THE NEW ZEALAND beekeeper

JUNE 1981

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ISSN 0110 – 6325

THE NEW ZEALAND BEEKEEPER

Registered for transmission by post as a magazine.

June 1981
Vol. 42, No. 2

Publishers
The N.Z. Beekeeper is published by the Agricultural Press Co. Ltd, Box 594, Masterton, on behalf of the National Beekeepers' Association of N.Z. (Inc.), Box 4048, Wellington, in the first week of March, June, September and December each year.

Editorial: Trevor Walton
Advertising: Alison Woolley
Address:
Box 594, Masterton, phone 81039
Deadlines:
Second Monday of the month preceding publication.

Circulation
All enquiries relating to the distribution of the N.Z. Beekeeper should be directed to Mrs Jean James, National Beekeepers' Association, Box 4048, Wellington.
Printer: MGV Ltd, Hutt Road, Kaiwharawhara, Wellington.

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GUEST EDITORIAL

Dietary trends - a potential problem

by Warren Hutchinson, Grader/Analyst, N.Z. Honey Marketing Authority.

AS UNDERSTANDING grows of human nutritional requirements, changes in our traditional dietary patterns become regarded as desirable. These changes are being advocated with increasing frequency by a number of agencies and are being well reported in the press.

The beekeeping industry should become aware of, and consider the dietary trend occurring both locally and overseas which could affect the future of the industry.

The medical and dietary professions in New Zealand are recommending very strongly a reduction in our dietary intake of simple carbohydrates or sugars.

The rationale for this advice is that excessive quantities of sugars tend to promote obesity, dental caries, and accompanying health problems. Sugars provide a source of calories without the dietary advantages of additional nutrients which are obtained from more complex carbohydrates such as cereals.

As an indication of the level at which these dietary changes are being supported, the minister of health in October last year issued a list of N.Z. dietary goals (prepared by the Nutrition Advisory Committee) which were explicit in recommending (among other things) a reduction in the intake of sugars.

Honey is regarded professionally as a prime source of sugars. This was well illustrated in a recent article in the N.Z. Herald (February 3, 1980) under the title "Better Health From Lower Sugar Intake" by Dr J.F. Newman: . . . "Brown sugar and the most natural of sugars, honey, contribute, in addition to calories, minute and quite insignificant quantities of iron and phosphorus".

Dietary trends in the interests of health can have a significant effect on the structure of food industries.

This is shown quite clearly by the movement over the last decade toward both reducing overall consumption of fats and also substitution of saturated fats by poly-unsaturated fats. Some of the consequences have been that the dairy industry has lost a significant portion of its market to margarine, and the pork industry is spending up to $750 000 this year to promote leaner pork.

It is felt that, tackled promptly by the industry as a whole, a strategy could probably be developed to protect the market for honey, while still remaining within the dietary contraints which have been recommended by the medical profession. Ignored as a problem, it is possible that this dietary trend could seriously affect the economics of the industry within the next decade.

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Full page $190 (4 insertions $160), Half page $100 (4 insertions $90), Quarter page $55 (4 insertions $45), 1/8 page $25. Special locations $30 extra. Colour $60 extra. Production charges will be made for all new advertisements where special production work is needed. Classifieds $5 a col/cm.

Beekeeper Rates

Advertising at these rates is available to registered beekeepers advertising products or services directly relating to their beekeeping enterprise only. In cases where the appropriate rate is in doubt, the editor's decision will be final.

Half page $65, Quarter page $35, 1/8 page $20, $3 col/cm. Production charges will be made for single insertions of a minimum of $5. (This does not apply to classified advertisements.) No deduction for contracts. Colour extra.

Subscriptions

The N.Z. Beekeeper is distributed free to all beekeepers owning more than 49 hives who, after paying their compulsory hive levy, automatically become members of the National Beekeepers' Association of New Zealand (Inc).

Beekeepers owning less than 50 hives, will pay an annual subscription of $10.00 which includes the cost of a subscription to the N.Z. Beekeeper.

KING BEE
(WHERE THE NBA HAS ITS STING)

Send dead bees to Pat

Dr Pat Clinch has informed the NBA Executive that it will be difficult for the limited staff he has available to conduct research into bee viruses. He was discussing a request from the executive for more effort to be put into this area as many beekeepers considered that viruses were the reason for mystery hive deaths.

However, he said that Dr Bailey at Rothamstead is prepared to carry out a limited number of tests on dead bees from beekeepers who consider they have a major problem. Beekeepers who have such a problem and have eliminated other possible causes, should send samples of dead bees to Pat Clinch at Wallaceville so they can be forwarded to Dr Bailey.

No compo for EBD

The government is not prepared to pay compensation for diseases affecting primary industry, except where they have the potential to devastate an industry. This explains why varroa disease is in the first schedule to the Apiaries Act and European Brood disease is not, according to Grahame Walton, MAF's senior apicultural advisory officer. He told the September meeting of the NBA executive that as European Brood disease is unlikely to be much more serious than American Brood Disease, there is little chance of having it moved into the first schedule of the Act which nominates diseases for which compensation would be payable to the Crown.

1981 Elections

NBA president Paul Marshall, as reported elsewhere in the journal, is not standing for re-election for president.

North Island executive members, Mike Stuckey and Ian Berry, and South Island executive member Steve Lyttle all come up for re-election to the NBA executive this year and are available for nomination.

Nominations for the elections close at 5 p.m on June 10, and votes will be counted at 9 a.m. on July 13.

Pesky pesticides

A letter from the Hawkes Bay branch expressing concern at the labelling of toxic fruit spray chemicals was discussed at the May executive meeting.

The main worry was that labelling was directed at the target crop, and ignored precautions that might have to be taken into account when the ground cover was attractive to bees.

Paul Marshall explained that the registrar of the Agricultural Chemicals Board, Mr B.B. Watts had said that there would be a meeting of all representatives sometime in July, to try and get some rephrasing done to labels.

David Dobson said the NBA, would like to see some symbol, such as the bee logo with a red slash through it, on some of the chemicals that destroyed bees. But the Agricultural Pesticides Board was opposed to too many symbols on labels.

Ian Berry and Paul Marshall were delegated to attend the meeting.

Flock House foregone

If beekeepers are left wondering where all the feedback from the Flock House workshop has gone, they can be rest assured it is not the journal's failing. The workshop was abandoned because of problems in the industry.

Paul Marshall said that such a workshop now appeared to be 12 months away. It would need careful planning once more.

Ian Berry said that he thought it should be developed further after the conference in July, when the industry would have a better idea of where its aims and ambitions lay.

President not seeking re-nomination

BEFORE THE committee meeting got down to business in Wellington on May 5, the president of the NBA, Mr Paul Marshall read out a personal statement to the members.

"Before starting the agenda for todays meeting I am going to take this opportunity to advise you that contrary to earlier indications made to some of you, from this point of time I will not be seeking re-nomination to the position of president at our next annual conference.

"Recently I have had to make, after full consideration, one of the hardest decisions of my life which is to place my beekeeping business on the market. Needless to say any move along these lines was thought to be at least another 20 odd years away, and that age would be the prime motive for such a decision.

"With the present situation developing in our industry I feel it would be unadvisable not to have a commercial beekeeper at the helm. I regret the need to take this somewhat dramatic step, but felt that after your support over the past two years the least I could do was advise you at the earliest opportunity as to my future in the industry.

"At this stage I have a further year on the executive, however due to the possibility of my no longer being a commercial beekeeper within the completion of my term, you may feel it would be advisable that I resign to allow the position to be filled in the coming executive elections."

Stephen Lyttle was the first to break the long silence that followed Paul's statement.

"You have left us speechless," he said. After that everyone seemed to come back to earth, and all around there were protests at the thought of him considering such a course.

"It would be ridiculous for you not to stay on," said Mike Stuckey. Mr Dobson said that under the rules as long as he was a member, he didn't see why he shouldn't be eligible for office.

Stephen Lyttle said that Paul had proved totally unbiased and should remain to see his office out.

Thanking them all for their support, Paul said he found it most heart-warming.

1. HMA Assets enquiry

by Simon Mill

ALTHOUGH BEESWAX is used for making candles, the problems of beekeepers and the dispersal of their near $1 m assets scarcely seem to have set the world alight and buzzing.

Moving with commendable alacrity, arbitrator David Kay of Wellington, presented his report to the acting minister of agriculture and fisheries, Rob Talbot by the stated time of March 31. When the N.Z. Beekeeper's reporter was in Wellington interviewing Mr Talbot on another assignment in mid April he asked how the report was faring. He was somewhat bucked by the undersecretary's congratulations that he was the first of all the media to have asked about, or for it.

So what are the glad tidings to carry to the bee world?

Mr Kay has found that "the net assets of the New Zealand Honey Marketing Authority must be attributed to the whole of the honey industry (including packers and producers as defined in the legislation)".

But that doesn't really make it 'game, set and match'. It probably only makes it 'love all', because probably that was always to a certain extent a foregone conclusion.

"And now the matter is back in my lap," said Rob Talbot as he handed over the report.

Well, in the sense that the divided honey industry may not be able to make up its own mind, that could be so. But there is no need for such to be the case if the industry was to take a responsible attitude to the position it is in and follow Mr Kay's further reasoning in his report.

The only restraint in it seems to be when speaking of the proposed national producers' co-operative, he begs to differ with Mr Talbot's statement to a honey industry meeting last August when he had said that undue delays in implementing the co-op concept were undesirable.

"With respect, I would suggest that insufficient information has been made available to judge the viability of the co-operative proposal. I would wish to see a more detailed feasibility study with particular reference to cash flow and seasonal cash requirements," says Mr Kay.

To that extent it would appear that Mr Kay has not been able to fulfil the second part of his investigation – how the funds should be used or made available for the use of benefit to the industry as a whole in a definitive way.

But he has left well spelt-out rules for the way he thinks a decision should be arrived at. And it doesn't point to ministerial interference.

Further, Mr Kay sees the establishment of a co-operative as the most acceptable solution to the industry's problems. But before any further action is taken he thinks it is necessary for there to be a further report.

This should be an independent feasibility report with particular attention to cash flow and the funds necessary to meet operational requirements. ("Independent" report infers no reflection on Mr Dellow, but must both be and appear to be, 'independent' to the whole industry, he states, quoting from Mr Berry's submissions.)

He suggests that the report could well give consideration to points raised by Mr Stuckey (included as part of Mr Berry's submission) that a co-operative could utilise the facilities of private packing plants now running below capacity, thus avoiding or minimising the heavy investment in fixed assets

The HMA, prima donna of the bee-world drama, remains centre stage. But one of the leading characters – the proposed co-op – has returned from the wings to read its lines once more to the director in the form of Mr Kay.

Satisfied they have it right, Mr Kay will recall the HMA from the dressing room and allow the act to continue . . .

But read on . . .

2. Kay report gets generally warm reception

Mr D.H. Kay's report into the assets of the HMA has been accepted by the HMA executive, and he has agreed to look further into the viability of the proposed co-operative.

While an outcome of this is awaited, the NBA is gearing itself for its own possible role as trustee of the HMA funds.

* * *

At the NBA meeting in Wellington on May 5 the item on the agenda which was considered sure to be of greatest interest was item 8 – Arbitrator's Report. Not that it could be thought of as provoking a storm, but more as to how the individual members, representing various factions of the industry would be able to combine a plan for the next step.

The first opinion sought was from vice-president Mike Stuckey who also doubles as vice-president of the HMA.

"At the meeting last week we talked about the thing quite a bit and in the end we accepted that it seemed to be a fairly good report.

"We discussed where to go next, and decided that before anything else could be done, we had to first find out whether or not the co-operative would still be willing to carry on under the situations to be carried out by them under this report. And we finally moved, and I shall read direct from the minutes:

"That the steering committee of the proposed co-operative be invited to submit its revised proposals for the purchase of any money for its trading operations in accordance with the investigating committee's findings, and land and buildings be offered to them at the following prices, Horton St, Timaru. $30 000; Saleyards Rd, $17 000; and Christchurch, Hornby, $75 000; and the Auckland property to be sold on the open market. Plant and equipment to be offered at values

that would otherwise be necessary. And that packers be given the opportunity to be involved in any proposed co-operative.

"I consider it desirable that the financial structure of any co-operative – or alternative organisation – should be such that its fixed assets would be financed by capital contributions, plus funds borrowed from traditional lending institutions," says Mr Kay.

"Its borrowings from an industry fund (to which I shall refer later) should be restricted to working capital – in particular funds required for the purchase of honey – and related to the value of stocks held."

To operate within these confinements, he remarks, would call for management skills and much closer alignment (on a time scale) of payments to producers with the receipt of sale proceeds.

In these necessary prior considerations he feels that attention should also be given to the extension of the taxation benefits from export incentives, to suppliers of the co-operative, by the framing of supply conditions that would meet the requirements of the revenue authorities. (The odium with which overseas markets regard our export incentives with – e.g. Meat Devco in the U.S. – may make this a dangerous idea to espouse in the light of more recent developments – editor.)

Keeping the momentum going, Mr Kay recommends that a firm timetable should be set for the production of the independent feasibility study.

Assuming that the report can show a viable co-operative venture there should be close co-operation between it and the Authority in an agreed handing-over period. This should include the planning for the dispersal of fixed assets and the possible alteration of the timing of payments to the producers to that planned by a co-op.

He thinks it would not be less than two years before the transfer was completed, but hopes the principles of it could begin within three months of receipt of the feasibility report.

"Following such agreement – with the assistance of independent arbitration if required, although it would be my hope that this would not be necessary – the co-op would require some time to organise its capital, fixed assets and finances as well as establishing a close liason with the authority to cover the details of the transfer activities," says Mr Kay.

Having established that the funds of the HMA belonged to the whole honey industry, Mr Kay says that the only organisation representative of the whole industry is the National Beekeepers' Association, and therefore the funds of the HMA should be vested in a trust under its control, but separate from the Association's other funds.

The income, which could be in the order of $10 000 a year would be used as determined by the trust deed, but he recommends such industry general interests as . . . market promotion by advertising; . . . financing education in the field of apiculture.

And consideration, he feels, should also be given to the fund being used to purchase oversupplies, thus acting as a stabilising force in the honey market.

Should the co-op feasibility study prove its viability he recommends that it should receive industry support by "say $600 000" at concessional rates of interest either:

- interest at 6 per cent being two thirds of the Rural Bank's base lending rate, or
- the first $300 000 at 3 per cent and the balance at 9 per cent.

"I favour the second method (or some appropriate variation) as it encourages the borrower to restrict the quantum of loan money," says Mr Kay.

Mr Kay stresses that he uses the above figures purely as an indication of the type of contribution that the industry as a whole should be prepared to make towards what is a major restructuring exercise.

"In addition, I consider that this assistance to a co-operative

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to be nogotiated."

"We thought it was better to put prices on the buildings so they knew what could be expected.

"So that is virtually the situation we are at now. We decided not to act on any earlier resolutions we had with regard to sales or anything like that, that we had had with the co-operative.

"Also we have asked, and it has been accepted that Mr Kay study the further submissions from the co-operative with the idea that he will inform the Authority whether or not the submission they put up is a viable proposition," said Mr Stuckey.

Mr Lyttle said they (the steering committee of the co-op) were quite happy to produce these figures.

It is now a matter of if, and when, Mr Kay is able to decide if the proposals of the co-op are feasible or viable.

"If he decides it is not viable then it is back to the beginning again.

"I think things have resolved themselves pretty well, I don't think anyone is completely happy with it and I don't think anyone is completely upset either," said Mr Stuckey.

Mr Dobson pointed out that although Mr Stuckey had said they would have to go back to the beginning if the co-op was not on, this was not entirely the case as Mr Kay had determined quite definitely to whom the HMA's assets would belong. So one formerly most contentious area had been resolved.

"If a group down south wanted to do something different if the co-op wasn't on and they wanted to build say a co-operative round Timaru, at least they have established that they could borrow from the industry fund," said Mr Dobson.

Mr Tony Clissold asked if the court order had been removed, but Mr Stuckey said that it had not.

The HMA was running down, but the intention was to keep the plant going and they would be shipping up unsaleable honey from Invercargill, Mr Stuckey said.

He added that the HMA had decided that as there may be quite radical decisions required after the NBA A.G.M. in late July, they had written to the minister asking if they could put the HMA voting back by a month until August. "It seemed crazy to get nominations before the issues had been defined," said Mr Stuckey.

Mr Ian Berry said it was not Arataki's intention to leave the injunction on. Mr Lyttle said that it was his understanding that by law Arataki, because they had sought the injunction, may not, on their own, be able to have it lifted.

He also felt that the injunction imposed not too much restriction on the plans of the co-op, as he felt, provided they fulfilled the criteria of the arbitrator, the government would legislate to allow them the funds in the extreme.

In response to a question by Paul Marshall as to whether the co-op would be a national co-op, Mr Lyttle said that its main stronghold would be in the South Island as that was where their honey tonnage was.

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School tree scheme endorsed

THE NBA committee meeting in May decided that the Nut Grove Project should be given a mention in the journal.

Several members felt that nut trees were not the most recognised of pollen bearing trees, but any increase in awareness of nature by school children was to be encouraged.

A trust, the New Zealand Productive Plant Foundation Trust was established several years ago to fulfil the ideas and ambitions of Selby Gouldstone a horticulturalist and plant expert, who wished to see groves of nut and other food bearing trees planted in every school in the country.

The trust has been approved by the Inland Revenue for tax exemptions for the $10 donation required for each tree.

Some 35 000 trees have so far been planted by the scheme which has had valuable support from the Mobil Environment Awards, the IYC Telethon and private citizens.

The trees are all cared for in the schools by children to ensure further educational benefit from the concept.

Macadamia, pecans, walnuts and chestnuts are the main varieties planted by the trust.

Ten dollars sponsors one tree, and by sponsoring 10 trees for $100 the donation constitutes a grove, and will be named with a plaque in honour of the donor.

Information and applications for forms can be obtained from the secretary, New Zealand Productive Plant Foundation Trust, P.O. Box 72067, Northcote, Auckland.

Spacing for hives

NEVER CRAMP yourself in the placing of hives. Leave plenty of room around each hive to make it possible to walk around or put supers down without interfering with the next and keep out of the way of the bees coming and going.

Nor is it wise to have hives so close together that bottom and boxes bump each time the operator bends down.

A compromise whereby two hives are arranged in pairs with a working space between each pair may be adequate for the commercial people but is rarely necessary or desirable for the amateur moving up to an out-apiary, who is not likely to have innumerable hives to put out and can afford to spread himself a little.

Spacing – In practice it will be found that one metre is the minimum and one and half metres the ideal. This is to be the actual distance between, not centre to centre. There is nothing more inconvenient to the operator or upsetting to the bees as struggling with inadequate room around or in hives.

Behind – Note also that there should be space to pass around behind the hives.

You need the space to stand there – the most convenient spot for the feet in routine examinations is at the back corner, either right or left as appropriate and it allows the operator those slight withdrawals from the bees he often finds necessary particularly if there is shade or cover there, the bees naturally heading for light.

It is easier and less disturbing if all equipment may be brought up along the back of the hives in the walkway there and if the hives back on to a hedge or other vegetation they will be healthier and drier if they stand out from it.

–David Williams

from page 5

would be phased out – albeit over a period of say 10 years."

"I find it impossible to consider the ownership and application of the authority's funds in isolation," he says.

Should the independent report indicate that the co-operative concept is impractical there would appear to be no alternative to the eventual winding up of the authority, and the transfer of the proceeds to an industry fund, the functions of which could include the purchase of honey in seasons of heavy production.

"For reasons either previously stated or implicit in this report I consider that the industry should appreciate that a considerable number of producers have had an assured outlet for their production for nearly 30 years and for this and other reasons the possibility of replacement by a co-operative should be fully explored before any other course is contemplated," Mr Kay concludes.

from page 5

Mr Marshall said that he had meant more in membership as the promoters had at one stage mentioned 10 or 12 North Island beekeepers who where interested in the co-op.

My Lyttle said that their membership would be open to all, but North Island members may have their honey packed by other packers on a contract basis.

Mr Mervyn Cloake said that the co-op would have to look after surplus honey, and may even have to carry it over to the following season.

At this stage Mr Dobson said that one of the reasons that Mr Brian Strahan from the Export, Import Corporation had been asked to address the meeting was to show that there was an organisation who could possibly be helpful in marketing surpluses.

The committee then discussed the part of Mr Kay's report about the NBA being trustee of any funds from the NBA. Various members felt that such a stewardship may lead to members being elected to the NBA for reasons of influencing the use of the trust funds rather than dealing with NBA affairs.

David Dobson suggested that there was probably no reason why the NBA executive couldn't appoint a Board of Trustees themselves.

After some debate it was decided that Mr Dobson should ask Mr Kay what he thought might be the best course for the NBA to pursue over the adminstration of the HMA funds. The committee felt that this was necessary because Mr Kay, himself, had pointed out that there may be a saving in the taxation on the income of HMA funds if a statutory industry fund rather than a trust fund was set up.

After Mr Kay's opinion had been expressed the NBA might then require legal advice as to whether it had the power to appoint trustees to administer the HMA funds, should that be the decision.

If it didn't have that power, hopefully there would still be time to get the notice of a change to the rules out within the 45 day time limit, before the A.G.M. in Queenstown.

The sword of Damocles

THE INTRINSIC worth of the HMA to the beekeeping industry as a marketing outlet for many producers of honey, and the stabilising effect that it has had is recognised by Mr D.H. Kay.

He also remarks on the HMA's established export markets, its knowledge of health and other regulations, and its staff, and says some regard should be given to retaining these.

In one section he determines that the HMA traditionally markets one-third of the New Zealand honey crop; provided by 150 to 200 suppliers as their only outlet; as well as provided by the excess of some private packers.

No longer retaining the sole export rights to honey, nor being funded by the seals levy, Mr Kay says, "It must be accepted that, given a continuation of the authority's activities in their present form, reliance on Reserve Bank funding will increase at a rate dependent on the rate of inflation.

"I would suggest that if the authority is to continue as a packaging and marketing organisation, having discontinued its operation of a stabilisation scheme, it is open to question whether the expanding quantum of Reserve Bank overdraft at concessional interest rates for an indefinite period can be justified".

Mr Kay says he appreciates these matters may be considered outside his terms of reference, but he finds them vitally neccessary to establish some form of framework on which to base the second part of his investigation – namely how funds attributable to the whole industry should be used or made available for the use or benefit of the industry as a whole.

Having previously stated that the concessional rates of interest charged on the HMA's overdraft by the Reserve Bank allowed it to operate in a fashion otherwise impossible to it, if it had been charged commercial interest rates; and having also found that neither the seals levies nor the retention of income surpluses gives any section of the industry any claims to the assets of the association, Mr Kay says:

"I conclude that the total demise of the Authority is inevitable."

Then begins the search to replace its role, its funds and its expertise for the benefit of the total honey industry.

Beekeepers Technical Library

Pests and diseases of the honey bee. An excellent, simple and straightforward publication with very clear colour photography and diagrams. No-nonsense text.

Arbitrators report on HMA funds and assets. No personal comment except try not to get upset. Go through it again quietly. It could and should be the tool that brings the warring factors to sign the peace treaty and hopefully unify the industry.

LATE BOOKS

Some borrowers are keeping their books far too long. Please, if you are guilty, do something about it. To send you a reminder costs 20c and precious time, it also keeps someone else waiting.

John Heinman,
Hon. Librarian
National Beekeepers Association
P.O. Box 112, Milton, Otago.

CORRESPONDENTS

IN DEFENCE OF MANLEY

Sir,

In the article about Manley frames David Williams asked why the M.A.F. was encouraging the use of Manley self spacing frames for honey production.

I cannot speak for all my colleagues but my reasons for suggesting new beekeepers go the Manley way are because I believe that honey, where possible, should only be extracted from white, not old brood comb. At least this applies in the Canterbury district which produces top grade white clover honey and doesn't want honey stained by storage in brood comb. Therefore as a person is forced to keep certain boxes for the storage of honey only, why not have the best, that being Manley.

David did not state that the Manley frame is self spacing, and anybody who has ever had to super up 200 hives and space all the frames by hand will realise just how easy it is to dump a Manley box on a hive and know it's spaced for honey production.

David also asked if there are any real advantages for the use of the ¾ depth box. All I can say is that even hobbiests get older, and the day comes when the ¾ depth is about all a person can lift.

My advice is, if you are building up your hive numbers and are interested in producing the best honey, think Manley, but if your hive numbers are static think carefully before introducing another non standard box into your system.

Yours,

John Smith
Apiary Advisory Officer

WHAT PRICING POLICY

Dear Sir,

It has come to my notice that the price for gate sales of honey this year is $2.00/kg.

The New Zealand beekeeper is peppered with concern regarding rising prices such as transport (fuel, tyres etc), sugar 100 per cent and of course inflation at approximately 18 per cent; yet the beekeepers themselves escalate their price by a mere 11 per cent.

I can only feel pity for those whose ambitions and livelihood are dependent on the sale of honey.

Yours,
M.H. Wood.
Ashurst.

HONEY FOR POTS

Dear Sir,

I should like to enlist your help, if I may.

I am a potter, for Billabong pottery as well as a small scale commercial beekeeper. We produce a lot of honeypots and honey jugs and sell some of our honey in these pots and jars. The market for honey in this part of America is very good, and since honey and pottery in concert help to sell each other nicely, I am trying to expand our honey line by adding some imported honeys.

In order to do this, I need suppliers. But our operation is relatively small; not big enough to justify the expense and complication of dealing through middlemen, and in fact I don't want it to grow big enough to meet that justification. Consequently, knowing no beekeepers in New Zealand, it occurred to me that through your magazine you might be able to recommend one or two New Zealand beekeepers interested in doing some small private export business with the U.S.A.

This approach to honey/pottery marketing is still experimental, as far as imported honey is concerned, and I wouldn't want more than 50 pounds from any one beekeeper at the start.

Although I have eaten and enjoyed New Zealand honey while in Christchurch and Wellington some years ago, the general acceptability of New Zealand honey by the American consumer is still unknown in this region. So given a starting point, we shall feel our way. Perhaps you can provide that starting point.

If you can help me at all please write to:–

James Dunn,
Billabong pottery.
Pegram Road,
Belews Creek,
N.C. 27009
U.S.A.

HFCS

Friend or foe?

THE LETTERS HFCS may not mean very much to beekeepers in New Zealand, but it is likely that we'll hear more of them in the future. They stand for "high fructose corn syrup". Normal corn syrup is largely sucrose or cane sugar, but this can be treated by either acid or enzymatic processes to yield a mixture of sugars in which fructose predominates.

Sound familiar? Well, these processes closely parallel the enzymatic conversion of plant nectar (mainly sucrose) by bees to yield honey, which is a mixture of sugars in which fructose predominates. Because the two end products are similar, HFCS can be used in many industrial applications instead of honey and can also be used to adulterate or "dilute" honey, or even to make a completely artificial honey.

HFCS is a clear, sweet, low-viscosity fluid which is hygroscopic and does not crystallise. Much like honey, it imparts a chewy or creamy texture when used in some baked or frozen goods, and it browns when heated. HFCS enhances fruit flavours, especially citrus, has excellent physical properties, and costs less than sucrose.

A large capital investment ($50 to 70 million) is needed to build an economical HFCS plant, so that in North America there are only about 13 in operation at the moment. However, the low price and over-production of corn by-products ensures that HFCS prices are below those of either beet or cane sugar.

Production in North America has approximately doubled every two years since its commercial introduction in 1967, with over a million tonnes shipped in 1978. In New Zealand HFCS is not yet in use, although soft drink manufacturers are giving it consideration.

This means to the beekeeping industry that HFCS may be either a friend or a foe. On the one hand, HFCS may be a cheap source of bee feed, no small thing in these days of rapidly escalating sugar prices. This, of course, can be only if HFCS is easily digestible by bees with no toxic residues (not yet determined), and if it becomes readily available in New Zealand.

The other side of the coin is the fact that HFCS may find many applications in the food industry for which honey is used now. Beekeepers must charge a certain price for honey, in order to stay in business, and if other suitable sweetners are available more cheaply then manufacturers may switch to those.

–from Andrew Matheson,

Saga of Chatham non-beekeeping

by John Smith, Apicultural Advisory Officer, M.A.F., Christchurch.

THIS IS MY third attempt at writing an article about beekeeping on the Chatham Islands. I promised one to the editor a few months ago but I had problems because the situation on the Chathams is so very complex.

In the March issue of the "Beekeeper" it was reported that it was hoped that a ballot for land and a beekeeping enterprise on the Chathams would soon be advertised by the Department of Lands and Survey. But alas just when it appears we are ready for the "blast off" we meet a hitch which delays the project a few months more.

Perhaps at this time I couldn't do better than review briefly the progress over the last 10 years, not because I think it has any great historic value, but because at times I have to remind myself that progress is being made and no matter how depressed I become this project will succeed.

When I was first appointed to the Christchurch apiary district some 15 years ago I was told that the Chathams were in my area but not to worry as there were no hives on the island, as they had died of what was called Chatham Island disease.

A few years later funds became available for me to make a hive inspection trip. I found about 10 hives which ranged from very good to very poor.

Three impressions of my first trip remain, the first was finding that hives had died from lack of bees while still full of honey, and the second was the vast potential of the island. It came as a shock to see what I thought was poor country turn out in reality to be lush fertile grasslands.

The third impression was seeing first hand what lack of insect pollination really meant to farms and gardens. It was one thing to talk about the effect of poor pollination on clover or fruit trees, but another to see it.

The problem of the dead hives had been recorded since about 1900 and, in fact, a term "Chatham Island disease" had been coined. It appeared that any queens reared on the island were substandard and were soon superceded by the bees by something even poorer. Yet hives headed by queens sent over from the mainland (South Island) did as well or even better than any in New Zealand.

The solution seemed easy; importing queens from New Zealand, although we didn't really understand why island bred queens failed.

It was only after my visit to Poland where I was shown in-bred queens, did I understand what was happening. Because there were only a few hives spread out over the islands, locally bred queens could only mate with drones from their own hives. There is a lesson here for any beekeeper who only uses a few breeders and keeps them more than one season.

After sorting out the dead hive problem, I became certain that beekeeping was viable on the island and that the Chathams needed hives if the farmers were not to waste money on clover seed.

About this time, the Lands and Survey Department purchased land on the island for development and it took little effort to sell them the idea that they needed their own hives. Murray Reid and myself learnt a lot about making, packing and shipping hives through a well "controlled" port. Did you know that just one bee attracted to the outside of a hive screen is a danger to the well being of one very large dock "worker" plus all his mates?

These hives did well, and as so much development had begun in the Chathams, I began to worry if I was seeing the islands through "rose tinted glasses". Mr Arthur Gosset of Bray & Gosset from Leeston, was asked to go the islands and report on how he saw the prospects for a commercial beekeeping enterprise.

After Arthur's visit the talking really began. He agreed that commercial beekeeping was possible and something needed to be done about it. So the problem for the last few years has been how? Do we attempt to train a farmer on the island to become a beekeeper or do we start a government enterprise and ballot it off like a Lands and Survey farm? There is also the point of view that we should not interfere, that if the islands are as good as we think for beekeeping, somebody will start without any government pushing.

At this moment the Lands and Survey Department would like to know whether an experienced commercial beekeeper, willing to risk some money of his own would be interested should they decide to really push this project, with loan money.

We think we know the sort of man we would like to see on the island. He would have had well proved beekeeping experience, be married with children under secondary school age, have a good second trade training, which he could use during the off periods, (a used car salesman would starve while a good carpenter would always find work). Above all his wife would have to be one hundred per cent behind the project and be willing to live without some comforts of the mainland. As already stated, the beekeeper would need money to invest of his own.

In return, the islands could offer a chance for somebody to have their own hives in a disease-free area. The apiary could produce above the New Zealand average of top grade white honey, at a cost no higher than on the mainland. Above all the islands would offer a life style that you may find is just what you are looking for.

If you think you fit the bill, bearing in mind that in spite of the rumours you may have heard there is no gift money available from the government, and you have some money of your own, we would like to hear from you.

The "we" in this case is Mark Hefferman of the Lands and Survey Department, P.B. Wellington; Arthur Gosset of Bray & Gosset, Pennington Street, Leeston; or myself c/- the Ministry of Agriculture and Fisheries, Private Bag, Christchurch.

I will be attending this years NBA conference at Queenstown which could be a good time for any interested persons to have a chat about the Chathams. That chat may change your life, and in about five years I may be able to write: "I am happy to be able to report that since the establishment of commercial beekeeping on the Chathams, the lack of pollination is no longer a problem and a handicap to any farmer wishing to develop his pastures. It is also good to be able to report that the person settled is financially secure."

I would like to express my thanks to the many people who have tolerated me boring them with my enthusiasm for the Chathams, to the many islanders for their kindness over the years, and to Arthur Gosset who will not allow the Lands and Survey Department or myself to forget the whole idea. My thanks must also go to many fellow officers in the Lands and Survey Department for the way they have been willing to try beekeeping.

Import/Export Corporation new honey marketing outlet?

AT THE NBA committee meeting on May 5, the members were addressed by Mr T.B. Strahan from the Export, Import Corporation.

Mr Strahan's appearance before the committee could possibly be deemed to have been a masterly piece of timing.

With the HMA running down and possibly some alternative required as an outlet for the combined surplus from the smaller individual beekeepers, the corporation could well be the overseas marketing arm that any infant replacement of the HMA may need.

Mr Kay in his report made mention of the fact that he thought regard should be given to the knowledge of export markets, health, other regulations and general expertise acquired by the HMA and this should be retained if possible.

But a co-operative or whatever may have enough on its plate domestically in the formative years to not be bothered with the export market.

But the catch is that the export market has been very necessary to take up the excess production in years of plenty, and thus act as a stabilising factor on the prices received by the industry.

Brian Strahan began his address by explaining that the corporation was formed by an act of the government in 1974, and was required to assist in exports overseas. It has permanent representatives in Venezuela, Sydney, Los Angeles and Singapore. (Although the Singapore office is closing down through lack of support by New Zealand exporters).

The corporation has independent directors from Treasury, Trade and Industries and non government sources. It is totally financed by the government, but is required to operate at a profit.

"The staff are regularly visiting overseas countries. For instance yesterday a man left for China. In two weeks time another leaves for Hungary and Yugoslavia, and I have recently been to the Middle East," said Mr Strahan.

"We have sold honey in the past. In the Middle East both bulk, consumer pack and comb, but in Saudi recently I saw an example of another countries packaging which showed our lines up in a bad light.

"Our product was packed in a plain glass jar and the opposition's in a plastic container. The Saudi's were buying the other product as much for the container as the honey, and incidently getting it slightly cheaper. An example of lack of market research. But market research is no good without action.

"We get regular inquiries but it is very difficult to handle as there is always an "on" and "off" situation and also we don't want to go into the marketplace with half supply.

"So I wonder if the problems in the honey export industry may be in areas in which we have expertise. The industry seems a little fragmented – could we not be a marketing outlet?" he said.

"Do you envisage acting as an agent, or an exporter?" asked Paul Marshall.

Mr Stahan explained that the corporation did research into the markets then added a percentage to the costs and took a commission. They were not there to undercut other producers, but they were obliged to make a profit, and the last lot of honey they had sold they had taken a 6 per cent commission.

Tony Clissold explained that the industry went from years of total production of 7000 tonnes with 5000 used internally, to a year of perhaps total production of only 5000 tonnes when the overseas orders would take too much from the domestic market. Beekeepers too, were so individualistic that any exporter may find that he has to get five tonnes here, and five tonnes there.

David Dobson said that if the HMA disbands there could be an organisation which could do the marketing.

Mr Strahan concluded by saying that he thought the honey industry needed to spread its risks in markets, and they needed overall thinking.

"Presumably the industry wished to grow, and presumably production will increase. The industry needed a regulating effect, and an exporter such as the corporation needs to be able to say with certainty that it can supply x number of tonnes. At present it seems to me that honey was just being flogged off.

"We can make market development more rational because we are visiting on other products, not solely honey.

"If the market gets reliability and integrity it will stick with you."

Mr Berry summed up the discussion by saying that the comb producers had combined, because after getting away their first container they had been faced with a repeat order which no single producer could fill.

It had required a co-operation to keep faith he said. Now the marketing of comb honey is highly successful because it is based on the co-operation started at the beginning.

Removing bees from from honey houses

by Murray Reid, Apricultural Advisory Officer, Hamilton

KEEPING BEES out of honey houses is an impossible task. However, there are several things that beekeepers can do to minimise the problem and to persuade the bees to leave once they are inside.

The most obvious thing to do is to keep the truck or unloading bay separate from the rest of the honey house. Keep the windows in this area to a minimum. The bees should fly from the stacks of honey to the window where they can be let outside or can be sucked up in a vacuum cleaner.

If a hive or a nucleus is placed on a ledge under the window, or in the ground nearby, the bees will not tend to come back in the window again. Don't build any storage racks or work benches under this window. You'll soon get sick of being stung every time you go to pick something up.

If the stacks of honey are left on the truck for a few hours most of the bees will either be out the window or crawling over the top rows of boxes. These bees will be sticky with honey but they can still be sucked up in a vacuum cleaner.

A word of caution here though. Don't dare borrow the vacuum cleaner from the house. Buy an old one for the purpose. Once the bag inside the vacuum cleaner is getting full the bees can be dumped into a bucket of hot water. Remember to empty the cleaner at the end of each day as the smell of festering bees is not too pleasant.

Some bees will always come into the extracting room or packing room. Here the old vacuum cleaner is most effective again. Don't use fly spray on bees as it makes them regurgitate honey all over the walls, windows and floors and you still have to sweep them up anyway once they are dead.

One idea, employed by a number of Waikato beekeepers to help bees find their way out through windows in the extracting room is to paint a black V shape on the window (see Fig. 1). As the bees encounter the dark edge of the V they show a visual "shock reaction" and follow along this dark-light boundary which leads, naturally enough, to holes in the top corners of each window.

Once in the corners the bees can leave by way of a wire cone and enter a nucleus or hive placed nearby. As soon as the robbing season really gets underway bees may come back through these supposedly "one-way" wire cones and they may have to be blocked up. Porter bee-escapes are more efficient and stop bees coming back inside. The beauty of these bee-escapes is that they can be incorporated into fly screens over the windows so that you can have ventilation without hordes of bees.

It may be a little difficult making corner holes in glass windows, already in place. One beekeeper told me he made holes in his windows by holding a 22 rifle close to the pane and puncturing the hold with a bullet. I still don't know if he was serious but the method can't be recommended at all. That bullet has to go somewhere once it has gone through your window. There are drill bits made for glass.

So if you are designing a new honey house or altering your existing place think about the bee problem and the mess they create on walls and windows. Here's a short check list of things to consider. You may be able to think of others—

- Keep the truck bay enclosed, and provide one small window in the bay, plus good artificial lighting.
- Put a nucleus or hive outside any windows, venting bees to the outside.
- Keep windows in the extracting room as low down as possible to make cleaning the walls easier.
- Keep the stud height in extracting rooms low for the same reason. Some beekeepers put high studs in the extracting room to keep the temperatures cooler. It's much easier to install a fan or an air conditioner.
- Don't build storage racks or tool benches under windows which are attracting a lot of bees.
- If you must put clear plastic panels in the roof (such as Nova Roof) don't position them over the uncapper or extractor. Both condensation and bees, and "bee condensation" will fall on your head!
- Fit fly screens to doors and windows. Those plastic fly strips that hang in doorways will not keep out bees and are a pesky nuisance when carrying things in and out of the honey house.
- Self-closing doors can be a good investment where a lot of visitors or children have the habit of leaving doors open.
- And lastly, think about fitting bee escapes to the windows or investing in an old vacuum cleaner.

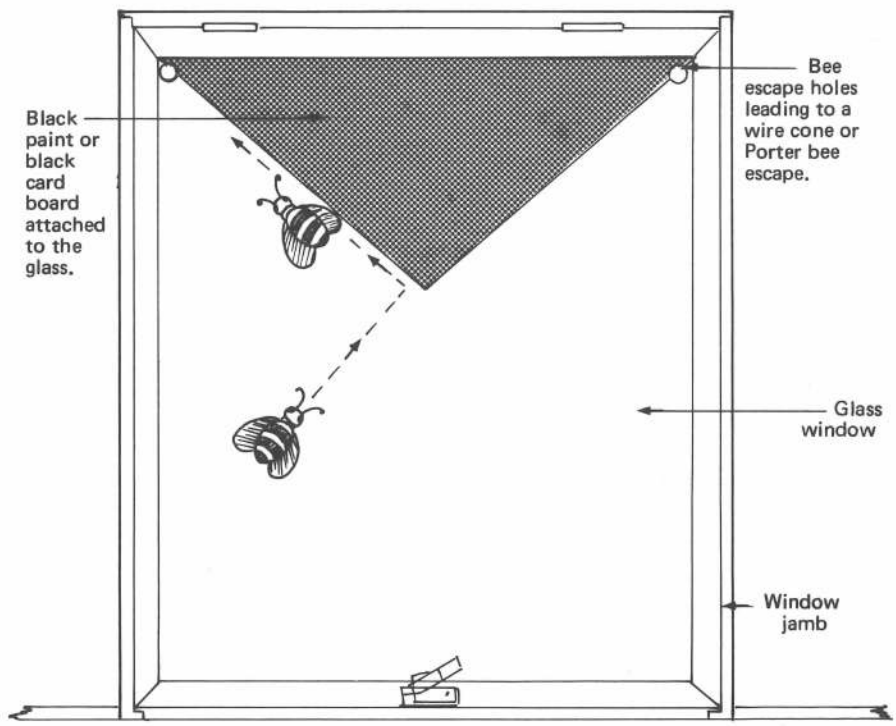


Fig 1. Creating a dark-light boundary on the window pane directs bees to the exit holes in the corner of the windows.

Computer queens?

A sub-committee of Mervyn Cloake and Steve Lyttle has been asked by the NBA committee to look into the pros and cons of a queen breeding programme along the lines of Sheeplan. The idea is the brain child of Kerry Simpson of MAF and Bruce Binney of Sheeplan.

Based on the work of Don Peer, G.J. Kleinschmidt and Cliff van Eaton, the aim is to programme characteristics and economic value into a computer to help breed better queens.

Proposing further investigation, Mervyn Cloake said he felt that the improved queens could have a great future on the New Zealand honey industry.

NBA 1981 Conference and MAF Seminar

at Queenstown, July 21, 22, 23.

Venue
Lakeland Inn, Lake Esplanade, Ph. 207, Queenstown.

Programme

Tues July 21	MAF Seminar. Social "get together" at Lakeland Inn 8 p.m.
Wed July 22	NBA conference 9 a.m. to 5 p.m. Trips and visits arranged for those not attending conference.
Thurs July 23	NBA conference 9 a.m. to 5 p.m. Trips and visits again arranged. Dine and Dance 8 p.m. at Lakelands.
Accommodation	Reservations to:— **Vickie McLaren,** **National Beekeepers' Association.** **Mount Cook Lines.** **P.O. Box 59,** **Queenstown.**
Lakeland Hotel	Single $30, Double $38 (child free plus conference discount).
Mountaineer Hotel	Single $33, Double $42.
Travelodge	Single $52, Double $65.
Arawata Motel	Kitchen Unit $30.
A-Line Motor Inn	Single $40, Double $46.
Blue Peaks	Kitchen unit $29.
Vacation Hotel, Q'town	Single $66, Double $65.
Goldfields	Bed and Breakfast from $12 night.
Registrations	A registration fee of $15 single, or $20 double to cover conference expenses payable now to Southland branch secretary:— **Murray Ballantyne,** **P.O. Box 7,** **Woodlands, Southland.** or at conference.
Social	Tickets for the dinner dance available at the conference at $18 per person.
Tours and Visits	These will be arranged each day. (With so much offering a longer stay is advised).
Travel Discounts	Travel bookings should be made through:— **Vickie McLaren,** **National Beekeepers' Association,** **Mount Cook Lines,** **P.O. Box 59,** **Queenstown.** Discounts will be available on bookings made through Miss McLaren.
Further Information	Contact Murray Ballantyne (Ph 393-090 Invercargill) or Vickie McLaren (Ph 366 Queenstown) or write to them at addresses above.

BURRCOMB

Booklet of diseases

A very good, colour illustrated booklet of honey bee brood disease has been received by the editor.

Initially a Danish publication, this edition was edited by the Professor of Apiculture at Cornell University, New York, is in English, and sells in the United States for $4.65.

The fourteen pages are illustrated on one side with excellent colour photographs by Henrik Hansen (of the Danish State Bee Disease Committee), of the particular disease, and on the facing pages with explanatory text.

Seven diseases are dealt with and there is a written table in the centrefold breaking the identification traits of the diseases into more readily recognisable symptoms.

The North Amercian (English) edition is distributed by:– Wicwas Press, 425 Hanshaw Road, Ithaca, New York 14 850, U.S.A.

The review copy has been forwarded to the honorary librarian.

Bees join the dolphins

An observation hive has been installed at Marineland in Napier, which from November through to March, will give holiday visitors and school parties an insight into the workings of the hive.

The double-glazed "A" shaped hive, installed by the Hawkes Bay branch of the NBA, is based on the same successful design as Bill Ashcroft has in his apiary in Havelock North.

The hive interior contains two frames of brood with a marked queen. These frames are located one above the other with a half-depth frame of food on top of that, separated by a strip of queen excluder.

Bees enter and leave the hive through an aperture near the bottom of one of the hive sides. A clear plastic pipe shows their progress to and from the outside.

On the walls surrounding the hive are 12 very large coloured photos which are captioned to tell the story of bees.

There is also a back-up hive of two brood boxes and a half depth super sited nearby which does well from local nectar sources, but is not allowed to get too strong for obvious reasons.

When the colder weather sets in, the bees in the observation hive are put into a nuc box and taken off display – they seem to appreciate the extra room and gladly make way for a new queen and her retinue in spring.

"You can't fool me! You've been into another patch of marijuana blooms!"

The New Zealand syndromes

David Williams writes that in recent months he has had visitors from Malaysia, Australia, South Africa, France, the United Kingdom, Western Samoa, New Guinea, and the USA.

He asked one visitor what he thought of his contacts with New Zealand people rather than New Zealand bees.

He was unusually honest.

New Zealanders were intelligent, hospitable, efficient, interested and interesting **but** – in his day to day travels he constantly came across what he calls the New Zealand syndromes.

No New Zealander, male or female, felt safe unless the visitor was immobilised by holding something – a cup of tea, a piece of cake, a book, a piece of equipment. Refusal of the offer of any of these left New Zealand hosts scared and uncertain what to do next.

No New Zealander allowed him to finish a sentence. He was always interrupted before he'd reached the end of what he had to say.

New Zealanders were rather on the defensive. One minor example of this was that the most common interruption was "Yes, but . . . "

New Zealanders were most reluctant to show him their bees! Talk about them, yes. Show him around the honey house, yes. But actually let him get into gear and into the bowels of a hive, not if they could help it!

"Well, that's what he had to say and I'll be watching myself pretty closely from now on. And keeping an eye on the rest of you! " says David.

You don't know how lucky you are!

For once we can be thankful we're New Zealanders!

One billion people (approximately 333 times New Zealands population) are short of food, something which is foreign to us as an agricultural producing nation.

The International World Food Day on October 16 this year plans to draw attention to the severity of world hunger and promote efforts to overcome it.

Established by the Food and Agriculture Organisation, World Food is sponsored by organisations at every level from small groups to international agencies.

The programme will be carried out largely through the media with specially prepared TV programmes and radio shows promoting the message that sufficient food should be available to all.

Quotable quotes

"The bee sting is, of course, well known as a cure for rheumatism but there is probably not another belief quite as extraordinary as the one, held on both sides of the Atlantic, that any girl who is a virgin can always pass safely through a swarm! The clever little creatures are apparently able to tell the difference."

"Two curious beliefs which are still occasionally mentioned about ants is that they never sleep, and that their eggs eaten with honey are a most effective antidote to love!"

Two quotations from Phillippa Waring's delightful "A Dictionary of Omens And Superstitions", Souvenir Press, 1978.

★★★

"The enclosure itself did not irk her, for she was able to love its austere beehive safety . . ."

Iris Murdoch – "Nuns and Soldiers"

★★★

OBITUARY

Noel Mervyn Rothwell

It is with great sorrow I have to report the recent death of Noel Rothwell of Hororata. Noel had managed Hororata Apiaries for Bray & Gosset Ltd of Leeston, for the last 20 years and was respected throughout the South Island.

While not a meeting or field day man, he became well known for his breed of queen, and what he called his Christchurch breeder was a firm favourite with many of the local beekeepers looking for a quiet strain.

Away from his hives Noel took a keen interest in all things rural, and could both tie and cast a fly to tempt the most reluctant fish.

At a personal level I know I will miss the chance to seek his advice on queen breeding and all aspects of apiculture.

John Smith,
Apicultural Advisory Officer,
Christchurch.

Racist bees!

NEW ZEALAND has about 40 species of native bees, all belonging to the two most primitive bee families. At the other end of the scale are five of the imported varieties belonging to the most advanced families. So is there a conflict between the European settlers and the native population for the pollen of New Zealand?

B.J. Donovan, of the entomology division of the DSIR's crop research at Christchurch, in a paper to the N.Z. Journal of Ecology, thinks there is not.

Because the Europeans brought imported bee 'tucker' with their imported bees, one could have expected that the introduced species would have been able to use their broader base of flowering plants to make inroads into the shorter honey gathering season of the native bees.

But a quirk of progress seems to have held benefits for the dimwitted native.

Man, with his roadside cuttings, stop banks, and horticultural land sprayed bare by weedicides has provided the ground nesting conditions the natives most favour. Their breeding population has improved as a result.

The length of the foraging season of the native and introduced species does not overlap except when the honey flow is at its peak.

By a stroke of mere fortune it is then that the shorter foraging native bee emerges, and of course with the superabundance available of nectar and pollen, it finds no competitor in the introduced bee already on the wing.

Mr Donovan concludes that the ability of the native bee species to still outnumber honey bees and bumble bees on many native and introduced flowers after 140 years of contact, indicates that these native bees are enjoying considerable competitive success. And the indications are that they should continue to do so.

Summation of main biological features of native and introduced bees in New Zealand.

Bee species	Number of species	Social organisation	Natural nest sites	Artificial nest sites	Primary flower relationships	Main foraging period	Distribution	Abundance	Parasites and diseases
NATIVE									
Colletidae									
Colletinae	30	Solitary	Bare soil, sand, clay	Road cuttings, ditch sides	Natives, many introduced		N.Z. wide	Seasonally very common	*Hyptiogaster*, *Bettsia alvei*
Euryglossinae	1	Solitary	Holes in wood – borer burrows	Unknown	*Leptospermum*	Late spring–early summer	Localised	Uncommon	Unknown
Hylaeinae	5	Solitary	Holes in wood < 6 mm across	Leafcutting bee nest holes	Natives, many introduced		N.Z. wide	Seasonally common	*Gasteruption*, *Melittobia*, other chalcidoids
Halictidae									
Halictinae	4 or 5	Primitively eusocial?	Bare soil	Herbicided soil	Numerous native and introduced	September to May	N.Z. wide	Seasonally common	Unknown
INTRODUCED									
Apidae									
Apinae	1	Eusocial	Hollows in trees etc. 20-100 *l*	Honey bee hives	Numerous introduced and native	All year	N.Z. wide	Very common	Mites, protozoan, amoeba, bacillus, virus, *Ascosphaera apis*
Bombinae	4	Primitively eusocial	Abandoned rodent nests	Bumble bee hives	Numerous introduced, few native	Spring, summer	N.Z. wide	Common	Protozoan, nematode, mites, *Melittobia*
Halictidae									
Nomiinae	1	Solitary	Moist alkaline soil	Alkali bee nest sites	Lucerne, composites	Summer only	Localised in South Island	Uncommon but increasing	Unknown
Megachilidae									
Megachilinae	1	Solitary	Holes in wood about 4–6 mm across	Leafcutting bee nest holes	Lucerne, composites	Summer–early autumn	Much of South Island, localised in North Island	Uncommon but increasing	*Melittobia*, *Pyemotes*

From: New Zealand Journal of Ecology, Vol. 3, 1980.

HOW TO HANDLE CAPPINGS

by A.G. Matheson, Apicultural Advisory Officer, Nelson.

PROCESSING CAPPINGS, has for some time been a bottleneck in the functioning of most honey houses. Although advances have been made in recent years, handling cappings can still be one of the most time-consuming and wasteful exercises in the honey house.

Selecting the best method for processing cappings is often a difficult decision for new beekeepers. This article, the first in a series of two, reviews various methods of processing cappings.

Cappings can be removed from the comb in several ways. The most simplest method uses a hand knife, heated either by a steam line soldered to the back or an electric element contained in the knife. Fixed vibrating knives are not very common in this country, but they do ease the job of uncapping. They consist of a fixed, heated blade, which is vibrated back and forth by an electric motor.

Thirdly, uncapping machines of various sorts have become very common among commercial beekeepers. They make the job of uncapping a lot easier.

Where eight or nine frames are used in a honey super, the combs are drawn out far beyond the wooden frame. It is usual practice to uncap down to the wood on the frame, with the result that up to one-third of the total honey crop is included with the cappings.

The primary aim of processing cappings must be to recover as much of this honey as possible, with little or no damage to it. The wax is also valuable, and should be recovered with minimum damage or loss.

There are several important factors to bear in mind when choosing a system for processing cappings. Minimising damage to honey and wax is of prime importance. Processing systems should be easy to operate, and not require constant attention while extracting.

A capable machine to process cappings should prevent bottlenecks in the operation of the plant. The installation and running costs should be in proportion to the overall cost structure of the honey house plant.

An important factor in the handling of honey, and especially in the separation of cappings and honey, is the use of heat. Mild heat is very useful at all stages of honey handling, to reduce the viscosity (thickness) of honey and make it easier to handle. Care must be taken though to not overheat the honey as it can change the flavour and colour.

There are four methods of separating honey from cappings and processing the wax. These are draining, squeezing, floatation and spinning.

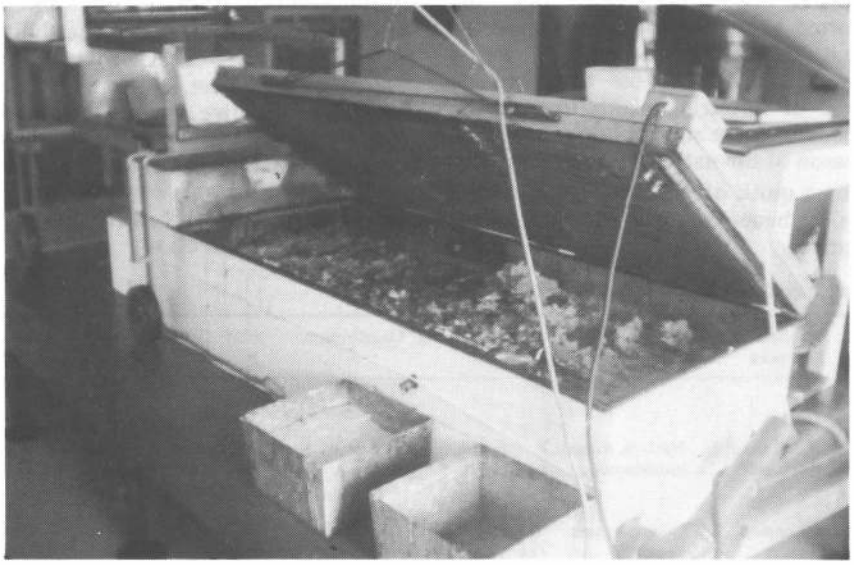


Figure 2: View of a hot-top, showing the heating cable under the raised lid, the cappings inside the machine and the separate outlets for honey and wax.

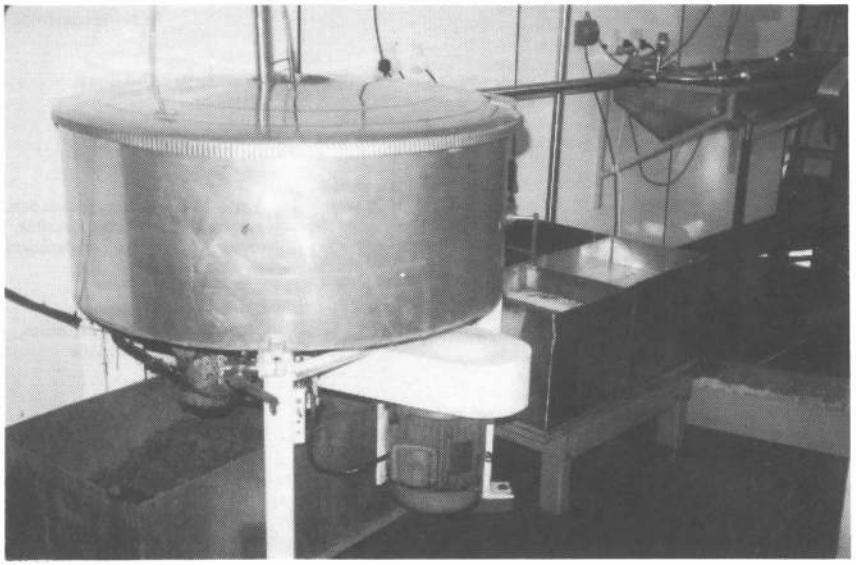


Figure 3: A centrifuge. Wax is deposited in the tray beneath the machine, and honey is run out into the baffle tank to the right.

Draining

The usual form of draining cappings, involves uncapping into baskets which are usually made of stainless steel mesh. These may be kept in a warm place, such as a water-jacketed vat, to drain. The time to drain the cappings varies between half a day to several days. This depends on the capacity of the baskets, the throughput of the plant, and the type of honey. Honeys with a low moisture content and thixotropic honeys are not really suited to such a system.

When the cappings have drained, they are further treated to melt the wax. This may be carried out with the same piece of equipment, by application of further heat. Alternatively, the cappings may be shovelled into another container for rendering. This may involve a "hot-top", an oven, or a solar wax melter.

The mixture of molten wax and honey is best run through a separator to retrieve any honey. The separator is provided with two outlets, at different levels, and may or may not be gently heated (see p 134, Beekeeping in New Zealand).

Cappings draining systems may be cheap to build, although one draw

back is that cappings must be double-handled. Any honey remaining when the cappings are melted is usually darkened or altered in flavour. It is often blended back with the bulk of the crop, or alternatively sold as manufacturing honey.

Squeezing

Separating honey and wax with a press is a very old technique. It was widely used before extractors were invented.

Cappings presses have also found application in New Zealand for the pressing of thixotropic honey, such as manuka, kanuka and ling heather.

Present day use is probably restricted to domestic beekeepers without alternative systems for processing cappings.

Floatation

Grouped under this heading are hot-tops and other cappings reducers, called "floatation" machines because they all work on the principle of heating the cappings and melting the wax. Wax is lighter than honey, so the wax floats to the top of the mixture and the honey sinks.

There are two basic types:

- Cappings reducers, in which the cappings fall directly onto pipes which are filled with either hot water or steam. Baines capping reducers have triangular heating pipes running across the bottom, while Brand melters employ a top coil or grid of pipes to melt the wax.
- Hot-top melters differ from this, in that the heat source never touches the cappings. A radiant heat element or heat lamps, project heat down on to the mixture, and the idea is that the molten wax protects the honey from over-heating.

Cappings reducers and hot-tops have probably been the most common methods of processing cappings in New Zealand in the past few decades. They have had the advantages of being readily available, and cheap and easy to build (though not necessarily to run).

However, many of these old machines are now being replaced because of the damage caused to honey by excessive heat, and more widespread use of uncapping machines. Cappings reducers and hot-tops are more suited to the steady flow of cappings from a hand knife, than the intermittent surges from an uncapping machine.

Spinning

The idea of spinning honey from cappings is not a new one. The invention of the centrifugal honey extractor led to experiments in spinning cappings, and some very old extractors had removable baskets so that they could be converted to cappings spinners. More modern systems involve separate

Figure 1: Uncapping into a hot-top, with a steam-heated knife.

machines, so that extracting and spinning can be carried out simultaneously.

Spinning the cappings is really a form of draining, with draining by gravity (in a vertical direction), replaced with draining by centrifugal force (in a horizontal direction). The process is greatly accelerated, as the centrifugal force might be 30 or 40 times stronger than gravity.

The combs are uncapped either directly over the spinner, or else into a hopper from where the cappings are pumped into the spinner. Emptying the spinner is a relatively easy job, and usually takes place twice in a day. The cappings must be rendered separately.

Cappings spinners use no heat, so damage to honey is negligible. Only a small amount of honey remains in the cappings after spinning. The machines run continuously, and require minimal attention during the operation.

One disadvantage is that the cappings require further handling and processing. This task can be deferred if necessary until extracting is completed for the season, although this is undesirable due to fermentation of honey, presence of vinegar flies, and possible robbing.

Another method of separating honey and wax by centrifugal forces, but more sophisticated than a spinner, is the centrifuge, or Cook and Beals. It works on the two principles of centrifugal force and specific gravity.

The machine is quite sophisticated and expensive, but if operated correctly is very efficient, handling a little over a tonne of honey per hour. Centrifuges are best suited to large operations with a big throughput of honey.

Feeding honey back to bees

When dealing with cappings on a domestic scale, it is often simplest to drain cappings as much as possible, and then feed the remaining honey back to the bees. This should not be carried out in the open, because of the dangers of spreading American foulbrood and starting robbing behaviour by bees.

Feeding cappings honey to bees is best done above hives, and simple devices can be made to make this job easier. Plans for these are available from the author.

Decision making

The best solution to the problem of cappings processing depends on many factors, and is an individual decision for each beekeeper. Important points need to be considered when deciding how to process cappings, such as how much damage is done to honey? How much honey is wasted? Is the capacity of the machine sufficient to prevent bottlenecks in the honey house, now and in the future? Does the machine need constant attention when in use? And are the capital and running costs in proportion to the size of the operation? (Labour is also a cost).

The final article in this series, in the September issue, will describe how several beekeepers in different parts of the country have tackled the problems of cappings and processing.

Making it as a medium-sized queen-rearing operator

In this article adapted from an address to the 1980 Beekeeping seminar in Tauranga, queen specialist Bruce Stanley summarises most of the important factors in developing a medium sized queen rearing enterprise. He said that readers have to take into account the fact that these are his personal views based on the experience of only five years of a beekeeping business where the substantial motivation in income has been from the sale of queen bees.

"Although I feel humble in the presence of some highly successful beekeepers, I hold my head high in the realisation that not many beekeepers have succeeded in maintaining a viable business in this specialist part of beekeeping," said Mr Stanley.

IF YOU want to make it in this sort of business you need a strong love of nature. Equally you need a strong heart for the continual challenges which will arise during the course of your business. Problems arise on a day to day basis and once the queen rearing cycle has started you are tied to the job.

No one is going to run a successful queen rearing business if they are scared of hard work and disappointment. In this regard, there is a continual struggle to maintain a balance between maintaining a high standard of workmanship and product and the sheer need to survive.

Another area of conflict is between the wish to have the easy going relationships natural to most beekeepers and the need to be skilled in business management and administration. The hard facts are that there are hundreds of mail order customers, bad debts and occasional hard-headed pollinating orchardists – all who have to be dealt with diplomatically but firmly if the business is to be viable.

When starting such a business, it is essential to have a few staunch people on whom one can rely for assured orders to take a base number of queens and upon whom one can rely for prompt payment and friendly advice.

If these administrative and diplomatic skills associated with running a business are not necessarily those which come naturally to beekeepers, there are areas which are even more foreign. To break into the export market it is helpful to have contacts and be able to do all ones own documentation – a real nightmare in some cases. I have had a lot of help from the department of Trade and Industry and New Zealand's overseas trade commissioners, but it inevitably falls on the individual exporter to clinch the deal and keep the business relationship going.

Market demand

It is is essential to develop the business to the stage where there are a number of assured markets which spread demand over the greatest period possible. The local spring market is very important, but this is mainly concentrated on the six weeks from October to the middle of November. Exports to Iran broaden the autumn market by adding a new demand from mid February to the end of March. Canada then takes over with a concentrated demand during April and May.

Finance

There can be a relatively low initial capital requirement of between $30 000 and $40 000 to become established in queen rearing. This represents some 250 hives – 200 involved as service units and for honey production, pollination, pollen collection, nucs, etc and 50 used as cell raisers and drone colonies.

You will also have to have some 800 to 1000 nuc boxes, honey supers, a shed, a Landrover, a tandem trailer and there must, of course, be a suitable site for a nuc yard. Additional capital will be required when you need to add to the cost of having a home and land in the country, ideally near the nuc yard area.

By far the biggest handicap is your inability to generate or obtain capital for further development. We persisted for many years and made many applications before we finally obtained the long term finance we needed.

The work

The choice of the district for conducting a queen rearing operation is most important. Obviously it must be in a good beekeeping area with both early and late flows of honey. Similarly it must possess a mild climate and be disease-free. The area must also be compact so that there is not too much fuel or time wasted getting access to all the apiaries. The colonies must be maintained in peak condition, even-though the repeated calls made to the hive during the spring results in some hive stress. Nosema control is essential.

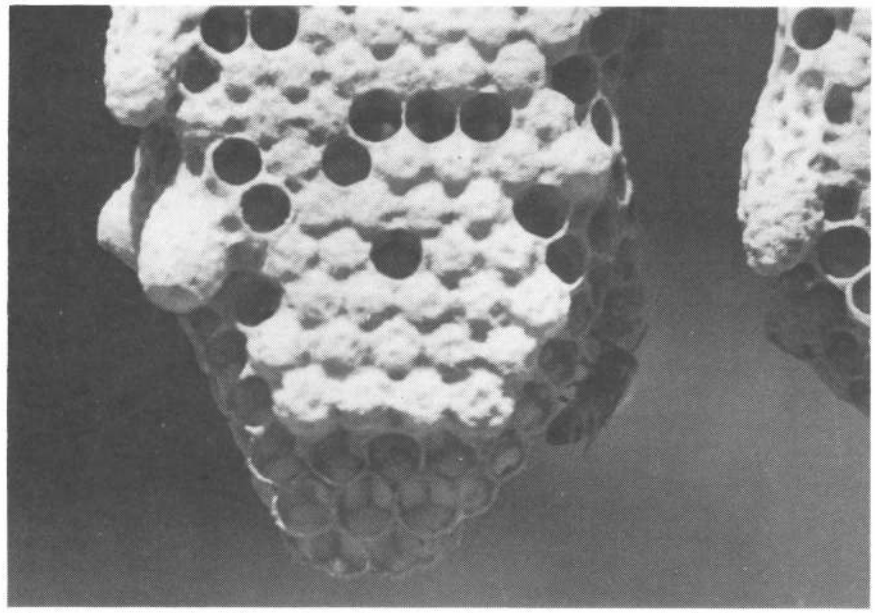
During the year you may take six to eight shakes of bees from the standard hives; four kilograms of pollen; three quarters of a box of bush flow; three quarters of a box of clover and a three frame nucleus. As well there will also be several shifts made to the hives including pollination. You may also take autumn splits for your own increase.

For the establishment period I would recommend the Griffin cell raising method, because it has been proven to be the most reliable. The important principles of cell feeding are plenty of bees and plenty of natural food. We choose a three day cell grafting cycle; grafting one day, placing ten day ripe cells and catching queens the next day. The important thing is to choose a standard method and to stick to it.

Small broodless sugar-fed nuc's are not conducive to the production of good quality queens.

The optimum nuc must be of minimum size, but still large enough to be a self maintaining miniature colony. This nuc will maintain a normal hive temperature to allow perfect hatching and care of the queen. It seems to me the choice of frame size is either one third or half frame width and either full depth or three quarter depth. You would need a twin mating box although some additional built-in versatility could be introduced here.

With good box marking and colour you can build up mating yards to one thousand nucs with good matings and returns. During honey flows you can achieve success rates of over 90 per cent.



Migratory work is obviously going to be an essential part of this type of business. Hives must be sound and on solid base boards. My system is to use a low trailer which takes one yard of bees at a time (say 24 hives) using a ramp and barrow to load them. It is essential to have a good site access, a spare tyre for the trailer and a good nose for shifting weather.

The queen rearing and additional operations are extremely labour intensive and have to be carried out in all weathers and all days of the week at the height of the seasons. In these circumstances it is essential to make a good choice of wife.

Standards

As a new business venture you're most likely not going to contribute much better than good looking queens. But there's not much wrong with that for starters. You could do a lot worse than concentrating on producing good fat cells, hatched in strong nucs, using a known good quality breeder queen.

It takes several years to get to the stage where you can start taking meaningful comparisons between strains for breeding improvement. We are flooding our mating area with good Italian drones from known high honey producing colonies. But it has taken us five years to get to this stage.

The future

It will be some considerable time before artificial insemination of queen bees has an impact on the commercial supply scene in New Zealand.

The market requires perfect mated, mass produced queens and I don't think we can expect this on a commercial scale from AI.

When conditions are right we can get 90 per cent or better returns of excellent mated queens. AI may eventually win out on a commercial scale by providing early or late season queens when natural mating conditions are not good. AI is, however, a proven important tool for breeding programmes.

The size of the occasional inquiry we are getting for the supply of spring queens staggers me. In fact we are turning away some major New Zealand inquiries now due to their size alone, the problem being that they are all generally required in October.

I see right now some opportunity for new enterprise or expansion to meet this demand. However, a new enterprise will not survive on October queens alone.

Due to optimum rearing conditions, autumn queens are my best produced queens and most of them are going overseas. I continue to export them because I need the extra return I get. But I do wonder if New Zealand beekeepers shouldn't be purchasing more of these highest quality queens.

Conclusion

Existing profitability in a medium-sized queen rearing operation is low. I anticipate that my autumn queens will sell at about NZ$6.40 C and F on export markets this coming season, which would be about $6.10 sold on the New Zealand market. This will probably be about equal to 5 kg of your next season's base price.

If queen bees were selling at that price level in New Zealand the resulting higher profitability would encourage keen interest in this important specialised work. This would further initiate bee breeding programmes and higher quality control by individual queens rearers competing for reputations.

The commercial honey producer would in turn gain some real benefit from this work through better availability of better bred spring queens (good mating, nosema-free), giving better acceptance rate, and with a longer productive life.

FROM THE COLONIES

POVERTY BAY

Most colonies have come through a disappointing season fairly well, with overall average yield down at about 50 to 70 lbs of honey per hive.

There has been some wasp problems, especially in the high country areas, where it has been necessary to dose hive entrances down earlier and control wasps through application of insecticides like Mirex.

Honey yields have been much the same, both in the high country and the lowland areas. The weather can be blamed for most of the low yields.

On March 14, a group of local beekeepers visited Peter and Snow Pegrams honey house in Frasertown for a field day. It was a success with everyone learning something and enjoying themselves. We extend our thanks to the organisers and Peter and Snow Pegram.

Recently the local association held a honey tasting evening with some two dozen samples presented. They varied from light amber to used engine oil in colour and consistency. Each honey appeared to have its own individual taste.

People were asked to try and identify the source or sources of the honey. It proved to be quite difficult, even the beekeepers could not identify the sources of their own honey in some cases.

Pollination of kiwifruit has become an annual facet of beekeeping in this area and some regard it as the main source of income, withstanding honey production. With this increasing business it is only right that we should learn from the mistakes and successes in other areas.

It has already been demonstrated in the Bay of Plenty that the crucial criteria for effective pollination service throughout an area, is good liaison between the people concerned which is encouraged by MAF.

Problems such as spray mortality and the economies of the operation should be looked at closely by all concerned, whether they wish to be independent of others or not.

The Bay of Plenty boasts a record of no spray mortality last season on kiwifruit pollination through good communications and this type of success could be achieved in Poverty Bay.

Barry Foster
Gisborne

SOUTH CANTERBURY

Most local beekeepers have now finished for the season and are turning their attention to the usual winter or off season jobs like wax rendering, making up new equipment or maintenance.

It is interesting to note the number of joinery or similar types of businesses which are offering hive parts at very attractive prices.

Prospective buyers would do well to make sure of the standard of workmanship in these parts before committing themselves, as there are reports of varying standards, some very good and some which could be disastrous.

The autumn weather has been good, especially for the production of honeydew but most of this will go into the feed stack as selling conditions have changed dramatically. What was up till recently a booming sellers market, is now a situation where sales even at very low prices are very difficult to make.

This is in line with predictions warning this situation could occur. It has, and those who have changed from honey to

dew production may well find that unless there is a change to the better in the market, they could miss out both ways.

The local branch held a very successful field day in late February. The principle attraction was Cliff van Eaton, the apiary advisory officer exchangee from Canada now stationed at Gore. Cliff is great value as he is involved in a queen bee improvement plan in Canada and can impart his knowledge to his listeners in such an able manner.

Graham Kleinschmidt and Don Peer have also stimulated intense interest in queen bee performance.

Our local apiary advisory officer, Kerry Simpson, and a geneticist from the MAF who is associated with the sheep breeding plan, are to prepare a queen bee breeding plan to be used by interested queen bee breeders who wish to improve their stock. This could be the start of a project which could have a great effect on our industry.

Harry Cloake
Timaru

WEST COAST

As in most areas, apiarists here have been busy cleaning up and packing up for winter.

Naturally when beekeepers meet they discuss the successes and failures of the past season and compare each others methods including mistakes and the reasons for the mistakes.

Some apiarists were going to rear queens in the autumn for increase next year. However, a lateish honeyflow kept them busy at the ideal queen rearing time because the nectar coming in was of the quick granulating kind and had to be taken off the hives quickly.

Queen rearing was eventually started but with an adverse change in weather the honeyflow cut off and worse still, for the production of good quality queens, the intake of pollen also ceased. Of the comparatively few cells produced many weren't of robust quality.

The lack of expected locally produced queens caused a rush to get queens from the North Island. The latest reports indicate that these have taken well.

Some beekeepers have retained a full super of honey off each hive for spring feed and with hives reasonably well stocked this should ensure a good spring build-up.

In the spring of last season, some apiarists fed out lavish quantities of sugar syrup with the hope of stimulating the bees to massive increase and a good workforce of bees to collect a bumper crop, but things didn't turn out as planned. The queens laid like mad, but with no pollen coming in, owing to weather conditions their progeny weren't up to standard.

The last discussion group was held at our presidents establishment at Franz Josef where wintering was discussed. The main decision seemed to be that the best way to winter colonies was to reduce them to two supers with plenty of stores.

Another interesting procedure discussed was the leaving of a very small entrance at the bottom board and providing a larger one under the loose fitting lid by using a slipboard upside down. It was pointed out that this saved condensation and left a dry hive throughout the winter. This also saved the end of frames rotting and enabled out-yards in cold valleys, where previously they had to be brought out for the winter.

The wintering in three story hives wasn't favoured, because in a cold winter the bees moved up to the top boxes leaving the bottom vacant except for their major pollen store. This store became damp and mouldy thus retarding spring build-up even when honey stores were ample.

Some had tried using a queen excluder under the top box of stores, but this sometimes ended in disaster as the cluster still moved up to the top box where the warmth was, leaving the queen to perish below the exluder for lack of attendants.

The seasons crop seems to have varied from poor to good on average.

Peter Lucas
Harihari

NORTH OTAGO

Nobody will be making a fortune with our honey crop this year. Extracting was finished early and hives wintered much sooner than usual and this in itself is causing a great deal of concern.

We've had a very mild autumn and the queens are just going off the lay, resulting in hives bursting at the seams with bees. They are steadily chewing their way through stores that would normally not be touched until well into the winter, so we will have to keep a watchful eye on things.

However, seasons such as this do have their compensations, as most of us have got practically all these winter jobs done already. We can at least have a spell over the winter now that those old frames have been melted out and rewired.

The branch has received its copy of the arbitrators report which makes interesting reading and will be discussed at our A.G.M. in a few days time.

George Winslade
Hilderthorpe

SOUTHLAND

Another season is almost over. Southland has had a good summer this year, but unfortunately it was also a dry one.

Honey flow finished about the middle of January, due to dry conditions and competition for pasture of hungry stock. However, despite the short honey flow most hives are well prepared for winter with more than adequate stores.

Because less honey was extracted, beekeepers made good use of the spare time in autumn queen raising with some good results being obtained.

Arrangements are well in hand for this years conference, which is to be held in Queenstown. Looking forward to meeting old and new beekeeping friends again.

See you there.

Alister Lee
Balfour

HAWKES BAY

Our field day at Peter and Snow Pegrams factory was well attended by 102 people, among them only six commercial beekeepers. It shows the amount of interest in beekeeping in the East Coast.

Guest speaker Doug Briscoe let us know beekeeping prospects in the Gisborne/Poverty Bay area. He spoke of the terrific potential for pollination alone with the large plantings of kiwifruit.

Graham Walton outlined future beekeeping forecasts; not only honey production but the side effects of beekeeping namely pollination, propolis, and the big potential of pollen production.

Andrew Mathewson – who was tour leader for the Aussies – spoke strongly on the need for queen breeding and replacement in the hive, which was followed by a demonstration by Peter with his queen rearing equipment and a tour of his factory.

He has a new centrifuge type of clarifyer for his manuka honey which is working well.

The day finished off with a question time and a resume of beekeeping in Queensland by one of the tour party.

Many thanks to Snow, Wendy and Mrs Williams for the smoko's in a delightful setting on a very successful day.

We have had our A.G.M. and are now looking forward to some serious work before conference. Next meeting May 19.

Keith Leadley
Hastings

BAY OF PLENTY

A generally low key mood prevails our branch, due to below average honey crops throughout the district. However, the optomistic attitude is that we are now well due for a period of good beekeeping years. A 'double banger' bush and clover flow must surely be on for next season.

Demand for pollination hives continues to increase, being met by existing suppliers. There has evidently been some trial basis progress with artificial pollination. Those well informed on the method are claiming that at best this may be supplementary to honey bee pollination.

The Te Puke kiwifruit pollination spray damage problems were virtually eliminated last season, the total combined effort of M.A.F., orchardists and beekeepers. However, it appears that this lesson cannot be transposed to newer developing orcharding without some serious spray damage problem first occuring.

Arthur Edwards gave away the branch presidency this year. Arthur has handled the branch affairs extremely well and never turned his back on a real problem. The branch is also very grateful for his organisational detail given to the recent highly successful Tauranga Conference. Incidentally we broke even financially on the exercise.

Jim Courtney replaces Arthur. Jim is a well established beekeeper at Waihi and a member of the Apiary Advisory Committee and a Waihi Borough Councillor. All the best Jim.

The branch has a relatively strong contingent of youthful beekeepers appearing on the scene at the semi and commercial beekeeping level. With present discussion and programming of field days we may be headed for a period of greater branch activity.

Bruce Stanley
Whakatane

OTAGO

We have had a lovely late summer and autumn. The weather is still mild for the time of the year with only the odd cold and raw day to remind us that winter is not far off.

Taking off the honey has caused no problems this time, for the paddocks are dry. Colonies are going into winter in good condition and the queens have closed up shop in reasonable time.

We said farewell to Cliff van Eaton, our stop-gap Canadian apiary advisory officer who spent the summer with us to our benefit and pleasure. We are waiting now to welcome home our own man Trevor Bryant.

The annual meeting was held last night. New president Bill Smoothy from Waipori Falls, secretary John Foote, Wylies Crossing, Mosgiel and treasurer Neil Walker, Milburn Apiaries, RD Milton.

Our previous treasurer, Brian Alexander leaves for the North Island where he hopes to do something with bees. Good luck Brian.

We have cancelled the Otago-Southland beekeepers convention, which is traditionally held on the Tuesday of Queen's Birthday weekend. It was scheduled on the same day as a short course on beekeeping management at Telford Farm Training Institute and too many people were involved in both. We hope that the powers that be will respect the Otago-Southland tradition next time.

John Heineman
Milton.

FAR NORTH

Optimism springs eternal but the season failed to live up to expectations and the crop proved to be somewhat patchy. The seasons and patterns seem to be changing. In some areas several times more than the measured amount of winter stores are needed to get the hive through the winter.

Although more land owners are becoming aware of the need for a balanced ecology and more stands of flowering eucalypt and similar nectar sources are appearing, there appears to be a growing gap in ongoing pollen and nectar sources. Whereas previously our humble manuka and gorse supplied our major needs for nectar and pollen and would exude at 10 degrees to 16 degrees, it seems that most of the exotics require 20 degrees or more.

It is becoming patently obvious that the MAF, Forestry Service and nurserymen will need to give the land owners a lead in restoring a balanced ecology. Not just trees for bees in a haphazard variety but calculated sources to replace manuka and gorse and to fill gaps when pollen and nectar are scarce.

The branch now meets on the second Monday of each month at the R.S.A. Library in Kaitaia and is presently planning the season's field days to give a balanced annual programme.

Guy Macpherson
Kaitaia

A FRESH START

by David Williams. Photos Allan Warren.

Watch those stores!

THE BASIC rule for stores in the hive is: "Never have less than the equivalent of two full frames of honey at any time, and the equivalent of ten full frames for winter".

If you find less than the minimum at your spring examinations you must feed. The question then is – how?

There are almost as many methods of feeding as there are beekeepers. Commercial operators want to get a lot into each hive quickly and with the minimum of time and effort and cannot adopt the more refined techniques listed here for the amateur.

I like to save two full frames per hive at extraction time and put them back in the same hives they came out of as needed – usually at the end of August.

Sometimes I feed dry sugar in a frame feeder.

The frame feeder is a trough made of ply or hardboard, nailed to a wood surround the size of a frame. It hangs in the hive and takes the place of a frame.

Originally I touted for syrup (i.e. a saturated water/sugar solution), until mine always leaked and syrup was messy to handle anyway, so I simply fill the things up with dry sugar and slop a dollop of water on top to dampen rather than dissolve it.

The bees never get too excited about it, merely working away at their own pace through the winter, and that no hive ever starved while they had sugar available (but note also that it wouldn't do for a small colony – which you shouldn't be taking through the winter anyway).

It is easy to see if more sugar is needed and to fill it up as required, and easy to get the bees to move out of the way to put the stuff in. Such a feeder or feeders – (you can use as many as you like) never interferes with examinations or manipulations and the feeders are easy for the do-it-yourselfer to make.

However, it is certainly easier for the bees to take up syrup, and Olifin Products at Box 10217, Te Rapa, for example advertised plastic frame feeders at $3.30 each ex store in the last "Beekeeper". I used to mix a pint to a pound – a pint of hot water to a pound of sugar, stir until dissolved, slop in. The bees will have tucked away in no time, but do put 'floaters' in for them to stand on.

Ray Chapman-Taylor's "Beekeeping in Auckland" recommends either feeding syrup as per "Beekeeping in New Zealand" or feeding dry sugar. This is done by putting strong brown paper on top of the brood chamber, tucking it down slightly between each frame for the full width, and from the front to within 25mm of the back. Then put a queen excluder above.

Pour up to 3 kg of dry sugar on and put a hardboard inner cover above this.

I found this method messy to carry out and inconvenient unless the hive was going to be left for some considerable time. There was no way of removing the paper once the bees had stuck it down except by scraping it off, and that could only be done after the bees had taken all the sugar. Frame feeders are better!

All books recommend the tin top-feeder. This is filling a tin with syrup, putting a few fine holes in the lid, and inverting it over the colony. It may work for some people, but I never managed to get the holes right – the stuff either didn't come out, or ran out the entrance. Frame feeders are still better!

There are various more formal top feeders and feeding methods for syrup, candy or dry sugar. Most hobbyists top feeding will use a double-rimmed board with a central, or end entrance hole, or slit, like an escape board without the escape, and will use dry sugar.

If syrup is used, the tray must be leak-proof and entry must be restricted in some way or there will be a considerable number of dead bees up there.

It is hoped this short list will be of some help to those new to the game. Remember – there can be no excuse for the bees in our care suffering in any way, and certainly not from starvation, the most easily preventable threat to their existence.

Small-scale cappings cleaning

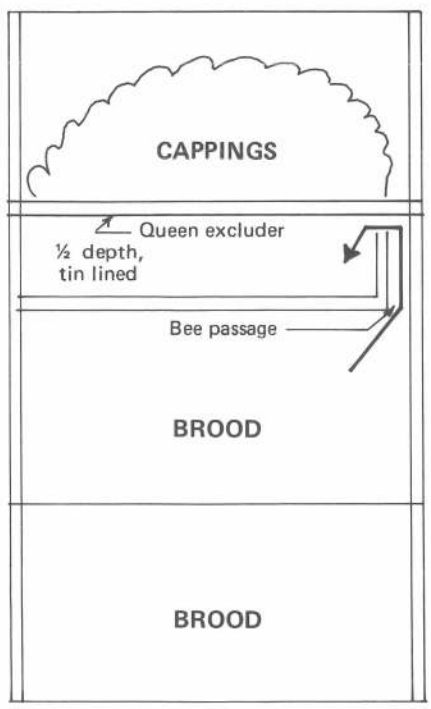
AFTER A SMALL study, David Williams adds the following points to the half depth/queen excluder method of dealing with the honey residue left in cappings, from the March issue.

The ideal amount to handle at any one time is the cappings from 30 frames.

At the appropriate time of year – February/March when most uncapping is done – the bees will deal quite comfortably with this amount in a week, particularly if the cappings are gently redistributed every couple of days so that the bees can get at them better.

After one week, the almost honey-free cappings may be tipped out and more put in.

There is no hurry so proceed gently and do not over-fill. Cappings may be left in until it is convenient to remove them – the bees don't mind.



A summary of the saga

I HAVE always strongly recommended annual requeening with stock from reputable sources and have given reasons for this in earlier articles.

Now we are faced with the two problems of continual price rises and continuity of supply. There have been many disappointed would-be customers this year who either did not get their queens on the date promised or did not get them at all.

Things can only get worse

Nor is there any indication that the upward price spiral will change. But this does not mean that queens supplied are not worth the price asked but rather that a "medium sized amateur", one with perhaps 4 to 10 hives may find the expense somewhat difficult to justify at the specific time of ordering, particularly if it has to come out of the housekeeping budget – $6, yes; $60, NO!

One solution

What is the solution? Obviously there is no single one but now that we have been through some of the more promising methods of queen rearing for the amateur we can start to think in broader terms and become a little more clinical.

My own preference in queen rearing is for grafting into cell cups and rearing in a queenless colony.

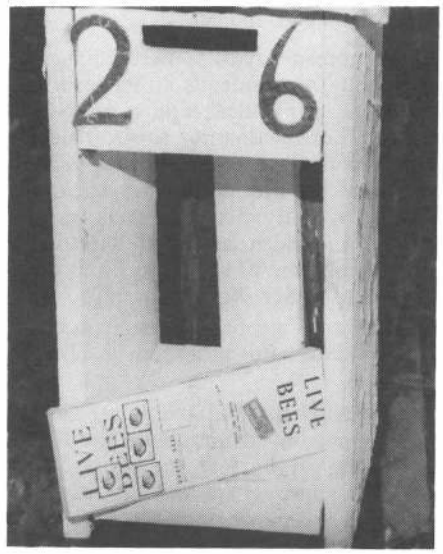
This is because I do not like the mess and vandalism associated with methods that call for chopping around the brood combs, (it runs against my own views of no-damage beekeeping) particularly when the cells to be taken are emergency-type which go right back to the central rib of the original foundation and almost have to be taken out with a chain saw. Even the punch method entails macerating the cells behind the ones to be punched, although punch cells raised in a false roof do have the distinct advantage of being exceptionally easy to examine, remove and use.

It is true that the cell-cup/graft system requires a positive attitude and a slight amount of equipment, unlike some of the others where it is easy to imagine some amateur saying after breakfast some sunny day "I think I'll just go and take a queen out".

It is necessary to melt wax, to make cups, to attach them to a prepared frame, to have an 00 artists sable hair bush and to have prepared a hive to receive the grafts.

But this once said (and done) the system is quick, precise, painless, and non-damaging to beekeeper, bee, hives or frames.

So, if contemplating queen rearing, slip into your best hive a couple of nice white empty frames in the centre of the bottom brood chamber one week before starting, to make everything nice and easy for yourself and thereafter proceed as in the article in the September 1979 Beekeeper.



The easiest way.

I can only recommend, and there is no doubt that adequate results may be obtained with most queen-rearing systems given enough attention to detail and a little experience. But grafting will remain my preferred method.

However, with the present price of queens, it may be necessary to plan on buying a minimum number of queens in autumn when the timing is not so critical and the possibility of actually getting them greater, and then raise sufficient for the other colonies in spring at your convenience.

Ideally

Ideally (and we may as well lay down the ideal which you then adapt to your own situation) this would be based on two home hives and anything up to twenty out-apiary hives.

You certainly wouldn't want more than two hives at home even in cases where the by-laws allowed it.

Naturally if you have the two home hives only the question doesn't arise – everyone can afford the present $12 or so for a couple of queens, but not everybody feels they can double up on their queen order every time they double up on their hives.

The timetable

The timetable for the 2 + 20 hive situation would then be:

Feb 28 – Two queens arrive, put in home hives, killing off old queens.

Sept 1 – Put two white drawn combs in centre of bottom chamber, hive two.

Sept 7 – Take queen and all unsealed brood from hive one with adhering bees, leaving sealed brood and bees on original site, feeding both halves heavily. Insert frame of cell cups in centre of queenless half, which should be second box up above combs of drawn, empty frames.

Sept 8 – Remove cell cup frame with cups now nicely rounded and cells warm; take one new frame eggs/larvae from hive two, brushing bees off with clean, new 100mm paintbrush. Graft larvae from edge adjacent to eggs to ensure of right age, replace frames in respective hives. All to be done as rapidly as possible. Feed cell-cup hive again.

Sept 9 – Check acceptance of cells – if disastrous (as well may be with early attempts) quickly re-graft and feed again.

Sept 19 – Use cells.

Discussion

The dates are arbitrary, of course, and must be adapted for the individual and the weather where possible, although the only possibilities for variations on the dates are those for February 28 and September 7. Queens when received may be stored until a suitable moment for insertion, while the cell-raising method may wait for a suitable day but, once started, must proceed inexorably through the sequence.

This brings to an end this short series of articles on queen rearing and the the use of queens. There is a lot more that could and should be said on the subject but I hope the articles have given all readers sufficient detail to allow them to carry out simple queen rearing techniques and to select the technique best suited to their operation.

But may I ask you all to re-read Graham Kleinschmidt's two articles in the last Beekeeper? Excellent stuff!

Naturally the subject will come up again in the future, but for now –

THE END.

READERS QUERIES

David Williams, our resident hobbyist adviser, is willing to answer reader's queries about problems they have with their hives. "My articles are designed to be both practical and provocative," he says. "There may be many points amateurs would wish to raise and would do so if told to write in. I would be happy to provide answers to the best of my limited ability and can always call on the literature or the experts for the really tricky ones."

Mail your questions to: "A Fresh Start", 26 Otonga Road, Rotorua. They will be answered by Mr Williams personally and suitable ones submitted for publication.

NEXT ISSUE

The next series will go right back to the beginnings and tell the potential beekeeper how to take up the hobby. These articles will be based on notes prepared for the Rotorua Club and will hopefully be of interest even to those now safely established.

PROTAGONIST OF MANLY FRAMES

Dear Mr Williams,

I reply to your article in the March Beekeeper re Manley frames.

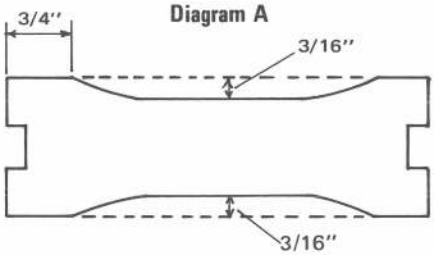
I am no expert on them or beekeeping but have been keeping bees for some 26 to 27 years. At present I run about 2000 hives.

I first became interested in the Manley frames when they were first mentioned. I had bought in a number of hives and the standard full depth supers I found in some cases were only 9 1/8" – 9 ¼" deep and as they were sound I decided to cut them down and try these new fandangle frames called "Manley".

As I manufacture all my woodware, I cut out the end bars the same shape as those in your photo in The Beekeeper but after the first crop and the propolis, I found them near impossible to part with ones bare fingers.

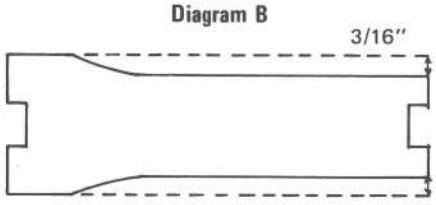
As I liked them, I tried a modification and found it very successful. What I did was to rebate each side.

Diagram A



This design works well and parts well but is difficult to cut out and there is a lot of fun when we put them back in the supers after extracting. The little lugs at the bottom seem to get crossed and tangled and now I cut out an easier type which is the same shape as the "Hoffman".

Diagram B



This is the design I now make and we have about 5000 supers of them.

When well filled, we would extract about 20 kg or more of honey. I find that the bees fill and cap them quicker as the bottom of each frame is the last capped. I also find that the ¾ super is capped a lot sooner than the full depth.

For extracting, they are very much quicker to uncap by hand as we have not yet got an automatic machine. I can uncap over 12 supers of full depth per hour but with ¾ depth, I can do over 20.

For supering up for the crop, they are much quicker as there is no time spent spacing frames. When full they are lighter than full depth but still a good weight, also perhaps you have a little more control over size on hives as ¾ size is a little less space.

We do not have queen excluders and put the ¾ depth on in most cases as 4ths but quite a few go on as 3rds.

We as yet have had very little brood in the ¾ depth supers. It may be the way I work my hives. I run them in a double full depth brood nest with 10 frames each and eight to the crop supers. With a bit of a squeeze I can fit 11 frames in the standard super and at times I find this helpful as there is no burrcomb.

Also in spring the same number of bees can cover a larger area then if the frames are spaced nine to the super – less bees between the frames.

There are a few drawbacks with the Manleys, one is if you have hives near manuka, you cannot extract, but I put them on as feed with a hive mat between, and that overcame that! Also you cannot put a frame down into a full depth if you need more feed, but I have had not trouble in that line yet.

I hope my comments will be of help.

Yours,
T.D. Rowe,
Eltham.

It was good to get your letter. A more sensible one I couldn't have hoped for and I think that all other beekeepers will be interested. You tell us why you took on the Manley, how, what the result was, what you had to change to make the system work best for you, and the advantages and disadvantages. An excellent presentation.

Yours,
David Williams.

Dear Mr Williams,

Having read about the health-promoting properties of propolis, I wonder if you can tell me how to prepare it. How can it be liquified for application to wounds, and how can it be taken internally – apart from chewing and chewing the sticky lump?

Yours,
Dawn Barry,
Stewart Island.

You ask how to prepare propolis for health purposes. As far as domestic processing in small quantities for your own needs:

For internal use, put propolis in the fridge overnight and then break it up into a fine powder by grinding it gently on a suitable piece of clean wood with some suitable object – I use a bone handle of a knife myself.

The resulting powder may then be gathered up and kept in the fridge until needed, when it may be lightly sprinkled on some bland food and eaten. Alternatively it may be mixed with a teaspoonful of honey. There seems to be no benefit from using the freezer section of the fridge rather than the chiller.

Do not try to powder with a hammer. Granules go everywhere while the bulk tends to merely clump on the hammer head.

For external use a little propolis should be put in a small bottle or jar with a little methylated spirits and shaken. Not all the propolis will dissolve but sufficient to turn the spirits brown. This solution may be applied as needed.

Boiling in water is useless. The propolis does not dissolve into the water but remains as a brown sludge, while the wax that is inevitably mixed with the resin forms a scum round the side.

I hope this helps a little. There are many more complicated ways of rendering down propolis but the above are the simplest and most practical.

Yours,
David Williams.

Spring Queens 1981

Commercial Supply: $6.60 each delivery from October.

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Telegram if required, $1.60 extra. Terms: Payment with order. Information sheet by return mail.

*****

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ROSS ROUNDS
THE PROFITABLE NEW WAY TO COMB HONEY PRODUCTION

Single-wheeled barrow speeds hive moving

by A.G. Matheson, Apicultural Advisory Officer, M.A.F. Nelson

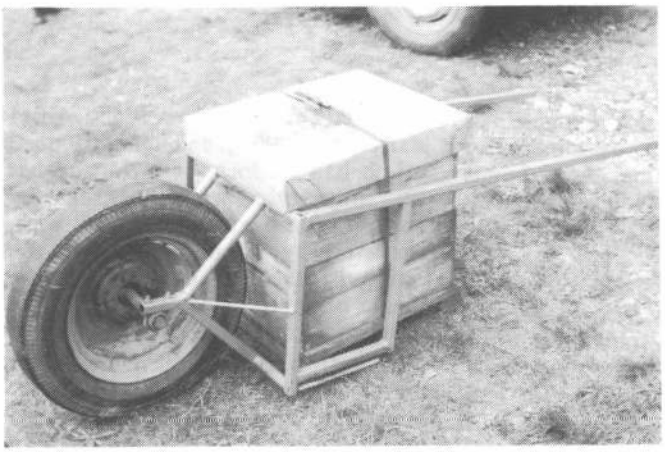


Fig 1: The hive barrow with a hive in position, ready for shifting.

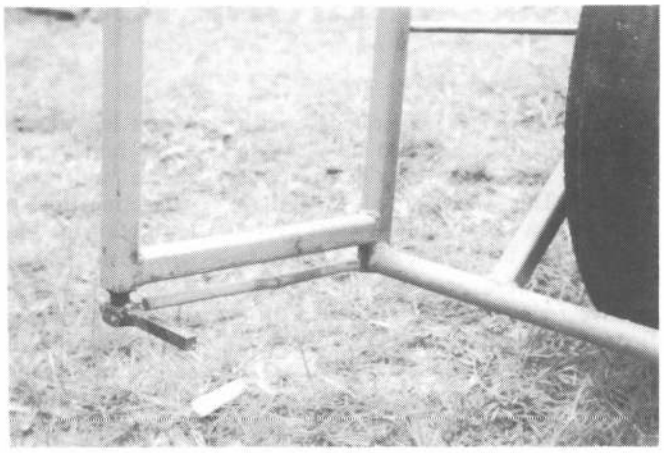


Fig 2: A close-up of the inside of the cradle, showing one lug and spring.

SHIFTING HIVES is a job that all beekeepers have to face at some time or other. Many devices have been made to make the job easier and these range from the cheap muscle power to several thousands of dollars worth of loader. One simple and ingenious device has been built by Mr Ralph Glasson of Taylorville, on the West Coast.

Having kept bees in a family company, Ralph Glasson was used to shifting hives by the "one person lifting each side" method. When he started keeping bees on his own, however, he needed a piece of equipment which would enable him to shift hives easily, and without assistance.

Ralph came up with the idea of a single-wheeled barrow, rather than the more conventional two-wheeled hive barrow. "Look at the early miners and pioneers on the Coast", says Ralph. "They shifted a lot by barrow, on rough ground, and they always used something with one wheel".

The single wheel makes the barrow very manoeuvrable, especially on rough ground. For shelter reasons, many of Ralph's apiaries are located a short distance into scrub from the loading bank. The single-wheeled barrow is ideal for these sites.

The feature which makes this barrow outstanding is the way in which the hive being carried is supported by two spring-loaded lugs, which pivot on the side of the cradle.

To laod a hive, the barrow is backed to the hive, the lugs springing past the runner of the floorboard and returning to a right angle position. The handles are lifted up, and the weight of the hive is supported by the lugs and the front of the cradle.

To release a hive from the barrow, it is placed on the ground, and the barrow is pushed out from it. The lugs pivot to pass the runner, and the spring causes them to return to their normal position.

Shifting hives is a fast operation with this barrow. It is ideally suited to apiaries with loading banks, although it can be used to push hives up from the ground. In that case, Ralph uses one plank on each side of the track. The barrow can go up one plank, drop a hive on the track virtually without stopping, and go down the other.

Ralph estimates that the barrow cost him about $20, as he only had to buy the steel. The wheel is from a Morris Minor, the lugs are from a gearbox, and the U-bolts used to support a TV aerial.

The frame is made from 25 mm hollow, square-section steel. The handles are 1 400 mm long and 535 mm apart. The lugs are 450 mm below the handles and 280 mm from the front of the cradle. The axle is 290 mm out from the front of the cradle, but of course this distance is determined by the diameter of the wheel used.

This hive barrow won the gadget trophy at the last West Coast field day (prize – the Page Cup and a dead queen bee). Simple and cheap to build, yet ingenious in design, it could be a very useful piece of equipment for many beekeepers.

Learn about bees overseas

AN OPPORTUNITY to learn many facets of beekeeping in an overseas apiary with free board and an income, would send many young beekeepers running for the suitcase.

The fact is, opportunities like this have been available through the International Agricultural Exchange Association for the last 15 years.

The association, which was formed to create opportunities for practical working experiences in the rural sector, sends selected young New Zealanders (19 to 28 years old) to overseas countries to study their speciality in agriculture or horticulture.

To apply, the applicant needs to be in the specified age range and have a firm practical background in their chosen field.

Under the scheme selected trainees spend from six months living with a host family in Canada, Australia or Europe. During their stay, they are not regarded as a cheap source of labour, the host family must fulfill their obligations to provide a useful educational experience so that the trainee works on the farm and also gains an insight of the economics and management involved in running the day to day operation.

The successful applicants are required to pay all travel expenses and air fares but while staying with their host family they receive free board and lodgings, and are paid a wage for their work.

This year there is an eight month tour to Europe (seven months working/training, one month unpaid free time); seven months to Canada (placements in the four western provinces, three weeks unpaid free time); 13 months around the world (seven months in Canada and six months in Europe, six weeks unpaid holiday.) All tours include a five-day orientation seminar.

For further information on any aspect of the IAEA please write to: International Agricultural Exchange Association, C.P.O. Box 1594, Auckland 1.

Supering with drone foundation (works)

by F.A. Galea

IN MY EARLY experiences with beekeeping there used to be a saying that "if left alone they'll draw out drone!" This was quoted at a time when it was fashionable to treat drone comb in the broodnest like the plague.

Beginners were strongly advised to remove frames with drone cells at the first opportunity – that is in spring, when stores were at their lowest.

In recent years however, I have experienced the tacky task of removing wild nests from a variety of inaccessable cavities. On these occasions one could not help but notice the abundance of drone comb on the surface of the nest area, where presumably food was stored on a long-term basis. In other words the bees had chosen this mode of construction for some very practical reasons.

In the past I practised interspersing drawn super frames with the occasional starter strip in unwired frames, from which I could easily cut chunk honey or present a frame to friends, who could cut out the contents without blunting their knives against wire strands. Invariably the bees had changed the pattern to drone as soon as building had progressed below the worker starter strip.

When I converted to jumbo sized brood frames and ¾-depth honey supers, each box, as designed, would serve its own purpose and would not at any time be interchanged.

Eight frame Manley supers with drone foundation were the order of the day, with many good attributes, as I came to appreciate. Uncapping was easier, the hot knife trimming off evenly when it rode on the top and bottom bars leaving an even surface for the nest season's start.

Dealing with eight frames per box meant less handling, less expense and more honey per box by eliminating spaces and woodwork. As a bonus extracting time was reduced, the contents flowing more freely from the larger cells.

When I extracted the occasional unwired drone frame it was not unduly damaged in a radial extractor and in any event it was strengthened by the bees the following year and became quite sturdy. By supering with comb that was never used for brood rearing, the problem of honey stain, transmitted when cutting through several layers of cocoon residue, was obviated. This ensured the true colour and flavour of the honey crop, while the cappings produced good quality wax, free of impurities.

This year's crop, having first heated the boxes overnight, was entirely extracted from newly drawn drone combs in ¾ Manley frames, by using a Penrose uncapping machine and a large semi-radial extractor. Included in the frames were some unwired combs that had been built from a starter strip. No frames disintegrated in the process of extraction.

Of 380 frames, none contained any pollen at all, as pollen is rarely stored in drone comb. The weight of a full ¾ box was 30+ kg, empty plus wet frames 7 kg, extracted honey per full box approximately 23 kg.

It would appear that by interspersing unwired starters with previously drawn comb, wiring of honey frames could gradually become redundant thus saving wiring and embedding time, also foundation. The problem of having wired undrawn foundation becoming detached and distorted when left undrawn by the end of the season would also be averted.

A half drawn and partially filled starter is a problem and is best trimmed off to half an inch from the top bar for future use, while the removed portion can be crushed and dealt with. However, by placing starters in the centre of the box one ensures that these become filled first and the problem is greatly minimised.

This year only two such frames of 380 had to be discarded in this way. Starters, of course, have to be attached in the groove with spots of molten wax. A small electric soldering iron is made for the job.

To produce drone foundation I use two plastic ¾ drone moulds sandwiching a standard ¾ worker sheet inbetween. The sandwiched sheet and the moulds are dipped in a solution of liquid soap and water then pressed by passing through rubber mangle rollers. The water need only be kept at blood temperature. Application of slight pressure on the rollers avoids stretching and distortion of the foundation and "hey presto!" worker becomes drone and the bees love it for honey storage. The price of the moulds is minimal and their life is 10 000 sheets and still going strong. Needless to say suppliers of foundation will soon oblige with drone if the demand arises.

Incidentally these simplified wax moulds were designed for cottage style beekeepers in remote corners of the globe who needed to make foundation from scratch by first producing a thin blank sheet that could later be embossed as required. Both worker and drone moulds are available.

I must add, that with the low cost of converting wax to foundation in New Zealand (at present) the process of starting from blanks is not necessary.

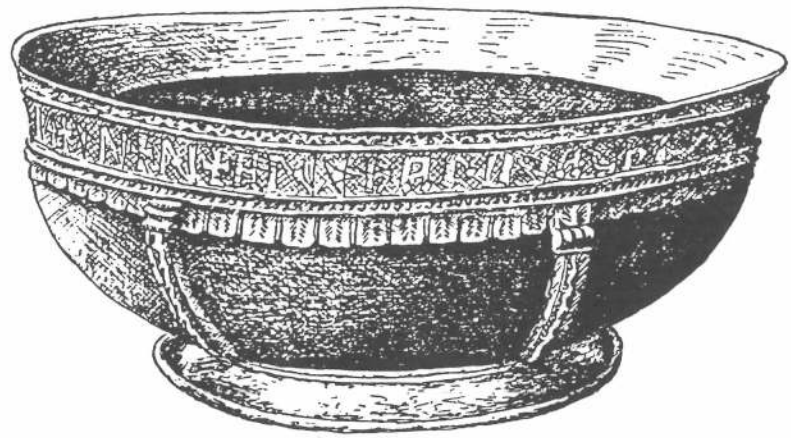
On rare occasions, where drone comb is placed above a confined brood nest and a queen excluder, you will find drone brood in the lower portion of the centre drone combs in the honey super. I have experimented with double excluders to conclude whether bees transported eggs from below. This seems highly probable as the queen would have had a double barrier.

This year using all three conditions – single standard brood box, double standard brood box and one jumbo brood box; I have not had a single incidence of transported eggs into the super. Excluders were used in all cases.

Next time I shall leave some excluders off and observe.

The place of mead, honey, pillage and plunder in Viking society

by John Koster,
American Bee Journal.



A mead cup (mazer) typical of those used during the Nordic period. (From Wassaill in Mazers of Mead by G.R. Gayre)

THE AGE of the Vikings, as everyone knows, was an era of dragon ships, swordplay, sea voyages, and bees.

The bee and honey played a major role in the culture of the Norse sea rovers, and for a reason that isn't hard to explain – climatic conditions.

A population explosion in Scandanavia, that the chill climate and thin soil couldn't support, created the Viking age with its long voyages and violent plunder raids. The same climatic harshness that created the Viking age meant that fruit and other sweet crops couldn't flourish in the Viking homeland: Honey was the only sweetener readily available to the Norsemen.

The Vikings didn't leave behind many cookbooks. But, some of their writings show the role that apiculture played in Viking culture.

The favourite Viking beverage was mead, a concoction of fermented honey and water. Though it was known elsewhere, mead was central to the Viking world because the Norse homeland didn't produce grapes for wine. Mead was powerful stuff: Its colour ranged from orange to red-brown, depending on the original honey, and it was a staple of the elaborate funerals that the Vikings were famous for.

The association of the highly intoxicating mead with funeral feasts was so strong that the expression "His mead is brewed" was an expression of belief that the man spoken of was doomed.

Mead lead to funerals as well as marking them: At least four Viking kings died during or after drinking bouts. And, the association between mead-intoxicated binges and the spiritual experiences were so strong that, well into the Christian era after the Viking age, a scandalised bishop wrote to the Swedes and warned them to stop declaring their kings to be saints because they had died from excessive drinking.

The mead of legend, the Skaldic mead, was said to make any man who tasted it a skald, or Viking poet. Norse legends said that Odin, the king of the Norse gods, risked his life to steal the Skaldic mead from the hostile Ice Giants and bring it to mankind.

The honey that mead came from also turned up in Viking poetry as a frequent metaphor for sweetness – about the only sweetness that the sagas speak of.

It is no coincidence that much of the action in "Beowulf", the great Anglo-Norse saga of men and monsters, takes place in a mead-hall, and that the heroes spend a lot of their time drinking mead, or that Beowulf himself, the hero of the saga, has a name which literally means "Bee-wolf," another way of saying "Bear". (The bear was to bees as the wolf was to other animals, the Norse seem to have reasoned, because bears were famous for their love of honey.)

Nor, is it accidental that the heroes on their dangerous mission are entertained by a minstrel singing of an even older Norse legend, the story of Sigmund the son of Volsung.

The story that Beowulf and his friends hear, one familiar to all Norsemen, is thought to be the oldest in all Germanic poetry dating from the collapse of Rome. Not surprisingly, it is an extended family saga of revenge and murder. And, bees play a role in even this ancient tale.

The introduction of Christianity to the northlands around the year 1000 A.D. spelled the beginning of the end of the Viking age, though not of honey, which remained Europe's only sweetener until sugar was introduced from the Islamic world during the Crusades.

It is perhaps ironic that, given the role that honey had in producing mead, the liquid fuel of so much Norse mayhem and pagan poetry, the bee provided Christian Norsemen with a major export item to the rest of Europe: From Spain to Sicily, the candles that burned before the altars of churches generally contained beeswax that came from the homeland of the recently pagan Vikings.

A rotten trick

THERE'S BEEN considerable interest on the West Coast recently about the rapid appearance of a rot in bee gear. It has been around for many years in small quantities, but has really become a nuisance in the past couple of years or so.

It appears that this increase in incidence is due to the couple of wet seasons the coast has had. Newspaper placed under the lid for sugar feeding acts as a wick, drawing moisture into the hive, and surplus paper should be torn off at the edge of the boxes.

Using infected gear in conjunction with "clean" gear will result in a rapid transferral of the rot into the uninfected gear and hot-dipping in paraffin wax will not arrest the decay.

Treatment of boxes in steam pressure chambers may be effective but chemical preservatives to inhibit the fungus will probably also "inhibit" the bees.

One means of combating this problem is using a naturally durable timber – kauri is not attacked by the rot, and the Forest Research Institute suggest heart red beech.

Initial treatment with metalex is a very effective timber preservative.

There are quite a few recent advances in timber preservation which may be good news to beekeepers, but we're still at the wait-and-see stage. One product is called "tricunol" which is like metalex but quite a bit cheaper.

Pat Clinch of Wallaceville Research Centre is doing some mortality tests with caged bees, and is finding considerable mortality. It does seem, however, that it depends very much on what diluent is used and for how long the timber is aired. Murray Reid has some nuc boxes treated with tricunol, and there appears to be no effect on the bees so far.

–from Andrew Matheson,
Nelson Beekeepers' Bulletin.

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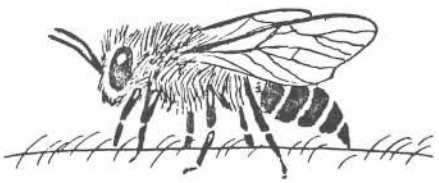
Richard Beeby
Lumsden.



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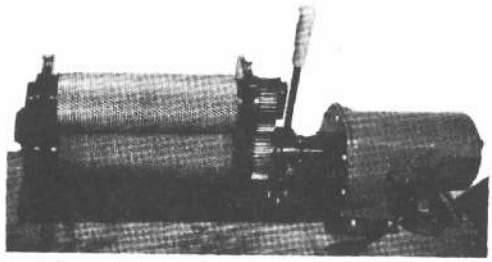

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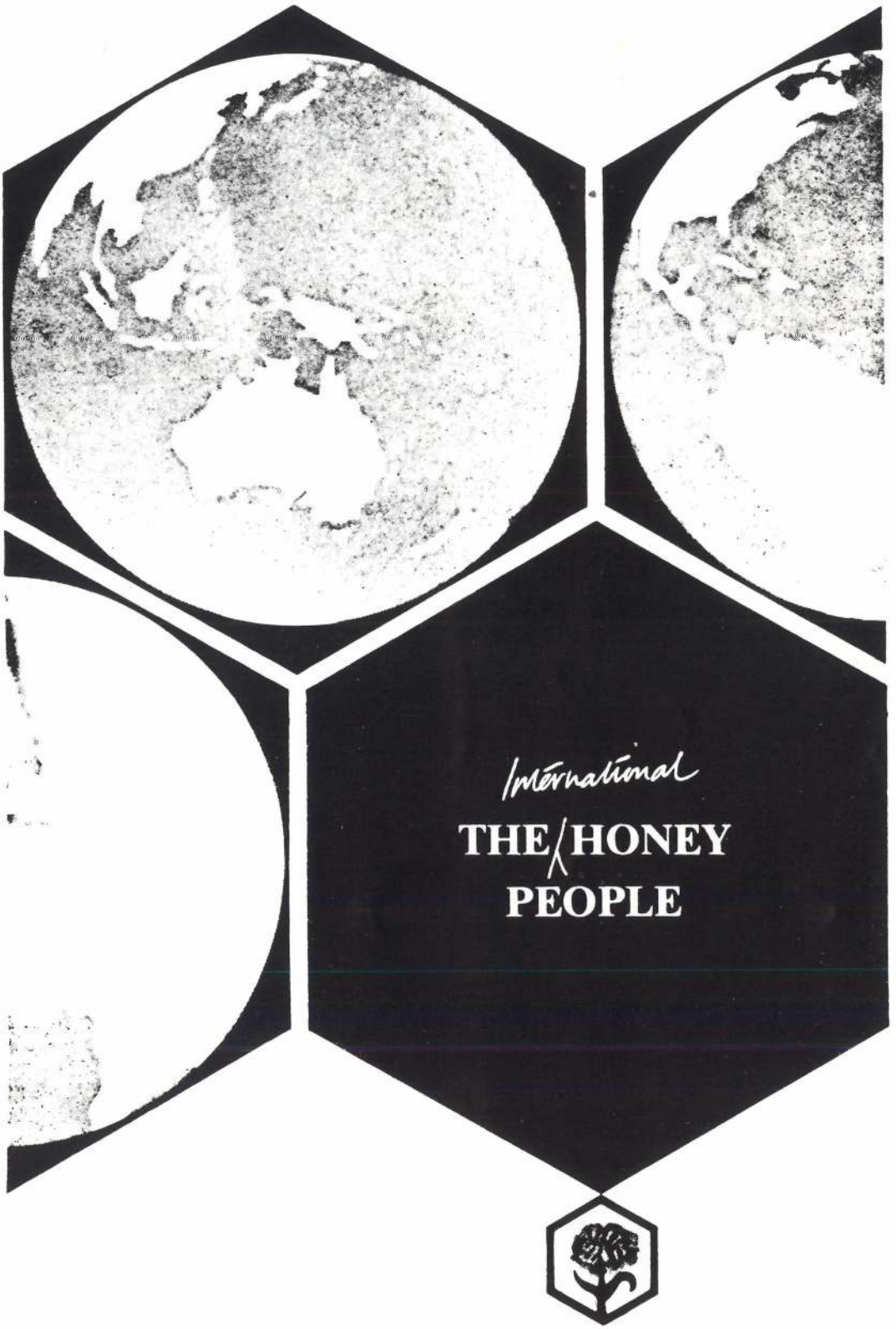

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