THE NEW ZEALAND beekeeper

MARCH 1982

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Signature.....

4153

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Harvesting the fruits of freedom

by Trevor Walton

THE PRICE of government involvement in industry is often high and, if you have witnessed the Wool Board's frustrated attempts to stabilise the crossbred wool price, the price seems to be climbing ever higher.

It's a good time to be rid of our bureaucratic chains and to taste some of the wild fruits of freedom.

There are many in the industry, however, who while happy to see government controls go, would have liked to see some minimum pricing structure underpinning the market. But beekeepers have voted for freedom and for as long as the private enterprise wind blows through the Beehive, there is no going back.

It is important for the future well-being of the beekeeping industry that this is well understood: That for the time being there is no going back and, even if there was, the price of government involvement is far too high.

(Remember the local market pricing formulae government used to impose on the HMA? Ones that made no allowance for profit or capital servicing. Or Bruce Barclay's doomed price smoothing scheme which, because it wasn't inflation-proof, meant you would have been better off with your funds invested in your beekeeping operation?)

Being free, of course, means the industry is now responsible for its own destiny in almost all areas. With no-one to lean on, we must all give greater support to those who represent us and, wherever possible, put aside petty issues for the common good.

The elimination of the HMA will, by itself, remove one of the main areas of political conflict from our industry and leave unchallenged the role of industry spokesman to the National Beekeepers' Association. For the executive of the association there will be the added responsibility of ensuring that individual beekeepers are kept abreast of those association activities which are of vital concern to them.

Nothing is more certain to cause suspicion or illwill in an industry than a poor flow of information. That done, there is also a place for a flow of information about commercial beekeeping to all New Zealanders . . . in other words, the creation of a public reservoir of goodwill and understanding about the needs of our industry and its contribution to the economy.

The responsibility for conveying a positive image of our industry will not depend solely on those who lead the industry.

In this issue of the NZ Beekeeper, there is an item in which MAF advisory chief, Grahame Walton, refers to the industry's habit of asking for extra advisers at a time when all government departments are being squeezed by a sinking lid policy. For an industry which already has more advisers per commercial operator than any other section of primary industry, these requests which come up at each successive conference make us look little less than foolish.

It's a case of rank and file beekeepers gearing their expectations to the political and economic realities of the time.

With the winding-up of the HMA we can also look at the roles being played by HMA assets arbitrator David Kay and MAF board member Mike Gould. While both have important parts to play, their roles tend to overwhelm the stage – a little like NZ television plays and movies before the producers got the confidence to use Kiwis in the leading roles.

It is probable that we will only get to enjoy the fruit of our freedom if we develop the maturity and confidence to have beekeepers in control of the destiny of our industry. Well meaning experts are invaluable, but only beekeepers really know the true needs of their industry.

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(per insertion)

Full page $225 (4 insertions $205), Half page $130 (4 insertions $105), Quarter page $70 (4 insertions $65), 1/8 page $40. Special locations $30 extra. Spot colour $75 extra.

Production charges
Advertisements should be provided in a camera-ready form or as photolitho negatives. Where copy has to be typeset, or where film work or bromides are required, these will be charged to the advertiser on a time and cost basis. Minimum charge $10.

Beekeeper rates
Registered beekeepers selling queen bees, used hives, used plant and other used apiary equipment are eligible for an advertising discount of 20 per cent of the appropriate commercial rate. The same concession applies to situations vacant and situations wanted advertisements. Where the appropriate rate is in doubt, the editor's decision will be final.

Production charges only apply to single insertion beekeeper advertisements or where special artwork, filmwork or bromides are required.

Classifieds
Available only to registered beekeepers and those seeking work in the industry. $5 a column cm. No discounts apply. No production charge. Maximum size: 1/6 page.

SUBSCRIPTIONS

Commercial beekeepers: The NZ Beekeeper is distributed free-of-charge to beekeepers with 50 or more hives, subject to payment of hive levy.

Others: Beekeepers with fewer than 50 hives and other subscribers: $12.50 a year. This includes (for New Zealand subscribers only) membership of National Beekeepers Association of New Zealand (Inc).

KING BEE

(WHERE THE NBA HAS ITS STING)

Travellers be warned

While there is virtually a complete import ban on bees, bee products and bee appliances, the Customs Guide to Travellers to New Zealand is completely silent on the matter.

However, thanks to an NBA initiative, the controller of customs has assured the industry that an appropriate warning will be included when the guide is next printed.

No tax incentives for queens

The Department of Trade and Industry has turned down an NBA request that queen bees be included as a qualifying item in its Export Performance Taxation Incentive Scheme.

Live animals, insects, other creatures and unprocessed primary products have generally been excluded from this scheme and its predecessors. The aim of the scheme being to increase exports of manufactured and processed goods. In reiteration of a letter from the minister of trade and industry last year, the department said an exception to the rules was not possible.

NBA voice being heard

The NBA executive has written to MAF asking that vice-president Mike Stuckey be appointed to the Apiary Advisory Committee. The current association representative is immediate past-president Paul Marshall.

Executive member Ian Berry has been appointed to the Pesticides Board under the new Pesticides Act. The board replaces the old Agricultural Chemicals Board.

TCI beekeeping course coming

A comprehensive TCI correspondence course for beekeepers is probably two years away – assuming that the Department of Education approves. TCI courses cater for the educational needs of most other branches of agriculture.

An approach from the NBA to the Technical Correspondence Institute emphasising the export potential of the beekeeping industry and the importance of its pollination services to agriculture, has drawn a positive response.

Mr Hardy of the institute has already collaborated with NBA president Tony Clissold, executive member Ian Berry and MAF senior advisory officer Grahame Walton in the preparation of a list of topics which could be included in a two-year TCI correspondence course.

After the topic headings have been further refined by executive committee members, a formal approach will be made to the Education Department asking that the development of the course proceed. If this approach is successful Mr Hardy estimates it will take about 18 months to complete course arrangements.

No MAF Seminar at Waitangi

IT SEEMS to have become a tradition. But according to MAF senior apicultural advisory officer, Grahame Walton it is not.

That's the MAF extension seminar associated with recent National Beekeepers' Association conferences.

This year there will be no seminar at the Waitangi NBA conference because, in Grahame's words, "It's not the time and place for it".

He says that before the first such seminar, held in Hastings in 1978, "We came to a clear understanding with the executive – and we made our views loud and clear – that MAF would not get locked into a regular commitment to provide a seminar at each NBA conference.

"After discussing the matter with the local MAF advisors, it is apparent that the main extension need in Northland is for pollination. Waitangi in July is not the time or place for it."

Nevertheless, the MAF team is keen to help. Grahame says he has advised the NBA executive that if any educational or extension theme is going to come through at the conference, "let us know a couple of days beforehand and we'll organise something".

Palmerston North Advisor

It's too early to start worrying whether Palmerston North might lose its apiary advisor in three years time. That's the message from MAF senior adviser Grahame Walton who says the present adviser J.E. Rodie won't be retiring for at least another three years. And while it's too early to give an assurance that he will be replaced at the same location, Mr Walton has assured the NBA executive there are no proposals afoot to delete the position.

Industry advisory needs

Grahame Walton has put the acid on the industry to let MAF know what its future research and advisory needs might be.

Mr Walton says the NBA has made many requests for additional advisory staff in recent years – a period when government staff ceilings are being lowered. Appointment of additional staff he says would have to be at the expense of other agricultural sectors and would be most unlikely.

The gist of his message to the industry being, that the best possible use had to be made of existing staff and that it's up to the industry to let MAF know what it really wants.

Nuie and Tongan Honey

Bee health is the only justification for refusing access of overseas bee products to the NZ market, according to MAF. This is in line with the government's open door policy for agricultural imports (the only exceptions being tobacco, poultry, wine, wheat, pork, ham etc: All of which benefit from various tarriff and non-tarriff barriers).

European Brood Disease, is one of the major exotic diseases which could be introduced to New Zealand through honey. Because of this MAF will not allow the entry of unheated honey from any country where the disease exists.

Since Nuie and Tonga are among those few countries where the disease does not exist, MAF will allow honey imports from these countries, subject to permit conditions being met.

Advisory exchanges cost money

While MAF's Trevor Bryant was fortunate enough to get an overseas study exchange last year, other advisers may not be so lucky. Despite an NMA conference request for advisers to have more formal contact with their counterparts overseas, neither the NBA nor MAF is able to front up with the money needed for more frequent exchanges.

One of the areas of greatest need for exchange experience is in the research area. New Zealand's only apicultural scientist, Pat Clinch, would obviously benefit from closer contact with overseas colleagues, but because he is the only expert he can't be released for other than short term exchanges.

If the money was available for Mr Clinch to go overseas, MAF had recommended that he be attached to a northern hemisphere research centre for no more than three months during the NZ winter. An overseas scientist could then assist him during his peak work period in the NZ summer.

While MAF agrees with the NBA conference suggestion that there be more overseas exchanges, especially for Mr Clinch, they don't have the money. For its part, neither does the N.B.A.

Disease procedures approved

The NBA executive has approved the MAF disease control procedures outlined in the December 1981 issue of the NZ Beekeeper. However, it still remains concerned that European Brood Disease is not listed in the First Schedule of the Apiaries Act.

Its second schedule status means that if MAF's "burn" policy is implemented, beekeepers with infected apiaries will receive no compensation from the government, even though eradication of the disease would be clearly in the national interest.

No hive levy increase

The minister of agriculture, Duncan MacIntyre, has approved of the fixing of the hive levy at 17.5 cents a hive. While this is the same rate as last year, the full amount of the hive levy will for the first time be directed to the NBA. In past years it has been shared with the Honey Marketing Authority.

NZ Beekeeper contract renewed

Agricultural Press, contract publishers of the NZ Beekeeper for the last six years, have had their contract renewed for a further year.

The contract for editing and publishing the magazine involves only limited article preparation. The NBA executive reminds beekeepers with news and views for publication to make better use of the NZ Beekeeper which exists for the benefit of all in the industry.

While the editor has final discretion over what is published, this discretion is exercised with care and articles from beekeepers are only rarely rejected. Modest payment is made for contributions.

Because of the importance of the magazine to the industry and the fact that it is the NBA's single largest item of expenditure, an Editor's Report will form a permanent part of future conference agenda.

Brood disease insurance gets good response

SOUTH BRITISH Insurance agency development manager P.J. McCabe is pleased with the response of beekeepers to his company's special European Brood Disease cover. The cover is an extension to the South British "Farmsurance" package.

However, some beekeepers have been disgruntled to learn that they are expected to turn over all their business insurance to South British if they want the EBD cover.

Mr McCabe told the NZ Beekeeper that the response to the package had been "very, very good in South Canterbury and the Hawkes Bay/Hastings areas". But the failure of some of the company branches to correctly code their returns to head office had made it difficult to measure the response in those areas. "I've got a gut feeling, but I feel we've got a good response in those areas too," he said.

To those beekeepers who only want the EBD extension from South British, Mr McCabe says he's sorry – but that it was a basic condition of the deal he made with the National Beekeepers Association when the policy was created that beekeepers would only get the EBD extension if they insured their trade assets with his company.

"I told the executive at the time that the EBD extension was not just a one-off. It was part of a package in which the beekeeper benefits from getting EBD cover, the NBA benefits through commissions and South British benefits through attracting a greater number of beekeeper policy holders."

Mr McCabe expects that the success of the EBD insurance extension will grow as more beekeepers come to renew their policies. He says most people don't like to change insurance companies mid-term and it will also take sometime before the company's reps canvass all beekeepers to advise them of the value of the Beesurance package.

HMA demise two steps closer

Option taken on Auckland premises

Draft trust deeds being drawn up

A firm of Auckland property investors have a purchase option on the premises of the Honey Marketing Authority (HMA) as part of a leaseback deal with a manufacturing concern. The "NZ Beekeeper" understands the consideration involved is close to the $500 000 asking price.

The purchase option is subject to a number of conditions. However, it can reasonably be expected that the deal will be settled within two months.

The sale of the property at a near-valuation figure is good news for the industry as each month's delay in selling the property meant a cash loss from rates, foregone interest, maintenance charges etc. of some $9 000 a month.

It is now probable, as a result of the sale, that the trust funds being established for industry from the assets of the HMA will have a capital backing of $750 000. Even with $600 000 of these already committed to the new Honey Marketing Co-operative at concessional rates of interest, there will be a considerable sum available each year for industry purposes.

How this money is used and the formation of suitable trusts for its administration now require the agreement of the industry as Mr David Kay proceeds with the final HMA housekeeping matters which, when completed, will allow the minister of agriculture to wind up the authority.

NZ Beekeeper editor, Trevor Walton, brings you up with the play. . .

THE PROBABLE sale of the HMA's Auckland property has put added pressure on the industry to reach prompt agreement on the nature of the bodies being set up to administer the funds released when the HMA is wound up.

Already there has been some concern by members of the National Beekeepers Association Executive about the need for proposed trust deeds to be finalised before the handover of HMA funds to an NBA-administered trust account.

The HMA board has insisted that trust deeds be finalised before the handover – a stand supported by government representative Mike Gould who says the minister of agriculture would insist that the trust deeds were finalised and had the support of both industry bodies before the handover and the wind-up of the HMA.

The NBA executive, on the other hand, was concerned that arrangements for a future administration structure were being drawn up without consultation with beekeepers and at possible great cost. In the words of Tony Clissold, "With the majority of the funds committed to the co-op, we could end up with a complicated and expensive trust structure with no funds to administer."

However, events have probably overtaken these concerns with the sale after several months of the HMA's Auckland property. Some in the industry had become resigned to sale at below valuation . . . an event which could have resulted in the establishment of a trust with no funds worth talking about. In the event, it now appears that there will be an initial capital available to the trust of $150 000. The income from this, together with the interest from the advance to the co-op will likely give the fund an annual income (before tax and reinvestment) of some $40 000.

How this money is to be spent has yet to be decided. Its administration, however, is likely to be by a trust.

At the time of writing the Auckland-based solicitors of the HMA were preparing draft trust deeds for the establishment of twin trusts to administer the funds resulting from the winding up of the HMA. One trust will be designed as a non-tax Charitable Trust for the purpose of funding education, research and similar activities on behalf of the industry. Its twin will be a general trust (subject to tax) charged with the task of maximising the income available to the Charitable Trust while minimising the impact of inflation on its funds.

Such a concept has the full support of the HMA board which had previously requested HMA assets arbitrator David Kay to come up with a number of alternative administrative structures for its funds:

- The establishment of a statutory fund (for market intervention or other purposes) was rejected on the basis that the industry had opted for free enterprise and was in the process of dissolving an existing statutory body. The board was also advised that the Treasury and Inland Revenue Department would both oppose this option.
- The establishment of an incorporated society to administer a fund would not avoid tax (flat rate 45 per cent and would be subject to possible abuse through the requirement of a minimum membership of 25.
- The only alternative left open to the HMA was a trust fund, with tax rates similar to those for individuals (marginal up to 60 per cent). Given this situation, the concept of twin trusts – one charitable and one general – was proposed and accepted.

The draft trust deeds are expected to be completed in early March. They will then provide a basis for discussion and hopeful agreement within the industry. Once this agreement has been reached, they will be submitted to the minister of agriculture for his approval.

"The minister has the power to release the HMA funds to a trust and to wind up the HMA by regulation. But because all the onus is on him he would be extremely unlike-

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from previous page

ly to do so, without the full support of the industry," observes Mr Kay.

This support is likely to be forthcoming once all parties have had a chance to discuss the drafts. NBA executive concern to date has arisen through a lack of information about progress with the trust deeds which it will eventually have to administer.

"This concern is understandable," says Mr Gould, "but it will soon dissipate once everyone has had a chance to discuss and possibly amend the draft deeds. It would have been pointless to try and finalise everything without the draft deeds – without them discussions would go around in circles. They will provide a framework for progress."

Mr Gould says he expects that NBA executive members will be circulated with copies of the draft deeds almost as soon as they are prepared. "We plan to show them to the HMA executive first, because if they don't approve of them in principle, there's no point in going any further. After that, they'll go out to NBA executive members as early as possible.

"We then hope that we can organise a joint meeting to thrash out a compromise draft which has the support of all on the HMA board and NBA executive."

Spending the loot

Even with the support of the NBA executive and HMA board to the draft trust deeds, there remains the problem of how to spend the income from the trust.

The deeds will inevitably deal with the trust objectives in broad terms, allowing some flexibility in administration over time. However, in all discussions so far there has been remarkably little in terms of specific proposals.

In all probability, the NBA executive will probably have to act as a publicity and ideas collection agency for the trusts, encouraging those in the industry to put up proposals worthy of industry support. Certainly the trustees can't be expected to run around the country looking for ways to spend the available funds.

As chief adviser to the trusts, the NBA executive will perform an important role – one which is underlined by the demise of the HMA. For in all fields relating to beekeeping, the NBA will from now on have far greater responsibility for co-ordination and leadership than it has ever had before.

However, the presence of the trust funds and the industry's future independence from government involvement and interference must give great hope to those who pin their hopes to the private enterprise star.

NBA 1982 CONFERENCE AND SEMINAR

At Waitangi, Bay Of Islands

July 27, 28, 29

Venue: Waitangi T.H.C.
Phone: Paihia 27 411

PROGRAMME

Monday	26	We suggest the Social "Get-together" be held this evening leaving the Tuesday and Wednesday evenings free for industry group meetings.
Tuesday	27	Seminar (organised by Northland Branch)
Wednesday	28	Conference
Thursday	29	Conference and Social evening. Proposed Bay cruise – Dine and dance on board "Tiger Lily" (depending on numbers attending).

ACCOMMODATION

Waitangi T.H.C.	Single $55/Twin $61
Waitangi T.H.C. Motels	12 – 2 B/R units; 4 – 1B/R units: $40 + $6 extra adults.
Motu Maire	5 – 2 B/R units; 2 – 1 B/R units: $28.
Awon	5 – 2 B/R units: $26-$30; 3 Bed/Bk room $10-$12.
Blue Pacific	5 – 1 B/R units (4 persons): $30 (all 2 B/R units can accommodate 6 persons).

Tariffs are applicable only if **all units are full.** Save money and share a unit with friends. All motels listed have been block booked and are within 10 minutes walking of T.H.C. All very quiet. Motels in Paihia will be reserved if necessary. **July 1st is the latest date to book for discount accommodation.**

To get the maximum discount offered, the Branch suggests reservations be made through:

Mrs T. Gavin,
R.D.2,
Whangarei.
Phone Mangakahia 891.

Please reserve accommodation from July ..... to July ..... for ..... persons

at Waitangi T.H.C. or ..... Motel.

I/We will be arriving by ..... (method of transport).

LADIES: As there is plenty to see and do in the Bay, would you be interested in more organised outings . . . YES/NO.

Name: .....

Address: .....

Phone No: .....

Final details in June Beekeeper.

What are the typical transport and fuel requirements for beekeeping in New Zealand? What variations exist between beekeepers? How are beekeepers coping with higher fuel prices? Answers to some of these questions have been revealed in a recent survey of beekeepers, carried out by the Joint Centre for Environmental Sciences, at Lincoln College. The survey, which included 39 beekeepers running a total of 55,750 hives (representing 37 per cent of beekeepers with 500 hives or more) was carried out as part of a research contract funded by the New Zealand Energy Research and Development Committee, and aimed at identifying the liquid fuel inputs to various farming systems in New Zealand.

The following article by Ian McChesney, assistant research officer, Joint Centre for Environmental Sciences, Lincoln College, is a summary of that survey.

Copies of the full report are available on request to the director, Joint Centre for Environmental Sciences. Cost $4. A detailed report describing fuel demand by the whole agricultural sector is due for release in a month or so.

Beekeepers are big fuel users

But surprisingly few keep track of expenditure on this liquid gold.

TRANSPORT IS a major input cost to beekeeping. Transportation by trucks was found to average 24 km per hive (per year) for 501-100 hive establishments, and 17 km per hive for 1001-3000 hive enterprises. Therefore, for a typical 750 hive enterprise, total annual truck running amounted to about 18 000 km. For a typical 2000 hive establishment, truck running averaged some 34 000 km per year.

As Figure 1 indicates, almost 70 per cent of establishments surveyed were requiring 10-29 km travelling per hive. However, there was almost a tenfold range between a few enterprises, ranging from 6 km/hive to over 50 km/hive.

Motorcar travel was also included in the survey, since 50 per cent of motorcar costs can be claimed against the business as tax deductible expenditure. From a limited number of responses, car travelling average 7 km/hive for 501-1000 hive enterprises and 4 km/hive for 1001-3000 hive enterprises.

Clearly, trucks are the predominant transport vehicle in a beekeeper's operation. 50 per cent of trucks found on the survey were in the light truck or "utility" class, and were less than 3.2 tonnes gross vehicle weight (G.V.W.) Most of these used petrol. Almost 40 per cent of trucks over 3.2 tonnes G.V.W. were diesel powered.

Fuel requirements

As might be expected, fuel requirements for trucking showed similar variations to those for transport requirements. Truck fuel requirements fell between two and 3.9 litres per hive for over 50 per cent of enterprises, but ranged from less than two to over 8 litres per hive (Figure 2). The widest range was found on the smaller enterprises.

In total, trucks consumed about 80 per cent of the fuel used within both enterprises size groups (Table 1). Petrol requirements were considerably lower within the 1001-3000 hive group, but diesel requirements were higher, reflecting the higher ownership rate of diesel trucks in these enterprises.

A small demand existed for diesel as a heating fuel, but the use of the Bosca wood burning boiler had clearly reduced diesel demand over the last two years.

Apiary location and hive shifting

The location of apiaries in relation to home base during winter 1980 is shown in Figure 3. The apiaries of larger enterprises were located further from base than those of smaller enterprises. For example, 65 per cent of the apiaries of 501-1000 hive enterprises were within 25 km travelling from base, whereas nearly 65 per cent of the apiaries of 1001-3000 hive enterprises were located further than 25 km from base. Visits to apiaries averaged eight per year, but ranged from four up to 30 (honeydew production).

78 per cent of beekeepers shifted at least some of their hives during the 1980/81 season. Again, wide variations were apparent between beekeepers in both the numbers of hives

please turn overleaf

Table 1

Beekeepers' average fuel requirements

Fuel type	Fuel end-use	Fuel requirements (litres per hive) 501–1000 hive enterprise	1001–3000 hive enterprise
Petrol:	Trucks	4.3	2.3
	Motorcars	0.7	0.5
	Other	–	0.1
	Sub-total	**5.0**	**2.9**
Diesel:	Trucks	0.2	0.9
	Heating	0.1	0.3
	Sub-total	**0.3**	**1.2**

shifted, and the distances over which shifts were made.

Costs

Estimates of vehicle running costs were derived from standard truck and car costs given by the Ministry of Transport, as at 31 March 1981. These included fuel, repairs and maintenance, oil, tyres and tubes, plus an allowance for depreciation, but excluded standing changes such as licences, insurances and the remaining depreciation. Average vehicle running costs were estimated at $0.29 km for trucks and $0.20/km for cars, or on a per hive basis, $8.07 and $5.63 per hive for the 501-1000 hive and 1001-3000 hive groups respectively. Fuel made up about one-third of these costs.

Since March, 1981, fuel costs have increased by only some 11 per cent. Therefore the current (March, 1982 cost of fuel imputs given in Table 1 would be $2.93/hive and $2.20/hive respectively for the two enterprise size groupings.

Perhaps one of the most important things shown in this survey is the tremendous range of fuel and transport requirements between beekeepers. For this reason average results should only be viewed as a "benchmark". Comparison on a per hive basis does not allow for differences in the beekeepers' operation and management – the extent of pollinating services, relative location of the honey house, bulk honey versus comb honey producers, single versus two queen bee systems, etc. These differences will lead to marked differences in transport and fuel requirements.

Elimination of wastage such as unnecessary trips or inefficient travelling is fundamental to reducing liquid fuel use. Few beekeepers appeared to keep vehicle logs or records, and it has often been stated that good records are a pre-requisite for efficient energy planning. This is an aspect requiring further attention.

It is important that such differences are appreciated by policy makers and those involved in formulating fuel contingency plans, and are not misconstrued as measures of efficiency or inefficiency.

Certainly, scope exists for reducing fuel demand in some instances. Some beekeepers commented that distant apiaries should be located closer to base and that hives need not be shifted if the returns from the shift seemed doubtful. The use of a smaller vehicle in some situations may also save fuel.

,wever, supply security is vital to beekeepers. In common with many other types of farming which is undertaken on a highly seasonal basis, the unavailability of fuel during critical periods could mean financial disaster for the whole year.

Some further work is required to determine the most appropriate fuel type(s) for beekeepers in the future. The survey showed that many beekeepers had changed (or were intending to change) to diesel trucks in order to lower running costs. It is certainly true that diesel gives a 30-40 per cent improvement in fuel efficiency over petrol. However, the price differential between diesel and petrol is narrowing and it seems likely it will narrow further in the future. Remembering back to the diesel restrictions in 1979 there must also be a big questionmark over long-term diesel supply security.

CNG is a possibility, at this stage for North Island producers only. Again some further investigation is required, especially to determine whether vehicle range presents a problem. Otherwise, in situations where the honey house is located close to a CNG supply, and only short travelling distances are required to service apiaries, CNG could prove to be an ideal fuel.

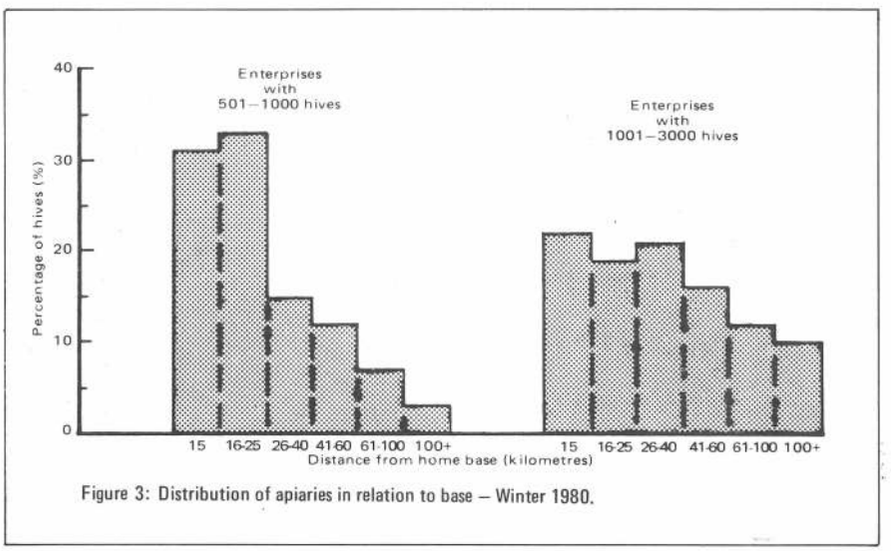


Figure 3: Distribution of apiaries in relation to base – Winter 1980.

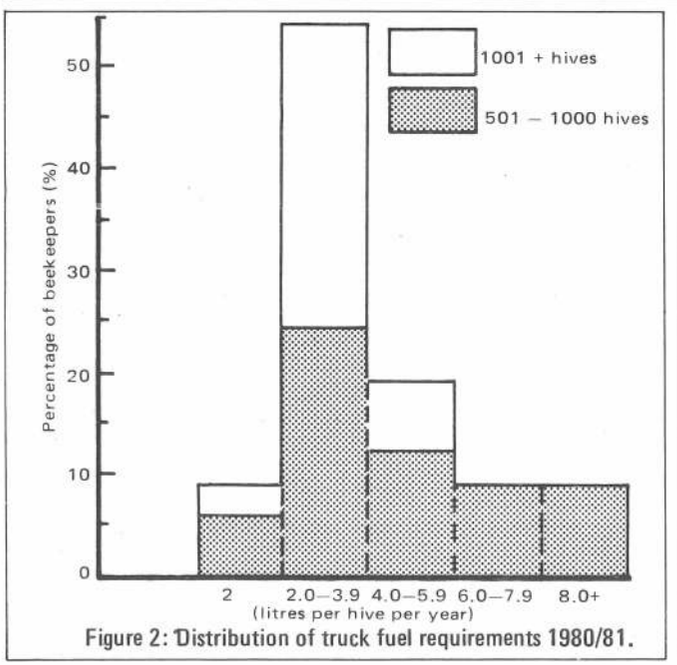


Figure 2: Distribution of truck fuel requirements 1980/81.

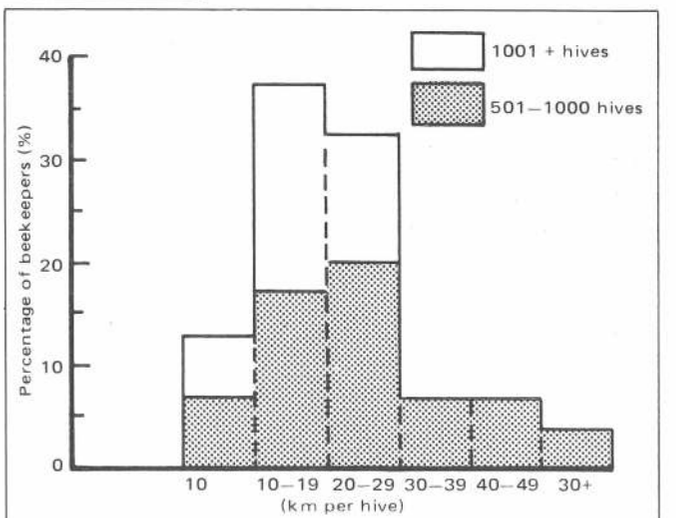


Figure 1: Distribution of truck transports requirements 1980/81 (Of the population of beekeepers operating 501 + hives, 59.7% had 501–1000 hives and 40.3% had 1001 + hives.)

BURRCOMB
from the editor

A bad start to the year

In early February, fire swept through the several hundred acre area of Haines Bee Breeders at Kaingaroa. The loss of nucs was considerable although it is surprising how many were saved. Malcolm feels there may be a difficult period in the spring as regards nectar sources (the red ti-tree and gorse exude all year round in this area) but it is business as usual and queens are available. The Far North Branch does (as every beekeeper will) sympathise with anyone who has to undergo such an experience.

Wendy Macpherson

ABD control with ETO

The Washington State Legislature has joined a number of other American states in the incorporation of ethylene oxide fumigation for bee disease control into its bee disease laws.

While agricultural authorities in most states prefer fumigation to be conducted in state-operated fumigation chambers, the lack of government funds has encouraged Washington authorities to permit fumigation in privately-owned chambers under supervision of the state department of agriculture. The new law means that ABD-infected bee hives may now be fumigated or burned at the option of the owner.

The worker's load

David Williams has been doing some quick arithmetic with his ruler to determine cause and effect of rain drops on bees.

Using an average worker bee – 13 mm x 6 mm x 4 mm (without legs), and a three millimetre diameter raindrop, David came to the conclusion that no wonder bees stay at home on wet days: With the statistics given, any bee would find it heavy going flying while being deluged by raindrops roughly one-seventh its own weight!

New Ibra Publications List

The International Bee Research Association has just issued a new 16-page catalogue for 1981/82.

The catalogue, known as List 1, illustrates the wide range of recent developments in beekeeping and bee research. There are publications on beekeeping techniques, bee breeding, bee behaviour and anatomy, bee forage and pollination, hive products, and bee diseases. IBRA Bibliographies now provide a comprehensive coverage of tropical apiculture. The reference section of the catalogue is unique, including not only beekeeping dictionaries for many languages, but also computer-generated indexes to IBRA's journal "Apicultural Abstracts" in hard copy and on microfiches.

List 1, which describes over 90 books, reprints and bibliographies, can be obtained free of charge from the International Bee Research Association, Hill House, Gerrards Cross, Bucks SL9 ONR, England, or from the Hon. Librarian, NBA, P.O. Box 112, Milton, Otago.

"The Queen's waiting Buzzby! She wants the projected pollen count pronto, or else it's bad news for programmers!"

Propolis collector

A recent item in the American Bee Journal describes a propolis collection system devised by an American beekeeper.

Roland Bell has developed a system whereby a window is cut in one or more sides of the hive and a piece of wood with slots cut length-wise is then made to fit the window.

When the slotted wood is in place in the hive body, a transparent plastic shield covers and protects it from the elements. The bees fill the slots with propolis.

When full, the block of propolis filled wood can then be removed and another inserted. The full one can then be put into the freezer until the propolis is hard and brittle and easily removed.

This is a fairly simple method of getting the bees to place the propolis where it could be readily harvested and the propolis is relatively free of undesirable debris, as compared with that stuck on the bottom boards or at the hive entrances.

If collecting propolis interests you, further information about this collection technique can be obtained from Roland Bell, 6901 Robinhood Lane, Fortworth, Texas 76112, United States.

Oops . . .

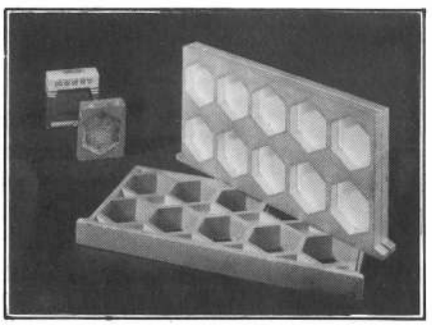
If you read Andrew Matheson's article on cappings spinners last issue and then couldn't work out the relative centrifugal force with the equation provided, chances are it wasn't your fault. The sub-editor's eager pen deleted the word millimetre from the footnote of the article, which was important so you would know what to measure the radius in.

The amended equation now reads:

$$\frac{RCF = rN^2}{900\,000}$$

. . . . . where r is the radius (in mm) of the rotating basket, N^2 is the speed in rpm squared.

New EPS beehive frame



New on the market is a beehive frame made of expanded polystyrene that saves material costs and construction time. It also allows comb honey producers to conveniently cut individual honey-filled pieces from the frame to form an attractive merchandising package. This way honey can be sold without cutting the comb.

Hexagonal openings conforming to the shape of honeycomb cells formed by bees are molded into the rectangular piece. A frame is made by cutting the piece along its lateral centerline, flopping the two halves, and sandwiching a sheet of comb foundation, usually natural beeswax, between the congruent openings. The assembly is stapled together.

The frame is used in typical beehive constructions where it is supported in a side by side relationship within a super.

Information on the beehive frame may be obtained from Hurd-Hex, R.D. #1, Pennellville, N.Y. 13132.

Leasing and share farming

by Andrew Matheson, apicultural advisory officer, Nelson.

THERE ARE big changes going on in the South Island high country at the moment. A lot of tussock country is being developed and oversown with clover – particularly under the government's land development encouragement loans scheme, (LDEL) With all this land now established (some 300,000 ha to date), naturally farmers' minds are turning to the next problem – how they are going to maintain the improved pasture.

If clover reseeding is required, then so are honey bees. The land development has created a demand for hives which cannot be fulfilled, for various reasons. First, management of bees in the high country is difficult, so beekeepers naturally find it best to leave their hives on closer and easier country. Second, in most areas there is not sufficient competition for sites to force beekeepers to take up high country beekeeping. Third, there is simply a lack of sufficient hives to fully stock new country.

Although many people are keen to get into the beekeeping industry, it is difficult for them to obtain money from traditional sources, which do not recognise hives as suitable security for loans.

Some farmers who are keen to get hives on to their property are considering alternatives to simply asking the nearest beekeeper. Some are purchasing hives, either to run them themselves, or, hopefully, to employ a beekeeper to do this. Other options include leasing and sharefarming.

If you want to get into the beekeeping industry through some sort of arrangement like this, what should you look out for?

Owner/Employee

If the farmer (or whoever) purchases the hives and employs someone to run them, then their relationship is simply that of owner/employee. The employer is responsible for all business expenses, and the employee simple receives a wage (possibly with a production bonus as well). The employee is in a similar financial position as if he or she were working for a beekeeper, but has a greater responsibility.

Leasing

A lease is quite different. This is a contract under which the owner of the asset (in this case a beekeeping enterprise) grants the use of the asset to another party. The owner is called a lessor and the user is the lessee. The lease agreement sets out the terms and conditions of the lease including the fixed lease payments which the lessee must make to the lessor.

The usual method of evaluating a potential lease involves drawing up a budget. After the costs of production have been deducted from the gross return of the business, the remaining sum is split two ways; to the lessor to provide return on capital, and to the lessee to provide wages for work and management skills.

For a satisfactory lease agreement to be drawn up, each party must be satisfied that their portion is sufficient. During the course of the lease, the lessor remains owner of all the assets and the lessee, as user, is responsible for all operating costs.

What could be in a lease arrangement for a person wanting to get on the way to owning their own beekeeping business? It gives financial return without requiring any capital to be tied up. It gives control of a beekeeping business without requiring ownership, and is a good way to obtain the experience which is required by some lending institutions.

For the owner, or lessor, such an arrangement is a way of owning an appreciating asset without having to put work into it, and of obtaining a return on the investment.

I have seen lease arrangements work well where the lessor is himself a beekeeper, building up to go full time, but without the time available to work 200 to 300 hives. If some are leased out, then he is able to continue working, building up more hives until the day comes where fulltime management of the outfit as a whole is possible. In the meantime, some other beekeeper has benefited from the experience (and money) obtained from running the hives for a season or two.

Sharefarming

Another type of ownership structure, similar in many ways to leasing, is sharefarming. In this case both the owner and the sharefarmer share some inputs and expenses and in turn receive a share of the profit–or loss.

Advantages of sharefarming include the fact that it can be a useful stepping stone to farm ownership; it allows the owner to relinquish work load but still retain control; it gives the sharefarmer more management experience and control; and the owner may be able to retain a good employee who would otherwise be lost to a better position.

The most obvious form of sharefarming in New Zealand is sharemilking, and for different agree-

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from page 11

ments (39 per cent, 50 per cent etc) the responsibilities of each party are clearly stated. Not so for the beekeeping industry however, and I know that I have received several inquiries from perplexed beekeepers interested in setting up a sharefarming agreement. How do they go about it?

There are four main contributions to a beekeeping business: Capital, (hives, plant, buildings, etc); labour, managerial skill, and costs of production, (sugar, queens, vehicle running etc). To work out what sort of agreement should be adopted a value is put on these and they are allocated between the parties.

A simplified example might involve a business worth $80,000 (hives and honey house). Assume that the best alternative use for the money invested by the owner is in inflation-adjusted bonds, returning about 17 per cent p.a. The cost of the owner's capital contribution could be estimated at 17 per cent of $80,000 or $13,600 per year.

The sharefarmer puts in $11,000 worth of machinery, (vehicle, bee blower, barrows, etc) so his annual capital contribution is 17 per cent of $11,000 = $1,870. His labour contribution could be valued at, say $12,000 p.a., making his total contribution $13,870 p.a. In this case, it might seem reasonable to split the income and expenditure of the business 50/50 between the two parties.

It must be stressed that this is a hypothetical example only; anyone who wants a 17 per cent return on their money should stay well clear of beekeeping!

In each case of leasing or sharefarming there needs to be two things present - a healthy amount of mutual trust and respect between owner and sharefarmer, and a legal written contract. This should be detailed in its provisions, yet flexible to allow some freedom of choice. What you intend putting into the agreement could be discussed with a MAF advisor, and it should be drawn up by a solicitor.

Today it seems almost impossible for potential bee farmers to collect enough capital to start off their own business. In some areas regional development finance is available to assist, but it is quite possible that in the future we will see more "unconventional" forms of finance, such as leasing and sharefarming, used. Hopeful beekeepers should be alert to the possibilities and explore every avenue open to them.

Acknowledgements
Irene Parminter, HAO (ECONOMICS), MAF, Nelson.

FAMILY WELFARE

Better sting sensitivity treatment available

However, don't just bowl up to your friendly G.P. and expect treatment on the spot.

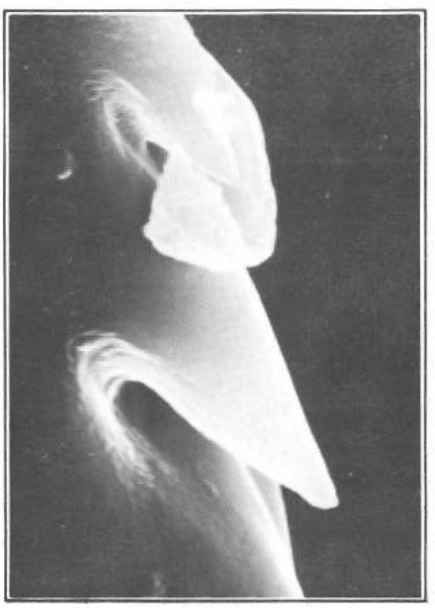
THE HEALTH Department has approved the use of the Albay Bee Venom Desensitising kit which until recently was on trial only at Auckland Medical School and Christchurch Hospital.

The active ingredient in the Albay kit is pure bee venom. Standard desensitisation programmes have until now been based on a protein-based bee body extract.

While the Albay kit has been shown by the Auckland Medical School to be far more effective than the standard treatment, its use is complicated by a number of factors. Among them:

- An agreed treatment programme using the Albay kit has yet to be finalised . . . though the basic principles are well understood.
- Before doctors can administer the treatment, they require specialist advice either from the manufacturers or from the allergy treatment clinics at Auckland and Christchurch hospitals.
- Treatment in error of a non-sensitive patient may have the opposite to the desired effect: Sensitisation. As a result, a history of extreme reactions backed by laboratory tests, is required before a treatment course should begin.

According to Dr G.R. Boyd of the Health Department's clinical services section, these complications have dissuaded the department from meeting the cost of the Albay Treatment unless the appropriate skin and blood sensitivity tests have been completed. A $450 price tag for materials alone will probably deter over-eager patients from taking the course.



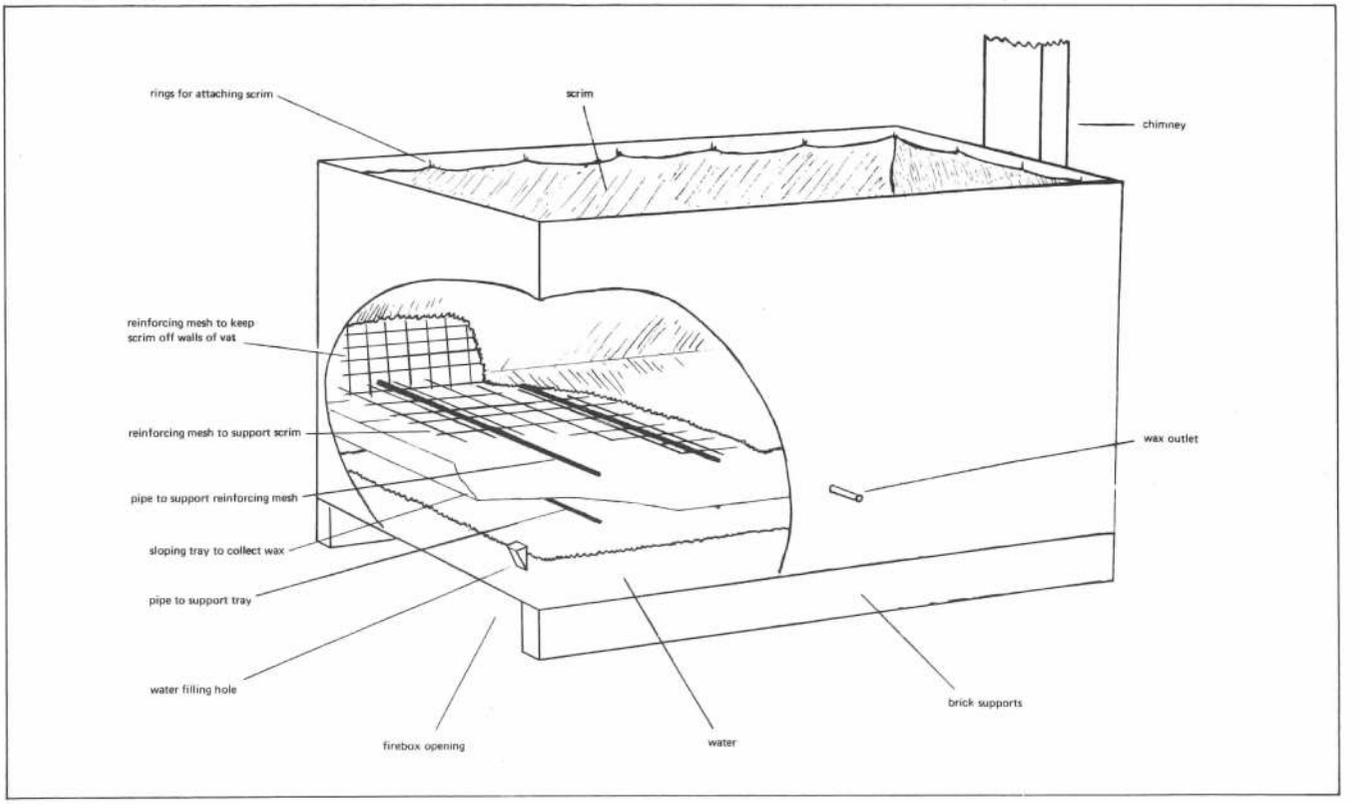
Nevertheless, human life is risked every day as a result of anaphylatic reactions to bee stings and since the recent trials show the standard bee body therapy in a very poor light, the Health Department has given the all-clear to the Albay kits for use in those hospitals where doctors are fully briefed on their administration.

Once a patient has completed tests and has started the course of injections at one of these hospitals, the course may be completed by the patient's G.P. with the Health Department meeting the cost of the materials.

"It is important that people who have completed the standard bee body therapy should also have the allergy tests, unless they have been challenged by a bee sting and know themselves to be non-sensitive," said Dr Boyd. "Some people who have had the bee body treatment didn't need it, because we didn't have tests to show whether they were really allergic. Some have been cured of their allergy by the bee body treatment, while others were not cured and are in need of the bee venom treatment.

"Just because someone has had the bee body treatment it doesn't mean they should rush off and have a new therapy. They may not need it. They should have the tests like everyone else."

Cut-away diagram of wax rendering unit built by Sandy Richardson.



Simple wax rendering without boiler or press

by Andrew Matheson, apicultural advisory officer, MAF, Nelson.

I DON'T know many beekeepers who can honestly say that they enjoy wax processing. Sure, it's nice to have those blocks of golden wax at the end of the day, but the difficulties in getting there!

Wax rendering is often hot and dirty work made extra troublesome by the lack of adequate equipment. Yet in most cases it's just not worth investing in expensive plant which will be used for only a small part of the year. This article describes one piece of equipment which renders cappings, scrapings, and comb wax, and yet requires neither a boiler nor a press.

It was built by Mr Sandy Richardson of Ahaura, Westland, who got the idea from similar units he had seen in Canada while working for a beekeeper there some years ago. It is the basic principle which is important, not the specific design, and the idea could well be adapted to make a unit of any size.

This particular model, which is illustrated in the diagram, is 2.4 x 1.2 x 1.2 metres in size – quite a large piece of equipment. It was not originally intended to be that big, but the local engineering works had a tank made of eight gauge plate steel which had been designed to hold eels, but never used for that purpose. After having it lie around for a couple of years, they were pleased to sell it off at cost.

The tank or vat sits on bricks so that a fire can be built underneath. It is fitted with a small opening in the side so that the bottom 100 mm can be filled with water. Heating this water provides the steam for rendering wax.

About 100 to 500 mm above the water is a sloping tray made of heavy gauge galvanised iron, which is supported by five 25 mm pipes running shortways across the tank. Wax collects in the tray, and leaves by way of the outlet pipe in the side of the tank. It is obviously important that the steam rising off the water is not prevented from entering the rest of the tank, so there is a 50 mm gap between the edge of the tray and the sides of the tank.

Wax to be rendered – whether spun cappings or old combs – is held in a large piece of scrim attached to hooks around the top of the tank. Scrim is sufficiently permeable for the steam to rise through it and the molten wax to run out. Slumgum is left behind inside the scrim.

The scrim bag is supported by 100 x 50 mm reinforcing mesh which sits on another series of five 25 mm pipes running across the tank. The size of the space between the scrim and the wax-collecting tray happens to be 200 mm in this instance, although that is not critical.

Remember that the wax-collecting tray is 50 mm shy of the sides of the tank, so to prevent wax from falling down this gap into the water, the scrim bag is held out from the wall by some lengths of reinforcing mesh – about 500 mm high – placed up the sides of the tank.

A lid was made of galvanised iron attached to a wooden frame, and this is lifted up by a rope and pully arrangement when the vat is to be loaded or unloaded. There is a high fire risk associated with any wax rendering system, so this unit is located in a small shed (open on one side) which is a safe distance from any other building.

Operating this device is very simple. In the case of cappings, these are spun in a home-made spinner (see last September's N.Z. Beekeeper) and loaded into the scrim bag. When the vat is full – a process which takes some days – it

continued overleaf

is fired up. Cull combs are simply stacked in, this unit taking two layers of full-depth combs totalling about 30 boxes. It would take three layers of ¾-depth – the final dimensions of any vat should be calculated according to the type of combs used.

The firebox has a grate in the bottom, and the fire is made on this at the front of the vat. Steam is produced about three quarters of an hour after the fire is first lit. It takes little firewood to keep the system operating, and anyway, what beekeeping outfit doesn't have an abundance of old supers and frames, just crying out to be disposed of?

A load of cull combs is melted out completely in three to four hours, during which time the sides of the scrim bag are jerked occasionally to agitate the slumgum.

Wax is run out through a conventional honey/wax separator and into moulds made from kerosene tins cut in half. Any remaining honey is not salvagable. Up to 14 of these can be filled from one load of cappings. Slumgum resulting from cappings or old combs is added to the compost heap – any remaining wax simply can't be recovered economically.

After three or four years of use the only signs of wear are in the galvanised iron tray used for collecting the wax – it might eventually be replaced with a stainless steel one. This wax rendering unit cost very little and deals effectively with all the wax from 300 hives – and sometimes more from other beekeepers. The desire to build it came from many frustrating hours spent pressing congealing slumgum in a hopelessly inadequate system, and a keenness to do away with boilers (and boiler inspectors).

BEE EDUCATED

The World's largest honey bee

by E.R. Jaycox, New Mexico State University, Las Cruces, New Mexico

YOU HAVE probably heard that a bee sting is only 1/8-inch long – the other eight inches is your imagination. On that basis, the largest honey bee is probably the first one that stings you.

Now we have a new contender for the title of the world's largest honey bee. It is a species called *Apis laboriosa*, and it lives in the mountainous areas of northern India, Nepal, and China – the exact areas are not well known.

This large honey bee was described and named in 1871, but it has remained unstudied and generally unaccepted as a separate species until 1980 when Dr S.F. Sakagami and two colleagues examined specimens and compared them with the large honey bee of India, *Apis dorsata.* They published the results of their study in "Insecta Matsumurana". The paper includes a colour plate showing the relative sizes of five of the species of honey bee recognised by the authors.

This large honey bee builds a single, large comb, often sheltered beneath an over-hanging cliff. Its nest and its ill temper are much like those of the large honey bee of India, *Apis dorsata.* However, *A. laboriosa* is about 10 per cent larger than *A. dorsata.* This size difference is similar to that between our European bee, *Apis mellifera,* and the Asian hive bee, *Apis cerana.*

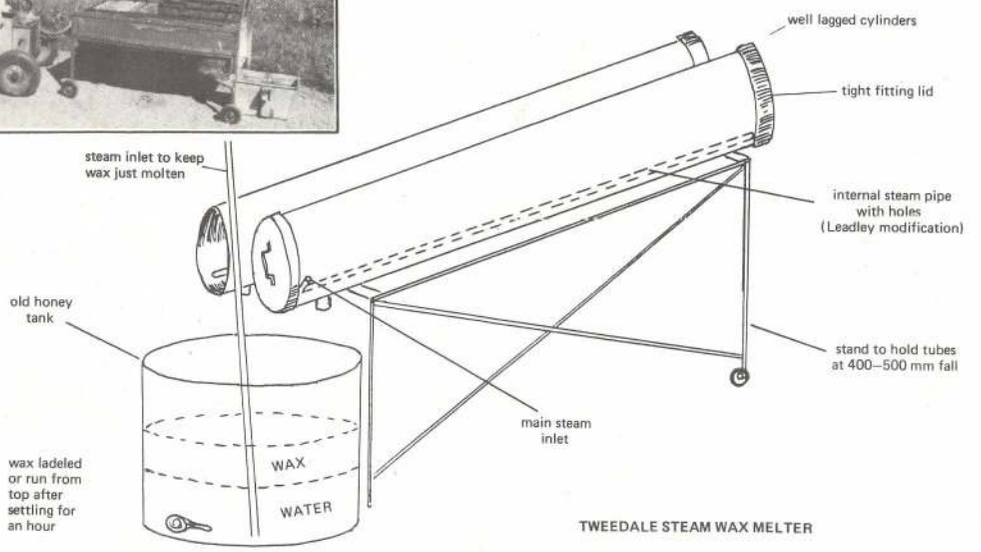
The bees studied by Dr Sakagami appear to be well adapted for life in the high mountains, and have been collected from flowers growing at about 4 100 m elevation. Only bumble bees are usually found at such heights. The bees may not nest at extreme elevations but, instead, may forage above and below their nesting area to take advantage of differences in the availability of flowers at the different elevations. It seems likely also that the bees can fly at temperatures that would prevent flight by other species of honey bees. Biological observations on the bees are very scarce and nothing is known about the behaviour and appearance of the drones and queens.

The report by Dr Sakagami reveals a general reluctance by scientists and non-scientists to believe that there are several more species of honey bees than we now recognise. By "species" I mean groups that do not interbreed and are separated geographically or behaviourally. For a long time the European and Asian hive bees were believed to be one species. Now we know they are distinct species that do not cross.

When careful studies have been made, we will no doubt find, as Dr Sakagami is suggesting, that there are different species of honey bees also in the Phillipines (*Apis breviligula*), the Celebes Islands (*Apis binghami*), and in Borneo (*Apis andreniformis*). The former two species closely resemble the large bees of India. The latter species is a close relative of the Asian honey bee called *Apis florea.* However, it occurs at higher elevations and not in the same areas as *florea.* Both *florea* and *andreniformis* build a single, small comb in sheltered locations.

Our problems in deciding on the number of species of honey bees in the world are related to the lack of studies of the honey bees in Asia and Africa, and to the opposing ideas of the people who have considered them. Most of us have been convinced there are only four species of honey bees. However, in a report in 1953, T.C. Maa concluded that there were more than 20 species around the world. At the same time, he noted that the job of reclassifying the honey bees was made very difficult by the lack of specimens and poor descriptions of them scattered widely in the literature. Biological information is also unavailable.

Mr Maa's attempt to gain acceptance for the existence of more species of honey bees may have had the opposite effect. Now, the work of Dr Sakagami and his colleagues could lead to the recognition of at least eight distinct species of honey bee in the world. Their publication about the world's largest honey bee contains strong evidence for the existence of seven species. Another publication dealing with the small honey bees will follow.



TWEEDALE STEAM WAX MELTER

One stage wax processing

by Kerry Simpson, M.A.F., Oamaru.

WHEN BASED in Palmerston North I was fortunate enough to visit Stuart and Don Tweedale at Taihape. Among some interesting items of plant was a one stage wax melter that they use to process spun out cappings, and for old comb rendering. The system they use is not new but is one of the cleanest and most efficient of this type I have yet seen. They are able to handle all their year's cappings and comb in under two weeks work.

Keith Leadley of Hastings, also visited this plant during a Flock House course and took plenty of notes on the Tweedale melter. Back at home he then made his own version to use with his Bosca boiler. The best features of both units are summarised in the diagram.

The basic mode of operation involves loading the wax cappings or old combs still in frames into old supers with metal rimmed excluders nailed on the bottom; excluders with wooden rims do not slide easily down the angle iron guides which support the supers in the tube. The boxes can be fed in from the bottom end and are stopped from sliding out by a steel stop welded onto the end of the angle iron rails.

The end is securely closed and steam is jetted into each super through 6 mm holes in an internal steam pipe. This pipe is a Leadley modification of the original and overcomes the problem of cool spots which can occur if the steam is not evenly distributed. The time taken to process each load depends on the efficiency of the lagging, (which should be a generous wrapping of batts or similar) and the steam input. Keith reports that each charge of nine supers of comb took about an hour to process and one leisurely working day yielded over 50 kg of wax. Two tubes side by side as used by the Tweedales obviously have a greater capacity, as one is in use while the other is being loaded.

Peter and Keith Pegram of Wairoa have also designed their own version, but instead of cylinders they have two rectangular tunnels side by side enclosed in a common layer of lagging. This represents sound design as it economises on heat as well as lagging material.

When no more wax comes out of the outlet along with the condensed steam, the unit can be unloaded. But here an important safety note. The lid must not be removed until the steam has been turned off, and even then the face and body should not be in front of the entrance to avoid any chance of steam scalds.

The wax and water runs straight out of an outlet at the lower end so the wax does not become soapy from overheating. An old honey tank, one third filled with hot water, collects the wax, which is kept just above setting temperature by means of a steam inlet. An hour or two allows the dross to settle before the wax is either ladeled into moulds or run off the top using a goose neck set in the side of the tank.

Slumgum is retrieved by dislodging from the frames and emptying out the accumulation in the supers. The great advantage of this system is that the slumgum does not need pressing. Stuart tells an amusing tale of a Palmerston North beekeeper who collected two truckloads of slumgum from Taihape to take back to Palmerston North to press out the 'wasted' wax. Stuart willingly gave him the slumgum and after eight hours driving the two loads were in town. After a morning's pressing for half a tin of wax, the slumgum was reloaded and disposed of at the tip. Not so amusing for the beekeeper concerned but it shows how

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from previous page

effective steam rendering can be.

If you have a steam generator or boiler and a bit of metal working skill, this system could be worth a try. The size of the unit can be adjusted to the volume of wax to be processed, and it compares well in efficiency, and is much less messy than traditional pressing systems.

To emphasise this last point, I must mention George Winslade of Oamaru. George has built a very neat diesel powered steam generator on wheels and has a small mobile steam chamber for melting out combs. Instead of slaving away ankle deep in a filthy wax room, George waits for a nice winter's day, and wheels the unit out into the yard. The process is so clean he could wear his best suit and shoes and go straight out to dinner after a day's work.

Should we let colonies rear their own queens?

by Elbert Jaycox, "Bees and Honey", University of Illinois.

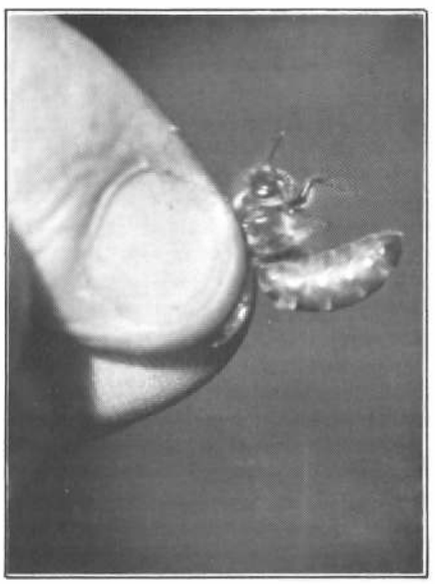
IT IS COMMON practice among beekeepers to remove a queen or make up a queenless new colony and let the bees rear a new queen. In doing this, the beekeeper assumes that he is saving money, the price of a new breeder-reared queen, and that the bees can be trusted to make a good queen for themselves. After all, if bees can communicate, use a compass, determine the time of day, and select the best food source, why can't they be expected to make a good queen?

There are several reasons why you should not allow the bees to make their own queen if you want the best colony possible and one that is capable of producing a large crop of honey. In the first place, many colonies, even large ones, are not in the best condition for rearing queens. If the colony had a poor or failing queen, it may have more old bees than young ones, a poor condition for raising a queen.

When new, small colonies are made up from larger ones, their population of bees may not have the best mixture of young and old bees to rear good queens. Such colonies may also be handicapped by having too few bees overall or too few bees for the amount of brood they must care for. The amount of stored pollen and honey and the amounts coming into the hive may also be important limiting factors in producing a good queen.

If the bees are successful in rearing a queen after being dequeened or split from their original home, how good will she be? This depends on some of those factors already mentioned, but also on the age of the larva from which she was raised. You might think that the bees always pick the ideal larva from which to rear a queen, but they do not. R.D. Fell studied the production of queen cells by bees and found that bees without queens began building emergency queen cells over worker larvae in 12 to 48 hours. They usually selected larvae less than two days old, but also selected larvae three and four days old. Thirty-five per cent, over one third, of the larvae selected were three or four days old. If queen cells are started at the same time on larvae of different ages, the oldest one will emerge first and become the new queen of the colony.

This brings up the question of whether there is a difference in the quality of queens raised from female larvae of different ages. The evidence, especially from studies made many years ago, is conflicting – the results were inconsistent. In older studies, control of rearing conditions may have been less stringent and the techniques of instrumental insemination were not available.



In 1971, Dr J. Woyke of Warsaw, Poland, published the results of a thorough study of queens reared from larvae of different ages and from eggs. He compared the physical characteristics of the queens including their weight, number of egg tubules in their ovaries, and the size of the spermatheca, the storage organ for the spermatozoa. Woyke also compared the number of spermatozoa received by queens that mated naturally and those inseminated instrumentally with different amounts of semen.

Woyke had difficulty rearing queens from eggs and from four-day-old larvae. The bees did not always accept eggs transferred to queen cups. Queens reared from four-day larvae were small. Many such queens were lost during their mating flights and it was difficult to inseminate them instrumentally.

Each day's increase in the age of larvae used for queen rearing decreased the weight of the resulting queen. This is a serious loss because large, heavy queens are the best performers in a colony. The smaller queens had a smaller number of egg tubes (ovarioles) in their ovaries, reducing their egg laying capacity. The number of ovarioles varied from 177 to 340. In some cases, queens reared from older larvae also had spermathecae only one-fourth as large as the largest queens. Although there was pleny of room for a normal number of spermatozoa in the smaller spermathecae, they contained much less than did the organs of larger queens, whether mated naturally or instrumentally.

Woyke concluded that each increase of one day in the age of larvae used to rear queens further reduced the queens' weight, number of ovarioles, volume of the spermatheca, and the number of sperm received at insemination. His results show how important it is to raise queens from the youngest possible larvae, which can be done, when a person selects the larvae. Fell found that at least 35 per cent of the time a dequeened colony of bees selects larvae that are too old to produce the best queens possible. Other conditions in the colony, mentioned earlier, may help to further reduce the quality of emergency queens.

When you let bees rear their own queens after making them queenless, the chances are good that you will get a small queen with less capacity for egg laying than a queen reared under optimum conditions. The queen also may fail sooner than a larger queen. If you are interested in the best performance and maximum honey production from your colonies, provide them with the best possible queens – don't force the bees to rear their own queens.

FROM THE COLONIES

WAIKATO

Well, most will be quite pleased with the season so far; a season that has been two weeks behind all through. It could extend a bit longer and put some icing on the cake.

As was predicted, tawari was going to flower heavily and it did, and but for a wet spell around new year, would have been a really big crop. As was usual with a good tawari year, astelia followed and much frantic removal and extracting took place to get the hives shifted away from it.

Rewa rewa was poor with weather problems, and blackberry yielding very well as did clover inland. With settled weather coming mid-January, generally good flows in most areas have continued and may continue as there are plenty of flowers still around. This makes this one of the better seasons after poorer ones.

C. Bird
Matamata

OTAGO

Looking through our notes in the previous issue I see that they had been written on the eve of our field day. Well, that event took place early in November at Milburn Apiaries, 45 km south of Dunedin. Good attendance, good programme.

The theme for the day was pollen: Pollen gathering, feeding, supplements, value as a health food and marketing.

An interesting demonstration was given by George Winslade, who showed us how to clean pollen with the use of a small machine he built for this particular purpose. The gadget looked somewhat like a model chaff cutter and it did the job well.

The manageress of one of Dunedin's health food shops gave us a talk which was very entertaining and the cause of some funny remarks and observations from amongst the audience.

And now about Otago's honey crop. Really, we don't want to talk about it. South Otago had less than an average of three hours sunshine per day during January, above Dunedin and in Central it was very dry. On an average beekeepers will have to be satisfied with a very mediocre return. The higher country has experienced one or two frosts in January.

As a very light crop seems to be general throughout the South Island, it will mean big problems for packers and for the new co-operative. Sorry we cannot let you have more cheerful news.

Library: An order has been taken for several publications. It will take some time to arrive as most have to come from overseas.

John Heineman
Milton

WEST COAST

Since December the weather has continued to fluctuate from good to bad, but, unfortunately favouring the bad, with disastrous results to any prospect of a good honey crop.

The fact that we have experienced thirteen successive wet weekends, separated by more than fifty percent wet days, is a fair indication of the conditions that had to be contended with.

The kamahi started with a prolific flowering, but was rained

out, dashing the hopes of those anticipating a good flow and build-up of bees.

The kamahi having failed, hopes were placed on lotus major, blackberry, dandelion, in fact anything that sported a flower that might produce a drop or two of nectar, but mostly they were forlorn hopes.

A meagre amount of nectar from bush sources, and more from lotus major has come in, but it would be doubtful if the returns from some apiaries would pay the cost of sugar fed out in the spring. It will be a surprise if any apiarists show a profit, and no surprise if they all show a loss.

Some apiarists are not extracting the little honey available, but concentrating on splitting up hives for increase in anticipation of a good rata year next year. It is no use aspiring to be a beekeeper if you are not an optimist.

One beekeeper placed his outyard where the farmer said the creek had never overflowed. There is always a first time, and during a heavy downpour forty hives became rafts and what remains weren't dug from the silt and shingle, can be found on the sea shore fifteen miles away.

It appears from a U.S.A. beekeeping correspondent's photos of beekeeping association fairs, that much effort is put into educating the public as to what bees are, how they live, what they produce and what can be done with their production. Beekeepers combine to sell their wares at the fairs thus advertising them.

From the peculiar questions asked by customers purchasing honey at the door, it would appear that our associations could do nothing but good for themselves, and their members by dishing out more education to the public.

Peter Lucas
Hari Hari

SOUTHLAND

January, usually one of our good months, produced record rainfall readings and below average honey production. Invercargill recorded nine inches of rain, the highest January reading since recordings started:

The only bright spot was the Southland field day held at Woodlands, under perfect conditions, with a large crowd enjoying one of the few fine days of the month.

With the general shortage of honey, buyers were much in evidence looking for suppliers to make up short-falls in their own crop. However, co-op shareholders were urged to support the co-op in its first year of operation.

Southland is at present without the services of an apiary instructor, as Trevor Bryant has retired to the kiwifruit area. The better climate may have something to do with it. We wish Trevor and his wife every success in their new venture and hope that the vacancy left behind in Gore will soon be filled.

Alister Lee
Balfour

HAWKES BAY

After a reasonable spring we caught the rain at the right time, giving us 4 mm in November. With some rains in December the early clovers and flowers came in with a good nectar flow, giving the early country two supers per hive from which most beekeepers benefited.

The manuka didn't yield at all, so we will have to use clover honey for winter stores.

Hawkes Bay has had a better than average honey crop.

Branch activities have been quiet with our field day on March 13; the theme for the day is queens and queen breeding.

Keith Leadley
Hastings

FAR NORTH

Here in the Far North we have had the driest summer so far for 50 years and the second driest summer on record. After a rather wet spring most nectar sources were late, and though there was plenty of clover in flower, there was only a small yield from this source. The season so far is ahead of last year, however, and at the moment there is a fairly good flow from the pennyroyal. Towai is late flowering and the rata is patchy.

Our December meeting included the usual festive tasting of mead and honey cooking. Our field days were in abeyance over the holiday season, but at the beginning of February we held a day at the club hives for extracting. The yield from the two hives, standard and three-quarter, was moderate and, apart from extracting we also took frames and honey for showing at the Mangonui A. and P. Show at the end of February.

Our thanks go to Dick Jurlina for his generosity in making his place available for extracting. This year it was the easy way out with an electric uncapping knife and a four-frame electric extractor!

We still meet on the second Monday of the month and the March meeting will be the A.G.M. Also, the March field day will be the final one for this season. By then we should be able to assess fully the 1981/82 honey season in the Far North.

Wendy Macpherson
Kaitaia

CANTERBURY

Crop prospects before December looked good with plenty of pasture clover around, although the hives were below strength because of erratic weather.

A series of strong hot northwest winds and easterlies virtually burnt most pastures off and hives lost a high proportion of field bees. As a result the Canterbury clover crop in most areas has ranged from below average to disastrous.

In spite of an unusually high number of nor-westers this summer, the honeydew yield has been below average, possibly because of the dry ground conditions, or maybe the insects went off on holiday.

Hives moved up to the bush from the clover in late January and February have done reasonably well.

A poor production year such as this emphasises the commercial beekeepers vulnerability and position as "poor relation" in the farming industry. We have to tolerate an under-staffed apicultural advisory service, and have no access to drought relief finance or subsidised minimum incomes as the farmers do. A shortage of beekeepers in future could have a disastrous effect upon Canterbury horticulture and pastoral farming.

Most clover seed crops this year have been well pollinated and set despite the weather and farmers are presently harvesting reasonably good crops. The return for clover seed this year has reached a record high and beekeepers get nothing for this pollination service, while the farmer is laughing all the way to the bank.

Possibly the time has come for farmers and beekeepers to negotiate a pollination fee per hive for seed clover crops as is done with blackcurrants and kiwifruit.

The Canterbury branch is to hold its annual autumn field day on March 20 at Hantz's Honey House, Lakeside, Leeston. All branches are cordially invited and the day will start at 10.30 am with morning tea, followed by demonstrations and guest speakers, finishing with a barbecue in the evening. There will also be a competition for the biggest hard-luck honey crop story, with anyone found crying in their beer being disqualified.

Tony Scott
Rangiora

POVERTY BAY

This season from all accounts, appears to have had a good to average honey flow. Hives generally built up well in the spring with some hives showing a surplus on willow and continuing on to make good returns on clover, the tawari and kamahi.

There has generally been a fairly heavy and prolonged flowering in the bush this season, followed by continuing yields on the clover, lotus major and other pasture sources. The prolonged dry spell has tended to seasonally dry things up a bit and nectar sources have fallen off.

The local association starts the new year with its first monthly meeting on February 10.

Barry Foster
Gisborne

NELSON

This season's honey crop is down a third on average and rates as probably one of the worst we've had for a long time.

The warm spring gave way to a cool summer with strong southwest airstreams making life difficult for bees in the up country areas. Clover, kamahi and manuka flows were hopeless. However, this year we have not suffered the serious drought of last year and already reports of a good honeydew flow are coming in.

With a bit of luck the Rural Bank will smile kindly on beekeepers in the Nelson province as well as the rest of the Island, in what has not been a rather spectacular season.

Congratulations to Mr Ron Stratford, who was made a life member of our club last year. Well done, Ron you deserved it.

Jeff Luke,
Richmond

SOUTH CANTERBURY

Some years ago, the wife of a well known Canterbury beekeeper in a women's hour session on the local radio, spoke of her life as the wife of a beekeeper. She quite dramatically highlighted the emotional agony a beekeeper goes through during the period just prior to the honey flow, the elation when things are right and the despair when things are not so right. Well, this season has left most South Canterbury wives with a memory of the agonies and joys of beekeeping.

The willows burst into catkin beautifully, just to be completely blown off the trees by another of those confounded nor-west gales. Also, this storm again heaped hives into the corner of the bee yards – in some cases it was difficult to know which super belonged to what hive so no willow flow, not a darned drop. It has been said no willow flow, good season, good willow poor honey crop, well, the crop should be good we thought, so we worked with super optimism.

100 mm of rain in October, with growth beating the stock – it was difficult to see the sheep in the paddocks, this was just great, everything going great. Then it started, nor-westers, sou-westers and so the drying process started but clover flowered like never before, it must be right we thought.

But no, a bit of a flow in early December then wind, hot and cold, dull cold days, surely it must warm up. So much ground cover the ground did not warm up and so time passed and despair set in. January came and went, still no honey and that was it. Weather records show the months of November, December and January gave the lowest rainfall since the 1890s.

Evidence the bees did not work the clover is shown in the clover seed crops; they are very poor, the reason as one beekeeper put it, being too much drought but not enough heat. Well, it is now over, the despair is wearing off but we did get a little honey, about the poorest since the mid 1950s.

You know the young can always learn from the old. I recall some very wise advice given at a field day many years ago: Bob Davidson said, "Never spend this year's profits till next year". How true, we have had some very good seasons in recent years, I wonder how many still have last year's profits.

Harry Cloake
Timaru

NORTHLAND

The spring build up of hives in Northland has been rather average this season. Rainfall was experienced in timely amounts but temperatures were colder than usual in October. Karaka poisoning was in evidence in some areas again this year causing losses of forage bees and general hive lethargy afterwards.

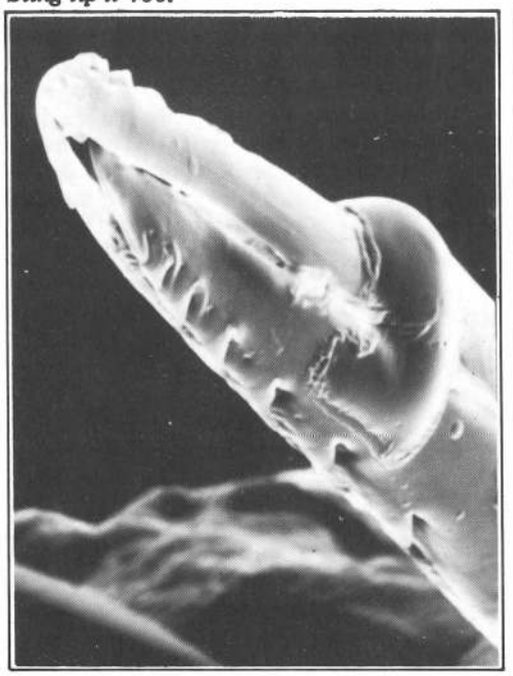
November saw good yields of nectar in manuka areas and the season appeared to be shaping well. Pockets of country near Whangarei produced well, helped by lucky falls of rain at Christmas and New Year. However, other areas have not been so fortunate.

The west coast of Northland has experienced an extremely dry period since, perhaps the dryest for 15 years. Other areas are also dry and the fire risk is very high. As a result of these somewhat patchy conditions, crops vary from below average to above average throughout the district; coastal areas in particular have not fulfilled beekeepers' expectations.

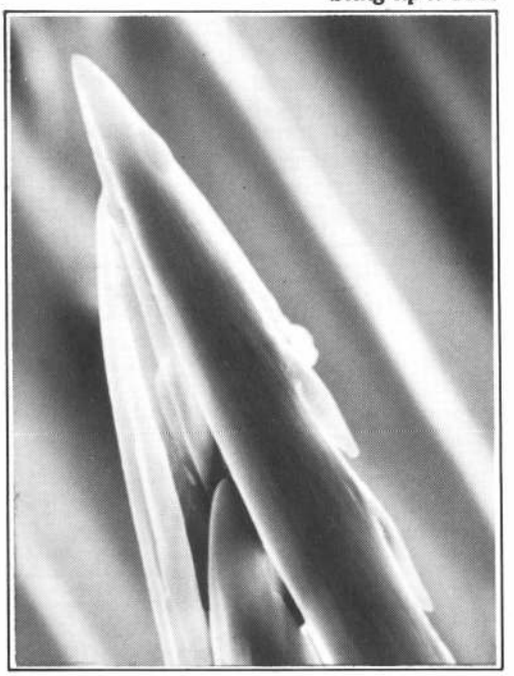
Some of our members are busily organising the coming conference to be held at Waitangi. We hope as many members as possible will be able to come and enjoy the climate, scenery and hospitality of the Bay of Islands. See you there.

Graham Richards
Whangarei

Sting tip x 400.



Sting tip x 800.



Bee venom as a cure

Stimulates cortisone production, activates metabolism of tissues.

MAN IS LIKELY to have been interested in bees ever since his existence, because bees existed already 40 million years before his evolvement. It is known that 40–50 million year old amber was found on the Baltic Sea coast, sometimes also containing bees which are absolutely similar to the present honey bee *Apis millifera.*

No other being, so small and with such a short life, probably exists on the earth, to supply us with so many, varied, and useful products as our honey bee *Apis millifera.* Men are likely to have been aware of the qualities of honey and beeswax since the first days of their existence. They probably also knew the effect of bee venom because they actually felt its real effect (pain) with every sting. That is why references to honey, beeswax, and bee venom are found in many early historic accounts. Interest for pollen, propolis, and royal jelly was reported only later.

At the Institute of Pharmacology of the Wurzburg University, research work on animal venom has a long-standing tradition; and our research team has conducted fundamental research on the chemical composition and pharmacology of bee venom.

When emerging, adult bees do not have bee venom. But already on their second day of life, when stings cannot yet be used, we have found an average of 0.04 mg. bee venom in the venom pouch. In the next days, the amount of bee venom would increase, but the pouch would be filled only on the 15th–20th day of life – precisely in the period when the worker bees take over their function as guard bees, bee venom being indispensable to them.

In this period, the venom pouch contains about 0.3 mg of liquid venom, i.e. 0.1 mg of dried venom. This amount of venom is slightly variable, also depending on food. By feeding tests we showed that the bees on no pollen (proteins) produce no bee venom. The season is also important.

Adapted from an article first published in "Apiacta" – the journal of the International Federation of Beekeepers' Associations.

by K.A. Forster, Switzerland.

We found that the first spring generations produce the largest amount of venom, an amount which decreases with the approach of autumn, but remains almost the same in winter, for a long time. The amount of bee venom and its quality also depend on the bee race.

With the earliest peoples of history, beekeeping was thriving and there is no surmise that bees and their products were already used also for medical purposes –certainly primitive: Tea of bees, bee ashes mixed with oil, etc. The Celtic and Germanic peoples prepared ointments for eye sores from bee ashes and honey and recommended bee products for stomach disorders, tooth aches, hair shedding, secretions, sterility, disorders in the menstrual flow, etc. Bees and bee venom also played an important part in homeopathy.

The bee was the best remedy in rheumatism for the homeopathists too. There was almost no disease for which bees were not used as a cure, especially internally – tinctures and infusions. A curiosity was the use of bees to ascertain the time of death, because bees were believed to refuse to sting corpses, and when forced to sting, no skin reaction would occur.

Independently, beekeepers have, for many generations, believed that bee stings would prevent and cure rheumatism. On this basis, Dr. Tertsch was the first physician who made a systematic and thorough study on 173 patients with rheumatic affections. The 39,000 stings were efficient, and he published the results in 1888. Ten years later, Dr. Langer reported on his first experiments with bee venom, and injected bee venom dilutions for the first time in patients in his clinic, with very successful results.

The therapy with bee venom became

please turn overleaf

more important when bee venom was available for use by physicians and patients in a simple form to handle, with no danger or pain, and efficient too.

Meanwhile, the composition of bee venom was known quite thoroughly. It contains a number of components having an important pharmacological activity, the major ones being histamine, peptides such as mellitin, apamine, and the recently identified peptide M, as well as the enzymes hyaluronidase and phospholipase A.

Researchers have managed to separate them, providing for easy chemical investigations.

External use of bee venom, as ointment or liniment, induces a visible local hyperaemia (congestion) also of deeper tissues, thus activating the metabolism of tissues. The body also produces more cortisone.

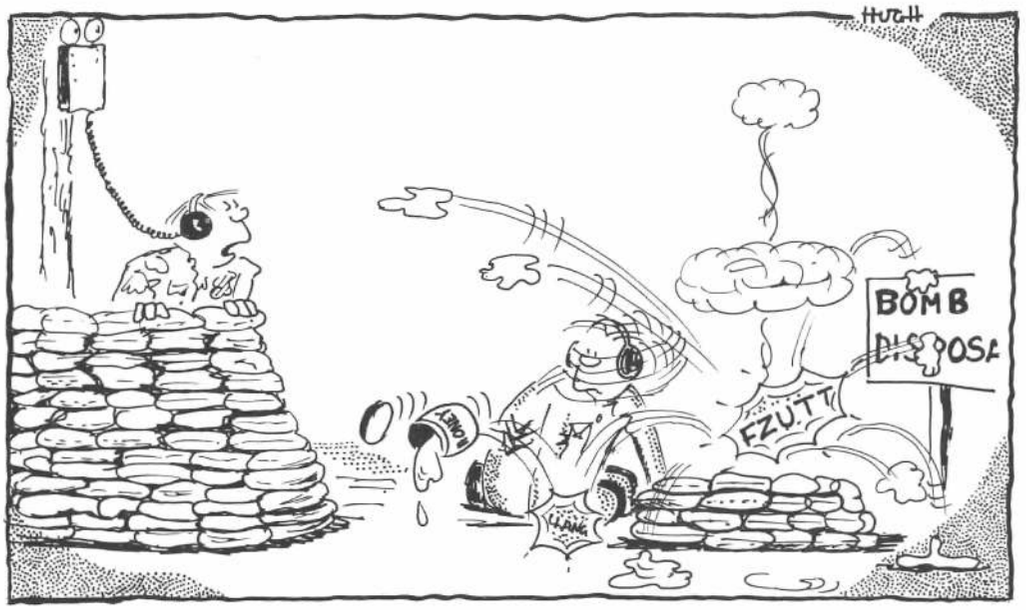
In the last 50 years, the medical press in West Germany, Austria and Switzerland published more than 100 scientific reports on the therapy with bee venom, but much more such publications have been released in other countries. All report the success recorded especially in rheumatic affections – muscular, articular and neurorheumatism, as well as in disorders of peripheral blood circulatin, of muscular strain after effort, and in the prophylaxis and therapy of affections of sportsmen.

Allergy to bee venom is also successfully cured with injected solutions of bee venom. The treatment starts with small doses which are gradually increased until a visible reaction appears. Then the dose is maintained the same until no reaction occurs any more. Then, increased doses are inocculated.

In the countries in which the German language is spoken, physicians would prefer to use bee venom in ointments and liniments, while in other countries both venom solution and combinations with sulphur, honey and galvanic current are used.

The fact that bee venom – produced by bees as a means of defence in their struggle for survival – is available to us for utilisation for therapeutical purposes, makes them even dearer to us.

BEE HUMOUR



Not bad – so far we've had the P.L.O., the I.R.A. and the red brigade all claiming responsibility for a jar of honey!

DANGER! Export Honey

WITH CURRENT moves towards each beekeeper exporting his own honey, readers may be interested in an apiary advisory officer's recent effort in this field and the problems that occurred.

It all started when the officer's horticulture advisory colleague went to England on a year's study tour. When it was discovered that his luggage was to be charged by volume not weight, it seemed a good chance for the apiary advisor to send some honey to his family in the U.K.

As the colleague decided to take a few tins himself to use as gifts, all available space was used but this wasn't expected to cause trouble.

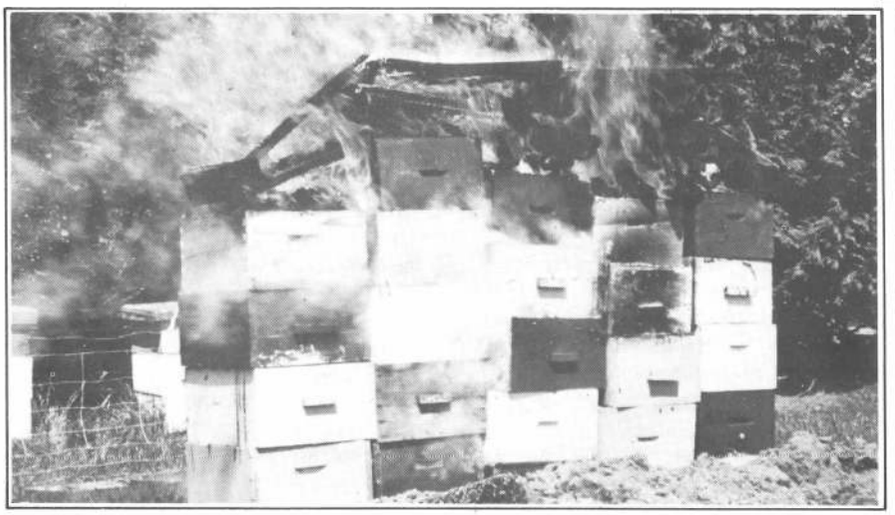
The first problem came when the English Customs Officer couldn't believe that people would give away honey in 2 kg tins and duty had to be paid – over $60 in fact, but the intrepid traveller reasoned that the honey was worth it, even if the recipients might not have been.

After that all went well with occasional cans being dropped off around England. But come the end of the year, one last tin had to be posted to the apiarist's brother and at this point the fun really started.

At this stage, it should be explained that the horticultural advisor had a rather unpronounceable Greek name, and when a heavy internal parcel arrived at the brother's local Post Office from somebody he didn't know and a name he couldn't pronounce, the bomb squad was called in.

Now we've tasted honey with all kinds of taints, but we understand that even Canterbury honey won't stand being blown-up without becoming difficult to eat.

And from now on, John Smith is back to sending plastic tikis as gifts to England and is leaving exporting honey to beekeepers.



Sadder but wiser

by Kerry Simpson, apicultural advisory officer, Oamaru.

FINDING THE odd hive infected with American brood disease is always depressing but the realisation that you, as the beekeeper, have played an unwitting part in spreading it through the outfit is far worse.

Not only beginners and side-liners do this; it has happened many times in large commercial outfits too.

After the beginning of the honeyflow in December last year, a very distressed beekeeper came to see me with a most woeful tale. This beekeeper was able to recognise disease but was finding far too much for comfort until finally he realised that it was showing up in hives that had been fed with syrup.

It appears that the feeder he had used had become contaminated during the spring. The feeder in question jets syrup into empty combs which are put back in the hive, excess liquid that does not stay in the combs running back in the tank to be recirculated.

One or more frames infected with *Bacillus larvae* spores had been filled and some of the infected material washed out into the tank. Every hive subsequently fed, totalling almost 50, has since shown up diseased and been destroyed. The highly infective nature of this bacterium is obvious when the continual dilution of the syrup with a freshly filled tank did not stop the problem spreading.

In this case, the beekeeper on realising his mistake, acted very sensibly; he checked all hives during the first part of the flow and caught most hives at the three to four cell infection stage. Only two weeks later, despite the flow, the disease was showing over most brood frames and very obvious in hives missed in the first check.

It is likely that a few more will be found when he checks the brood before removing the crop from the apiaries. This procedure should be standard practice with all beekeepers, but sadly is not.

It was the beekeeper too, who suggested this article be written to warn others of the dangers of this type of syrup feeder. A very responsible attitude.

A second, very costly outbreak over the Christmas/New Year period was traced back eventually to an unregistered site of five diseased hives. So if you know of unregistered apiaries in your area please let your inspector know. It is in everyone's best interests and certainly not telling tales.

By the way, did you get your return in on time this year? Each return helps in co-ordination of an inspection programme.

Killer bees - seven years from the United States

by Bronwyn Falconer

WHEN SEVERAL colonies of African bees escaped from a Brazilian apiary in 1956, the American beekeeping industry could not forsee the consequences and expense that this mistake would eventually cause their livelihood.

Quickly inter-breeding with the European bees in Brazil, natural selection favoured the African characteristics, making the hybrid bees a formidable opponent of organised beekeeping in America and the cause of danger to public safety. Because they have thrived in the warmer temperatures, the African bees have migrated northward, bringing fears to the minds of North American commercial beekeepers and the public alike, as the future appears uncertain as long as the bee spreads.

A recent consultation between American and Venezuelan beekeeping experts enlightened the Americans into the nature of the African bee and the havoc it has caused in Venezuela.

They stress that if research into the African bee is not stepped up its arrival in the United States will mean the end of large honey yields. More importantly it will affect pollination – indirectly causing a decrease in food production.

The bees are particularly undesirable for beekeeping because of their tendencies to strongly defend their colonies, swarm excessively, leave their hives completely and kill queens when disturbed.

They are not good honey producers or easy to manage. Only about one-third of Venezuelan commercial beekeepers are still in business and hobby beekeeping has become non-existent since the arrival of the African bee.

In Venezuela the public safety side of the African bee issue seems to be the only one warranting attention from a government that is more interested in the big dollars from oil. Extensive press coverage of the "killer bees" has meant the public has a fear of bees and beekeeping, thus hobby beekeeping has declined because of the danger to the beekeeper and of keeping hives near built up areas.

There is the safety side for the commercial beekeeper to cope with as well. They have to don heavier protective clothing, use a larger smoker and remove the honey at night, under red light. The yields of honey are exceptionally low compared with the production level for European bees, hardly warranting all the extra attention and care these bees need.

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One commercial beekeeping enterprise recorded a drop in annual crop production from 130 tonnes to 30 tonnes. Venezuelan University hives yielded only 12 kg a hive.

The low honey production is not caused by poor nectar sources in that country either. Studies into the nectar production in Venezuela show the potential for producing honey is a lot better than indicated by yields. Venezuelan experts now believe that honey production is low because of the high density of feral swarms of African bees, thus making intensive competition for the existing resources.

Hived African bees are no steady prospect. The slightest disturbance will cause them to leave the hive, filling up on the honey already there and leaving the brood behind. All of the necessary hive factors may be present but the bees still swarm. There has not been a lot of success at trying to keep European bees in Venezuela, nor for that matter trying to introduce European queens into colonies of African bees.

Once a European queen has been successfully introduced into a hive there is danger that invading swarms will take over these colonies, killing the queen and replacing her with their own. European queens will not curtail swarming instincts of African bees. If they swarm they take her with them.

If the queen has clipped wings and cannot swarm with the bees, they go without her. Because a large number of mated African queens exist outside colonies, it is easy for a queenless swarm to meet up with another queen.

One of the reasons that the European bees find it difficult to compete is in the life cycle of the drones. African drones mature faster and earlier in the season than European drones, and manage to mate with both African and European queens. There appear to be many more African drones trailing behind the queen in her mating flight, thus giving greater odds that the African lineage will be passed on.

Many solutions have been put forward to solve the problem. There has been a suggestion that the entire bee population south of Panama should be chemically destroyed, compensating the beekeepers for their losses and starting the industry all over again. Another suggestion has been to introduce a bee disease which European bees are immune to.

Because of the indecision among experts as to how fast the bee is progressing northward and the difficulty and expense of detecting Africanisation, present solutions seem to be along the lines of developing a genetically superior bee – modifying the undesirable characteristics of the African bee and changing management techniques accordingly. If this research is successful it is envisaged that the crisis that would otherwise be caused when the African bee finally reaches North America, would not occur, and instead the bee would be absorbed into a modified beekeeping enterprise.

United States beekeeping scientists, administrators and industry representatives have agreed that the present research programme will cost $250 000 to set up and an additional $300 000 each year for the next five years to support the research being carried out.

It will not be an easy task to get this extra finance from the American government for this United States Department of Agriculture programme. With government spending cut back it will take considerable lobbying to see the situation understood.

The research project will need cooperation from all the governments concerned with the African bee crisis and the Venezuelans urge that the research must begin now or it will be being carried out when the bee reaches Mexico and the United States.

African bees will be in the United States in seven years at the earliest. With the urgency of the situation only just coming to light, research must start now if answers are going to be provided before the African crisis hits the American beekeeping industry.

Autumn pollen feeding

by Andrew Matheson, apicultural advisory officer, MAF, Nelson.

NO DOUBT many beekeepers have experienced the seemingly mysterious decline of a colony which is disease-free, has a young queen and plenty of honey stores. Feeding sugar syrup doesn't stop the decline, and may even speed it up. Usually this is called "spring dwindling" or "autumn collapse", depending on when it occurs.

What some beekeepers realise (and others do not) is that pollen shortage is often the cause of such a colony decline. If this is a recurring problem in your area, then you should be planning right now what you are going to do to prevent "autumn collapse" this year.

Beekeepers and scientists have, for many years, tried to find a suitable pollen supplement for honey bees. For instance, in 1655 one Samuel Hartlib recommended that dry meal or bean flour be added to "tostes of bread sopped in strong ale" as a cheap winter feed for bees. Modern practice is to reserve the ale for the beekeeper, and feed the bees with something which has been formulated a little more scientifically.

Supplements or substitutes – what's the difference? Strictly speaking, a substitute is a totally "artificial" diet (i.e. contains no pollen), while a supplement is a mixture of pollen and other ingredients.

As with humans, bees do not instinctively know what foods are good for them. Like us they eat on the basis of what they like. Exactly what stimulates the feeding response in bees is not known.

The problem with a straight substitute is making it attractive to bees; various synthetic attractants have been tried, without success. Fortunately a team of US Department of Agriculture scientists are working on this problem, although only a few months ago they reported that: "To date there is no satisfactory well-defined diet available for rearing larvae of the honey bee".

The best protein food for bees is pollen, but this is normally either too expensive or too scarce to use in big quantities. It is usually padded out with other nutritious material to make a pollen supplement, which is still attractive because of its pollen content.

One common recipe is as follows: Mix one part pollen with four parts warm water, by weight. When the pollen has softened, add eight parts by weight of sugar. Add three parts soya bean flour. Knead into a dough, varying the consistency if necessary by addition of more flour or water. Make cakes about 10 mm thick and weighing 500-750 g and place on waxed paper. (The soya bean flour must be of the low-fat type, and very fine in texture. One suitable type is Staley 1 – 200, available from Healtheries (N.Z.) Ltd.)

Pollen supplement being fed on the top bars above the brood nest.

Pollen can be trapped in areas or times where it is abundant, and stored deep-frozen until needed. It may be worthwhile having an apiary kept for pollen trapping, so that supplements can be made up for other apiaries.

Caution: Trapped pollen can transmit spores of *Bacillus larvae*, which causes American foulbrood. Be sure that the colony donating pollen is disease free.

If absolutely no pollen is available (which I find fairly hard to believe), then a substitute must be made up. The above recipe is followed, but the pollen is replaced by such things as brewer's yeast, skim milk powder, and even egg powder. If pollen is not used, then the diet should be as varied as possible, in case any one component is deficient in essential amino acids or other requirements.

When should pollen be fed? Normally this is done in spring, and in the June issue Trevor Bryant will discuss how to go about spring feeding.

Now to the lesser known practice of autumn pollen feeding.

How long a worker bee lives for depends on many factors, such as genetic background, pressure or absence of a queen, the quantity of brood in a hive and, most importantly, how well it is fed.

During spring and summer when the colony is growing, a relatively small number of workers support a large quantity of brood. The ability of nurse bees to produce the large amounts of royal jelly required is pushed to its limit.

When this limit is reached, the nurse bees continue to produce royal jelly, but they do so by depleting their own body proteins. They are thus undernourished, and don't recover even when fed lots of pollen. It is this malnutrition which shortens the lifespan of workers, not the fact that they "work themselves to death".

These bees are called "summer bees".

By contrast, bees emerging in the autumn face a different situation. At this time of year, brood rearing is being reduced, and an abundance of nurse bees are available to feed the relatively few larvae.

At the same time, large quantities of stored pollen in the hives permit the young workers to accumulate protein reserves in their tissues which are not, at this time, being seriously depleted by an excessive demand for royal jelly. This results in long-lived "winter bees", many of which will live to see the coming spring.

Both "winter bees" and "summer bees" may be produced at any time of the year by regulating the amount of brood to be fed, and the amount of pollen supplement available to the bees.

This is particularly important to bear in mind when preparing colonies for winter. Supplementary pollen feeding in autumn will ensure three things:

There will be a strong population in the hive for overwintering; a significantly higher proportion will be "winter bees", able to cope with the strains of rearing the first few cycles of brood next spring; the colony will have adequate supplies of pollen next spring, even if bad weather prevents flight.

The timing of autumn pollen feeding will depend a lot on local conditions. It should not be too early, yet must be done while there is still active brood rearing, nectar and pollen available outside the hive, and adequate flying weather.

Autumn pollen feeding is most important for:

- Queen rearing and drone rearing colonies for next spring,
- Queen banks,
- Early pollination hives,

continued overleaf

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Invention and refinement

by Nick Wallingford

NOT LONG ago I had a talk with Peter Pegram of Wairoa about extractors and beekeeping equipment, and he told me of an extractor that he has tucked away in one of his sheds.

Those of you who know Peter realise how enthralling his stories can be, so with one thing and another I never did get to see the extractor, though he promised a picture to be published later. He has no idea of the extractor's age, or even where he got it; it's one of those things that get picked up and filed away, periodically looked at and then forgotten. It seems a good example to illustrate the basic difference between invention and refinement.

The extractor is the essence of simplicity. All it consists of is a stick with a box-like affair attached near its midpoint. The uncapped frame is put into the box, being held off the sides by a gauze.

To use it the top of the stick is spun around in a circle while the bottom remains implanted in the ground. The box spins around and the honey is spun from the comb, running down the inside of the box to collect at the bottom where it is drained off from a corked hole.

Nothing could be easier, could it? And yet, if you will think about it, the complicated extractors used today, with microprocessor controls for speed and time of extraction, even those capable of extracting several hundred frames at once – they are all just refinements of this basic extractor. They all rely on centrifugal force to cause the honey to run out of the cells, and then down the walls of the shell to be drained or pumped.

Major D. Hruschka's original invention is quite evident in virtually all extractors in use today, from this simple stick model to the large Australian machines. The frames may be placed radially or tangentally to the axis of spin, or even spun while still in the honey supers as with the big machines, but the basic idea is all contained in the simple little extractor Peter has had for years and must have been ages old when he got it.

Tanging the swarm.
"The Beekeeper Book".

Peter and I went on to talk about the major advances of beekeeping and what they have brought about.

Taken from a practical point of view, it is mostly the advances of about 100 years ago that make beekeeping as we know it possible; most improvements since then seem to be refinements rather than invention. The moveable frame hive by Langstroth, the extractor by Hruschka, the bellows-type smoker by Quinby and comb foundation by Mehring – these four events stand out and give rise to a categorically different beekeeping.

Most of all our "modern" units are really just sophisticated variations of these original inventions.

I know that there are a number of gadgets, what would be considered "lateral" approaches to a problem, that will hopefully show promise as practical solutions with a new twist. To attempt to design an extractor, for instance, that is not based on centrifugal force is a real challenge indeed, and those with enough creativity to try it come up with some radically different machines. The use of low pressure, high volume air to "blow" the honey from the combs would fit in this category for instance.

Murray Reid gave a talk a few years ago, giving some of his ideas on what beekeeping in the 21st century might be like. I can't remember all of the details but I came away with the impression that beekeeping might not be all *that* different.

Some major breakthroughs may likely occur, but for the most part we may still be using variations and refinements of things that have already been developed. I find this reassuring in some ways, and consider it a more realistic prediction of the ways things may be than when I am told electronic wizardry will run it all and robots do the lifting.

It seems to put the onus upon us as beekeepers to develop devices for our particular needs, and I feel that on the whole we are well suited to it. Apart from the advance made by the truly original among us, I think beekeeping will continue to grow through a slow evolution of existing ideas and equipment, just as our present day extractors owe their existence to the humble little stick-mounted affair in Peter Pegram's shed.

Our thanks to the original inventor can be shared with the many refiners of ideas with which beekeeping abounds.

Autumn pollen feeding

from previous page

- Overwintering nucs,
- Colonies working a late honey flow on pollen-deficient plants,
- Hives to be used next spring for early nucs or packages,
- Colonies in areas prone to "autumn collapse" and early spring pollen shortages.

And finally, some words on feeding pollen supplements from a paper by Ivor Forster:

"Beekeepers will learn to recognise a seasonal pattern that could result in pollen deficiencies only by studying conditions in their own districts. Undesirable colony symptoms that have no obvious explanation could well be suspected as due to pollen deficiencies (e.g. absence of essential amino acids), and trials should be made to see if they respond to the feeding of supplements. The effective use of pollen supplement must be treated as another skill in the art of beekeeping which requires considerable study if worthwhile practical results are to be obtained".

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Part 3. Annual Examinations

Story David Williams. Photos Alan Warren.

ANNUAL EXAMINATIONS sound rather like S.C., U.E. and all those other acronyms that plague our offspring. In Parts 1 and 2 of this series I dealt with what and where to buy and what and why to wear. We now start on the colony itself, what to do and why.

Introduction

The yearly sequence remains – requeen with a bought queen in autumn, do queen cell checks through the spring, pile the supers on in summer, take them off in autumn and start the whole cycle over again. As with all natural things, it is geared to the seasons.

It is sometimes said that the bees will go on behaving naturally, as they have for millions of years, in spite of everything we can do, as if the bees were a bulldozer and we were merely a fence post in the way. This is to put things in reverse order. We do not so much alter the bees' habits, which are deeply rooted in their instincts, as manipulate them to our advantage.

Again, an advantage would imply that, if someone gains, someone loses. In the case of beekeeping this is not so. All their instincts are satisfied by wise management plans while we get pleasure, satisfaction and honey. So once again let it be said that the two principal aims of management are: Keep the colony healthy, happy and dynamic at all times and prevent swarming.

Duty calls

It is a common fallacy amongst those acquainted with beekeeping that the bees do all the work. But the beekeeper has to do as much or more than the bees themselves. He has to buy, build, prepare, examine, rearrange, repair, replace, repaint. Clear sites, super as required, remove, extract, strain, bottle and clean up. Scrape, brush, clean, store, requeen, read and study and join a club, etc, etc, – you can continue the list for yourself.

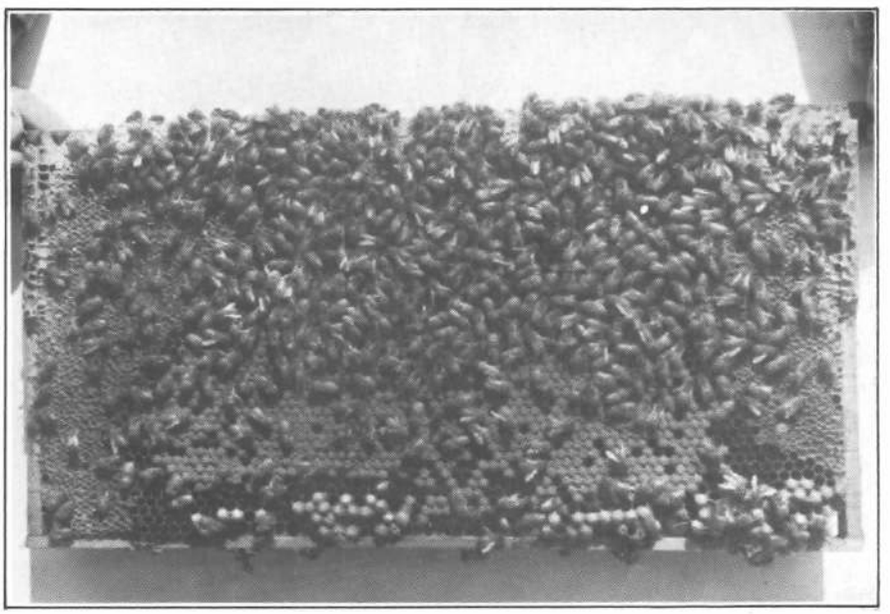
Now for specifics.

Examinations and rearrangements

Note that for purposes of definition 'rearrangement' implies some changing of the order and particularly the position of frames *usually from one brood chamber to another;* 'examination' implies observation, usually of both stores and brood, with zero or only minor changes in the order and sequence of frames.

I will not differentiate further between them, our concern now is what happens, and when.

A very normal frame from the centre of the second brood chamber: Sealed honey in an arch from bottom corners, sealed brood in lower centre and a fringe of bulbous drone cells along the bottom edge.



The basic brood chambers

So let us be quite clear what I am talking about here. I am talking about a total of 18 frames arranged in two brood chambers.

Note that the nine frames in each are pushed together centrally, leaving space between the last frame and the inner surface of the brood chamber on each side. This gives drier conditions, removing frames from contact with any damp outside wall in winter and allowing a slow current of air through at all times – the bees may do a bit of bridge building in these outer spaces but this is easily broken with the hive tool.

By keeping the frames solidly together in the centre we get maximum warmth and protection, providing good bee rearing conditions; prevention of "bulges" of honey at the top edge of the frame which occur if they are spaced out; and the outside space makes it much easier to remove the first comb without undue jarring or levering or damaging the bees.

And, of course, any foundation combs to be drawn out, whether in brood chamber or super, should be bunched together in this way so that the bees can cluster and concentrate – never alternate, say, drawn combs and foundation, and never, never alternate honey and foundation and never, never, never alternate brood and foundation or split up the brood nest in any way – that is just asking for all sorts of problems.

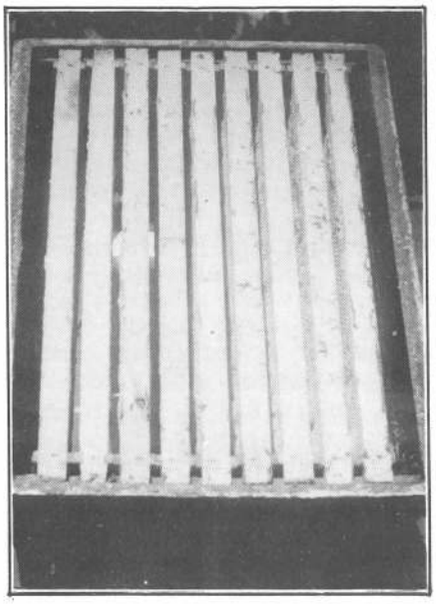
A tourist trip through the hive

We will now assume that you have all your gear and equipment and that the bees are safely established in a hive in the garden.

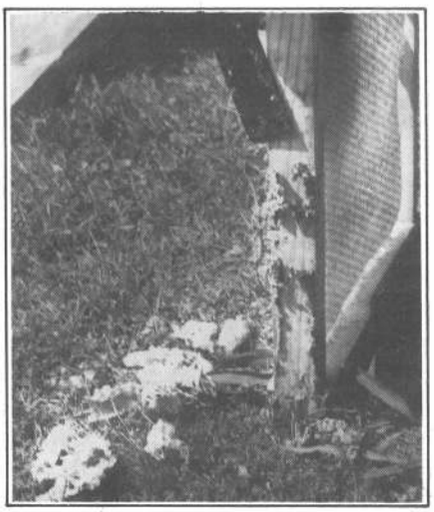
The hive at this stage consists of floorboard, roof, perhaps an inner cover, and the brood chambers in which hang the frames.

These frames are used by the bees for all their necessary purposes: As a home site in which they can congregate, rest, feed and recuperate and which they can defend; as a site for the queen to lay eggs and for brood to be reared; for pollen storage; for nectar deposition and ripening, and for honey storage.

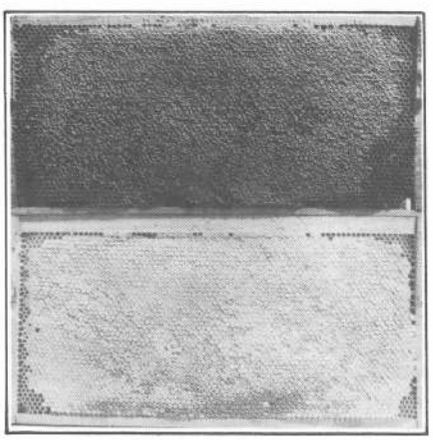
Note that frames used by the bees exclusively for honey storage, put on at the start of the honey flow above a queen excluder and removed when filled and sealed, or at the end of the flow, remain light in colour. Frames used in the brood nest and the brood boxes become darker and darker through the seasons as the bees work resin and other substances into the woodware and wax, and the cocoons of larvae are incorporated in the cell



Nine frames arranged centrally: Gaps arranged evenly at each side.



Scrape frames clean as you go: Save the wax fragments in a moth proof container to eventually melt down.



Sealed stores, honey and pollen sealed for winter feed (top) and the honey crop: A clean white sealed frame ready to remove from the supers.

walls. Even frames used for honey and pollen only, around what we call the brood nest, i.e. the area used for brood rearing, go dark of wax and dark of cappings. This is due to a combination of honey saturation, age, usage, trampling by insect feed and prolonged heat and humidity.

Hives are not generally examined in the honey season so that we are primarily concerned with the brood chambers only.

In the brood chambers we will encounter, in addition to the bees themselves, pollen and honey in the outer frames, both sealed and unsealed, easy to identify by appearance – just ask yourself "What will it look like?" and there it is.

In the more central frames will be found cells in the base of which are small, white cylindrical eggs, best seen by holding the frame so that the sunlight shines right to the base of the cell. These will hatch into small white grubs, always seen surrounded by a milky pool of brood food and which develop for a while before being sealed in under a porous, domed, coffee-coloured capping of pollen and wax.

There will usually be patches of larger, bulgier, drone cells, often along the bottom edge or in top corners of normal frames and there will always be more sealed brood than unsealed, simply because of the time factor.

The beekeeping year

Now that we have got through all the necessary preliminaries, let us list the major events of your hive management plan as they relate to the actual handling of the colony. Once again I will use Rotorua dates and leave you to apply your own correction factor. Note that there is no point in pretending that the following sequence is sufficient in itself for maximum beekeeping efficiency. Rather it is the skeleton which supports the rest, the vital framework of the beekeeping year.

Early June: Check stores by selecting a cold clear morning, and at first light or as soon after as convenient, slowly remove the roof and place gently on the grass. With extreme care and delicacy remove the inner cover or hive mat and quickly assess the condition and quantity of stores and the position of the main body of bees in relation to them.

Do *not* make the common mistake of waiting for the warmest part of a fine winter's day – the bees may be active, the cluster expanded, and accurate observation impossible. By doing it when the bees are passive, the stores check can be done in seconds without disturbing a single bee. If your wintering down was adequate, so will be the stores, but you have to know.

Repeat at the beginning of July and the beginning of August. If stores are needed, gently take out the empty combs nearest the bees, ones that can be removed without disturbance, and replace with full if you have them. If you do not, then you have to feed with sugar syrup as soon as possible and on as warm a day as possible – but that is another subject.

Now, on to summarise the major events of the year. Note that the sequence and technique of examination was listed in the September 1977 "Beekeeper" and will not be repeated here. If you want a copy, write to me and I'll send one.

August: In this case, the last week in August, completely examine and rearrange your colony keeping the brood nest neat, compact, warm and comfortable. This means keeping it in the centre of the second brood chamber, counting the bottom one as the first, and while doing so, scrape top and bottom bars free of wax and propolis.

Check stores – if you have extra frames of honey, these may be slipped in at the side or in the centre of the bottom brood chamber. Clear floorboards and replace if necessary and remove any entrance guards used.

Switch new brood boxes for old and repaint and generally do a spring cleaning top to bottom and leave bright and clean.

I won't discuss queen cell checks here, but they should take place weekly through August to December.

November: At the end of November put all queen and brood into the bottom brood chamber, and all stores of pollen and honey outside the brood and in the second box. Add the queen excluder above this and add honey supers as needed.

Packing the queen in the bottom box allows the bees to pack honey above her, so keeping her down, ensuring that the second box is substantially filled with what will become winter stores. Full frames may be moved from the centre to the outside as completed and replaced with the empty or unsealed outer frames, but it is more usual to simply let the bees get on with the job of filling box after box with honey and to disturb them as little as possible, if at all.

March: At the end of February or beginning of March remove the last of the honey supers and the queen excluder and requeen.

Rearrange so that the brood is central

in the bottom box with stores outside it plus ten full frames of honey in the second box, and any partially unsealed frames in the centre. This is so the bees move up into the centre as stores are consumed and are safely tucked away in top central position at the worst of the year, and then expand out from there as temperatures rise and days lengthen in spring.

Scrape frames clean as you go and add entrance guards.

And so back to June, July and August and . . .

In conclusion, each examination has a specific function and a specific objective – you do something to achieve something. Always have clear in your mind what you are going to do, and why, before you even light your smoker. All operations are designed for the well-being of the bees under your care, and all are performed within the confines of the two bottom boxes, the brood chambers.

Finding the queen

It is not always necessary to find the queen in hive management procedures but it is always satisfying and reassuring to do so. I am often asked "How do you find the queen?" or "How did you know she would be just there?".

Experience and luck, I suppose, but there are certain pointers to help you.

The queen prefers to lay in an orderly manner, filling in the majority of cells on the adjoining faces of frames before moving over or round to the next.

If on frames in the bottom box she may move either *up* or *across* and vice versa if on top but the general tendency in bees and queens is always to move up gradually.

The queen is unlikely – and I put it no higher than that – to be on the outermost combs and more particularly not on the outermost face, or on frames of stores i.e. pollen and honey without empty cells for her to lay in, or on frames of sealed brood. Eggs take three days to hatch.

So the trend is for the queen to be on central frames and, if no major rearrangement has been done, on central frames in the upper brood chamber, although if she runs out of room there she will move down quite happily.

The experienced beekeeper removes the outer frame for ease of manipulation and goes steadily across the box frame by frame, quickly checking each one. If he finds well-developed larvae or sealed brood it is a while since the queen has been there. He continues on until he perhaps comes across a mixture of freshly hatched larvae and eggs. He knows that the queen was there some three days ago and that he is closing in on her.

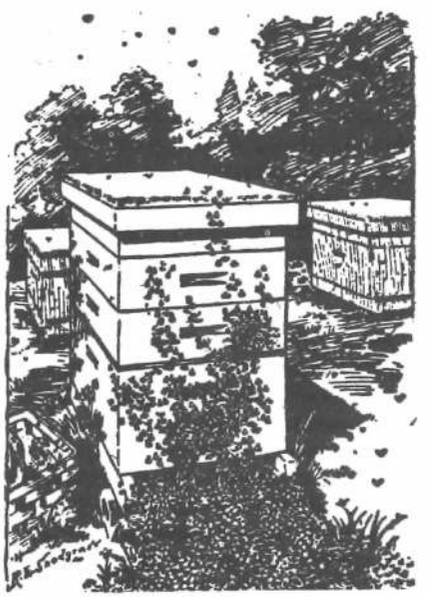
He will then come to frames containing eggs, perhaps only partially laid in. The queen is here or nearby and he examines each face carefully until he locates her, a long slender creature going about quietly and purposefully.

It is unlikely that she will continue laying while he watches. She knows her own value and will quickly try and pop round the other side of the frame, seeking the darkness and warmth of the hive again.

She is not difficult to find once you have the knack of it. If she isn't in the top box, remove that and go through the same sequence in the bottom one. If she isn't there either, start again!

Readers' queries

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.



Dear Mr Williams,

I have run three or four hives since 1959. Over the years I have boosted the odd weak hive with a swarm in the late spring and for some reason, the recipient hive has rejected the swarm twice this spring.

I normally take the swarm in a cardboard carton, tip it into a super of slides, then next day destroy the queen.

The first one this spring I joined using double thickness newspaper but there were a few flying bees. Result – a heap of dead bees next morning.

When the next swarm actually settled in a super of slides near the three hives, I destroyed the queen and waited until dark before placing the double newspaper, a queen excluder (to hold the paper down), then the super of bees on top.

Again they were rejected. Incidentally the swarm was not from my hives!

I have racked my brains to figure out what I might be doing differently to cause rejection of the swarms and would appreciate any tips you may be able to offer.

Yours,
Ian Lennox.

I always think the joining of two colonies of bees as being like two gangs of men building a brick wall: The wall can be built from either side – if just the foundations are down it's easy for either gang to step over and join the mob on the other side, but as the wall goes up it becomes progressively more difficult and eventually impossible.

The layers in the wall between colonies could be marked with such factors as age of queens, distribution of ages of workers, presence or absence of drones hungry or otherwise, during honeyflow or dearth, weather good or bad, and a host of other items.

If we are dealing with a swarm on one side some of these factors become paramount and could perhaps be responsible for two or more layers in the wall all by themselves.

A swarm is already at a high level of alienation and may meet an equally strong reaction from any other colony with which it comes in contact. Again, in theory, a queen may swarm away each year but her influence and the stamp of authority she places on that swarm may decrease with the years.

A swarm headed by a young queen may have a very high "resistance factor", if we may call it that, extending even beyond her removal.

Specifically, you say you are having difficulty uniting swarms with already established colonies. We must accept this situation.

To ensure success, establish the swarm as a separate colony immediately alongside the colony to be augmented. Leave one week. Then, on a fine warm day and between 11 a.m. and 2 p.m. kill off the swarm queen and quietly unite, placing one sheet of newspaper in position lightly scratched with the hive tool, and placing the existing colony **on top** *of the swarm. Leave one week, then examine and rearrange as desired.*

All the best,
David Williams

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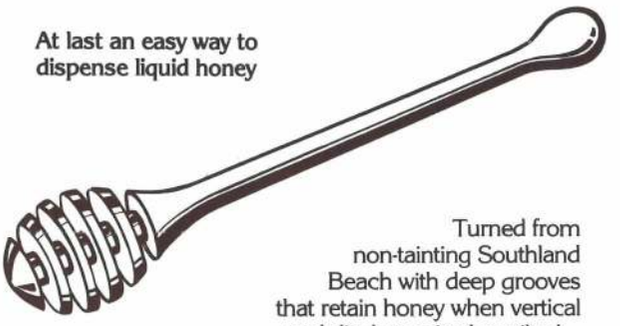

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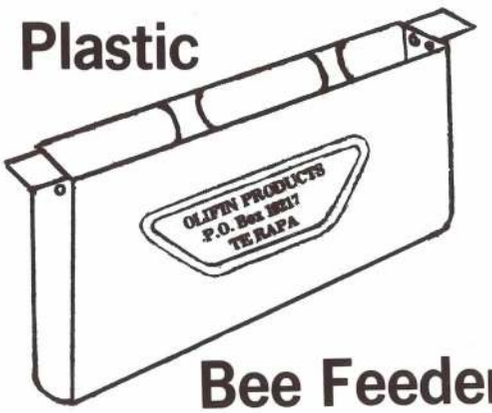

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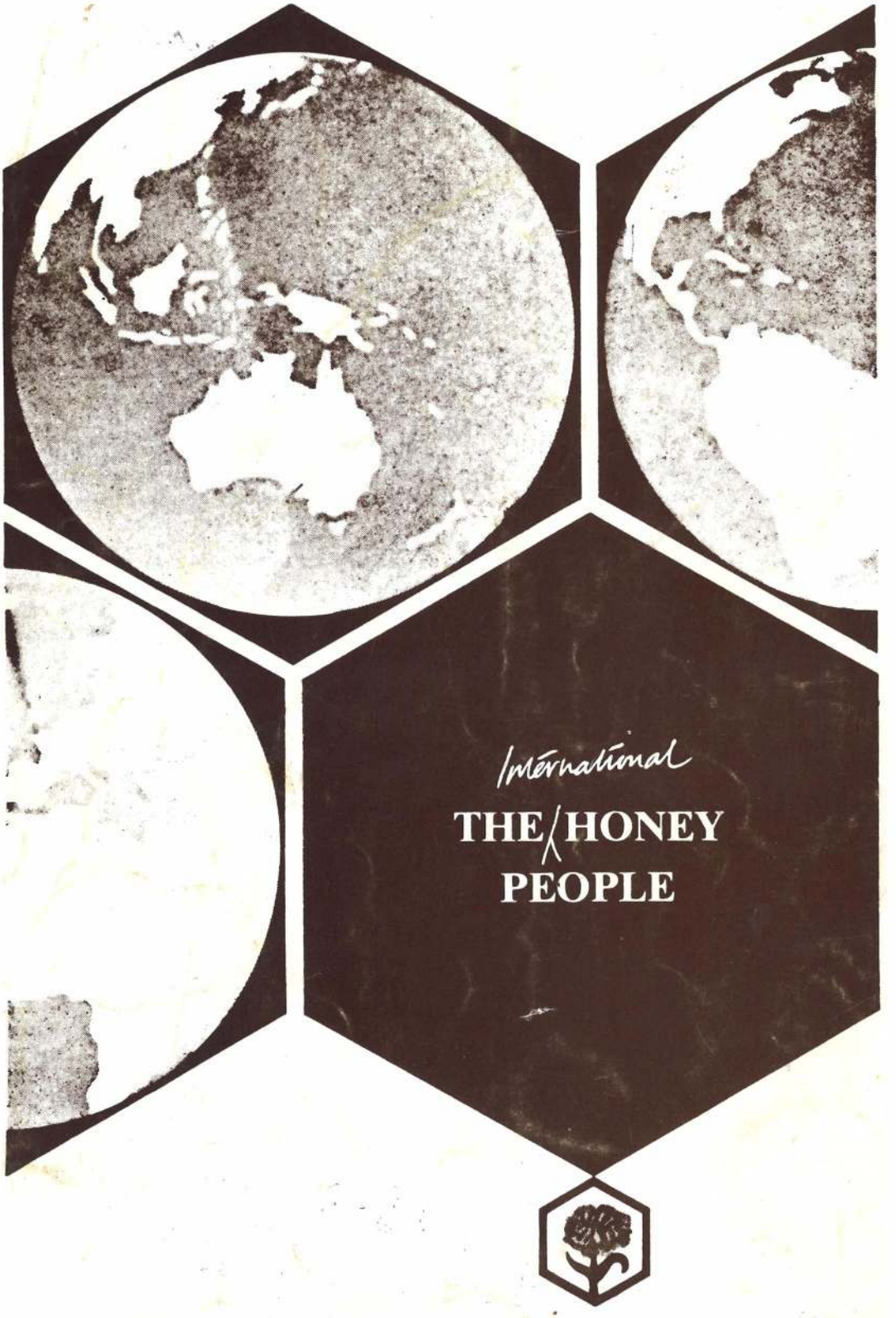

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