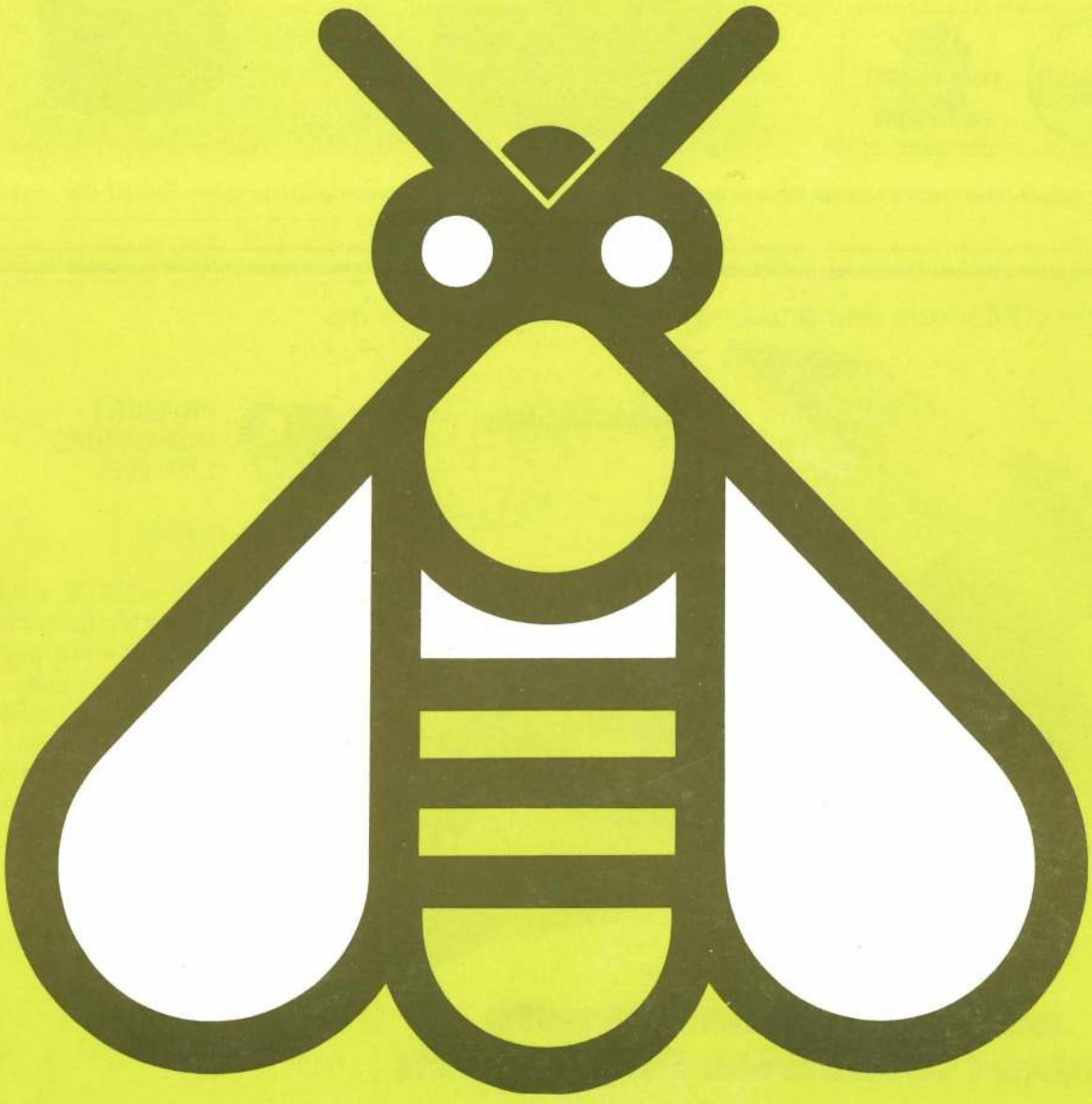
THE NEW ZEALAND beekeeper



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Index

Playing it close to the chest

THE DECISION of the 1979 industry conference to choose an "independent" as its president has borne fruit. Working independently of the various industry pressure groups, Paul Marshall (with the assistance of agriculture undersecretary Rob Talbot) has succeeded where so many others have failed.

In the intimate atmosphere of a Wellington boardroom, he managed to get a consensus of opinion from representatives of all sectors of the industry. Unlike a large conference where delegates sometimes play to an audience, the recent Wellington meeting grappled with some serious problems and found solutions. (See our story on page 13).

The role of Rod Talbot was important. At the industry conference, his knowledge of the industry was transparently thin. At the recent NBA meeting he was well-briefed and a constructive chairman.

Paul Marshall is concerned that his next steps should be positive, but because of the number of competing interest groups in the industry he is playing his cards close to his chest. However, it is certain that he will be seeking further assistance from the associate minister before he makes the next move.

He talks of another meeting to precede the 1980 conference at which a number of hard policy options can be discussed for presentation to the conference.

At the moment the president of the NBA has the initiative and the confidence of the industry.

It is good to feel that we are making progress.

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Beekeeper rates

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

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

Subscriptions

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

Beekeepers owning less than 50 hives, will pay an annual subscription of $9.00 which includes the cost of a subscription of the NZ Beekeeper.

KING BEE

(WHERE THE NBA HAS ITS STING)

Beekeeper contract renewed

The Agricultural Press Company of Masterton has had its contract for the production of the NZ Beekeeper renewed by the NBA executive. The new contract which starts with the March 1980 issue of this magazine allows for increase in production charges as a result of inflation in costs, though some marked savings have been made.

In order that the overhead costs of producing the magazine are shared among as many subscribers as possible and because of the desirability of spreading the NBA net further into the hobbyist's fraternity, a continuing membership drive will be started with the December 1979 issue. Prospective members will be circulated with a free copy of the magazine with the offer that they should become subscribers.

Bad weather relief reviewed

The beekeeping industry is unlikely to have an insurance scheme started in order to protect apiaries and beekeeping enterprises from the effects of bad weather. The Ministry of Agriculture and Fisheries is currently reviewing its adverse climatic events relief system and its report was referred to Mr Mervyn Cloake of the NBA executive for study and comment.

The report suggested a number of alternatives by which industries could protect their assets and their income from the effect of bad weather. Of the suggestions, which included an insurance scheme, Mr Cloake suggested the best would be a cash loan proposal. This would enable beekeepers hard-hit by bad weather to get themselves established again.

The association is not taking any further action on the reports.

Honey standards codified

The food standards committee of the Standards Association has recently prepared a draft standard for honey so that the New Zealand definition is aligned with those set by Codex Alimentarius. Similar changes have been made to other New Zealand standards for agricultural products so that they comply with the international codex definitions.

President on Chemicals Board

The president of the NBA, Paul Marshall, has been reappointed as the association's representative on the Agricultural Chemicals Board. It was previously the policy of the association to have the vice-president as the board representative, however the chopping and changing which resulted from changes in the executive was not appreciated by the board and in the future, a long-term executive member is likely to remain as the representative.

Apiary committee

The Apiary Advisory Committee which supervises the toxic honeydew bee-free zone in the northern North Island, is made up of Mr Ian Forbes of MAF's advisory services division and Messrs J.R. Courtney, J.D. Lorimer and P.W. Marshall, all apiarists from Waihi, Hamilton and Napier respectively.

No loans for hives

The NBA executive is actively gathering ammunition to support its case to have bee hives accepted as collateral for Rural Bank loans. Beekeepers who have been turned down in their approaches to the Rural Bank for finance because of this situation are advised to get in contact with their nearest executive member so the matter may be taken further.

MAF seminar at Tauranga

The Ministry of Agriculture is going to run another beekeeping seminar at the next industry conference. The conference is being held in Tauranga in 1980.

Queen loss study likely

Supercedure losses of North Island queens in South Island hives are of growing concern to some South Island beekeepers. The losses which occur up to two months after requeening involve a big proportion of hives in some apiaries.

The problem has been apparent for the last two years and as a result, the MAF advisory services team is planning a special research probe to get to the root of the problem. Any beekeepers with supercedure problems along the lines described should get in contact with their local apiary advisor.

Clinch the clincher

The NBA executive has resolved that it will support the import of Mason bees by the D.S.I.R. for investigational purposes only when Pat Clinch of Wallaceville Research Station is satisfied that there will be no disease risk in the proposal.

The Executive and the Wallaceville Research Station maintain a close liasion and at the October meeting in Wellington, executive members took the opportunity to visit the research station in the Hutt Valley.

Vipers Bugloss free

The name of this valuable honey-producing plant is a bit of a give-away. There are many non-beekeepers who regard it as somewhat as a nuisance, calling it a few other choice names as well: Like Patterson's Curse in Australia.

In New Zealand, V.B. is also known as Blueweed in those areas where it is a valuable honey plant – notably Marlborough and Canterbury – where it tends to become well established in riverbeds and open country.

Its blue flowers, however, have been a target of noxious weeds sprayers in recent decades . . . a fate which only now looks like coming to an end with the removal of this annual of the borage family from the schedules of the Noxious Plants Act.

A plant of European origin, Blueweed is not highly regarded in those parts of the United States and Australia where it has become established. In New Zealand it is important to the livelihood of a number of apiarists, and the news that it is no longer regarded as noxious by the authorities is likely to be greeted by these people as good news.

Rumours not facts

Widespread rumours about the fate of the government representative on the HMA board, Don Hayman, had not borne fruit at the time this issue of "Beekeeper" went to press. In response to some pressure from beekeepers, it was rumoured that Mr Hayman was about to be replaced by Mr Grahame Walton as the minister's man.

However, the appointment is made by the minister of agriculture and he had not notified any of the parties involved of any changes he might have in mind.

BURRCOMB

from the editor

Environmental commission on our side

Following the 1978 NBA conference, the executive officer Graham Beard, approached the National Roads Board to investigate the feasibility of planting road sides with suitable flowering shrubs and small trees for bees.

The response from Mr Tourell and Mr Burt from the Roads Board was, to say the least, a masterpiece of bureacratic obstacle creation.

Mr Burt on behalf of Mr Tourell, said that while the NBA suggestion seemed to be a useful idea, there was the problem of members of the travelling public transplanting NRB planted trees into their own garden. He went on to say, "the use of shrubs which attract bees has another disbenefit for the motorist who through the national roads fund would be meeting the cost of these works. An increase in the bee population on bush highways can create a distinct travel hazard since many of the bees would inevitably find their way into passing vehicles. The presence of a bee in a fast moving vehicle is a most uncomfortable distraction for the driver and is the direct cause of a small proportion of our traffic accidents.

"In summary then the planting of nectar and pollen producing plants on the highways is not an activity which the National Roads Board can encourage on the grounds of costs involved and the reduction of road safety."

Mr Gresham, of the Commission for the Environment, is not satisfied with this reply and has told the NBA executive officer that he is disappointed with the response of the National Roads Board. So much so that he has raised the matter with the director general of agriculture, Mr Bromley, of the Town and Country Planning Division of the Ministry of Works, and Mr Richards of the New Zealand Counties Association.

Beekeepers and motorists may get to see more attractive road side planting yet.

Decontamination?

Australian beekeepers visiting New Zealand are likely to be decontaminated using the mineral hot pool method of sterilisation. The Ministry of Agriculture and Fisheries apiary advisory officer in Christchurch, Mr John Smith, is pioneering this field and I was the first guinea pig. Upon arrival in Christchurch, I was driven to Hamner. On the way I showed some interest in looking at hives in paddocks adjoining the road, but John just kept driving on.

Upon arrival at Hamner, it was suggested that I might like to take a dip in the hot pools, that turned out to be very pleasant. After going through this ritual, it was considered all likely bee diseases that I may have been carrying would have been eradicated and I was then allowed to look at hives in New Zealand!

Rumour has it that this treatment will be a pre-requisite for overseas beekeepers visiting New Zealand before they can enter an apiary.

Bruce Ward,
– Goulburn.

No! Not 1969, it's 1979

From time to time there are grumbles about private packers underselling their colleagues at less than the cost of production. We can only assume that this supermarket managed to find someone who still thought it was 1969 and priced accordingly.

And you say you work hard!

BEES ARE the best pollinators in the world, their supporters claim, and with some justice.

There may be 60 000 bees in a summer hive of which at least half go out and gather, and every time they go out they pollinate.

Let's have a look at the statistics. The 30 000 bees bring in at least 60kg of honey (well, they certainly do in my hives!) and this will have been reduced from twice that amount of nectar, or 120kg.

However, at least twice this amount will have been used in spring buildup, brood rearing, eating, wax production, etc, and for winter stores. (Morse claims five to six times in his "Complete Guide to Beekeeping".)

Therefore total intake will be at least 360kg every year. Each bee on each trip will return with an average of 70mg as a load. To get this, the bee will have visited an average of at least 700 flowers.

So if we multiply all that together: 30 000 bees getting 360kg at 70mg per load at 700 flowers per 70mg, we get the incredible total of 3 600 million visits to flowers per beehive per year. Multiply this by the 220 000 hives in New Zealand and it adds up to 792 000 000 000 000! And thats without the trips for pollen!

Beat that if you can!

Which shows the vast amount of energy the bees expend, the vast area they must cover and helps to explain the high death rate in the field bees in the honey flow.

– David Williams.

"Bee alert" logos available

Iowa State University has produced a set of logos aimed at creating an awareness of honey bees among urban and agricultural pesticide users. The logos are suitable for use in magazines, newspapers, and newsletters. They can also be used on T-shirts and stationery.

A set of 12 logos of three different sizes is available free of charge from Dr Jerald R. DeWitt, Extension Entomologist, Entomology Insectary Building, Iowa State University, Ames, Iowa 50011. As seen in the sample above, each logo includes a honey bee and the words "Bee Alert".

There are 12 different cautionary statements about using pesticides. Although the logos include the University's name, they may be used without it according to Dr DeWitt.

Old timer calls it a day

Industry identity, Mr T.R W. Nicholas, has decided to put up his veil and smoker for the duration.

The last of three well known beekeepers who established commercial beekeeping in the Taranaki area, Mr Nicholas was until June an agent for Alliance Bee Supplies in Henderson near Auckland.

The other two identities were the late Allan Bates, formerly of Kaponga and until his recent death, of Matamata and Mr H.R. Penny, the 92 year old former president of the Taranaki branch of the NBA. Mr Penny celebrated his 60th wedding anniversary in February and only gave up his hives about a year ago.

Mr Nicholas, until his retirement, had been beekeeping for 50-odd years. His business had been started by his father and uncle under the name of Nicholas Brothers in 1906.

In 1917 Nicholas Brothers extracted a bumper crop of Rewa Rewa honey which was exported to England for the princely sum of 2/6 a pound. Honey production and cone foundation manufacturing was the main source of income for the Nicholas Brothers' business.

The early records of this business were destroyed by fire in the early 1930s. With the aid of the slow transport provided by horses and wagons they were among the first beekeepers in the country to have out-apiaries. Honey sheds were built on several apiary sites and the product was extracted in these sheds and carted in 60 lb tins to the home apiary for later exporting.

According to Mr Nicholas, early copies of the journal of agriculture had write-ups of honey production in the early days in south Taranaki. These featured the operations of the Nicholas Brothers.

In a letter to the N.Z. Beekeeper, Mr Nicholas said that he wishes to thank those beekeeper friends for their support over the years and he wishes them good health and good crops in the years ahead.

The N.Z. Beekeeper staff say a big thank you to Mr Nicholas and wish him a very happy and fulfilling retirement.

Gear sold to US

Timaru inventor and former beekeeper, Robert Davidson Jnr, has sold world wide manufacturing rights of his revolutionary gearing system to an American company.

Under the deal, Mr Davidson retains the ownership of the four world patents already in existence and further developments which might also be patented.

Mr Davidson whose invention was described in detail in the March 1979 issue of the N.Z. Beekeeper, has been pressured by the firm which has bought the rights to his invention to continue his development work in the United States.

However, he recently told the Timaru Herald that he had no intention of leaving New Zealand.

They don't always understand . . .

Our eagle eyed former librarian has forwarded a copy of an article from the Timaru Herald which illustrates a lack of knowledge most New Zealand travellers have of the restrictions on the import of bee products. In an article describing an exchange group visit to New Caledonia, Mr J. Robert said that the most disappointing feature of his return to New Zealand was to have to surrender to the agriculture department a bottle a natural honey.

He said the bottle of bush honey was from the native niaoula flowers, trees of which cover practically the whole of New Caledonia.

"I had taken honey from New Zealand and not for a moment thought there would be any problem about bringing back some of the local product," he said.

It may be good apiary industry public relations for the NBA and the Agricultural Department to get together to produce a small pamphlet for New Zealand travellers telling them why these restrictions exist. A little understanding would go a long way.

Tax man not too harsh

Beekeepers worried about the tax-deductability of their up-graded honey houses should get their accountants to make a good case to the Inland Revenue Department.

While no hard and fast rule can be made about the tax-deductability of modifications made to honey houses to ensure they comply with the Food Hygiene Regulations, there is provision in the Income Tax Act for the Commissioner of Inland Revenue to use his discretion "as he thinks just" where an asset has become "obsolete or useless".

No doubt, if your honey house was just a run-down little shed and you wish to replace it with a sophisticated food packing house, the deductability won't be total.

But in our experience, the Inland Revenue Department is generally fair and reasonable to people who make fair and reasonable requests. A beekeeper who makes such a request is likely to be treated as favourably as a dairy farmer with a cowshed needing upgrading for the same reasons. And we haven't heard of any dairyfarmers being turned down.

Photos from top, clockwise: Close up of ULTRACOELOSTOMA ASSIMILE after careful removal of its protective capsule; an apiary site on honeydew; bees working honeydew on a tree trunk. Photos by G.K. Crozier.

BEECH HONEYDEW HONEY - A vast potential

by Advisory Services Division, Ministry of Agriculture and Fisheries.

"THERE EXISTS a potential for at least 60 000 beehives producing in excess of 3000 tonnes of beech honeydew honey, with a current export value of $5 million" said Mr R.L.G. Talbot, Under-Secretary to the Minister of Agriculture, when opening the beekeeping industry's annual conference at Christchurch in July. "These are astonishing figures when considering that New Zealand's total annual honey production averages just over 6000 tonnes, but I believe they are realistic and attainable" he said.

Mr Talbot's comments were based on a comprehensive report on the beech honeydew resource prepared for him by the Advisory Services Division of the MAF. The following article is a summary of this report.

The honeydew insect

Honeydew is a by-product of the feeding processes of many types of plant-sucking insects, particularly of the Order Homoptera. It is one group of Homoptera, namely the scale insects or Coccoidea, which is of relevance here.

Southern beech *(Nothofagus* spp; also incorrectly called birch) harbours at least thirty species of scale insects in New Zealand. While many or even most of these secrete honeydew to some extent the most important species is *Ultracoelostoma assimile* Maskell (Homoptera; Margarodidae). *U. assimile,* commonly known as the sootybeech scale, is found on many different species of trees and shrubs throughout New Zealand, but is found in highest densities on beech trees.

The second-instar female nymph is responsible for the production of honeydew. First-instar nymphs are "crawlers", adult females do not feed, and males are not thought to be present.

After the crawler stage is completed, the insect moves into a crevice in the bark of the tree and secretes a waxy test in which it passes the remainder of its existence. The insect inserts its long proboscis through the bark and parenchymal tissue into a phloem cell. It feeds on phloem sap, and because of an apparently inefficient digestive system, excess nutrients are excreted or exuded in the form of honeydew.

To facilitate the removal of the honeydew out of the test in which the insect lives, the sootybeech scale has a long waxy tubule attached posteriorly. The honeydew passes through this tubule (commonly referred to as a "thread" or "whisker") and collects in

a droplet at the distal end. It either falls off or else is removed by another agent.

Honeydew honey

Honeydew is collected by the bees, modified into a form of honey and stored in the combs. This product is known as beech honeydew honey, although it is sometimes misleadingly referred to as beech honeydew, birch honey or even bush honey.

Because nectar and honeydew are both essentially modified phloem sap, nectar honey and honeydew honey are basically similar products, although there are of course important differences. These differences are readily apparent by smell and taste, although they are difficult to show chemically because of the similarity of sugar spectra in the two products, and the fact that the apparent differences are caused by chemicals present in very small quantities.

In Europe, honeydew is collected mostly from conifer forests, and also from such trees as oak, ash, elm, maple, lime, etc. But it is from the coniferous forests of Germany, Austria, Switzerland, Bulgaria, Greece and Poland that significant quantities of marketable honeydew honey are produced. Honeydew honey thus forms a part of the traditional diet of many Europeans, which accounts for the demand for New Zealand beech honeydew honey there.

Beech honeydew distribution

In general terms, it can be stated that beech honeydew is found in mountain, black, red and hard beech forests in the northern half of the South Island. On the eastern side of the main divide honeydew occurs north of Mt Somers, and on the West Coast it can be found north of a line drawn between Bell Hill and Atarau in the Grey Valley.

The areas of highest honeydew pro-

HONEYDEW RESOURCE SURVEY OF CANTERBURY PLAINS FOOTHILL FORESTS

FOREST	MAPPING UNIT	Forest area below 850 metres (hectares)	1 Mean No. of active threads (millions)	2 Total No. of threads (millions)	3 Hives forest could support	4 Present No. of hives (Autumn 1979)	5 Honeydew Honey yield (kilograms)
Ashley/ Mt Grey	Karetu/Horsford	1 720	8.45	14 534	6 880	600	344 000
	Mt Grey/Ashley	760	1.15	874	3 040	1 895	152 000
Okuku	TR Okuku River	1 140	2.97	3 386	2 280	50	114 000
	TL Okuku River	650	2.37	1 541	2 600	300	130 000
Mt Thomas	Lees Valley	400	0.82	328	800	–	40 000
	Frontal Country Canterbury Plains Frontal Country	1 820	1.05	1 911	7 280	1 000	364 000
Townshend	Townshend River	2 100	2.24	4 704	4 200	–	210 000
	Milton and Shifton Streams	990	1.87	1 851	1 980	–	99 000
Oxford	Canterbury Plains Frontal Country	2 620	moderate	–	10 480	–	524 000
	Waimakariri Block	2 370	low	–	4 740	–	237 000
Torlesse	Torlesse Range	450	3.80	1 710	1 800	100	90 000
13 Mile Bush	Bush Stream	370	1.69	625	1 480	–	74 000
	Selwyn River Nth	950	4.96	4 712	3 800	–	190 000
	13 Mile Bush Stream	200	0.97	194	800	–	40 000
Rockwood	Rockwood Range	340	1.23	418	1 360	200	68 000
Mt Hutt	Canterbury Plains Frontal Country	740	3.39	2 501	2 960	600	148 000
	Back Block	280	12.39	3 469	1 120	–	56 000
Alford	Canterbury Plains Frontal Country	2 110	0.80	1 688	8 440	2 000	422 000
TOTAL		**20 010**			**66 040**	**6 765**	**3 302 000**

duction are black and mountain beech forests in drier areas, below an altitude of about 850 m. In the Nelson, Marlborough and Buller regions, lowland beech forest is usually mixed with podocarp and hardwood species, and the rainfall is mostly higher than in Canterbury. This means that obtainable yields of honeydew honey are lower, and are often mixed with floral sources.

Within the bounds of the sootybeech scale's range, Canterbury contains about 40 000 hectares of beech forest. However, much of this is inaccessible, and also the scale's distribution is not uniform. For the production of honeydew honey, the most important areas are the Canterbury lowland forests.

NZFS Canterbury beech forest survey

As part of the New Zealand Forest Service 1978/79 ecological surveys, some 26 000 ha of the Canterbury lowland forests were assessed for sootybeech scale population levels.

The honeydew resource data was collected between the middle of November 1978 and February 1979 in Ashley, Mt Grey, Okuku, Mt Thomas, Torlesse, 13 Mile Bush, Rockwood, Mt Hutt and Alford indigenous forest areas, as well as the Townshend Catchment of Oxford State Forest. Assessment of the resources was not confined to State forests.

While this survey only covered the foothill forests, honeydew is known to occur in commercial quantities in parts of Craigieburn, Broken River, Puketeraki, Glens of Tekoa, Grantham, Hossack Downs Forests, and in remnant beech areas north of the Hurunui to the Clarence River.

Plots, generally 10 m x 10 m and 200 m apart, were established along survey lines which were randomly located from rivers to the nearest main ridge top. Measurements were restricted to *Nothofagus* spp. with a diameter of 5 cm or more at breast height. The number of threads supporting droplets of honeydew, protruding through the bark within a 12.5 sq cm sampling grid, were counted.

At each plot the following additional information was recorded: Altitude, aspect, slope, physiography, parent material, drainage, evidence of cultural influence, ground cover, and mean top height of the stand. A computer programme was prepared using the logarithmic relationship between the diameter and the surface area to determine the estimated number of scale insect threads supporting honeydew droplets per hectare of beech forest.

Beech forest honeydew potential

This data, presented in columns 1 and 2 of the Table, is extremely useful in assessing the potential of areas for honeydew honey production. The number of active threads per hectare of forest gives an assessment of the concentration of honeydew production within that forest.

The total number of threads gives an idea of the sum of production for that area.

It is immediately apparent from these results that the most-utilised areas, in fact, are among those with the lowest densities of scale insect. These have apparently been stocked for other reasons, such as proximity to apiarists' existing operations, ease of access, lack of originality on the part of apiarists, etc. The high yields obtained in these areas stress the enormous potential of some other areas, not yet utilised.

Several areas stand out as having a very high potential. The north branch of the Selwyn River, The Okuku, Townshend, Torlesse and Mt Hutt areas all

have high honeydew production, but are not stocked with bees to any significant extent.

In estimating the potential hive capacity (column 3) and honeydew yields (column 5) in the Table a number of assumptions have been made:

- Stocking rate of four hives/hectare
- 50 kg honeydew honey obtained/hive/year
- Parts of the Mt Thomas, Oxford and Alford forests have been excluded from the Table for reasons of low potential as well as restricted access, sites and pollen sources.
- Only 50 per cent of areas with a reasonable honeydew resource but minimal roading, apiary sites and pollen sources within parts of the Okuku, Townshend and Oxford Forests have been included.
- 850 m the altitudinal limit of the honeydew resource.

Based on these realistic, conservative assumptions there exists a potential for at least 60 000 beehives, producing in excess of 3000 tonnes of honeydew honey within the 20 000 hectares of forests listed in the Table. This potential crop has a current export value of $(NZ) 5 million.

Other findings

The Ashley/Mt Grey Forest received the most intensive sampling study; an area where existing hive densities were higher than for any other part of the survey area. The available honeydew resource, at 1.15 million active threads/ha was not very high when compared to other forest areas.

One zone within this forest contained 1150 hives with access to 330 ha of beech forest. It could absorb more hives, but the main constraint to further expansion is apiary management problems, particularly robbing.

An adjacent zone contained 200 hives with access to 320 ha of beech forest. This second zone could easily absorb another 1000 hives, providing apiary sites were made available.

In the Mt Thomas Forest the occurrence of honeydew and the density of active threads were found to be highest on northerly aspects (6 201 000 threads/ha) and lowest on southerly aspects (147 000 threads/ha).

During the period that the recordings span, there are apparently two distinct "populations" of scale insects. Recruitment of new second stage nymph honeydew producing insects occurred for the Mt Thomas plot in late January, whereas for the higher altitude Craigieburn plot, the recruitment of new honeydew producers is only evident from mid-February.

Prior to the recruitment of new insects the population is lower than it is either in early summer or in autumn. Hence the recordings verify the observations of apiarists that peak honeydew flows occur in the spring and early summer, and again in late summer and autumn, with a low yield period in mid-summer.

In addition to the Canterbury lowland forest ecological survey, a field survey was carried out in parts of the Nelson apiary district to assess the potential for honeydew honey production. Potential exists for greater utilisation of honeydew by apiarists in the Nelson apiary district, as supplementary winter stores for bees, a component of "bush honey", and as a separate, exportable line. An ecological survey of scale insect population is desirable in this region, to isolate areas of high honeydew production.

Roading access and the availability of apiary sites are generally adequate for the forest areas listed in the Table. In some cases a four wheel-drive vehicle would be required, in other cases access through private land would be necessary. Most forest blocks contain many potential apiary sites, however some levelling may be required.

Pollen availability is limited in a number of forest areas, however this is not considered to be as serious as depicted by some beekeepers. The feeding of pollen supplements and substitutes, not presently used to any extent, could be developed as a routine part of hive management to overcome shortfalls.

Some beekeepers have advocated the planting of pollen-bearing trees or shrubs. The propagation of pollen trees for bush fringes, farmland, and other modified ecosystems is acceptable, but the idea of planting exotics within beech forests, an indigenous ecosystem, cannot be fostered.

Conclusions

This recently completed study of the beech honeydew resource has clearly defined the vast potential that exists, and that is available for the taking, now, in areas where roading is adequate and where sites could be developed.

Government has been of some considerable help to beekeepers, and particularly to commercial honeydew producers, in assisting them to increase production. The export taxation incentive on honeydew, the rural export suspensory loan, the monitoring of bee diseases, and an advisory service which can extend the findings of the honeydew honey resource study are some of the major ways in which this government assistance has been provided to honeydew producers.

Some aspects warrant further examination. It is recognised that a major difficulty facing potential commercial producers of honey, including honeydew honey, is their difficulty in obtaining sufficient development finance. A continuing research programme into honeydew is also warranted. At present there is little scientific knowledge about beech honeydew; the biological processes involved, its distribution, forest ecology, and its utilisation, and research in these aspects should be fostered.

ACKNOWLEDGEMENTS

This article was prepared by Grahame Walton, Advisory Services Division, MAF on the basis of reports prepared by J. Smith, A.G. Matheson and I. Parminter of the Advisory Services Division, MAF, and by M.C. Belton and E.R. Crozier of the NZ Forest Service.

No changes in apiary advice

MAF ADVISORY services are not about to change their methods of providing detailed information on honey extraction plants to beekeepers.

In Remit 30 at the 1979 industry conference, the Association requested "the Ministry to provide the industry with detailed information on honey extraction plants, suitable for handling honey which will meet with the entry requirements of importing countries."

Replying to this remit, Mr G.M.Walton of MAF Advisory services division says, "the Ministry, through its advisory service, does indeed provide the beekeeping industry with detailed information on honey extraction plants and this information in general meets the requirements of importing countries.

"Detailed information on honey extraction plants can best be conveyed to interested beekeepers by discussion with local apiary officers.

"Published articles are not considered to be the best medium to transmit "detailed information" other than to present the general broad principles of honeyhouse and equipment preferences."

Mr Walton said that the ministry would continue to publish general interest articles in the future.

A special report by Harry Cloake

Apimonda in Greece - hives amid history

GREECE WITH its background of mythology and ancient history provided a grand background for the 27th International Congress of Apiculture held at Athens in September this year.

The congress was held in the main conference hall at the Hilton Hotel, the largest hotel in Athens. The static trade displays were held in an adjoining area, while on a covered patio next to this was a display of ancient beehives (mostly of the type used in the Mediterranean area) and antique beekeeping equipment. Alongside was a large selection of modern equipment and machinery.

The first morning of congress was set aside for registration and facilities were available through a travel agency to book for the many half or full day trips to some of the more interesting parts of Greece near to Athens. While there was considerable congestion during most of the morning those attending were able to make suitable arrangements. The New Zealand party were fortunately staying at the Hilton, so had no difficulty in arranging their requirements.

Most of the New Zealand party took advantage of the free afternoon and took a half day tour of the city. Athens has a population of close to three million and because it has so much to offer the tourist, the afternoon was really exciting. It is a blend of the ancient and the modern, with magnificent marble buildings side by side with ruins of a long gone era, with the Acropolis standing boldly high on a rocky hilltop in the centre of the city.

For the opening of the congress on the morning of the Saturday, the hall which seated over 1000 people was crowded.

People were standing in the aisles and overflowed into the foyer. While the opening ceremony was very formal, speeches were brief.

It was unfortunate Keith Doull of Adelaide could not be present through ill health to hand over the chain of office of congress president. It was here English speaking people attending the congress came up against their first difficulty: The translations of speakers into the English language were shocking and very difficult to follow as the interpreter was definitely not a natural English-speaking person. For most of us this spoilt the whole congress, resulting in many not attending as many sessions as we had intended.

Congress proceedings are divided into sections, each section dealing with a certain aspect of apiculture. This allows those attending an opportunity to select those papers they wish to hear and at the same time take advantage of the many local bus tours or just go sightseeing. It was unfortunate the set programme was not adhered to. It caused confusion and this, coupled with the poor translation, just dampened our enthusiasm.

In general the papers given lacked real practical application and on this occasion the whole programme had a continental flavour and was just not applicable to our way of beekeeping.

Those who attended the congress at Adelaide will remember the great social events which brought people of all nations together and created a carnival atmosphere. This was sadly missing at Athens with only one social event, the farewell banquet. This had been changed to the last night so we NZ'ers missed out. We had a plane to catch.

There was great concern evident at Congress about the spread of the Varroa mite. Several papers were submitted on the subject, but it appears up to the present there is just no way to stop the spread through Europe and adjoining continents.

As was evident by exhibits in the trade displays, plastics are slowly making their way into beekeeping. While still expensive, there appears some promise for wider plastic use in the future.

The finish of Continental-made extracting equipment was noteworthy. All was beautifully made, had real practical application in smaller outfits and appeared to be very durable.

The programme provided a full-day bus tour of beekeeping country, beehive sites and sightseeing. Forty five buses were used to take those attending congress. The route was west from Athens to Corinth, across the famed canal to the plains of Agolis. Several stops were made to visit hive sites during the morning.

Greece, with an area similar to the South Island of New Zealand has some 750 000 hives of bees and produces about 6000 tonnes of honey. Langstroth hives appear to be used by the more modern beekeeper with Greek black bees predominating.

As the honey season was finished it was difficult to assess the efficiency of their beekeeping, but if the bee strength at a time similar to our March was any indication, I doubt if they know what a good strong hive looks like. We tasted several honeys. Thyme honey in Greece bears no resemblance to that gathered here, it is delicious.

After visiting the bee sites we were taken to the ancient Acropolis of Mycenae; here is the famed Lions Gate, Great circle, site of the Shaft Graves, and the Beehive Tomb of Klytaimnestra, so named because of its shape.

Lunch at a village was something to be experienced. We all got something to eat and plenty of local wine, but what an effort for the locals, their families and I am sure, all their relations. Imagine 45 buses loaded with people from 45 countries all packed into small cafes in a small Greek Village being fed at the one time. It was some experience.

We returned back along the coast to Corinth stopping at the ruins of Epidauros to see the restored theatre. It is here one can stand at the top of the 60 terraces and hear the human voice spoken in a normal tone at the bottom, perfect acoustics and the most perfect theatre of its kind. This was a wonderful day and perhaps the best part of the congress.

While one does not really learn a great deal more about beekeeping in a practical sense, it is the atmosphere and the people one meets at congress which makes it a most interesting experience. Some of us met again with people from other lands we had first met at Adelaide. We met like old friends. We may have had problems in communicating, but we managed.

That is the great fun of it. But seriously, this is what brings people of all

nations together in a common cause and we then know each other so much better and appreciate each others problems.

No one should visit Greece unless you visit the Greek Islands. A full day's cruise on the blue Mediterranean to the islands Hydra, Poros and Aegina was an experience we will not forget, for it is here one goes back in time and see life as it must have been so many centuries ago.

Some of us also took a bus tour to the ancient city of Delphi, reputed to be the home of Apollo and the famed Oracle. This tour took us through some of the thyme honey country by Mount Parnassos. Hives were placed along the roadside in apiaries of up to 40 hives, all appearing to be good standard Langstroth hives, with some apiaries a few hundred metres from the next one.

Those of us who were fortunate to be able to make the trip to Athens will not forget it. We saw beekeeping in Hawaii, Canada, France and Greece and thanks to the tour leaders, Kevin and Sunney Ecroyd, it was wonderful.

CORRESPONDENTS

TREE CROPS CONFERENCE

Dear Sir,

The New Zealand Tree Crops Association will be holding its annual conference at the Lake Hayes showgrounds in the Wakatipu, commencing Friday April 25, 1980 (Anzac Day) and concluding after field trips on Monday April 28, 1980.

The conference will depart from tradition this coming year and provide a series of continuous workshops covering various tree crop interest and related crops. Subjects such as grafting, budding, pests and diseases, propagation, plant material selection and shelter, crops and sub-tropicals, to nuts, to bee fodder and animal fodder will be covered in the workshops.

On the Friday afternoon there will be a seminar on the export potential of tree crops and lead speakers will come from the fields of Trade and Industry, Hortex, Standards Association, M.A.F. and one of New Zealand's major exporters.

On the Saturday afternoon there will be a symposium titled 'Tree crops in the high country' and the lead speakers here will be from the fields of high country farming, commercial beekeeping, entomology, soil conservation, forestry research and tussock grasslands. The symposium will look directly at the prospect of co-operation between the high country farmer, the tree grower and expansion of the beekeeping industry up into the high country.

Although it would be the wish of N.Z.T.C.A. to see as many beekeepers as possible join the association for their own benefit, as well as that of the association, a wish not to join should not deter beekeepers from attending the conference.

As conference convener, I would like to issue an invitation, through your magazine, for beekeepers, amateur and professional, to register on a daily basis and take part and contribute to the conference.

It is hoped that trade exhibitors will respond to the invitation because of the style of the conference, perhaps it could be described as a cross between an A and P show and a fair. You may care to be represented at the conference and we would be pleased to see you. We would also be pleased to see as much coverage of the conference in beekeeping related matters published in your magazine.

If you or any beekeepers need any further information about the conference. then please write to me at P.O. Box 124, Queenstown.

Yours,

Ernest New,
Invercargill.

ELECTION THANKS

Dear Sir,

To those who supported me in the recent Honey Marketing Authority election, thank you for your vote.

Yours,

Harry Cloake,
Timaru

LOOKING FOR AMERICA

Dear Sir,

Through your magazine, N.Z. Beekeeper, please extend the Michigan Beekeepers Association's cordial invitation to all the beekeepers in New Zealand to attend the American Beekeeping Federation's convention. It will take place the week of January 21-25, 1980 at the Hyatt Regency Hotel complex in Dearborn, Michigan, USA.

Many activities have been planned to keep you and your family busy from dawn far into the night: A honey show, social activities, election of the American Honey Queen, equipment displays, places of local interest to visit, just to mention a few.

The Michigan Beekeepers are proud to have the American Beekeeping Federation Convention in our state. Hope all of you will join us to make this the most successful convention ever.

Yours,

Linda Van Andel
Invitation Chairman
Flying Dutchman Honey Farm
Six Mile Lake Road
Ellsworth, Michigan 49729

DISEASE FREE BEES

Dear Sir,

I understand that "Brown Line Bees" bred up by Rothenbuhler at one of the USDA bee research labs in the United States are resistant to A.F.B.

Should Mr Stratford be experienced enough in importing, and able to obtain their strain in the U.S. – he would be able to substantiate his advertised claim.

There are drawbacks: (1) They can only be maintained by instrumental insemination. (2) Viability is low.

Furthermore, the A.F.B. resistance characteristic is gene linked to aggressiveness.

Should Mr Stratford be further interested in looking for the truth, and not "bulldusting" himself, and the uninformed, I will endeavour to obtain the references and – or a copy of the relevant papers for him. Then he can read all about it.

Yours,

Ross Hargreaves
Palmerston North

This correspondence is now closed – Editor.

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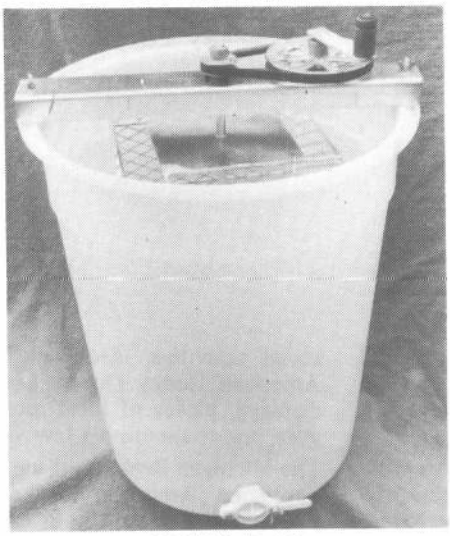

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NBA meeting looks like healing rifts

SOME OF the rifts in the fabric of the NZ honey industry could soon be repaired. That's if the initiative started by a recent meeting of industry interests in Wellington is carried through to a successful conclusion.

The meeting, which was organised at the suggestion of NBA president Paul Marshall and chaired by undersecretary of agriculture, Rob Talbot, made real progress in identifying areas for new policy formation.

The meeting agreed:

1. **That the administration of export control over honey should be taken away from the Honey Marketing Authority.**
2. **That it be noted that a South Island operation could in due course be the only commercial involvement of the HMA.**
3. **That control over exports was still desired.**
4. **That the centre for export control be placed in the hands of an alternative body of one or more members.**
5. **That the new export control office should set export price minima – this to be done by appropriate and general background studies including the HMA general manager.**

The meeting, which was by invitation, included Mr Talbot, Ian Forbes (assistant director of MAF advisory services division), the president and executive members of the National Beekeepers Association, the general manager and board mdmbers of the HMA, two representatives of the Honey Packers Association and one representative each of the HMA Suppliers Association, the Comb Honey Association, and the Honeydew Honey Association.

In opening the meeting, the undersecretary for agriculture, Mr Talbot drew attention to the way in which improved prospects for honey exports had weakened the support for the HMA. With most beekeepers now wanting a share of the export action, he said there was no longer a consensus of opinion within the industry as to the role of the HMA.

"Some believe the authority should remain the sole exporter. Others believe that a measure of competition should apply with all commercial beekeepers being given the opportunity to export honey under certain conditions,"said Mr Talbot.

"The majority viewpoint within the industry now appears to be in favour of private exporting, and the traditional function of the authority as a buyer of last resort can no longer be maintained.

"This brings us to the two immediate issues - the guaranteed base price system and the "take all honey offered" system. These may be liked by the industry, but because of the restrictions required to maintain the two systems they may be difficult to operate.

"Many beekeepers feel they can get along independently without the cradle of a base price or guaranteed buy-in system. But I'm sure everyone will be aware that any such systems require the whole industry to be involved with them, presumably on a compulsory basis. This will ensure the long term viability of the proposition. Therefore it is clear that a majority of the industry must be in favour of the systems and be prepared to give the necessary support.

"The crux of the matter is that it appears that this consensus within the industry no longer exists. Although suppliers may believe the authority should have the sole right of export and be given the support to continue the two systems, the government cannot undertake this support until there is a clear majority in favour.

"We therefore find a situation where there is an authority trading in honey - in a sense operating as the Hollands Honey Co-op but geared up with the facilities and overheads to operate as a national body with the wide functions and responsibilities.

"The changed market situation makes it vital that a revision in the present structure be undertaken," said Mr Talbot.

Mr Talbot said he could not see why beekeepers who wished to supply an industry board, should not form a co-operative or private company of their own. There was a need to closely question any government involvement in producer marketing, he said.

While recognising that the "co-operative" option may not be as attractive because it would not have the Reserve Bank overdraft accomodation available to the HMA, Mr Talbot said the HMA's entitlement to Reserve Bank overdraft accomodation would have to be looked at anyway, if it is not being called upon to perform any industry-wide functions and is only being supplied by one-third of the nation's honey producers.

"The question of export control also comes into this matter," he said. "If the authority relinquishes its powers over export control to some other person or organisation, then I understand the non-supplier members of the board would be willing to relinquish their positions and allow the authority to be run and controlled only by its suppliers."

NZ queens safe in Luddington, UK

MAF APICULTURAL advisor Vince Cook reports that an experimental consignment of Queen Bees from South Canterbury has arrived safely at Luddington research station, England.

The queen bees which were billed by "The Timaru Herald" as the possible start of a lucrative export trade, were introduced to their new hives in September. In the 1980 northern hemisphere summer they will be evaluated for their performance in comparison with other strains of queens.

In a letter to "NZ Beekeeper" Vince says it is important that New Zealand is recognised as a potential supplier of queen bees to the world. The results of the British trials will no doubt give us a good idea as to whether that potential is likely to be realised.

BEEKEEPERS TECHNICAL LIBRARY

The "take over" from Chris Dawson is not altogether completed. Chris is still struggling to have some books returned to him. We trust that everything will be right in the near future.

In the meantime we are in business. Several parcels of books have gone out and one or two returned again.

The books are accommodated in their own bookcase and well protected from damp and sun. Tony Glissold, a member of the library committee, had a look and was satisfied.

Postage has become very expensive. A not too large parcel may cost $1.50 to get to Auckland. So you can be assured that fairly soon the cost of borrowing books will have to be increased if we want to make ends meet.

Two new books have come to hand: Presented by Mr Wallingford: BIOLOGY OF REPRODUCTION AND GENETICS OF THE HONEYBEE, Author J. Woyke, University of Warsaw. It is a technical report of research conducted over the period 1971-1978. Very technical indeed. Many figures and diagrams. Not a book for beginners but probably of great interest for the advanced student or queen-breeder who is interested in A.I.

Received from the Editor of this Journal: REARING QUEEN HONEY BEES, by Roger A. Morse. A well known writer of today's bee literature. Familiar subject, always interesting. Perhaps no new material but it is clearly and simply written and can be recommended to chaps with 1 or 1000 hives alike.

Beekeepers Technical Library, Box 112, Milton. John Heineman, Hon. Librarian.

Mr Talbot said the first objective of the meeting would be to reach a consensus. It could then go on to deal with feasability studies on the operations or proposed operations of the HMA, the location of HMA facilities and the ownership and operation of the HMA.

He then added that the present stabilisation scheme had in practice only applied to HMA suppliers. He said that any future scheme should only apply to exports, but that the government would not impose such a scheme without the support of beekeepers.

MR PAUL MARSHALL, president of the National Beekeepers Association, then presented a paper in which he emphasised the need for marketing and stabilisation policies which were sound and which had the understanding and support of the industry.

Mr Marshall reminded the meeting that many beekeepers had good reason to be thankful for the authority's existence, while at the same time abusing the privileged position it gave them.

Many beekeepers, he said had used it as a convenient dumping ground, so much so that he thought it a wonder that it was able to operate at all. The end result of this was that today only one-third of beekeepers supply any part of their crop to the authority for marketing, while the remainder sheltered under its umbrella.

"The umbrella being: An alternative market, until recently a price stabilising scheme, supplying a wholesale/retail price list and stipulating a minimum F.O.B. for export honey, thereby giving a measure of control of exports," said Mr Marshall.

He drew attention to the fact that the HMA was ideal for those who wanted to produce honey and leave the marketing to others. For those with low capital reserves, its system of guaranteed payment was also vital.

For non-suppliers with little capital, Mr Marshall said the HMA's umbrella was also useful.

On the other side of the coin, Mr Marshall said he could see the merits of private exporting.However, he warned that it was not for the faint-hearted, nor for those who did not know the market. "Such knowledge," he said, "cannot be instantly obtained and finding the market is hard enough for the beginner; on top of which there is the increased capital expenditure necessary to start off with and to sustain oneself while looking for a buyer.

"This aside, a change in our thinking and approach to marketing is now required. Quite clearly the HMA must move with the times. Personally I would not like to see it cease functioning altogether, as it still has a place in the industry. By its very existence, even if only as a token purchaser of honey, or as an advisory board, would give producers some confidence in selling their crop as well as stability to the market".

PERCY BERRY, chairman of the HMA, then told the meeting that the authority had assumed the stabilisation scheme had gone with the changing circumstances. He said that the authority had not exercised its option to sell its Parnell property and current thinking was that if the Auckland packing operation was phased out, the property would be retained as an investment.

He said that in his view there was a difference between the North Island and South Island situations. The North Island intake of 440 tonnes was not likely to be sufficient to support a packing plant in that island. In the South Island, an intake of 1500 tonnes justified an operation along current lines.

Later in the meeting there was considerable discussion on what the association should do with its Auckland property and it was resolved that the authority should review the situation at the end of the current marketing year.

HARRY CLOAKE of the HMA Suppliers Association said the executive of his association had decided to support the continuation of the HMA in its present form. The only change requested was in costing procedures to ensure no part of the structure was totally uneconomic.

Mr Harry Cloake said his association had investigated alternatives to the present system, but felt they would place an impossible financial burden on those involved, unless considerable finance was available from the government or other outside sources.

"Professional advice has been obtained in this matter and after lengthy and full discussion we were advised to endeavour to retain what we already had and make it work," said Mr.Cloake.

"We see no evidence that the authority needs to be replaced or eliminated: It appears to be serving the industry quite adequately. To expect the industry to make radical changes in the short-term is unreasonable.

"There is no doubt any change away from a marketing organisation like the present authority will affect suppliers to a greater extent than non-suppliers. Many of these suppliers have no wish to market their honey, they are content to deliver their honey to a depot and receive payment. Should this service not be available to them, their efforts to dispose of the honey could cause chaos in the industry."

MR LLOYD HOLT of the Honey Packers Association said private enterprise was the best way to cut marketing costs. He also said that because of high freight costs, regional pack houses were essential. In the case of the North Island, it was his view that a central HMA packhouse in Auckland was not on and should be discontinued.

Mr Holt said that the only export control needed was for quality. In all other respects, he said, packers were well-financed and capable of serving the industry.

After Mr Herron of the Packers Association, Mr Belin of the Comb Honey Association and Mr Jeffrey of the Honeydew Honey Association had spoken, Mr Talbot summed up. He pointed out that while it was clear that the HMA suppliers wanted the present system to remain, basic changes were needed and maintenance of the status quo was not on.

Mr Talbot said it was clear that it was unrealistic to continue the present situation when only one-third of producers supplied the HMA. At that stage the chair was taken by Mr Forbes.

After some discussion on financing the HMA's future operations, Mr Mervyn Cloake of the NBA executive said that finance was the key factor when looking at alternative systems. At this stage, the chairman, Mr Forbes, said that while only one-third of producers supplied the HMA, the majority of board members did not. This was in his view untenable and he wanted a consensus from the meeting on how they viewed the matter.

This matter was discussed at some length, resulting in a resolution from the meeting that administration of export control should be taken away from the authority. This course of action was seen as being a first step in putting the HMA under supplier control.

After further discussion on the need for a price-setting and market information service, Percy Berry made a number of points which are incorporated as items two to five at the beginning of this article.

These items were given the full support of the meeting, which closed after a unanimous vote of thanks was made to Mr Marshall for initiating the action that led to the meeting being convened.

QUEEN REARING COLONIES

by Chris Dawson, Timaru

THE THREE necessities for raising queens are a breeder queen, a cell producing colony, and queen mating colonies. In a previous article, cell raising colonies that give a high standard of efficiency were described. Queen mating colonies that are equally efficient use the multiple small colony principle.

What is a Queen Mating Colony?

Any colony of not less than 100 bees that has enough food and a queen cell or virgin queen plus a box to live in could be a queen mating colony.

The box to live in is not absolutely necessary – a small swarm hanging on a branch of a tree sometimes is a queen mating colony. Therefore, 120 bees collected from the flower garden, placed in a chocolate box, given some food and a queen cell or virgin queen, taken two miles away and allowed to fly from an exit in the box could be a mating colony.

When this small colony thrives, it can become a honey producing colony. Any colony larger than this can be a mating colony.

Efficiency matters

The beekeeper searching for the most efficient mating colony asks four questions; What is the lowest efficient number of bees? What is the least amount of food? What is the smallest size of box that is necessary to produce a good healthy queen? And finally, what is the queen mating colony that requires the smallest amount of labour?

Small starved colonies produce similar queens, and boxes that are too small take up too much time in handling frames, while boxes that are too large make the bees work far too hard to keep them warm.

It was after studying various methods of using small mating colonies, and after having observed several methods in use that I came to a very important conclusion: The smaller the mating colony, the greater the amount of attention needed and the greater the need for a tight timetable of management. The balance between bees, food and labour for efficient production had to be struck.

The problem reduced to a bald statement resolved itself into:

- What are the minimum requirements for efficiency?
- What is the shape and smallest size of frame?
- What shape should a compartment be?
- How many frames of food, comb and brood are needed?
- What is the system that needs the least amount of attention?
- What system allows the maximum flexible timetable of management?

Variable nucs

Out of these problems grew the 'variable' or 'flexible' nucleus hive and, today, this system is being used by an increasing number of beekeepers in various forms.

A variable nucleus can be used in five different ways: First as an ordinary five-frame nucleus hive holding five full-length, full-depth Hoffman frames each with a top bar length of 19 inches and a comb area on one side of 136 square inches.

Second, the 'variable' nucleus can be used as a hive holding twelve half-length full-depth 'variable' frames, each with a top bar length of approximately nine inches and a comb area on each side of 58 square inches. These frames fit across the hive.

By sliding partitions into slots in the walls, the 'variable' nucleus can be built into three variations. By placing one partition at the centre, the hive can be divided into two compartments, each holding five frames. By sliding in two partitions, the hive has three compartments each holding three or four frames and when three partitions are slid into place, each of the four compartments holds three frames. (Pic 1 & 2)

Each compartment is a complete bee colony with its own entrance and its own rotating door. Each compartment is bee proof and odour proof and each colony shares its warmth with adjoining colonies. The rotating door regulates ventilation, flow of bees and admission of robber bees and wasps. (Pic 3)

When the nucleus is divided into three or four compartments, the minimum efficient specification of each compartment is: Lowest number of bees : 1½ frames; least amount of stores. Half of one frame (but this is adjusted according to the current nectar flow; lowest number of frames : three.

These colonies are strong enough to maintain their morale during variations in climate and nectar flow. If one compartment loses morale through non-emergence of the virgin or through a virgin going missing on mating flight, the partition can be lifted out and the colony joined with its neighbour until morale is restored.

Because of the flexibility of these mating colonies they do not need to be managed to a tight timetable. Each compartment can be managed separately and it will maintain its own colony odour and morale.

For speed and ease of working, I prefer to divide the hive into three compartments each containing three frames and a thin dummy frame that is a considerable help in conserving warmth. (Pic 4)

When divided into three compartments, frames can be removed with a minimum of disturbance to the small colony, frames can be inspected on both sides while being held in one hand and the virgin or queen quickly located.

Wintering

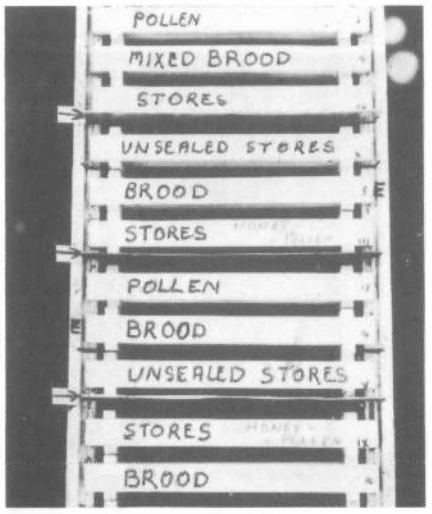
In preparation for winter, all partitions can be removed and the colony made into a strong nucleus which, provided it is furnished with ample stores and a queen, will carry through the winter.

Once established, the 'variable' nucleus colony is permanent. If managed competently through the winter, the brood nest will start spreading early in spring and can then be divided and prepared for the introduction of queen cells or virgins.

Before the introduction of a queen cell, each compartment is built with a frame of stores. Outside of this I use a thin dummy frame for the conservation of warmth.

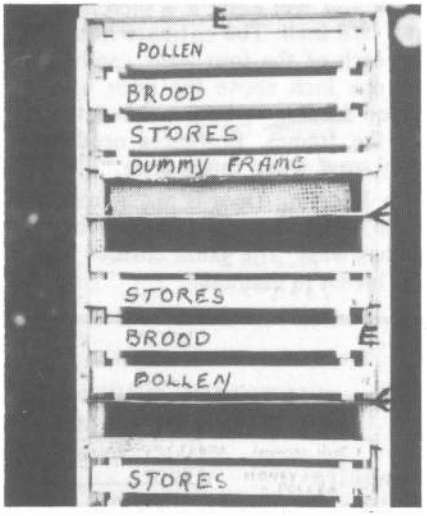
I am well aware that there are beekeepers who will rise to their tiptoes and yell at me for suggesting the build-

By sliding in one, two or three partitions, the "Variable" nucleus divides into two, three or four compartments



When three partitions are used, each of the four compartments holds three frames. Arrows mark partitions. "E" shows position of entrance.

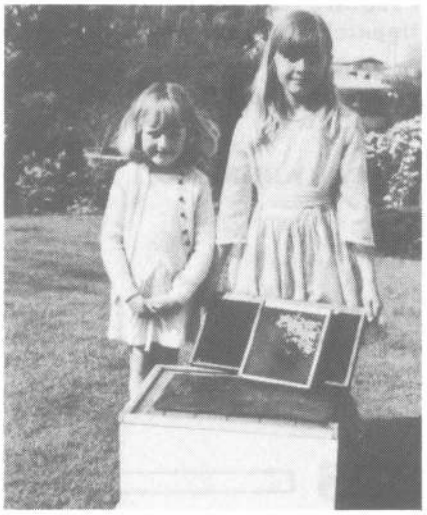
The rotating door regulates ventilation and movements of bees in and out of each compartment



For speed and ease of management, I prefer to divide the nucleus into three compartments.

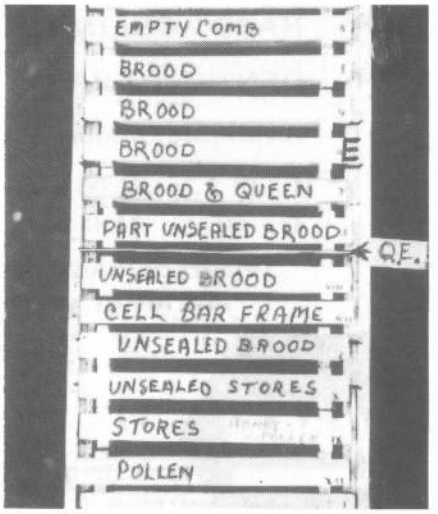
Frame arrangement for wintering over. (See partitions removed)

A "Variable" frame of honey being used to raise two young virgins.

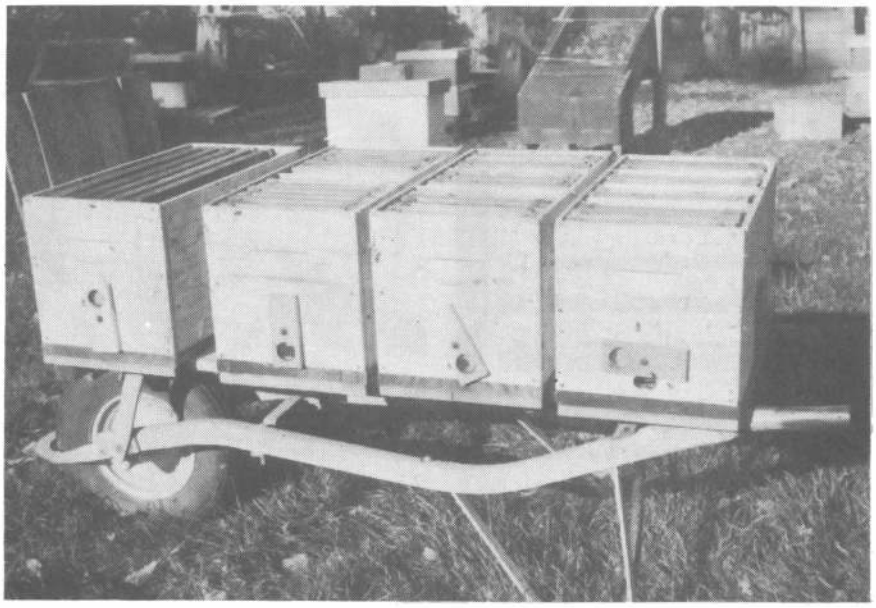


The "Variable" frame has a comb area of 58 square inches compared with a Hoffman frame of 136 square inches

The "Variable" nuclei frames are filled with stores over a normal honey producing colony



Arrangement of frames and Queen Excluder (Q.E.) for Queenright Cell-Raising colony.



The rotating door solved a number of difficulties in managing small colonies.

ing of special equipment. Rearing queens is just as much a special operation as extracting honey or moving colonies and it is just as necessary to be efficient in raising queens as in other operations.

With the correct equipment and a system that has a flexibility that allows for the vagaries of the weather and nectar flows, and other emergencies that arise, queen rearing can be built into the routine of most beekeeping enterprises to make them more profitable.

Rotating door

A large amount of experimenting with various door closing devices ended when the rotating door was completed. The door has a blind end that can close the entrance completely or give a one-bee entrance. The other end has a double layer of gauze which is 1/8 inch apart. The double gauze prevents the beggar bees who beg food from a nucleus colony and the colony will feed their stores out to the beggar bee until their stores are depleted. The ventilated end can be used in several positions, with full ventilation but no access, one-bee entrance with ventilation, or fully open giving full access.

The size of the access hole is 5/8 inch. A mouse will enter a ¾ inch hole but not 5/8 inch. The entrance holes, one on each of the four walls, can be placed one inch above the floor to allow syrup feeding to be poured at the top of the frames. Entrances need to be very small when this is done.

The Rotating Door is made from half inch wood, four inches long by two inches wide. The gauze covered hole is 1¼ inches in diameter.

Minister assures industry of import safeguards

THE MINISTRY of Agriculture now prohibits or restricts the import of all bee products likely to transmit bee diseases and pests. This is a result of last years amendment to the Apiary's Act.

However, the associate minister of agriculture, Mr Rod Talbot, has advised the industry that these restrictions are only intended to prevent the introduction of undesirable diseases, pests and predators. The controls are not intended to serve as a barrier to trade.

"Where a bee product can be imported with minimal risk to agriculture, then approval will be given," said Mr Talbot.

He was replying to a letter from the NBA executive secretary in which his attention had been drawn to a 1979 NBA conference resolution which asked the minister to use his discretion very sparingly in allowing the importation of bee products.

Mr Talbot advised that the import of honey was prohibited from all countries where European Brood, Acarine and Varroa diseases occur.

The import of pollen, collected by bees, is restricted to sealed capsulated retail packs. The import of bees wax used for beekeeping purposes is prohibited from all countries except Niue.

Royal Jelly imports are restricted to sealed retail packs and Propolis, Venum and other bee products are considered on merit upon import applications.

Although not stated in the minister's letter, there are also many imported products which include bee products in their composition. These include many waxes, polishes, lotions, cosmetics and medical preparations. However, the import of undesirable pests and diseases in these products would be extremely unlikely.

FROM THE COLONIES

CANTERBURY

After a very mild and warm winter most hives have emerged into the spring quite strong and as a result more than usual feed honey and sugar were consumed during August and September. October was unusually wet and cold, with the willow flow in most areas being below average to non-existent.

In bush areas hives built in strength over the spring period due to very early heather and pollen supplies.

The honeydew has yielded periodically over the winter, with a good flow in late October.

The Forst Service permit for hives in bush areas in state forsts is presently being re-negotiated to the mutual agreement of effected beekeepers and forest service. The introduction of a hive levy by the Forest Service has set an important precedent.

A successful field day was held at Mount Thomas on October 13 and a good crowd attended. Among the items of interest were:- The opening of Steve Bozi's artificial insemination unit along with demonstrations; a talk by Kevin Ecroyd on the recent Apimondia congress in Athens; an address to hobbyists by John Smith on spring management and Gary Jeffrey on Queen rearing, and finally an account of use of forest bush areas for beekeeping by Mt. Thomas ranger, Dave White.

The day finished for most with a few beers out of the rain, in Allen Hill's tent and apparently some of the "stayers" lost all track of time.

Black currant crops are on the increase in Canterbury and a lively discussion was held at a recent branch meeting among potential and existing pollinators on the subject of fees for moving hives for pollination; as a result a delegation has met members of the berryfruit growers association for discussions on negotiating an acceptable fee.

The outlook is good for the coming season with plenty of growth in the pastures, and strong hives. Beekeepers are hoping for continuing fine weather and an early honey flow so that they can stop feeding hives.

Tony Scott,
Christchurch

HAWKES BAY

Hives have come through the winter in good condition generally and spring has been quite kind to them. Willow has again been patchy with very good yields in parts and stocks building up nicely.

Conditions have been good for queen rearing and very satisfactory results have been obtained where the protected cell method has been used.

The demand for pollination services has considerably increased with yet again spray poisoning damage being very noticeable. The branch is very apprehensive about the marked increase in plantings of Kiwi fruit in the area and spraying problems around the time clover is being worked.

Manuka is flowering well and looks very promising for a crop of honey this season.

An observation hive is to be a seasonal exhibit at Marineland, Napier, supplied by the branch along with coloured prints etc. It should help to get the story of bees across to the general public.

There has been a marked increase in interest from beginner hobbyists, many in the younger age group, a very healthy sign.

Ministry of Agriculture inspectors are doing an excellent job on spring hive examinations and four cases of B.L. have come to light.

We are very sad to report the death, in August, of Les Maltsaid a member of the branch since its earliest days. Over the years he rendered sterling service along with his wife, Freda, to whom we extend our deepest sympathy.

Walter Watts
Taradale

SOUTHLAND

This time of the year usually brings lists of things to be done before Christmas, but this year the list seems to be longer than usual.

Some beekeepers are making preparation for comb honey production and some are upgrading honey houses to new health standards for the coming extracting season; some are doing both as well as the usual requeening and feeding of hives.

Some parts of Southland had a better than normal willow flow, and because of a slightly higher than normal rainfall, dandelion is producing a small flow on good days.

The local branch, at its last meeting, worked out a suggested contract form for those supplying hives for pollination. As we note the ever increasing acreage of black currents growing, we feel this will be a worth while arrangement for both beekeepers and growers.

Our field day will be held on January 26, 1980 at Mr W.T. Herron's property, Greenvale, Waikaka.

Alister Lee Balfour

WAIKATO

Well, here I am, 6am, and too wet to get down to the honey house. Worked in rain all day yesterday, was told I was "mad" to be out in it, and the only reply I could think up was "it does help". (Anyone know of a better answer?).

An old market gardener friend told me in July "Cliff, I think we are going to have a very wet spring," and how right he was. Have had the year's average rainfall a month ago and still it comes down. Unfortunately, it is spread over a couple of days at a time so that it all soaks in. After deciding to do all the yards we could get into in one week in the hope it would dry up for the next week, only found it worse.

Disease has reared its ugly head. Last year I had meant to comment on the serious outbreaks, but this year it seems worse. Apiaries that had never had disease are showing up odd cases, and in some areas groups of apiaries are all showing some.

It seems that the idea that the beekeeper is responsible for his disease is not working; in the days when the apiary instructor was able to spend most of his time inspecting we had pretty well no disease, and for years were free. Now that it has got away, it will take a lot to get it under control again.

Of great interest is the future of the HMA building and operation at Auckland. Basically it seems that the Auckland depot is needed so that beekeepers can get some money for their honey as soon as it is extracted. There is no doubt that to some extent the export of South Island honey is subsidising the Auckland depot, and one wonders at the profit in bringing Southland honey to Auckland to pack and then sending it to the Hawkes Bay to sell.

There is much interest in the comb honey arena, and a lot are going to raise some, so that 200 – 300 tonne of honey from the North will go overseas as cut comb.

Queen raising has gone very well for those who have kept going and high percentages of layers are reported. One wonders how those who have not done any as yet will get on.

Barbery has been patchy as high wind and frost have ruined many areas, but some honey has been gathered in places.

Rewarewa, Tawari and Kamahi are well budded, but there is no sign of clover, and the wet conditions could give a good crop of buttercup. Weather will determine our crop. Well cheerio, "till the nodding thistle blooms again."

Cliff Bird, Matamata.

NELSON

Since the last journal appeared, Nelson branch has had no special outings, but a couple of evening meetings at Richmond have been bright and lively with experienced members helping out with topics and demonstrations. Rudolph Muller showed some worthwhile modifications he's made to conventional pollen traps and it seems several members are now harvesting this for the health food market.

Nelson, at least close to the centre of population, may not show consistent honey crops, but there are plenty of pollen sources as I ruefully found when I went into a couple of brood nests last week. The bees had far too much in storage, so I was listening intently when another hobbyist mentioned he'd taken seven ounces from one hive for just one day . . . undried of course. Too late to try the idea this season though as the start of our flow might be only a fortnight away, when the wire meshes should really come off.

Pollen granules needed

BECAUSE OF the severe import restrictions on pollen granules, the major manufacturer of pollen foods, Healtheries of NZ Ltd are on the lookout for alternative local supplies.

While pollen collection for commercial sale has not been widely practiced in New Zealand in the past, the Ministry of Agriculture believes there is considerable scope for this activity. Beekeepers interested in collecting pollen can obtain details about pollen traps and methods of collecting, cleaning, drying and storing from the minister's apicultural advisors.

Healtheries requirement for New Zealand pollen during 1979 has been in the order of half a tonne. During 1980 the requirement will be increasing to 2 tonnes – a figure expected to continue during 1981 and onwards.

Pollen is available on the world market from Spain at under $3 f.o.b. a kg or $3.80 a kg f.i.s. in Auckland. However, in order to encourage production of domestic pollen Healtheries are currently offering $6.50 per kg for lowest quality pollen and $7.50 per kg for best quality pollen to New Zealand beekeepers.

"Why and how the producers in other countries produce pollen so cheaply compared to our producers, we are at a loss to understand," said Mr A.E. McCartney, Managing Director of Healtheries. "It is clear to us that if we could purchase New Zealand pollen at around $4 to $5 a kg we could then no doubt not only double our sales or more, but we could give longer guarantees as to our requirements. But in a market where the price difference is so wide we are only able to sell New Zealand pollen because of our special packaging, established name in the field and by cutting the margin on our tableted product production."

Healtheries specification pollen granules is as follows, "the granules must be clean, free from moth eggs, larvae and insect fragments. The moisture content should be 8 per cent to 10 per cent, but may not exceed 10 per cent. The heat used in drying must not exceed 49 deg C. The dried product must be stored in poly lined four gallon lever lid tins, or double poly lined corrugated cartons and sealed so as to exclude air, light and possibility of moisture uptake."

Mr McCartney said that his firm would be keen to deal with anyone who could supply his firm's needs. However he said it would be most effective if they could deal with a set number of reasonably efficient operators, rather than a myriad of small suppliers.

"We are quite prepared to deal with any apiarists, provided the quality is good and the packaging is satisfactory," said Mr McCartney.

Today, with October ticking over into November, barberry is just blossoming and hawthorne hedges are whitening nicely; though as I look from my lounge window there are a few chains less than last year where the bulldozer has made way for posts and wire. Hands up anybody who's seen a farmer plant a live fence in recent years.

Not a quarter mile away there's a nine-acre boysenberry garden and the pollination hives went in ten days ago. I'm told about a thousand hives were on the move just then, out of apples etc. and into berries.

Fred Galea who had a flying visit back to the U.K. and John Moffitt who recently worked his way through several Australasian beekeeping areas told of their travels and showed a variety of plastic accessories which are being introduced overseas.

At the last meeting members learned why the branch capitation grant hadn't been received from the NBA at the usual time. Curiosity rapidly turned to resentment when we found that it was decided in Wellington that we didn't need the money this year as our last balance sheet looked so healthy. Aside from the fact that, by then, the figures head office had based their decision on were substantially out of date, members left no doubt that they didn't like this policy of use it (year by year) or lose it. Indeed, the recent rise in annual subscription coupled with this denial of funds to the branch for 1979 has prompted some hobbyists to question what they get from the NBA for their money, and to consider forming a local club instead.

Alec Hastwell
Richmond

FAR NORTH

The October inspection of the club hive showed that the season is not as we remember in previous years of beekeeping. It has been the wettest winter for 30 years and almost everyone has had to feed their bees, very unusual here in the milder climate of the north.

It also appears that the nectar and pollen sources available during the winter months in the past, making supplementary feeding unnecessary, are no longer in such abundance. We notice that the professionals tend to "migrate" their bees from coast to bushland for the winter.

The need to grow "trees for bees" becomes more apparent every day; this is emphasised by the possible poor season this one threatens to be.

The introduction of weekend beekeeping courses by the Northland Community College causes concern that the very low incidence of brood disease be maintained; the responsibility that goes with keeping bees is not always understood and needs to be well taught.

The club is very enthusiastic in its field days and is grateful to Len and Peta Hill for siting the club hive in an area that is easily accessible at any time of the year.

Wendy Macpherson

Don't overdo the sales pitch on honey

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

ALTHOUGH HONEY is now much easier to sell than it was in the past, many beekeepers still believe they must provide the customer with outlandish nutritional claims about honey. Perhaps this relates to some feelings of insecurity by the beekeeper. He may wish his honey were better than it is.

More likely, he has seen the long lists of vitamins, minerals, and amino acids found in honey and believes that honey's appeal can be increased by pointing them out. But it is sometimes difficult to comprehend how much honey a person must eat to be benefited. Let's look at the details.

In her book, Honey, Dr Eva Crane has included a table showing the vitamins and minerals in honey in relation to human requirements. The human requirements used in the table are those published by the U.S. Food and Drug Administration as the daily, minimum amounts for human well-being.

The first thing you notice in the table are the gaps indicating the absence in honey of some of the materials listed. Honey lacks vitamin A, folic acid (part of the vitamin B_2 complex), vitamin B_{12}, and vitamins D, E, and H (Biotin). There is also none of the essential mineral, iodine, in honey.

Another feature of the table is the wide range of values for the amount of an individual vitamin or mineral in honey. These ranges relate to differences in the plants and their nectars from which the honey was made and, in a few cases, to how the honey was handled. The amount of copper, iron, and zinc in honey certainly could be influenced by the contacts it has had with these metals in containers, Brand melters, and elsewhere in processing and storage.

The table presents the range of values for the amount of each vitamin or mineral found in 100 grams of honey, somewhat less than a quarter of a pound. I converted these values to show the number of pounds of honey you would have to eat each day to obtain ALL of the minimum, daily requirements of that vitamin or mineral from honey. On this basis, your daily iron requirement can be satisfied most easily by eating honey.

You could do this by eating 1.1 to 40 lb, depending on whether the honey had a low or high iron content. Your next most easily fulfilled minimum requirement would be for pyridoxine, one of the B-complex vitamins. For this, you need to eat 1.3 to 55 lb of honey. It seems obvious that honey is not really a good source of either of these materials in relation to the amount of honey which a person is likely to consume in a day.

The figures are much less favourable in the rest of the table. To get your daily requirements of phosphorous and copper, you would have to eat at least 4 lb of honey; for vitamin C, about 5.5 lb; and for riboflavin (B-complex), 6 lb. If your honey happened to be low in these materials, you would need to eat as much as 110 lb of honey in a day in order to fulfill the minimum requirements. Among the minerals, our need for magnesium is relatively high. To satisfy it with honey could take as much as 127 lb, the highest amount in the converted table.

As many as 18 amino acids are found in honey. The weight of each is so small that the matter becomes one of scientific interest rather than of nutritional significance, according to Dr Crane.

The conclusion reached in Dr Crane's book about the value of the non-sugar components of honey (vitamins, minerals, and amino acids) is a significant one for people who sell honey and extol its virtues: the "non-sugar components of honey are present in such minute amounts compared with those in a normal diet that honey is not in general a useful source of them."

Let's sell honey as a natural food, a way to obtain quick energy, and as a source of delightful flavours not found anywhere else. We don't need any false or distorted claims to sell such a wonderful product.

OTAGO

This time we came through the winter without any serious disasters affecting livestock. In fact, it has been a mild winter at least in south and west Otago. The funny thing is that hives in the lower parts of the province did not open up so very well. An especially higher number of queens than normal had chucked in the sponge. Not only older specimens but also ones only introduced during last autum. Why?

Spring, up to now, has been pretty good for these parts of the country. Some was gained from the willow in places, but a strong wind during the peak flowering landed a carpet of catkins on the ground where they did nothing to benefit the bees.

The branch planned a mini-field day recently. Well attended but rain kept people away from the branch apiary although the inside programme with films offered plenty of interest to all. Clover in the pastures is showing up very well and we do hope it is a good omen for the 1980 season.

M.J. Heineman
Milton

SOUTH WESTERN

With the mostly fine and mild winter behind us, it was only to be expected that we could look forward to a rather indifferent spring, and that is exactly what we got. Rain and more rain from August up until the present time.

The sugar feed bill will be something many of us would rather forget. Anyway there could be a bright side, after all that wet weather we could be in for a fine summer.

It was quite a shock to hear of the difficulties the HMA were experiencing at present, and it brings home to all of us just how important it is to have a reliable outlet for our honey at all times.

The government is supposed to stand behind all primary producers and private enterprise and yet we see them refusing to supply enough short term finance to keep an organisation like ours going while at the same time you read of the Seamen's and Stewards' union, being allowed from $3 000 to $4 000 each year, just to commute backwards and forward to homes and places of work by plane and taxi. The whole thing seems very wrong.

It is to be hoped the lucky ones making the trip to the ancient land of the Hellenes got beyond the city of Athens and the Acropolis and saw some of the beautiful mountains and valleys of central and northern Greece and met the people of the villages and towns, who were so good to the young New Zealanders' of nearly 40 years ago. The older people would remember and make the visitors from these shores very welcome.

Stuart Tweedale
Taihape

SOUTH CANTERBURY

Hives of bees opened up this spring bubbling over with bees, far too strong for the time of the year, also they had lowered the stores alarmingly. Again here in South Canterbury we have another cold wet spring, the third in a row, and beekeeping with four wheel drive has been the order of the day.

Willows were in catkin for a long period but, except for hives in a very sheltered site near the willows, no honey was gathered. In spite of this wet cold weather queen mating has been surprisingly good. After three wet springs perhaps the queens now get into the gumboots and oilskins and get out and on with the job.

Native bush has not yet yielded, perhaps after the phenomenal flowering last year all shrubs and trees will take a spell from flowering. With the moisture in the ground all we require now is fine warm weather and who knows

this may be it. A warm spell would send pasture growth away, the stock would not have a chance to keep it down and this is what beekeepers like. Once the feed beats the stock the clover has a chance to flower profusely. These are the conditions which set the stage for the bumper, but we will wait till it is in the tank before we will call it that!

Vince Cook entertained local beekeepers at a branch meeting with slides and talk about his visit to England, the first since he left 25 years ago. Sorry I missed the show, was away at Apimonda Congress at the time. Reports of the evening say it was an interesting evening.

Raining again, just had 50mm in the past 24 hours, so it will be back to the four wheel drive and on with the sugar tank.

Harry Cloake,
Timaru

NORTHLAND

June in Northland this year has been one of the wettest on record but a rather average spring has followed it. We did have one series of particularly heavy frosts, for the north, which burnt many native trees and ferns not normally affected.

Winter losses of hives were rather worse than usual; robbing wasps being the cause in some cases. Spring build-up of hives has been quite good as the bees have been able to bring in good supplies of pollen. The food supplies of these hives, that have burst away with spring brood rearing have needed careful attention this year to avoid starvation in early October. However in some areas manuka is already yielding well.

Graham Richards,
Whangarei.

NORTH OTAGO

A very mild winter for North Otago resulted in the hives opening in the spring full of bees and little else, with most beekeepers rushing around madly with extra feed.

Spring came along and the hoped for willow flow went the way it does most years. Wind and copious amounts of rain fixed that, in fact it just doesn't know when to stop. The countryside is looking well and it augers well for that bumper season we are always looking for.

May we take this opportunity to wish all our fellow beekeepers the very best for Christmas and the New Year and that all the complaints will be of too much honey.

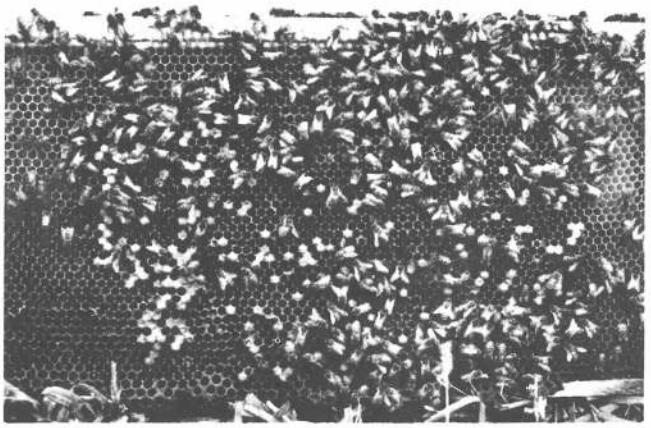
George Winslade

WEST COAST

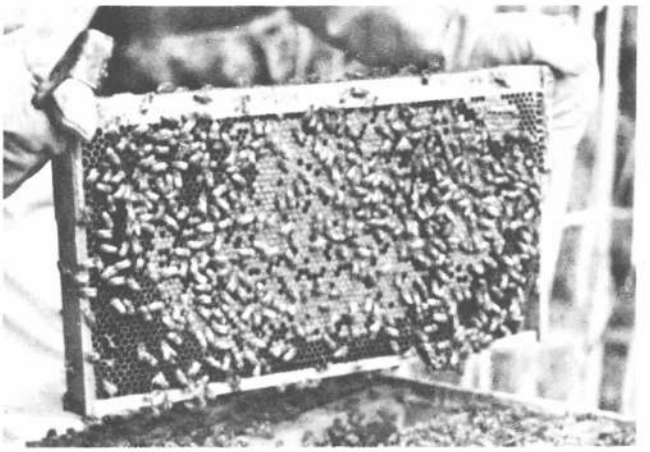
The season opened with a very cold and wet September, with hives slow to build up. The weather then changed to some of the finest one could hope for just as the willow and fuchsia came out. The hives filled up with an abundance of pollen and honey, and really surged ahead. Queen mating was the best for a number of years, with anything up to 98percent in most yards. By the end of October bees were wetting the third box. One can only hope for not too much rain in November; with hives reasonably strong, a lot of sugar may be needed to keep them going.

Wishing a merry Christmas and a prosperous New Year to all the Queen bees and a few minutes relaxation to all wives, and hard done by employees.

James Bushby
Kumara



Brood comb from a laying worker colony. Note the scattered sealed cells of drone brood in worker cells, the small number of bees, and the scarcity of food. Approximately 40 per cent of the bees in this hive were drones.



Brood from a normal queenright colony. Compare with first photo.

1. Laying workers

by Bill Carlile, American Bee Journal, March 1979.

"I KNOW the queen is alive, because there are eggs – lots of them. But I sure can't find her . . ."

"My colony keeps getting weaker. I'm afraid it has one of the brood diseases, but I can't tell which it is . . ."

"She is a poor layer and I haven't been able to see her. But when I try to introduce a new queen, the bees kill her. That's the third one . . ."

"They keep producing queen cells, but never raise a queen . . ."

"My hive is full of real small drones . . ."

Many cells have five, six, or more eggs. Some have several larvae . . ."

Perhaps these are all expressions of what might be called the laying worker syndrome. Laying workers are just that – worker bees which can and do lay eggs in the cells. Let's delve into this fairly common, abnormal condition.

First of all, we must remember that, compared to queens, worker bees are incomplete females. They have some ovary development, but workers cannot mate with the drones. Therefore, any eggs which are produced by workers are unfertilized and, like unfertilized eggs from queens, can develop only into drones. (Rarely a female will develop from an unfertilized egg. This is called parthenogenesis.)

There may be one or more laying workers in any colony, but there are apt to be more of them when the queen is a poor layer and during swarming season. The stress of a deteriorating or failing queen and then the greater stress of a queenless condition seem to stimulate the acceptance by the colony of some number of these laying workers.

Visually, there is little to differentiate the laying worker from any other worker. You are most apt to notice one when it is in the act of laying. Its abdomen and perhaps much of its thorax will be backed into a cell. There may be a loose circle of attendants around the laying worker – not so definite or constant a circle as is usually seen around a queen.

A laying worker often deposits her eggs on the sides of the cells since she is too short to attach them near the centre of the back end of the cells, as would a normal queen. The workers probably are not so well-adapted physically to positioning eggs. Each laying worker normally lays but one egg in a cell. Others, however, may come along and add their eggs to the same cell. This multiple-eggs-per-cell is typical of the colony with a number of laying workers.

Because so many laying workers place their eggs in worker cells, the drones which reach maturity are conspicuous because of their smallness. Most are little larger than workers; some may be even smaller than workers. Because the cells are capped over in a bullet-shape, the capped cells are also conspicuous.

In a colony which has some laying workers and a pure Italian queen, for example, there may be black and other off-colour drones. These will be from the laying workers. (They would have to be observed as just-emerged drones, since off-colour drones which are old enough to fly could be "drifters" from other colonies.)

Any colony with laying workers only (no queen) begins to deteriorate in a number of ways. There is a gradual dwindling in total population. At the same time, there is a gradual change-over in the makeup of that population. Since none but drones are emerging, there are no replacements for the workers which are continually wearing out and dying. So, proportionately, the workers become fewer and the drones increase in number.

As the population shift continues, the workers are less able to collect sufficient nectar and pollen to feed the many larvae and adult drones. Whether of normal size or small, drones do eat! So honey and pollen already stored in the hive may be used up.

Another result of a disproportionate, dimished population is that the numerous larvae cannot be fed properly. So instead of maturing, increasing numbers of larvae die of starvation. The scattery brood pattern starts to look like that of a diseased colony. Some of the worker-cell drone cappings are sunken, many are partially uncapped, and the bodies of the dead remain in the cells.

Often a colony with only laying workers will not seem quite as demoralized as a hopelessly queenless one. The loud buzzing, so characteristic of the bees when a queenless hive is opened, may be missing. The bees often seem to be fairly content with the fact that something is laying. Perhaps instinct motivates them to accept this abnormal condition – instinct that is based on the minute chance that one of the larvae will

develop as a female, a potential queen.

Since the "allegiance" normally given the queen is misdirected to the laying workers, it is difficult to requeen such a colony. Even though you attempt to provide them with just what they need, a young vigorous queen, so often the bees will kill her!

Beekeepers are often advised to take a colony with laying workers to a distant part of the yard. There all the bees are shaken or brushed from all the combs. Then the hive is returned to its original location. The idea is that the laying workers won't or can't fly back. But research has shown this to be in error – most of them can and do fly. So some, at least, return to the hive and the requeening problem remains unchanged.

If the colony is still worth trying to save, one of the better ways of requeening it is to remove some of the combs and give the colony a three-, four-, or five-frame nuc which has a good laying queen.

Similarly, one or more frames of sealed brood which is just beginning to emerge can be given the laying worker colony. The queen may be introduced by using a push-in cage, placed over an area of open cells on one of the combs added to the colony. The addition of the young emerging workers makes queen introduction a better risk.

If the colony has had laying workers for a long period of time, is getting quite short of worker bees which are now getting old, and the main part of the honey flow has been missed, it is probably best to unite the various bodies and supers of the hive with other good, queenright colonies in the yard, rather than wasting expensive queens.

2. Workers secrete queen substance

QUEEN SUBSTANCE was so named because it is secreted by glands in the queen's head. This mixture of chemical compounds influences the behaviour of the worker bees in the colony, causing them to gather around the queen, preventing their ovaries from developing, and keeping them from rearing queens. When workers have no queen, in experiments or in a queenless colony, a few of them will begin to lay eggs. Such "laying workers" are attractive to other workers, who often form a court around them as they do around a queen. Laying workers, or extracts of their bodies, will also inhibit other workers from laying eggs, much as a queen does.

In South Africa, there is a distinctive honey bee race known as the Cape bee, that differs from other races in its ability to produce adult worker bees from eggs laid by unmated workers. Cape workers have 10 to 30 egg tubules in their ovaries, compared with the usual 1 to 10 in workers of the European races kept in the United States. The workers of pure Cape bee colonies also have a sperm storage organ much like that of a queen, but smaller and nonfunctional. In queenless colonies, these workers produce large, but scattered brood nests entirely of developing workers in worker cells. They do not lay enough eggs to maintain the size of the colony, but they can rear a new queen from a worker-laid egg.

It has long been believed that laying workers probably secrete queen substance, but attempts to confirm the idea have been unsuccessful until recently. Now, Dr F.Ruttner, with colleagues N.Koeniger and H.J.Veith, has reported in the publication *Die Naturwissenschaften* success in identifying 9-oxodecenoic acid in an ether extract of heads of Cape-bee laying workers. The 9-oxodecenoic acid is the most active of the many compounds in queen substance. No queen substance was found in the heads of Carniolan worker bees from colonies with laying queens. However, the authors assume that workers of races other than the Cape bees also have the ability to produce queen substance because their laying workers also have courts of attending bees. The queen substance is probably converted from another compound, 10-hydroxydecenoic acid, used by adult workers to feed their larvae.

Professor Ruttner is the leader of the Institute for Beekeeping of the University of Frankfurt located in Oberursel, Germany. He is interested in both basic and applied studies of bees and maintains colonies of the three Asian honey bee species as well as those of the Cape bees. Because of the abilities of Cape workers to secrete queen substance and to lay worker eggs, Professor Ruttner must keep them in an apiary by themselves. Otherwise, when Cape workers drift into a colony of another bee race, the queen of the colony is killed. Studies of the behaviour of the Cape bee are of great value because they will lead to a better understanding of the behaviour of all honey bees and its evolution.

from E.R.Jaycox, "Bees and Honey," University of Illinois

3. Another view

THE PROCESS OF QUEEN-WORKER DIFFERENTIATION IN THE HONEYBEE (M98)

by Dr J. Beetsma

THE MYSTERY of how the same egg can give rise to either a fertile queen or a sterile worker has puzzled beekeepers and bee scientists for centuries. This reprint of an authorised article in Bee World describes the painstaking research on the subject carried out in many countries.

Queen-worker differentiation in the honeybee is regulated by the quality of the food during the first three days of larval life. The larva perceives food quality by sense organs on the mouthparts, and it is the sugar content of the food that appears to be crucial, in that it triggers the rate of food intake, which is higher in queen larvae than in worker larvae. The rate of food intake probably regulates the activity of the corpora allata, and thus the amount of juvenile hormone produced. A high juvenile hormone level during the third day of larval development induces differentiation into a queen; a low level results in the development of a worker.

The article sets out clear arguments to show why the above conclusions are valid rather than others that have been proposed, and why there is no longer any reason to search for a queen-determining substance. The bibliography gives details of the 120 publications referred to in the text.

The reprint can be obtained from the International Bee Research Association, Hill House, Gerrards Cross, Bucks SL9 ONR, England, price 50p or $1.20.

SWARMS

Why they happen, how to avoid them, what to do with them

by our hobbyists' adviser, David Williams

SO FAR in this series we have laid down a timetable for your operations and emphasised that any deviation from it will lead to trouble, instructed you in the necessary techniques and manipulations to make a success of your hobby, had a brief discussion on the beehive itself and on ancillary equipment, and talked about small-scale extraction with its possibilities and pitfalls.

The emphasis in each case has been on ease and simplicity of operation. This is important. If a thing is too much trouble, or too inconvenient, it won't get done and, in beekeeping, not doing things leads to disaster.

First, and certainly most important from both a production and a public relations point of view, are swarms. *Swarming is preventable.*

But the prevention must be positive, even though that cannot always be relied upon: Once I tried queen-rearing by removing queen and brood from a strong colony, except for one nicely filled unsealed comb in the centre of the second storey.

The bees duly built six beautiful queen cells and then the weather turned sour (remember Aug/Sept 1975?) and it seemed impossible to take the cells on the eleventh day and sub-divide the necessary hives in which to put them.

Ah well, I thought, at least that hive will re-queen itself. Time went by and day twenty-one dawned and the sun came out and at 10.10 am that hive swarmed.

In theory that virgin should have hatched somewhere around day 12 and assassinated her embryo siblings. In practice she swarmed and left behind two other virgins cohabiting in perfect harmony. So much for theory! Never trust a bee. And you can see what is meant by being positive. The least I should have done was to take those cells down to one regardless of the weather.

Play and Swarms

A distinction may usefully be drawn here between the swarming instinct and what can only be described as play.

In spring, around the middle of the day when the weather starts to pick up a little, a hive of any size at all will suddenly indulge in an orgy of extra-mural activity. Drones will emerge from the hive in large numbers and buzz happily around, while innumerable younger bees will crowd the landing board and walk up the front of the hive, constantly taking off and landing again.

The episode may last ten minutes to half an hour and subsides as quickly as it starts. This sudden outburst of energy is part of normal behaviour. (If bees crowd the front of the hive in summer, it is because they are too hot and need more ventilation.)

This play activity is no cause for alarm. On the contrary, it is a healthy sign, indicating that the hive is building up nicely, that there are plenty of frivolous young bees ready to take part, that the food situation is not desperate, and that summer is a'cummin in.

A swarm starts with the same level of activity, but bees and drones sweep around in great, noisy circles of double-ended loops that, once seen, are unmistakeable.

The usual time for a swarm to issue is in mid-morning when the temperature has risen to a viable level but the swarm still has the rest of the day to decide on a suitable site for their new home and settle in there.

The normal sequence of swarming is well known. The queen lays, or is persuaded to lay, eggs in preformed queen cells which are usually on the bottom edges of central frames in the second storey. Here control of temperature and humidity are most easily assured, food supplies are ready to hand, and there is ample room for them to hang without obstruction while the bees have space to cluster round them and minister to them.

Such eggs hatch after three days and the larvae are fed for a further five days before the cells are sealed for them to pupate and go through their metamorphoses. The time of sealing is a trigger for the swarming impulse.

Some authorities claim that the food supply to the queen is reduced during this time so that her egg laying will be curtailed, and that she is chivvied round the hive to get her fit for what may well be only the second, and final, flight of her life.

When this swarming impulse becomes manifest there is considerable agitation both within and without the hive. The sound made by the hive is quite distinctive – a hard rattling of wings and a subdued roar.

Gradually the queen is bullied into coming out to the landing board and eventually taking flight, to settle on a nearby bush or other suitable staging post.

The flying bees, about half the inhabitants of the hive, gradually coalesce around her and hang head ups and tails down in a rainshedding temperature-controlling ball.

Reports of the size of swarms are to be treated with caution. Many beekeepers have been told of swarms "that filled the street" and have arrived to find a double handful of rather sheepish bees hanging from a minute azalea bush. It happens to all of us. If the warning comes a little earlier and the beekeeper happens to be on the spot as the hive is in the process of swarming, and if he is within reach of a garden hose, then the best thing to do is to put the sprinkler on the top of the hive, turn it full on and leave it so for an hour.

The queen, on emergence, will be soaked, as will the bees and so unable to fly. Attempts to cluster will continue, so that she may be located, or she may even be deterred from exiting.

Bees will swarm on anything – even the front axle of your car.

Stop the spray and take emergency measures. These may consist of killing the queen and knocking the swarm cells down to one, so letting them re-queen without swarming, the flying bees returning to the hive without trouble.

Or the hive may be removed to another site, a new box put on the old one, the queen replaced in this where she will be joined by all gatherers, and both hives fed. The queenless portion will then requeen itself without swarming and the two halves may be joined later in the season if desired.

If the hive is away from such civilised amenities as a garden hose, a garden syringe and a bucket may make an adequate substitute.

In most cases the swarm will have issued and settled. Then it becomes a matter of:

Swarm taking

Swarms very early in the year are likely to be hunger swarms and vicious. They should be sprayed with a sugar solution, left for an hour to absorb it, and then taken.

Normally a swarm is honey-filled and good tempered. If in a convenient spot on a branch or bush, it may be possible to slip a large cardboard box underneath, knock the branch sharply so that the swarm falls into the box, crate it up and take it home.

Some beekeepers have a large metal funnel which fits into a swarm box for the same purpose, and these are ideal. The bees slide down the slippery sides and fall into the box below, the box rapped sharply on the ground to concentrate the bees in the bottom, the funnel removed and the cover slid across.

With the cardboard box it is often wise to spread a sheet underneath and, after the bees are in, to wrap this securely around.

Unfortunately swarms do not always co-operate by settling on a convenient branch. If on a fence post or similar it is possible to brush them off with a large paint brush. The funnel is particularly useful here.

If in some cluster of bush, it may be possible to smoke them and so cause them to move to a position where they may be taken or, in some cases, it is possible to plant a beehive close enough to them and to agitate the cluster enough to cause them to fall onto a board leading up to it, even if a certain amount of digging and pruning has to be done. The whole beehive is removed later.

It is said that a frame of brood in the hive proves irresistible to them.

Swarms in trees are generally not difficult to take if they can be reached by ladder.

It may well be that after you have removed the bulk of the swarm some residue remains, or scout and other flying bees regather at the swarm site. It may be convenient to have a second collection to round up these stragglers, or they may be left and the bulk will find their way back to the original hive as long as the swarm was not on the spot for too long.

Having grabbed your swarm, it is not unusual to hive it immediately. Lean a large sheet of hardboard or plywood up to the landing board of any empty hive in position, open the box, quickly turn upside down and, in one motion, throw the bees onto the board.

Bees always head upward, so in no time at all the first scouts find the entrance and start wafting a homing scent back down to the bulk of bees below them by raising their tails, exposing their Nasonow gland and fanning their wings.

These soon troop up in ranks of twenty or thirty; one of the most fascinating sights in all beekeeping, this sea of gold marching up like a tidal wave at a steady, regimented pace, with the queen often hurrying through them or over them to get to safety – a sad loss of dignity.

If the bees are from your own hives and you know them to be disease free, they may be hived on drawn comb. If from an unknown source, they should be hived on foundation only. In both cases they should be fed.

If the bees seem agitated, continue to fly and refuse to enter the hive, you have not captured the queen and will have to try again.

Incidence of swarming

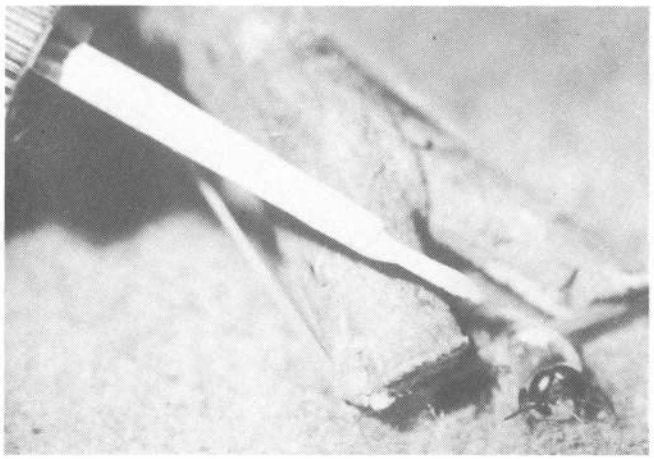
It cannot be said too strongly or too often that we owe a tremendous debt of gratitude to our research workers and, in this particular instance, to Ivor Forster who, as reported in the New Zealand Journal of Agricultural Research for August, 1969, carried out experiments using 96 hives in the South Island. He found that manipulative control of swarming was ineffective, that hives re-queened in spring showed no desire to swarm, that most hives with second year queens tried to swarm and that some of the hives with autumn queens ditto.

He also found that second year queens produced less honey than first year ones; hives that swarmed produced no surplus; self requeened hives produced more honey than those with introduced queens; hives that attempted to swarm but were prevented produced less honey than undisturbed hives; spring queens produced more honey than autumn queens or rather their hives did; drone-free hives produced less honey than those with drones. His best season (1965-66) produced an average of 139.2 lbs surplus per hive.

All uncertainty is thus removed. We know exactly what to expect and,

turn to page 29

The marking of bees



MARKING MAKES a specified bee easy to locate. Any study of bee activity usually involves marking bees in some way and there are various combinations of colours for this – you can even buy little numbers to glue onto your bee.

Drones have been marked to single them out as potential semen donors, workers have been marked to check their comings and goings and stayings – I like the story of Professor Lindauer in his study of the "busy bee" who observed one worker for 68 hours and 53 minutes without seeing it do any work at all!

But, basically, the amateur usually only wants to mark the queen, primarily to make her easy to find but possible also to follow her progress and check that he finishes with the same queen he started with – there are recognised annual colours in the bee research world and these would be used internationally for marking in that year.

You won't go to that level of sophistication but may care to try the odd dab of white.

In America it is routine to offer queens "marked and clipped" for a few cents extra.

How do you hold 'em while you brand 'em?

This is easily enough done. I use a rubber band stretched across a slightly forked stick – and, once again, practice on a dozen drones before you do anything important, because it is surprising how little pressure you need to hold a queen or whatever else you are marking down, and you can certainly damage her if the band is too tight.

Where do you hold the bee? Right across the peduncle, the short stalk that joins the thorax to the abdomen. That holds the insect very nicely, either for wing clipping or for marking. The rubber band goes across wings as well, of course.

What to mark with? I simply use white typists correcting fluid, which I see is trademarked "Snowpake". This dries easily and quickly and without harm. At the Queen Bee course, there was some slight discussion on what to use – water-based spruce paint was OK, nail polish was not because its acetone solvent is too close to the sting pheromone iso-propyl-acetate.

A dab in the middle of the thorax is perfect. This is easy on the queen because she is bald there. Other bees are a little more hairy and may need two dabs to stand out clearly.

The bee may certainly be transferred to a convenient site for marking, but if you are only going to do the queen or a few drones to see which hives they turn up in next, there is absolutely no reason why you cannot do it on the comb, right there where you're looking at them – it never seems to worry them or alarm them unduly.

from page 27

knowing this, we also know what has to be done. All praise to Ivor Forster who put the whole subject on a rational scientific numerical basis. And so to queens and drones.

Queens and drones

I would prefer not to discourage anyone from trying all beekeeping techniques once, as long as they are prepared to accept the obligations that go with them.

There is no harm at all in raising your own queens as long as it is realised that this depends upon a sound knowledge of the requirements for good queen-rearing, a precise sense of timing, and the steadiness of hand and temperament to accept the results, good or bad, and to profit from the experience.

Nevertheless it must be said that it is not only the requirements of queen rearing as such that militate against a small scale operation. It also remains true that there seems to be an inevitable genetic drift towards the dark end of the spectrum year by year and that, in the case of this superstition, black is indeed evil.

The best gatherers I ever had were from a swarm collected up at Mamaku. They were out before all the other hives in the morning and they finished later at night and they filled super after super. The only trouble was that nobody could get near enough to them to take it away.

They were black and evil and had a built-in early warning system and get anywhere within ten metres of them and the front of your overalls would be peppered with stings. Eventually I had enough courage to go in and requeen them. I still have the scars.

The moral of this story is that a bee of gentle disposition can be forgiven many other faults. Buy golden and you can't go wrong.

Simple enough, you might think, but how to go about it? The same way you shop around for anything else. You keep looking until you find a brand that suits you and then stick with it.

And, don't think I am the only one recommending this. I.W. Forster in the 1974-75 report of the Apiculture Section of the Wallaceville Animal Research Centre, summarises his findings as: "Results suggest that in selecting breeding stock, beekeepers should choose queens whose progeny are evenly marked and light coloured. This should favour a reduction in both swarming and propensity to sting."

Unless yours are the only hives in the neighbourhood (and this does not mean the only hives known to be in the area, which is not the same thing) and unless you also have a pure strain of golden bees with the drones as aristocratic as it is possible to encounter, you may well end up with dark-coloured, bad-tempered bees whose attitude may well make your beekeeping less of a pleasure than it should, and can, be.

In this case the investment of a few dollars in queens from a reputable breeder can make all the difference. Your queens will cost you the equivalent of perhaps only three kilograms of honey. What a small price to pay for comfort and peace of mind.

And, while on the subject, let us discuss drones. The text books tend to make drones sound a necessary evil. Forster does not think so, nor do I. As long as you cull your frames judicially and as long as the brood comb in your hives is not inconvenient to you (and it shouldn't be under normal examination conditions of nine frames to the brood chamber, removing the outer one so you can work the rest) drones do no harm at all and may do some good. Certainly, there seems to be some correlation between the presence of drones and the happiness of the hives in spring. Hives without seem a little touchier and a little more restless and a little less inclined to work.

I have known operators who leap savagely on every last bit of drone brood and hack it out, mutilating combs, making a mess, and upsetting the bees. Totally unnecessary. If a frame contains an undue proportion of drone comb it may be moved to the outer position in the box and removed when empty. A far easier solution.

Wing clipping

ONE REPUTED method of swarm control is wing clipping of the queen. Here we tell you how to do it, and why it will not work.

The operation is a simple one. Pick the queen up gently in the right hand, being careful not to squeeze the abdomen – that is, pick her up by the front half, not the back.

Transfer her to the left hand so that thumb and finger are on either side of the thorax. The wings now stand proud and one half to two thirds of one side may be taken off with a pair of small, sharp nail scissors.

Practice on a dozen drones first. This will not only give you the technique, it will also give you confidence.

Release the queen back into the hive as soon as possible, preferably by putting her on the top bars and letting her find her own way down. *Do not put her in at the entrance.*

Another do not – do not attempt this on a young queen. For one thing, neither she nor the hive need it because a hive led by a young queen will not swarm and the bees are apt to panic if a young queen is molested in any way and kill her.

She should be at least three months old before clipping is attempted and even then supersedure of a clipped queen is said to be common.

Clipping will not do anything to solve your swarming problem. All it does is to put them off for a few days and lull you into a false sense of security.

The theory is that: Either the queen cannot fly so cannot leave with the swarm, so no swarming, or the queen leaves with the swarm, cannot fly, so lands on the grass and dies there. The bees return to the hive and inform the remaining inhabitants that swarming is a miserable failure. They then accept the first virgin to hatch out and live happily ever after.

In practice swarming is merely delayed until the first virgin is available, then the swarm takes off with her.

Certainly the beekeeper may be observant to notice all the commotion going on, but a hive that has reached this state is not in the best condition for moving steadily forward to the honey flow.

Wing clipping may be a fascinating hymenopterous operation, but one that has little practical application.

Even supposing the impossible happens and you manage, by superhuman effort, to totally prevent swarming every year without the expense of requeening, you now have a highly neurotic set of bees whose natural inclinations and sense of right have been violated and an inefficient and ageing queen.

In doing this you have had the worry of knowing that the bees will repeatedly attempt to swarm every spring and, in the latter years, at other seasons also, with the physical necessity to prevent this and will in all probability have a decreasing honey crop to show for your pains.

The truth is that good management means positive, progressive thinking and not merely maintaining the status quo.

A FRESH START

Part 6 Queen rearing for amateurs

PUNCH

story
David Williams

photos
Allan Warren

THIS TECHNIQUE is the subject of "Raise Your Own Queens By The Punch And Cage Method" in Leaflet no. 10 of the English Village Bee Breeder's Association (1970), and of an article in the American Bee Journal for November, 1974.

Note that you will have to prepare extra equipment for this, but that once you have it, it may be used again and again. Note also that the slight inconvenience of having to equip yourself with these items is more than balanced by the ease and convenience of the system.

Equipment

You will need:

- A false top for your brood chamber. This will be exactly the same in length and width but only six centimetres high, with a top of hardboard, plywood, etc. 25 mm diameter holes are neatly drilled in a pattern around the centre – perhaps twice as many holes as you need queens and the whole thing neatly painted.
- A number of corks with 25 mm small end diameter. These will have a hole neatly drilled half way up the centre, exactly the right diameter to take the sharpened end of a pencil, and a countersunk hole superimposed on the above for a short distance to take a series of tube sections 25 mm long and 12 mm inner dimension – these may be of metal, bamboo or, in my case, glass tubing, and one end will be chamfered to a sharp edge.
- Plungers to fit up the tube sections and into the corks. These can be of rod, dowelling, or anything else, and, as hinted above, I use 20 mm long sections of sharpened pencil.

And that's all you need.

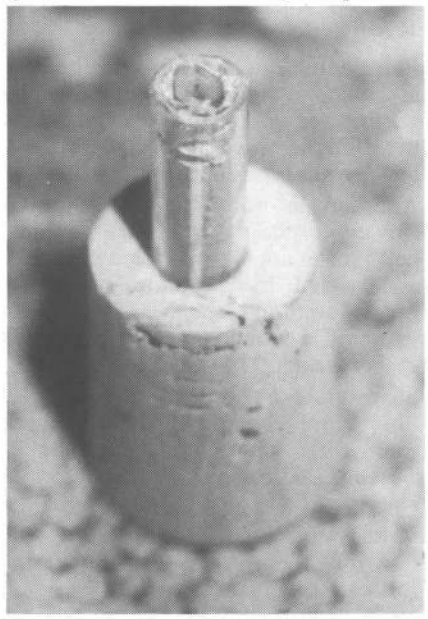
The Process

Once these few small items have been prepared, the technique is simplicity itself:

Prepare hives/frame as in Strip article, except you will not need the space in the centre of the cell-raising colony. Pre-warm the room and have everything handy – corks, stubs of pencil, tubes.

Bring in the breeder frame and scrape away the back of the frame over the operations area – this need not be large, because you'll use only few cells. Select the appropriate cell with minute larvae in and place sharpened end of tube over it (see tubes are warm – you don't want all the heat sucked away from larva) and cut it out by rotating tube slightly back and forth – don't go round and round or you'll "screw" the cell, placing the tip of the finger behind to cut against and withdraw.

Slide the cell onto the plunger, pushing the cell up to the other end, cut off the excess cell almost back to larva (I slice down with sharp scalpel and open out like a banana) and spread sides of cell over end of tube. Push into a hole in the lid.



Ready for bees to work on.

The lid must be pre-warmed and placed down to retain some heat.

Repeat the process until all holes are filled, or as many grafted as you want and simply block off the spare holes. Place the lid over the prepared hive, cover with the hive mat, and put a spare empty super above, the hive roof covering all.

Replace the breeder frame – the bees soon smooth and tidy it up again, if there are a few holes in it. And that's that – very simple once you try it.

You can also place punch cells in a frame in the hive, but note:

With the cork, tube and cell there is only room for one set, on the top bar only (two if you move the top bar up).

The cork can possibly be shortened a little but not the tube – it has to be long enough to fit down to the base of the cell without much damage to the top.

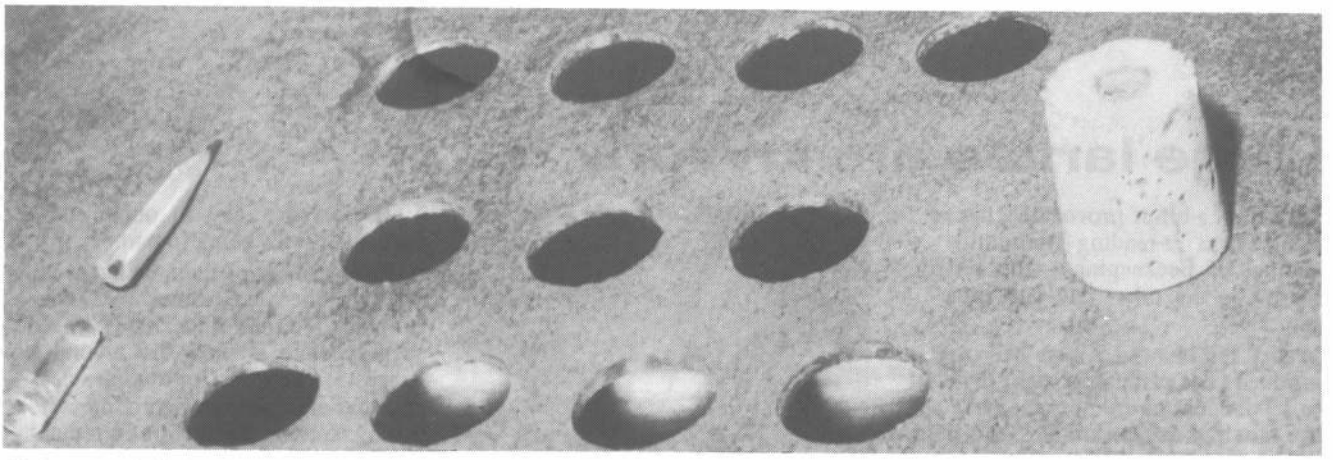
The tubes/cork have to fit into slots, not down into the hole – you can't pull the cell up through the hole, nor can you take the cell off the tube.

One benefit of the top punch system is that the corks may be lifted out of their holes one by one, looked at and replaced without even opening the hive up and with only one or two bees clinging to them, not the festoons you get with interior systems.

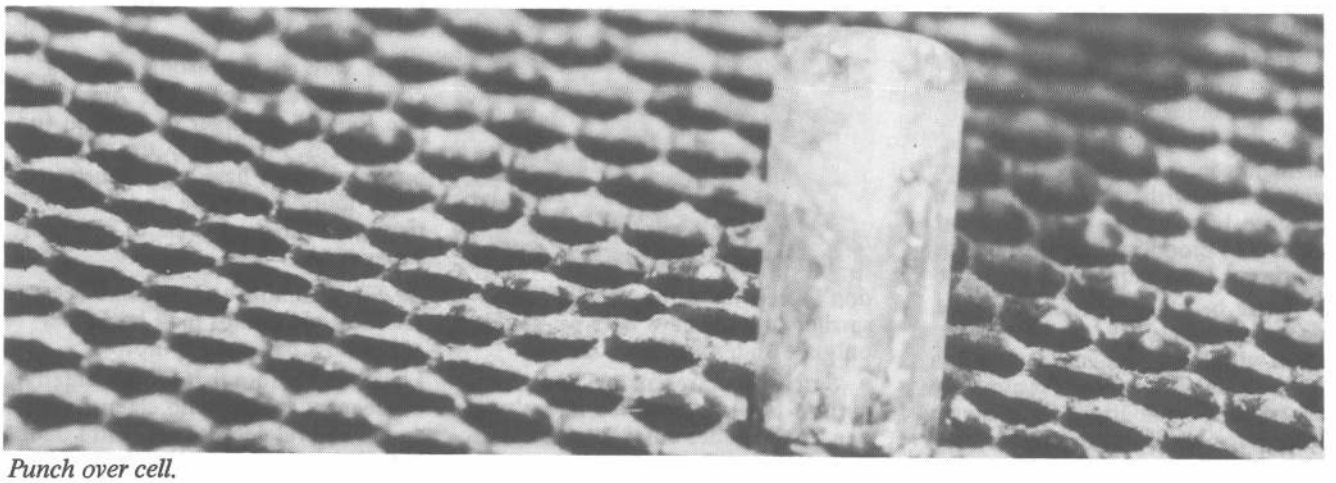
Do please follow the instructions. After one hurried and incomplete account of the punch method at an amateur meeting, one keen type reported it didn't work – the bees carried the eggs back down again. "EGGS!!!" I screamed. The fault was mine for being less precise than I should have been, but if I say larvae, please use larvae, and remember that precision in technique and timing is essential.

And please do not – I repeat DO NOT – use drone larvae, as one lady did, "because the cells were larger and they were easier to see."

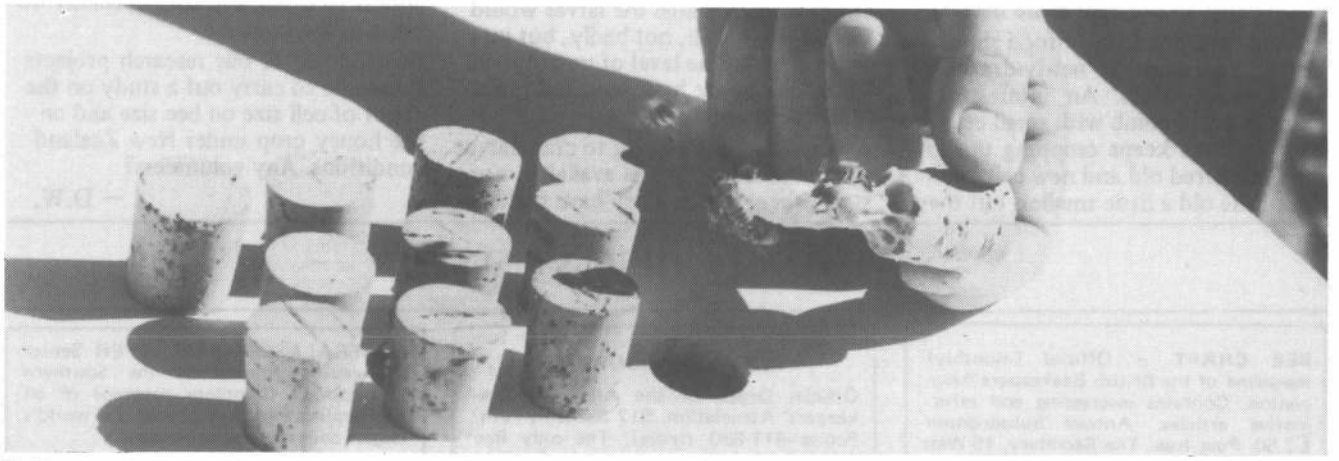
And do understand that these methods we have gone through in the last few issues are outlined here in this form for those who want to raise a few queens once a year – in other words, for you and me.



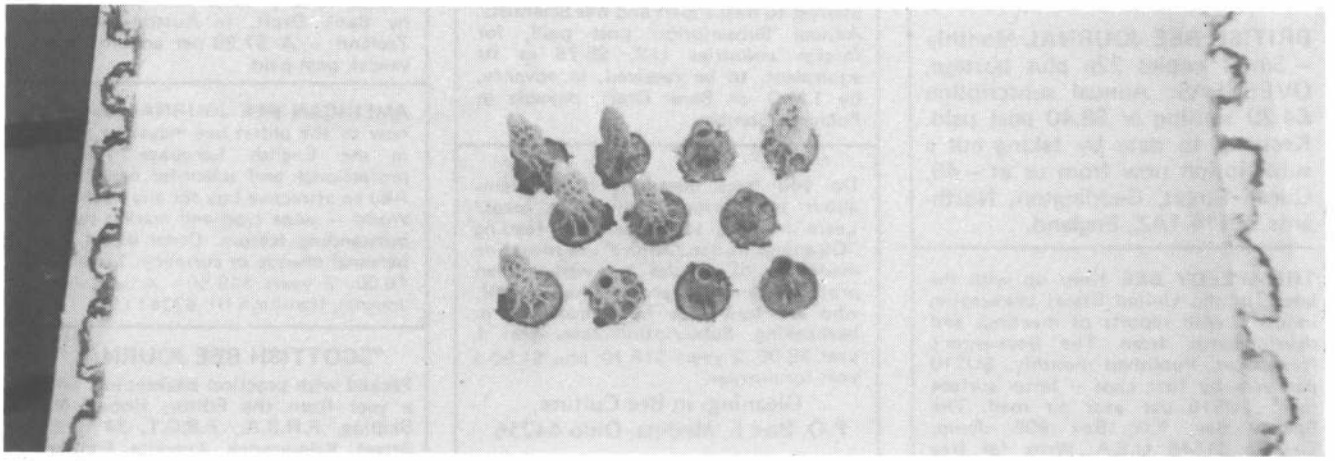
Holes, pre-drilled cork, pencil plunger, glass punch



Punch over cell.



Cells - may be removed and examined individually without any fuss.



How they look: Actual acceptance was slightly better than shown. These cells were over-demonstrated and over-photographed, and as a result, the bees tore some down.

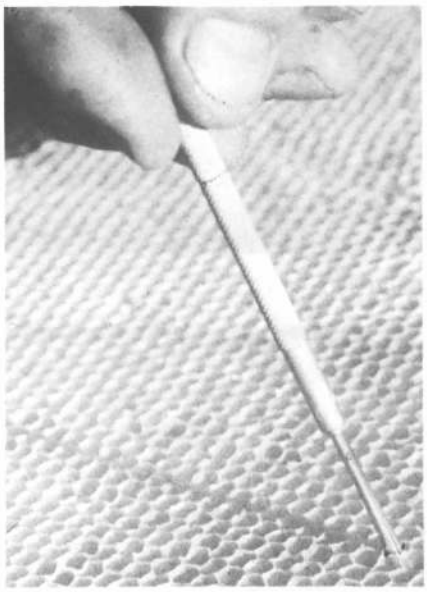
Large larvae are luvverly

Let's have a bit of provocative discussion. I was re-reading Wedmore's Manual Of Beekeeping – the 1942 reprint – the other day and came across:

'A well-fed larva in a large cell may produce a bee as much as eight per cent to 12 per cent above normal, while a bee raised under favourable conditions as to temperature and feeding and in an old comb with small cells may fall short of normal by as much as 50 per cent.'

There is more but that will be enough to start with. If what he claims is true we may assume that:

- Spring feeding pays handsome dividends in ensuring big, fat, happy young bees with the inference that they, in turn, will be more efficient feeders of brood, so that the large-bee syndrome is selfperpetuating.
- Large bees will be more efficient nectar gatherers (Wedmore credits them with longer tongues in addition to their other virtues. Presumably nectar carrying ability is not a simple weight for weight ratio but increases expotentially. I would not be surprised if told that a 12 per cent larger bee could carry 25 per cent more nectar).
- And, of course, that brood should always be reared in newly-drawn foundation combs. An interesting point, his 'old comb with small cells', and one that keeps cropping up. I have measured old and new cells and found the old a little smaller, but they



don't keep on getting smaller and smaller or we'd have bees we could only see under a microscope.

- Surely he makes an invidious comparison between 'well-fed larvae' and one 'raised under unfavourable conditions?'

I would have thought that as long as stores were available the larvae would be fed – not well, not badly, but just fed. i.e. up to the level of nutrition all honey bee larvae have been fed to for millions of years.

- The bees aren't going to cram larvae simply because food is available, nor starve them if it is. They have perhaps 1 500 larvae a day to nurse and certainly aren't going to pamper them.
- Thus instead of there being, as implied in the text, larvae well-fed, ordinary fed, and underfed, I would suggest there is only the second except in the direst of emergencies, and that emergencies are counteracted, not by starving larvae, but by reducing the number of eggs laid and larvae raised, right down to the disaster level which would affect the whole of the colony.

There was an interesting article a couple of years ago in the American Bee Journal on larger foundation for better bees. Presumably the sizes of our foundation base are taken from those found in nature and proved through a hundred years of practical experience.

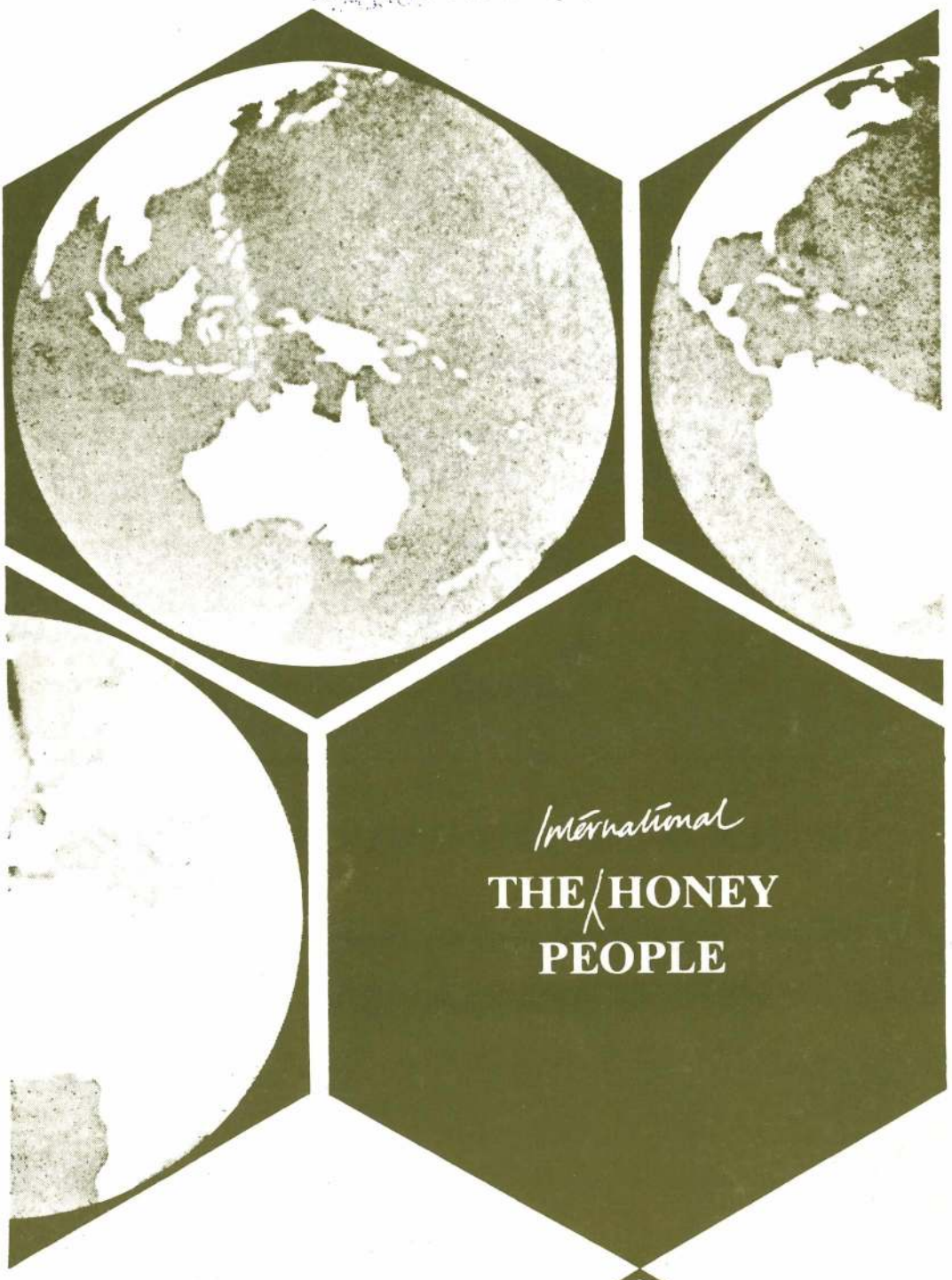
As for Wedmore's claim that bees raised in old combs may be 50 per cent below par – surely not!

I have said before that I know elderly beekeepers around who claim brood combs several decades old, and I doubt if their bees are significantly smaller than average. They certainly don't appear to be so, and they certainly do bring in the honey.

Perhaps one of our research projects should be to carry out a study on the effect of cell size on bee size and on the honey crop under New Zealand conditions. Any volunteers?

— D.W.

OTHER PUBLICATIONS



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