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Notes from the President

Nick Wallingford

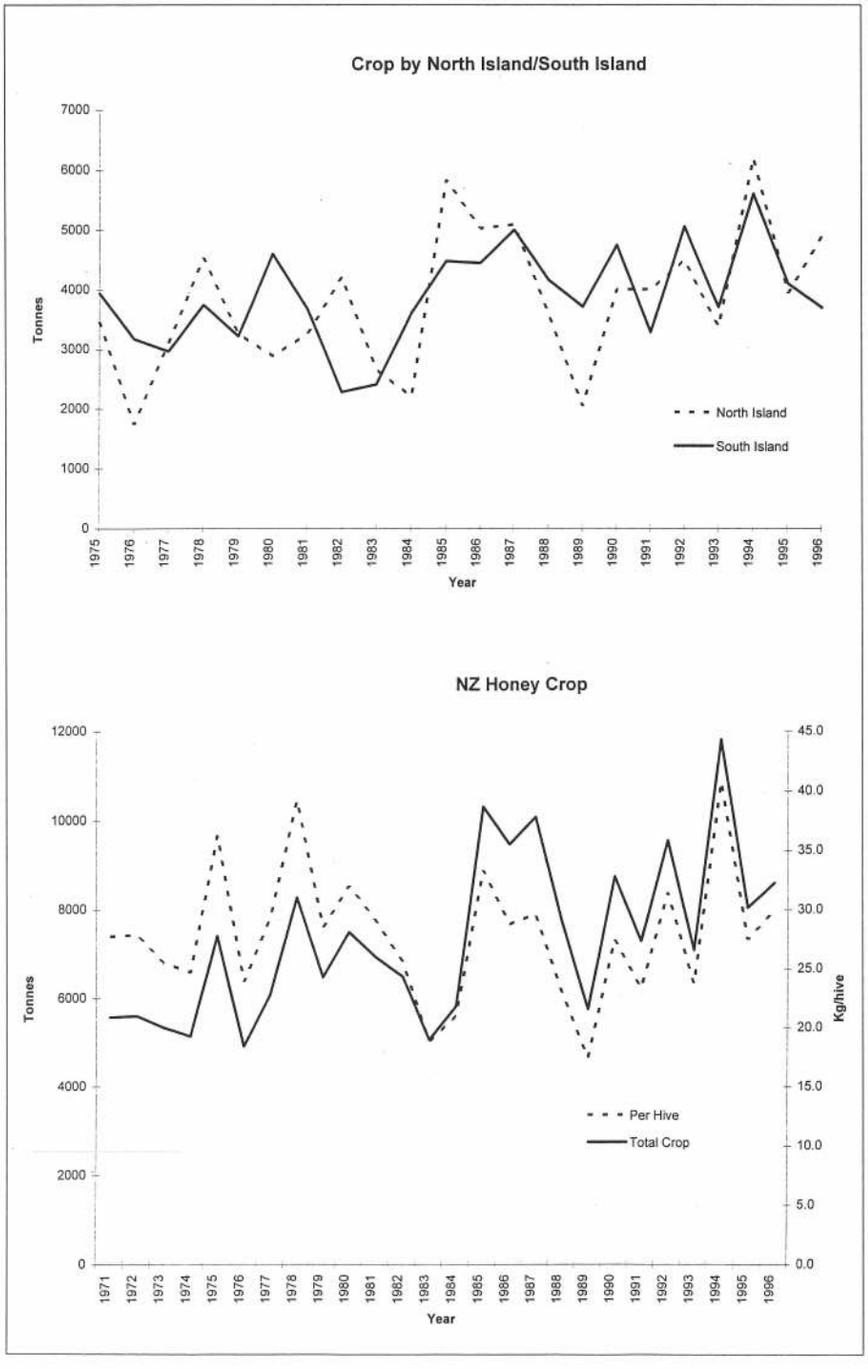
This month's notes are going to be 'graphical'! I've collected some numbers to relate to each other to do with the New Zealand honey crop.

Statistics such as these related to hives, beekeepers and production are important to any producing industry. We are fortunate that we have reasonably good figures going back quite some number of years (further back than these graphs indicate). The numbers were collected by the Department of Agriculture (now the Ministry of Agriculture and Fisheries).

And what's going to happen into the future? This collection of statistical information is just one more of those government funded services that the industry is losing. Not so dramatic to the industry's well-being as advisory services and disease control, perhaps, but a further indication of the 'distancing' (particularly as it relates to any sort of funding!) that all producing industries are facing from government departments.

I wonder whether we will have accurate figures available to us to continue these graphs next year?

New Zealand honey crop



Are you a Member?

One of the commonly asked questions to this office is am I a member of the NBA as I don't keep bees?

The answer is, if you pay a Hive Levy to the association, or you subscribe to The New Zealand BeeKeeper Magazine you are a member of the Association and you take advantage of the member benefits that are offered through your magazine.

Harry Brown

The New Zealand BeeKeeper

THIS ISSUE

Notes for beginners and others

Good spring management is a must if you want to reap a crop of honey. After that harsh winter we have experienced a wonderful month of September here in South Otago. Best spring for ages. Some newly gathered nectar and plenty of fresh pollen was showing up some 10 days later. Rosemary, flowering currant, cherry plums and rhododendrons were the probable sources. The colonies were very content, in good shape and with no signs of disease. Brood nests were expanding thanks to that bit of fresh nectar and pollen coming in. Still plenty of stores too. That really makes for a nice satisfying picture. I sincerely hope that you too find your hives in such a condition. But... there are always buts!

Colonies expanding rapidly so early in the season can perhaps cause problems in the coming months. If this calm, mild weather holds we just could do alright from the willow which should start soon, usually it blows up just then. However if we do get that willow flow a population explosion will occur indeed.

"Good" you will say. Up to a point.

Under reasonable conditions young vigorous queens increase egg laying capacity at this time of the year till she reaches a peak of some 1500 and sometimes more eggs each day. This high level should be reached about six weeks prior to the main honey flow for it will be the bees raised during this intervening period that are going to make up the field force for bringing in the crop.

If we are faced with an extra early and strong build-up we have to expect a few problems. Hives which are too strong too early cannot keep body and soul together if not managed sensibly, they will swarm. We have to do something about it in good time. Don't wait till a hive is boiling over with bees and swarm cells are all over the place. The risk of swarming is greater when queens are well into their second year or older. So the answer to that one is obvious.

With an early flow s.a. willow, Spanish heath or some other source a brood nest may well become congested, where honey is stored in the cells a queen cannot deposit eggs. An extra super may be needed.

"Milking" some combs with sealed brood near hatching from the real strong colonies and giving it to weaker ones is good policy, benefits both parties, but it must not be over-done, there must be enough bees in the weaker hive to be able to cover this extra brood when the temperature drops or some of the brood may become chilled. Give the combs you take out first a light shake to remove the older bees and make sure the queen is not on it. Then place it with the adhering younger bees into the brood nest of the recipient hive. No fighting will take place.

You can simply swap places between a weak and a strong hive. The field bees of the strong hive will home on to their old position and thus build up the strength of the weaker one giving it more bees to cover extra brood given to it or that which its own queen will start to produce following this stimulation. At the same time it will slow down the over strong colony somewhat.

"Reversing", that is interchanging the two brood nest supers is also good practice. It often helps to extend the brood nest more efficient over the combs in both supers. It should not be done before the brood nest has expanded well into the bottom super.

When an extra super is required to supply more space it will be a good opportunity to insert a few frames with foundation into the brood super. Take two or three combs with sealed brood and place them into the centre of the third box. Replace them with the foundation. They should go alongside the brood nest, that is on each side of the remaining combs with brood. Some experts advocate to alternate brood combs with foundation but I don't think that is such a good idea in our changeable climate. We may well have to face some real bad and cold weather this side of Christmas. It will pay to place an excluder between the third super and the brood nest to keep the queen from moving into what will become an extracting super. Another very good way to deal with very strong hives before they get the swarming urge is to make a nuc (top) which can later be reunited, giving then the parent colony that extra lot of bees and brood at the crucial time (start of the main flow) and a young queen into the bargain. But for this one should either have a caged queen to introduce to the top (preferably) or a ripe queen cell. If the top has combs with larvae of the right age a queen cell may be raised but that takes valuable weeks and there is the uncertainty of mating and quality.

You may have wintered some single storey units which now require an additional super. It is often advisable to place the extra box on to the bottom board and the one with bees and brood on top. Easier for the bees to keep the hive temperature correct in case of a cold snap. The bees will gradually take possession of the lower super and the queen will follow. Once she has expanded her nest into a number of combs the supers can be reversed. It will stimulate her further to lay eggs into the empty cells between the curves of brood.

Things may look rosy just now with some early nectar coming in and a good pollen supply but in lots of places there will be a dearth between now and the start of the main flow. That means little or nothing coming in but with consumption of stores increasing all the time, it is essential to keep the tucker supply up to the mark. If the food is not there all endeavours will have been in vain.

Remember that strong hives do not need any further boosting. When supplementary feeding has to be done a large quantity at once of strong syrup is the rule, not small amounts of a weaker syrup. A top feeder capable of holding six to 10 litres is the answer to feeding a populous hive. Easy enough to make yourself, using a cut down old super and some cut open plastic oil containers (properly washed out). But three or four kg honey containers with perforated lids placed upside down on some thin slats above the brood nest and inside an empty super will do the trick too. A crown board can be adapted for the job by cutting the required number of round holes over which to place the containers with syrup. So we have a number of options we can use as anti-swarming measures in our spring management and the one aim; optimum field force strength for the main honey flow.

Practice any one or a combination of several. You are the judge and have the choice.

Summing up:

1. Good vigorous queen essential (less than two years old)
2. Reversing
3. Extra super for more space
4. Using foundation and raising brood combs
5. Making a top nuc with a new queen or cell
6. Swapping places between a strong and a weak colony
7. Take some brood away from the strong to benefit the weak
8. Break out any swarm cells and keep doing it. A practice with doubtful results for once a hive reaches that stage it becomes very questionable if the issue of a swarm can be stopped.

Essentials:

Stores must be adequate at all times.

Always keep an eye open for any sign of disease, especially B.L.

Never swap combs, other gear or interchange hives or feed honey before you have the certainty it is all disease free.

Letters to the Editor

If you write a letter to the Editor, or have an article you want printed as an article, can you clearly mark it as such. ***Thanks, Ed***

Dear Sir

The response to my request for honey samples hasn't been all that good. I imagine, however, that with spring upon us that the 96-97 season flows will start trickling in. I have currently about 100 samples but we are hoping to get about 500, so we are quite short of that target at the moment.

Any help that you can give in obtaining samples is most appreciated.

Nicolette Brady,
Research Technician

Dear Mr Brown

Re: Importation of Didgeridoos into New Zealand

A Didgeridoo which has bees wax around the mouth of the instrument can be imported into New Zealand under an import health standard. 152. 10.03.401. I have attached this standard for your reference.

This is a small quantity of wax, and it is unlikely to come into contact with bees or beehives.

If you have any further questions, please do not hesitate to contact this office.

Renee McCaw for Dr K.A. Mulqueen,
National Service Manager, Import Management and Quarantine
Special thanks to a Hawke's Bay person for raising the question

Dear Sir

I must take to task B.A. Wardle's colourful description of honey made after his factual comments on honeydew as mentioned in his letter to the editor, August 1996 in *The New Zealand BeeKeeper* and I quote *"...honey as bee vomit gathered from the reproductive areas of plants."*

My objection is of course the word "vomit" which as described by The Concise Oxford Dictionary... *VOMIT Eject from stomach through mouth; eject violently, belch forth.* I would like to point out to B.A. Wardle that the process of turning pure nectar into honey is done by the method of quiet regurgitation. On observation of the field bee returning to the hive and transferring the contents of her honey crop to the bee on honey duties within the hive, regurgitation to me is a more apt description.

However I would be the first to admit word substitution in this case would not improve the impact of his argument but for me is more factual.

As for floral honey being gathered from the reproductive areas of plants lets admit it's all done in the best possible taste.

Paul Marshall

Dear Harry

With regards to Bull, No 3 story and home built aeroplane. The navigator's seat is mentioned twice. The second time should have been nagigator or naggigator seat depending on which school you went to, I wonder if you could explain to readers of the journal.

Ron Mossop

Tena Koe Harry

Thank you very much for putting an article in the September issue of your journal — we have had a lot of support from members of the association for this project.

Fortunately, I have been able to obtain the photos from a range of sources: The New Zealand Geographic; Peter Smith of Visuals Canterbury and one of a wild beehive from Landcare Research Nelson.

The book is now being designed and will be trialled in schools shortly; we expect it to be printed in late October or early November. Thanks again for your help.

Naku, na
Ross Calman, Editor,
Huia Publishers, Wellington

Dear Harry

I write to comment on a point in the generally interesting short article "Inside the beehive", Camille Guy, on page 21 of *The New Zealand BeeKeeper*, Vol 3., No 6, July 96.

The final paragraph states:

"Honey is sweeter than sugar, so when you substitute in cooking use less."

I won't argue over whether it tastes sweeter, and I'm sure the advice will be good for our waistlines. However, as stated higher in the item, honey contains up to 20% water. When substituting honey in fruit winemaking you should use 20% more honey by weight than sugar. I suggest the same may apply in cooking.

David Wood

Dear Harry

The Auckland Branch is planning a Field Day on Saturday, 15th February 1997. We are bringing out Denis Anderson from Australia who will be our main guest speaker. Most people will remember Denis, who lived and worked in New Zealand a few years ago.

Denis's topics, the supporting speakers and their topics, the venue and other details will be advertised close to the time. We believe this day will be a most informative one. A warm welcome is extended to all those who wish to come.

Yours faithfully

B. E. Alexander,
President Auckland Branch

Food inspection agreement

Christchurch — A new food inspection agreement signed with Australia should save exporters more than $1 million a year, Trade Minister Philip Burdon said recently.

Under the agreement most food products passing between the two countries will be subject to the same domestic checks as local foods.

Mr Burdon, who signed the agreement with Australian Trade Minister Tim Fisher in Christchurch, said the deal was an example of the potential for the CER agreement to benefit both countries.

The arrangement on food inspection measures, to take effect from January 1, would see substantial benefits flow to the New Zealand food industry.

The industry had estimated the arrangement would save it $1 million a year.

Foods like shellfish and peanuts would remain under stricter controls because of the potential for public health risks.

Mr Fisher said in a statement the arrangement was a logical and welcome step forward. Both countries would have comparable domestic surveillance systems for foods.

Acknowledgement New Zealand Press Association

Library News

Goodwin R.M., Haine H.M. and Todd J.H. Apicultural Research Unit Annual Report. July 1995-July 1996. 61p,1996, NZ.

IBRA. Proceedings of the 4th International Conference on Apiculture in Tropical Climates Cairo 1988. 529p, 1988, UK.

Please you very overdue borrowers return the material you are sitting on.

New Zealand Honey Food & Ingredient Advisory Service

In this month's column: We could test your honey and health folklore; Some honey marketers getting free publicity; Honey on Wellington Radio and with Wellington chefs; Market research has interesting detail; Supermarkets getting tough on commodity products; Honey, whisky and porridge; Unique New Zealand honey could save beef industry millions of dollars; My honey of the month... a weedy choice.

We could test your honey and health folklore

Most beekeepers know of folklore about some curative value in honey. Modern research is starting to prove that those folks knew their lore! So now YOU have the chance to get scientific research focused on an aspect of honey that you believe could benefit both beekeepers and consumers.

The Honey Research Unit is developing its research programme for the next two years. If you have a concept/theory/hypothesis that you believe would be of interest to our honey scientists, now is your chance. Just write down the ideas with your name and contact details and send to: **New Zealand Research Unit, P.O. Box 32, Blenheim or fax to (03) 577-8429**

Dr Peter Molan, Professor Alistair Wilkins and their staff, have an international reputation for their honey research work. The Research Unit is a marvellous asset for our industry; and now you have the chance to have the scientists check out your honey-health benefits. But you must get your ideas in by 7 November! Do it now... the Unit's Liaison Committee will discuss all of the ideas put forward and prioritise them in terms of potential value to consumers and beekeepers. (The Liaison Committee is Allen McCaw (Chairman), Neil Stuckey, Dr Peter Molan, Professor Alistair Wilkins, Dr Mark Goodwin, Bill Floyd). **Remember the deadline: 7 November, close enough for you to need to do it now!**

Some honey marketers getting free publicity

Some months ago I asked for companies who would be happy to donate honey for PR purposes to let me know. They did, well, a few did. But that's okay, it was enough for what I needed. The system is working well and every so often those packers get the advantage of some (important) person getting some of their product (the latest one to get a parcel is Lindsay Yeo, Wellington radio star). But this is to remind all packers that if you don't make your product available I can't use it. If you're happy with others benefiting... no worries, this notice is only here to make sure no one feels aggrieved at some later stage when one of their competitors gets their products used by us publicly.

Honey on Wellington Radio and with Wellington chefs

September was a good month... highlight was my visit to Wellington, interviewed on Newstalk ZB, by Lindsay Yeo and friends, in the peak-time breakfast programme.

Good interview but Lindsay told me how he'd learned that "Southland made the best honey in New Zealand and New Zealand made the best honey in the world and therefore Southland honey was the best honey in the world." Just before anyone starts writing a remit for Conference next year about the Marketing Committee selling out to the deep south (put your pen down, G) I want it on record that I did not say that, or set Lindsay up to say it... and it must be remembered that Lindsay is from down that way and we all know that once a Southerner, always a Southerner. For the record, I immediately said that 'yes, they make great honeys down there', but then added... "so do Auckland and Waikato and... a whole host of regions in New Zealand!"

After the radio interview I gave a honey tasting presentation to the Wellington Chefs Association. Good fun and once again chefs amazed by the difference in flavours of our different honey types. (Des Britten and Lois Daish (Listener Foodwriter), both won honey prizes for their flavour guesses). The honeys we're using at present for the chef tastings are: Northland Manuka; West Coast Kamahi; West Coast Rata; Northern Rewarewa; Canterbury Honeydew; Southern Thyme. The differences between those six honeys are so marked that chefs rethink their attitude towards honey as a group of flavourings.

And for those of you who question the 'intelligence' of tasting thyme honey... believe me, the chefs can visualise it in a sauce or marinade and find the flavour sensational. (To me it's a cinderella waiting to be discovered... but then, so are a lot of honeys!). I'm also putting a lot of emphasis on the regional variations in varieties... and that these are features, not faults, of honey... just like the regional variations in wines.

Market Research has interesting detail

Did you know that, over the last twelve months supermarkets have sold $14,231,566 worth of honey. Of that total, $3,781,000, is in house brands. And just 28 out of the 262 honey products listed in New Zealand supermarkets account for $11,318,959 of the total. Clover is the biggest selling variety... and next? Manuka.

More next month; we've just purchased data to compare last year with the previous two years to look at the development of the mono-floral honeys.

The research does show an awful lot of companies selling their honey by the same name as everyone else. Marketing your product simply as 'creamed honey' is not helping to create your own loyal customer base. Use your brand and varietal or descriptive names to make people feel good about your product; feel that it's something special; worth paying for; maybe paying more for.

Supermarkets getting tough on commodity products

There's rumblings that some supermarket groups are going to cull out some of the duplicate lines they're carrying. This will happen in a number of categories, from cheeses to honeys. Yes, honeys! If you are one of six honey brands sitting on the shelf (as I saw in one supermarket recently), sitting next to each other, all with the same product name (and in the same type of packaging; Like 'twins' but just with different brand names) then you are vulnerable! And what happens of course is that the grocery buyers play 'twins' off against each other by that unique weapon they have... Price Negotiation! And the crazy thing is that it means, in a year when honey prices internationally are going up and up... some packers may be tempted to sell for less; because it's the only weapon they think they have left. It's up to beekeepers to pressure their packers to be innovative, to make their honey special. And I don't accept that any honey in New Zealand can't have a unique perspective! If you disagree... send me the details, I'll prove you wrong... but, to be fair to the industry, I'll have to publish my advice to you in *The BeeKeeper* (otherwise I'm helping you at the expense of other beekeepers... and I work for the industry at large). There... glad I got that off my chest.

Honey whisky and porridge

By the time you read this we'll have been to Otago for the Field Day and the Foodwriters' Conference. The friendly folk at Wilson's Distillery are providing me with some complimentary Lammerlaw (New Zealand's flagship single malt whisky) to run a competition to decide which southern honey is the best partner with the Lammerlaw in a hot toddy. You're right... tough job; but on your behalf I'll try and enjoy it. The

Continued on page 7

Continued from page 6

competition will also include a porridge and honey pairing... they say the Flemings Southern oats are the best in the world... so it seems a waste to pour salt or refined sugar on it... a premium New Zealand honey is the logical choice.

Unique New Zealand honey could save beef industry millions of dollars

Also, by the time you read this, I'll have been comparing notes on the scouring incidence of bobby calves who have had supplementary feeding of honey against bobby calves that haven't. This is a project Peter Molan is very keen on; links in with proven scientific research that shows that honey can assist with gastroenteritis problems.

Interesting and exciting feature of the research... best honey for the job looks like it might be rewarewa (not you-know-what!). It's good to be working on a project that shows other New Zealand honeys may have special health values.

It's also a very exciting project! Feeding calves with antibiotics has had some disastrous results as drug residue has been found in the exported meat; costing New Zealand millions of dollars in lost beef sales.

I must admit the whisky research is probably going to be more enjoyable than measuring scouring rates. There's an expression that's somehow very apt... "it's a s----- job; but someone has to do it".

Honey of the Month

My honey of the Month? Has to be a delightful fragrant clean fresh honey with an herbaceous nose and grapefruit-like crisp aftertaste tones... a honey that was slightly 'chewy' (it hadn't been creamed or strained; but I prefer my honey in that raw state)... and apparently a honey that many think has no commercial value at all... 'Buttercup'.

Neil Stuckey sent me the sample (from the Waikato). Delightful honey! I know it's not available every year. But apparently there's enough to create a small commercial opportunity for someone... a boutique honey... sell it in small outlets... nice little label... link it in with lush dairy farm images... could work!!!!... and why not sell it 'raw'... you'll have me as a customer!

Interesting the way some of the best honeys come from plants that others are trying to get rid of... manuka, buttercup, nodding thistle.

And that's all for this month.

Regards, Bill Floyd

Another Fred story

Experience counts for a lot in most industries and beekeeping is no exception. Every beekeeper has resorted to reading copious volumes on beekeeping at some stage of their career, yet when they put into practice all they have learned from the books the bees perversely refuse to follow the directions of the beekeeper.

There was a stage in my beekeeping that my confidence was at a low ebb. Increasing the hive numbers was the name of the game, so I did what the books told me to do. In the spring a split of my best hives saw a threefold increase in the hive numbers, new queens installed and room for expansion in each hive. Leaving the hives alone for the next month was the hardest part, yet when I finally did look the results were disappointing. A few were queenless, and the others showed little sign of being well on the way to becoming a robust healthy hive.

Naturally this matter was raised at the weekly suds session at Joe's garage and lots of sympathetic noises came from the assembled beekeepers in between the gulps of sudsy froth their glasses contained. The usual remedies emerged, join a queenless hive with a queenright hive, check the food stores and even "that's the way it goes sometimes." Fred was there but said remarkably little. I came away from the session really little wiser than when I went into it.

Two days later Fred phoned, could I spare him some time to work the yards in the foothills? The next morning bright and early we set off, passing the usual pleasantries on the way. On arrival at the first yard Fred asked me to follow him as he proceeded to lift the lid from the first hive. My job was to remove the supers above the brood boxes and stack them carefully on the upturned lid. Fred then removed the brood box and examined the super below it. In the centre he had a recessed platform on which was a lump of something whitish in colour. It was smothered in bees. The whole hive was alive with bees, a far different story to those of my hives located in the same area.

I commented on the healthy appearance of the hive and asked about the substance on the holding board in the bottom box. "Pollen substitute" said Fred, as he added a little more to the hive from a tin he had with him. "In these foothills the bees are struggling to find sufficient pollen at this time of year, so they must be supplied with a substitute. The local farmers came down heavy on the gorse, removing our prime source of pollen.

In addition there is a tendency for the bees to be stressed with the crook weather we have had, and so Nosema gives them the gut-rot. Introducing a little Fumidil B into the sugar syrup they are fed with helps clean up their tummies". So saying the hive was reassembled and the holding tank for the sugar syrup replenished before the lid was replaced. We carried on through the yard and all the hives were in excellent condition, ready for the forthcoming summer.

On arrival at the home base Fred remarked that there was some pollen substitute left over, would I like to have it? That tin of sugar syrup will only deteriorate so you had better take that for your hives as well. He would not need any for a little while.

That's Fred. Always ready to offer assistance, yet never by ramming his thoughts down your throat. In the nicest way possible he got me to accept the message the books failed to drive home. Local knowledge is essential, experience counts for a lot, and be prepared to assist the newcomer at every turn.

Ham Maxwell

Time for a move

Buzz go the bees,
Way up in the trees
It's swarming time,
The scouts do a little mime.
The Queen says off we go,
A scout shouts "NO".
We've got to fill with honey,
After all, we've got no money.
When they've had their fill,
And can hardly stand still
Off they go in a big ball,
To the big old hall.
This will be their new home,
They set about building comb.
The bees are hard at work,
Until along comes a jerk.
That'll destroy their nest,
Because bees are a pest.

Naomi Dalby, aged 13, England

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Transshipment of New Zealand honey-bees through Hawaii

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Introduction

Hawaiian ports often are centres for the break-bulk redistribution and rerouting of cargo originating elsewhere in the Pacific Basin. This added exposure to foreign goods, over and above that arising from normal trade activity, has heightened Hawaii's vulnerability to entry and establishment of exotic organisms. In recent years, for example, shipments of honey-bees from Australia and New Zealand, bound for Asian and North American markets, have passed through Honolulu International Airport in increasing numbers. These so-called transshipments have raised a number of concerns among agricultural officials and some beekeepers in Hawaii, perhaps the greatest of which has focused on their potential to introduce exotic honey-bee pathogens and parasites. Fear of foreign contamination has even prompted at least one local beekeeper to propose that Hawaii be given legal protection "as a sanctuary for [the] cleanest and most isolated honey-bee [sic] gene stocks in the United States" (Patton 1995, p. 226). This paper examines some of the more significant issues involved in the transshipment of New Zealand honey-bees through Hawaii.

Basis of the controversy

What has come to be known as the Honey-bee Act of 1922 (and amendments thereto) permits the importation of living adult honey-bees into the United States only from those countries "determined by the Secretary of Agriculture (A) to be free of diseases or parasites harmful to honey-bees, and undesirable species or subspecies of honey-bees; and (B) to have in operation precautions adequate to prevent the importation of honey-bees from other countries where harmful diseases or parasites, or undesirable species or subspecies, of honey-bees exist" (Michael 1978, p. 345). In 1993, after a controversy arose over passage of foreign honey-bee shipments through Honolulu (many Hawaii agricultural officials and beekeepers being opposed to such shipments), the law was reinterpreted by the United States Department of Agriculture's (USDA) Office of the General Counsel also to restrict transshipments of bees through the U.S., which were thereafter to be viewed as importation, and therefore subject to approval by the Secretary (Cipolla 1993). Moreover, since 1985, state law had prohibited entry into Hawaii of all living and dead honey-bees, and all hive equipment not certified to be free of honey-bee pests and pathogens (Hawaii Revised Statutes, Title 11, Chapter 150A). Together, the federal and state laws enforced a halt to bee transshipments through Hawaii at the end of the 1993 shipping season. The issue appeared to have been settled.

However, intensified lobbying by New Zealand bee interests during 1994 (which continued efforts originally begun in 1990), to open the U.S. market to New Zealand bees, ultimately resulted in an amendment to the U.S. bee regulations (Federal Register, Vol. 60, No. 21, Wednesday, February 1, 1995) permitting transshipment of New Zealand bees through U.S. ports, beginning in 1995. (The U.S. remains closed to Australian bee transshipments.) This new development came in the wake of the latest round of negotiations under the General Agreement on Tariffs and Trade (GATT). According to provisions of GATT, a country is permitted to impose any biosanitary measures necessary to protect the health of its agriculture from potential contamination from international commerce as long as the measures have a valid scientific justification (USDA 1995). This requires that a scientific risk assessment be performed to gauge the risk of importing or transshipping a particular commodity. Results of the assessment can then be used to guide quarantine decisions on the potential need to apply restrictions to the commodity or to deny entry entirely.

After performing independent risk assessments, both USDA and the Hawaii Department of Agriculture (HDOA 1995) concluded that the transshipment of New Zealand honey-bees through Hawaii and mainland ports would not pose a significant threat to the health of U.S. (including Hawaii) honey-bees and other agricultural resources. The HDOA report concurred with USDA that "there is no scientific reason not to allow the transit of New Zealand's honey-bees, particularly when it has been demonstrated that New Zealand's honey-bee population has a very high health status and at the same time effective and reliable risk management strategies exist (e.g., shipping and oversight requirements outlined in the rule) [and] can and will be employed" (USDA 1995, p. 1). Both reviews also concluded that there was no scientific evidence to support the opinion, held by at least one Hawaii beekeeper, that Hawaii has a unique apicultural health status compared with the rest of the U.S. and, thus, should be exempt from the new rules.

Perceived risks in the Transshipment of New Zealand bees through Hawaii

Of major concern to Hawaii agricultural officials and beekeepers has been the potential for New Zealand honey-bees transiting Hawaii to introduce exotic pathogens and parasites into the local bee population. Although New Zealand and Hawaii share the more common and widespread honey-bee pathogens and parasites (i.e., the bacterium Bacillus larvae [causative agent of American foulbrood], the virus causing sacbrood, the fungus Ascosphaera apis [chalkbrood], and the microsporidian protozoan Nosema apis) and pests (Galleria mellonella [L.] [greater wax moth] and Achroia grisella [F.] [lesser wax moth]) (Anderson 1987, Messing 1991, Matheson 1993), other bee pathogens and parasites have been found in New Zealand that are not known to occur in Hawaii. These are the sarcodine protozoan Malpighamoeba mellificae and the following viruses: acute bee paralysis virus, bee virus X, bee virus Y, black queen cell virus, chronic bee paralysis virus, cloudy wing virus, filamentous virus, and Kashmir bee virus (Anderson 1987, 1988a, Bailey and Ball 1991, MAF 1994).

Malpighamoeba mellificae, which causes amoeba disease, infects the lumen of the Malpighian tubules (excretory organs that function like the kidneys of vertebrates) of adult bees, causing the epithelium to atrophy and impairing functioning of the tubules (Furgala & Mussen 1978, Bailey & Ball 1991). There are no known outward symptoms; diagnosis depends on detection of cysts by microscopy. The disease is not common, and losses are generally minor, except when it is found in combination with other adult pathogens, such as N. apis (Furgala & Mussen 1978, Shimanuki 1983).

Acute bee paralysis virus was originally discovered in the United Kingdom during laboratory studies on chronic paralysis virus (Bailey & Ball 1991). Further investigation showed that this virus occurs commonly in seemingly healthy honey-bees, but has never been associated with disease or mortality of bees in nature. However, the virus has been identified as a major cause of adult and brood mortality in mainland Europe and the U.S. (Florida) in bee colonies severely infested with the parasitic mite Varroa jacobsoni Oudemans.

Bee virus X occurs in adult bees, and has been found to multiply

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experimentally only when given to them in food (Bailey & Ball 1991). The virus will apparently shorten the lives of bees, and its detrimental effects are increased in bees also infected with M. mellificae.

Bee virus Y also multiplies readily when given experimentally in food to adult bees. However, the virus causes no visible signs of infection (Bailey & Ball 1991). Apparently, multiplication of this virus is dependent on the presence of N. apis in the same host. The virus may increase pathogenicity of the microsporidian.

Black queen cell virus is associated with queen cells, which develop dark brown or black cell walls and contain dead prepupae or pupae (Bailey & Ball 1991). It is a common infection of adult bees in the field. This virus is also intimately associated with N. apis.

Chronic bee paralysis virus has long been known in Europe (Bailey & Ball 1991). Symptoms include an abnormal trembling motion of the wings and body, bloated abdomen, and partially spread, dislocated wings. Those affected fail to fly, but often crawl on the ground and up grass stems, sometimes in masses of thousands of individuals. Infected bees die within a few days, and severely affected colonies may suddenly collapse, often within a week. Surveys in the U.K. have shown that the virus is commonly present in colonies throughout the year, and can cause mortality approaching 30% of the total usually considered normal (Bailey & Ball 1991).

Cloudy wing virus is common in bees showing a loss of transparency of their wings when they are severely infected (Bailey & Ball 1991). Infection may be transmitted through the air over short distances. Infected individuals soon die. In the U.K., about 15% of colonies have been found to be infected with the virus, and some colony deaths have been associated with severe infection.

A third viral associate of N. apis, filamentous virus multiplies in the fat body and ovarian tissues of adult bees, and the hemolymph of those severely infected becomes milky-white with particles. In temperate regions, incidence of the virus shows a marked seasonality, with a peak about May and trough about September (Bailey & Ball 1991). There is a general weakening of infected colonies, accompanied by the presence of crawling and dead bees and the presence of brown or black pupae in capped cells. The virus is apparently replicated in N. apis (Liu 1991).

Kashmir bee virus has been called the most deadly honey-bee virus of all those that have been described (Liu 1991). Australian strains of the virus were reportedly associated with severe mortality of adult bees in the field, and have also appeared to cause the death of larvae (Bailey & Ball 1991). However, in most colonies in Australia and New Zealand, the virus normally exists as harmless, inapparent infections of all bee stages, except adult queens, and is able to persist in this state indefinitely; the infrequent cases of lethality are associated with co-infection by other gut pathogens, such as N. apis and Melissococcus pluton (the bacterium that causes European foulbrood, which is not found in New Zealand) (Anderson 1991). Recent work has found that this virus also exists in Australia as natural infections of the German yellowjacket Paravespula germanica (F.), and thus has a much broader host range than originally thought (Anderson 1991).

Other organisms found associated with honey-bees in New Zealand, such as the mites Acarapis dorsalis Morgenthaler, A. externus Morgenthaler, Melittiphis alvearius (Berlese), and Neocypholaelaps zealandicus (Evans), are not considered harmful (Morse 1978, Eickwort 1988, CAPA 1991?, Delfinado-Baker 1994). Moreover, their occurrence in New Zealand is not common (Anderson 1987).

An apparently pathological condition, called half moon disorder, that kills larvae at an early age and resembles European foulbrood, has been found in bee colonies in New Zealand. However, evidence suggests that half moon disorder is not caused by a pathogen, but may be related to a physiological abnormality of queen-bees, the cause of which is as yet undetermined (Anderson 1988b).

Scientific opinion differs as to the threat the above pathogens may pose for the health of bee colonies. Perhaps of most concern are the viruses, some of which have been implicated in bee losses. These agents have been found associated with some bee mortality in the field. However, the data accumulated thus far would seem to suggest that bee viruses seldom cause readily apparent natural infections. Rather, in areas in which they occur, they seem to be endemic to honey-bee colonies, infections remaining asymptomatic until virulence is triggered by a natural (e.g., co-infection by another agent, adverse environmental conditions) or artificial (e.g., injecting dead bee extracts or sterile saline solutions into apparently healthy pupae; Anderson & Gibbs 1988) stress. For example, acute bee paralysis virus seems to occur naturally in various species of bumble bee, but without any evidence of symptoms unless the virus is experimentally transferred between hosts by injection (Gochnauer 1978). Kashmir bee virus causes no noticeable effects when fed to larval or adult bees, but becomes lethal when injected directly into the hemocoel (Anderson 1991). For these and other reasons, Kashmir virus and such viruses as chronic paralysis and bee viruses X and Y are considered by some experts to be of little or no economic importance (Liu 1991, Anderson 1993).

Honey-bee disease surveillance in New Zealand

In contrast to Hawaii, apiculture in New Zealand is a tightly regulated industry (NBA 1995). The Ministry of Agriculture and Fisheries (MAF) administers the Apiaries Act of 1969, which involves maintaining a register of all apiaries in the country as well as enforcing the requirement that beekeepers furnish a statement of inspection once a year, including a report of disease incidence. Health inspections are the joint responsibility of the National Beekeepers' Association (NBA) and MAF.

Once a year, within six months of the bee exporting season, approximately 5% of colonies are examined each by MAF and NBA (for a total of 10% of colonies) for presence of American foulbrood (AFB), considered the most important endemic bee disease. At other times, beekeepers are required to report disease incidence during their routine colony inspections. There is a strong desire to avoid the use of antibiotics for disease control, and, in fact, their use is prohibited by law (C. Van Eaton, personal communication, 1996). New Zealand is attempting to eradicate AFB by burning contaminated colonies and equipment.

MAF alone is responsible for annual inspections for exotic pathogens and parasites. During these, 500 apiaries located in high risk areas (judged to be the most likely places in which an exotic bee disease could become established in New Zealand, e.g., near major population centres with international seaports and airports, other centres with a significant overseas tourist industry, and rubbish dumps) are inspected by MAF personnel for presence of European foulbrood, parasitic mites (V. jacobsoni, Tropilaelaps clareae Delfinado & Baker, and Acarapis woodi [Rennie]), and Africanized honey-bees (Van Eaton 1992, personal communication, 1996; NBA 1995). In the mite survey, at least 100 drone pupae in each hive are visually examined for presence of V. jacobsoni and T. clareae; a sample of at least 400 adult bees is taken from each hive and inspected in the laboratory for presence of V. jacobsoni, T. clareae, and A. woodi. At least 500 live adult bee samples are provided to MAF by bee exporters for testing for exotic mites. All samples are tested according to international standards (Van Eaton 1992).

Other diseases, such as nosema disease, chalkbrood, amoeba disease, and sacbrood, are not required to be reported by beekeepers. However, all suspicious bee disease symptoms reported by beekeepers will be investigated by MAF apicultural

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personnel (C. Van Eaton, personal communication, 1996). MAF also will inspect the apiaries of exporters for diseases if importing countries (e.g., Korea, Australia) require it. Other viral diseases are not routinely tested for (R.M. Goodwin, personal communication, 1995).

MAF has developed a honey-bee Exotic Disease and Pest Response capability. Under this system, supplies, manpower, and laboratory facilities are in place for a rapid response to any positive diagnosis of an exotic bee disease sample from the active surveillance program or from any other source (Van Eaton 1992).

In summary, the honey-bee inspection programme employed by the New Zealand Ministry of Agriculture and Fisheries and the National Beekeepers' Association of New Zealand appears more than adequate for detecting common bee pathogens, parasitic mites, and Africanized honey-bees. The surveillance and testing methods employed meet or exceed standards common on the U.S. mainland (J. Bach, personal communication, 1992).

Honey-bee Transshipment safeguards

In New Zealand, MAF has the responsibility for setting the standards that bee exporters must meet to satisfy requirements set by the governments of other countries, including any requirements set by countries through which the bees must pass (transit). To that end, the agency, in cooperation with the New Zealand honey-bee industry, has established a Quality System for the Safe Export of Package Bees. This document specifies a code of practice for the industry to follow through all stages of shipment assembly and transport to help ensure the safe passage of bees to foreign countries.

To gain first-hand knowledge of the specific procedures involved in the preparation and export of package bees and queens, HDOA entomologists visited New Zealand MAF officials and bee shippers in February 1995 (Nakahara and Culliney 1995). Currently, there are three honey-bee exporters in New Zealand: Haines Breeders in Kaitaia, Kintail Honey in Tauranga, and Arataki Honey in Rotorua. All package their bees in a similar manner, in a refrigerated room with vacuum hoses to remove excess bees clinging to packages after they are filled. At both Haines and Kintail, packages (in the form of strong cardboard boxes designed by Haines) are loaded onto wooden skids, four skids per metal airline pallet (432 boxes per pallet). Plastic straps secure the boxes to the pallet. A large sheet of heavy, woven netting (of the kind used for windbreaks in agriculture) then secures each pallet and prevents any bee escapes. The entire pallet is then covered with cargo netting. Packages are delivered to the airport before dawn. In the only significant deviations from the practices of the other two shippers, Arataki uses cardboard tubes of its own design, which, after they are filled with bees, are loaded onto skids within a rigid metal framework that protects the tubes on all sides. Four skids (a total of 704 tubes) are secured to a pallet.

Additional requirements, communicated by HDOA (Wong 1995) and USDA APHIS (Fons 1995) to MAF and to the bee exporters, further reduce the risk of New Zealand bees escaping while in transit through Hawaii. The added conditions that must be met include the following:

Cardboard tubes and Haines cardboard boxes only are approved for transiting package bees. Wooden boxes are not approved for transshipments.

Boxes and tubes must be free of bees on their exteriors.

Boxes and tubes must be secured to skids to prevent movement. Cardboard angles shall be used to reinforce horizontal surfaces as well as vertical surfaces along the corner of the pallet.

Skids of boxes or tubes shall be secured to the pallet and completely enclosed with woven netting to prevent bee escape if boxes or tubes are damaged in transit. The whole assembly shall be secured to the pallet with cargo netting.

Signs stating "Live Honey-bees," with letters at least five inches high shall be posted on all four sides of the pallet.

A MAF inspector shall inspect every load bound for transshipment through Hawaii.

The shipper must have entered into a Quality Control/Quality Assurance Agreement with MAF.

The bees must be certified to be of New Zealand origin and to be disease-free.

The bees must be shipped by air on an airline that has completed a compliance agreement with the USDA.

The bees must be shipped by air through Honolulu International Airport. The bees may be transferred from one aircraft to another at the port of arrival in the United States provided the transfer is done under the supervision of an inspector and the area used for any lengthy storage of the bees between flights is within a completely enclosed building.

The shipments should be scheduled to arrive between the hours of sunset and sunrise (hours of darkness) with the shortest possible connection time scheduled.

At least two days prior to the expected date of arrival of honey-bees at a port in the United States, the shipper must notify the APHIS PPQ Officer-in-Charge at the port of the following: the date of arrival and departure, the name and address of both the shipper and receiver, the quantity of queens and the number of cages of package honey-bees in the shipment, and the name of the airline carrying the shipment.

The airline carriers also have been informed that detection of escaping bees will result in immediate condemnation of the bees and revocation of the permit allowing future bee shipments by the carrier. Further, APHIS and HDOA have developed an inspection and emergency response protocol specifying the handling of bee shipments while they are at Honolulu International Airport. Steps have been taken to ensure that all necessary equipment (additional netting, insecticide) and manpower are available to deal with any accidents that might threaten the integrity of the cargo and allow bees to escape.

Conclusions

Although the bee pathogens known to be present in New Zealand and elsewhere, particularly the viruses, undoubtedly have negative effects on individual bees, and probably weaken colonies to some extent, their overall epizootiological significance is unclear. However, the weight of evidence presently available would seem to suggest that they have little appreciable economic impact on beekeeping. There have been no reports of widespread colony deaths attributable to bee viruses. Further, there is no good evidence that bee diseases from New Zealand have been introduced into, and have adversely affected beekeeping in, countries (e.g., South Korea, Canada) that import bees from New Zealand. For example, bees from New Zealand and Australia (a country that shares many of the same bee viruses) have been imported by the hundreds of thousands into Alberta Province in recent years. Beekeepers there have reported no cases of disease that categorically could be linked to the imports (Liu 1991).

The cryptic nature of honey-bee viruses and other pathogens shows that they can be present in a region, and remain unknown, until comprehensive surveys are performed to detect them. This was the situation that largely prevailed in New Zealand prior to Anderson's (1987, 1988a) work. Many of the bee pathogens found in New Zealand also have been reported from the mainland U.S. These include the acute paralysis, Y, black queen cell, chronic paralysis, filamentous, and Kashmir viruses, and Malpighamoeba mellificae (Furgala & Mussen 1978, Liu et al. 1987, Bailey & Ball 1991, Bruce et al. 1995). As traffic in bees between Hawaii and mainland states was unrestricted before 1985, these and other pathogens also could be established in Hawaii. In the absence of surveys, Hawaii cannot claim truly to be free of the bee pathogens known to occur in New Zealand. Thus, there is at present no evidence to support the notion that Hawaii represents a unique repository of

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disease-free and genetically distinct honey-bees, and no biological basis on which to oppose transshipments of New Zealand honey bees through Hawaii.

The quarantine arrangements worked out with New Zealand's MAF, coupled with additional safeguards in place at Honolulu International Airport, have reduced the risks posed by bee transshipments to acceptable levels. Any mishaps that might occur, allowing for the escape of bees, likely would have minimal impact. Honey-bees are highly social insects that depend largely on chemical communication (pheromones) to maintain mutual orientation and social cohesion. Even in a major accident, a large number of bees suddenly set free in the unfamiliar surroundings of an airport would likely tend to remain together in a localized area, attracted to each other and to the queens by various chemical signals, where they could more easily be destroyed. Such bee "spills" have occurred with little problem at airports in other countries. For example, in one incident at the Kuala Lumpur airport (Otis 1993, 1995), the mass of disoriented bees stayed near or on the boxes from which they had escaped. Very few flew, and then only briefly before alighting again. They were easily killed with detergent-water sprays. There was no indication that any bees left the immediate area. Similar behavior has been exhibited in accidents involving queen battery boxes (boxes containing caged queens, but free attendants), the few escaping workers all settling quickly again about the queens (G. Rouse, personal communication, 1995). In the present situation, the requirement specified in the shipping protocol that all bee transshipments occur during the hours of darkness further minimizes the risk of any foreign bee contact with local bees.

Any assessment of risk must take into account the element of probability. To introduce a pathogen or parasite from New Zealand into the Hawaii honey-bee population would require the following chain of events (Tamashiro 1995). First, New Zealand inspectors would have to allow some infected or parasitized bees to be shipped. Bee cages and netting then would have to be damaged en route or after arrival, allowing bees to escape at the Honolulu airport. Escaped, infected bees would have to evade attempts to capture and destroy them. They would have to come into contact with susceptible local bees at the airport. They would have to transmit the pathogen or parasite successfully to the local bees. Lastly, newly infected local bees would have to be able to transmit the pathogen or parasite to other Hawaii bees. The probability of all of these events occurring with any one shipment is likely quite small.

The record of New Zealand bee transshipments during 1995 and 1996 has been encouraging. Both package bee and queen shipments have been assembled in apparent strict adherence to the MAF Quality System requirements; there have been no mishaps, allowing for the escape of bees, during flight or off-loading at the Honolulu airport; and the time spent on the tarmac before transfer to connecting flights has been brief (no longer than two hours). On numerous occasions, the exporting companies have taken extra pains to have their own personnel on hand to inspect the bees and ensure that all goes well.

Global commerce has entered a new era. Gone are the days when countries could impose protectionist measures (often to shield domestic industries from foreign competition) conveniently wrapped in the guise of environmental (including agricultural) protection. Modern, comprehensive treaties, such as GATT, permit trade barriers to be erected only on the basis of sound, scientific evidence. Lingering, but negligible beekeeper opposition notwithstanding, the experience with New Zealand bee transshipments through Hawaii shows that a reasonable balance can be struck between the benefits of free international trade and a sovereign state's need for protective quarantines.

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Obituary

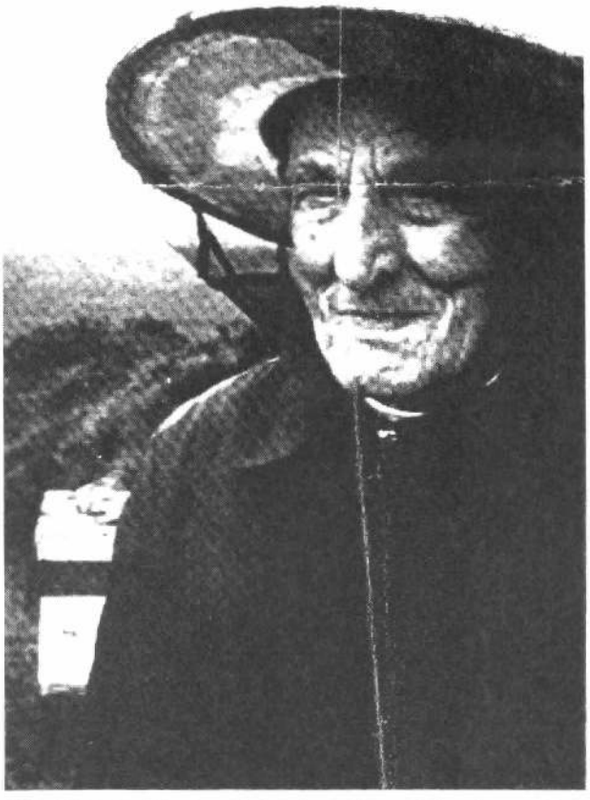
The achievement of Karl Kehrle, a Benedictine monk, was to breed a very decent British bee. Wherever in the world apiarists meet they speak in awe of Mr Kehrle's sturdy bee, which produces lots of honey and is reluctant to sting. Like the British themselves, it is a mongrel, combining the virtues of the native bee with those of worthy bees from elsewhere. Mr Kehrle once heard of a promising bee said to be found only in central Africa. Although in his 80s, in poor health and carried on the back of a friend, he tracked the bee down on the slopes of Mount Kilimanjaro.

Selective breeding has been going on in a random way for thousands of years since animals and plants were first domesticated, Gregor Mendel (1822-84), like Mr Kehrle a monk, laid the foundations of what has come to be called genetics. Mendel did clever things with gardens peas, but had no success with bees, whose sexual practices remained a mystery to him. Queen-bees, it is now known, mate with a drone, or several drones, while on the wing. Then, loaded with sperm, they return to the hive for several years, producing huge numbers of bees. Mr Kehrle pioneered artificial insemination for bees, impregnating his queens with the sperm of immigrant bees. "A very delicate operation," remarked a colleague of Mr Kehrle.

His Buckfast bee, named after the abbey in Devon where Mr Kehrle was a monk, became an unusual export, earning many thousands of pounds for the order. Numerous Buckfast bees have been imported by commercial honey producers in the United States, where disease has caused widespread damage. (The Benedictines, a fairly liberal order, have a talent for making money; their abbey in northern France makes a liqueur, much in demand despite being too sweet for some tastes). Mr Kehrle became a celebrity within the bee world, lecturing here, picking up an honorary doctorate there, written up in bee journals, made a vice-president of Britain's International Bee Research Association. A species of bee was named after him. It wasn't a bad career for someone who, as he occasionally remarked, had no formal education at all.

The Italian clue

Karl Kehrle was born in Germany. His mother, a keen Roman Catholic, heard that the monks rebuilding their abbey at Buckfast, shut down in the reign of Henry VIII, needed workers. So Karl, not quite 12, was sent to England. He wasn't strong enough to lift stones, so he helped with the bees. By 1919, aged 21 and now a monk named Brother Adam, he was the abbey's master beekeeper. He set out to save the native British bee, which was being wiped out by a disease called acarine. He cross-bred Italian bees, which were free of acarine, with some of the abbey's bees that had eluded the disease. The cross-breeding was a process that was continued under Mr Kehrle over subsequent years with the help of other foreign bees.



Karl Kehrle (Brother Adam), saviour of the bees, died on September 1st, aged 98

Some bee people, while admiring Mr Kehrle's skill as a beekeeper, note that his innovations owed much to the work of Ludwig Armbruster, a fellow German (later a victim of the Nazis), who, following up the work of Mendel, published research on bees and genetics. Mr Kehrle was, by contrast, a hands-on, practical man. But this was no bad thing. Someone has to turn theory into practice. He was unsurpassed as a breeder of bees. He talked to them, he stroked them. He brought to the hives a calmness that, according to those who saw him at work, the sensitive bees responded to. He was very upset when two of the abbey's queen-bees were stolen, and remarked on the frailty of humans. Bees, he said, would never behave like people. "He loved the bees a almost as much as he loved God", said a colleague.

A mischievous comment, perhaps. Yet even in the brotherly community of an abbey little jealousies can arise over a colleague who seems to have got more than his fair share of attention. In 1991 Mr Kehrle asked the abbey to provide him with a qualified assistant to help with research into the varroa parasite, which, like the acarine disease of the 1920s, is threatening British bees, and is at present controlled, although only partially, by chemicals. The abbot turned down the request, and apparently felt that, after 80 years at the abbey, it was time for Brother Adam to part from his bees and spend the remainder of his life on monkish duties. "I am sure that he would consider himself a monk first a beekeeper second," said the abbot, not entirely convincingly. Mr Kehrle handed over his hives to young monks, but was never unwilling to give advice.

He said he wanted to live to 100. The astonishing thing is that he lived as long as he did. Physically, he was not strong. His journeys abroad in search of bees, often partly on foot or by donkey, were exhausting. He suffered several heart attacks. Doctors routinely told him he would never work again. Several times he received the last rites of his religion, but clambered from his bed to see how his bees were managing without him. If an interest in life can keep you going, it certainly worked with Karl Kehrle.

Acknowledgement The Economist
Thanks to Fred Bartrum

Report of a visit to Korea

by Jim Edwards, National Manager for International Animal Trade, Ministry of Agriculture

I visited Seoul in late August to negotiate improved access conditions for New Zealand honey-bees. While not finalised during the visit, the indications were that the Koreans have accepted our case and that if they are unable to implement the changes before the next export season, that they will complete all that is necessary next year.

Visits to experts

While in Korea, I visited a number of organizations to build support for the New Zealand case. At the National Veterinary Research Institute of Anyang, we met Dr Kang, the veterinary parasitologist who visited New Zealand two years ago to study honey-bees and whom was visited during the last trip to Seoul.

Another visitor to New Zealand, the eminent Korean expert Professor Woo, was away overseas but had recommended that we call on the Director of the overseas Pests Division, Department of Crop Protection, who along with an Entomologist in the Division of Exotic Pests, both work in the National Agricultural Science and Technology Institute.

Dr Lee, the entomologist, was particularly interested and very supportive of the New Zealand case. He asked for more information about the beekeeping industry in New Zealand. Apparently there had also been a visit from Australia about one month prior to my visit.

Quarantine service

I discussed the case for reducing the barriers to importation of New Zealand honey-bees with the National Animal Quarantine Service (NAQS). NAQS continued to support the New Zealand case. NAQS staff had not completed their review of all of the information that had been sent to Korea for consideration. They agreed with the need to review the Korean regulations to bring them in line with the globalization approach required following the SPS Agreement. This process had begun and should be completed soon. This would enable the regulations applying to New Zealand to be considered when Korea recognises the health status of different countries and develops bilateral agreements.

NAQS told me that all of the development work would be prioritised by the Korean MAF. I explained that the importation of bees should be given a high priority because of the value that crop pollination has in the timely provision of foods for the Korean population and emphasised that this was far more important than any perception that the Koreans may have that bees were only being imported for honey production.

When NAQS was pressed on the need to implement the new importation requirements before Korean importers arrange contracts with New Zealand exporters, I was told that there would be no final decision this year. The procedures to revise regulations are lengthy and involve drafting, notification, consultation, finalisation and finally approval.

During my presentation of the technical details that had been provided to support our request for better terms of access, I extended the case to include removal of post arrival quarantine. Given the lack of risk of diseases being imported into Korea by New Zealand honey-bees, all that was required was a documentation check to ensure that the certification was correct. There was no justification for post arrival quarantine; so bees should be released to the importers very soon after arrival. There was some reluctance to accept this concept because of the NAQS experience of mites imported with shipments from China and the losses of bees in an earlier shipment from New Zealand.

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Ministry of Agriculture

At the Ministry of Agriculture and Forestry in Kwachon, I met the Director (Dr Bae) and his Deputy (Dr Lee) to negotiate better access for New Zealand honeybees. Dr Bae explained how the MAF were now developing bilateral protocols to replace the generic approach that they had previously applied to all exporting countries. They had received our proposals and had worked part way through them.

I explained how we had documented the relevant facts for each disease of interest and how this would help with their consideration of the certification that was necessary and consistent with the obligations of the SPS Agreement. We had provided references and also supplied a copy of the IBRA World Bee Health Reports. I advised that the former director of IBRA (Andrew Matheson) now worked as SPS Adviser for the New Zealand Ministry of Agriculture.

The Deputy Director will be dealing with the changes required to meet our request. I explained that we needed a commitment to complete the work. Korean importers would be arranging contracts with New Zealand exporters before the end of the year; and the bees were vital to the pollination of food crops for the Korean population. Dr Bae said that while they would try and give priority to enable the project to be completed this year, they could give no guarantee. If the work was not completed this year, it definitely would be completed next year.

I was fortunate to have the opportunity to visit the Korean Veterinary Medical Association while in Seoul. This proved to be a fruitful visit because the KVMA Secretary General has close links with Dr Kim (Director General of NAQS) and Dr Bae (Director of MAF). My role as Vice-President of the World Veterinary Association apparently gave significant importance to my visit, not only in the minds of the KVMA, but also Drs Kim and Bae. Hopefully this will pay off in the final results of our access negotiations.

Honey

I also visited Mr Choi, the Deputy Director of the Food Industry Division, Food Policy Bureau to discuss Korean standards for honey. Mr Choi advised that honey must comply with the standards specified in the Korean Food Code. I advised him that since honey for human consumption had to meet the standards of the New Zealand Ministry of Health, I expected that the existing standard of New Zealand honey would be equivalent to the Korean requirements.

Korean Beekeeping Association

I visited Mr Jung, the Chairman to discuss importations from New Zealand. This year New Zealand exported 5-6,000 of the 35,000 packages of bees imported into Korea.

Mr Jung said that the Korean beekeepers thought that Australian bees were better than New Zealand bees. The Australian bees were more healthy and lasted longer. He recommended that New Zealand study what the Australian exporters were doing right. He noted that the quality of the food supplied during transportation was the best and was modified according to the weather conditions. They had experimented with food types and had asked Korean beekeepers for feedback on the quality of the shipments.

Mr Jung said that bees should be packaged as close as possible to export to minimise the time that they are kept in the packages. He wanted New Zealand and Australia to make a joint approach to NAQS to reduce the quarantine period. I advised that we had already asked both NAQS and MAF to remove the quarantine period completely on the basis of the disease risk analysis that we had done.

The Korean beekeepers are concerned about the threat of chalkbrood from New Zealand. Mr Jung said that since the price of bees from New Zealand and Australia was about the same, the preference had been to buy Australian bees from chalkbrood free areas because the Korean beekeepers think that chalkbrood is more important than European foulbrood. Mr Jung said that the Korean beekeepers avoided the use of chemicals because of concern for residues in honey.

Mr Jung acknowledged receiving a letter from the President of the New Zealand Beekeepers' Association.

Acknowledgements

I am very grateful for the support from the New Zealand Embassy in Seoul, in particular Mr Gerald McGhie, Ambassador; Mr Peter Lund, Research Officer; Miss Choi Jung-mi, Research Officer; and Mr Lee Chung-Loon, the chauffeur.

Funding for the trip was made possible jointly by the National Beekeepers' Association of New Zealand and the World Veterinary Association.

From the colonies

Southern North Island Branch Report

September has been a wonderful month. The weather has been very kind. Maximum wind for Wellington has been 44 kilometres per hour, (down from the usual gusts of 100 kilometres) and very little rain in the later part of the month. In fact, nine straight warm days in a row have dried out paddocks and allowed beekeepers to get out amongst the bees.

Most have been doing their spring inspections, feeding hives and those around the orchard areas, have been moving hives for apple and pear pollination. Those further north and inland are stimulating hives and getting them set for the move north to the kiwifruit in a few months time.

In the bush areas the bees have taken advantage of the early spring nectar sources while those close to rivers have experienced a very good willow flow. The bees have built up well and some are making preparation for swarming. This has made it easier to produce queen cells to replace failing queens and drone layers.

And after a week of inspections I'm very grateful that I only have 350 hives. For I have sore finger joints, (my hives were wintered three high and most still have plenty of honey, plus some of the hand holds in the boxes are only 10mls), so I'll make a hive cracker for next year. Rabbits abound and they scare the heck out of you when they suddenly take off from under the hive you're working on, and my companions for the week have been the grey warblers and tuis that sing to you while you're working. It's been long hours, hard work but very pleasant.

On the domestic scene we have finalised our conference accounts and made a small profit for the branch, our spring field day was on the 5 October at Oakura and Beth Johnson (the other half of our president) should be walking well with her new knee.

Frank Lindsay,
Southern North Island

Permission to publish our conference attendance list

Several sponsors have asked us for a list of those who attended conference so that they can do some follow up.

If there is anybody out there who objects to their name, address and phone number being handed on, could you please contact Mary-Ann Lindsay (04) 478-3367 by the 20 October please.

William Charles Cotton
The Grand Bee Master of New Zealand

Part II

James Busby and Three Hives of Bees

Cotton's friendship with James Busby of the 1840 Treaty of Waitangi began soon after Selwyn and Cotton arrived at the Bay of Islands. One year later, Busby made a trip to Sydney aboard the schooner *Shamrock*. The *Australian* for 6 May 1843 listed a Mr. Busby aboard out of Auckland. The *Sydney Morning Herald* for 8 May 1843 (p.2) gave his arrival as one day later, 7 May. Cotton must have seized the opportunity provided by his trusted friend's visit there.

On Friday 7 July 1843, while Busby was still in New South Wales, Cotton, who remained anxious to secure some bees, noted that the *Shamrock* was to sail the following day for Sydney. **"I also sent a note to Mrs McArthur of Parramatta begging her to fulfil her promise of sending me some Bees."**

Cotton titled his journal page "Omens" and observed **"oddly enough the** (reading the) **evening before was Proverbs XXIV, verses 13-14**

Eat honey My son,
eat thou honey because
it is good

and the honey comb, which is
sweet to thy task

so shall the knowledge of wisdom
be unto thy soul;

when thou hast found it, then
there shall be a reward,

and thy expectation shall not
be cut off.

James Busby returned from Sydney, and reached the Bay with three hives of bees on 3 August 1843. From Cotton's journal, under the page heading "Bees Arrive", there is this entry **"Thursday August 3rd. During the morning I had a letter from Mr Busby dated of this Day at sea, and bringing the joyful intelligence that he had his hives of Bees for me, one from D Steele's, the other from Mrs Sparke. Friday August 4th. Many thanks to them. In the afternoon Mr ? rode down to Mr Busbys and returned soon after midnight with an account stating Bees were all safe, tho a great deal of honey had run out. The hives having been thrown over during the voyage."** Cotton had visited Steele at Cooks River in May the previous year while waiting for the *Tomatin* to be repaired. Two of his Sydney friends had been able to provide some hives.

Colenso, 1895, supports Busby

From a newspaper scrapbook held at the Hocken Library, Dunedin, come clippings of two letters. The source appears to have been the Hawke's Bay Herald, published late December 1895. The first letter came from Amy G. Storr, daughter of beekeeper Mrs. Thomas (Mary Anne) Allom. Under the banner 'A Deserved Recognition' and dated October 1895, Amy Storr pointed out to the editor **"Knowing the interest you take in matters relating to the early days of the colony"**, the achievement of her mother in introducing bees to New Zealand. For this success, she was presented a Royal Society of Arts and Commerce silver medal by the Prince Consort in 1845.

Amy Storr's honestly brokered letter, accompanied by a photograph of the silver medal, and particularly the mention of 1845, was quickly pounced upon by William Colenso, who responded to the editor of the 'H.B.H' in his letter dated 'Napier, 9 December 1895'. Misunderstanding the medal

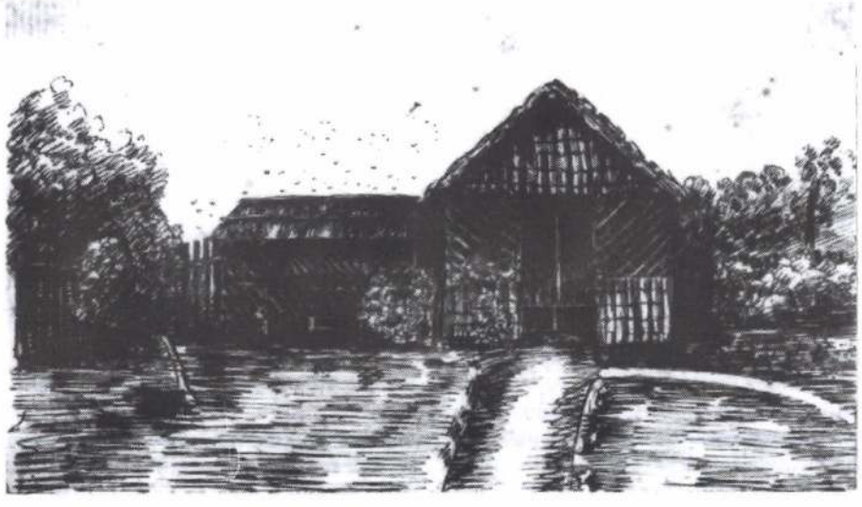
James Busby in 1831

presentation year with the year that the feat was achieved, ie., 1842, Colenso attacked with his first hand knowledge. His epistle was long, strident and eloquent, some extracts being:

"SIR. —I was not a little surprised (I may add and amused!) in reading in your paper of the 7th instant a letter written from England to you, purposely and fully stating that "Bees were introduced into New Zealand in 1845!" and that there is a silver medal extant attesting it, of which a photograph was also sent to you. I am sorry (in a certain sense) to have to upset the pretty picture you, and your English correspondent have given us, but now for the plain dry facts, without alas! the embellishments of a silver medal, or of a photograph, or of 'a deserved recognition.'

When I came to Hawke's Bay, on my second visit, to reside in 1844, I brought my hive of bees with me. That special hive was made in the Bay of Islands for me, containing a swarm from the bees of my esteemed friend Mr James Busby, of Waitangi ... having introduced bees into New Zealand a few years before. (Note: Colenso's recollection here is faulty, the bees arrived only the year previous, 1843).

I may add that Mr Busby had reared several hives of bees, and with many others, I had gone from the Paihia mission station (near by) to Waitangi, to see the bees at work; ... The Rev. W. C. Cotton, (mentioned in the English letter to you, and who arrived in the Bay of Islands with Bishop Selwyn, in 1843), was a great bee lover



Cotton's apiary and summer house, Waimate, 1844

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... He had a hive of bees at Waimate, from Mr Busby's, in 1842-3 ... (Note: Colenso's memory is again at fault, Selwyn and Cotton arrived 1842, not 1843).

Moreover, I think there were bees at the old Church Mission Station at Poverty Bay prior to 1844, also a swarm from Mr Busby's hives. ... Such a medal with its pseudo inscription would be sure to evoke much controversy in 'days to come,' if not now so clearly explained and shown to be untrue. But, in my saying this, I mean only in the one primary sense, of the *first* introduction of bees into New Zealand, and without any reference to the sending them hither direct from England. ... Honour to whom honour is due."

Though not the first to introduce honey-bees to New Zealand (ie. Mary Bumby, March 1839), Colenso clearly identified Busby as the one to have brought the 'Cotton' bees to the North Island. Also, Cotton's possession of a hive at Waimate 'from Mr Busby' was recognised. The year provided as '1842-3' is accurate enough, given that Colenso was remembering back over 50 years.

The special hive made for Colenso was surely a copy of those top-bar 'storifying' hives Cotton used and whose plans he made available to anyone that required them. From his 1848 *A Manual for New Zealand Beekeepers,* after providing detailed specifications of his preferred hive style **"... I hope to send down from the apiary at St. John's College patterns of the different forms of hives which I should recommend my pupils in this place to adopt. ... I have had some made for the Maori beekeepers at Otaki and Waikanae by a carpenter of this place, who gave me satisfaction in the work which he did under my directions; and he has promised me to be equally careful in making any others which may be ordered of him."** (p.20). Cotton's mention of Waikanae, within Poverty Bay, north of Gisborne, matches Colenso's reference to the destination for one of Busby's hives.

Hocken, 1896, also supports Busby

Busby's introduction of bees receives another mention in an article by T. M. Hocken in *The Otago Witness* for 17 December 1896, titled 'The Governors of New Zealand'. Shortly after Busby's replacement by Captain William Hobson in February 1840 **"... he revisited Sydney with his family. After residing there a year or two he returned to New Zealand and became permanently a settler at the Bay of Islands. He brought with him on this occasion the first hive of honey-bees introduced into New Zealand."**

When the *Shamrock* departed Sydney in late July, on board with Busby were three hives of bees, which arrived at the Bay of Islands on 3 August 1843. From Cotton's journal for that day there was expectant optimism regarding the welfare of the bees. Only one of these three colonies was to survive. Rev. Richard Taylor wrote in 1868 **"Mr. Cotton ... was more successful, and from his hive both islands are now well stocked."** Note the singular mention of **"from his hive"**, though Busby, in truth, was in possession.

Cotton Commences Beekeeping

"Thursday August 10th 1843. A pleasant walk to John Fox's, took boat to the Busby's (Buzz Bee) found his hive alive and doing well whilst I was sadly off. In one of mine, a very heavy one, the combs had all broken down & the Bees were drowned In the honey. The other, a very large straw one from Mrs Sparke, had still a few bees in it alive, not above a cupful. <u>But</u> the combs had all fallen, and the <u>navvies</u> had made free with the honey. Did not think they had a chance of living, as they flew about in a tumultuous way — sorry for it." It's possible that the hives were not properly secured during the voyage or that they suffered a rough passage. Two hives suffered severely.

"Friday August 11th 1843. ... about 1 o'clock ... to Mr Busby's ... to <u>pick</u> up the remains of my Bees. Found they had all flown away, a poverty swarm, soon after I left them yesterday, sorry for it." Disappointed with the apparent failure of both his hives, Cotton still had hopes of bees arriving from his Sydney friends. **"Saturday September 9th 1843. ... off to Kerikeri after dinner, as I heard a ship had arrived from Sydney, and I hoped she might have brought me a hive or two — no Bees."**

For less than two months in 1843, from August 3 to September 29, Cotton had one remaining skep hive of bees, his other heavy skep hive having already succumbed following its rough treatment across the Tasman Sea. Busby's box hive survived for Cotton to work **"Friday September 29th 1843. ... over to Mr Busby's. Took a comb out of their hive ... I am to have the first swarm. My Bees to my astonishment alive. The Bees, and their little combs which they had made, occupied about the space of a tea cup. There was honey in the cells, and brood. Had I turned them down at once, and fastened them to their stand they might have done well, but I yielded to my wish to see the Queen, so I tipped-tap tap on the inverted hive.**

The Bees, about a pint — marched all up the sides of the hive in a few minutes, and I had the pleasure of showing Mrs Busby, and handling myself for the first time a Queen in N.Z. after some time I put her back, and great was the buzz of gratulation. Terrible bad weather came on soon after and this parcel of Bees <u>soon</u> dwindled away, or flew away as a poverty swarm. Their hive was a great deal too large more than three times the size of those we have in England. I should have been very glad had this hive done better as its ups & downs in life would have been unprecedented in Bee annals.

My Sydney friends made the mistake of picking out for me some of their heaviest hives, whereas the lightest wd have been best. The storified Hives too, like that which Mr Busby brought down for himself are best suited for the voyage — in them the combs are more broken up into smaller portions, & have more support. <u>But</u> <u>to</u> return to this lot of mine. The day I first saw them, they swarmed away, so that when I returned August the 11th the hive was empty. In the <u>even</u> Mr Busby's man ... found them all clustering together on the ground, near the hive, the greater part of them

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Cotton's room at left, one skep and two box hives at right November 1844, Paihia Parsonage

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having got into an old glass bottle. He put the hive over them. For several days following wet & cold they swarmed out, and went crawling about the walls, in a half torpid state. ... and at last got them to stop in the hive where they began to work - but as I have said did not ultimately come to anything. ..."

The surviving hive of the three that were landed in the Bay and named 'The Queen' was "**The original stock brought by Mr Busby from Sydney 1843**". Also annotated in a family tree of the subsequent 'daughter' and 'grand-daughter' swarms that issued — 'Princess Royal', the first swarm, was given to Cotton in March 1844 as well as the Princesses 'Mary' and 'Alice'. 'Prince of Wales' went to Mrs Henry Williams, 'Prince George' was given to Mr Mair and removed to Wangari, 'Prince Frederick' was removed to Auckland by W. Clarke and 'Prince Henry' was sent to Pa Karaka (now Pakaraka). Princesses 'Maud' and 'Matilda' along with 'The Queen' remained with the Busbys.

The Princesses Mary and Alice arrive

Cotton waited seven months from August 1843 for a hive of bees to call his own at Waimate. "**Tuesday March 5th 1844. Turned a little in the morning, fittings for the observatory hive. Then walked down to the bay to buy stores, and bring up my hives, got to John Fox's, which is just by the Waitangi. Back by 2 — only 3 hours — very fast walking, hired his boat, went over to Kororareka — did a great deal of shopping... back to Paihia, about an hours talk with Mr. H. Williams about my journeyings and trips... at Mr. Busby's by 8pm. Stopped up two of my stocks, I started at 9 by boat to John Fox's, which I left at 10. a brilliant moon so that it was as good walking as at noon day. We went softly for the sake of the Bees which two natives carried arrived home at 3am. Established the Bees in their house. Three or four combs had broken down from the heavy hive. I had taken away the bottom board, and wrapped them in a cloth, so when I loosed the cloth they fell to the ground with a piteous crash & buzz. Nil desperandum. I placed the combs on the top of the hive, as they were full of brood and turned an empty box over them, and had the satisfaction next day to find that the nurses had gone up to them, fixed the combs, were busy with the brood as tho nothing had happened. at 4 o'clock I laid down for a couple of hours sleep.**

Wednesday March 6th. After making all due preparation I transferred my other stock into my observation hive. I then performed the operation in Mr Christopher's little house, which was quite full of spectators. A very successful operation. I found the queen immediately, and by means of a top bar, with which I headed the frame of the observatory hive I fixed the beautiful little combs begun 2 days ago after they swarmed quite well. The swarm only came out on Sunday, so that I hoped they wd do well. I did not give them a full dose of the fungus, so a great many revived before I could get them into the hive. It gave us however no trouble, for I had only to open it inside and they all merrily joined their companions in the hive, which I placed in my summer house. ... The hive was a beautiful sight. They immediately began to saw off the head of a piece of comb which was too near the window and worked so hard, that it was quite finished by the first thing in the morning.

The stock has grown so strong, that they could not nearly all get into the hive. I was planning to put a large glass upon the top, when they swarmed out, settled beautifully on an acacia tree near to the house. I hived them, and they went in so completely, into one of my old cedar boxes that I carried them immediately back into the summer house, without waiting for ever. I was so confident that they were all right that I did not leave any one to watch and when I came back in about an hour they were all clean gone. Sorry for it. But the Bush will get stocked, and it is only carrying out my intentions of letting one swarm in the house its liberty."

The 'Princess Royal' arrived at Waimate on Tuesday March 12. The order of the day was "**up at five, bathed, breakfasted and off in the boat to Mr Busby's before 7**" He was back at Paihia by 8 with his hive. After a four hour carry and accompanied by D Davies, Cotton reached Waimate at 12. The journal entry for the following day caused me to imagine a smile on his face as he surveyed his home situation and apiary "**Wednesday March 13th. The Bees this morning bringing in great loads of a very red pollen. I have all my life desired to have such a summer house, and now I come to NZ and find it.**"

Peter Barrett, August 1996

The next episode covers Cotton's continued beekeeping adventures on the North Island at Waimate, at Purewa Creek in Auckland and finally at Wellington with 'The Bees Farewell' prior to his departure for England.

Note: 1. Thanks to Bruce Stevenson for his assistance at the Mitchell library during his Sydney visit in June and for his valuable findings at the Auckland Institute and Museum.

2. Cotton's script has, at times, been difficult to interpret. Thankfully, most words are clear. Where a word could not be identified, a "?" was substituted. Where a translation remained uncertain, the word appears underlined. The result is then comprehensible, if not word perfect. This story, a second instalment on Cotton's time in New Zealand, is the result of many, many painstaking hours spent deciphering Cotton's handwriting. Much more study will be required to fill out his years in the North Island.

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How *"Bees Plus"* came about

Mark and Sheree Silson operate a large apiary business from Katikati in the western Bay of Plenty. They manage about 2200 hives spread over the Coromandel Peninsula, Waikato and Hauraki Plains. They also provide a pollination service to approximately 60 kiwifruit orchards and 15 avocado orchards.

Over the past years, Mark has worked from notes in a hard cover diary for all regular maintenance visits, hive movements, honey, etc. Business has gone well, but diaries have their limits. It is hard to plan accurately for a round of scheduled visits. Regular frustrations have included:

- not knowing exactly what maintenance work is need on specific apiaries. Previous diary entries are easily missed and memory can be affected by the stress and pressure of long hours.
- ensuring problems such as disease, queens and starving are adequately recorded and actioned — and being able to report on them at a later date!
- having confidence that unsupervised staff have indeed checked each site completely and recorded all important information.
- compiling a full, comprehensive history for a particular apiary. What work was done on it? How much honey did it produce? Where did the hives come from and where did they go? Which crews have visited the site, and when?

A few years ago, Mark and Sheree invested in a computer to help with accounting and other office tasks. Sheree had worked with computers a lot in a variety of previous jobs and knew what computers can do — with the right software.

Sheree started to keep track of apiaries using the database in Microsoft Works. But this soon became too difficult. Tasks like manually updating or copying database records and getting reports to work well became too arduous. It was time for some proper software.

Sheree had got to know a software developer, Phil Radford, while using some other specialised software in kiwifruit coolstores. After some planning and discussions about what they really needed, the project got under way.

The new software, called ***"Bees Plus"*** is now installed on their computer. She spent a few days entering in information about all their apiaries and hives.

They can now produce accurate work sheets (for each crew, area and particular date) detailing all work that needs to be done. Hive movements are easily recorded together with a wealth of other information — tops, nuclei, pallets, queens, supers, honey, disease, work done and work to do, and more.

Visit schedules are produced easily for pollination sites or honey apiaries. A range of other reports will help in all aspects of apiary management.

After using the software for just a few days, both Mark and Sheree say they wish they had invested in software like this years ago! They can now plan for a day's work in five minutes and are looking forward to using ***"Bees Plus"*** over the coming season.

"Bees Plus" is now available from Phil Radford, a computer software developer in Tauranga. Phil has been writing software for the past nine years, mostly for horticultural and associated industries. He has clients from Kerikeri to Nelson, helping and supporting them over the phone and sometimes with the aid of modems.

The SPS agreement:

A new era in international trade

Andrew Matheson, National Adviser SPS (Animals), MAF Regulatory Authority, PO Box 2526, Wellington.

"A race is on to deepen and broaden the outcomes of the Uruguay Round, to accelerate the creation of free and open trade and investment ... and to liberalize new areas."

That quote was in a national newspaper recently as the trade ministers of the Apec forum, which includes New Zealand, met in Christchurch.

A few years ago we couldn't open a newspaper without hearing about the Uruguay round of Gatt, but then it all went quiet. But now Apec (Asia Pacific Economic Cooperation) is pushing this cause and, believe me, when the World Trade Organization has its first ministerial meeting in Singapore in December, you'll hear about nothing else for a while.

What does it all mean? How does all this global stuff affect New Zealand, or New Zealand agriculture or, more to the point, the average beekeeper?

I'm writing here about one part of this move towards more liberal trade: the sanitary-phytosanitary (or SPS) agreement. It's the part which affects agriculture the most, and so it's the part which affects you the most. The SPS agreement will have the most profound impact on agricultural trade of anything in the past half century.

Uruguay round of Gatt

Since 1947 the world trading environment has been regulated through the General Agreement on Tariffs and Trade, commonly known as Gatt. This agreement was an attempt to avoid a repeat of the disastrous economic policies of the 1930s, which resulted in a huge worldwide depression.

Gatt didn't stay the same over its history of more than 40 years, but was changed through a series of 'rounds' of negotiations. The most recent set (the Uruguay round) was both long — seven years — and very radical.

When the Uruguay round was finished in 1994, New Zealand trade analysts could look back on years of hard work, but also look forward to a change that probably ranks in importance for us along with the advent of refrigerated shipping and the CER relationship with Australia.

The Uruguay round was the first Gatt round to consider agriculture comprehensively. Previously domestic agricultural policies were largely exempt from international trade rules, because food security was tied up with national security and thus was non-negotiable. Nations, including our own, were pretty well addicted to subsidizing farmers and protecting agriculture.

But not only did the Uruguay round include agriculture, it contained a whole new thrust towards freeing up international trade from tariffs and other barriers.

SPS agreement

Not being able to use tariff and other barriers to the same extent means that countries would be more likely to use sanitary measures, or health protection measures, to restrict trade. Some countries do that anyway; hiding behind restrictions which look as if they are protecting animal or plant health, but really are designed to restrict imports. Any move to liberalize trade must try and stop this from happening.

So the Uruguay round incorporated a new agreement: the sanitary-phytosanitary agreement (the SPS agreement for short), or to give its full title, the 'agreement on the application of sanitary and phytosanitary measures'.

The SPS agreement is about how to apply sanitary (human and animal health) measures and phytosanitary (plant health) measures. It establishes principles which bind countries when they set health-protection measures for the importation of plants, animals and their products. It covers all SPS measures which affect or may affect international trade.

Creation of the World Trade Organization

A new organization, the World Trade Organization (WTO), has been set up to encompass the revised General agreement on tariffs and trade (Gatt 1994) and all the 21 multilateral agreements established under the Uruguay round. (The SPS agreement is just one of these, and the others cover a range of areas from customs valuation to intellectual property).

The WTO has over 120 members, including most of New Zealand's major trading partners; of our top 15 export markets only China and Taiwan are not WTO members. They, and a number of other non-members, are moving towards joining the WTO and are trying to adopt SPS principles as part of that process.

WTO is not Gatt under a new name. It requires member countries to remove import prohibitions and reduce import tariffs. It is also a forum for resolving trade disputes, though while it has a formal disputes settlement procedure and can impose penalties the aim of it is to prevent disputes and to resolve them before they go to the procedure.

It's also worth noting that there is no 'á la carte' approach to the WTO: members signing up must agree to abide by all its provisions (including all of the 21 multilateral agreements). This will increase consistency and certainty, compared with the piecemeal approach allowed under Gatt.

What does the SPS agreement cover?

Sixteen pages of text may not sound like much of an earth-shattering document, but the carefully crafted prose of the SPS agreement packs a lot of punch. It repays careful reading, but here I'll outline the main concepts and principles in this compact.

Remember these are binding on WTO members when they use sanitary or phytosanitary measures; any steps to protect animal, plant or human health which might affect international trade in any way. (From now on in the article I'll just refer to animal health or sanitary measures, to keep things simple).

Necessity

Members have the right to protect the life and health of their animals, provided the measures taken aren't inconsistent with the SPS agreement.

So national sovereignty is preserved, but balanced against the commitments made when members agreed to the results of the Uruguay round. In fact the most fundamental challenge of making the SPS agreement work is to reach a balance between the sovereign rights of individual countries to set their own animal health protection measures, and to achieve the aim of facilitating trade.

What defines necessity? The agreement gives that role to science rather than politics, as sanitary measures must be based on scientific principles, and kept in place only while justified by scientific evidence.

Consistency

Sanitary measures have to be applied consistently, and there are three main areas where members have to be careful to avoid what the agreement calls arbitrary or unjustifiable discrimination.

Firstly, discriminating against foreign suppliers is not allowed. This 'national treatment' principle means that imports can't be treated differently from local trade in the same commodity; for instance a country can't require imported bees to be free of chalkbrood if there's no similar requirement for locally-traded bees.

The second principle is called 'most-favoured nation'; members can't discriminate between members where identical or similar health conditions prevail, setting tough health standards

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for imports from one while being more liberal with imports from the other.

The third area of consistency deals with how a country is consistent in determining what level of risk it will accept for different areas of trade; different species or products, different countries and even different sectors (for example, the risks accepted for poultry meat imports compared with the level of risk of introducing diseases on beef imports). This is a tough issue, and the SPS committee is still grappling with it.

Harmonization

Harmonizing sanitary measures is an important objective of the agreement, and members are obliged to base their sanitary measures on international standards where they exist. For animal health the international standards are those developed by the OIE, the Office International des Epizooties or the world organization for animal health.

The OIE now has a much more important role than it did in the past. Since 1924 this intergovernmental organization has worked to share information on animal diseases, coordinate research and harmonize regulations on international trade. Now its recommendations have a new status, and it's vitally important for countries to work to make these scientifically valid and up to date. All sanitary measures based on OIE standards are deemed to be acceptable under the SPS agreement, even if the international standard is outdated.

WTO members may use higher sanitary standards than those developed by the OIE, either if there is scientific justification, or if they can demonstrate a need for a higher level of protection than the standard would give because of some unique feature of their animal health status. Any higher sanitary standard must still not be inconsistent with the other provisions of the SPS agreement.

Equivalence

The agreement also forces a move away from importing countries insisting that particular sanitary measures be applied to animals or animal products. In the post-Uruguay round environment it's results that are important, not processes. Different health measures used by an exporting country must be accepted by an importing country, if it can be objectively shown that they achieve the importing country's appropriate level of protection.

For example, an importing country couldn't insist that beeswax was melted with steam at a certain temperature for a certain time, if the exporting country could show that another treatment (say irradiation) delivered the desired level of protection (e.g. reducing to the same level the risk of introducing the EFB bacterium).

Equivalence will mostly be applied on a bilateral basis, and the agreement envisages members setting up bilateral agreements based on this concept. New Zealand is doing exactly that with the European Union in a wide-ranging veterinary agreement due to be signed this year, and has already had discussions with a number of Asian countries (including Korea) about such agreements.

Assessment of risk

Any WTO member must ensure that its sanitary measures are based on an assessment of risk; in New Zealand we call the whole process 'risk analysis'.

Risk analysis is a fast-evolving science which helps regulators assemble data in a thorough and consistent way, so their decisions can be made on a sound technical basis. The process also becomes more transparent; anyone affected by a decision can see the assumptions and decisions made in developing sanitary measures.

New Zealand beekeepers will be familiar with the risk analyses carried out on the importation of Carniolan semen and honey from Australia.

Determining the appropriate level of protection

Once the risk analysis has been performed, regulators must decide the level of protection that is appropriate to their circumstances. Sanitary measures should be suitable to the need, which is dictated by the probability of a pest or disease being introduced or becoming established, and the consequences of that happening.

Given a choice of sanitary measures which will deliver the appropriate level of protection, members must choose the one which will be least distorting on trade.

Regional conditions

It's no longer appropriate to think of a whole country as being 'infected' with a disease, if there are real differences in the presence or incidence of that disease within the country. Sanitary measures should take account of demonstrable regional variations in health status in the exporting country.

So, for example, New Zealand would have to have a different attitude to the importation of honey from Western Australia than from the eastern states. But to support a claim for regional freedom from EFB, Western Australia would have to provide objective evidence on issues such as effective surveillance, import control measures, and geographical or ecological factors keeping the state free of the disease.

Transparency

Probably the most immediate change in the way countries operate in the SPS environment is an opening up of information channels about the sanitary measures they use; being transparent in the current jargon.

Members have to notify other members of proposed sanitary regulations and allow comment (except for emergencies such as outbreaks of serious diseases). Other members are entitled to comment, and have their submissions discussed.

In effect this is the consultation process, which we're familiar with, extended on to an international scale. Remember that not all countries have an open process of consultation with domestic industries.

WTO members must also set up single enquiry points, so that any other member may ask about a wide range of sanitary measures including SPS regulations, internal procedures such as manuals used by inspectors, and even the risk analysis procedures used to develop import health standards. We're used to the Official Information Act, but this requirement takes transparency offshore.

New Zealand's notification authority and national enquiry point for all SPS measures are both operated by MAF Regulatory Authority, which has recently strengthened its SPS transparency procedures.

Other provisions

The SPS agreement also covers other areas, including the following:

- Members should contribute to relevant international organizations, which for animal health means the OIE, and to the development and review of standards.
- Members are encouraged to provide technical assistance to other members.
- There are special provisions for developing countries, delaying full implementation for five years in the case of least developed countries and two years for other developing countries.
- The SPS committee which meets in Geneva is charged with implementing the agreement, and has a mandate to provide a forum for discussion on issues such as equivalence and harmonization.
- The WTO also has a consultations and disputes procedure.

What does the SPS agreement mean for New Zealand?

New Zealand is fully committed to the WTO, and in fact was a prime mover in the Cairns Group which did much of the lobbying on agricultural matters during the Uruguay round. Our government has given New Zealand's full commitment to complying with the SPS agreement.

This doesn't mean we have no right to continued protection of our animal health status; such a right is enshrined in the

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SPS agreement. But there are responsibilities. We need to justify our animal health measures, and ensure that they are soundly based on science. That obligation is set down in the SPS agreement too.

In basing our health protection measures on good science we must:

- choose an appropriate level of protection;
- use recognized risk analysis procedures;
- recognize equivalence; and regional disease status;
- minimize the negative effects on trade.

Zero risk is not an option. Actually there's no such thing as zero risk, and even if there were, travellers must travel and we all want interesting food products in our shops. Even the zero-risk merchants don't want zero risk in their overseas markets; "We're clean and green so we must protect ourselves, but you must take our products — it's not fair if you close your borders".

We must be consistent in the way we assess risk and apply sanitary measures, between countries, and across different species and products.

We must follow international standards where appropriate (those from the OIE for animal health). We must fulfil our notification and transparency obligations. And we must strive to play a full part in international organizations such as the OIE, and work in other forums such as Apec to promote adoption of the SPS principles.

As a major agricultural exporter New Zealand has a lot to gain from the SPS agreement. But to ensure the most favourable approach for our exports we must lead by example, not maintaining existing trade barriers or erecting new ones.

World adoption of SPS conditions hasn't happened overnight, but gradually this agreement will make it easier for New Zealand to gain market access for our animals and animal products. It has already influenced the behaviour of regulators around the world, shifting the burden of proof onto those setting sanitary measures for imported animals and animal products.

Neem Research

by Adony Melathopoulos, Simon Fraser University, Burnaby BC

Beekeepers have become increasingly dependent on the use of synthetic pesticides and antibiotics to combat bee pests, and this has led to problems of increased treatment and labour costs, toxicological hazards to beekeepers and bees, and risks of contaminating honey crops. In addition, the limited number of registered products currently available for use have left beekeepers vulnerable to the evolution of pesticide and antibiotic resistance. Searching for alternatives has not been easy, but now scientists think they may have found a glimmer of hope from naturally occurring compounds found in plants. Plants produce chemicals to protect themselves from diseases or being eaten. Nicotine, for example, is a potent nerve toxin that tobacco plants produce to preserve their leaves from hungry insects. People have used these compounds as folk remedies for centuries. Scientists are now investigating these compounds. This work has led to promising initial results from two North American studies suggesting that plant extracts may soon be available to beekeepers to fight their mite and disease problems.

The extracts currently being tested on honey-bees have several properties that make them superior to synthetic products. They tend to be effective against a wide range of pest organisms, making it possible to control many honey-bee pests simultaneously and, reducing the number of chemicals used in bee hives. They also tend to have low environmental persistence, do not induce resistance readily, and are relatively non-toxic to humans.

Most of the work to date has been done on highly odorous oily plant extracts known as essential oils, which are volatile blends of chemicals that hold the fragrance of leaves or flowers in a concentrated form. Until World War II essential oils of thyme, lemon, clove and chamomile were used as antiseptics in hospitals. Their use to fight bee mites and diseases has already developed in Europe, where an Italian product containing the essential oil of thyme (thymol) has been shown to be effective against varroa. In North America, USDA scientist Nick Calderone is looking at the efficacy of a thymol, eucalyptus, camphor, menthol oil blend against varroa. Recent studies using green florist foam to slowly release the blend indicate it can be as effective as Apistan. Earlier work by Calderone suggests some of the essential oils in the blend could be effective against American foulbrood (AFB) and chalkbrood. Although still being tested, results to date offer some promise for the near future. Unlike essential oils, products derived from the Asian neem tree are relatively unknown to North America. Nonetheless, neem products have been used since antiquity in the traditional Hindu medicine known as the Ayurveda. The antibiotic and pesticidal properties of neem leaf, seed kernel, and neem seed oil extracts have been confirmed through research over the past fifty years. The extracts contain a number of active ingredients that are potent antibiotics, able to stop invertebrates (such as mites and insects) from feeding, and disrupt the hormones they use for molting. Despite wide spectrum efficacy against many agricultural pests, neem is relatively non-toxic to insect predators and pollinators, including honey-bees, birds and mammals.

We at Simon Fraser are currently assessing the effects of neem seed extracts on varroa and tracheal mites, chalkbrood, and AFB. We hope to confirm work at Agriculture Canada and in Germany that suggests neem products are effective against both mites, chalkbrood and Nosema by early next year, and to determine if and how neem can be safely used in the hive.

Plant extracts may be the next breakthrough in the management of honey-bee pests. It is ironic that the same concoctions used by grandparents worldwide to cure colds and flus, have found their way into our sick bee hives.

(No botanical extracts mentioned in this article are currently registered for use in honey-bee colonies in Canada.)

Acknowledgement Hivelights

Thanks to Comvita

Seniors get serious about PCs

They're the new computer generation which is sweeping New Zealand. But they're not hi-tech whiz kids but senior citizens who are getting serious about computers.

WHEN Mary Furlong set out to determine whether older people would apply themselves as readily as children in learning to use computers, she gathered 22 senior citizens in a classroom at the University of San Francisco.

Furlong, a college professor then in her mid-30s, was trying to dispel some assumptions her generation had made about seniors: that because they hadn't regularly encountered computers in their workplaces, their banks, their grocery stores and their homes, they were afraid to use them.

She found that most of the assumptions were — as senior citizens used to say when they were young sprites — hogwash.

Ten years later, Furlong's research project has snowballed into the non-profit SeniorNet, America's biggest and oldest on-line service and learning centre for seniors.

Furlong's classroom is no longer big enough: The group has grown to almost 20,000.

SeniorNet has also sprouted across New Zealand with branches established by local communities from Auckland through to Christchurch.

The aim of SeniorNet is to have 20 centres around New Zealand by the end of the decade.

Telecom provides limited financial and practical support to new centres.

Wellington, the first SeniorNet established in New Zealand, has been attracting seniors keen to get to grips with PCs since 1992.

Anyone over 55 years can sign up for computing classes for two hours a week over eight weeks, costing around $45.

"Members want to keep up with their grandchildren, discover new technology or perhaps learn how to create databases for their finances and hobbies," says branch chairman Ton Beck.

The Wellington classes includes people in their eighties. SeniorNet, in the United States, at least, only reaches a fraction of the seniors using computers. Many more are out there, tapping away at their keyboards. Seniors are using personal computers for everything from organising recipes to managing finances and businesses to keeping in touch with relatives and friends. Older people, in fact, are leading the computer-using pack. Among all members of households with computers older people are spending an average of 12 hours a week at the screen, according to a US study by Packard Bell. Adult males came in at 10 hours a week, adult females and college students at nine hours, teenagers at seven.

Older people have disposable income and leisure time, key factors in their willingness and ability to buy and use computers. Decreased mobility also makes the computer attractive. Although the Packard Bell study says few seniors use computers for e-mail, it is catching on as a way to keep up with far-flung offspring or friends and relatives in out-of the-way places. Mary Mitchell, 72, of Simsbury, Connecticut, uses e-mail to keep in touch with her home town when she spends her winters in Florida. She also e-mails her granddaughter in college in Vermont, and her other grandchildren in Connecticut. The first in her family to buy a computer, Mrs Mitchell considers e-mail 'a wonderful intergenerational communication tool. My granddaughter in college will sit down and shoot off a message on a computer before she'll sit down, and write a letter.' Mrs Mitchell believes older people have "computer psychosis" - a fear of learning how to use computers. "But they will get over it" she says. "They are already getting more and more into learning it".

The push to instruct older folks in the fundamentals of computer use probably won't be necessary in 10 to 15 years, when computer-literate baby boomers become computer literate retirees.

"Baby boomers are going to be the market in 10 to 15 years for which people will be developing software and Internet content" says Bradley Haas, manager of communications at US SeniorNet. "They'll have the time and the resources and the know-how to enjoy something like this".

Anyone interested in establishing a SeniorNet branch in their region can contact Dorothy Lomas, the SeniorNet Co-ordinator for New Zealand on (04) 382 3127.

Putting bite on

A Rotorua man arrested for the possession of cannabis oil told police the drug was necessary to dull the pain of his police dog bites.

Swarming

Summer is here,
Warm weather at last,
And the bees are swarming,
Ring, ring goes the phone,
Mum answers it,
It's another person with a swarm,
Not another replies dad,
Gone are the quiet days.

White clover breeding, flowering, and farm management as it relates to Beekeeping

John van den Bosch [1], D R Woodfield [1], P T P Clifford [2], J R Caradus [1] AgResearch Grasslands, [1] Palmerston North & [2] Lincoln

Background

There is a perception that honey yields from white clover have declined in recent years, particularly in Southland and Waikato. Observations from Southland indicated an apparent decline from 50 kg/hive earlier this century down to 30 kg/hive now. Some reasons were suggested, and we will identify many others which could be influencing white clover flowering and therefore honey production.

Honey Production

Despite suggestions of a decline in honey production per hive, New Zealand's honey production from 1973 shows a general increase in total production, with no obvious trend in kg/hive - just plenty of variation, presumably mainly weather related. Honey yields from the seven regions of New Zealand are even more variable. There have been some high production figures from the Lincoln area (equivalent to Canterbury and North Otago) as in 1992 and 1994, which includes our main white clover seed growing region. The decline in 1995 and 1996 reflects two poor summers for clover growth in Canterbury.

There is no clear link between honey and clover seed yield when looking at the yearly yields from the mid 1970's. A good early summer may leave beekeepers in the land of milk and honey, but a wet February when clover seed is being harvested would give seed producers a low seed yield, so it is not too surprising that the yields do not match up well. The highest honey yield was in 1994.

Value

White clover is New Zealand's most economically important plant as it is our predominant forage legume, and farming is still our country's main income earner. White clover contributes about $3 billion annually to New Zealand, mainly as a nitrogen fixer and as a high quality feed for livestock, but not forgetting honey and seed export values. The value of bee pollination as worked out by your association is coincidentally also about $3 billion, though we do question the replacement nitrogen figure, as N is fixed without any input from bees. However, this is not to deny their importance to agriculture.

White Clover Breeding

As well as good luck four leaf clovers, many cultivars have been bred. This started in the 1920's, leading to the first release in the 1950's, of what was subsequently named Grasslands Huia in 1964, and many more have since been bred for specific regions, farm types or environments in recent years.

- Grasslands Huia - our oldest cultivar, collected from paddocks in Hawke Bay and North Canterbury.
- Grasslands Pitau - a cross between Huia and a Spanish type which had more growth in winter.
- Grasslands Tahora - a small leaved dense type collected from a range of moist North Island farms.
- Grasslands Kopu - a cross between Pitau and some very large-leaved ladino cultivars. It is a large leaved type for dairy farming especially.
- Grasslands Demand - selected in Southland from local and Southern European plants.
- Grasslands Prestige - selected from Northland sheep and beef farms.
- Prop - collected from dry hill country in the Waikato for early and prolific flowering.
- Grasslands Challenge - chosen in Northland from New Zealand and Mediterranean crosses for increased growth, and is large leaved.
- Grasslands Sustain - selected for higher stolon density than other cultivars of the same leaf size.
- Le Bons - selected for growth in Canterbury from crossing several cultivars.

As the premier white clover breeding organisation in the world, we have a suite of cultivars available, with a range of leaf sizes, areas and farm types which suit the cultivars, matching animal production and the environment. These have mainly been bred under grazing for high leaf production for feeding grazing animals.

Flowering

High seed production is vital for any new cultivar to become a commercial success. The parent plants of our newest cultivars (eg. Challenge, Prestige, Demand & Sustain) were all selected for flowering ability at Lincoln, in our main seed production area. There is variation in time of flowering, and this can be altered and manipulated during breeding. A good example of the difference that selecting for seed production makes is seen with Challenge (Figure 1).

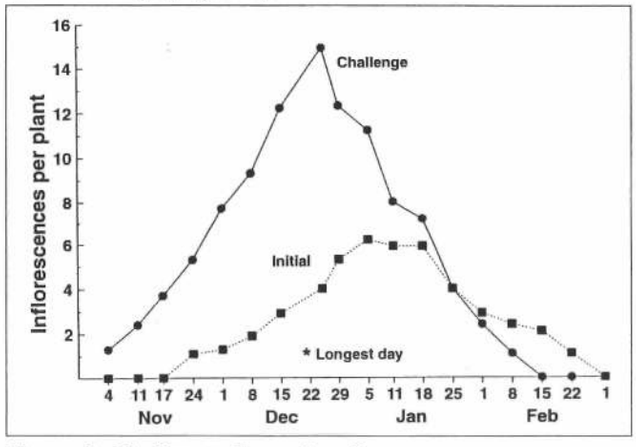

Figure 1. Challenge Flowering Curves.

There was an increase of more than 100% in flowers/plant after selection for flowering, while the time of peak flowering was moved to earlier in the season, which may be desirable to beekeepers in some parts of the country. We need high seed yields to ensure seed growers produce the seed for our new cultivars. We need their expertise, and they use our expertise in breeding and seed research.

The number of flowers, time and pattern of flowering, plant density (which affects potential flowering) and seed yield, vary greatly. In general, larger leaved cultivars have fewer leaves, larger flowers (i.e. more florets/head), but they have fewer flowers per unit area (Figure 2) and tend to have a lower seed yield (Figure 3).

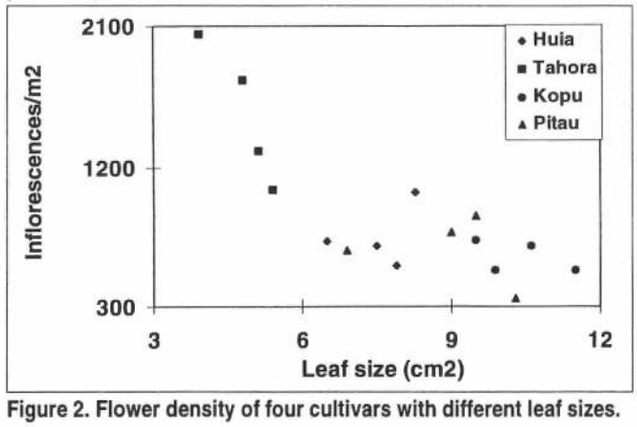

Figure 2. Flower density of four cultivars with different leaf sizes.

Many environmental factors influence leaf size and seed yield. The fertility status of the soil has a large effect with a more fertile soil giving bigger leaves and less seed. There is increasing pressure on the good seed growing land in Canterbury from orchards, vineyards, and new dairy farms.

Also many overseas cultivars are now being multiplied here, increasing competition for clean land. The seed yield and flowering characteristics of many of these overseas cultivars are often poor in New Zealand.

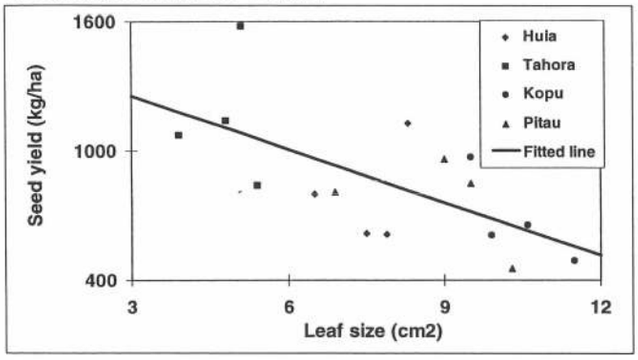

Figure 3. Seed yield of four cultivars with different leaf sizes.

The important part of the flower to you for honey production is the nectar, and there is little data available on that in New Zealand. The assumption has been that more flowers means more nectar.

Nectar

Temperature has a major effect on nectar production, and this is seen in some experiments from Wales. Daylength is also a key environmental factor.

Figure 4 shows the number of flowers/plant, nectar/floret and number of florets for 10 varieties at three different temperatures. Increasing the temperature increased the nectar flow. There was great variation between the cultivars in nectar production. Taking an average of the 18 and 26°C temperatures, the range was from 3.4 - 11.7 nl/floret (Norris: Annals of Botany 1985).

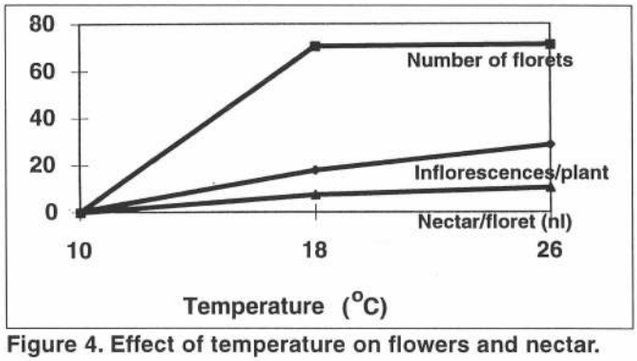

Figure 4. Effect of temperature on flowers and nectar.

A similar trend occurred when daylength were increased from 12 to 14 and 16 hours. Nectar/floret and number of florets (average for 6 cultivars) were affected by daylight length, with an increase in nectar as daylength increased (Table 1, from Norris: Annals of Botany 1984). We have only been breeding for seed production, but if there was a need, resulting in a financial return, it could be possible to select for nectar and pollen production. This nectar data shows the effect of climate on flowering and nectar production, and confirms what beekeepers have observed for years, since bees do not forage at low temperatures.

Changes in New Zealand Agriculture

The intensification of our farming also impacts on production of flowers and honey. Most of our farmland is still grassland. There was an increase in the area used for farming in the early 1970's, but it has been relatively steady since then. The number of sheep increased until 1982, and has been declining since then. Sheep are more predominant in Southland, Otago and Canterbury than elsewhere. The number of beef cattle increased until 1975, then declined, and is now increasing again. The intensification of our farming systems is most evident on the dairy farms. Dairy cattle numbers have increased, especially in the last eight years. Waikato and Taranaki are still the major dairy areas, but cow numbers have increased substantially in Canterbury and Southland. The trend to fewer and larger farms with more cows continues, and there has been a substantial increase in both milksolids per hectare and milksolids per cow, with stock numbers per hectare relatively static (Figure 5).

Farm Management

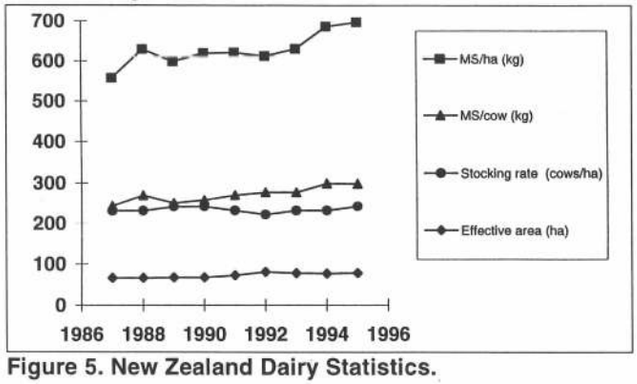

Figure 5. New Zealand Dairy Statistics.

Perceived yield decline in honey may relate to changes in pasture management.

1. More intensive grazing and/or more frequent grazing, results in less chance for clovers to flower.
2. Topping of pastures is now a more common practice, removing clover flowers.
3. More weed spraying, affecting flowering plants which were bee food sources. This is both total pasture spraying (e.g. broad leaf herbicide sprays) which can affect the clover plants, and the spraying of areas such as fencelines, killing other nectar sources which are important in building up bee numbers prior to peak flowering in summer.
4. Soil fertility sequence in newly established pastures. Applying fertilisers such as superphosphate boosts clover growth, and the paddocks are often clover dominant in the first few years, but as soils become more fertile competition from associated grasses increases.
5. More silage and less hay is being made in recent years. Silage is often cut in November/December after a spell of about 6 weeks, whereas hay paddocks had a much longer spell in the December/January period, when clovers were flowering more profusely.
6. Fertiliser. Boron is important for white clover seed production. It is vital for both pollen growth and nectar quality and quantity. Boron reduces the fructose content balance in nectar, which is what honey-bees prefer, and if boron levels are lower still, the plant will also produce less sugars in total. Potassium is another key nutrient for flowering plants. Total fertiliser usage, both superphosphate and others, has increased since the mid-late 1980's.
7. Increased nitrogen fertiliser use in particular can result in more grass and less clover. In Taranaki, N usage increased by more than 10 fold from 1988/89 (1,000 tonnes) to 1993/94 (11,000 tonnes). Under high fertility intensive grazing systems on dairy farms especially, more of the plants energy goes to producing more large leaves, at the expense of flower production.
8. Increased use of high endophyte ryegrasses can reduce clover content as high endophyte ryegrasses are more competitive than endophyte-free ryegrasses.

Summary

There has been a long history of white clover breeding, with cultivars suitable for different regions, climates and livestock now available. Checking and selecting for flowering and seed production has been a priority for parent plant selection in recent years. Many changes in farm management practices particularly those associated with intensification lead to a reduction in white clover content and flowers. We found no evidence of an actual decline in honey production per hive. Climate/weather is still a dominant factor determining honey production levels. Variation in nectar production indicates that plants could be selected for greater potential honey production.

Table 1. Effect of daylength on flowers and nectar.

	12 hours	14 hours	16 hours
Number of florets	65	54	65
Nectar/floret (nl)	19	27	33

Beekeeping Memoirs

by Ron Mossop

Horrible Harry

Like many beekeepers, I had a problem with long grass about my honey shed. In the spring and early summer I always seemed to lose things in the long grass, while in the late summer and autumn the dry grass was a fire risk. So to solve the problem I bought some ewes and a ram to keep the grass down. They did a good job, but the ram died.

In those days I used to go trout fishing to Lake Rotoiti for about four days at a time, several times a year. My fishing mates were Don Barrow, a past-president of the New Zealand Beekeepers Association, along with his brother Charlie and another beekeeper Ron Parkes who had been beekeeping since 1936. We seemed to spend most of our time taking about beekeeping, along with catching a few trout because the fish smoker was kept fairly busy. It was on one of these occasions I mentioned to Don about my ram dying. He said he had a ram that he was very keen to get rid of.

Don had a honey shed in town surrounded on three sides by houses. He had a grass problem also, so he kept a few ewes and a ram. At the back of his section was a tree with a car tyre hanging down on a bit of rope that his children used to play on. Don's ram discovered that if he butted the tyre it would swing out and come back and hit him, which he enjoyed, so he would bunt this tyre for hours — cheered on by the children on the safe side of the fence. One day Don was cutting out thistles on his section when the ram charged him. Don managed to fight him off with the spade and would have liked to kill him on the spot but he was in sight of about ten houses, and may have found himself in court charged with cruelty to dumb animals, so resisted the temptation. There was only one thing to do — banish the ram to my bit of land in the country. So one day Don and Charlie arrived in their truck with the animal tied up on the back. They let him loose and my tranquillity on the section disappeared. I called the ram Harry for some reason I can't remember. Harry charged almost anything that moved.

I had an old Commer van that I used to travel to work in and take honey back at the end of the days for my wife to sell at the honey stall. I also used it as a smoko room and would sit in it to have my lunch where I could see Harry up to his tricks. At the end of the day Harry would wait until I was driving off to go home, then he would charge the tail-light on the back of the van. It cost me a small fortune buying new tail-light glasses. When I was loading honey into the back he would charge me and it was only a bit of fancy footwork on my part that saved me on several occasions. Harry got very persistent with his attacks so I kept a sharp look-out and when I saw him coming I would drop everything and leap on the landing outside the honey shed door and hit him over the head with a two by two fence batten that I kept there especially for him. He must have enjoyed it because after a week he would come back for some more. My small daughter used to come down to the section with me sometimes and would walk along behind me looking over her shoulder in case that horrible Harry got her, and so Harry became Horrible Harry.

Harry loved apples and used to wait by the apple tree where he could beat the ewes to any apples that dropped. He discovered that if he charged the tree a shower of apples would come down. Unfortunately he could only eat one apple at a time and the ewes would rush in and get the rest. So he had this cunning plan when he felt like a feed of apples he would chase the ewes and knock them down or into the river. When most of them were cowering in a corner he would rush back and charge the apple tree and eat all the apples that fell himself. Any ewe that was brave enough or hungry enough to come near Horrible Harry as a true male chauvinistic pig, would knock them down.

One day I was under my truck greasing the thing, when Harry came along and decided that it was a good place for me to stay. Every time I attempted to get out he would rush round to where I was. It was quite a problem and took a little bit of thinking on my part as to how I would outwit the brute this time. The answer came to me. The next time he came for me I aimed the grease gun and at one foot range I squirted him in the eyes, and so made my escape.

The last straw in the saga of Horrible Harry came the day I took an armful of rubbish across the section to the fire heap. I had temporarily forgotten about Harry until I felt a very heavy blow on the back of my leg that knocked me to the ground. I got up with both fists swinging and Harry backed off. That put me in hospital for ten days where I had to have surgery on my leg. I had ten days to think about exactly what I was going to do to Horrible Harry when I got out.

When I could hobble about again, I took my old .22 single shot rifle and some bullets and went down to the section to get rid of the menace. It must have been the tupping season because Harry was having such a wonderful time that I did not have the heart to spoil his day, so he got a reprieve from execution. Several days later I heard some car tyres screeching up on the main road. I went up to investigate and there was Horrible Harry playing chicken with the cars. This was the final straw. I grabbed my rifle and three bullets and went after him. By the time I caught up with him he was up the road and had got on to a sheep farmer's place. He had seen me coming and decided to make himself scarce, so he ran up a hill about a hundred feet high. I went up after him but he raced me to the top easily because he had four legs and was very fit, whereas I had one and a half legs and was very unfit. When I got to the top of the hill he was up against a fence that ran at right angles to the road fence. He turned to face me and I realised it had to be a head shot because of the type of rifle I had. I was puffing. I took aim at his head, fired and completely missed. Harry got the message and ran down the fence line until he came to the main road with me running behind him waving my rifle. I don't know what the doctor would have thought if he could have seen me because he let me out of the hospital a bit earlier than he should have on condition that I took it easy on my leg.

At last I had Horrible Harry in a corner by the road. I did not miss with the second shot. It hit him in the forehead, but he did not fall over as he was supposed to, but just stood there and stared at me. After a long while he turned his head and my last bullet hit him behind the ear. He went down like a stone. Just then I heard somebody behind me ask if they could have him for dog tucker? A friend had seen my performance when he was driving down the road and stopped to see what was going on. So we dragged Harry under the fence and threw him on the back of his vehicle. The dog tucker man drove away and that was the last I saw of Horrible Harry. Some dogs had enough to eat for weeks afterwards.

I expect the ewes on the section were not sorry that Harry never came back. As for me, I reckon Harry had it coming to him. Nowadays, we solve our grass problem by opening the boundary gate between us and the neighbours to allow their sheep to wander in and out when it suits them. This is a much more satisfactory arrangement than trying to keep our own sheep and I would recommend it to my fellow beekeepers if it is at all possible.

Written quotes may save haggles later

by Pamela Rogers, Ministry of Consumer Affairs' Advice Service

"How much will it cost me?" Should be the most important question before getting work done.

Yet the advice service gets many phone calls from consumers who had a job done and then find there is a disagreement over the cost.

How can you avoid these problems? And what can you do if there is disagreement over payment?

We suggest consumers should always ask the price they will be charged before they get work done. They can do this by asking for either a quotation or an estimate.

Exact charge

For example, if you ask the painter to give a quotation for painting the outside of your house, you are asking him exactly how much he is going to charge for doing the work. Once the quotation is accepted, the painter cannot charge any more, even if the work takes longer than first thought.

It's a good idea to get a written quotation that shows the price, the work to be done, and all the costs involved. If the quotation doesn't mention GST you can presume it is included. The trader cannot add GST to the final account.

If a trader is going to charge a fee for giving a quotation, they need to tell you beforehand. If they don't, they cannot later charge you for preparing the quotation.

'Best guess'

If you are asking for an approximate cost of the work, you should ask the painter for an estimate, in other words a "best guess".

However, this doesn't mean the final account can be lots more than the estimate. An estimate allows for some leeway, but the final account cannot be any more than 15 percent higher than the estimate. Again, it's a good idea to get the estimate in writing.

Sometimes consumers phone us because they think they have agreed to a quotation and the trader thinks they have agreed to an estimate!

This is why we suggest you should get your quotation or estimate in writing. However, in case of a disagreement a compromise is often the best solution.

But, if the trader has charged more than 15 per cent more than the price he originally stated then there are good grounds to dispute the account.

Sometimes the trader cannot, or refuses to, give either a quotation or an estimate because they don't know how much the work will cost.

Set amount

In this case it's a good idea to tell them that you want them to tell you when the cost goes beyond a certain amount, so you can have the choice of stopping the work.

It can seem like a nuisance to sort out all these details when you only want your car fixed or your house painted "immediately". But a little time spent then can save days, if not weeks, of unpleasantness later.

MAF Quality Management — The Evolution

On 1 July 1995, structural changes within MAF resulted in Fisheries becoming a separate Ministry. At the same time, government decided that the Ministry of Agriculture should retain the "MAF" title and logo to avoid confusion, particularly in our export markets which recognise and trust the name MAF uses on export documentation.

Within the Ministry of Agriculture further changes occurred. MAF Quality Management (MQM), was internally separated from the rest of core MAF. This split emphasised the service delivery functions of MQM, as distinct from core MAF's role in policy and regulation setting. These "core" groups are referred to as MAFPolicy and MAF Regulatory Authority (MAFRA) respectively. Today MQM is managed by a separate advisory board, chaired by the Director General of MAF.

MQM comprises some 1900 staff, and delivers a wide range of services, including border protection at our airports and ports, livestock TB testing and animal welfare, meat inspection, horticultural export certification and honey-bee disease surveillance. MQM is a fully autonomous business arm, with a rapidly growing set of business relationships in addition to government contracts.

The wide range of services provided by MQM to the agriculture and food industries can be grouped into three service areas; **Gateway Assurance, Market Assurance** and **Outbreak Response Services.**

How do these changes affect the beekeeping industry and its relationship with MAF?

Let us begin by considering policy and regulatory issues, including new legislation. The NBA Executive has regular contact with both MAF Policy and MAFRA. For example MAF Policy deals with matters such as the Commodity Levy. MAFRA is concerned with regulatory aspects such as the Pest Management Strategy and with negotiating export certification requirements with governments of our trading partners. Individual beekeepers however, would have few direct dealings with either MAF Policy or MAFRA in the course of their day-to-day business.

MQM, as the service delivery arm of MAF, is the first point of contact with most beekeepers, as it is with most other people in the primary production sector.

Gateway Assurance:

Services provided by MQM under this heading include:

- *Border Services*: Maintaining close watch over incoming passengers and freight to ensure that "risk items" (those items posing a risk to our biological security) are intercepted at the border. Preventing the entry into New Zealand of exotic pests and disease is a major function of MQM Border Service. Staff regularly intercept honey and other bee products which could be carrying European foulbrood (EFB).
- *Surveillance systems*: Surveillance is maintained throughout the country for a range of exotic pests and diseases which might slip past the border despite the best efforts of border service staff. Apicultural Advisory Officers inspect hives for EFB in high risk areas (around ports, rubbish tips etc.) and take bee samples to check for mites. Other MQM staff maintain surveillance for other pests and it was as a result of the surveillance system that the current outbreak of Fruit Fly was detected in Auckland.
- *Laboratory Services*: Supporting both the border service and the surveillance programmes is a system of diagnostic laboratories where samples of a wide variety of organisms and products are tested for pests and diseases.
- *Export inspection and certification services*: by maintaining our excellent pest and disease-free status through border services and surveillance activities, MQM is able to provide export certification for a wide range of primary products including bees and bee products. MAFRA negotiates the protocols with trading partners and MQM staff deliver these services on behalf of MAFRA.
- *Quarantine facilities*: MQM staff manage quarantine for imported organisms that are imported into containment facilities until testing demonstrates that they are free from pests and diseases. Quarantine could be within a MQM facility or, under the supervision of MQM, at a privately run quarantine facility.

Market Assurance:

MQM staff provide a range of services relating to the assurance of product quality. Quality is defined as "fitness for purpose" and may include such things as "freedom from TB in cattle and deer" or "freedom from AFB in bees".

Anywhere where a producer wishes to provide assurance regarding product quality there is an opportunity for MQM staff to authenticate that the producer is following his/her quality procedures. It is important to note here that MQM does not set standards. These are agreed between supplier and client. MQM's role is the design, implementation and/or auditing of quality systems, providing credible independent inspection and assurance to the customer. In the beekeeping industry, MQM provides quality assurance for pollination hives used by fruitgrowers in Hawke's Bay and the Bay of Plenty. MQM also currently manages the AFB disease control programme on behalf of the NBA. This is essentially an audit of beekeepers' ability to recognise and eliminate AFB from their beekeeping operations. The programme involves MQM in inspecting hives for disease and in assisting NBA branches also to inspect hives under their diseaseathon programme. Market Assurance through quality assurance is a major growth area throughout primary production. At the recent conference in Wanganui, beekeepers met to discuss quality assurance in respect of "organics" and "manuka". Once standards are set by an industry MQM has the capability to provide the authentication required. Any situation where a producer is required to furnish his client with authentication offers an opportunity for MQM to assist both parties.

Outbreak Response Services:

MAF Quality Management maintains highly trained teams of staff capable of responding to either an outbreak of an exotic disease, or to a natural disaster affecting agriculture or horticulture.

Most beekeepers will recall the "Nelson response" of some six years ago when, for a while, it was thought that EFB had arrived. More recently, many beekeepers have taken part in exercises in Christchurch, Tauranga, Palmerston North and Timaru to train staff and test systems. A similar capacity exists to deal with exotic animal diseases and plant pests and diseases. This capacity has been rigorously tested recently during the Auckland Fruit Fly outbreak.

What is perhaps less well known is MQM's capacity to respond to natural disasters, for example blizzards, floods or even volcanic eruptions. By having response systems and trained personnel in place, MQM can act quickly and decisively to minimise the consequences of these events on primary industries. The ability to respond to climatic disaster, preventing unnecessary animal suffering, is viewed favourably by many of our trading partners, who place increasing emphasis on animal welfare issues.

Despite changes in organisation within MAF, the beekeeping industry and other primary sector groups can remain assured that the capacity of MQM to provide traditional services in the areas of Gateway Assurance, Market Assurance and Outbreak Response is being maintained. The Apiary Section within MQM looks forward to the challenges of providing new services to assist the industry in its development of new products and markets, while at the same time maintaining its traditional services at a high level.

Thanks to MAF Quality Management

Wanted: Foundation Press Equipment for the making of Foundation Wax

We are looking for a New Zealand Supplier of Foundation Press Equipment for the fabrication of Wax Foundation (preferably wire reinforced), and we outline the full details of our requirements for a Foundation Press Equipment, which is explained as follows

1. We are interested in a **Foundation Press Equipment** that consists of a pair of heavy blocks, a bit larger all around than a sheet of the standard wax foundation, framed in wood and hinged on the long side so that the halves close together much like a long, narrow book. Inside where the halves meet, are a pair of dies, castings taken from the standard sheet of beeswax foundation. To make the foundation wax, one just pours hot wax onto the die face of the one half die, then closes the press quickly to distribute the wax evenly between the two dies. When the wax is cooled, you open the press and remove the sheet of simple home-made wax foundation. It would be much better if the equipment manufacturer of this foundation press equipment could also incorporate the provision for the user, the proper positioning of the embedding wires in this equipment in order that the foundation wax to be produced would already be wire-reinforced.

2. We would be extremely glad to consider **a New Zealand Firm Offer** (from any of the New Zealand Associate Equipment Suppliers) for this **Foundation Press Equipment** to be quoted in United States dollars (US$), including the corresponding **Surface Parcel Post Shipment,** to our designated address at #74 Boston, Cubao, Quezon City, Metro Manila, Philippines 1109.

3. In the event, we shall find the **Firm Offer** of the supplier for the **Foundation Press Equipment** suitable for our purpose, we shall be prepared to place the corresponding order based on the following terms and conditions:

3.1 We are prepared to effect **full payment** on the order in USA dollars to be drawn in favour of the **equipment supplier** through our **USA Bank of America personal cheque** on the basis of the accepted **firm offer,** inclusive of the handling and shipping charge through **Surface Mail Parcel Post Shipment,** to be incurred by your good-selves, said shipment to be addressed at our stated Philippine address.

3.2 The order shall be shipped, via **Surface Mail Parcel Post Shipment, only after our Bank of America cheque in US dollars, drawn in favour of the supplier, shall have been duly cleared by its own correspondent bank.**

We would be most grateful and appreciative of any efforts on your part that would bring us to the able supplier of the **Foundation Press Equipment** in your country.

Thank you. Best wishes of the day.

Francisco R. Lopez
Phone: 721-83-69 or 721-83-90
e-Mail<frlopez@helios.iconn.iphil.net>
74 Boston Street, Cubao, Quezon City, Metro Manila, Philippines 1109

RECIPES

Waldorf Chicken Salad

2 tbsps mild flavoured honey *(Suggestion: Tawari Honey)*
2 tbsps Dijon mustard
1 tbsp poppy seeds
½ tsp grated lemon peel
1/3 cup fresh lemon juice
1/3 cup salad oil
12 dried apricots (moist pack preferable)
1 quart bit-size pieces cooked chicken or turkey
1 apple, cored and diced
¼ cup diced celery
¼ cup minced green onions
½ cup toasted sliced or diced almonds

Stir together honey, mustard, poppy seeds, lemon peel, juice and oil. Add apricots and let stand 30 minutes. Remove apricots and set aside. Add chicken and toss lightly. Refrigerate until ready to serve. To serve: Add apple, celery, green onions and almonds to chicken mixture. Divide onto lettuce lined plates and garnish with apricots. *Makes 4 to 6 servings.*

Cheese 'n Apple Pie

3 tbsps butter or margarine
3¼ cups whole wheat pastry flour
3 tbsps salad oil
1 to 2 tbsps ice water
5 or 6 medium apples, cored, pared and thinly sliced
1/3 cup mild flavoured honey *(Suggestion: Clover Honey)*
2 tbsps butter or margarine, melted
3 tbsps whole wheat flour
½ tsp cinnamon
½ tsp nutmeg
1 cup grated sharp cheddar cheese

Crust:

Cut butter into flour. Add oil slowly and continue mixing until dough is crumbly. Slowly add ice water, adding only enough to make mixture form soft ball. Roll dough on a lightly floured surface onto a 12 inch circle. Place in 9 inch pie pan, turn under edges and crimp or flute.

Filling:

Combine apples with all ingredients except cheese. Place one half of apple mixture in prepared pie crust. Sprinkle with ½ cup grated cheese. Repeat layers. Bake at 400 degrees 10 minutes, reduce heat to 325 degrees and bake 20 to 25 minutes longer or until apples are tender. *Makes 6 servings.*

Country Style Ice Cream

"So good you'll want to double the recipe"

2 eggs
2½ cups milk
1 tbsp pure vanilla
¾ cup mild flavoured honey
2 cups (1 pint) heavy cream

Hint:

For fresh fruit ice cream, simply add 1 cup honey sweetened crusted fresh fruit to each quart of ice cream mixture before freezing. In large mixing bowl, beat eggs until light. Gradually add milk, vanilla and honey. Beat until well mixed. Add cream and mix thoroughly. Process in ice cream freezer according to manufacturer's directions. Top with honey-sweetened fresh fruit or honey nut topping. *Makes 2 quarts.*

Thanks to Bill Floyd for honey types. Honey varieties are suggestions.

Fresh Strawberry Jam/Topping

"Delicious on toast, biscuits or ice-cream"

6 cups (about 5 punnets) sliced strawberries
2 boxes (1¾ ounces) powdered pectin
1¾ cups mild flavoured honey
2 tbsps fresh lemon juice

In a large saucepan, combine strawberries and pectin, mashing or crushing berries to blend completely. Bring mixture to a boil. Boil hard for 1 minute, stirring constantly. Add honey and lemon juice. Return to full rolling boil and continue boiling for 5 minutes, stirring constantly. Remove from heat. Skim off foam. Ladle into hot sterilized jars. Seal. *Makes eight ½ pint jars.*

Golden Glow Muffins

2 cups whole wheat flour
2 tsps baking powder
1 tsp cinnamon
¼ tsp salt
½ cup chopped nuts
½ cup raisins
2 eggs
¼ cup orange juice
½ cup salad oil
½ cup honey *(Suggestion: Rata Honey)*
1 tsp vanilla
1 tsp grated orange peel
1 cup shredded carrots

In large mixing bowl, combine flour, baking powder, cinnamon, salt, nuts and raisins. Set aside. In small bowl, blend together eggs, orange juice, oil, honey, vanilla and orange peel. Add to dry ingredients. Stir in carrots until moistened. Spoon batter into paper-lined or greased muffin pan cups. Bake at 375 degrees 20 to 25 minutes. *Makes 18 muffins.*

Microwave:

Microwave on high for 2½ minutes for 6 muffins.

Pack-along Snack Bars

"For those trips in the Great out of doors"

4 cups rolled oats
1 cup flaked coconut
1 cup wheat germ
1 cup chopped almonds, cashews or peanuts
1 tsp cinnamon
1 tsp salt
½ cup salad oil
1 cup honey *(Suggestion: Rewarewa Honey)*
1 tsp vanilla

In a 9x13 inch pan combine oats, coconut, wheat germ, nuts, cinnamon and salt. Set aside. In a bowl, blend together oil, honey and vanilla. Pour over dry ingredients and mix until well coated. Bake at 350 degrees 25 to 30 minutes, stirring four times during baking. Press hot mixture into a greased 10x15 inch jelly roll pan using a rolling pin. Cool and cut into 48 bars.

Microwave:

Microwave granola mixture on high for 10 to 12 minutes, stirring every 4 minutes until toasted. Combine as above.

Sweet and Sour Zucchini

"Serve as a vegetable or a salad"

1½ tbsps chopped onions
1 cup white wine vinegar
½ cup chopped green peppers
½ cup diced celery
7 small zucchini, thinly sliced
½ to ¾ cup mild flavoured honey *(Suggestion: Vipers Buglose)*
1 tsp pepper
1/3 cup salad oil
1 tsp salt

Combine all ingredients in large bowl. Cover and refrigerate overnight. Drain and serve chilled or at room temperature. *Makes about 2 quarts.*

Acknowledgement American Bee Journal

IMPORTANT DATES FOR 1996

BRANCHES SEND YOUR MEETING DATES IN FOR 1996. NO CHARGE.

EXECUTIVE MEETINGS

December Meeting — 3 December Tuesday to 4 December Wednesday

MAGAZINE

Copy/advertising deadline — 1st of month. **EXCEPT for DECEMBER issue. DEADLINE 25 NOVEMBER.**

COMING EVENTS...

1996-1997 CALENDAR AUCKLAND BEEKEEPERS CLUB

November 9th	10.00am	Working Bee
	12.30pm	Hive expansion
December 7th	12 noon	Christmas BBQ
		Check honey flow

Contact: (09) 342-9415, Peter Silcock.
AUCKLAND BEEKEEPERS CLUB INC.

WHANGAREI AND DISTRICT BEE CLUB PROGRAMME FOR 1996-97 SEASON

November	2nd	Supering in preparation for honey flow
December	7th	Hive management — Christmas BBQ — Own meats
February	1st	General management
March	1st	Taking of honey
April	5th	AGM — Honey Show — BBQ — Own meats — Wintering hives

Secretary: Mr Harold Hagemann. Telephone: (09) 437-0098

★ ★ ★ BRANCHES... *PUT YOUR MEETING DATE IN HERE...* FREE ★ ★ ★

AUCKLAND BRANCH
Christmas BBQ, BYO
All welcome Sunday, December 22,
12 noon onwards,
let us know if you are coming.
Phone Janey or Rob Johnston,
Runciman Road, Drury.
Phone: (09) 294-8320

SOUTH CANTERBURY BRANCH
Phone Noel (03) 693-9771

CANTERBURY BRANCH
Phone: Brian (03) 318-0732

CHRISTCHURCH HOBBYIST CLUB
These are held on the first Saturday each month, August to May, except for January on which the second Saturday is applicable.
The site is at 681 Cashmere Road, commencing at 1.30pm.
Contact Peter Silcock Phone: 342-9415

DUNEDIN BEEKEEPERS CLUB
We meet on the first Saturday in the month September - April, (except January) at 1.30pm. The venue is at our Club hive in Roslyn, Dunedin.
Enquiries welcome to Club Secretary, Dorothy phone: (03) 488-4390.
Next Club meeting to be held at 30 Lawson Street on November 2 1996.

FRANKLIN BEEKEEPERS CLUB
Meet second Sunday of each month at 10.00am for cuppa and discussion.
Secretary — Yvonne Hodges,
Box 309, Drury.
Phone: (09) 294-7015
All welcome — Ring for venue.

HAWKE'S BAY BRANCH
Meets on the second Monday of the month at 7.30pm.
Cruse Club Taradale.
Phone: Ron (06) 844-9493

NELSON BEEKEEPERS CLUB
'Mead-Making' demonstration and barbecue
Date: Saturday, November 16
Time: 5pm
Venue: Peter Ree's place,
39 Todd Bush Road.
Phone: (03) 546-1422

OTAGO BRANCH
Phone Bill (03) 485-9268

POVERTY BAY BRANCH
Barry Foster (06) 867-4591

SOUTHERN NORTH ISLAND BRANCH
Phone: Frank 478-3367

TARANAKI AMATEUR BEEKEEPING CLUB
Phone: (06) 753-3320

WAIKATO BRANCH
Call Tony (07) 856-9625

WAIRARAPA HOBBYIST BEEKEEPERS CLUB
Meet 3rd Sunday each month (except January) at Kites Woolstore, Norfolk Road, Masterton at 1.30pm.
Convener Arnold Esler.
Ph: (06) 379-8648

WELLINGTON BEEKEEPERS ASSOCIATION
Meets every second Monday of the month (except January) in Johnsonville. All welcome, contact Frank Lindsay (04) 478-3367.

WANTED TO BUY

HONEY AND COMB HONEY

We are buying all grades of honey.

For our current buying price…

Contact: Steve Lyttle

NEW ZEALAND HONEY LIMITED

Cnr Elginshire and Treneglos Streets
P.O. Box 2155
Washdyke
Timaru

Phone: (03) 688-8150
Fax: (03) 688-8125
Mobile: 025-995-599