bottom of the stack. The fumes of the acid kill the cysts of *M. mellificae* within 7 days, along with any *N. apis* spores which may be present, but they do not harm honey or pollen stored in combs. The fumes are also corrosive, but only



Cysts of Malpighamoeba mellificae, flowing out of a ruptured Malpighian tubule of an adult worker bee, observed at 400x magnification using bright field* (A) *or dark field* (B) *light microscopy.* Mt = *Outer wall of Malpighian tubule;* c = *cysts of M. mellificae.

superficial corrosion occurs to nails and wire in hive materials during fumigation.

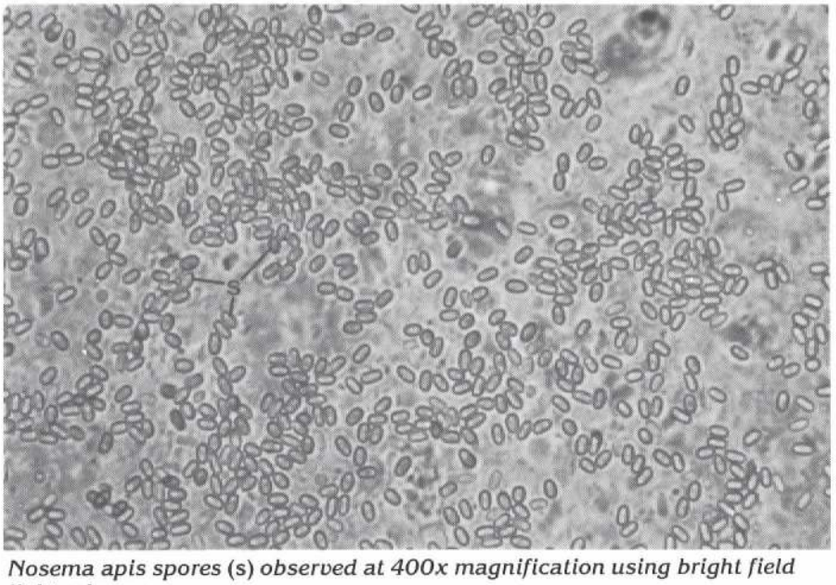
Diagnosis of Amoeba Disease

Colonies affected by amoeba may show no obvious disease symptoms, but in others, during spring, the colony population may be reduced or remain static for no obvious reason, while hives of others may contain soiled frames or combs. However, these symptoms are similar to those caused by other bee diseases, particularly nosema. Thus the presence of *M. mellificae* can only be confirmed by microscopic examination, usually for cysts in the Malpighian tubules of infected worker bees. In the microscope the cysts appear spherical in shape and are slightly larger than spores of *N. apis* (Figures 2 & 3) and, at the correct magnification, can be readily observed through the walls of infected Malpighian tubules (Figures 1 & 2).

A quick method of testing a colony for amoeba is to collect 20-30 worker bees from a colony in which symptoms indicative of the disease have been noticed. The abdomens are removed from these bees, their heads and thoraxes discarded, and the alimentary canals are dissected from the abdomens. These are placed under a cover-slip on a glass microscope slide and slight pressure is applied with the thumb to the top of the coverslip. The preparation is then ready for examination for cysts, using a light microscope capable of magnifying at least 400 times (x). When examining the preparation it is best to first locate the Malpighian tubules using 100x magnification (Figure 1(A)). However, the spherical cysts can only be unequivocally recognised when using magnifications of 400x or greater (Figures 1(A)-1(D). A magnification of 400x is ideal for detecting the cysts through the walls of Malpighian tubules whether using bright or dark field microscopy (Figure 2). A photomicrograph of *N. apis* spores (Figure 3), observed at 400x magnification, has been included for comparison with *M. mellificae* cysts observed at the same magnification (Figure 1(C) & 2).

Concluding Remarks

In many respects amoeba disease is similar to nosema disease. However, in most beekeeping countries in the Northern Hemisphere amoeba is believed to be less serious than nosema. Nevertheless, more research on the life cycle of *M. mellificae*, the causative agent of amoeba, is needed before a clear picture can emerge of the effects of the disease on bee colonies. It is also important that further research on the disease be carried out in Southern Hemisphere countries where beekeeping practices and climatic conditions are very different from those in the Northern Hemisphere.



Nosema apis spores **(s)** *observed at 400x magnification using bright field light microscopy.*

New Zealand beekeepers are now in the fortunate position whereby they can obtain an accurate diagnosis of amoeba (and other bee diseases) in their colonies by sending bee samples together with a small fee, to the Ministry of Agriculture and Fisheries (MAF), Plant Protection Centre, P.O. Box 41, Auckland 1. Details of this 'user-pays' bee disease diagnostic service can be obtained from local MAF Apicultural Advisory Officers.

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Crop and market report No. 4

Prepared by Keith M. Herron

Bulk Honey Stocks. Much is in the hands of producers and exporters.

Bulk Honey Prices. There is a preference for 0-9 mm honey. Darker honies are not fetching prices expected by producers. Prices cover a range between $1.75 and $2.20 per kg plus GST, with $1.90 per kg plus GST common. Terms of payment range from immediate to long-term but most payments are made soon after delivery.

Prices To Wholesalers. The top price is $1.50-$1.60 plus GST for a 500 gr. pot. Several packers would like to increase that rate but too much honey is offering at a low price.

Price To Retailers. Most large retailers can buy honey at wholesale prices.

Price to Consumers. Retail statistics show the following: Nov. 1986, $2.04; Dec 1986, Jan., Feb 1987, $2.03, all per 500 gr. wax pot.

Honey House Prices (own containers). The price per kg ranges from $2.75 to $3.35 plus GST with an average of $3.00 plus GST.

Comb Honey. Demand exceeds supply but prices are good for quality, well-presented, combs. Some agents are offering low, unrealistic prices.

Contract Extracting. For 200 supers plus, $2.20 to $2.60 plus GST per super. Small lots up to $5.50 per super plus GST. There is a wide range of charges for this service. However, please note that an extracting plant brought with a $50,000 loan at 20% calls for an annual interest repayment of $10,000 a year. If the plant handles 5,000 supers a year that equals $2.00 per super for interest alone.

First Comment. Export sales are slow. Statistics show the following exports of honey for February.

Extracted Honey: 50,098 kg sold for $NZ114,617 FOB
Comb Honey: 11,518 kg sold for $NZ48,859 FOB
Honey Dew: 40,367 kg sold for $NZ77,496 FOB

Second Comment. The book "Market Study-Honey a Study for Major Markets", International Trade Centre UNCTAD/GATT, is 160 pages of information **NO EXPORTER** can afford to be without. Order yours from the Executive Secretary before May 15. Cost about $US35.00 ($NZ60.00 approx.)

PEANUT BRITTLE

2 cups sugar
1 cup honey
1 cup water
2 cups salted peanuts
1 tablespoon butter

• Put sugar, honey, water in sauce pan. Stir until sugar is dissolved. Cook to 300° F. Remove from fire. Add butter and peanuts. Stir just enough to mix thorougly. Pour into very thin sheets on a well-greased platter. Cool. Break into pieces to serve.

"A little honey in the canning
Mixed with the juices
is good planning."

The great New Zealand wasp survey

By Andrew Matheson, Apicultural Adviser

Beekeepers with 50 or more hives will have received a sampling kit for the joint MAF/DSIR wasp survey. The replies are now coming in and the information supplied with samples is proving extremely useful.

We should appreciate receiving the remaining questionnaires and samples as soon as possible, so we hope you will take time soon to collect specimens and fill in the survey forms.

I am working on the survey with Dr Henrik Moller of DSIR's Ecology Division in Nelson. We wish to establish.

- the distribution and relative abundance of the German wasp (*Vespula germanica*) and the "common" wasp (*V. vulgaris*)
- the economic impact of wasp predation on beekeeping
- if the *V. vulgaris* invasion is changing the kinds of wasp damage that beekeepers face, or altering the degree of it.

Readers of the *Apiarist* received a sample form with the last issue. We should appreciate as many of those back as possible, with each sample containing about 20 wasps from one locality.

The new wasp species definitely attacks bees and beehives. I checked apiaries early this autumn and found *V. vulgaris* inside hives, robbing honey, and chopping up live bees at entrances. We believe that this is the first recorded incident of *V. vulgaris* preying on bees or beehives in New Zealand.

It is important that we find out more about *Vespula vulgaris*, the common wasp. Please send your wasp samples and survey forms as soon as possible to:

Wasps (Freepost)
DSIR Ecology Division
Private Bag
Nelson

N.B. It's a Freepost service — no need for a stamp.

This wasp survey would have been impossible without the generous support of a number of sponsors. We are pleased to acknowledge their contribution and list them below.

- Kiwicare Corp/Bug Bar Pest Products (principal sponsor)
- Tecpak Plastics (principal sponsor)
- Auckland Beekeepers' Supplies
- Dimet Corrosion
- Fruitgrowers Chemicals Co.
- Lilypack Industries
- Pharmacy Wholesalers (SI)
- Symes Apiaries
- The Bee Farm
- V L Smith & Son, Kaikoura.

APOLOGY

Chas Reade, Auckland, rates an apology. On page eight of the last issue we spelt his name "Read". We humbly grovel and if Chas cares to front up to the bar at Conference '87 we are prepared to make a verbal apology practical.

Editor.

South-Western's Field Day

South-Western held its Field Day at the establishment of Chris and Margaret Brommell, Manaia, some 18 kilometres north of Hawera in the midst of the dairy country.

The climate is affected by Mount Egmont and the area is subjected to westerly and south-easterly winds. Box thorn hedges give shelter from the winds but as sources of pollen and nectar are unreliable. Frequently beekeepers must feed hives until the main pasture flow in December.

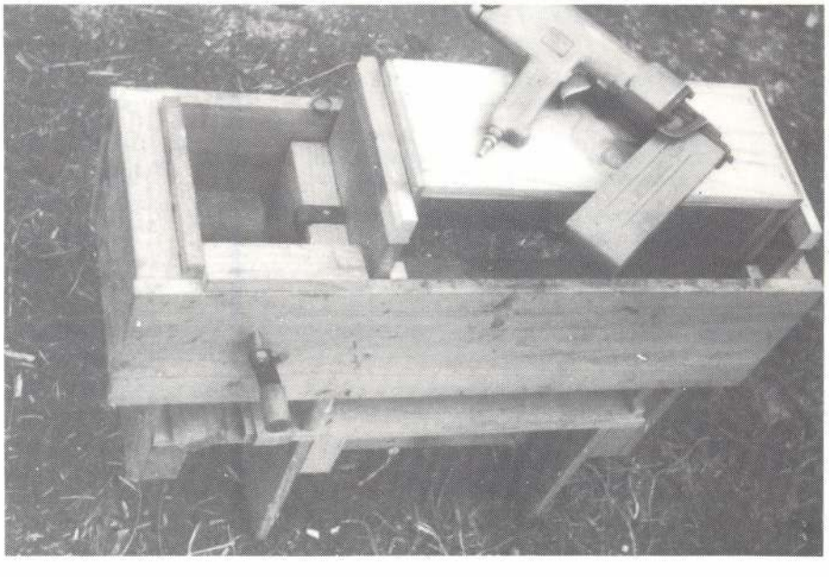
Chris and Margaret Brommell own 500 hives spread over 160 square kilometres and mainly for honey production.

At the back of his house Chris, a cabinet maker by trade, has a workshop where he makes all his own woodware. At the Field Day he demonstrated the making of this woodware from beginning to end.

A competent tradesman, he showed, among other things, how to chose timber to avoid knots, his nest of saws for cutting hand-holds, and how to position those hand-holds so they are not obscurred by lids.

Sensible about lifting, he makes three-quarter rather than full-size honey boxes because they weigh less.

Chris recommends proper equipment if you intend to make your own woodware and notes that a series of gadgets is time-saving. He emphasises safety (have a guard on your saw and wear glasses and ear muffs) and suggests comfort: for example, a rubber mat on a concrete floor saves your feet.



Top Photo: Stan Young and Martin Smith enjoy a joke.

Centre Photo: Chris Brommell, shows the crowd how to assemble a super with an air stapler.

Bottom Photo: The super gripped by Chris's (patent??) moveable jack made from an old car jack.

Right Photo: Chris Brommell answers questions about the Nicot cell raiser.

Left Photo: Part of the crowd at the Field Day.

Right Photo: The wintering-down demonstration.

Creating your own creamed honey

By Skep

What will you do with all the honey you produce? A good question! Here you are, a proud hobbyist with three or four hives, and you've just harvested your first really good crop. Always assuming (as I discussed in a previous article!) that you managed to extract it all.

In the process of doing that you probably ruined a variety of kitchen implements, tracked honey through the house, transferring it from comb to hands to door knob to the rest of the family. So to this point, you've done it the way everyone else does the first time. If you're really smart, you will have filed away all the information for the next time.

For example, the handcrank extractor that walks across the floor unless someone holds it down. Next year you'll remember to arrange some turnbuckles to securely fix it to the floor.

And that bag of cappings that hung around for a week to drain! Next year you'll arrange a proper place to hang it, away from the ants and the carpet. This year, you probably ran the liquid gold directly from the extractor into the variety of jars you located. You ate a lot, gave some to friends, neighbours, and relations. You maybe even sold some to workmates.

In this article I'd like to suggest how you, as a hobbyist, can best prepare and package your honey for presentation, whether as a gift or to sell.

The three most important quality control factors are completely within your control. They are: too much heat, too much moisture, and too many bees' legs. All three can easily damage your product.

Heat is an easy one for you as a hobbyist. Nothing at all like the problem that presents itself to the commercial beekeeper. There is no reason why you should need to heat your honey at all. Apart from the heat of the uncapping knife your honey can be handled at room temperature. If you extract it immediately after removing it from the hive, so much the better.

Excess moisture, leading to off-flavours and fermentation, can be avoided through attention all the way through the honey-from-the-hive to honey-in-the-jar process. Don't extract honey until it is thoroughly ripened. Often, especially if the flow is still on, it may not all be completely capped. Take a frame and shake it over the open hive. If it is thoroughly ripened it should not shake like water out of the comb.

Once you have extracted the honey keep the containers covered. Honey can take moisture from the air so don't leave it exposed, especially if you need to store it in moist or less than favourable locations.

Try to avoid incorporating small air bubbles with the honey as you run it through a fine strainer. Don't simply let it drip through the strainer and into a container; place something in the container so the honey will run down rather than falling into the honey already in the container.

No matter how well you strain the honey after extracting, you still need to 'skim' it a day or so later. The froth

Solar Wax Melter: an ideal way for the hobbyist to deal with wax scrapings and cappings wax.

that floats to the surface of the honey contains small bubbles and wax particles. Skimming the froth gently from the surface of the honey will greatly improve visual quality.

Depending on the quantity of honey you have, there are some excellent containers available to hold it until you are ready to run it into its final jars or plastic pottles. Food-grade plastic containers can be fitted with a plastic tap. Fit a rubber seal and tighten so there will be no leak. If you have insufficient honey to justify such a container, plastic Polypails make good storage containers.

Ever ended up with honey granulated so hard that you can't stick a knife into it? Honey so hard it tears the bread when you try to spread it? Honey with gritty bits of sugar crystals?

It's still honey, of course. Nothing really wrong with it, other than inconvenience and the chance of putting some people off honey forever!

The 'creamed honey' sold in New Zealand must be the source of the most often repeated myth about honey. No foreign materials are added to the honey to make it granulate smoothly. No icing sugar, white sugar, flour, cream or lard (Yes, I have been told that's what beekeepers add to their honey!) or anything else.

There's no reason at all why you, as a hobbyist, should not try to make your own creamed honey, instead of relying on good luck to get a smoothly-granulated honey. Though the results may be variable, you'll have a good time learning a little more about your hobby.

Creaming honey is simply controlling the natural crystalisation process.

Almost all honeys will eventually naturally granulate. Most will within a few months although others remain liquid for longer. In England, such naturally granulated honeys are called 'set honey'.

The speed at which honey granulates, its texture, is mostly a product of the ratio of the two main sugars in honey: dextrose and levulose. For a reason never clearly explained to me, sugars often have two names, confusing things very nicely, thank you. Dextrose is also known as glucose and levulose as fructose. To add to the confusion, levulose is also known as fruit sugar.

If a honey has a high dextrose to levulose ratio, it will granulate rapidly with a fine crystal. If it has a high levulose content, it will granulate slowly and often with crystals so large that you can feel their sharpness on your tongue.

To 'cream' honey, the beekeeper mixes in a percentage of honey that has already granulated finely. This honey is called a 'starter', because its crystal structure will start the liquid honey granulating in the same manner. In order to speed up the granulation, the starter needs to be thoroughly mixed with the liquid honey. Then the container must be kept cool: not cold, not refrigerator-style cold, but simply cool. The ideal temperature is about 14 degrees.

Keeping the honey at this temperature causes it to granulate as rapidly as possible, and since it already has a nice grain started, the entire volume will granulate in the same way as the starter you introduced. Stir occasionally during the process. Once the

granulation is well established, the now cloudy-looking honey can be run into its final containers. Again, it should be kept cool to assist rapid granulation.

In practical terms, you begin the process by finding some finely-granulated honey. This might be some from last season that you kept back or you could even buy some from another beekeeper or the shop. I like to add as much as possible, even up to six kg or so for a Polypail of honey, but you probably don't need that much. If you like, begin with a small amount of starter and bulk it up by carrying out the process twice.

Stir the starter honey thoroughly into the liquid honey. It's not easy, but you need to completely spread the granulated honey through the liquid. Afterwards, keep it cool by placing your bulk container (well covered, of course) in a cool room, such as a basement or cold closet.

Stir it several times over the next week. It should start clouding as the granulation spreads rapidly through the honey. You can now run it into its final containers. Again, keep them cool. The honey should be nicely creamed and set with a fine, smooth grain within a week or two.

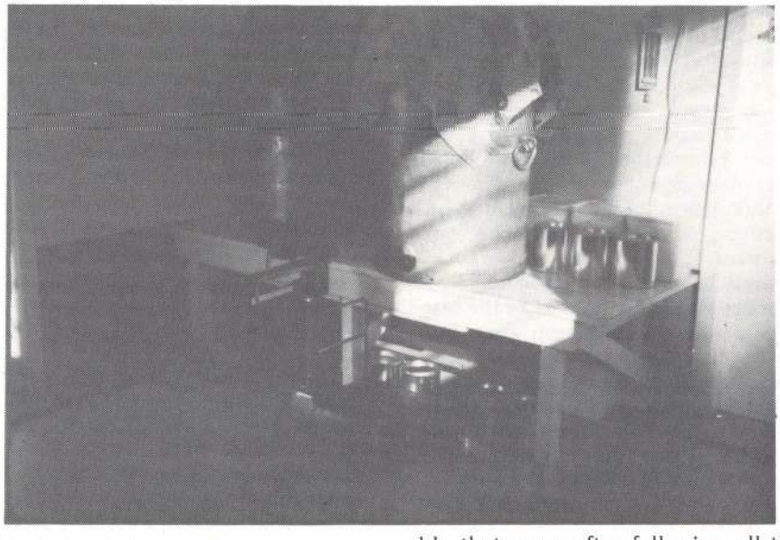
Kiwi beekeepers have been using this process for over 60 years. They figured out that long ago a practical scheme for controlling the granulation in honey.

Credit for the 'scientific' approach to creamed honey goes to an American, a Dr Dyce, a beekeeping professor at Cornell University. He described a complex and detailed method of producing creamed honey that differs little from the basic procedure given above. He did, however, meticulously give temperatures and amounts, such as the ideal temperature to heat the honey before adding the starter, to make sure there were no natural crystals present.

I've always felt that the Kiwi beekeepers never really got the credit they deserved. The way I understand it, Dr Dyce visited New Zealand and saw the process in action several years earlier!

As I mentioned earlier, your results may be somewhat variable. It's possible that, even after following all the directions, your honey might still set hard as a rock. As a hobbyist, you can't control all the factors involved, but the odds are that you'll produce a better product than if you trust to natural granulation.

If you become really interested in the process, you might care to read further about what is quite a specialised subject. I fail to see how anyone can ever tire of being a hobbyist beekeeper: not if you've an inquisitive mind about how things work. Beekeeping provides you with all sorts of excuses to go off at tangents as diverse as entomology and food technology. To say nothing of apicultural botany and woodworking!



A small door-sales' area. The honey is being creamed in the two cream containers, although stainless or food-grade plastic would be a better surface to contact honey.

FROM THE COLONIES

South-Western Districts

Another successful field day — this time at the Brommell home and honey house, Manaia, South Taranaki. Fifty of us watched Chris Brommell demonstrate every saw cut needed for a new honey super and frames. Correct wintering-down procedures for hives were also described, and the day ended with a visit to the honey house.

In the south of our region April was a busy month for those packing live bees for export. Six beekeepers between Palmerston North and Paraparaumu were involved with this new venture. Norm Keane, acting for Kiwi Queens, Auckland, was the co-ordinator.

Wasps have been worrying for some apiarists. We are on the alert for the first signs of the new common wasp and wonder how dangerous it really is.

Because of low yields in some areas, it has been a struggle for some colonies to build up enough stores of their own for winter. These hives will need extra care and feeding if they are to survive.

John Brandon

Otago

Winter is upon us; this morning the frost is on the grass.

With the season now behind us the Province is showing a mixed bag of results, as reported earlier.

Autumn did not give us many nice days — except for Easter, which was glorious. Lately we've had cold days with lots of wind and showers, and snow higher up. Plenty of tucker left on the hives will be a good investment.

We feel concern about the trend in the market place, but no doubt that's the same outside Otago.

At our annual meeting Bill Ross took the chair and John Foote again accepted the job of Secretary.

We have not yet decided whether or not the Annual Convention will take place. If we decide in its favour neighbouring branches will be notified.

John Heineman

Northland

Since writing the notes last, the latter part of the season proved to be a dismal flop. Most areas of Northland were below average. Weatherwise we have had a dry autumn so access to all sites is still pretty good. I daresay it won't be too long before we are up to our axles in mud.

Several members were involved in training programmes for beekeepers from Pacific areas. Preparation is underway for next season's pollination, while Queen producers are still getting late shipments away.

Pat Gavin

Marlborough

The season was well below average. Only the two-queen and strong hives collected much in the short bursts in late December and early January, so the low-intensity beekeepers have had a poor season.

The current DSIR Nelson survey on wasps reminded us of those insects. The dry November and December brought many of them, especially close to the beech forest. But generally, the wasps are not entering hives or really causing much trouble. This season we also had the common wasp to contend with.

Chalk brood has become evident in most hives. It is more serious in higher rainfall areas, where it causes some nucs to dwindle until they die out. That draws the conclusion that chalk brood either did not previously exist in this area as it would have been seen, or that the old unobserved chalk brood has mutated into a more virulent form. Anyway, chalk brood is proving to be more serious than we first believed.

The Marlborough Wine and Food Festival, held with a new format and at a fresh venue was very successful. More than five times as many people went. An increase of 1000 to 5000. The Bee Club stall drew much interest. We remember it as a delightful imbibing of the worlds' best wines and food. It may become a major event, so let's see you next summer.

Our club held a tour of some of the honey houses. Useful tips and pitfalls were noted. The AGM was well attended, with some changes to the hierarchy.

James Jenkins

Hawke's Bay

Generally the 1987 season was very poor. One and a half tonnes per 100 hives appears the best reported. However, the enthusiasm of members, both commercial and hobbyist, is still there with the hopes that **next** season will be the bumper one.

The Branch Field Day was the bright spot of our autumn. Held at John Dobson's home and queen farm at Kereru, it was the first outing we'd had in that district. Since it was so successful surely it will not be our last!

The programme included John and Jenny's lecture and demonstration on queen grafting and rearing. Ted Roberts outlined the new format MAF, and Ian Berry discussed alternative styles of queen rearing.

Competitions and raffles were well supported, and tickets in the raffle for the flagon of mead sold like the proverbial hot cakes.

At one of our recent monthly meetings our members greatly enjoyed a lecture and colour-slide show by Neil Orr, an apiary inspector and instructor from Canada. Few of us realised that beekeeping in competition with bears can, at times, prove somewhat exciting.

Our best wishes for a speedy recovery go to Paul Ashcroft who is soon to undergo a back operation. Paul has had to resign as our President but we thank him for his services over the past four years.

Regrettably Secretary John Walker has also resigned and we should like to thank him for a job very well done. On a brighter note we congratulate John Dobson on his election as our new Branch President.

Gordon Sutton

Westland

The Branch Field Day was held at Ray and Diana Arbon's property, Barrytown on February 7, in fair to fine weather. The programme was arranged to cater for hobbyists in the province, so it was disappointing that so few took this opportunity to meet and learn from others in the industry. Nevertheless, this interesting day began with Branch Chairman Lindsay Feary welcoming visitors to the Coast. Mr Harry Cloake, Timaru, then gave a most interesting address on 'Looking to the Future' commencing with beekeeping for beginners and progressing through to full-time beekeeping.

Keith and Basil Detlaff followed with a demonstration of building and preserving hive equipment.

John Hartnell, Hororata, spoke on marketing.

Peter Little, Geraldine, spoke on wax processing.

Queen-raising, grafting etc., was a combined effort by Gavin White, Takaka; Tom Penrose, Rangiora; and John Glasson, Blackball. Gavin White also updated NBA matters.

Jack Olykan, Co-Op Hornby Branch Manager, displayed Nylon Honey Filters.

The Branch wishes to express special thanks to guest speakers for their visits and involvement. This helped make the day both interesting and informative.

Autumn has been a repeat of last year: unsettled, changeable weather,

and a considerable variation in the strength of, and feed in, the hives. More wasps have been around this Autumn and reports suggest that the common wasp has also arrived at least in one area on the Coast.

Recent frosts have taken their toll of wasps and have thankfully considerably diminished their numbers. So, now it's to find those odd nests still troubling the hives and then back to winter work.

Sandy Richardson

Nelson

The honey flow stayed shut from very early January and, as autumn advanced, very little of any bee fodder showed up.

Huge numbers of wasps appeared very rapidly and took up residence on honeydew-producing trees which appeared just waiting for the wasps' arrival.

Many people believe honeydew did not flow this year, but the trees we saw near our hives were studded with wasps who left the trees looking very dry and scrubbed.

Those beekeepers who normally look to beech for part of their winter supplement will have fallen short this autumn.

On March 1 members held a picnic afternoon at McLean's Rest Area, on the banks of the Motueka River.

We held our AGM at our last meeting and elected Peter Hobson as President and Philip C. Ropp as Secretary.

At this time of year we learn how well we have pollinated the kiwifruit crop. The harvest here was a little earlier than usual and produced some large fruit, but how heavy the crop has been we will not know until the final count.

Hives used for pollination have not produced any surplus honey, and some have needed supplementary stores.

Anyway, be it as it may, the winter will soon be upon us, then past, to see us heading into the next season with renewed energy for things to come.

Ron Stratford

Auckland

We held the AGM of the Auckland Branch on March 5 and Graeme Cammell and Chas Reade were re-elected Chairman and Secretary respectively.

The guest speaker was our man from the DSIR, Denis Anderson. He talked on queen rearing and the Canadian market, and posed the question: "Are we producing the right type and breed of queen required in Canada?"

It appears Canadian favour the Carniolian bee and Denis was of the opinion that some inseminated bees of this breed should be imported as a foundation for our export trade. Denis has worked out a system of importing which he says would eliminate the possibility of bringing disease into New Zealand.

Denis suggests that our gene pool might be becoming too narrow and that the infusion of some new blood might give us a greater range to breed from.

Several beekeepers present thought that the best lines of queens in New Zealand should be checked over and bred from before we consider imports.

The Auckland Branch Field Day will be on June 20 at the DSIR, Auckland. Theme for the day: "Do we need overseas queens?"

The honey crop around Auckland was quite poor, especially where the hives had been used for kiwifruit.

Dave Young

FROM THE COLONIES

Waikato

The Waikato Branch of the NBA held its 1987 AGM at the MAF conference room, Hamilton, on May 1. Twenty two members voted Russell Berry back as President for a further year and returned Tony Lorimer as Secretary.

We were pleased to learn we broke even financially when we hosted the National Conference at Rotorua last year.

Murray Reid rated last seasons' crop at 3.6-4 tonnes per hundred. He discussed the problems he had with the 1080 opossum poisioning programme at Taurmaranui, noted that some beekeepers were not as co-operative as they might be. He also told us about the releasing in the South Island of a tiny wasp which is a parasite of the German and common wasps. In the Waikato the wasp has been a bigger problem than in other years and we have had reports of an up to 50% loss in some apiaries. Hopefully, if the parasite is a success, it can be released in the North Island shortly.

We are concerned that MAF officers are still seizing up to 200 illegal imports of bee products at our airports and if, as some suggest, these seizures are the tip of the iceberg, it shows how vulnerable we are to a serious disease.

We were disappointed to learn that Cliff Van Eaton, Advisory Officer, Whangarei, is leaving MAF and joining a private company in Pukekohe. The industry can ill afford to lose men of Cliff's ability.

An interesting article we discussed estimated that our pine forests produce about 60,000 tonnes of pollen per year. If we could gather this pollen and sell it for $10 per kilo it would be worth a staggering $600 million dollars. A great pity the bees don't like the stuff.

Scientist Mark Goodwin begins working at Ruakura in June where he will study pollination.

Hives are being stolen in the Taupo area and one beekeeper reports that his honey has been stolen.

Ray Robinson

Canterbury

The Canterbury Plains generally enjoyed an above-average season although the honeydew orcas returned poor crops. Hives are light and will require autumn feeding because of a long, dry spell from the end of the honey flow.

We now have the honey in the drums but for the first time in many years there appears to be a surplus and no one wants to buy. However, as the saying goes: "Honey in the drum is as good as money in the bank". Unfortunately it's an investment on a fixed deposit at a poor interest rate. So until the dollar drops in value and exports begin moving we are stuck with a problem.

Planning for Conference '87 is well advanced with lots of exciting things underway, especially the "Honey Week" promotion. That should set the scene for an excellent Canterbury Conference. See you all there.

Richard Bensemann

IMPORTANT NOTICE: TRUST FUNDS

Applications for Trust Funds close with the National Beekeepers' Association of NZ Inc. on 30 September 1987.

The present place of honey in the market place

The results of research by Lincoln and Victoria Universities as analysed by Tactical Marketing Ltd.

* Consumption:
  Frequent consumers tend to be families with school-age children, who eat traditional breakfasts i.e. cereals, bread etc.
  Infrequent consumers tend to have pre-school children or university students.
  Non-Users tend to be 50 + years.
  Consumption of the latter two groups is very much lower than families with children.
  Approximately 88% of households use honey at some time.
  Current average P.A. consumption 8 kg/Household.
  (50% > 6 kg, 38% < 6 kg).

Note: Sales levels will be under threat with the decline in number of children per household, and an aging population in New Zealand, and the trend away from traditional breakfasts.

* Useage:
  Primarily as a spread, competing principally with marmite/vegemite, peanut butter and homemade marmalade.
  There is also a reasonable useage in cooking and to a lesser extent as a sweetener. Consumer confusion exists when using honey as an ingredient in the areas of "how to use" and "what will the taste effect be."

Note: Market Opportunities

* Where Purchased/Packaging:
  Primarily in a supermarket, in 500 gm packs. Consumers are satisfied with current packaging with some preference for glass but not at a price premium exceeding a few cents.
* Purchasing Motivators:
  Brand is inconsequential, it is a totally fragmented market. Honey buying decisions are based on consistency and flavour preferences and appear to be largely traditionally-based. i.e. creamed/clover. The product appears relatively insensitive to price. Clear on-pack information might assist lesser-known brands to sell.
* Product Image:
  Honey has a positive value-for-money health image. Consumers lack knowledge in the areas of calorie content and some concern exists regarding tooth decay.

Preliminary Areas of Potential Increased Consumption

* Reposition or develop a product for;
  a) the 50+ yr group
  b) Couples without children
  c) Health Market
* Develop the cooking ingredient useage.
* Sweetener market, develop granulated honey, free running for use as a drink sweetener and as a cereal sweetener.
* Commercial Market. As a sweetener in processed foods stressing health and naturalness. Pack flag a "Honey-natural pure" symbol for cross-promotion.
* Tourism market. Export and hotel table.
* Compete against the spreads market, promotionally and in-store.

NATIONAL BEEKEEPERS' ASSOCIATION 1987 CONFERENCE

AGM, Conference of Delegates, and NBA Seminar
Christchurch July 14-15-16

Venue: Avon Hotel
356 Oxford Terrace, Christchurch
Telephone (03)791-180

NBA Seminar

am — **"THE IMPORTANCE OF HONEYBEE STOCKS"**
— A discussion of issues

pm — **"CONCEPTS OF MARKETING"**
— Prof. Steve Bridges
Professor of Marketing
Massey University

PROGRAMME

Monday 13	*Social get-together at Avon Hotel 8 pm*
Tuesday 14	*NBA Seminar — Specialty group meetings during evening*
Wednesday 15	***Conference.*** *Dine & Dance Social Evening. Afternoon bus trip for ladies*
Thursday 16	*Conference all day*
Friday 17	***Social Day :*** *Ski Trip or Golf followed by Mid-Winter Christmas Dinner at J. Symes' honey shed*

COST

Social get-together:	*A complimentary cocktail on arrival — courtesy the Avon, thereafter drinks own expense.*
Seminar Registration:	*$10 includes morning and afternoon teas.*
Conference Registration:	*$25 includes morning and afternoon teas and bus trip for ladies.*
Social Evening:	*Single $35 Dinner dance and entertainment — drinks own expense. Double $65 Tickets will be available at the 'get-together' on July 13 and in the mornings before the Seminar and Conference. Please send no money in advance. Cost excludes GST.*

VENUE

Avon Hotel

LOCATION

In a city noted for its charm and beauty, the Avon Hotel enjoys an enviable location ... a prime spot — on the quiet banks of the Avon River, yet only minutes from the hub of our busy city centre.

Within a few minutes driving time visitors will find fine museums and art galleries, a world famous botanical garden, an international sports complex, splendid golf course, sophisticated shops, and theatres . . .

EXTENSIVE FACILITIES

We pride ourselves on our superior and extensive range of guest facilities.

Our lounge, housebar and fully-licensed restaurant are spacious and invitingly comfortable. For your extra enjoyment we have an indoor health and exercise complex comprising heated swimming pool, saunas, and well-equipped gymnasium.

Other hotel services include souvenir shop, same day laundry and dry cleaning, sightseeing, travel and accommodation bookings, on-site car parking and on/off coach loading facilities.

QUALITY ACCOMMODATION

All bedrooms are tastefully decorated with full facilities; well appointed bathroom, colour television, refrigerator, tea/coffee making facility, radio, telephone, mini-bars, central heating. Room service is available.

Book your accommodation now. One room rate $85.00 + GST irrespective of how many in the room. Book directly with hotel, say you're with the NBA.

The NBA Canterbury Branch cordially invites you to attend the 85th Annual NBA Conference. For information please phone
President T.D. Penrose — Telephone Loburn 827 **Secretary** R.D. Bensemann — Telephone Greenpark 831

Hot News from Sydney

By Andrew Matheson
Apicultural Adviser

Aussie beekeepers have a new way of cleaning up after AFB. Instead of burning diseased gear or using a paraffin dipper, beekeepers can have contaminated gear "zapped" in an irradiation chamber.

Gamma rays produced by radioactive cobalt sterilise all *Bacillus larvae*, including spores, so the gear can be reused.

During a study visit to New South Wales last year, MAF apicultural advisers visited an irradiation plant used to treat diseased bee gear. This article outlines how the process is utilised by the beekeepers industry in Australia.

First Use of Radiation

Prior to 1983 in mainland Australia, AFB-infected hives had to be burnt. This is expensive — from July 1980 to 1983 New South Wales alone had 183 AFB outbreaks, involving the destruction of 1,604 hives out of a State total of 300,000.

Paraffin dippers are not commonly used for sterilisation of infected hives in Australia, and salvaging equipment by other means was not permissible.

Gamma radiation was examined as a possible way of treating diseased gear. In 1983 Michael Hornitzky of the NSW Department of Agriculture and Pamela Wills of the Atomic Energy Commission carried out trials and found that a dose of 10 kilograys (1 megarad) was completely effective against AFB spores.

They next looked at treating diseased frames. Infected combs with about 1,000 AFB scales in each were given a 10-kilogray dose of radiation at an atomic research station. Ten single-deck hives were filled with six treated combs and a three-frame nucleus, and left for at least two years. The bees removed the treated AFB scales and expanded their brood areas into irradiated cells. No AFB developed in experimental colonies, but other hives containing untreated diseased frames developed fresh AFB in less than three weeks.

Now they could test irradiation on a commercial scale. With no industrial radiation plant in New South Wales at the time, they used one in Victoria. In all 300 AFB-contaminated hives (1,400 boxes) were shipped from near Tamworth in northern New South Wales. This cost $6,000 for transport (two semi-trailers) and approximately $3,000 for gamma-radiation. The material was worth $32,000, so the savings amounted to $23,000.

In the three years since that trial none of the irradiated hives have developed AFB. What's more they even produced more honey than other hives, probably because *Nosema* and other organisms were sterilised too.

Since those trials thousands of diseased hives have been taken from West Australia and South Australia to Victoria for gamma radiation sterilisation. No AFB has recurred in treated hives.

continued on page 26

The Radiation Plant

Sydney now has its own gamma radiation plant, which the MAF team visited. It's located in an industrial area some 35km west of the city centre and, while its main use is to sterilise medical supplies, it also treats diseased beekeeping equipment from around the State. Ansell Steritech, the firm proposing the plant in Auckland, built the Sydney unit about six months before our visit at a cost of $A4 million.

You might expect this facility to resemble a nuclear power station, but from outside it looks like an ordinary warehouse; as it does inside except for the radiation chamber at one end. That contains the heart of the plant: a radioactive source of cobalt-60.

Entering this radiation chamber is quite a chilling experience. We walked along the corridors lined with two-metre thick concrete walls to the inner chamber where irradiation takes place.

Fortunately for us (and our future children) the radioactive source was lowered several metres into a pool of water, where it glowed with an attractive and somewhat eerie blue.

When the plant is operating this source is lifted up from the water. Crates containding the material for sterilisation are moved by remote control around it to ensure an even dose; rather like rotisserie-cooked chickens moving around an element, though the process takes a lot longer.

Using the Irradiation Process

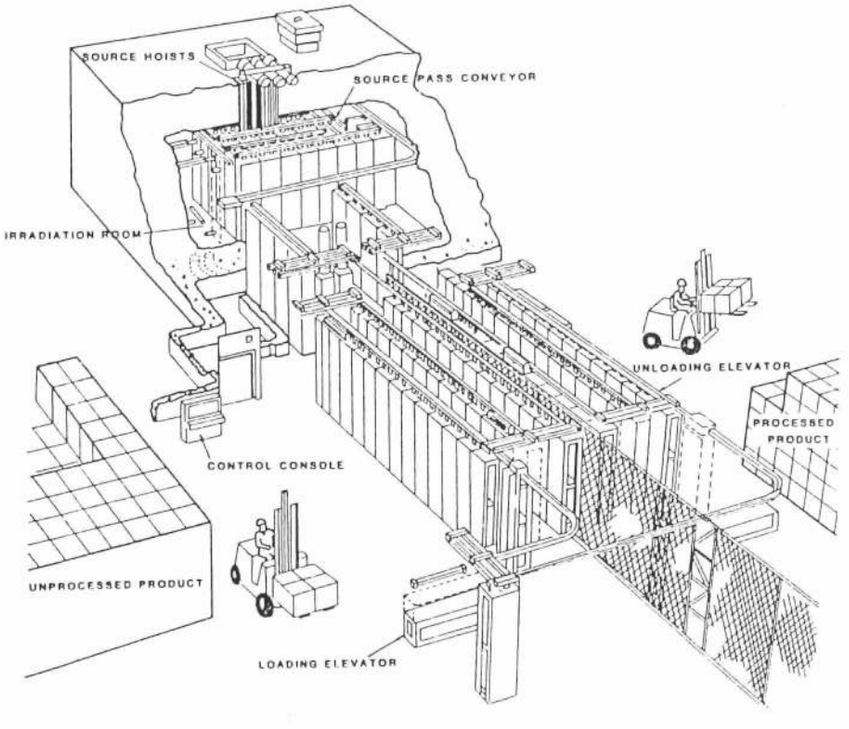
When AFB is confirmed in a beekeeper's apiary, the state apiary officer may, at his discretion, order either destruction or irradiation of the diseased hives. Groups of fewer than five hives not handy to an irradiation plant are usually burnt.

Before hives are irradiated they must be free of honey, brood, and bees. This is because honey froths and expands when irradiated, bursting cappings and escaping from the crate into the radiation chamber where it makes an awful mess in an otherwise clean place. Any brood that is left in the combs later decays, stinking out the hive and the apiary.

A diseased hive for irradiation must first be rendered broodless. If the queen is killed many bees will drift to other hives and spread AFB, so the queen is caged to prevent her laying and she's left in the hive for at least three weeks.

On the next visit the remaining adult bees are killed. The usual method is to dig a trench about the width of a bee box, stun the bees with a mixture of chemicals, put the box over the trench, and knock the bees into it.

Alternatively the bees can be killed with petrol as soon as disease is discovered, and burnt along with all frames containing brood.



Cut-away drawing of a typical gamma radiation plant.

Next the honey must be extracted. The honey is sold only for manufacturing, and the honey house plant cleaned with sodium hydroxide solution after use (or irradiated at government expense if transport to a plant is feasible). If the beekeeper's plant isn't up to standard, the combs containing honey will be burnt.

Hives must be transported to the radiation facility in a bee-proof truck. On arrival the equipment is stored in the warehouse until a place in the processing schedule becomes available.

Material for irradiation passes through the plant in hoppers suspended from an overhead rail, moving into the radiation chamber in a series of steps.

The speed of this process depends on the strength of the gamma radiation source. As the plant had only recently started operation when we visited, the source was relatively small. This meant that material took nearly two days to pass through in a series of 30 steps. As demand for the facility increases, Ansell will upgrade the radiation source and reduce the processing time.

Any increase in temperature during irradiation is slight (2-3°C) and won't damage beeswax. The irradiated hives leave the chamber gradually and are unloaded and stored until they're transported back to the beekeeper.

Beekeepers can immediately restock sterilised hives with bees which will remove the irradiated AFB scales (unlike untreated ones). The reason for this alteration in the scales' consistency isn't known, but presumably some chemical change takes place.

Safety

Two systems are used to check that the hives are being sterilised and the plant is working successfully. Labels which change colour when exposed to the required dose of gamma radiation are attached to the hoppers. Plastic vials containing bacteria are periodically sent through the chamber along with material to be irradiated. They are removed at the exit and sent to a laboratory to be cultured: no growth indicates that the irradiation process is working.

While inside the chamber we found it reassuring to learn that stringent precautions prevent the plant accidentally restarting. There is only one key to start the plant; it is carried (attached to a geiger counter) by the person entering the chamber. As a further precaution warning bells and flashing lights activate when the radioactive source is lifted from its bath.

That's safety at the plant — what about the irradiated material? Firstly, gamma radiation makes nothing

radioactive. The process is more like a giant microwave oven than an atomic bomb. No significant effects have been observed on beekeeping equipment that has been through the plant ten times.

Costs

Irradiation at the Sydney plant costs $A7 per three-storey hive. That is paid by the state government bee diseases' compensation scheme. Beekeepers pay a registration fee every two years of $A10 per beekeeper, plus $A2 per 10 hives. This doesn't fully fund the compensation scheme, but rather it goes into the consolidated fund to offset some of the disease-compensation payouts.

If hives are burnt the government pays compensation equal to two-thirds of their market value. If the hives are irradiated, the government pays the processing fee and the cost of replacement queens, but not for transport or loss of profit. Of course beekeepers who fail to register, get a permit to move, or notify the disease get nothing.

Implications for NZ

So what's in store for New Zealand? That depends to a large extent on those long planning-hearings at Mangere. But if a plant is built, beekeepers will gain some advantages:

- Those within reasonable trucking distance might be able to sterilise diseased gear
- Irradiated pollen can safely be used for feeding to bees, without risk of disease transfer
- Some export opportunities might be opened up, such as nucleus hives on irradiated gear to some countries that now only take packages. Irradiated honey might also be used in queen candy.

A gamma radiation plant is not all good news, though. There would be a much-increased risk of AFB being spread from diseased hives in the field prior to removal, with hives in transit to the plant, with hives in storage at the irradiation plant, and with diseased honey extracted in beekeepers' honey houses. Some bee products not now permitted in New Zealand might possibly be imported if irradiated, such as beeswax, pollen, and royal jelly.

Before any irradiation plant can be used by the beekeeping industry, MAF and the NBA must work out a comprehensive and stringent policy on the procedures to be adopted.

Eyes down, Look in

Brian Milnes, MAF's bee-disease diagnostician will be leaving his base in Auckland on 21 June 1987 for a five-week tour of New Zealand to hold meetings with beekeepers at 25 different places. Beekeepers who wish to attend these meetings should ask their AAOs for times, dates, and places.

At these meetings Mr Milnes will explain how the MAF's Bee Disease Diagnostic Service works and why it is essential that the industry supports it. He also intends to discuss with the various beekeeping-supplies outlets the possibility of their stocking kits containing official specimen jars, instructions for collecting and dispatching adult bee and brood samples, a price list for services, and address labels and special mailing envelopes.

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

Court Case Decision

Judgement has been released by Judge F G Paterson, in an action brought by Keith Bidmead against Andrew Matheson of the Ministry of Agriculture and Fisheries and the Attorney-General. The hearing took place at Westport on 4-5 December 1985, and the judgement was made on 10th February, 1987.

Judge Paterson's decision is:

This claim arises from the destruction by the first defendant of some seven hives belonging to the plaintiff (Mr Bidmead) at the roadside at Berlins near Westport on 11 February, 1980. It is alleged by the plaintiff that in carrying out such destruction by burning the first defendant was negligent in not first digging a hole and then burying the burned remains and surplus honey to ensure no disease escaped or was available to infect raider bees and that in fact seven further hives of the plaintiff previously free of the disease must have been infected by the disease from the unburied remains causing loss for which Mr Bidmead claims $1,540 plus a consequential loss of profit.

A considerable time has been allowed for submissions from both counsel but although the Crown Solicitor for both defendants has furnished helpful submissions, those for Mr Bidmead have not been received although promised from time to time to the registrar upon enquiry. Today on the application of defendants' counsel I have agreed to proceed to judgement and will not allow further time for promised submissions to be received.

However, I do not expect this to disadvantage Mr Bidmead who at all times I find to have been an inefficient and intermittent bee farmer whose hives have been diseased for some time with American foulbrood disease, and his lack of attention to the eradication of that disease or, indeed, reporting its existence to the defendants has been a cause of much concern to them in the interests of the beekeeping industry. His endeavours have been ineffective and half-hearted and that led the first defendant (Mr Matheson) to destroy the seven hives concerned on 11 February, 1980.

The terrain made it difficult for the first defendant to dig as deep a hole as he should have and time did not permit him to complete the task by fully covering all remains so that there was some residue, particularly of escaped honey, which could permit further spread of the disease. However, the plaintiff had a neighbour, Mr Calder, keeping a watch on the property durings his absence and he and Mrs Calder came to the scene as soon as they saw the fire. I am satisfied that despite his denial Mr Calder was asked to take over and cover the remnants of the burning and he agreed to do so, thus enabling the first defendant to visit other areas that day. It did amount, however, to some negligence on the part of the first defendant who as a qualified apiaries inspector should have ensured that the task he had undertaken of necessity was completed properly.

But that finding goes nowhere near supporting a finding for damages in the result. I do not accept that there was, on the balance of probabilities, a resulting infection of other disease-free hives of the plaintiff. I am satisfied that it was more likely that this was just an extension of the disease-ridden beekeeping which had been a concern about Mr Bidmead for some long time. The claim therefore fails and there is judgement for the defendants with costs, disbursements and witnesses' expenses to be fixed by the registrar.

Library Notes

Keep your catalogue up-to-date.

New books.

Donated by author RON BROWN "Beekeeping a seasonal Guide". Mr Brown left this book for review while visiting this country. A great book indeed, both as to content as well as appearance. Hard cloth back, attractive dust jacket, good quality paper, clear b/w photos and diagrams. It systematically covers all seasonal activities: health, queen raising, industry addresses, conversion tables, etc. Aimed at the full range of beekeepers. No doubt a first-class manual but of course written for the Northern Hemisphere. Still you won't regret the trouble and time involved in borrowing and reading it. 1985, 192p, UK.

Purchased:

At least the little classic by Brother Adam: "Beekeeping at Buckfast Abbey". Written by one of the best known British Beekeeping personalities. Hard back, b/w photos and ... 9 pages devoted to the art of making mead! If you have not read this one it is here for the lending. Just ask for it. 1977 (reprint), 86p, UK.

From Mr. Dawson's boxes:

Hort. Education Association "The Pollination of Fruit Crops". 1967, 68p, UK. Philips E.F. "The Structure and Development of the Compound Eye of the Honey Bee". 1905, 42p, US.

Pritchard M.T. "Modern Queen Rearing". 1916, 24p, US.

Frankland A.W. "Treatment of Bee Sting Reactions" IBRA M37, 1963, 4p, UK.

Dade H.A. "The Flight of the Honey Bee" IBRA M35, 1962, 9p. UK.

Smith F.G. "Beekeeping in the Tropics" IBRA R11, 1953, 13p, Tanganyika.

Crane E. "A Beekeeping Visit to the Soviet Union" IBRAM 38, 1963, 26p, UK.

Cook V. "Facts about Beekeeping in New Zealand" IBRA M49, 1967, 12p, NZ.

Morgan P. & Percival M. "The Rearing and Management of Bumble Bees for students of Biology" IBRA M48, 1967, 61p, UK.

Thawley A.R. "The Components of Honey and their effects on its properties" IBRA R33, 1969, 19p, NZ.

As mentioned before we received a substantial collection of papers, pamphlets, articles and clippings from Mr Dawson. It turns out that we are faced with some 500-odd entries for the catalogue and in no way can these be listed in this column. A supplement to the catalogue is the answer and will be available in due course.

We are working on it, but it will take time.

SORRY FOLKS and now the bad news:

Costs are catching up with the Library. Please alter the rules in the catalogue as follows:

FIRST REQUEST TO BE ACCOMPANIED BY a minimum $5 to cover postage and loan fees. (credit balance held for your future use).

LOAN FEES: Books 50¢ ea. Magazines parcel up to 1kg. 50¢, up to 3kg. $1.50. Papers, pamphlets, small booklets 10¢ ea.

LONG-TERM LOAN: (pre arranged) reference books $2 ea.

You will be charged for reminders for every overdue books and for any replacements in the case of loss. Please take care. Our books are very expensive.

John Heineman
Hon. Librarian

The value of honey bees to New Zealand

By Andrew Matheson, Apicultural Adviser

How much is beekeeping worth to this country? We all "know" that other people benefit from our industry much more than beekeepers. Pollination, it is usually claimed, is worth many times the value of bee products sold.

But how much is pollination worth? How much of our horticultural production are bees responsible for? What about the clover that bees pollinate — what is that worth to our pastoral industries?

In response to a request from the NBA executive I, with Mark Schrader's help, recently tried to calculate how much beekeeping contributed to New Zealand's economy. Because production figures are difficult to find for many commodities, I've used export figures in most cases.

Horticulture

The crops listed below rely on honeybee pollination to produce commercial crops. Sure, other pollination agents are involved but without managed honey bees production is probably not economically viable.

Crop	Annual export value ($ million f.o.b.)
Kiwifruit	$295
Applies and pears	$117
Berryfruit (fresh and frozen	$ 34
Stonefruit	$ 5
Citrus	$ 3
Miscellaneous sub-tropicals	$ 1
	$455

These figures include fresh and some frozen fruit exports, but don't include the value of further-processed products such as juices or canned fruit.

Vegetable and seed crops

Squash is the most important vegetable which needs pollination, and last year $36 million-worth of this crop was exported. Many other vegetables don't need pollination, but grow from seeds for which pollination is necessary. Much of this seed is imported to New Zealand — except onion seed — so I've included only the value of our onion exports in this category: some $8 million annually.

Most vegetable seed crops require pollination ($1 million per year exported), and honey bees contribute to the production of at least $9 million worth of clover seed annually.

Total for vegetables and seed crops: $54 million per year.

Pasture legumes

So far this calculation has been relatively easy, but it's more difficult attempting to estimate what our pasture legumes are worth in the way of nitrogen-fixing.

Although clovers are perennial, seeding is still necessary to maintain an adequate seed reservoir to sustain the clover content in pasture, particularly in harsh environments where winter kill is significant.

It is estimated that clovers fix an average of 185 kg/ha of nitrogen per year in New Zealand pastures. Using this figure an estimate can be made of the replacement cost to farming, if this nitrogen had to be applied artificially.

Area of improved pasture in New Zealand	9.4 million ha
N-fixation by clovers (average)	185 kg/ha/yr
Total nitrogen fixing	1.74 million tonnes/yr
Urea equivalent (46% N)	3.78 million tonnes/yr
Cost to apply urea	
urea $416/tonne	
freight $16/tonne	
application $30/tonne	
total cost $462/tonne	
Total replacement cost of nitrogen	$1,746 million/yr.

Wow! It's obvious that honey bees are most important to New Zealand because they pollinate the legumes on which our pastoral systems depend.

Bees and bee products

How does pollination-value stack up against the direct income from honey, queens, wax, and the like? Well, we've run up a "credit" of $2,255 million per year so far, and it's obvious that beekeeping won't come anywhere near that.

A United States researcher called McGregor came up with a ratio of 100:1, that is pollination being worth 100 times as much as beekeeping's direct products. A more recent analysis by Marshall Levin, also of the US, calculated a figure of 143:1.

How much does beekeeping generate in direct income in New Zealand? Again taking fairly conservative figures:

Honey: average 9,100 tonnes per year at $2,005/tonne f.o.b. = $18,245,000 per year

Wax surplus to the industry's requirements: average of 154 tonnes per year at $4,900/tonne = $754,000.

Bees: In 1985-86 export of live bees totalled nearly $0.7 million f.o.b. This was made up of 16,480 1 kg — equivalent packages and an additional 25,700 queen bees.

So the total value of bees, honey, and beeswax averages approximately $19.7 million per year. The pollination benefits are 113 times as much as the value of bees and bee products.

That's a pretty impressive figure. How much do beekeepers collect in pollination fees? Last year, according to MAF figures, 89,760 colonies were hired out for pollination, for a total of $6.1 million in fees. Over 80,000 hives went to kiwifruit alone.

Honey bees provide a vital pollination service to New Zealand agriculture and horticulture. That has been the main justification for much of the support provided by government agencies to the beekeeping industry. It is recognised that an adequate population of honey-bee pollinators can only be maintained in the context of a thriving beekeeping industry. Of course, the industry's tangible products (honey and beeswax) are worth only a fraction of the value of the pollination services provided.

BAKED HAM

1 ham
1 cup honey
cloves

• Select a good quality ham. Wipe meat with a damp cloth and remove unsightly parts. Place ham fat side up in roasting pan. Add no water. Bake uncovered in slow oven (300° F.). Insert a meat thermometer with the bulb at the center of the largest muscle. Cook until the thermometer registers an internal temperature of 170° F. 25 to 30 minutes per pound should be allowed for roasting time. Before the ham is done, take from the oven and remove the rind, Mark fat into squares. Place whole glove in each square. Pour a honey glaze over ham. Return to oven to finish baking. Baste frequently.

Value for money in research

By Pat Clinch

This year the Apiculture Research Section at Wallaceville will close.

The Section was formed in 1944 under Trevor Palmer-Jones. Because of his pioneering research into the effects of pesticides on honey bees, it soon became world renowned as the Wallaceville Bee Laboratory and in 1965 employed two scientists, a technical officer and a technician. However, as the Section was funded almost entirely by the MAF with a little support only from the Kiwifruit Authority, the grounds of financial restrictions were used to halve the staff when Trevor retired in 1975. Nevertheless, the Section remained prominent because of its research into kiwifruit pollination.

The MAF intends to form a new Apiculture Research Section at the Ruakura Agricultural Research Centre, Hamilton. Funded partly by the NBA and partly by the Kiwifruit Authority, the time allotted to honey bee and kiwifruit research will relate to the percentage contributions of these organisations. Research is expensive, and a few years ago it was estimated that to employ a scientist and a technician, plus overheads (buildings, power, vehicles, etc.) cost over $100,000 per year. Thus the NBA share of $10,000 must be considered a bargain.

The Wallaceville Section covered virtually the whole field of apicultural research. Some of its projects were: effects of pesticide applications (testing insecticides, fungicides, and weedkillers on honey bees in the laboratory and field), toxic honey, toxic nectar, pollination of crops, bee disease diagnosis and monitoring, mites in colonies and their control, sugar feeding and preservation, effect on honey bees of wood treated with preservatives, pollen supplements, and pollen identification.

Because of this wide field, it was almost impossible for staff to specialise and because there will always be the need for a Section capable of carrying out such a wide range of work, it might in future be financed by "user-pays", as are disease diagnosis and pesticide residue analysis.

However, the Beekeeping Industry is not rich, and with limited resources, the most prudent use of money may be to fund only top-class specialists on short-term contracts to carry out specific investigations. The NBA does just that with Dr Denis Anderson at the DSIR in Auckland: his survey of bee diseases is proving invaluable. Dr Cam Jay too, a specialist in bee orientation, funded for eight months by the Kiwifruit Authority, made a valuable contribution to our knowledge of kiwifruit pollination. Perhaps, to overcome problems with the export of queens and packages, or to direct bee-breeding to produce strains of queen bee suitable for the different overseas markets, the employment of a top-class specialist might achieve in months what otherwise may take years.

LAMB CHOPS WITH HONEY-MINT SAUCE

• Select rib, loin or shoulder lamb chops. Set the regulator of the range for broiling. Place the chops so that there is a distance of about three inches between the top of the chops and the source of heat. If the distance must be less, reduce the temperature accordingly so that the chops will broil at a moderate temperature. When the chops are browned on one side, season, turn and finish the cooking on the second side. Frequently during broiling, baste with honey-mint sauce. Chops cut 1-inch thick require 12 to 15 minutes for broiling.

They don't sting me!

By Dudly Lorimer

The genuine interest and curiosity of people when shown a hive of bees never ceases to amaze me.

Of course, if the hive is demonstrated properly, and the "rubbernecks" wear proper protective clothing, it gives us good public relations. But what does one do with the person who ignores all warnings and merely strolls over to watch us working hives?

Some 40 years ago I remember such an incident. It had an amusing and somewhat bizarre ending which seems worth relating.

I was re-queening an apiary with particularly stroppy bees when I heard a tractor manoeuvering a set of chain harrows through the gate into the paddock where I worked. I immediately stopped to let it get clear before I continued but, being curious, the young farmhand driving, stopped, left the tractor idling, and wandered over to see what I was doing.

I warned him several times of the danger but he ignored my warnings, and leaned on a post to watch me, seemingly oblivious to the threat from the bees swarming about him.

"Bees don't sting me", he nonchalantly advised several times, chatting on idly for a full ten minutes while I continued working and took a proper pasting.

I gradually came to the conclusion that perhaps he was right. — particularly since his clothing consisted of no more than a pair of shorts, a singlet, and gum boots — when I suddenly realised that his flow of verbage had suddenly ceased. I glanced up curiously to see him standing, bolt upright, clutching his shorts with one hand, his mouth wide open and a glazed expression freezing his face.

Suddenly he leapt upwards, his legs flailing the air and, still clutching his shorts, took off for his tractor at the "high port".

I've seen plenty of rally driving, but never with a farm tractor towing harrows, its driver threshing the air and grabbing the wheel only at intervals.

By the time he reached the gate the harrows were almost airborne and he needed a miracle to negotiate it.

With no miracles on special that week he hit the strainer post with such force that it sheared off at the base and became embedded in his cross bar, stripping some fifty yards of fence which wrapped around the tractor, stalling it.

I rushed over to see what I could do but by the time I reached the tractor the driver had disappeared over the horizon travelling at a rate of knots and still clutching his shorts.

For the moment there ended the story, but some three months later, while chatting to the farmer, I asked how his farm hand was. The farmer handed me an enigmatic look.

"Odd you should ask," he grinned. "He used to drive me bonkers with his constant chatter, but about three months ago he suddenly matured or something." The farmer scratched the side of his face thoughtfully, stared into the distance. "Seems like something traumatic happened. Must be something to do with a certain paddock because no way can I get him near it."

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