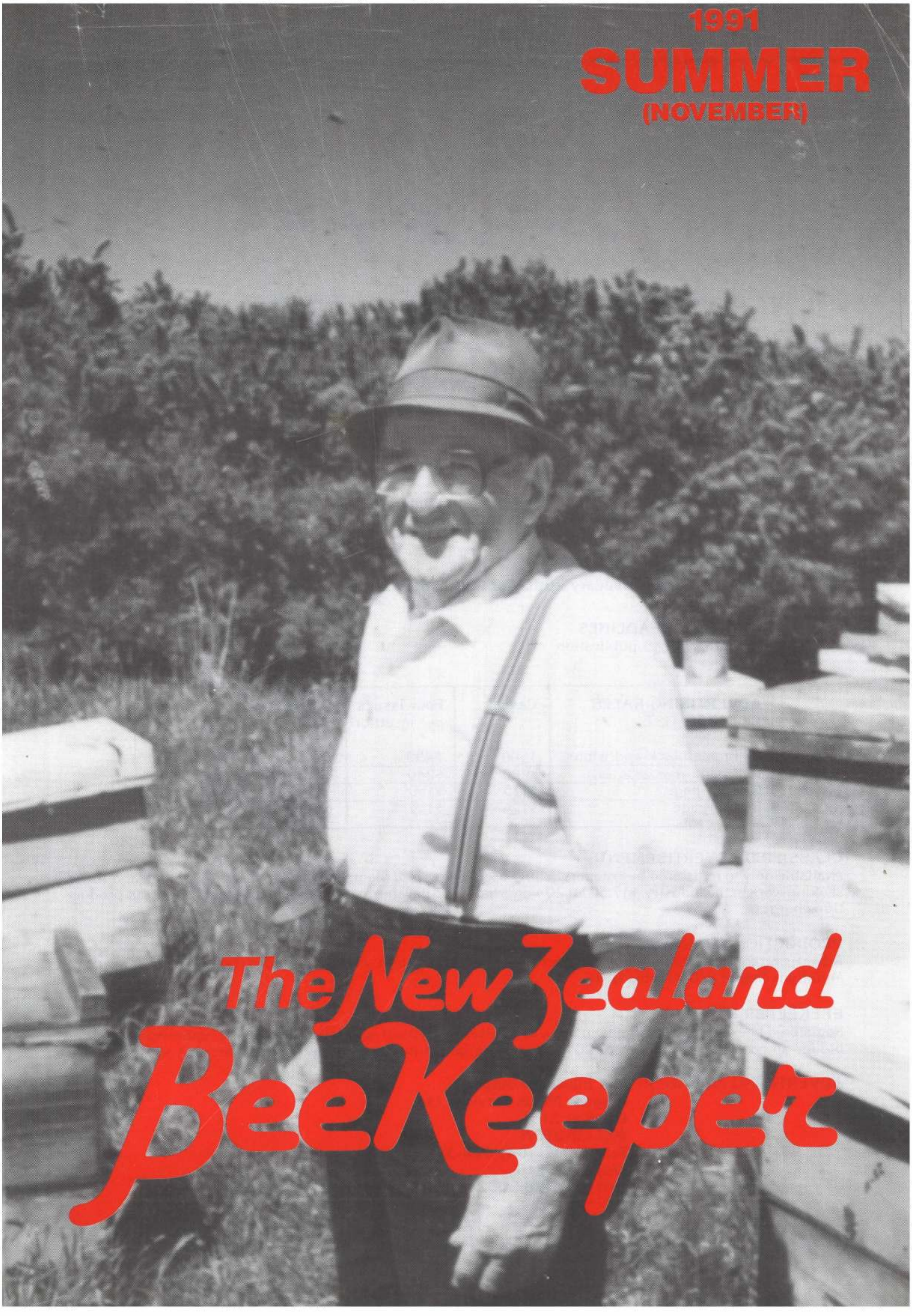
1991

SUMMER

(NOVEMBER)



The New Zealand BeeKeeper

The New Zealand BeeKeeper

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

CIRCULATION, 1,550...
To Members of The National Beekeepers' Association of NZ Inc. who own more than 50 hives each and so are legally subject to the annual hive levy. **THESE HIVE-LEVY PAYERS OWN APPROXIMATELY 87% OF ALL BEEHIVES IN NEW ZEALAND.**

To Beekeepers with less than 50 hives who subscribe to the journal at $33.75 a year (incl. GST) which also includes membership of the National Beekeepers' Association of NZ Inc.

PUBLISHED
Four times a year: **Autumn** (February 14), **Winter** (May 14)
Spring (August 14), **Summer** (November 14)

ADVERTISING DEADLINES
(Booking & Copy) **January 20th, April 20th, July 20th, October 20th**

EDITORIAL DEADLINES
1 month prior to publication.

ADVERTISING RATES Plus 12.5% GST.	Casual	Four Issues per insertion	Image Area
Full page black and white	$500	$450	27cm deep x 18cm wide
Half page (Horizontal only)	$280	$240	13cm deep x 18cm wide
Quarter page	$175	$150	13cm deep x 9cm wide
Eighth page	$125	$115	6.5cm deep x 8.5cm wide

CLASSIFIED ADVERTISEMENTS
Available only to registered beekeepers selling used hives, used plant, and other apiary equipment, and those seeking work in the industry. $17.50 for 20 words Incl. GST payable in advance. No discounts apply. No production charges.

PRODUCTION CHARGES
Advertising copy: Bromides. Copy for which bromides are required, will be charged to the advertiser at net cost. Minimum charge $20.00 (plus GST).

BEEKEEPER RATES
Registered beekeepers selling queen bees, used hives, used plant, and other used apiary equipment are eligible for an advertising discount of 20%. Where the rate is in doubt the publishers' decision will be final.

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Burgess Media Services Ltd
P.O. Box 2131
WELLINGTON
Telephone: (04) 478-3062 or
(04) 478-9316
Fax: (04) 478-3062

1SSN 0110-6325
SUMMER 1991
No. 212

The New Zealand BeeKeeper

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Diogenes Designs Ltd

FRONT COVER: The late Peter Herbert Barber (see obituary page 11). Photo courtesy Mrs Dian C. Squires.

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The New Zealand Beekeeper is published by the National Beekeepers' Association of NZ Inc., Dalmuir House, The Terrace, P.O. Box 4048, Wellington. Telephone (04) 472-8102.

Annual subscriptions available from the above address are: New Zealand $30.00 (plus GST). Overseas airmail: Australia & S. Pacific $US19.00; N. America & Asia $US24.00; S. America, Europe, & Middle East $US28.00. All overseas surface $US16.00. Payment by bank draft or cheque only.

Editor: Michael Burgess. Advertising Manager: Elisabeth Burgess. Burgess Media Services Ltd., P.O. Box 2131, Wellington. Telephone (04) 478-3062, (04) 478-9316, Fax (04) 478-3062. Letters, photographs, articles should be sent to the editor. Payment for articles and photographs published is at the editor's discretion. For advertising rates see page two.

KNOCKERS

By Anon.

The notice said to come along to a field day; it listed the topics to be covered. Very nice, a little bit of this and that to stimulate the imagination. I am always on the lookout for new ideas and methods so this should be a fun day. When we reached the venue, the sessions had already started, so I joined the one on queen rearing, a subject I have little experience with, but in which I am interested.

As the talk progressed, it became evident that some of the audience were well versed in the subject. Interesting information began to flow and the more obscure points raised taught me a thing or two. That was until the subject turned to woodwork. Then it appeared that the smart 'Harry' in the second row was not at all interested in listening to the explanation given for utilising a combination queen-rearing box. He rubbished the idea. It would never work. The bees would fail to accept the commomality of the top box, and with three separate queens each with their distinctive pheromones the confusion amongst the bees could only lead to massive fighting and destruction of the nucleii. He knew without the slightest shadow of doubt that each nucleus must be self-contained to achieve success. Naturally the beekeeper lecturer tried to explain that this idea was not new, that it had been around for some time, and that in trials they had undertaken the success rate was 100%.

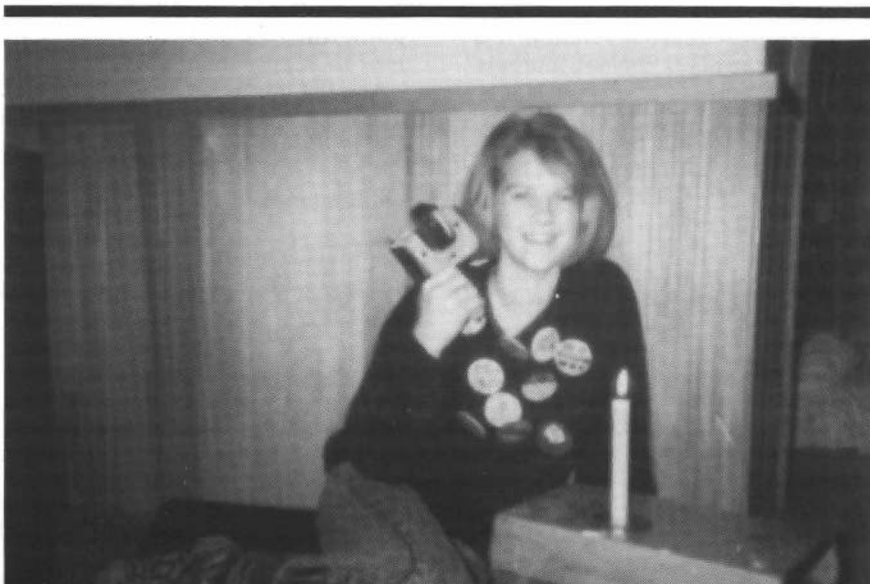
This still did not convince 'Harry', and he continued to argue that the method could not work. Fortunately the presenter kept his cool, saw he was getting nowhere and bluntly shifted the subject matter to the provision of food supplies for the nucleii. So far so good. We learnt that the provision of pollen patties resulted in the average size of the queens produced being larger than without this provision. By inference, the larger queen size meant that the useful life and egg laying capacity, the overall stamina of the queen, would result in a more productive hive. "Not so" argued 'Harry'. He had raised queens that were smaller than those he had originally purchased when he started in beekeeping. They had gone on to produce some of the most productive hives he had ever had. Size was irrelevant. So was colouration. He had been around long enough to know what he was talking about.

At this point I expected the lecturer/beekeeper to step down from the rostrum and hand over his chalk to 'Harry'. Instead he continued with his talk, but without asking for questions. Suddenly, with an explosive roar, 'Harry' launched forth into a diatribe which, when translated, inferred that all research into queen rearing had hit stalemate years ago, and that anyone thinking he could come up with ideas that could add anything significant to the subject was wasting his time. He knew, because he had researched the subject, and knew all there was to know about it. Sitting there, listening to newfangled notions was, to his way of thinking, a waste of time. So saying, he hauled his bulk from the chair and clumped off to the doorway at the rear of the hall.

Silence reigned for a prolonged period, then a voice from the middle of the hall said in a stage whisper: 'Thank you, Lord, for we are blessed with his absence'. The guffaws which followed relaxed everybody, including the lecturer, the the discussion continued, now without interruption. At the conclusion of the talk the usual vote of thanks was given, followed by a special vote of thanks for the ability of the lecturer to keep his cool.

With members like 'Harry', your club life is never dull, but letting him, or her, subject a visiting lecturer to harassment is unpardonable. The majority of speakers have gone to a considerable amount of trouble and time they could have profitably used elsewhere to prepare and give a talk to your club. To arrive and be abused is bound to cause resentment. Before long the word will be round to avoid your club like the plague. This restricts information into your club and hence, a poorly informed membership, and the cause is easy to remedy. These 'Harry's' should be taken aside and told, bluntly just what they are doing. Sure, you may lose them as members, but in the end what has the club lost? With the club back on the visiting-speaker list, the gains in information will more than outweigh losing your 'Harry'.

It is uncomfortable to sit alongside 'Harry' at a talk or discussion session, as your concentration on the subject is continuously broken. Under these conditions the amount of learning is minimal, the visiting speaker is demoralised and will fail to give of his or her best. So sort out your houses, your membership, and your ideas in the future running of your club. Failure to do so may result in the death by strangulation of the entity called "Our Club", all because of one or two people.



Neisha Moffitt, badge maker extraordinary. Neisha, aged 13, burned the midnight oil before Conference to punch out 120 plus badges for participants. This picture was taken before she had to make a padded glove to protect a blister. She went to school next day with eyes like road maps and a hand that did not want to write.

LETTERS

Dear Sir,

We often say at IBRA that our library is the world's most comprehensive collection of material about bees and beekeeping.

That's a fairly loose statement, but two recent incidents brought home to me how true it is.

First of all we had a scientist visit who is a world expert in his field, and who is preparing a book on his particular subject. He thought he'd already got all the references he needed, but after a couple of days in the library was amazed at the extra material he'd discovered.

The second lesson was a more personal one for me. I've prepared a couple of long articles since I arrived here, and what a joy it is to work with such an Aladdin's Cave of information only a flight of stairs away. Almost any reference I wanted was easily found.

It's amazing that this library is operated by only two people: one full time and one part time. All the material in it has been donated, and the running costs are borne by the financial support of IBRA members and customers for our information services.

Because our library is run on such a shoestring budget, I'm writing to ask for some help from New Zealand beekeepers in three areas. Firstly I wonder if we can get some back copies of New Zealand beekeeping journals. One of the articles I've written recently is a review of New Zealand beekeeping (being published in two issues of *Bee World*). I noticed when researching some historical questions that we're a bit light on early New Zealand journals. We have:

* All issues of the *New Zealand Beekeeper* since it began in 1939.
* *The Apiarist* from number 1 (1978) to number 59 (1988), but missing numbers 2 and 3.
* Two issues of the *New Zealand Beekeepers' Journal:* 2(11) November 1918 and 2(12) December 1918.
* Two small producer journals: a complete set of the *New Zealand Honeybee* 1937-1939 (Percy Hillary), and a set of the *New Zealand Honey Producer* 1929-1930 (WB Bray) which is missing volume 1 number 7.
* *The Apiarist* (incorporated in the *The New Zealand Smallholder)* 1927-1937, 9(11)-19(5), with the exception of these issues: vol 12 no 2, 4, 11; vol 13(9); vol 14 no 1, 12; vol 15(7); vol 16(12); vol 17 no 10, 12; vol 18(6).

Does anyone have any missing copies or issues of other journals they could donate to IBRA's library? We'd be particularly interested in:

* Hopkin's *Australasian Bee Journal* 1887-1890
* the *New Zealand and Australasian Bee Journal* 1883-1885
* the *New Zealand Bee Journal* 1914-1922
* the *New Zealand Farmer, Bee and Poultry Journal* (yes, really!) 1885-1901.

In case we're overwhelmed with support, I've come up with a scheme to avoid duplication. If you give us any of the material mentioned, or any other journals we don't know about, contact John Heinemann at the NBA library: PO Box 112, Milton, Otago (phone (03) 417 7198 or 417 7197 (home). He'll keep a list of what has been sent - if you're first out of the starting blocks with a particular journal you can post it to us and John will make a record of its despatch. If the same issues have already been sent, John might be able to suggest another home for them.

Now the second request for assistance goes to scientists. Our collection of reprints, 32 000 at last count and still growing, has been built up by authors' donations. When you have a paper published, we'd be grateful if you could send us a reprint. This also has the benefit of ensuring that your work is reported in our journal *Apicultural Abstracts* as quickly as possible.

I know that reprint budgets are getting tighter these days, but if you could spare five copies of each paper we can make use of them. As a service to world beekeeping we maintain four IBRA branch libraries in Asia, Africa and South America, and extra reprints are used to supply them.

And the final word goes to beekeepers. What benefits do you get from IBRA's library services? It might surprise you to know that you've been getting use out of the library for years. I know that when I was writing extension articles for this magazine I used IBRA journals quite a lot - especially *Apicultural Abstracts* which surveys all the world's literature on bees and beekeeping - and scientists and other advisors so the same. So behind those technical and research articles you appreciate is the help from the world's best beekeeping information service.

Progressive beekeepers who spend about one pollination fee a year on IBRA membership know they are supporting IBRA's information service. Part of it is the library, and another part if our free advisory service to beekeepers in developing countries (who usually have few information resources, and no overseas funds to buy more).

Members also get discounts on publications and information searches, and a free subscription to the quarterly journal *Bee World*. With two articles coming up on New Zealand beekeeping that's an offer too good to refuse!

So there's a three-part request for help. Dig out these old journals you've had in the back of the honey house since the year dot. Scientists, how about putting us on the mailing list for your reprints? And we'd greatly appreciate support from any beekeepers who want to look over the fence and see what's happening in the rest of the world.

Our address is 18 North Road, Cardiff CF1 3DY, United Kingdom, and our two voluntary representatives for New Zealand are listed in the classifieds at the back of this journal. They can send you more information on membership.

Andrew Matheson

A Blenheim sheep getting into the beekeeping industry. From Oliver M. Vercoe, Blenheim.

Kiwifruit Pollination: A Synthesis of Four Year's Endeavour

By Trevor Bryant

INTRODUCTION:

To succeed as a grower of kiwifruit, one is required to produce volumes of quality fruit and ensure the result is achieved consistently and within budget if returns are to maximised.

Pollination is a key component in the management equation to achieving the production goal and is a significant contributor to orchard profitability, as it determines the volume of fruit and average count size.

Pollination has, in the past, also been identified as a limiting factor to producing sustainable and consistent yields. With the technological advances over the past decade now available to growers and service agents, it need no longer be an inhibitor to consistent sustainable yields. The use of Hi-Cane will assist in maintaining fruitfulness on an annual basis and artificial pollination can assist honeybees to ensure that flowers are pollinated every year, regardless of weather.

Honeybees provide the most cost-effective pollination system, but my experience indicates that up to 40% of orchards will benefit financially from the combined inputs of honeybees and artificial pollination. The advent of returns based on fruit size enables growers and pollinators to put a price on pollination and determine the benefits of expenditure in this key area. To eliminate pollination as a limiting factor to producing higher yields, growers must provide the right ingredients: essentially, these are light, (also important in all aspects of growing), pollen - there must be good males, well-managed, well-distributed throughout the crop, the male flowering must be in syncronisation with the females and the males must produce copious volumes of quality pollen. The crop must be sheltered but not at the expense of light and there must be an effective transfer agent to ensure that the pollen is deposited on all flowers. Of critical importance is the concept that pollen is a primary resource to be moved about the flowering canopy and can be explained thus: (Fig. 1)

Pollination, by definition, is the transfer of pollen to the female flower by bees, man (artificial technology), wind, water and other insects. To the orchardist, the beekeeper or service agent, this definition requires elaboration. Pollination as I perceive it, is the utilisation of the resource which determines the volume of fruit produced and the size of that fruit. To undertake the above, it is necessary therefore to measure the volume of the resource, its quality and to put in place systems to ensure that each flower receives sufficient pollen to maximise the seed production within the fruit.

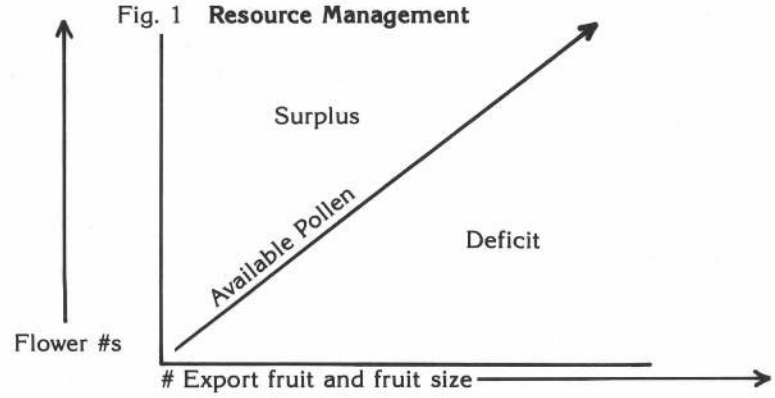
With the concept of pollination understood and the definition in place, programmes can now be designed which will enable growers to achieve their goals and objectives, but these must, of necessity, be flexible, as no single strategy is perfect nor immune to weather. Management practices must therefore be flexible and take into account what has/may occur. An integrated management strategy for maximising yield is therefore essential if the real potential of the crop is to be realised. The basic parameters must therefore be known and various strategies and options established to realise the potential, as the real decision maker is often the weather; it is beyond our control and therefore a major limiting factor, although its impact can be minimised.

The design of a pollination strategy requires a co-operative effort by the grower and the pollinator. Such a programme will consider:

1. The production goals of the grower
2. Number of winter buds - potential flower load
3. Potential export fruit (Target 66% flowers to export fruit)
4. Male vine status
5. Available pollen load
6. Quality of pollen resource
7. Distribution of pollen resource

All these factors determine the number of bees, the distribution of hives in the orchard, and the need for artificial pollination as back-up. They also indi-

Fig. 1 **Resource Management**



cate the $ required to pollinate the crop and the risk factor. Of secondary consideration are other likely pollination strategies which may be influenced by weather, budget and risk considerations, opportunities to increase profitability, and also here, future strategies for management. Overriding all this, is the need to be totally flexible and not dictated to by preconceived ideas or what has gone in the past.

FLEXIBILITY:

Being flexible is to a large extent "seat of the pants" driving with several well thought out options to counter any given situation.

The basic parameters are known but the decision maker is out of our control, i.e. the weather. (Fig. 2)

For the grower and the client, it may mean a combination of the following:

For the orchard:

1. Where flowering is drawn out, perhaps using less hives but increasing a sugar feeding programme
2. Which flowers extremely heavily and compactly, increasing the hive numbers
3. Hit severely by rain during flowering, artificial pollination may be a necessity
4. Hi-Caned and where sequential flowering occurs, it may be possible to use 20% to 50% less hives, but by the same token, be prepared to put in the full quota
5. For most orchards, it will mean making a substantial investment in a total pollination package to produce volumes of fruit in the preferred market sizes.
6. The result, where things go exactly to plan, carrying out the programme as designed, achieving the crop that was targeted and the fruit size realising its real potential and the final cost of pollination being 50% - 75% less than budgeted.
7. Where inputs are low and things go awry, the real cost of pollination may exceed 50 cents a tray from a yield as low as 45 fruit per 100 flowers (or even less).

Fig. 2

POLLINATION MANAGEMENT:

The Orchard Management

* Light & shelter
* Males
  - good distribution
  - 10% male canopy
  - high producers
  - quality product
  - syncrhonised with female
  - well-managed to retain vigour, pollen production
* Reduction of competing sources
* Management of crop prior, during and after flowering
* Floret and/or fruit thinning

The Hive Management

* Consultation with beekeeper
* Hive preparation to specific recommended standard
* Introduction to crop viz. 5% female bloom
* Placement of hives for maximum bee density/activity
* Internal sugar feeding

Bee numbers based on flower load
(3 per 1000 flowers)

Adequate seed numbers per fruit

Good bee foraging on minimum of 50% of flowering days

Alternative options if weather or reduction in pollen resource will/may limit yield

Quality Control

1. Contract with Beekeeper
2. Assessment of male pollen quality = maximum yield, fruit size & quality
3. Hive strength or bee visitation (monitored)

(after G. Wilson)

A POLLINATION STRATEGY:

When assessing a pollen resource and its utilisation, the most important criteria are established by the grower: pollen volume and quality is set according to the male plant and the management of that male as is the male distribution throughout the orchard.

Male vine distribution determines the distance the pollen must be moved by bees or other insects. Light in the canopy, competition from other floral sources, shading, all assist in establishing hive distribution and feeding regimes. The scheduling of introduction of bees into the orchard is influenced by the market and the use of Hi-Cane. With the emphasis on larger fruits, it is important that bees be introduced into non Hi-Cane treated orchards at 5% female bloom, as in my view it is the earlier flowers that where properly pollinated will produce fruit in the 25-33 count range. Experience over three years has borne this out.

In Hi-Cane treated crops, bees must be introduced as soon as the female flowers start opening: bee numbers need to be carefully considered and the total canopy of the flowers available to the bees known. An example of this was in 1989 when it was observed that in blocks where blooming commenced early, bee numbers in the female canopy were very low and it was our observation that this occurred because the total male canopy available throughout the orchard and other orchards in the immediate vicinity was much greater than that which bees could reasonably populate. Thus, for early treatments, greater bee numbers should be considered and the numbers can then be reduced in sequential flowering blocks.

In the past, it has been recommended that eight hives per hectare be used to set a commercial crop. It is now believed by many researchers, growers and pollinators that this is inadequate and most of us now estimate bee numbers as hives per number of trays, this number being determined by the number of flowers, the distribution of pollen, the density of the flowers and the limiting factors within the orchard and surrounding area. A further element that must be considered and overrides all these is the limiting factor often determined by a reduced volume and quality of pollen. (Fig.3)

A comprehensive literature review, personal communication with researchers and growers and my 10 years experience, suggest to me that at least 4.5 kilograms pollen per hectare are required if good honeybee pollination is to be effected, where crops of more than 6000 trays/ha. are projected. If pollen has a germination of less than 80%, greater volumes are required to be transferred to achieve a result comparable to pollen with a higher germination and more bees will be required to transfer that resource. An examination of the male vine and management will provide an assessment as to quality and volume: in general terms, the more mature the buds, the greater the volume of pollen and the greater the percentage of germination.

Bee density in orchards can therefore range from 1 beehive per 500 trays anticipated yield to one beehive per 1200 trays. It generally follows, in my experience, that the greater the number of bees required to transfer the pollen, the greater the risk to realising the target crop. Furthermore, the more bees required may have an opposite effect to that desired, for example if pollen volumes are low, the pollen will be spread thinner and the resulting yield will be low with the count size in the high end of the range, i.e. in the 42-46 range. Growers and pollinators must be able to recognise these situations and growers be provided with options which will help optimise yield.

ARTIFICIAL POLLINATION:

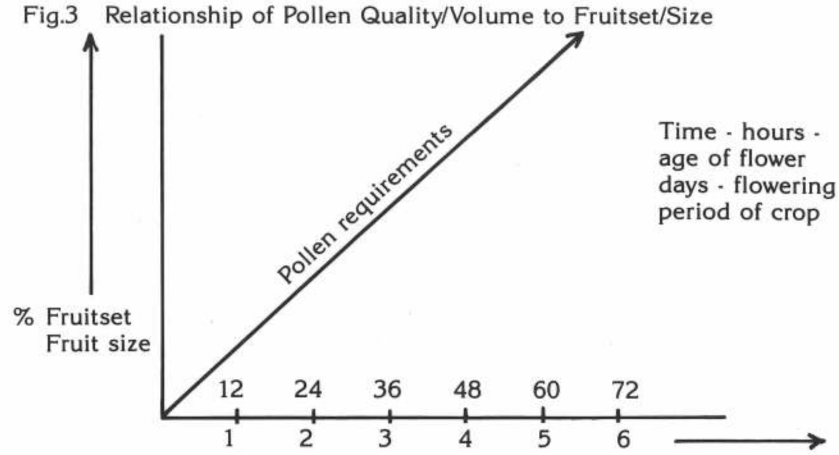
There are available to growers a number of different systems, each of which has a place in the orchard and where, if used properly, can bring significant benefits to growers. These systems are:

* Airflo pollination
* Pollenaid
* Roll-on
* Turbo Bee

There are some new systems in the pipeline.

Client demand and my preference have led us to adopt the Airflo and Pollenaid systems. All have now been used for three years and good results have been achieved, although it must also be mentioned that there have been one or two abysmal failures. The Airflo system is primarily used to introduce pollen in a dry form and can be applied either directly to the flower or by touching the flower. Over the past 4 years, this technology has been used in a number of different ways:

Fig.3 Relationship of Pollen Quality/Volume to Fruitset/Size



1. **A top-up application**
As the name suggests, this method is undertaken to add additional pollen into the flowering canopy where the pollen resource is known to be inadequate to size fruit to preferred market requirement. Low rates are applied throughout the flowering period with the clear objective of enhancing the work of honeybees. To determine whether this method is to be used, past cropping history needs to be known, status and distribution of the male vine, the potential crop load and the weather during flowering. It is also used extensively where dollar inputs may be rather restricted.

2. **Enhancement**
This is usually undertaken where Hi-Cane has been applied and flowers are treated at peak bloom with a high rate of pollen. The objective is to increase the total amount of pollen in the flowering canopy and not only put significant numbers of pollen grains into the stigmatic area but have good pollen available in the anthers which will be collected by bees and transferred onwards. Both dry and spray pollination can be used here. Again, a relatively quick and effective way of adding pollen into a system.

3. **A specific application**

This is a variation on the enhancement programme and is usually applied to a specific percentage of flowers, usually at the end of the blooming period, that is at around 85 - 95% bloom, or to bloom in the shaded areas, which may be later flowering than the later crop. Pollen is applied at the recommended rate and the objective is to increase yield and raise average fruit size in these regions. It is also used where the males may be slightly out of syncronisation and the late bloom is targeted as often these are the blooms which will produce flowers for fruit in the small count range.

4. **Total Pollination**

As is suggested, pollen is applied to flowers at regular intervals, usually every third day, to set an economical crop of fruit in the preferred market range.

DESIGNING A POLLINATION STRATEGY:

To determine what is to be put in place, whether to use just bees or bees and artificial, or just artificial, a careful analysis of the orchard is required. An important consideration is budget and the return on investment. To illustrate the need for careful analysis of the orchard to establish what strategy to put in place, these can be best explained by using some case studies. Because of the extreme variable in costs on the orchard and beyond the orchard gate, benefits are quoted in additional production.

CASE STUDY I: (Production year 1988/89)

Orchard Data:

* Canopy area 6.5 ha. pergola
* No Hi-Cane
* Target yields 6500 - real potential at fruitful budbreak 5200 trays/ha.
* Vine data (at fruitful budbreak)

Export trays	15
Export fruit (av. 36)	540
Total fruit	621
Total flowers	714
Flowers/m²	32

* Target is 0.7 export fruits/flower
* Male ratio is 1:6
* Pollen resource is adequate for crop load but pollen quality is potentially low viz. males pruned hard and regrowth is immature
* No other limiting factors

Assessment:

Target yield is achievable using honeybees only, but the average count is at risk - estimated average 37 count. Airflo pollination is recommended, targeting the final 25 - 30% of bloom. Honeybees to be introduced at the rate of one hive per 750 trays with first hives brought in at 5% female bloom and balance at 45% bloom. All hives to be fed sugar syrup every second day.

What actually happened:

Bloom period started well and I am sure growers are only too aware of the outcome: it rained for six to seven consecutive days from 25th/26th November. In this case (and a number of other instances) the decision was made not to deliver the remainder of hives (because of reduced flower numbers) and to use the Airflo pollinator to enhance pollination.

Because this crop and a number of others were at risk, a coverage of 0.5 ha./hour and a pollen deposition of 180 grams/ha. was targeted.

The result:

The coverage rate was achieved and the pollen deposition equated to 150 grams/ha.. For the orchard in this study, an increase of 800 trays per ha. was achieved, i.e.

Treated area - 4350 trays/ha., average count 35.8.

Untreated area - 3520 trays/ha., average count 36.7.

N.B. Overall, a total of 25 ha. were treated using the enhancement technique for an average benefit of 620 trays/ha. and a 1.5 count increment over control blocks.

CASE STUDY II:

Production year 1989/90

* Canopy area 4 ha., T-Bar
* Hi-Cane treated, two applications, seven days apart
* Target yield 7500 trays/ha.
* Target fruit size average 35 count
* Vine data:

Export trays/vine	21
Export fruit/vine	735
Total fruit/vine	845
Flowers/vine	972
Buds/vine	540
Buds/m²	25

* Target is 0.7 export fruits.flower
* Male ratio is 1:8, Matua type
* Pollen resource is estimated at 4Kg./ha.
* Distribution is inadequate
* Shading and competition not limiting factors

Assessment

The target yield is at risk because of poor distribution and quality of pollen. If bees only are used, real potential is approximately 18 trays/vine, which average count 39. To ensure all flowers are pollinated, at least one hive per 500 trays would be required.

Suggested Pollination Strategy

(i) Use bees at one hive per 1000 trays and hives to be sugar fed every second day. Introduce 20 beehives into the orchard when the first blocks commence flowering with the balance (10) as the second treatment comes on stream.

(ii) Artificially pollinate blooms at peak flowering with a follow-up application at 95 - 100% bloom.

(iii) If weather looks likely to impact on bee foraging, reduce bee numbers and treat all blooms every third day after bloom commences with particular emphasis on the rows with no males.

Result

The weather and budget constraints were considered immediately prior to bloom and options (i) and (ii) implemented. A small block of 0.2 ha. was not treated with artificial pollination as a control. At packing, treated blocks yielded 7800 trays/ha., average count 34. The control block yielded the equivalent of 6700 trays/ha. with an average count of 37.

Benefit

1100 trays/ha. with a gain of three count sizes.

CASE STUDY III:

1989/90 season

* Canopy 4 ha. pergola
* No Hi-Cane
* Target yield 8000 trays/ha.
* Target fruit size 36
* Target is 0.7 export fruits/flower
* Male ratio is 1:4, males Matua and 4-yr. grated M-series
* Pollen resource is high > 4.5Kg./ha. with excellent distribution

Assessment

Use beehives at one hive per anticipated 1200 trays, providing weather is fine and male syncronisation is good. Perhaps consider artificial enhancement of last 15 - 20% of female bloom.

Result

Weather was brilliant, flowering was in syncronisation, first hives introduced at 5% female bloom with balance at 45 - 50%. Result at packing 9300 trays per ha. average count 33.

CASE STUDY IV:

1989/90 & 1990/91

* Canopy 2 ha. pergola
* All Hi-Caned, two applications, four days apart
* Target is 7250/ha.; potential at budbreak estimated at 8000/ha.
* Target count is 35
* Male ratio varies from 1:4 to 1:8
* Male type Matua which have been restructured towards cane replacement system
* 1989 male pollen resource is low, 3Kg./ha., and quality is questionable. 1990 pollen resource good and quality assessed as adequate (70% germination).

Assessment

Male pollen quality and volume

would indicate a potential yield of 6000 trays/ha. of average count 39 in 1989. No other limiting factors. 1990 > 6000 trays/ha., average count > 36.

Pollination Strategy

Use one beehive per 2000 potential trays with an additional one hive per 2000 introduced at peak bloom. Artificial pollination to be undertaken every third day commencing at Day three after bee introduction.

Result

The pollination strategy was implemented as planned. Final yield was 7800 trays/ha., average count 33, plus 1800 Jumbo fruits exported.

In 1990/91, 8050 trays/ha., average count 33 plus 1200 Jumbo fruit.

CONCLUSION:

Profitable kiwifruit growing demands that growers produce sustainable yields of fruit to the Kiwifruit Marketing Board's specifications and that the lows be removed from the production cycle. Pollination has been identified as a key limiting factor to producing sustainable, constant yields of quality, large fruit. With the ever-increasing technological advances available to growers and service agents, pollination need no longer be a major limiting factor to achieving realistic production targets.

The use of Hi-Cane will assist orchardists to maintain fruitfulness on an annual basis and properly designed pollination startegies utilising honeybees and artificial pollination will ensure that flowers are properly pollinated every year, regardless of weather. The advent of returns based on fruit size has enabled growers and pollinators to put a price on pollination and determine the benefits of expenditure in this key area. Honeybees alone can provide most growers with a cost-effective pollination system, but my experience indicates that up to 40% of orchards would benefit financially from the combined inputs of artificial pollination and bees, as their major limiting factor is the male vine, the clone, the management of that vine, the quality volume and distribution of male pollen in the orchard plus lack of funds to undertake a full pollination programme.

An integrated approach to pollination is a requirement of many orchards if their potential is to be realised.

OBITUARY

PETER HERBERT BARBER
1902-1991

Peter Barber was born in Waimumu in July 1902 the 10th of 12 children. He was brought up on a small farm and attended the Te Tipua school where he had a memorable, if uneven, schooling and endured both justified and unjustified punishments according to the custom of the times. Some of the latter still rankled 80 years later.

Upon leaving school he worked on the home farm until 1920 when he set out on his own using his skills as a blade shearer, possum trapper, and harvester. In 1927 he began beekeeping, an interest which dominated the remainder of his long life.

In 1930 Peter bought a rough farm at Glencoe which he began to improve while building up his hive numbers to an eventual peak of 600.

Peter married Katie in 1931 and struggled through the depression with a young family. Times were very tough, rabbits (of which there were plenty) were the main meat supply. Honey sales were difficult but barter was the rule - honey for groceries at the local shop, honey for bacon at the butcher and, on one memorable occasion, a basket of top quality comb honey for a new winter coat needed for a young daughter.

Peter soon began rearing his own queens and selling the surplus to hobbyests and other local beekeepers. This developed to the stage where many beekeepers got their start from Peter: queens, nuclei, and hives, and, most importantly, information and skills. For many years Peter had the effective monopoly of supply to beekeepers on Stewart Island.

Numerous skills helped Peter survive independently. His honey house was constructed of hand-made concrete blocks, as were his garage, greenhouse, and extremely productive raised-bed garden. Much of his equipment was recycled from others cast-offs. His queen rearing system utilised home-made cell cups fixed to colour coded blocks for ease of working.

For many years Peter kept his own seed. His strain of carrots was unique - huge, sweet and tender. Even last year he grew many surplus vegetables for friends and neighbours.

Peter was an accomplished water diviner and was seldom wrong when asked to locate a new water supply.

In 1962 Peter was sworn in as a JP, several years after his first nomination, a delay that he ascribed to his reputation for straight talking and refusal to kowtow to those who considered themselves privileged.

Peter tried to retire several times, selling most of his hives but unfortunately the hives he kept had a tendency to "breed like bloody rabbits". In reality he was unable to resist breeding new queens which meant more nucs and eventually hives. In no time he'd be back up to 100 or 200 hives. The constant demand for a supplier of suitable Southland-bred queens kept his interest up.

In later years Peter found that the emphysema caused by 50 years of smoking severely limited his ability to work as hard as he wished so he had to rely on the labour of others in return for a share of the crop. His erratic short-term memory made life difficult at times but he was still an active beekeeper at 88 years old and actively planning work and experiments for the next season. Peter even bought a new veil (at last!) a few months before he died.

Peter Barber was a "Bee Master" by any standard. He made a valuable contribution to Southland beekeeping over two generations and will be remembered by many as a small figure in a battered hat, an ancient work jacket and a tatty veil seated on a hive and surrounded by, and talking about, his beloved bees.

EFFECTS OF SOME CHEMICALS ON NOSEMA DISEASE OF BEES

By Louise Malone and Helen Giacon

INTRODUCTION

***Nosema* is a very common disease of New Zealand bees (Anderson 1988, Goodwin *et al.* 1990). It is particularly prevalent in Spring and Autumn, when damp, stressful conditions favour its development. It affects only adult bees and is difficult to diagnose, as the only obvious sign of infection is an increased number of bee deaths. Despite its apparent mildness, it is a serious disease and has been shown to markedly reduce both honey production (Fries *et al.* 1984) and pollination efficiency (Anderson 1988).**

The only treatment for *Nosema* infection, apart from reducing dampness and stress, is to feed an antibiotic called fumagillin which suppresses infection, but does not eliminate it (Bailey 1953). This drug is expensive, but *Nosema* is so common in New Zealand that it has been calculated that routine feeding of fumagillin to colonies, without even checking for *Nosema,* wouild be an economic proposition (Goodwin *et al.* 1990). The use of such drugs may not appeal to many beekeepers, as it seems to run counter to honey's wholesome, natural image.

Nosema disease is caused by a tiny single-celled, spore-forming animal (protozoan) called *Nosema apis.* Each spore is only five thousandths of a millimetre long, so a positive diagnosis can be made only with a microscope. It is the spore which initiates infection. When an adult bee ingests a spore, conditions in the bee's gut trigger the spore to fire out a long thin tube, which normally lies coiled within the spore. This tube then pierces one of the cells lining the bee's gut and the spore "injects" its contents into this host cell. Once there, it multiplies by cell division until all of the gut tissue is packed with protozoan cells. Each of these matures into a spore which is then passed out when the bee defecates. The protozoan is then ready to be picked up by a fresh bee.

Since *Nosema* spores are the "key" to infection, we decided to study the process of germination, whereby the tube is extruded from the spore, in the hope of finding some simple way of stopping the process and thus preventing infection. Much is known about the germination process in other, related protozoa which infect other insects such as caterpillars (Undeen 1978). For many of these, germination can be inhibited by treating the spores with solutions of simple salts, such as calcium chloride or magnesium sulphate. We tried treating spores with these and a range of other readily-available chemicals and then tested their ability to germinate in a weak solution of hydrogen peroxide, which is known to cause germination of *Nosema apis* spores (Van Laere 1976), and is present in honey (Russell *et al.* 1990). Any effective chemicals were then tested for their toxicity and their ability to inhibit *Nosema* infection in caged bees.

METHODS

Infected bees were collected from one of our hives, dissected, and their guts removed and examined for spores. Infected tissue was homogenised to release the spores. This mixture was then filtered through nylon bolt cloth and the resultant preparation was treated by centrifugation and washing to produce a pure suspension in sterile distilled water.

The following chemicals were tested at various concentrations (see Table 1) for their ability to inhibit spore germination: magnesium sulphate, calcium chloride, sodium chloride, calcium propionate, sodium bicarbonate, acetic acid, potassium permanganate, copper sulphate, zinc sulphate, zinc chloride, potassium dichromate, phenol, sodium hypochlorite, and a virucidal disinfectant. For each test, a small volume of spore suspension was centrifuged briefly and the pellet of spores resuspended in the test solution. This was incubated at 30°C for 30 min, then a sample was taken and examined under the microscope. Two hundred spores were scored to see if the test chemicals themselves caused germination. The remaining suspension was then treated with 0.5% hydrogen peroxide at 30°C for 20 min. After this, another sample was taken and checked for germination. Two controls were run: one had spores in distilled water only, to check for spontaneous germination; the other had spores exposed to water and then hydrogen peroxide, a treatment which should result in maximum germination. Test chemicals which are effective inhibitors should result in a spore germination rate lower than that of the second control.

To test the effects of any promising chemicals on bees, five treatments, using 20 to 25 bees each, were run for each chemical. Newly-emerged bees were dosed with *Nosema,* if required, by force-feeding them with two microlitres of sugar syrup containing spores. They were then caged and incubated at 32°C for 17 days. Dead bees were removed at 6, 10, and 11 days after setting up, and each was dissected and checked for *Nosema* spores, as were any survivors at 17 days. The five treatments were as follows:

1. Provided with sugar syrup only. (Controls.)
2. Provided for the duration of the experiment with sugar syrup with test chemical added. (To test for chemical toxicity.)
3. Dosed with *Nosema* and then fed with clean sugar syrup. (*Nosema* controls.)
4. Dosed with *Nosema* and then fed sugar syrup with the test chemical added. (To test for ability to cure infection.)
5. Dosed with *Nosema* spores suspended in a small volume of test chemical and then maintained on clean sugar syrup. (To test for effectiveness as a disinfectant.)

RESULTS AND DISCUSSION

Spore germination

None of the tested chemicals triggered the germination of spores (0% to 1% germination recorded). Of the controls, no germination was recorded for those treated with water only, and 61% to 78% of spores germinated when treated with hydrogen peroxide only. Similar levels of germination were noted after hydrogen peroxide treatment of spores from most of the chemical tests, indicating that the chemicals had not had an inhibiting effect. Copper sulphate at 0.01M gave a final germination rate of 24% and zinc chloride at 0.0001M resulted in only 27% germination. These chemicals are not likely to be harmless to bees and the reduction in germination rate was not sufficient to warrant further investigation. The virucidal disinfectant (at 1% or 0.5% concentration), sodium hypochlorite (at 1% or 0.5% concentration) and phenol (at 1% concentration) reduced spore germination to between 0% and 35%. This is not surprising, because these chemicals are all disinfectants, and may poison the spores so that germination is no longer possible.

Effects on caged bees

Table 2 shows the results of treating caged bees with virucidal disinfectant, phenol or sodium hypochlorite. When fed only sugar syrup, 40% to 68% of bees survived for 17 days and none were infected with *Nosema*. No bees survived being fed continuously with phenol or hypochlorite. There was reasonable survival with the virucide (45%), but this was not effective at controlling infections in *Nosema*-dosed bees (87% infection), or at rendering spores inviable when mixed as a dose (60% infection). Both phenol and sodium hypochlorite were effective at killing spores when mixed with the dose, but even the small amount of phenol administered may have been too toxic, as only 12% of bees survived this treatment. Bees fed their dose of spores mixed with hypochlorite and then maintained on clean syrup survived well (100%) and had no infections. This demonstrates that the spores these bees were dosed with had already been killed by the small amount of disinfectant in which they were suspended.

Conclusion

Sodium hypochlorite at a concentration of 0.5% is an effective disinfectant, killing spores within the 30 min it took to set up the dosing experiment. Household bleach is 3% sodium hypochlorite, so soaking tools and equipment or swabbing with a 1:6 dilution should kill *Nosema* spores. This is probably more convenient than the currently recommended treatment of keeping equipment at 49°C for 24 hours (Cantwell and Shimanuki, 1969).

Feeding bees with simple salts or with disinfectants does not cure *Nosema* infection and may harm your bees. Feeding fumagillin is at present the only option for suppressing *Nosema* infections, although it does not necessarily completely eliminate them. Perhaps the best hope for the future is to breed bees with some resistance to *Nosema*. The next focus of our research will be to determine whether there is any genetic component to bees' susceptibility to *Nosema* and how much variability there is between different isolates of *Nosema*.

REFERENCES

Anderson, D.L. 1988. Pathologist's report. *The New Zealand Beekeeper, Spring 1988,* 12-15.

Bailey, L. 1953. Effect of fumagillin upon *Nosema apis* (Zander). *Nature 171,* 212-213.

Cantwell, G.E. and Shimanuki, H. 1969. Heat treatment as a means of eliminating *Nosema* and increasing production. *American Bee Journal 109,* 52-54.

Fries, I., Ekbohm, G. and Villumstad, E. 1984. *Nosema apis,* sampling techniques and honey yield. *Journal of Apicultural Research 23,* 102-105.

Goodwin, R.M., Ten Houten, A., Perry, J.H. and Moore, S.J. 1990. "Ruakura Apicultural Research and Advisory Unit. Annual report, July 1989-July 1990." 92pp.

Russell, K.M., Molan, P.C., Wilkins, A.L. and Holland, P.T. 1990. Identification of some antibacterial constituents of New Zealand manuka honey. *Journal of Agricultural and Food Chemistry 38,* 10-13.

Undeen, A.H. 1978. Spore-hatching processes in some *Nosema* species with particular reference to *N. algerae* Vavra and Undeen. *Miscellaneous Publications of the Entomological Society of America 11,* 29-49.

Table 1: Germination of *Nosema apis* Spores

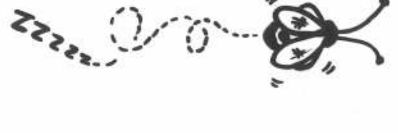
Test Chemical	Concentration	% Germinated	(number scored)	Test Chemical	Concentration	% Germinated	(number scored)
Magnesium sulphate	0.1M	80	(246)	Zinc chloride	0.01M	66	(235)
"	0.01M	49	(237)	"	0.001M	70	(210)
"	0.01M	68	(214)	"	0.0001M	27	(206)
"	0.001M	61	(219)	"	0.0001M	85	(214)
Calcium chloride	0.1M	84	(242)	Potassium dichromate	0.001M	62	(220)
"	0.01M	80	(251)	"	0.0001M	59	(213)
Sodium chloride	0.1M	73	(201)	Virucide	1%	0	(200)
"	0.01M	84	(252)	"	1%	3	(207)
				"	1%	0	(200)
				"	1%	11	(206)
Calcium proprionate	0.1M	84	(241)	"	0.5%	7	(216)
"	0.01M	71	(199)	"	0.1%	79	(224)
Sodium bicarbonate	0.1M	69	(207)	Phenol	1%	35	(208)
"	0.01M	66	(210)	"	1%	1	(200)
"	0.001M	63	(205)	"	0.5%	84	(206)
				"	1%	72	(225)
Acetic acid	3%	56	(232)	Sodium hypochlorite	1%	6	(212)
"	1%	68	(209)	"	0.5%	4	(209)
"	0.5%	72	(227)	"	0.1%	64	(251)
Potassium permanganate	0.1M	64	(231)	Water (control)		68	(238)
"	0.01M	73	(222)			61	(222)
"	0.001M	59	(214)			61	(222)
"	0.0001M	60	(212)			70	(212)
Copper sulphate	0.01M	24	(226)			73	(206)
"	0.001M	57	(220)			78	(205)
"	0.0001M	63	(221)				
Zinc sulphate	0.01M	50	(213)				
"	0.001M	66	(235)				
"	0.0001M	66	(242)				

Table 2: Effects of disinfectants on survival and *Nosema* infection in caged bees.

Treatment*	Total no. bees	Bees surviving 17 days Number	(%)	Bee infected with *Nosema* Number	(%)
Virucide					
1.	22	15	(68)	0	(0)
2.	22	10	(45)	0	(0)
3.	21	16	(76)	18	(86)
4.	22	0	(0)	18	(82)
5.	20	20	(100)	12	(12)
Phenol					
1.	25	17	(68)	0	(0)
2.	25	0	(0)	0	(0)
3.	25	4	(16)	4	(16)
4.	25	0	(0)	1	(4)
5.	25	3	(12)	0	(0)
Sodium hypochlorite					
1.	25	10	(40)	0	(0)
2.	25	0	(0)	0	(0)
3.	25	11	(44)	16	(64)
4.	25	0	(0)	0	(0)
5.	25	25	(100)	0	(0)

* See text for methods.

Van Laere, O. 1977. Factors influencing the germination of *Nosema apis* Zander spores. In "Biological Aspects of *Nosema* Disease. Apimondia Symposium of Bee Biology and Pathology, Merelbeke, Belgium, July 14-16, 1976." Apimondia, Bucharest. pp. 56-64.



A WORD TO CONTRIBUTORS

A strange thing has happened over the past two issues. So strange it almost gave your editor a heart attack. The fact is simply that for those two issues we have had, for the first time, more copy than the magazine can handle. You will appreciate, of course, that this is a bit like discovering a four leaf clover, or the abominable snowman, or that New Zealand has a viable economy.

However, if your piece has not yet appeared in the New Zealand Beekeeper, do not despair. It is on its, way. Why it has not appeared so far, and something else which you may consider far inferior has, is probably simply a matter of length for the space available. Having said this, it does not mean that existing contributors, or others contemplating sending material, should hang up their pens. Please remember that this is merely a temporary blip and it cannot last. So please continue to send your material. Remember, that without you there is no magazine.

Michael Burgess
Editor

WHAT'S IN A NAME?

From Andrew Matheson, Director, IBRA

In a recent issue of the *Australasian Beekeeper,* Bob Gulliford has penned an article with the intriguing title "American foul brood makes welcome return".

No, as a former apiary inspector he's not cheerfully contemplating huge bonfires, but rather is applauding the reappearance of common sense when it comes to naming one of our least-favourite brood diseases. The term "American brood disease" has finally gone to the great paraffin dipper in the sky.

One of the first pleas to quit using the term "foul brood" came from "Ti-tree Tony", writing in the *New Zealand Beekeeper* of August 1950. Under the heading "Foul brood - foul honey" he suggested adopting the name "failing brood", but sticking with the initials AFB. His suggestions fell on deaf ears, it seems.

The term "American brood disease" seems to have been invented in Australia, again because of objections to the "foul" connotations of the established name.

Like so many unusual ideas this one came from a conference resolution. The Commercial Apiarists' Association conference in Tamworth in 1959 passed a motion that AFB should henceforth be referred to as *Bacillus larvae.*

The executive then pestered the minister to get extension staff to mend their ways too, but by the time politicians had dealt with this request the outcome was that for publicity purposes ABD and EBD would be used, but that "the former names would be retained for scientific material and regulatory work". Sound like a typical bureaucratic compromise!

But the beekeepers were on a roll. The Victoria Apiarists' Association hopped on the bandwagon at their 1960 conference, and the NBA in New Zealand followed suit in 1961. The New Zealand Department of Agriculture even wrote to the NBA agreeing to stop using the word in official publications.

So everything was fixed - or was it? Kiwi beekeepers seemed to avoid the "brood disease" terms by talking about "BL" or just "disease", or talking about foul brood when that's what they meant.

In Australia, though, things were different and by the late 1960s "American brood disease" was in vogue. When European foulbrood was identified in Australia in 1977, it was called "European brood disease", although the term was unknown elsewhere.

Through the remainder of the 1970s and in the 1980s ABD and EBD were commonplace in the Aussie bee press, though a problem cropped up when the gas ethylene dibromide came into consideration for controlling wax moths (and blowing up beekeepers' sheds). EBD sounded very much like EDB, confusing a gas with a bug, so beekeepers had to start reverting to EFB (and thus AFB), though it was common to see both terms used in the same sentence. In speech "American" and "European" seemed to do the trick.

In New Zealand there was another fling at getting foulbrood abolished when "Small Beekeeper" (why don't these people ever use their real names?) wrote to the *New Zealand Beekeeper* in June 1978. With agreement from the NBA executive and a sympathetic ear in MAF the term "American brood disease" enjoyed a brief revival, and when the Apiaries Act was being revised in 1980-81 one of the legislative architects switched the names of both AFB and EFB. But neither executive decisions nor legal technicalities had any effect on beekeeper practice in this case: foulbrood reigns supreme.

Of course neither American or European "brood disease" has any standing overseas and can be just a source of confusion - like the beekeeper heard to remark: "You're lucky you don't have AFB in Australia, only that American brood disease".

Now, in Australia the New South Wales Bee Disease Committee has recognised that enough is enough, and that for official purposes "American foulbrood" is the title of choice.

Where did the term "foul brood" come from anyway? The first reference to my knowledge was by Nicol Jacob in 1568 on his book *Thorough and useful teaching about taking care of bees, gathered from true experience* (the title in original German is even longer). He talks about "die foule brut", literally "the foul brood", though whether he was referring to AFB or EFB we don't know.

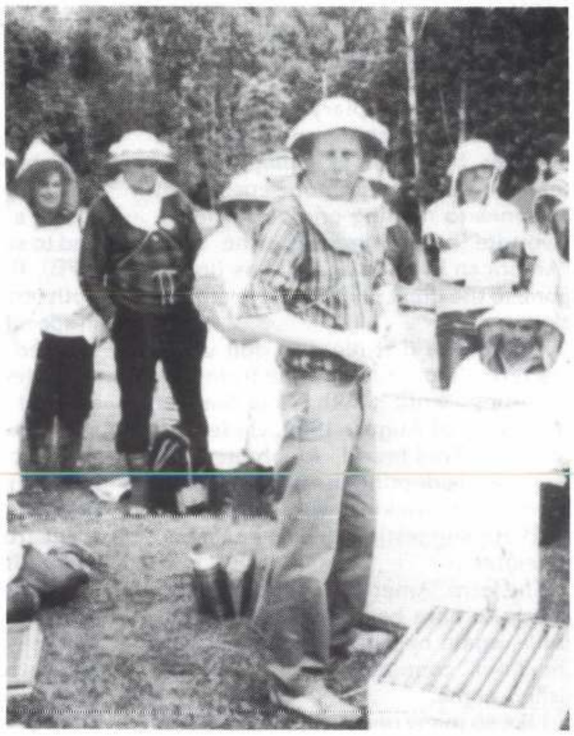
Another old bee master, Schirach, in his 1771 book *Histoire naturelle de la reine des abeilles* (Natural history of the queen bee) talks about "faux couvain", or false brood, probably because no adults emerge from it. In French foul brood is today called "loque", literally a tatter or rag, presumably from the tattered remains of brood left in the cell.

It was probably Dzierzon in 1882 who first clearly recognised that there were two types of foul brood. In the UK in 1885 Cheshire and Cheyne isolated *Bacillus alvei* as the cause of one of the foul broods — this disease was later called European foul brood when G.F. White, working in the USA, determined the cause of the other foul brood to be our old friend *Bacillus larvae.*

It was E.F. Phillips, writing in a forward to White's paper in 1906, who designated the twofoul broods as "American" and "European" according to where the causative agent was first discovered. The names don't relate to the origins of the diseases — that information has been lost as bees have been moved around the globe.

One last, minor point. Foul brood was for centuries spelt as two words, though in more recent years almost all English-speaking writers have adopted the spelling "foulbrood".

SOUTHERN NORTH ISLAND



Above: Cerecell's display table.

Above right: Gary Tweeddale demonstrates the way of making a split.

Below: From left to right, Trevor Rowe, Joyce Young, Margaret Brommell, Chris Brommell, Ken Richards, Stan Young.

FIELD DAY AT LEVIN, OCTOBER 12

Above: Part of the crowd at the Field Day.

Below: Students undertaking the correspondence course from Telford attend for their practical examination.

HOW TO HANDLE YOUR QUEENS

By John Heineman

It is undeniable that beekeepers feel a certain amount of satisfaction, sometimes elation, when they spot the queen while working hives. Queen-spotting competitions at field days are often practiced and are no doubt popular.

Finding the queen is a bit of an art, but with practice one's ability in finding queens will develop and improve. There is a technique and certain rules for this game, following these will certainly improve your chances of success.

For a starter, go easy on the colony. Use smooth movements, no jerking, bumping or dropping of combs and as little smoke as possible. First remove the hive lid and place it on the ground near the hive. Pry off the crown board quietly and administer a few small puffs of smoke. If you are working a two-storied hive, part the boxes with your hive tool and place the top box on the lid. Cover the bottom box temporarily with the crown board. Reason for first seperating the two supers? If you don't, her Majesty could just decide to go down below while you are rummaging around in the top super.

The next step is to lift out the first comb, the outside one nearest to you. Look it over on both sides then place it alongside the box. It's not likely she will be on this first comb, but you never know. It does happen. Now while you lift out that first comb one side of the next becomes exposed and it pays to have a quick glance over it before your scrutinize the one in your hands. The same goes for the sides of the super and the bottom board when you get down to the bottom box. You may get a glimpse of her and so save time.

After looking over the second comb replace it in the open space left by the first comb. Carry on that way until you come across the old girl, or have finished examining all the combs in this first super without finding her.

If not successful go through the bottom super in the same manner.

More often than not the queen will be found on combs with brood and eggs as she keeps expanding the brood nest from the centre outwards, it does not happen in a haphazard manner.

Now if you have had no luck in finding that queen after scrutinizing all the combs, you just have to do it again, sorry. You will probably find her this time.

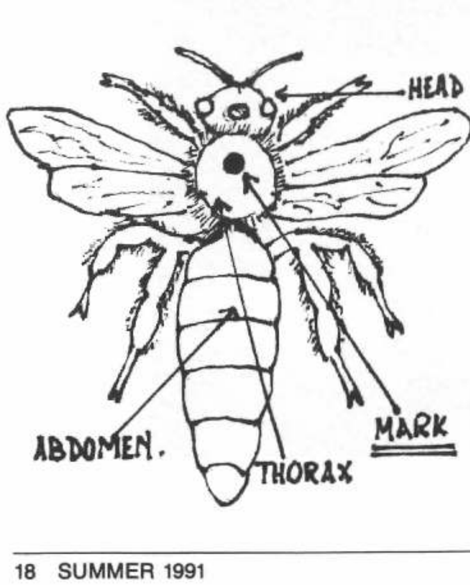
An important point to pay attention to while looking over the combs is to position yourself so that you take full advantage of the light. It makes a lot of difference to have the sun shining on the comb. Also when looking at a comb with bees aplenty, I find it best to first circle round the edges and then spiral towards the comb's centre. It is not slow motion, for you don't have to look at every worker, but are after one individual which is different from the others.

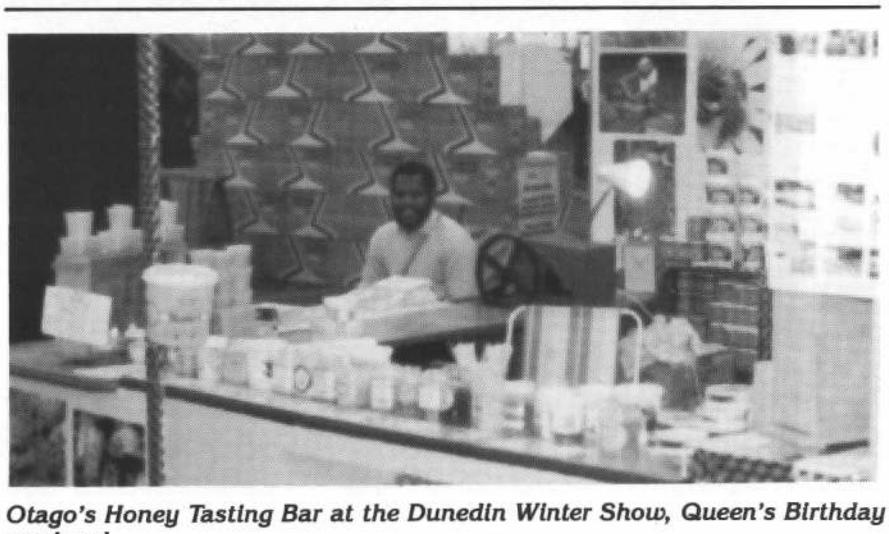
It does happen to the best of us that all this looking and searching gives no result and one has to admit to being led by the nose by one little elusive queen bee. Frustration all right. Better get used to that for there is plenty of it in beekeeping. Last resort, shake all the bees through a queen excluder. Place an empty super on the bottom board, take say four frames with brood and place these into the empty box after shaking all the bees off on to the other frames which are still in the super or sitting on the lid. Place the excluder on top of the super with these four frames and the part empty super above the excluder. Shake all the bees off the remaining combs on to the excluder placing the shaken combs beside the hive. Having done this, the bees will rapidly work through the excluder to cluster on the combs below, but the queen cannot get through and soon you will be able to shout: "Bingo", I got you!" Bees will walk up the sides of the super. Keep them wiped down on to the excluder. A bit of smoke will hurry it along too. Then replace all the combs, keeping in mind the right sequence of the combs so that the broodnest stays a broodnest and is not split up. It is a rough and ready way to find that queen, but it does work.

It is more difficult to find the queen of a dark colony. The blackies we have in New Zealand are in general proper mongrels. Besides being smaller they are often in the habit of running all over the place or they start to cluster at the bottom edge of the frame you are looking over. It makes it hard.

It is also easier to spot a queen in a small colony than it is among a large population. One should of course always first consider the WHY of a certain action. Do you need to find that queen? There is no good reason whatsoever to see the queen every time during a routine inspection. If good healthy brood in all stages is desired quantity is present, and you are certain that the queen is not due for replacement, just leave her be. It is a different story if the hive must be re-queened. Then you have a valid reason to find and remove her.

Having MARKED queens makes finding them a piece of cake. That little dot of paint really stands out. When purchasing queens you can ask the





Otago's Honey Tasting Bar at the Dunedin Winter Show, Queen's Birthday weekend.

breeder for marked queens and he will probably oblige (albiet for a little extra charge perhaps). That is the easiest way out.

However there are other reasons for marking queens. Using different colours for successive years will enable you to tell her age and you will know without a doubt when it has become advisable to replace her to avoid failure at a crucial time and minimize swarming trouble.

It happens that newly introduced queens sometimes are superseded after a few weeks or months. A sad thing if you have paid 10 to 15 dollars for the beastie. So if it was a marked queen you introduced and next time an unmarked one is running around you know without doubt what happened. You would of course also like to know why it happened. Could it be that you have mishandled the introduction, or perhaps the colony has gone short on stores? Is there something amiss at the suppliers end? It pays to try to find out, especially if the incidence of supersedure is high.

So if your hives are headed by unmarked queens you should consider marking them. It is not such a difficult job. Of course you can do it. There are different kinds of suitable "paint" readily available which work satisfactorily. It must be non-toxic and fast drying. Nail polish, correction fluid and paint can all be used. Our queens get a little dot of "Humbrell" paint, available in tiny pots. Correction fluid comes now in the shape of a felt pen. I see an advertisement in Bee Craft May 1991 for a "Spot On" Ball Point Queen Marker, from Norman Blackbourn, 66 Sunnyhill Av, Derby DE 3 7JR, UK. Could be a very handy tool. But you can very well use a small paint brush, tiny stick or a round-headed pin pricked into a cork. Whatever you use remember that the "paint" should not be too thick as it might flow on to the "skin" of the thorax and adhere properly. Neither should it be too thin as then it may flow through on to the neck region or wing base.

It is not an activity you can tackle wearing clumsy gloves. Queens are capable of stinging but don't do so often. In all my years of beekeeping I have had numerous stings, thus must run into hundreds, but I have, to my knowledge, never been stung by a queen bee.

First of all you must locate the queen and then hold her in position. If you are right-handed catch her with that hand by the wings and transfer her to your left hand and hold her gently but securely between thumb and finger. Please don't squeeze her abdomen. You will have your right hand free for the brush or whatever you may use for administering that spot of paint onto her thorax. Avoid getting paint into her eyes, or on her wings or antennae. Give a little time for the paint to dry then let her go. Before embarking on the real thing it will be a good idea to have a practice run using a drone. Better not let those marked drones go back into the hives! It is said that when a number of queens are to be handled, one after the other your hands should be washed each time. Otherwise there is the risk of transferring the odour of one queen to the next, perhaps resulting in rejection by a colony.

A simple gadget can be made and used so as to avoid touching the queen to be marked. Cut a ring from a PVC pipe 0 25-30 mm about five to six mm long with a fine toothed hacksaw blade. Smooth the cuts with fine sandpaper. Using instant glue, secure some gauze to the edge of one end of the ring. Net curtain will do. Plant shops sell bulbs is small net bags. That material is ideal. The mesh is about two mm. Metal gauze is probably too stiff and may cause injury. After locating the queen on the comb imprison her with the ring, pressing down lightly on the comb surface. The queen will be held immobilized by the pressure of the gauze and you can put that little dot of paint on her thorax through a square of the mesh. Then let her go. In that way you don't touch her at all with your fingers.

What colour "paint" should you use? The international code is: 1991-96 white, 92-97 yellow, 93-98 red, 94-99 green, 95-2000 blue. Red, white, and blue is what we use for we try to requeen every colony regularly and few queens are older than 24 months.

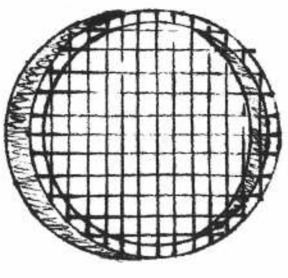
There are some sophisticated systems on the market: little punched out coloured and numbered aluminium or plastic discs to be glued onto the queen's thorax. That's fine for special projects where there is a need to keep track of every individual queen, but I don't think you and I need to go that far.

Managing a few hives in the back garden, one can usually remember what is what. When the numbers go up, it is not a bad idea to also have a mark on the hive to tell you at a glance what age queen should be inside. A coloured drawing pin is the answer. If systematically positioned on the front left corner or right corner, top or bottom, the pin not only records age but also the queen's origin s.a. home-bred of this or that breeder queen, or bought in from a particular queen breeder.

There is another way to mark queens. Namely by CLIPPING her wing or wings. Part of the wings are cut off with a small pair of scissors. Left side one year, right side the following year. That tells you her age. But for finding her I think that a little coloured dot stands out a lot clearer than half a wing.

The other reason for clipping is that it is supposed to be an anti-swarming measure. Sure a clipped queen cannot fly away so when she leaves the hive with a swarm she will fall to the ground, the swarm will settle nearby, discover that the queen is absent and will consequently fall back on to the hive it has left. There will be a newly hatched queen ready to take over from the old one. Sounds simple and efficient. But is it?

Well, before a swarm leaves a hive things have happened within the colony which have stopped it from it's normal behaviour. A young queen may be running around very soon, but she is a virgin and not as yet ready to produce fertile eggs. It will take some time before she has been mated. So there will no doubt be a break in the brood cycle at a probable crucial time which will ultimately adversely affect the honey crop. Then there is a real risk that a swarm might leave the hive headed by



a virgin queen. At best it buys the clipping advocate some extra time. He has lost a queen, but kept the 20,000 to 30,000 workers making up the swarm if he can make certain, at short notice, that no more than one queen will emerge. But there must still be a loss. Prevention is better than cure. So go for good management early in the season, for young queens. nucs, use of foundation and enough extra super room when needed. That makes for much more positive swarm control than clipping queen's wings.

Among bee authorities we find a great diversity of opinion as to the value of clipping with regard to swarm prevention. Some state that it may impair egg production, may affect the queen's sense of balance, and so increase the risk of injury and increase the incidence of supersedure.

A research project involving clipped and unclipped queen's by the Department of Agriculture here in NZ took place over 1967-1970. The results showed no apparent harm was done by clipping and no significant variation in honey production between colonies with clipped or unclipped queen's. Clipping did not result in increased supersedure. (Ref.: Effect of Clipping Queen Honey Bees' Wings, by I.W. Forster, 1971). So much for that.

Now I am not an over-sensitive person and am well aware that we have to do things to our domestic animals for good reason s.a. tailing lambs or castrating bulls. But to mutulate a queen bee, the most important individual in a bee colony, without a very good reason and with alternatives available really goes against the grain.

So I hope you won't become a clipping enthusiast but will practice good management and use the paint pot for marking queen bees.

FORD GOES ELECTRIC

Ford is to build an international demonstration fleet of 100 electrically-powered Escort vans for evaluation in Europe and North America.

The Escort va, manufactured exclusively at Halewood on Merseyside in north-west England, was chosen because of its suitability for modification to electric drive. It will be fitted with an electric motor, single speed transaxle and electronic controls, and use an advanced version of the high energy sodium battery originally invented by Ford in 1965.

A number of the vehicles will have a hybrid "range extender". This is a small internal combustion engine with an alternator to give the hybrid version an expected range of at least 400km.

Normally, the electric Escorts will have a target range of 160km with 0-80kph acceleration in 14 seconds. Battery recharge time will be six hours and some vehicles are also to be equipped with an electric air-conditioning system.

Conversion of the vans will begin in the US in late 1992 and is due to be completed in 1993. The vehicles will then be handed over for use by private fleet operators and the public in the US and Europe. One of the main objectives of the programme is to gain customer experience before beginning large-scale production of electric vehicles.

A Ford spokesman commented: "We are aiming at petrol engine performance for these vehicles, working on several fronts towards the day when the customer will not notice any real difference between an electric and petrol-powered vehicle. Electric vehicles will be superior in some ways - no exhaust emissions, reduced vibrations and noise, and a more interesting design since less frontal area is needed to house the powertrain."

Ford, however, believes that further technological advances need to be made before electric vehicles become acceptable to buyers. Such advances must include improved battery technology and cost-effective high power electronics to control the propulsion motor. And it is likely that the first large-scale production electric vehicles will be for commercial use rather than for the private motorist.

Nelson

With the warmer season ahead most willow flows are winding down and the barberry flower is coming on. Beekeepers are now looking for some sunny weather. The overnight snow fall has not been received joyfully, but despite indifferent weather, bees have built up reasonably well.

The end of winter this year was different to many. When the badly-needed rain came the weather warmed so much that the lucerne trees, which had almost died in the drought, recovered to flower vigorously.

While we all expect, and like the idea of, a good crop of honey, one often wonders why we bother to harvest such a tasty and delightful food when it has to be sold at a price less than half of its real value.

Ron Stratford

Auckland

Even those with four-wheel drives have given up trying to get into some sites. It has been very wet, although not too cold, and matings are slow. But the wind does make it easier to light the smoker and the rain means I can sit inside and watch a bit more rugby on television.

Most hives have opened up strong after a reasonable willow flow and the barbery is looking very promising.

Kiwifruit pollination is only weeks away. Overall numbers required are down and a few beekeepers are undercutting.

Our branch disease control programme has started well with each warrant holder responsible for an area. They can usually manage them during normal rounds. There have been no serious outbreaks of disease so far. What would we do without the branch secretary to organise matters for us?

Nigel Birse

Otago

We held our second meeting since Conference last evening (Oct. 4). Relatively well attended. We also welcomed the Chairman and Secretary of the North Otago Branch who felt the need to hear our views regarding the important issues facing the beekeeping industry at present.

News from around the province is not very uplifting. Many hives are not in good shape. Besides normal winter losses for various reasons, hives have opened up to show failed queens in larger numbers than usual. Others are very weak notwithstanding the fact that stores are not critically low. Not an uncommon picture when a very poor summer is followed by a tough winter.

The weather since halfway through September has been extremely changeable with little sun, lots of rain and wind, and lower than normal temperatures. This does not help but for that the blame goes to El Nino, not the government for a change.

Naturally members are not looking forward to paying higher hive levies. We could well do without these increased costs at present. However we are of the opinion that disease control must be maintained.

It was decided that a "traditional", diseasethon, concentrating a considerable number of beekeepers on a given day to cover a certain area or areas, as we did last year, would be of lesser benefit than a number of experienced individuals spread over the province volunteering to do checks and report findings. A list with names has been sent to our MAF Officer in Alexandra with a request to provide us with a schedule for inspection and warrants.

Thus we will be able to cover a wide area with least effort and minimum cost.

And so we carry on, hoping for a better crop and better prices.

John Heineman

Marlborough

A very warm August meant an early start to the season with drones in the hives earlier than usual. A cold and wet mid-spring has slowed activity right down, so there is no excuse for being behind now. The hives are stronger and hungrier. There are good soil moisture reserves at present. Today has been our really only windy day for this season. Let's hope it remains only a few.

We are removing the hives from cherry pollination now. It has been a long flowering season for cherries because of the chilling weather.

In early September we held an informative meeting with Stephen Ogden to discuss varying issues concerning the beekeeping industry.

A diseasathon day was held on September 21. The planning was a little on again, off again, with funding eventually coming from the NBA so MAF could be engaged. Of the hives inspected 1.5% contained AFB and 5% of the sites inspected contained disease.

A hands on woodworking afternoon held recently in which several hobbyest beekeepers participated, taught us a few tricks of the game.

On November 21 we are holding our Spring Field Day. Speakers will include Reg Clarke updating us on his latest queen research, Stephen Ogden on MAF issues, Rod McKenzie on comb honey production and James Jenkins on spring hive management. Visitors are welcome.

I keep hearing interesting snippets from the marketing area, so I look forward to reading the research that is currently happening.

James Jenkins

Hawkes Bay

The buzzy branch has buzzed out of hibernation after a cold snap should have killed off some of the nasties.

The 1992 Conference date has been set and a venue chosen following a meeting with Dudley Ward, Ted Roberts, and the Conference subcommittee. There has been a good response to an invitation to companies wishing to be part of the action. If your company has not had a direct approach, but you want to get your name in front of all the beekeepers at the 1992 Conference, get in touch with the Hawkes Bay Branch now.

At the branch apiary, screens have been erected so that visitors can get close while the bees fly up and over, hive sites have been tidied, and all eight hives have been requeened with cells. President Bob is always ready to pick up another spare hive while the Bee Farm donated the queen cells. Thank you. Newer members were also given the chance to find the old queens. 100% success was achieved without screening.

Organisation for the disease inspection day is in the capable hands of Ian Berry with the promise of a good turn out on November 2. MAF has supplied materials including lists of hive locations; but the ground work will be carried out by branch members. The day will finish with participants and friends at a barbeque tea.

At our meeting on November 13 we look forward to hearing Alan Bougen of Comvita tell us how to maximise hive revenue by harvesting all the by-products. Why import raw materials that we can gather here with a little extra effort? The meeting is at the polytech in Taradale starting at 7.30pm.

Here in the Bay, spring showers have given the ground a good soaking. Pollination is about two weeks earlier than usual and we are looking to a good honey crop ... if we don't get it too dry from now on. To cap off the year the Branch Christmas Party will be held at the Brown Owl Coffee House on December 10. If you haven't paid and want to go, pay now.

In the new year, as part of the Summer Festival of Hawkes Bay, members will be on hand for two days to give the public a chance to get close to bees at the branch apiary.

Ron Morison

Southland

Winter is reluctant to release its hold on Southland this year. Snow still covers the mountains to a very low level. Working bees is no picnic this season. Gumboots, waterproof clothing, and chains for the truck, is the order of the day.

Hives opened up well where they had plenty of stores, but because of the long hard winter some hives have been found to be hungry. With the lack of suitable weather queen making has been restricted, but drones seem to be active given the opportunity.

A successful spring field day was held at Don Steadman's Apiary, Grove Bush. It involved the hobbyest group and students from Telford, ably assisted by Branch members. The weather was kind and hives were worked under ideal conditions. Methods of checking for disease, feeding, and queen raising were demonstrated.

Allster Lee

Southern North Island

Strong north-westerly winds and heavy showers have covered most of the western side of our district during September and October. Bees have been slow to build up and most beekeepers are out feeding sugar syrup and pollen supplement to build them up for kiwifruit pollination.

The bad weather has not affected all areas. South and eastern areas have had some good weather and reported early swarms. But these soon stopped when strong winds and the cold weather arrived again in early October. All this has taken the cream off the willow flow and made the mating of early queens difficult.

Most beekeepers have reported the paddocks have been very wet making access to them difficult. However those who bought four-wheel vehicles last year have noticed how much easier is it now to get in and out of wet apiary sites.

It looks as if MAF hasn't the funds to undertake disease inspections this year, so groups in the city areas are trying to organise disease-a-thons to keep BL under control. A reminder for those inexperienced at using petrol to kill a hive. PETROL CAN EXPLODE. Recently, a fellow beekeeper killed a BL infected hive with petrol and duly dug a deep hole to burn it as prescribed by MAF. Normally most of the petrol evaporates when you pile the supers into the hole. However this day was heavily overcast.

Having experienced "look Mum, no hair and eyebrows" before when burning hives, he stood well back and lit it from a distance. Turning to walk back to his children some way away, he was sudden flattened by an explosion that ripped the supers apart. Luckly he was unhurt but it was quite a shock for both himself and the children. If you are working alone out there - be careful.

SPRING FIELD DAY

About 70 beekeepers attended our Spring Field Day at Levin, Saturday October 12. Many Hobbyists from the four clubs in our district, and a good selection of commercial beekeepers, attended. Some travelled three and a half hours. One even arrived in a fire engine that was doing its 150k shake-down trial.

The programme covered demonstrations on feeding, splitting hives, making up nucs, queen introduction, the Cloake method of queen raising, disease inspection, nosema control, a simple hive numbering method, and preparing hives for pollination.

We are ably assisted by Gavin McKenzie from Telford who was in the area taking the students on the National Beekeeping Correspondence Course for their practical tuition.

The weather was kind and most came away with some new ideas and sun burnt faces. Ceracell's sales table created much interest and we hope it was successful for the company. We thank them for coming so far. Special thanks to Rob and Beth Johnson for their hospitality, and to the speakers for making the day succesful and enjoyable.

Here's hoping everything improves for the honey flow.

Frank Lindsay

Northland

Winter is well past and the bees wintered well. Very little supplementary feeding was needed. From mid-September we had strong winds and rain on most days. I suppose we had to pay for our mild, early spring somehow.

Queen rearing has been difficult, if not impossible in less sheltered areas. However, a few fine days will change the prospects of getting those queen orders filled on time.

A lot of honey has been moved out of the north in the past three months. Prices were not great, but were acceptable given the state of the world market. Manuka from early sources will be scarce because of wind damage, but it is a long way to April and the end of the season, so we should get another chance at obtaining a good crop.

Branch meetings are hotting up as members come to terms with 'user pays'. However, members are not happy with the on-going disease issue and its funding. We only hope sanity will prevail soon.

Malcolm Haines

Library Notes

From John Heineman

Once again we received a considerable amount of valuable material from Trevor Bryant, Te Puke. Branches and beekeepers' clubs could make good use of the slide collections and transparencies. A variety to choose from. Don't forget to keep your catalogue updated.

Audio-visual

Slides: BEE PASTURE (trees, shrubs, flowers) 91; ANATOMY 48; BEE DISEASES AND PESTS (endemic and exotic) 72.

Transparencies: Series 1: covering stages of adult working bee, colony maintenance, approx. rate of consumption of pollen by colonies with different rates of brood rearing, colony preparation for honey flow, max. populations for production bees, honey and queens, foraging area potential, commercial crops pollination requirement, pollination (eight transp.).

Series 2: flower anatomy: apple, apricot, cherry, black currant and raspberry (five transp.).

Series 3: anatomy and dissection of the honey bee (20 transp.) from plates of HA Dade's book.

Books

Adam, Broth. BEE BREEDING. 1954, 24pp, U.K. (reprint from Bee World).

B.C. Hon. Prod. Ass. GOURMET HONEY RECIPE BOOK, 1975, 41pp, Can.

Crane E. POLLINATION OF SEED CROPS, summary of research 1959-1971 reported in Apicult. Abstracts. 1972, 163pp, UK.

RUTTNER F. & oth. CONTROLLED MATING OF HONEY BEES. 1972, 96 pp, Austria.

Sarazin M.J. THE CANADIAN INSECT PEST REVIEW (vol. 66). 1989, 117pp, Can.

Shimanuki H. & Knox D.A. DIAGNOSIS OF HONEY BEE DISEASES. 1991, 53pp, USA (donated by Mr. M. Reid, Hamilton).

Miscellaneous

Legislation (proposed). Discussion papers and reviews Animal Health Act and Primary Produce. 1989 - 1990, NZ.

Articles, Papers etc

Ag. Canada MEET BERTA BEE (Primary school activity booklet) 14pp, Can.

Bettesworth D. A BEE STOCK IMPROVEMENT PROGRAMME FOR N.Z. 1989, 10pp, NZ.

Calder M. SWEET AND SAVOURY HONEY RECIPES. 1978, 12pp, UK.

Cloake H. QUEEN - CELL RAISING - MY WAY. 3pp, NZ.

Fix W.J. & Palmer Jones T. CONTROL OF FERMENTATION IN HONEY BY INDIRECT HEATING AND DRYING. 1947, 8pp, NZ.

Hamblin R. THE WORSHIPFUL COMPANY OF WAX CHANDLERS OF THE CITY OF LONDON, QUINCENTENARY 1484-1984. 1983, 24pp, UK.

Jacks H. SCREENING TESTS WITH INSECTICIDES FOR CONTROL OF RED SPIDER MITE ON BEANS. 1954, 6pp, NZ.

Lamb K.P. & Jacks H. DURATION OF EFFECTIVENESS OF SOME ORGANIC PHOSPHOROUS INSECTICIDES AGAINST MYZUS PERSICA ON SWEDES. 1954, 5pp, NZ.

McFarlane R.P. & oth. HEMIPTERA AND OTHER INSECTS ON SOUTH ISLAND LUCERNE AND LOTUS SEED CROPS. 1980/81, 4pp, NZ.

Palmer Jones JT., Clinch P, Briscoe. EFFECT OF HONEY BEE SATURATION ON THE POLLINATION OF CHINESE GOOSEBERRIES VAR; HAYWARD. 1975, 2pp, NZ.

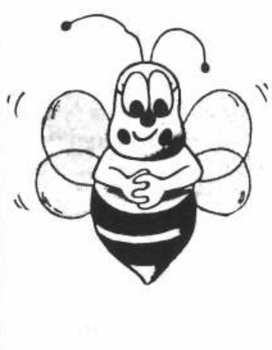
Palmer Jones JT., Clinch P, Briscoe. OBSERVATIONS ON THE POLLINATION OF CHINESE GOOSEBERRIES VAR. HAYWARD. 1974, 4pp, NZ.

Paterson C.R. & A. Palmer Jones. JT. VACUUM PLANT FOR REMOVING EXCESS WATER FROM HONEY. 1954, 15pp, NZ.

Root Coy. BEES FOR PLEASURE AND PROFIT. 8pp, USA.

White C.F. THE BACTERIA IN THE APIARY. 1906, 50pp, USA.

OVERDUE BOOKS. ARE YOU GUILTY? PLEASE RETURN LIBRARY MATERIAL PROMPTLY WHEN FINISHED WITH IT. OTHER BORROWERS MAY BE WAITING.



Seasonal Pollen Sources for Honey Bees in Canterbury High Country

W.D. Pearson, DSIR Plant Protection, and V. Braiden

Natural reseeding of white clover *(Trifolium repens)* in high-country pasture is dependent on honey-bee pollination (Palmer-Jones et al. 1962; Pearson 1985). While honeybees can produce good honey crops (Ledgard and Simes 1983) during the summer, there is no information on pollen sources necessary for colony expansion in the spring. Beekeepers may therefore be reluctant to commit their hives to these areas. This survey was carried out to determine the sources of pollen from spring to autumn and their sufficiency to maintain colonies through the year.

Our hives were set out in October 1984 at Broken River on Flock Hill Station, Canterbury, at 730m above sea level. The surrounding vegetation was rangeland with native tussock grassland and shrubs, and remnants of experimental plots sown with introduced grasses and forage legumes. Beech *(Nothofagus solandri)* forest margins and exotic trees and shrubs, including gorse *(Ulex europaeus)* and willow *(Salix sp.)*, were available within three km.

The hives were fitted with Ecroyd pollen traps modified for periodic pollen collection. We inserted the traps at midday for periods of one to four hours, depending on the volume of pollen collected. We trapped pollen weekly from 12 September 1985 to 29 May 1986 (Fig 1). We sorted the trapped pollen by colour and weighed the fractions, then prepared several representative pellets of each colour for microscopic identification either fresh (Sawyer 1981) or after acetolysis (Erdtman 1960). Microscopic examination was necessary because colour alone was found to be unreliable for some species.

We removed one full super of honey from both hives after each of the first two seasons, in January 1985 and 1986. In February 1987 we removed another full super and a Ross Round super from one of the hives but the other had weakening over the summer and no honey was harvested. The cause of this weakening is unknown.

SPRING - September to November

Very little pollen was collected by bees during September, just 0.9% of that collected over the whole year. A mountain heath *(Leucopogon sauveolens)* was the major source in the first two collections, (59% and 47% of that collected) (Fig. 1). Redwood *(Sequoia sempervirens)* was also present in the first collection (32%) but *Coprosma* (36%) replaced it in the second collection and thereafter was the major source until the beginning of November, contributing 15.1% of the years total.

Although dandelion was collected on seven of the ten spring collection occasions it was the major component only once (87% of it was collected on 6 November) and accounted for approximately 24% of the spring pollen. Native daphne *(Pimelea sp.)* was collected most often, occurring on nine of the ten occasions but its contribution was generally small, averaging 2.4% of the weekly collections.

Matagouri *(Discaria toumatou)* was collected in preference to white clover from mid-November to mid-December when it disappeared from the traps. At the last spring collection matagouri made up 74% of the pollen trapped and comprised 20.7% of the total pollen trapped during the period. White clover comprised 19% of the last collection and 6.5% of the total for the period. Buttercups *(Ranunculus sp.)* and mountain beech were major contributors (44.0% and 38.1%) on only one occasion (13 November), before matagouri or white clover were in full flower.

SUMMER - December to February

There were 12 collections during the summer. Matagouri was the major pollen source on the first two occasions and in that time supplied more than 43% of the pollen collected over the whole season. White clover was collected on every occasion and was the major source on five of them, supplying nearly 30% of the summer collection. Thistles were the other major source during the summer. Native broom *(Carmichaelia sp.)* was the principal source once but contributed only 0.06% of the pollen collected over the summer period; (Fig. 1) the day was wet and windy and one hive collected no pollen at all.

Table 1. Major sources and types of pollen trapped from honey bees colonies at Broken River, 1985-1986.

Period (g/hr)	Wind-borne	%	Insect-borne	%
September (1.060)	*Coprosma*	83.7	*L. sauveolens*	7.8
			Gorse-type	3.5
			Pimelea	0.9
October (19.798)	*Coprosma*	81.9	Dandelion-type	7.1
			H. alpina	4.8
			Gorse-type	0.7
November (40.257)	Beech	7.9	Dandelion-type	33.5
			Matagouri	31.4
			White clover	9.9
			Buttercup	9.0
December to February (50.138)	Pine	0.06	Matagouri	43.2
			White clover	29.8
			Thistle-type	10.1
March to May (6.813)			Dandelion-type	89.6
			White clover	6.2
			Thistle-type	4.0

AUTUMN - March to May

Dandelions provided nearly 90% of the pollen collected in each of the ten autumn collections (Fig. 1). White clover and thistle were only sporadically collected after the beginning of March.

The sequence of principal collections was *Coprosma* in early spring, matagouri in early summer, then white clover and thistles through the summer. Dandelions, although available throughout the year, were only collected when little else was available.

Honeybees may select pollens on the basis of their nutritional value. 'Excellent' pollens have been identified by Stanley and Linskens (1974) as including those from insect pollinated fruit trees and white clover, while 'good' ones include dandelions and some wind pollinated species. 'Poor' ones are wind pollinated deciduous trees, such as birches *(Betula sp.)*. Conifers, including pine and larch *(Larix decidua)*, are regarded as particularly bad. As a general rule, wind pollinated plants have pollen of low nutritional value, while insect pollinated ones have high value.

Wind pollinated species commonly form a large part of honeybees spring pollen collections and our results reflect this (Table 1). Wind-borne pollens made up 86.8% of that collected in September, 82.1% in October but only 9.8% in November; over the remaining six months it made up just 0.06%. Almost all of this was *Coprosma* with some mountain beech in November. During the summer period, of the 14 species recorded, pine is the only wind-borne species. If Stanley and Linskens' (1974) general rule applies here, the conifers may actually be deleterious and *Coprosma*, even though it provided most of the pollen collected during the period of colony expansion, may be no more than 'good'. However, the bulk of the spring pollen was collected in November and came from insect pollinated species, mainly dandelions, matagouri, white clover and buttercups (Table 1); most of these species would be classed as 'excellent'.

Nothing is known about the nutritional value of New Zealand native plant pollens, except that karaka *(Corynocarpus laevigatus)* pollen is toxic to honeybees (Bryant 1982). Nine of the 21 species providing early spring pollen were native and supplied 90% of the September-October pollens (Table 2). In addition to the 82% provided by *Coprosma*, there were small amounts of matagouri, two mountain heath species, weeping mapou, porcupine shrub, native daphne, and patotara. Research is needed on the nutritional value of pollens of native species, particularly *Coprosma*, beech and matagouri. Of introduced species, gorse and willow contributed only 0.85% and 0.13% to the total. Native species contributed very little pollen in late summer and autumn when the bulk is provided by white clover, thistles and dandelion (Table 2).

This study has demonstrated that the combination of pollen supplies from native species in the spring and introduced species in late summer/autumn appears to be adequate for colony maintanance throughout the year, and the production of surplus honey. Beekeepers can provide pollination services for introduced clover in high country, and obtain honey crops, at

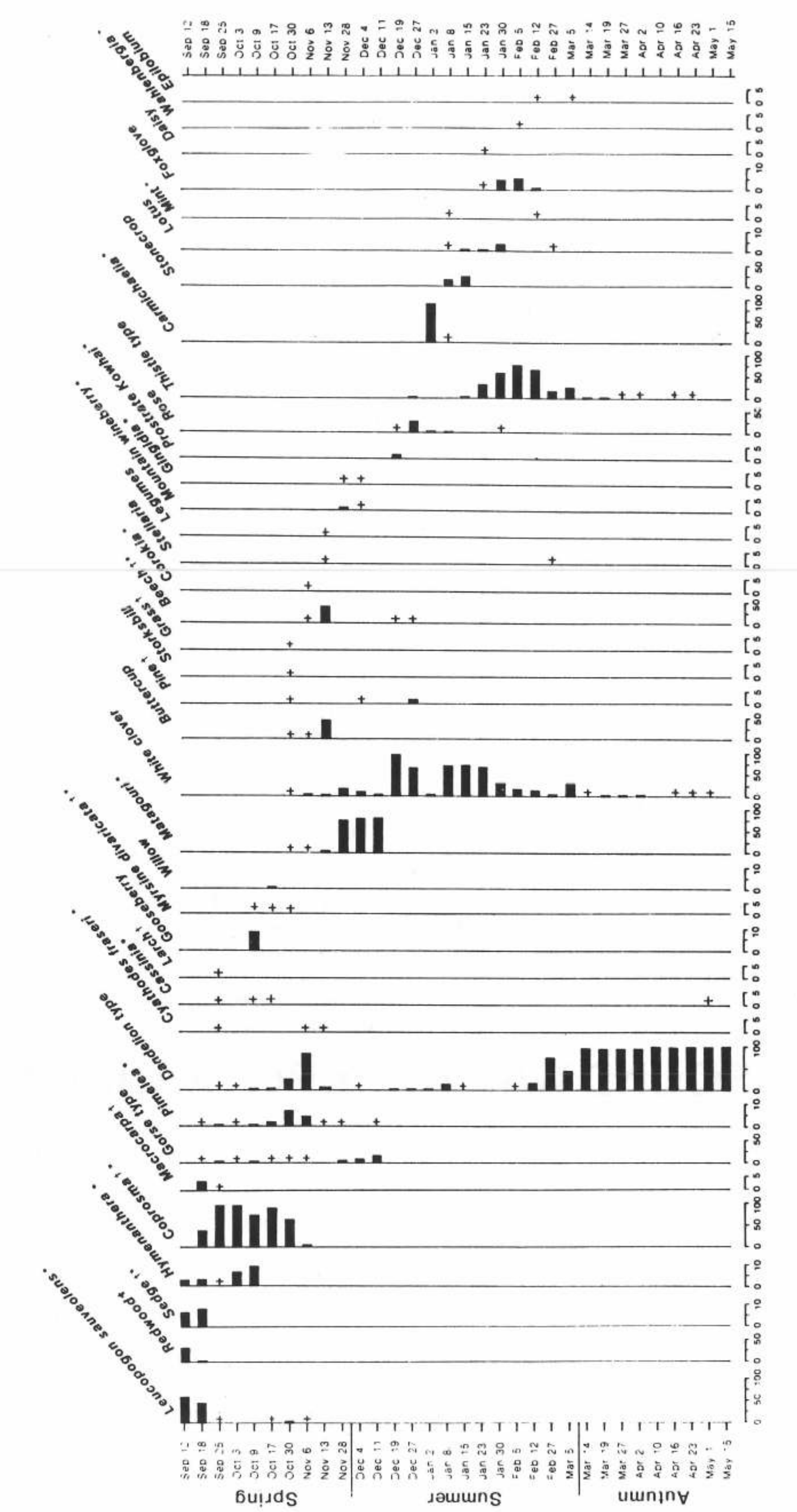


Figure 1. Percentage composition of weekly pollen collections by two honeybee colonies at Broken River, Canterbury, 1985-1986. Percentages indicated + are less than 1%. Species indicated * are native and those indicated † have wind-borne pollen.

Table 2. Origin of major pollen sources through the season at Broken River, 1985-1986.

Period (g/hr)	Native	%	Introduced	%
September (1.060)	*Coprosma*	83.7	Gorse-type	3.5
	L. sauveolens	7.8		
October (19.798)	*Coprosma*	81.9	Dandelion-type	7.1
	Hymenanthera	4.8		
November (36.489)	Matagouri	34.7	Dandelion-type	37.4
	Beech	8.6	White clover	10.9
December to February (50.088)	Matagouri	43.2	White clover	29.8
			Thistle-type	10.1
			Dandelion-type	6.3
			Gorse-type	5.5
March to May (6.821)	*Cassinia*	0.02	Dandelion-type	89.7
			White clover	6.2
			Thistle-type	4.0

least in areas with flora similar to that of this study site.

ACKNOWLEDGEMENTS

We wish to thank N.T. Moar, C.J. Meurk, W.R. Sykes and C.J. Webb for advice on pollen and plants. B.J. Donovan supplied and maintained the hives and modified the Ecroyd trap. W.J. Whitford tended the traps on occasions and C. Brown prepared the figure.

REFERENCES

Bryant, T.G. **1982** Spring pollen feeding. *The N.Z. Beekeeper 174:* 23-24.

Erdtman, G. **1960** The acetolysis method - a revised description. *Svensk botanisk Tidskrift 54:* 561-564.

Ledgard, N. and Simes, W. **1983** Honey production at 900m in Craigieburn Forest Park. *The N.Z. Beekeeper 177:* 25-27.

Palmer-Jones, T., Forster, I.W. and Jeffrey, G.L. **1962** Observations on the role of the honey bee and bumble bees as pollinators of white clover *(Trifolium repens* Linn.) in the Timaru district and Mackenzie country. *N.Z. Journal of agricultural Research 5:* 318-325.

Pearson, W.D. **1985** White clover seed production in high country pasture. R.B. Chapman (Ed) *Proceedings Australasian Conference on Grasslands Invertebrate Ecology 4:* 121-126.

Pearson, W.D. and Braiden, V. **1990** Seasonal pollen collection by honeybees from grass/shrub highlands in Canterbury, New Zealand. *Journal of Apicultural Research.* In Press.

Sawyer, R.W. **1981** Pollen Identification for Beekeepers. *University College Cardiff Press: Cardiff.*

Stanley, R.G. and Linskens, H.F. **1974** Pollen. *Heidleberg and New York: Springer-Verlag.*

A SOUND WAY TO REPEL RABBITS

Rabbits are in the news in New Zealand at the moment with arguments raging as to the desirability, or otherwise, of myxomatosis as a means of controlling the rabbit population. It is timely then that a British company, Wyvern Electronics, has just introduced an electronic rabbit repellant designed to keep the creatures out of crops.

In addition to rabbits, other pests such as deer and pigeons can be repelled from crops using the cost-effective and environment-friendly system introduced by the company.

The Wyvern Rabbiter is an electronic unit which generates a complex sequence of audible and ultrasonic sounds which switch between the master unit and the four outlaying slave units positioned along the periphery of the crop.

Since random sequences of sounds are emitted at varying intervals from different locations, the rabbits have no opportunity to develop familiarity with the sounds. Finding them disturbing and confusing, they prefer to stay away from the protected area. An optional strobe-light unit is very effective in deterring pigeons.

The Rabbiter is more cost-effective than the alternatives of netting, which is cumbersome and labour intensive, or of shooting, which is only a short-term remedy, the losses being rapidly made up by the rabbit's natural prolific reproduction. Moreover, there are no corpses to attract vermin.

Operating from a safe 12V supply such as a car battery, a system (master and four slave units) can protect a perimeter of up to 200m. It is suitable for use at night as well as in daytime and in all weather conditions.

Jar and bottle filling machine

A commercial jar and bottle filler machine, with an attachment that avoids air pockets being trapped in irregularly shaped containers, has been developed in Britain.

The Posifill MK2 semi-automatic filling machine, from the Universal Filling Machine Company, rotates the table on which the container being filled is placed, and the filling nozzle dives to near the bottom of the container jar. Centrifugal force throws the substance out into the corners of the container as it is ejected at high speed. The nozzle rises as the container fills. The whole process can be conducted at the rate of up to 30 containers per minute.

The system has an emergency stop and priming control, chargespeed control and two-speed filling. A choice of nozzles is available and a simple dial-and-lock system permits control of volumes per container. Air consumption is up to 37 litres of free air per minute at a pressure of 4.2kgf/cm² and the machine can be set up with either a 25mm diameter feed, 50mm diameter feed, or with an overhead hopper for filling creams and gels.

Hygienic kitchen wastebin

A kitchen wastebin offering a greater convenience has been introduced by a British company.

From Better Bin Designs, the item is set into an opening in the kitchen work surface and has a sealed low-profile lid. A standard bin liner is anchored below the opening where it collects refuse and waste pushed through from the work surface. The bag, which can be from 20 to 90 litre capacity, needs no waste bin and simply stands in a drip tray which contains any leakage.

The lid, aperture and drip tray are easy to clean and the sealed bin liner, safe behind a kitchen unit cupboard door, is claimed to be more hygienic than free-standing waste bins.

The bin is made from strong durable ABS plastics, with a textured finish to eliminate scuff marks, and is available in white, beige or brown. Fitting requires only a simple worktop cutout, as for sinks and hobs.

The kit includes sealing grip rings and lid, cutting template and fitting instructions, four fixing clips and screws, the drip tray and a pack of bin liners.

HONEY, NATURE'S SWEETENER

From Sue Jenkins

Honey has been man's basic sweetener. Records dating back to 4000BC show man using honey as a sweetener.

The use of refined sugar as a sweetener is recent. Many of us have acquired the taste of white refined sugar as our everyday sweetener. Consequently we are missing out on the quality sweetening properties of honey.

As well as the quality sweetening property of honey, honey has other functions as an ingredient in our food preparation. For example:

* Honey adds moisture, hence eliminating dryness and crumbliness to baked goods.
* Honey improves the keeping qualities of our baked goods and breads.
* Honey enhances fruit and spicy flavours in fruit cakes and carrot cakes.
* Honey mixes easily with oils, so you can create sauces and salad dressings.
* Honey enhances colour - in baking the carmelization enhances the crust colour eg. breads, meat, etc.

Honey can be substituted for sugar in recipes. When recipes call for white sugar, I generally use a light-flavoured honey such as Clover or Vipers Bugloss. With recipes calling for brown sugar or golden syrup I use a strong-flavoured honey such as Manuka or Spanish Heath. This choice in honey type is important, because the distinctive flavour of the honey, whether it be Clover or Manuka, affects the final flavour and quality of the product.

Here are some general rules for substituting honey for sugar in recipes.

* substitute honey for up to half the sugar
* with experimentation, honey can be substituted for all the sugar in some recipes. Use ¾ cup of honey for each cup of sugar used
* add ¼ to ¾ teaspoon baking soda for each cup of honey used. This neutralises the honeys acidity
* reduce oven temperature by 10-15 C to prevent over-browning of baked goods. This is because honey carmelizes at a lower temperature
* in biscuits and cakes add honey to the butter or oil gradually, in a fine stream, beating constantly to get more volume and a lighter texture.

HOT GREEN SALAD WITH HONEY HERB DRESSING

Prepare six cups of assorted green vegetables, eg. broccoli, florets, finely sliced courgettes, sliced celery, chopped green pepper, bean sprouts, sliced brussels sprouts, finely sliced cabbage, or spinach. Cook lightly in a little boiling water in a saucepan on the stove or in the microwave until tender but still slightly crisp. Drain. Pour over the hot dressing, serve immediately.

Honey Herb Dressing:

2 tbsp clover honey
2 tbsp spiced vinegar
1 tbsp oil
2 tbsp finely chopped fresh herbs

• Place all the ingredients in a microwave-proof jar and heat on 100% power for one minute.

GREEK HONEY-WALNUT CAKE

100g butter
½ cup sugar
½ grated orange rind
2 eggs, beaten
1½ cups flour
1½ tsp baking powder
5 tbsp milk
½ cup finely chopped walnuts
syrup
½ cup honey
½ cup water
2-3 tbsp lemon juice

• Cream butter and sugar, add grated orange rind and beaten eggs. Fold in sifted dry ingredients alternatively with the milk and walnuts. Bake at 180C in a prepared tin for 35-40 minutes. When cooked pour over the syrup.

To make the syrup, boil all syrup ingredients together for five minutes.

BAKED CHEESECAKE

Honey blends itself perfectly to the flavouring in this rich traditional cheesecake. Serve with ice-cream. Use softened or liquid honey in this cheese cake.

Pastry Base

1½ cups flour
125g butter
2 tbsp honey (vipers bugloss or clover)

Filling:

250g cream cheese
2 eggs separated
4-5 tbsp honey
grated rind and juice of one lemon
2 tbsp self-raising flour
½ tsp cinnamon

• Sift the flour into a bowl. Cut the butter until it resembles coarse breadcrumbs. Stir in the honey and knead lightly. Press into a 23cm flan dish. Prepare the filling by beating together the slightly-softened cream cheese and the egg yolks. Stir in the honey, lemon rind, and juice, then stir in the sifted flour and cinnamon. Whisk the egg whites until stiff and fold lightly into the cream cheese mixture. Pour this into the base. Bake at 180 C for 15-20 minutes then at 160 C for a further 25-30 minutes until the filling is set. Serve hot or cold.

HONEY LEMON WHIPPED CREAM

Serve over gingerbread, fresh apple cake, or fruit pancakes.

1 cup cream
¼ cup clover honey
5 tsp lemon juice
1-2 tsp grated lemon rind

• Whip cream to soft peaks then slowly add the honey and whip to stiff peaks. Fold in lemon juice and rind.

HONEY PORK SATE

1 kg pork fillets, trimmed and sliced into thin strips
¼ cup oil
2 onions, sliced
3 cloves garlic, crushed
1 red pepper, sliced into julienne strips
½ cup sherry
¼ cup crunchy peanut butter
¼ cup tomato paste
2 tbsp soy sauce
1 tbsp chilli sauce

• Place prepared pork fillets in an earthenware bowl. Heat oil in a large frying pan and lightly saute onions, garlic, and chilli. Remove from heat, stir in honey, sherry, peanut butter, tomato paste, soy sauce and chilli sauces. Allow to cool then mix through the pork fillets. Cover and refrigerate for 24 hours. Thread pork ribbon-fashion on bamboo skewers. Barbeque or grill sate for approximately 5-8 minutes. Serve accompanied by the marinade and saffron rice. (Serves 8).

FROM RABBITS TO RATS

Farms, market gardens, warehouses and other food stores can be protected from the depredations of rats and other rodents in a highly effective manner using another ultrasonic barrier system devised by Wyvern Electronics.

The Ratsonic surrounds the area requiring protection with a barrier of constantly changing electronically synthesised ultrasound. The ultrasound itself is an accurate approximation of the distress and aggression calls of rodents. This creates an environment which rodents find intolerable, causing them to stay away from the protected area.

The deterrent is preferable to shooting, poisoning or trapping which cause only individual losses, quickly made up by rodents' prolific rate of reproduction. Moreover, the bodies of dead rodents introduce a further health hazard. The system is hygienic and environmentally friendly.

A complete system consists, typically, of a master unit and three slave units, positioned at the corners of the area being protected and directing ultrasound along the boundaries. The equipment is designed for intermittent use and runs from a standard ac mains supply.

EXPORTING: A PAPER GIVEN TO THE SOUTH ISLAND SEMINAR

By Percy Berry

I should like to discuss current problems. My main activity is with exports that I hope to make at the right time. That takes a lot of picking. It also takes a lot of financing at times. There will not be many of us to whom that is new.

Each day we must look at the affairs of that day. I look firstly at the exchange rates that I am interested in. By pressing a few buttons and waiting for what seems to be ages, I have a print-out of the information I want, and some I neither want nor understand. It probably seems a longer wait when you know that the cost of waiting is $2.50 per minute. But it is not a bad service.

As the morning drags on, someone in the bank provides a fax service summary of the Arataki bank accounts. I often get the impression that I am being told to get on with the books but to leave the cheque book in the drawer. Our bankers would no doubt be happier at times if I showed a little more interest myself, but bankers are a pretty helpful bunch and they can be more helpful if they can find time to become more familiar with their clients total business operations. They too, like ourselves, usually enjoy a few hours away from their desks. I think it is important to remember that.

I spend much of the day taking advantage of the communication systems that now exist. The high-rise buildings full of offices in the cities seem harder to reach and less productive of profits than an office in the vicinity of home, or even in the home. This is perhaps something we, as beekeepers, should think more about these days.

My office is in the old house in which we raised our family for much of the time. It's old, its spacious, and it's fairly well equipped. The house is of little commercial value, but we try to keep the lawns and gardens in reasonable shape and this makes for a pleasant place to work. I used to have an office upstairs in the middle of Hastings, but with the communication systems now available, there are advantages in being "a bit out in the sticks". It can open up wider areas of interest and development without too much capital cost and no travelling costs. It could also, under some circumstances, enhance family interest and family involvement.

There are so many interesting avenues relating to honey production and honey marketing. In marketing one may need stamina but not ncessarily physical fitness. Probably the ability to withstand long periods of mental pressure can help. To a degree I have been able to confirm that.

Many New Zealand beekeepers are under that sort of pressure now, and it is not confined to New Zealand beekeepers. Over the past few years, beekeeper's problems have had no national boundaries. When I was in the United Kingdom 12 months ago, the press referred to the difficulties of the European beekeepers. They were seeking assistance.

For beekeepers everywhere who started, or expanded their operation during the period of accelerated pyramid buying, the problems have been greater. All of us welcome the evidence that we are through the worst. The significant rise in world prices of darker grade honeys and the steady firming of prices of white honey provide good news and not before time.

In producing honey, the areas of higher production tend to move. In Ian's records some yard records will go back probably more than 40 years. The moment in average production is reflected in the average of the past 10 years only. The period before that is considered to have little reference to potential production.

Changes in honey processing enable us to present some of the more viscous honeys quite attractively these days. This promotes our manuka areas to higher levels in potential areas of profitable production. I have a hunch we will need those sites before very long.

Manufacturing - honey is no longer honey that is regarded as unsuitable for table use. It is apparently an increasing percentage of our normal production that does not find its way to the table as honey. Japan's marked increase in honey imports recently is said to be largely a result of the use of honey in drinks. One English trader in Mexican honey explains that he is selling it all to manufacturers.

There are as many angles to marketing honey as to producing it. After we have prepared our bees to harvest a crop we accept that the results, from there, are in the lap of the gods.

But when we have a crop to sell the results can be influenced by factors which are sometimes rather less than devine. For instance the operations of the United States Dept of Ag.

In recent times you have probably heard enough from me on that subject. I'm sure Washington has. Sometimes I make the point that we should remember that there are no George Washington's left in Washington.

It is just unfortunate that when the Canadian Government went to the help of its beekeepers recently it did not use the same tactics as the Americans. Then we would have an exporting country holding its stocks unsold. That could have proved very interesting. It may have cost the Government less. As it is the heavy subsidies being paid to the Canadian beekeepers do not help our marketing. However it was certainly better than no assistance - the Canadians needed the help.

Beekeepers the world over have needed some shield against the influences of the USDA procedures over the past five years.

I am now encouraged by the development we see in the world today in the field of international understanding. It seems that these developments will have increasing momentum. One of the by-products of such development is higher demand for foodstuffs. If the demand is for more apples we can plant more apple trees. If the demand is for more bread we can plant more corn. But if the demand is for more honey

CURRENT WORLD TOTAL AVERAGE YEARLY PRODUCTION		900,000 MT
LIMIT OF AVAILABLE NECTAR		1,250,000 MT
Significant demand increase and price increase		
	1992-1994	
SUPPLY RESPONSE	1994	1,100,000 MT
INCREASE UP TO	1997	1,200,000 MT
LIMIT PRODUCTION	1998	1,250,000 MT
Strong competition for sites in New Zealand 1994 onwards.		

we can increase production to the limits of available nectar resources - and no further. There is no economic means of increasing it. It is a finite resource.

Trying to assess the significance of this fact has been bugging me for some time. I look back at a paper I gave at the Australian Congress three years ago. I made these points:

1. "It has been my privilege to live through one era of great changes and into a new era of changes likely to prove even greater changes that are likely to have a tremendous impact on the economy of our industry. Today we seek more places to sell our honey. I think that tomorrow we will be seeking more places to produce it.
2. "I believe that the period we have now entered calls for an immediate assessment of the world's nectar resources. It is a limited resource, and for obvious reasons it will continue to be a limited resource for as far into the future as any of us can foresee.
3. "I do urge, that while today's problems of finding a place to sell our honey are uppermost in the minds of most of us, we should not lose sight of the fact that the problem of tomorrow might well be finding a place to produce it. If I were younger, I might express this view less strongly, lest I be proved wrong and be found hanging from a gum tree."

Today in the United Kingdom I am drawing attention to the fact that honey supplies are not without limits. It may look like a selling gimmick to some. I will accept that risk. Some of our honey labels there read:

> "The world's nectar sources are limited and diminishing and there are no economic means of increasing them.
> CARE FOR THE ENVIRONMENT
> CARE FOR THE BEES."

We must ask ourselves what are the implications for the future of our industry?

What is the present world production of honey?

What is the limit to future productions?

When will call for increased production?

When will world population reach the limit of the available nectar?

I think these are questions to which we should seek answers now. Estimates of future events in this area are likely to be more accurate if the interest is widespread. If our best estimates prove to be rather wide of the mark we will still benefit by being ready for a change such as we have contemplated. Some may conclude that a shortage of nectar will not occur at that point where they could be excused from further contemplation. They could even prove a cheap source of bees - and sites.

Those of us who acknowledge the production problem and the massive implications for an uplift for our industry should start pondering. I set out here my estimates with plenty of room for your alternatives.

AND FROM IAN BERRY, PRESIDENT OF THE NZ HONEY PACKERS' ASSOC.

The NBA mission statement of "BETTER BEEKEEPING - BETTER MARKETING" is a good one. It places equal emphasis on production and marketing. If you visualise a pendulum centred between the two it sometimes swings towards production and sometimes towards marketing. Occasionally the pendulum will be in the middle, indicating a balance between supply and demand, and this is the goal to strive for. The mission statement of the Packers' Assn could well be "better marketing" and the pendulum is now indicating a need for this. However, there are signs that the pendulum is now indicating a need for this. However, there are signs that the pendulum is due to swing back towards the centre before too long. My reason for saying this is because:

EXPORTS OF NEW ZEALAND HONEY. Exports have shown a rising tendency over the past two months. For the first three months of 1991, 410 tonnes were exported with 179 tonnes in April and 250 tonnes in May. Making a total of 839 tonnes for the first five months of 1991. Exporters are receiving increasing enquiries from overseas and I am hopeful the present high stocks of honey in NZ will be nearer to normal by the end of the year.

A further indication of "Better Marketing" is the possibility of:

SETTING UP AN EXPORTERS' SECTOR OF THE NZHPA. At the NBA planning meeting held last March at Flock House we suggested the Packers' Assn could discuss at the possibility of setting up an Exporters' sector of our Assn as a practical method of establishing an Exporters' Group. I feel we could get this sector up and running quickly and at little cost. This would then form a basis on which an exporters' organisation could be built for the future. Like any new organisation it would depend on some enthusiastic and dedicated members prepared to put in the work to make it a success. If after a period of time it becomes apparent that it is not achieving the hoped for results, we will at least have gained some knowledge at little cost.

Other matters on which I would like to report are:

FINANCE The financial position of the Assn continues to be strong. Net assets are now $35,510, an increase of $1,513 for the year. While reduced interest rates and die commissions will reduce our income, I see no need to increase subscriptions for the coming year.

RULES OF THE NZHPA. The existing file copy of the rules is very dilapidated and in parts hard to read. These have now been retyped and the amendments set out to make them easier to read and follow. I would suggest that some of the wording is now obsolete and we should look at updating the rules soon.

MEMBERSHIP remains steady at 46 financial members.

HONEY FOR SALE CIRCULARS. This new service was introduced last December to provide a low-cost method of keeping members of the Assn informed about which producers have honey for sale. It is important for honey producers, as well as packers, that all market opportunities are followed up. Knowing what honey is available, and where, should help with this.

RETAIL OUTLET PRICE SURVEYS. While some useful information has been sent to members at times, we have not yet arrived at a practical method where this is done regularly. We feel the methods we have tried resulted in too much detail and too much work. We suggest a system of monthly reports on 500g Tecpak or Lilypacks in certain key stores may solve this problem.

CONFERENCE CALLS Three conference calls have been held since last Conference, on 28 Jan 91, 25 Mar 91, and 20 May 91. The system of having a telephone meeting between 10 members and then sending out a report to all members is, I believe, a practical and relatively low cost method of providing up-to-date crop and market information for members.

To conclude, I would like to thank members for their help and cooperation during my first year in office. Special thanks to our Vice President Peter Bray for his guidance and advice during the past year. Also to our Secretary Barbara Bixley for all the good work she has done for this Assn. I have enjoyed my first year as your President and would be happy to continue for a further year should this meeting grant me that privilege.

How to Demolish your Chainsaw

By Chris Ogilvie

Rule No. 1. Keep cutting even though the chain is getting blunt. Gnaw your way through softwood, hardwood, dirt, sand, and embedded staples, but whatever you do, don't sharpen the chain. When the chain is nice and blunt, the motor will scream, wearing itself (and you!) out with very little progress being made. It won't rip out great chips of wood, just fine dust which soon blocks the air filter, clogs the cooling fins, and finds it's way into fuel, oil, ignition and starter systems where it causes all sorts of mischief.

Of course, to make a blunt chain cut at all requires lots of downward pressure. Consider this to be good exercise. It grossly overloads the guide-bar rails and the back of the chain, and will wear them out in no time. Nothing bulk money can't fix. It also will tear the handle soft mounts apart, but you can tie the handle back with baling twine. Finally, the cutting teeth of the chain get badly damaged when run blunt, and will need to be filed back a long way to create a new cutting edge. A major job, which is worth putting off even longer!

Rule No. 2. Allow the chain to become good and slack on the bar before you adjust it. This allows the chain to hammer away at the bar where it first enters after going around the sprocket, also after the chain has gone around the bar tip. A loose chain comes off the bar much more easily, and it usually gouges a bit more out of the saw body when it does. It also allows the cutters to tilt up so that they won't cut properly, but will wear out at the heels.

Rule No. 3. Make sure that the chain and bar jam in the cut as often as possible. When they do, heave and pull on the saw. This stresses the handle mounts to their limits the other way, busts chains, bends bars, or may even break the bar mount pad clean off the saw!

Rule No. 4. Don't fuss about chain oil. Any old oil will do; just because it's no longer good enough for the tractor, she'll be right. Tip it in the saw. Never flush the oil tank, or clean the pickup filter. And don't clean the oil hole in the bar; maybe it'll use less oil if you leave it clogged up.

Rule No. 5. Reset the carburettor. The manufacturer and the service agent obviously know nothing about chainsaws. You can get it to rev much faster by leaning off the mainjet. Not only will this cause it to over-rev and over-heat, it will reduce it's power, and it's lubricating oil supply. In conjunction with a blunt chain, this can be very effective in getting a saw to self-destruct completely.

Rule No. 6. Ignore the air filter. Combined with rule No. 1, this will also soon add up to a saw with no power. When finally the saw won't go, poke a hole though the air filter with a screwdriver while you are trying to remove it and leave it like that. It won't clog up again.

Rule No. 7. Bring home a tin of petrol and tip in a bit of engine oil, super tractor oil, diff. oil, anything, to make up the two stroke mix. After all Grandpa used engine oil in the old Villiers, so why break tradition?

Rule No. 8. When the spark plug packs it in, and it surely will if you follow the above rules, throw it away and find one with the same thread that has been rattling around in the glove-box of the ute, or lying amongst the hayseeds at the back of the workbench. If the saw goes, consider the problem over. Nevermind technical things like heat-range, reach, seat, or type.

Rule No. 9. When you start your saw, pull the cord right out to the end viciously. Given the above mistreatment, it probably won't start if you don't. And if you do, it won't be long before the cord and the saw part company. When you refit it, make sure the spring is wound up good and tight. This will ensure that when you pull it next time, you will bust the end off the spring.

Rule No. 10. When you take your saw to bits to fix the starter, or fit a new bar and chain, don't clean anything. Trap sawdust and dirt between mating surfaces, and retighten as best you can with a battered six-inch crescent, or a worn old screwdriver of the wrong size. After a time parts will start to vibrate and move. Wait until the screw holes wear to twice their original size, and the screws drop out. Then force in an old screw from the bottom of the tool box. If it's a self-tapper, all the better.

Rule No. 11. When you have a job to do, throw the saw on the back of the ute, along with a couple of strainer posts which roll about, or chuck it on the carry tray on the back of the tractor and bounce out to the back of the farm. When you get there, fell trees on it, drive over it, spray it with gorse killer, whatever you like, but whatever you do, don't maintain it in any way. Forgetting the chain-file, bar-wrench, spare plug, and chain oil should ensure this.

Rule No. 12. Store your saw by abandoning it on the back of the ute, leaving it there through rain, hail and mud, or chuck it just inside the shed door on the floor where you trip over it, and the goat can eat the hand mitt off it. Alternatively, you could put it on top of a bag of super, which eats holes through it. Do make sure that it is in a well-lit spot, so that the mason bees can come and bung up the cooling fins, or stuff the muffler full of clay and torpid spiders. On some models they even manage to corrode the piston permanently on to the cylinder wall.

If you faithfully follow these rules, you should have little trouble in reducing your $800.00 precision-made investment to a $50.00 trade-in in as short a time as possible!!!

TURNING WASTE TYRES INTO USEFUL PRODUCTS

Britain's Industry and Technology Minister, Lord Reay, recently announced a grant of over £700,000 for research into ways of combining waste rubber tyres and plastic bottles and recycling them into marketable higher grade products.

Lord Reay said "I am delighted that the Department of Trade and Industry's financial support has enabled Rosehill Polymers, a small UK firm, to take this forward in collaboration with this German partners Heldt KG.

"This project is particularly significant because it aims to use two types of waste material — plastic bottles and rubber tyres — which have been identified by the UK Government and the EC for priority attention.

"I am particularly pleased that Rosehill Polymers is leading the research, which has the potential to convert simultaneously two difficult waste materials into useful, saleable end products."

The technology uses a binding process which makes it possible to combine the two distinct materials into higher grade products such as sound absorbing components for motor cars, flexible insulating materials and heavy duty packaging.

The project has potentially great benefits in dealing with the growing problem of rubber tyre disposal. In the UK alone, 25 million car tyres are scapped each year.

Current methods of disposing of low-grade plastic and rubber waste such as plastic bottles and discarded tyres are based either on incineration, which makes no use at all of the intrinsic properties of the materials, or conversion into low-grade products.

The proposed method of recycling, unlike current methods, retains and exploits the plastic and elastic properties of the waste material rather than using it simply as an inert powder.

The project which has total costs of over £3 million is the latest under Euroenviron, the Pan-European programme to support innovation.

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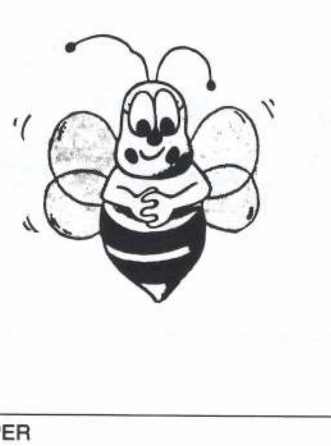

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