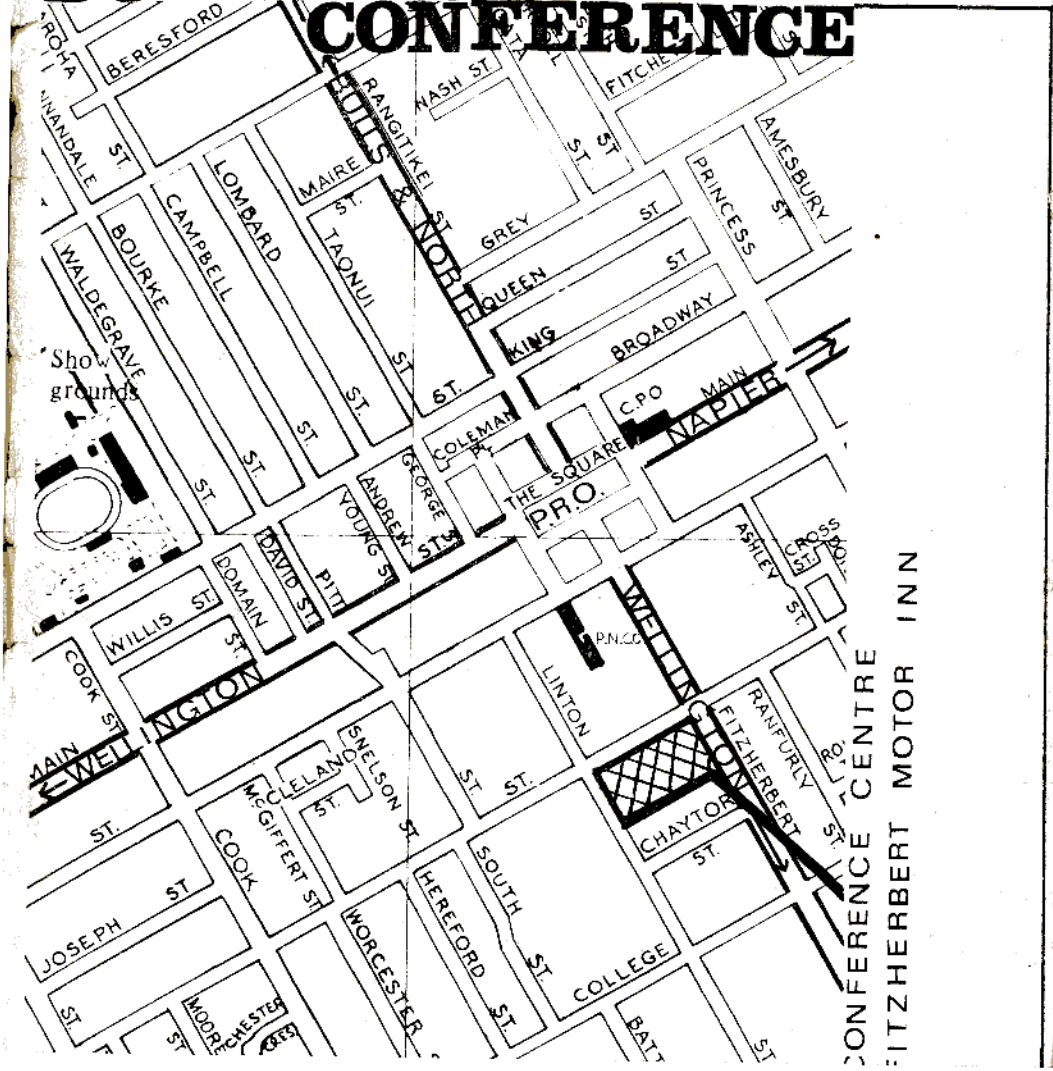
THE NEW ZEALAND BEEKEEPER
May 1974

PALMERSTON NORTH DOMINION CONFERENCE



CONFERENCE CENTRE
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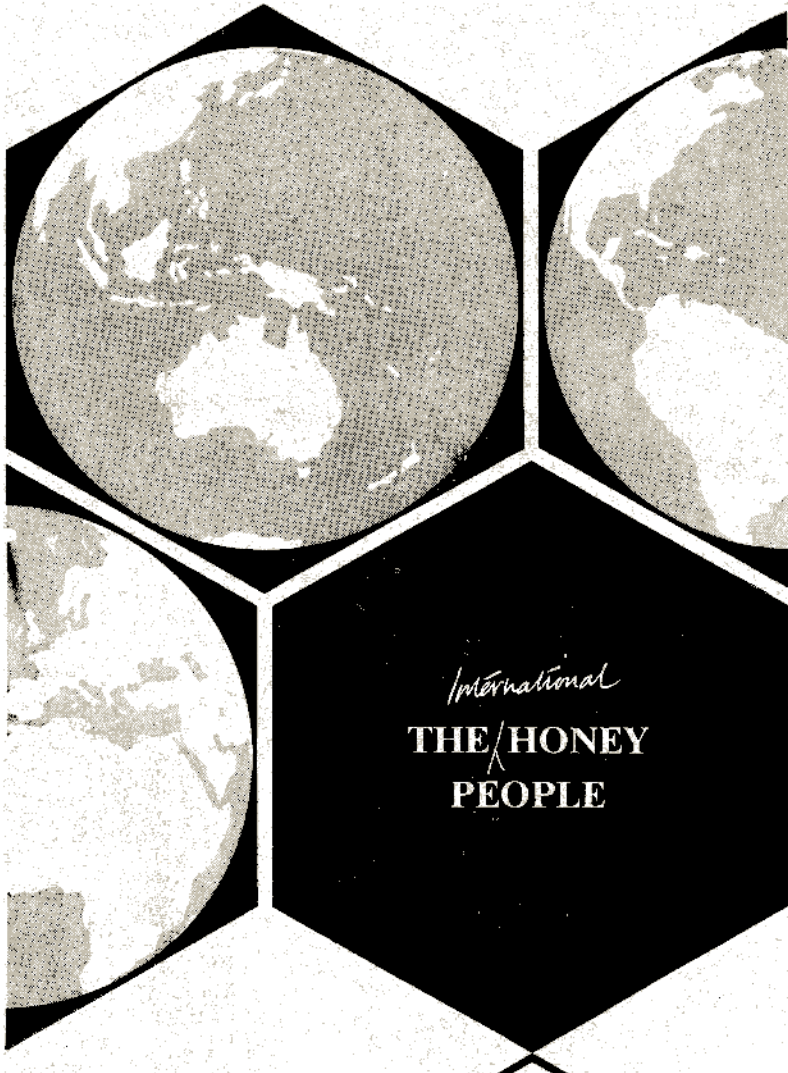

THE NATIONAL BEEKEEPERS' ASSOCIATION of N.Z. Incorporated

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President: Mr W. A. Clissold, No. 5 R.D., Gore.
Secretary: Mr A. M. Ward, 10 Beattie St, Gore.

THE NEW ZEALAND BEEKEEPER

Vol. 36, No. 2

Published in February, May, August and November by the National Beekeepers' Association of N.Z. (Inc.) in conjunction with the N.Z. Honey Marketing Authority. Subscriptions (posted): Members $1, Non-members and Overseas $2 per year (see note inside back cover). Registered for transmission by post as a magazine.

Editor: Norman S. Stanton

MAY, 1974

CONTENTS

The Levy Scheme

After years of rough words, remits and resolutions a Levy Scheme acceptable to both the National Beekeepers' Association and the Honey Marketing Authority has been hammered out. The basis of the negotiations for this scheme and the principles involved are outlined elsewhere in this issue. It can fairly be said to be a marriage of the Nelson and Kaitaia Resolutions plus a formula to make it work supplied by the H.M.A.

The hope for sanity in the industry now comes with the implementation of this scheme. If its critics are going to go on using their rough words before the scheme which has been agreed to by the majority of the leaders in the industry has had a fair trial they will fan the fires of frustration and suppress the honest attempts at sanity which have come into the industry.

My plea, then, is that we (I am becoming more deeply involved all the time) not only approach the new scheme with goodwill and an agreement not to fight against it but with a determination to go out of our way to make it work. The best analogy

could be from the recipe for a successful marriage which someone has provided. "It is not enough *not* to fight, nag or bicker within the marriage to make it work. Both partners must *actively* seek the health, well-being and happiness of the other if it is going to survive." Might this just be the formula we could try for the next few years until something better comes along or something better is indicated by changing conditions?

The Price of Honey

The recent fall in the price of honey on some markets has the prophets of doom loudly sounding off with all kinds of over-reaction. Any comment at present would be superfluous. But there is one observation worthy of note in this connection. That is the fact that the export price quoted by the Australian Honey Board for light amber has for the first time in my experience fallen below that for pale amber. In fact there was a short time early in the year when *all* grades of Australian honey for export were being quoted below that for light amber. The present top export price of about $630 per tonne (= 1000 kilogrammes of 2.205 lb each) is still at 28½c per pound well above the payout authorised by Government of our own H.M.A.

Annual Conference — Palmerston North

Elsewhere in this issue full details of this important event are published. It is to be hoped that every financial member will exercise his democratic right to present remits to his Branch which, if duly approved, will go forward for discussion and vote at Conference. You will note that the announcement in August last year of the "70th Conference" was in error and for this the Editor offers apologies. This could have read the "89th Anniversary of the formation of the New Zealand Beekeepers' Association" or the "60th Anniversary of the reforming of the N.B.A."

Second Best Beekeeping Magazine?

In a letter to Dr Richard Taylor (see February, 1974) Lawrence Goltz, editor of *Gleanings in Bee Culture*, has this to say about this magazine:

Dear Richard,

Thank you for forwarding the picture of Norman Stanton, editor of the *New Zealand Beekeeper*. I would consider the *New Zealand*

Beekeeper as the second best bee journal in the world so I am certain that he and his staff must be doing an excellent job with the magazine.

Yours very truly,

Lawrence R. Goltz.

[I cannot take all the credit. Without the help of the Apiary Instructors and other professional contributors, also the beekeepers of New Zealand, this standard could not be maintained. But we need your continuing co-operation in our efforts to keep up this standard.—Ed.]

HONEY INDUSTRY LEVY

In past years successive executives have endeavoured to formulate a generally acceptable proposal to refinance the N.B.A. and at the same time spread this cost evenly over all sections of the industry. It was also recognised by most producers that a central marketing body such as the H.M.A. should also be supported so far as its administration as a board was concerned, by all producers.

Little has been achieved in the past by putting forward various schemes such as hive levies or production levies because of the variations in seasonal production from area to area. It has now been generally accepted that a Levy can only be applied at the point of sale of the honey.

The H.M.A. have always maintained that a Levy should be retained on all retail sales and the balance paid by declaration. The N.B.A. on the other hand preferred that the whole scheme be by declaration, because the present Levy on containers has proved difficult to enforce and was felt by some to be inequitable.

It was with this background that both parties met in Auckland in an endeavour to formulate a common policy on the whole Levy issue.

Following a discussion with the Authority's solicitors and the general manager it was clear that both schemes could in fact be merged to the industry's advantage and the two main points which emerged were:—

1. That at one specific point in the chain from production to consumption the honey must become liable to the Levy.
2. That honey on which Levy has been paid be able to be identified at the point of payment.

The present seals scheme covers both these points in that the payment is due when the honey is offered for sale and the honey liable for the Levy is inside the container bearing the seal. It was therefore agreed to continue the present seal on containers as proof of payment of Levy. For all other sales of honey sold in any container not bearing a seal authority number a declaration will be filled out showing the date of sale and the quantity of honey sold. The declarations will be in booklet form in triplicate, one copy is delivered to the purchaser, one copy is kept by the producer, and one copy goes to the H.M.A. together with payment of the appropriate amount of Levy. (In fact these third copies could be accumulated by the producer and sent in at either monthly or quarterly intervals together with cheque for the total Levy.)

The Authority will provide quickstick type of seals for all common weights of honey containers for use on unprinted tins and for attaching to customers' own containers. The books of declaration forms will also be provided.

How will all this work in practise?

The producer puts his honey into one or more of the following containers:

1. Printed retail containers already bearing a seal.
2. Unprinted retail containers.

3. Bulk containers supplied by packer.
4. Bulk containers supplied by H.M.A.
5. Retail containers brought in for filling by customer.
6. New bulk containers for private sale, e.g., manufacturing.

The Levy is accounted for as follows:

1. Container maker notifies H.M.A. of sale of containers to producer as at present.
2. & 5. Producer attaches a quickstick label or fills in a declaration form.
3. & 6. Producer fills in a declaration form and gives one copy to packer or manufacturer.
4. No action needed by producer. The Levy will be deducted from final payment to producer.

In the case of a Packer, he buys printed containers and is automatically charged with the Levy. However, he is going to fill some of these containers with honey on which the Levy has already been paid by the producer by declaration. In this case the packer sends to the H.M.A. the copy of the declaration given him by the producer and this amount of the Levy will be credited to the Packers' account.

While some objectors to the scheme would like the whole Levy payable by declaration with no attachment of seal, it is felt that this gives too much room for evasion, either deliberate or accidental. If the Post Office did away with postage stamps and everyone sent in a monthly declaration of mail posted, it is very likely that postal revenue would fall dramatically.

As this scheme is now a Levy on honey sold by a producer, it is to be expected that each producer will charge a price for his product which will recover the value he places on his honey, plus the amount of the Levy. Providing he does this the Levy is eventually paid by the consumer.

The amount of the Levy will be based on budgets presented by both bodies and approved by the Minister, and subscriptions to the N.B.A. will continue, but be deductible from the N.B.A. part of the Levy.

These new regulations as set out by the N.B.A. and administered by the H.M.A. are fair and reasonable and both bodies are emphatic that such measures as are thought necessary to enforce them will be used.

Beekeepers Technical Library

P.O. Box 423, Timaru

BOOK DONATED TO LIBRARY

Presented by Mr Terry C. Gavin of Whangarei, a Foundation Life Member:

NEW ZEALAND INSECTS and Their Story by **Richard Sharell**—1971. 268 p. plus; 200 colour photographs and 88 black and white.

The Library is pleased to announce this valuable addition.

A wide assortment of books of interest to beekeepers is available to members of the National Beekeepers' Association. Send a self-addressed envelope for a copy of the Rules and a List of Books.

While the Librarian is absent on the Beekeeping Project in Papua-New Guinea (May-June-July) Mrs Dawson will attend to Library loans as far as she is able.

CHRIS DAWSON, Hon. Librarian.

N.B.A.
ANNUAL CONFERENCE

PALMERSTON NORTH PUBLIC RELATIONS ORGANISATION INC

This is to confirm the arrangements which our organisation has undertaken for your National Beekeepers' Conference to be held in Palmerston North from Wednesday 17th July through until Friday, 19th July.

VENUE:

We have booked the Conference Room at the Fitzherbert Motor Inn for the 17th, 18th and 19th July (Wednesday, Thursday and Friday), and we are holding 40 twin units at the Fitzherbert Motor Inn. The Executive will be placed in some of these units for their meetings to be held on the Monday and Tuesday prior to the Conference.

GET-TOGETHER:

We have organised a Get-Together at the Fitzherbert Motor Inn Conference Room on Tuesday, 16th July, 8.00 p.m. for the delegates, providing tea, coffee and savouries for 70 people.

CABARET:

We have arranged for the Cabaret to be held at the Awapuni Hotel on Thursday 18th July at 8.00 p.m. at a cost of $10 double. Included in this price will be a buffet supper, champagne, beer and spirits. We have also arranged the printing of the Cabaret tickets.

SIGHT-SEEING TOUR:

We are arranging for the wives of the delegates a tour on Thursday, 18th, and at the conclusion of this tour, the wives will be transferred to hair salons. All this will be included in the cost of the tour.

SECRETARIAL SERVICES:

Our office will provide Secretarial Services for your Conference, picking up material from your Executive meetings for duplication on Monday and Tuesday at 12 noon and 4.00 p.m. each day. We will also have a girl on duty at the Conference Headquarters from Tuesday afternoon until the Conference concludes on Friday.

CONFERENCE FOLDERS AND STATIONERY:

We are arranging the printing of simple Conference folders, included in which will be publicity material and writing material.

I. N. MacEWAN,
Public Relations Officer.

WELCOME TO PALMERSTON NORTH—"CITY OF ROSES"

Founded more than 100 years ago on the banks of the Manawatu River to serve an agricultural community, Palmerston North is today the second largest inland city in the nation and the principal junction in the North Island's transportation network.

Industry and commerce have grown with the city and thrive today in a progressive society together with several major educational and research establishments. Massey University and the Dairy Research Institute are of international repute and contribute in no small measure to New Zealand's development, and, of course, benefit the city in so many ways.

Palmerstonians have a cosmopolitan heritage, are friendly, tolerant and proud of their city. Numerous fine private gardens and homes reflect this pride. Extensive parks and an ever-increasing number of recreational and cultural amenities give pleasure to all.

The staff of the Public Relations Office, in the Centennial Pavilion, the Square, will be pleased to assist with any queries regarding the city and its services. It will also be our pleasure to arrange accommodation at no charge, and introductions to executives or organisations, clubs, etc.

I hope that you will enjoy your visit and only leave Palmerston North with the intention of returning, soon.

I. N. MacEWAN,
Public Relations Officer.

SOME FACTS:

(1) The population of Palmerston North is in excess of 57,000.
(2) Palmerston North is New Zealand's seventh city.
(3) There are over 16,400 houses in Palmerston North.
(4) Over one-quarter of New Zealand's population lives within a radius of 100 miles of Palmerston North.
(5) The centre of the city is 100 feet above sea level.
(6) The area of the city is 10,630 acres of which there are over 700 acres in park lands and reserves.
(7) Meteorological information: The average annual rainfall is 39", average temperature is 54.8° F., average annual sunshine hours total 1,814. The latitude of the city is 40° 21 mins. south and its longitude is 175° 37 mins. east.
(8) In addition to a copious artesian supply, over 370 million gallons of water is stored in the Tiritea Dam, which includes a modern filtration plant.
(9) The Manawatu Catchment Board covers 2,680 sq. miles (1,750,000 acres) which includes one city, nine boroughs, five counties and parts of nine other counties. The Board controls 500 miles of principal rivers and 2,000 miles of secondary rivers.
(10) Educational facilities: 22 primary, three intermediate and six secondary schools serve the ever-growing population. Additionally, there is a teachers' training college, technical institute and Massey University.
(11) The airport is capable of handling all aircraft presently operating on internal routes. It has a Class I runway, 4,900 ft long and 150 ft wide, fully sealed and lit. Landing aids include a visual slope indicator. Airport operability has been a constant 99.7% over the past three years.
(12) The modern railway station is a junction for five different rail routes.
(13) Palmerston North was proclaimed a borough on 12th July, 1877 and was raised to the status of a city on 11th August, 1930. The centenary of the city's settlement was celebrated in 1971.
(14) The city's armorial emblems are associated with Lord Palmerston, one-time Premier of Great Britain, after whom the city was named.

ACCOMMODATION BOOKING

Complete and return immediately to: P.N. Public Relations Officer, P.O. Box 474, Palmerston North.

Number of Persons .....

Adults .....

Children .....

Ages: .....

Date of Arrival ..... Date of Departure .....

Day of Arrival ..... Day of Departure .....

Time of Arrival ..... Time of Departure .....

Type of Accommodation (only good quality accommodation is allocated).

Hotel ☐ Motel ☐ Private Hoel ☐

(Tick which preferred)

Specify number and type of Room (i.e., Single, Twin, Double, Family)

.....

Self-contained or Serviced .....

NAME .....

(print clearly)

ADDRESS .....

.....

(N.B.: There is no charge to the individual for this service. No cash is required at this stage. The Public Relations Office will advise you of the bookings made and you pay the motel/hotel in the normal way.)

ACCOMMODATION GUIDE

Cost for first two persons is first; additional adults are in parentheses.

MOTELS

A La Vista, $11-$13 ($3.00); Alpha, £11.50 ($3.00); Bryn Teg, $9 and $10 ($3.00); Broadway, $10 ($4.00); Ande-Llewyn, $12 ($2.50); Central, $9 ($2.50); City Court, $10; Coachman, Serviced units, $12 ($3.00); Self-contained units, $12 ($3.00); Family self-contained $13.00 ($3.00); Consolidated £10.50; Motel United, Self-contained, $10 ($3.00); Serviced, $9 ($3.00); Overlander Trailotel, Self-contained, $8 ($2.50); Serviced rooms, $6; Palmerston North Motel, Self-contained $10.50 unit ($3.00); Pioneer, $9.50-$11 ($3.00); Ruahine, $8 (£3.00); Sunglow, $7.50 ($2.50); Terrace Court, $11 ($3.00); Trade Winds, $8.50.

HOTELS

Albert Motor Lodge, $11; Awapuni Motor Inn, $10.50; Cafe de Paris, $5 B/B; Club Hotel, $11 (inclusive all meals); Commercial Hotel, $12 (full); Fitzherbert Motor Inn, $14 ($2.00); Empire Hotel, $10; Hotel Carlton $15 (inclusive all meals); Majestic Hotel, $14.50; Masonic, $15.50 B/B.

PRIVATE HOTELS

Ambassador Hotel, £10 day; Central Hotel, $13 DBB; Rebecca Lodge, $13 DBB.

TRAVEL HOTELS

Prices are for first two persons.

Chaytor House, $11 B/B; Greyton Private Hotel, $11 B/B.

Executive Meeting at

WELLINGTON

Wednesday to Friday, March 13th to 15th, 1974

Minutes of a meeting of the Executive of the National Beekeepers' Association of New Zealand Incorporated held in the Druids' Club Rooms, 4th Floor, Druids' Chambers, Wellington, on Wednesday, 13th March, 1974, commencing at 10.30 a.m. and carrying through until Friday 15th March, 1974.

PRESENT:

Mr I. J. Dickinson, President in the Chair, Messrs M. Cloake, M. D. Haines, J. D. Lorimer, D. Penrose and J. de Wit.

In attendance: E. R. Neal, Association's Secretary; N. Stanton, Editor of New Zealand Beekeeper.

BEREAVEMENT:

Mr Penrose reported that he was a pallbearer representing the Association at the funeral of Mrs Pearson: It was agreed that the General Secretary write a letter to Mr. Pearson expressing sympathy at the loss of his wife, and mentioning that Mrs Pearson had always been noted for holding open house to beekeepers and noting that she was well renowned locally and by overseas visitors.

TAX INCENTIVES:

Mr Dickinson reported that the action envisaged at the December meeting had been carried out. He was, however, astounded to find that of the parties circulated, only two had replied, although the assistance of the Association had been offered to them in this matter. The Secretary confirmed what Mr Dickinson had said and reported that he had been in touch with an officer of the Department of Trade and Industry and to the General Secretary's embarrassment had explained the position to him.

DROUGHT RELIEF:

Mr Dickinson said that he had received a letter from Mr Haines, asking Mr Dickinson to see Federated Farmers about drought relief provisions. Mr Dickinson said that he had seen Federated Farmers prior to the meeting, although he had not discussed this particular matter. Mr Dickinson referred back to the 1970 correspondence. Mr Haines reported that Mr Carr of the H.M.A. was being approached by members about drought relief. Apparently the areas affected were in the Waikato and Warkworth/Wellsford. Apparently there were pockets of country affected. Mr Dickinson said that there was also another letter from Government on the matter which he could not produce, in such short time, the text of which was that beekeepers could pick up their hives and take them from drought-stricken areas into more normal area. Mr Cloake said an ex-chairman of a drought relief committee had come to speak at a Canterbury branch meeting. Apparently the provisions were that first of all the area had to be declared a drought area and then relief to farmers was only in respect of what was outside normal requirements. Apparently farmers received only a few dollars. Mr Cloake wondered whether applying for drought relief was worth it. It appeared from the discussion that took place that the crux of the matter was that if an area was declared a drought area beekeepers could apply for a guaranteed overdraft and this was the extent to which relief would be granted. No further action to be taken.

COST OF PRODUCTION SURVEY:

At this stage the Departmental Officers arrived. These included Mr Jack Watt, Mr Eric Smaellie and Mr Alex Smith who was from the Economic section

of the Department of Agriculture and Fisheries, Christchurch. Mr Dickinson welcomed the three members of the Department, and said that he hoped that fruitful discussion would ensue. Mr Alex Smith then presented his thoughts on a Cost of Production Survey. He said that there were three methods. One was a detailed survey with an average result. Second was the detailed survey with an economic analysis following, with a bigger sample and third was an accounts survey with taxation accounts from various beekeepers being collated. He handed to the President his notes on what he had told Executive. He thought method one would cost about four thousand dollars and method two would cost in excess of this. It was agreed that executive would consider next what steps had to be taken.

METRICS:

Mr Dickinson said that they would like to ask Mr Watt how the Department was going on this. Mr Smaellie said that there would be a meeting about April with representatives from the Executive.

BRASS & HONEY:

Mr Smaellie asked what brass machinery was used. It was pointed out that most honey pumps are brass. The Association wishes to know what reaction brass has with honey, if any.

Mr Dickinson thanked Mr Smith, Mt Watt and Mr Smaellie for their attendance. At this stage the Departmental Officers left.

COST OF PRODUCTION SURVEY:

It was noted that this is being carried forward and pursued with members of the Ministry of Agriculture and Fisheries. Mr Penrose to keep executive informed on progress.

METRICS:

On the motion of Mr Penrose, seconded Mr Cloake, it was **resolved** that the Secretary write to the Department of Agriculture and Fisheries asking that three members of the Executive plus Mr K. Ekroyd (representing the manufacturers) plus a representative from Arataki Apiaries Ltd (representing the Comb Honey producers) be the N.B.A. nominees to any meetings held by the Department of Agriculture and Fisheries on metrication of beekeeping equipment.

On the motion of Mr de Wit seconded Mr Cloake it was **resolved** that the National President, the Vice-President and Mr Lorimer be the members of the Executive. This was in line with Mr Dickinson's thinking that it should be the President plus one member from the North Island and one member from the South Island.

MINUTES TO BRANCH PRESIDENTS:

The Secretary reported that he had had a request from Mr Walley of South Western Districts regarding extra copies of minutes to members. The Secretary recalled that the number of copies of minutes published had been cut down in view of their cost.

On the motion of Mr Penrose seconded Mr Lorimer it was **resolved** that in future, copies of Executive minutes go to all Executive plus all branch Presidents plus all branch Secretaries.

EDITOR:

The Editor reported on advertising rates. He was obtaining 1250 copies per issue of the New Zealand Beekeeper every printing and 1150 were going out. There were approximately 1000 net paid local issues. He recommended to Executive that advertising rates be increased.

On the motion of Mr Penrose seconded Mr Lorimer it was **resolved** that advertising rates in the New Zealand Beekeeper in future be $20.00 for a full page, $12.00 for a half page, $7.00 for a quarter page, $2.00 for an inch depth advertisement with a minimum of $2.00.

In regard to the printer on the motion of Mr Dickinson seconded Mr Penrose it was **resolved** that the Editor provide a report on changing the Journal from four to six issues each year, and this report be ready for Conference.

Mr Lorimer said he was a little concerned at the tone of the Editor's comments in the November Journal, where the Editor, in his Editorial had highlighted areas of disagreement. Mr Lorimer thought it might be more important to mention areas of agreement. Mr Penrose said he would agree with Mr Lorimer; on the other hand against this Mr Stanton was trying to mirror the frustrations of Executive at the time.

Note for Mr Stanton: The phone numbers for the Executive and Secretary should be put with their addresses in the Journal that comes out.

HIVE DISEASE INSPECTION FORM:

This has been raised by a member of the Executive. It was agreed that this lie on the table, to be taken up with Department of Agriculture & Fisheries.

GRADING:

Mr Cloake said the grading system needed to be looked at. Forty-four gallon drums were not desirable containers because they were difficult to extract samples from. He said recently his apiary inspector had put in a recommendation that his honey be down-graded, in spite of the fact that all of it had gone through a thin 60 mesh strainer. Mr Cloake suggested that three things could happen:

1. The gradings could be looked at;
2. The H.M.A. accept the gradings as is;
3. That a lot more heat might have to be applied.

On the motion of Mr Cloake, seconded Mr de Wit, it was **resolved** that the Association ask the H.M.A. to investigate methods of straining honey in large quantities.

Apropos of this Mr Cloake thought the H.M.A. should contact the D.S.I.R. and perhaps pay for any research in this connection. Mr Cloake said the H.M.A. did the grading, they paid for the grading, and therefore they should tell people exactly how the straining of honey should be carried out. Mr Dickinson said he would like to know what the instructions re grading were. Mr Dickinson suggested that this was another matter that lie on the table, and be taken up with Mr Watt and Mr Smaellie.

Mr Penrose said that he was against this; that the Department had two perfectly good instructors.

Mr Dickinson moved and Mr Lorimer seconded an amendment; the word "H.M.A." be replaced by the words "Ministry of Agriculture and Fisheries". When the amendment was put it was **carried** and therefore the substantive motion became "that the Association ask the Ministry of Agriculture and Fisheries to investigate and research the best methods of straining honey in large quantities."

When the substantive motion was put it was **carried.**

GRADING FEES:

A letter ex the Ministry of Agriculture and Fisheries regarding grading was tabled.

CANADIAN TOUR REPORT:

Mr Haines reported that there were 18 probables, and other relative details.

BURSARS TO CANADA IN 1975:

Mr Lorimer said it was now time to plan the Bursar exchange with Canada. Mr Haines said he had written to Canadian council about a bursar scheme. Mr Penrose said he supported the exchange. Mr Penrose said that Abbott Laboratories might be interested. They were advoçating the use of Fumidal B in New Zealand. This had been in use for many years in Canada, and a bursar could gain valuable knowledge in the use of this product with particular reference to New Zealand conditions. Increased use of supplementary sugar feeding in New Zealand which would include the product Fumidal meant that the timing of the bursar's trip would be of commercial value to Abbott Laboratories.

It was noted that Mr Cloake had gone to Canada as a bursar in 1965-66. On the motion of Mr Dickinson, seconded MrLorimer it was **resolved** that the General Secretary approach:

1. The Association's bankers.
2. Kimptons.
3. Alex Harvey.
4. Abbott Laboratories in terms of the Fumidal mentioned above.
5. Winstones.
6. Alliance Bee Supplies.
7. The H.M.A.
8. D. F. Penrose.
9. R. Davidson Jnr.
10. The Queen Exporters.

and commercial beekeepers in general via the Journal. It was agreed that Mr Penrose would supply brief notes to the Secretary so that he could compose his letters. It was agreed also that the question of the bursar be publicised by having an insert in the May 1974 Journal and also verbally at Conference.

OVERSEAS BURSAR EXCHANGE:

On the motion of Mr Lorimer, seconded Mr Dickinson it was **resolved** that a sub-committee be set up with its convenor being Mr Cloake having power to co-opt so that the question of the overseas bursar exchange could be considered.

It was also agreed that the question of the bursar could be carried forward to the July meeting.

ACCIDENT COMPENSATION:

The Secretary spoke on this as he had studied the matter in his own practice. It was noted that as beekeepers' employees were rated at 80c in the $100.00. The Secretary pointed out that all self-employed irrespective of the industry, trade or profession in which they were, were liable for $1.00 in the $100.00.

PROPOSED VISIT BY SECRETARY TO FEDERATED FARMERS:

The Secretary said he had been invited by Mr Pryde to a meeting at Federated Farmers on the 25th March 1974. He understood that at this meeting the salaried officers of Associations affiliated to the Federation would be having a get-together to discuss mutual problems. Mr Dickinson said that he had talked to Mr McClaggan of Federated Farmers who had appreciated the problem of the Association of not being able to send a representative to Wellington to Federated Farmers meetings as often as the Association might wish on the grounds of cost.

LIBRARY COMMITTEE:

Mr Cloake reported that one of the three committee members Mr L. Little had died a while back which left a vacancy to be filled.

On the motion of Mr Dickinson, seconded Mr Penrose, it was **resolved** that the Library Committee have the power to co-opt a third member. It was agreed that the Secretary write to the Library Committee along these lines.

BRANCH MERGERS:

Mr Lorimer reported that the Bay of Plenty members had come to the conclusion that the level of their membership had come to a dangerously low level, insofar as the attendance at meetings was concerned. The membership roll totalled about 30 but nowhere near this amount attended meetings. The original idea was to have Rotorua as a headquarters with Taupo coming into the Bay of Plenty area. It seemed that there were two factors to be considered;

1. The prime factor was to strengthen the Association as a whole.
2. There was a need to protect the present Waikato branch from undue loss of membership.

Mr Lorimer thought it was better from the Association's point of view to have fewer branches but stronger branches. In the original idea Tirau was the boundary between Waikato and Bay of Plenty. This was nearer to Rotorua

than to Hamilton. Mr Lorimer however recommended that Tokoroa should be the boundary line with an area, Taupo, Turangi, Tokoroa, Rotorua, Tauranga. Executive agreed to this recommendation.

OLD SOUTH OTAGO BRANCH:

The President said he had learned that there was a defunct South Otago Branch. It was agreed that the Secretary write to Mr Percy Bateman, a member at 6 Ross Street, Balclutha, asking who the Secretary could contact regarding the now defunct South Otago Branch.

LEVY SCHEME:

There was a long informal discussion by Executive on the Wednesday evening; — Mr Dickinson reported.

Mr Dickinson said that he was concerned that the H.M.A. had not got its own solicitor to put the suggested amendments in writing for Executive to peruse. Secondly, he was concerned that the H.M.A. kept referring to the Nelson scheme as the "N.B.A. Scheme". The Nelson scheme had derived from a meeting between the H.M.A. and the N.B.A. with an outline of the scheme given by the Minister of Agriculture, Mr Moyle. The H.M.A. had called N.B.A. representatives to the H.M.A. meeting on Monday 18th March. Mr Dickinson therefore considered it was most necessary that the Executive reach some agreement before this date. Mr Penrose said that he had been talking to Mr E. W. Lall of the Ministry and apparently the biggest problem was one of evasion. One of the arguments by the H.M.A. in opposition to the present suggested scheme (i.e., the Nelson scheme) was the possibility of evasion.

On the motion of Mr Dickinson seconded Mr Penrose it was **resolved** that it be a recommendation to the H.M.A. that a clause be incorporated in the new levy scheme that a honey sold register be maintained by beekeepers.

On the motion of Mr Penrose, seconded Mr Haines it was **resolved** that the declaration form be included in the draft regulations and the final show; (a) the money returned for honey sold in the year under review, (b) the poundage of honey sold in the year under review, (c) and that these figures be capable in the event of challenge of being supported by a trading and profit and loss account solely recording the operation relating to the sale of honey.

Mr Cloake said that the new scheme had been hoisted on to the N.B.A. He said that he was no longer prepared to concede that the Industry was stuck with the Nelson scheme. He thought the Executive's representatives should go to the H.M.A. meeting with a different approach. Mr Penrose said he thought the Industry needed a levy. Mr Lorimer said it was a fundamental system to have a levy. Under the present system, the consumer paid, where under the new system the producer would pay.

LEVY SCHEME:

This was further discussed at quite some length and many aspects covered to give the executives representatives at the coming meeting a comprehensive view of the way the executive felt.

OUTSTANDING SUBSCRIPTIONS:

At 3.25 p.m. Mrs B. Neale attended and spoke to the question of outstanding subscriptions. It was agreed that the Executive be sent the complete list and Branches be sent a list pertaining to their particular branch. At 3.55 p.m. Mrs Neal left.

BOILERS:

On the motion of Mr Dickinson, seconded Mr de Wit, it was **resolved** that a letter from the Marine Division dated 8 March 1974 be received and that Executive await developments.

FUEL:

On the motion of Mr Dickinson, seconded Mr Haines, it was **resolved** that the letter from the Ministry of Transport dated 7 March 1974 be received and the contents noted.

CONFERENCE:

Mr Dickinson brought up the question of executive ribbons which seemed to be falling low in stock. It was **agreed** that the Secretary ensure that for the next conference in Palmerston North there were ribbons for the President, the Vice-President, Executive, Editor, Secretary, guests and host branch.

It was noted that the Conference would take place on the 17, 18, 19 July and it was agreed that the Secretary get Mr K. Morris to book the Executive in according to the schedule compiled by the Secretary regarding accommodation. It was also agreed that the Secretary get Mr K. Morris to notify Mr Stanton of details so that he could publish these in the May Journal. It was agreed also that the Secretary remind South Western branch of the instructions for running conferences and it was also agreed that the Secretary remember to send out Group Air Travel Vouchers.

WAYBILLS:

A letter from the Ministry of Transport dated 22 February 1974 was received and Mr Cloake had questeioned this ruling.

On the motion of Mr Penrose seconded Mr Lorimer it was **resolved** that Mr Cloake approach the Ministry of Transport to get a clear ruling on waybills and goods licenses.

It was agreed that he visit the Ministry of Transport at 9.00 a.m. on Friday, 15 March 1974.

INCREASED COST OF HONEY:

Mr Lorimer reported that the packers seemed to have taken action on this but the Association did nothing about it. It was agreed that the President raise this matter with the H.M.A.

AVAILABILITY OF HONEY CARTONS:

On the motion of Mr Cloake, seconded Mr Lorimer it was **resolved** that the Secretary write to Winstones in regard to Cardea cartons pointing out the grave situation and stating that the Association expected better service from a monopoly operation marketing this type of product and that therefore the Association considered that shortages seriously affected the livelihood of members and further that the Association would be loathe to consider applying for a license to import cartons themselves.

QUEEN SUPPLY PRICES:

Mr Dickinson said he had talked briefly to Mr Jasper Bray regarding this question. Mr Bray was trying to get as many Queen Bees for export as possible. Prices had been mentioned. Mr Dickinson said that he was concerned generally that New Zealand had enough Queens for local use. He was concerned that there might be a scarcity. He did concede that $1.25 was cheap for a queen, but he was concerned about the possible escalation of prices. Mr Penrose said that ten or fifteen years ago, ten cents was paid for a pound of honey and a hive was valued at $10.00, with the queen bee at $1.00. It would seem that prices had risen proportionately.

H.M.A. DRUMS AND FREIGHT:

These two questions were discussed. It was agreed that the President and Vice-President would take this matter to the H.M.A. at the next meeting.

RUSTY DRUMS:

It was agreed that the President and the Vice-President would take this up with the H.M.A. at the next meeting.

SUGAR:

Mr de Wit asked for further information regarding the supply of sugar. Mr Penrose said that this could be negotiated on a local basis.

REPRINT OF RULES:

On the motion of Mr Penrose seconded Mr Dickinson it was **resolved** that the rules be reprinted with a 10 per cent overprint, and the Secretary be empowered to accept the most favourable quote. It was agreed that Mr Penrose would obtain a quote after the Secretary had let him know how many books were required. It was also agreed that Mr Dickinson and Mr Lorimer would get quotes and that Boughtwood be given the opportunity to quote.

BRANCH PLACARDS FOR CONFERENCE:

Mr Penrose undertook to have the signs written.

PAYOUT FROM H.M.A.:

Mr Lorimer said that the H.M.A. reserves were very substantial. He thought that there was a 14.5 cents advance per pound when the guaranteed total price was 23.5 cents. Six years ago there had been 8 cents advance when the guaranteed total price was 11.5 cents. At this stage Mr Cloake arrived.

On the motion of Mr Lorimer, seconded Mr Penrose it was **resolved** that the President and the Vice-President request the H.M.A. to increase the advance from the equivalent of 14.5 cents per pound to the equivalent of 18 cents a pound, on the basis that in those years when payout was 11.5 cents the advance was 8 cents and that the reserve funds were sufficient to allow the suggested increase in advance.

MINISTRY OF TRANSPORT:

Mr Cloake reported that he had visited the Ministry of Transport who would write to the General Secretary within two or three days regarding waybills, and goods service licences.

DRAFT HEALTH REGULATIONS:

At this stage Mr Neil Cook arrived. This was at 10.35 a.m.

Mr Dickinson asked Mr Cook how far the draft regulations had proceeded. Mr Cook replied that galley proofs had arrived and they were in the process of being checked. He thought that the final draft would be ready in about two months. Mr Cook departed at 10.55 a.m.

MINISTRY OF AGRICULTURE AND FISHERIES:

1. Hive Inspection Form

Mr Smaellie said the Act was quite specific on this point. Mr Lorimer asked whether it would be sufficient if the intention of the Act was carried out. Mr Watt said that he would have a good look at the implications of the filling in Hive Inspection Forms with a view to obtaining simplification.

2. Grading

Mr Dickinson asked Mr Watt to outline the way grading was done, and the method. Mr Dickinson said that he was concerned that some samples did not reflect the representative quantity of the whole parcel of honey. Mr Smaellie pointed out that honey was graded to the grade of the lowest sample. Mr Watt said he was not happy about honey grading, especially since honey was not a product that could not be stirred up to form a honogenous quality. Mr Watt said he would look at the apparent inconsistency and techniques in grading. Mr Penrose said he was not happy about colour grading, and quoted an instance where there were variations under the Phufnd system. He wondered whether there was a variation between Christchurch and Auckland grading machines or were the people who were reading out taking inaccurate readings. Mr Smaellie said there was a master Phufnd grading machine in Auckland. Mr Watt promised to investigate this.

3. Fees for Grading

Mr Penrose thought that if the Beekeepers were having to pay for grading, the techniques should be first class.

4. Bursar in 1975

Mr Dickinson said that Mr Cloake had said that whilst he was in Canada the Canadian Department of Agriculture had helped him immensely. Mr Dickinson asked Mr Watt how receptive the Ministry of Agriculture and Fisheries was to Apiary Instructors transporting bursars from point to point and giving them information. Mr Watt said the Ministry would be happy to show the bursar round within one district. He was not so happy about the bursar being transferred from one district to another district. He suggested that the General Secretary write to the Ministry setting out the situation, and he also suggested that the bursar be armed with a letter of identification from the General Secretary.

5. Apiary Instructor — Hamilton

Mr Lorimer said there was some concern about the Apiary Instructor in Hamilton when the present one retired. The Waikato District required a top man for such a large area and population of hives.

6. Straining of Honeys

Mr Dickinson asked Mr Smaellie whether he could have a look at providing information on the techniques of straining honeys.

PRICES OF HONEY ON THE LOCAL MARKET:

Mr de Wit said he was concerned since he found that people could still buy honey in containers at 33 cents per pound **packed**. Mr Dickinson said that he had visited the Industries and Commerce Department. He said that an officer had said to him that all producers should be told that if they were increasing prices they should advise the Industries and Commerce Department. Mr Dickinson said he had asked why the honey prices had been switched from Category B to Category A. Mr Dickinson said that the Industry and Commerce had said that it was linked to the maximum retail price scheme and the pricing structure of honey also had an influence in the decision.

STATE ADVANCES CORPORATION:

Mr Dickinson said that he had visited the State Advances Corporation regarding loans to beekeepers, and that he had been informed that a draft of the policy of the State Advances was going out to State Advances branches as a booklet. It appeared that beekeepers would be lent money on merit and the range would be $5,000 to $10,000. On special occasions it might even be $25,000. Insofar as the question regarding residual value of hives was concerned State Advances were not prepared to answer Mr Dickinson on this question, but recommended that this should be taken up with State Advances Corporation in writing.

PEPPERMINT HONEY

By Murray Reid, Apicultural Advisory Officer

When I first tasted this honey I was half expecting it to have a peppermint flavour yet I knew it should not. A pure sample was taken from foundation, drawn in a hive actively working a large crop of peppermint near Lincoln. The honey had a medium flavour that persisted for a short time on the tongue. A sample sent to the honey grader showed a moisture content of 17.4 per cent and graded 67 mm on the phufnd scale. This is light amber—the same as the Honey Gold pack marketed by the H.M.A. Perhaps the most distinguishing feature of peppermint honey is its very slow rate of crystallisation. Even after more than a year at normal room temperatures it has remained liquid. The few crystals present are very fine in texture.

At present about 25 acres of peppermint are grown in Canterbury for the production of peppermint oils. These oils are used as flavourings in anything from toothpaste and confectionery to medicines and chewing gum. While the quality of oils grown for local peppermint is very high the quantity varies according to the season; oil production is very dependent on long sunshine hours over the summer. As the maximum quantity of oil is harvested when the plant is allowed to reach full flower, hives near fields of peppermint could expect to get a late heavy flow of nectar.The crop is extremely attractive to bees. At the moment the economics of growing peppermint for export are competitive with other crops so we should see an increase in acreages of this crop over the next few years, particularly in the North .Otago, Canterbury and Blenheim areas.

BEESWAX

World prices have reached the highest in the history of this company's experience. However, with the uncertainty of the effects the fuel crisis will have on the economics of many wax buying countries it is difficult to predict further trends. If you have any wax for sale please ask for our latest quotation.

COMB FOUNDATION

Most sizes are in stock, but early ordering for conversion helps us to avoid delays in delivery. We must also insist on receiving your wax for conversion at least two-three weeks before you require delivery of the foundation.

METRIC WEIGHTS

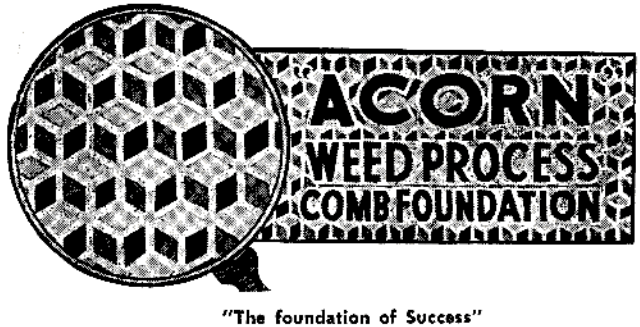
All wax received by us is now being weighed in kilograms. When our present stocks of foundation, weighed in pounds, are exhausted we will be packing foundation in kilogram weights as under:

	Present lbs. per Carton	Approx. sheets per Carton	New kg per Carton	Approx. sheets per Carton
Medium Brood	28	224	12.5	221
Seven Sheet Special	30	210	13.5	208
Extra Heavy Brood	35	210	16	211
Thin Super Full Length Full Depth	35	420	16	422
Thin Super Standard Half Depth	33	981	15	893
Thin Super Full Length Half Depth	33	825	15	827
Medium Brood Three-quarter Depth	26	273	12	277

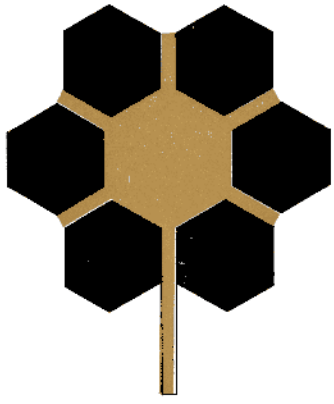
A. Ecroyd & Son Ltd.

P.O. BOX 5056,
Papanui, Christchurch, 5.

Telephone: 526-044, Christchurch.
Telegrams: "Acorn" Christchurch.
Address: 25 Sawyers Arms Road, Papanui, Christchurch, 5.



"The foundation of Success"



1974 BEEKEEPERS' SEMINAR TAUPO

TUESDAY — WEDNESDAY — THURSDAY

AUGUST 13 - 15, 1974

Honey producers are cordially invited to attend the "1974 Beekeepers' Seminar" to be held at Taupo on August 13-15, 1974.

The theme of this Seminar is:

"HONEY: ITS PRODUCTION, PROCESSING AND PROMOTION"

This theme is both appropriate and topical. Since the last North Island Beekeepers' Seminar, held at Ruakura in 1969, there have been important new developments with respect to honey quality (Codex alimentarius: standards for honey), hygiene (new Food and Drugs, and Food Hygiene Regulations), and honey handling methods (bulk handling, palletisation, cappings, processing, etc.).

In preparing the seminar programme the Ministry of Agriculture and Fisheries has sought to include beekeepers with extensive practical experience, outside speakers with some familiarity with the hony industry as well as its own Apiary Section advisers.

Always important in any industry get-together are the opportunities to participate, discuss, and to fraternise. Ample opportunity has been made for this during, and between, seminar sessions.

The first and third days of the seminar will be held in the comfortable surroundings of the Lake Taupo Yacht Club Hall. The second day will involve a bus tour to two new honeyhouses in the Taupo-Waiotapu area.

GRAHAME M. WALTON,
on behalf of Organising Committee.

Tuesday, August 13:

LAKE TAUPO YACHT CLUB HALL

Morning Session:

Registration, morning tea.
Official Opening and Welcome.
Codex alimentarius — the new standards for honey.
Honey quality; meeting a changing situation in New Zealand.
Honeyhouse equipment and systems. Panel of speakers.

Afternoon Session:

25th Anniversary Bee Research Association—Guest Lecture.
Honey House Hygience and the Health Department.
Utilising our darker honey areas. Panel of speakers.
Manuka honey, its production and handling. Panel of speakers.

Wednesday, August 14:

Field Day at two honeyhouses: Acacia Bay Apiaries Ltd, Taupo.
Arataki Honey Ltd, Waiotapu.
Guided tour of Acacia Bay Apiaries Ltd.
Honeyhouse construction, hygiene, equipment.
New or novel equipment/ideas.
The metric hive. M.A.F. recommendation.
Trade displays.
Guided tour of Arataki Honey Ltd.

Thursday, August 15:

LAKE TAUPO YACHT CLUB HALL

Morning Session:

The marketing of honey—from outside looking in: Mr A. Ward, Massey University.
Marketing of honey within N.Z. Panel of speakers.
Marketing honey overseas. H.M.A. and comb honey speakers.
Packaging and labelling of honey for the retail market: Health Department.
The retail honey pack—the action and reaction of the consumer: Mr P. Dickson, University of Waikato.

Afternoon Session:

American Foul Brood—the BL situation.
Nosema in N.Z.—the results of national survey and fumagillin feeding.
The closed area—present situation.
The evaluation of N.Z. strains of Bees.
Closure.

1974 BEEKEEPERS' SEMINAR

REGISTRATION FORM

Post to: Ministry of Agriculture and Fisheries,
Private Bag,
PALMERSTON NORTH.

Please register

Name(s) .....

Address .....

.....

for the 1974 Beekeepers' Seminar, to be held at Taupo
AUGUST 13 - 15

I enclose $..... cheque or Postal Note as fee(s) for this Seminar.

Signed:.....

The $7.00 Registration Fee for the three days includes morning and afternoon teas, a field day luncheon, and a 130 kilometre (80 miles) return bus trip to Waiotapu. Beekeepers are asked to assist the organisers by posting the application for registration, together with the Registration Fee, as soon as possible. A lapel badge will be issued as receipt of registration and will serve as an admission ticket.

($7.00 Registration Fee for the Three-Day Seminar)

Once a completed Registration Form has been completed a complete Programme will be posted and the cutting out of the one on the back of this page will not be any loss.

Letters to the Editor

[It is good to have comments from members, however controversial their views may be. They will always be published as long as there are no personal attacks. In my view, the magazine should be a sounding board for ideas and criticisms, then when the idea has crystallised it should be presented to one's Branch as a remit to Conference. On the floor of the Annual Conference the matter should be discussed in full, then voted on by delegates in the system now used.—Ed.]

PAPUA-NEW GUINEA BEEKEEPING PROJECT

4 April, 1974.

To all who shared in the Project . . .

Through the help that you and many others gave, the purchasing of all the necessary equipment was possible. You will be happy to know that the first phase of the Project has been successfully completed. All the equipment has been paid for and is now on the ship *Capitaine la Perouse* on its way to Papua-New Guinea. Some funds have been sent to Mount Hagen to purchase locally available materials.

Your enthusiasm for the project and kindly encouragement made the task a pleasant one. I hope I can now complete the project satisfactorily to justify your faith.

Six students have enrolled for the first class at the Training College and the shipment includes enough Beekeepers' clothing and tools to allow them to receive simultaneous instruction.

For the first few days after arrival my programme will be limited to allow me to break slowly into the work and become acclimatised.

The first task is to assemble the hive bodies, lids and floor boards, treat them with preservative and paint thoroughly to keep out the weather. After this the frames that hold the honeycomb have to be assembled. When the wax foundation has been fixed in the frames, we will be ready to venture out to remove colonies of bees from buildings and trees. These are to be used to start off the beehives and when they are stablished, purebred Italian queens from New Zealand will be introduced.

Finance: A committee consisting of Mr H. Cloake (Fairview), Mr F. G. Howe and myself administered the funds. An account was opened at the South Canterbury Savings Bank and all donations received were paid into this account. All accounts for payment were approved by this committee before payment. An audited Statement of Income and Expenditure will be supplied to any person requesting same.

My address during May, June and July will be C/o C.L.T.C., P.O. Box 382, Mount Hagen, W.H.D., Papua-New Guinea.

To the beekeepers of New Zealand, may I express special thanks. You have been most generous and I hope to be able to supply some intresting news in the future.

CHRIS DAWSON.

R.D.2,
Matamata.
April 18, 1974

RE LEVY SCHEME

The Editor,

For nearly 40 years what has been the main cause of contention in our Industry? What has caused more debate, hard feeling and frustration than the Seals Levy? The complexity of the new proposals make me shudder. As I understand it the Authority wants some of its administration costs, and the N.B.A. all its costs, and so this hideous scheme has grown till it nearly swallows us in complexity.

Would it not be easier to do as the Rabbit Board did and devalue the rabbit (the Seals Levy) and solve our problem?

May I suggest that in place of the Seals Levy, the H.M.A. press for an administration cost to be added to the 23.5c per lb on which their local sales are based. They would automatically collect this with NO cost to anyone. The H.M.A. would be happy then.

For the N.B.A. a hive levy of 5-10c per hive, depending on requirement, which is less than ½c per hive, plus a Journal charge. This would put all on an equal footing as some pay nothing under the proposed scheme (comb honey, queen breeders).

There would then be no more work for the H.M.A., as all the work involved in the Levy System would cease, again reducing costs.

I feel that this is the only way to get a united indusrty again to the benefit of all. Really, the only answer to the Levy Scheme is NOT to have one based on honey.

CLIFF BIRD.

P.S.:

In the Matamata library at present is a photo of the apiary established by Mr Hopkins at Matamata in 1884. It was approximately 400 yards N.W. of the Matamata estate homestead "The Towers". All the hives seem to have alighting boards, and all lids of the gable type. The photo is on loan from a Miss Firth from Auckland, and would be worth the Association getting a copy for its records.

Also feel that maybe 1984 Matamata would be a good place for Conference as it would be the centenary of commercial beekeeping in N.Z. which was started at Matamata.

C.B.

[Regrettably this letter is full of inaccuracies and half-truths. The anology between the rabbit and the Seals Levy is scarcely valid. Under the proposed scheme the Queen Breeders and Comb Honey producers will pay the Levy on extracted honey as well as Membership Fees to the N.B.A. Your suggestion of Matamata as a possible venue for Conference in 1984 could be passed to Executive in a few years' time.—Ed.]

THE MINISTRY OF TRANSPORT
Private Bag, Wellington, 1
New Zealand

General Secretary,
National Beekeepers' Assn of N.Z. (Inc.),
P.O. Box 1879, Wellington.

22 March, 1974

Dear Sir,

Further to my letter of 22 February wherein I set out the requirements of an apiarist so far as they relate to the need for a goods service licence and the carriage of waybills, I must point out that I overlooked that part of the Transport Act which excludes a person carrying on business as an apiarist for the need to hold a licence when carrying goods in connection with his business.

Because of this exemption, the need to carry waybills is also not necessary.

I trust that you have not been unduly inconvenienced by my earlier reply.

Yours faithfully,
G. H. WHITE,
Secretary for Transport

Le Ruisseau, Water Lanes,
St Peter Port, Guernsey,
Channel Islands.
(via England)

April 11, 1974

The Editor,

Guernsey is a small island (British) belonging to a group of islands known as the Channel Islands situated just off the French Coast of Normandy. It is noted for its scenic beauty, its dairy cattle and also as a vacation resort. It also has a small but enthusiastic Beekeepers' Association and it is in connection with this that I write this letter.

Every year we invite an experienced beekeeper to visit us and give us a talk on some aspect of beekeeping. For 1974 we would like to make our invitation world-wide and any experienced commercial beekeeper or College Lecturer who would like to be considered is asked to write to me at the above address. The person we have in mind is one who will be visiting England on holiday this coming summer and who is used to giving talks (preferably illustrated) on some of the more serious aspects of beekeeping.

Return air fare from London would be paid and hospitality provided.

Your sincerely,
LESLIE ROBERTS.

Rotowaro

The Editor,

Referring to an article by Professor G. F. Townsend, November issue, closing paragraph, p. 53: "The only stumbling block to complete mechanisation of management at the present time is a suitable method to destroy the old queen without opening the hive."

A few years back I had a hive knocked right over. It was cold weather in August. I put the hive together again then had a look through it a fortnight later. There was no brood.

It would have been next to impossible to buy a new queen at that time of year.

A few weeks later I had another look at it and this time there was plenty of brood. So the bees must have made themselves a new queen.

Since then, using a motor lawn mower between the hives in summer I have accidentally bumped a hive. The result — the queen was killed and not replaced.

So, to solve Professor Townsend's problem, all one would need to do would be to give a hive a vigorous shake a week or so before taking the honey.

C. PHILLIPS.

Drummond,
April 29, 1974.

The Editor,

In reply to criticism of Government limiting the payout to beekeepers, Mr Aubrey Begg, M.P., Awarua (Southland) stated in his address at the opening of the Southland Field Day, 2nd February, 1974, that if beekeepers were not satisfied with Government policy, then the alternative was to do away with the H.M.A.

The answer is as simple as that. In other words the beekeepers have themselves to blame and only themselves. Our destiny lies in our own hands.

In the past many alternatives to the H.M.A. have been put forward but because of limited funds within our Industry and the cheap loan money then available through Government, the automony of a statutory body has been tolerated because of necessity.

But now that we have our own funds (about half a million dollars) let us ask ourselves the following questions:

1. Why should beekeepers be deprived of hard-earned money?
2. Why should beekeepers have to bear the cost of two organisations in an industry as small as ours?
3. Why must we pay out thousands of dollars in salaries and wages just to sell a few tons of honey on the local market and in opposition to many of our own members?
4. Why must we bear the cost of three packing plants, none of which functions economically?
5. Why must we continue to pay out thousands of dollars in honorariums and expense accounts to Government nominees or Board members who are so dictatorial in their actions?

6. What purpose does our N.B.A. serve if its decisions are to be controlled and vetoed by the H.M.A.?
7. Now that beekeepers no longer require the support of Government loan money, let us discard the restrictive measures and controls of a totalitarian Government. We believe that our own national body (the National Beekeepers' Association of N.Z. Inc.) is perfectly capable of handling our industry's affairs in total.
8. We now have a large amount of our own funds on hand. Why can't this money be made available immediately to the N.B.A. to assist and finance younger beekeepers to develop and establish themselves? Under the present set-up of the H.M.A. and Government restrictive measures and controls, our industry lies crippled and disorganised because there is no way of putting this money to use.
9. Furthermore, the N.B.A. already has the machinery incorporated in its rules and regulations to lend money for the benefit and development of the industry. Therefore, why can't this money of ours be put to work by assisting younger beekeepers. In turn, the fund would develop itself by interest increments and as money usually doubles itself over 12 to 14 years' investment, refunds of the original sum could then be made to the beekeepers (or their dependants) who originally provided the fund.
10. How can any industry develop or be prosperous under circumstances whereby its own funds cannot be put to work. Despite recent efforts at national level, the State Advances still refuse to accept hives as collateral. Therefore what chance has a young beekeeper got of buying out another beekeeper?

In this day and age, money must be made available in order that the industry can develop alongside other agricultural organisations.

Beekeepers, young and old, must give support to such measures. It is in their own interest to do so.

J. A. DAVIES.

[Although, in the interests of full debate, I have at times criticized the H.M.A. I could not agree with this correspondent's desire to abolish it. The function of the H.M.A. and the N.B.A. are entirely different and there is little, if any, overlap.—Ed.]

Box 3478 Fort St John, British Columbia, Canada. VOC 2PO

The Editor,

Having seen your address in the "Australian Beekeeper", to which we subscribe, we wonder if you could supply the names of any beekeepers in the Auckland-Tauranga area who may be interested in employing my husband during the months December to March 31 (Canadian winter). He has bees here in Canada but as we live far north it is only a summer-time occupation and is interested in securing work in New Zealand. (Mrs.) NANCY M. CLARKE.

[Would interested beekeepers please write to Mr George D. Clark at the above address.—Ed.]

Field Trial

POLLEN SUBSTITUTE: SOYA BEAN FLOUR MIXTURE

By T. G. Bryant, Apiary Instructor, Gore

DESCRIPTION AND SITUATION:

With the co-operation of Glass Bros. the trial was set up in the Waikaka Valley. An apiary with below average production was chosen on the hills above the valley. This apiary was well sheltered from the south and north-west with good exposure to the sun.

The hives were set out in two rows facing to the north. Seven colonies in the front row, ten in the back row.

The farm land was rolling with some steep faces. Bee pasturage was predominantly clover with some thistle. No willow or other tree sources of nectar were in the immediate vicinity nearest being nearly two miles away and then only in small quantities.

Pollen sources were sparse. Some gorse and broom was available and weed sources scarce.

MANAGEMENT:

The trial was run as near as possible to coincide with the normal practices as carried out by Glass Bros.

One variation was introduced, this being the two-queen system as used by G. Walton in the 70/71 and 71/72 seasons in the Hawkes Bay area.

The apiary was first inspected by myself and Mr T. Clissold of Glass Bros. on the 10.9.73.

All colonies were checked for BL, strength and condition, queen performance, stores and pollen supplies. The hives were weighed and then sugar or honey added.

After assessment and inspection one colony was found to be queenless, one colony had died out, five colonies headed by failing queens to be re-queened. The remaining ten were headed by one year queens.

Four control colonies were chosen. These were to be fed solely on honey and raw sugar.

All colonies were given the same feed requirements. No syrup was fed.

The colony which had died out was made into two nucleus with brood and bees from other colonies and separated by a division board. Two mated queens were introduced. No. 8.

The queenless colony was confined to the lower brood chamber and a queen introduced. A nucleus colony was made up in the second box, a queen introduced. No. 4.

Four of the colonies to be requeened were used as two queen units and the other was requeened as it was. No. 3.

The substitute was premixed, to form a dough, half in sugar syrup and half in liquid honey. Patties were made about fist size and placed on top of the frames directly above the brood.

PROGRAMME OF WORK:

The apiary was visited twice a month to replenish patties and observation.

One colony No. 16 was found queenless on 11/10/73 and a mated queen introduced. The bees missed gathering any willow and sugar was given to those that needed it.

One two-queen colony suffered from an attack of nosema No. 14. On 29/10/73 the apiary checked again for BL. Food stores were replenished and strong colonies supered.

The queen in one colony No. 6 was found to be failing and was re-queened.

The introduced queen in No. 16 failed and the colony was headed by a virgin.

At this stage it appeared obvious that the colonies on substitutes were

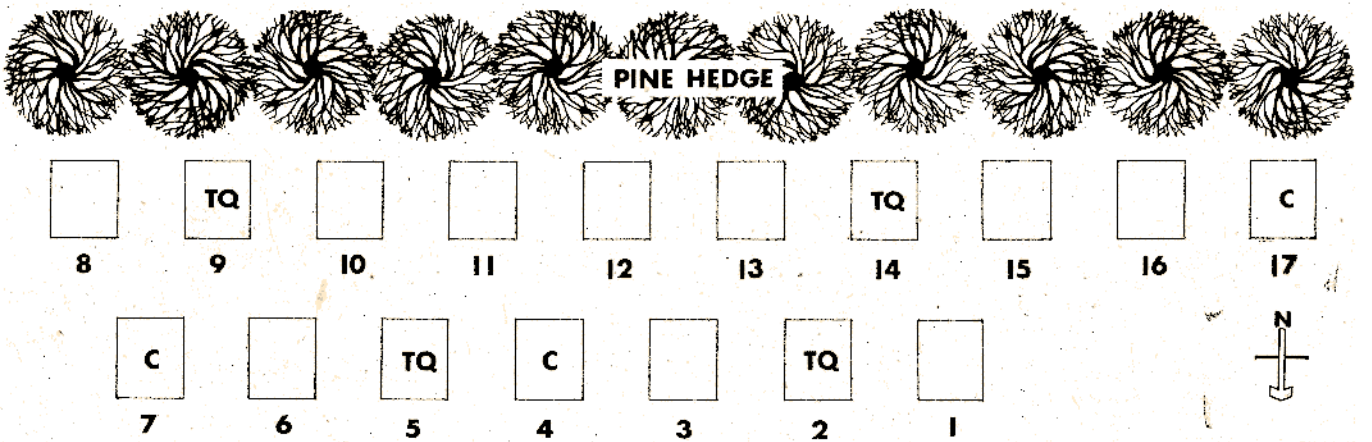


Fig. 1. Ground Plan of Apiary Site.

HIVE NOS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
EX. 1	20.41	25.86	20.41	14.97	48.99			A				18.14	18.60		19.05		
EX. 2	53.07	55.34	49.44	45.36	50.80	56.25	44.91	41.73		49.44	48.54	52.62	49.44	54.43	55.79		100.70
EX. 3	52.16	56.70	52.62	60.78	50.80	53.99	52.16	30.39	42.64	49.90	53.52	56.70	40.82	49.44	58.97	34.02	25.86
								B									
								28.12									
								44									
	125.64	137.90	122.47	121.11	150.59	110.24	97.07	144.24	42.64	99.34	102.06	127.46	108.86	103.87	133.81	34.02	126.56

Fig. 2. Individual Hive Production in kilograms.

GENERAL VIEWS OF THE SITE OF TRIAL

Left: The author is almost equal in height to No. 5 hive in the Trial. Right: Earlier in the season.

consuming more stores than controls and other apiaries in the vicinity. The hives however appeared stronger and had more stored pollen. The exception was No. 17.

The apiary was visited again on the 16/1//73 and 4/12/73. Three-quarter depth supers were given to each hive. Pollen substitute and sugar again fed to bees. A small amount of nectar was noticed in the hives on 4/12/73.

At this point it had become obvious that there were not enough control hives and that drifting was a problem. No. 17 benefitting.

On 17/12/73 the two-queen colonies were united. No. 4 was also united and No. 8 split into two units. All colonies were supered and honey was being stored in small quantities. No substitute was fed from this point.

Clover was well in flowering but the bees had had very few flying days.

The weather had been cloudy and cold during late November, December with no rain. Pastures were drying out and it appeared as though the araa was in for a drought. On the 18/12 the rains came to relieve the situation.

THE CROP: (see Fig. 2)

To enable extracting to commence 10 supers of honey were taken off on 4/1/74. A total of 186.43 kg of extracted honey.

On 21/1/74 cattle knocked over one hive — No. 7. The apiary was robbed of 33 supers of honey when visited to right colony No. 7. A total of 835.98 kg was extracted.

All honey was taken off above the excluders on 13/3/74. Adequate stores were left under the excluder to winter hives. Total of 823.28 kg was extracted.

Five colonies, Nos. 9, 10, 11, 12 and 17 were knocked over by cattle and 4 super of honey were lost through robbing.

Total honey extracted 1845.69 kg (see chart).

Average per hive, 108.57 kg.

Tonnes per 100 hives, 10.857 tonnes.

COSTS:

These are estimated, but should be somewhere near correct.

Labour (av. 2 hours per visit 2 experienced men at $2.50 an hour)	$100.00
Pollen substitute (24 lbs and 3.5c per lb; 75.90c per kg)	8.28
Sugar ($2.00 per hive)	36.00
Extraction (1845.69 kg at 34.96c kg)	73.09
Queens (13 queens at $2.00)	26.00
Mileage (17 x 10 x 18)	30.60
Material (one lid, floor, excluder)	6.00
TOTAL	279.97

Income (Honey at 53c kg (29.48 kg wax at $1.43 kg)	42.16
TOTAL	$1020.31
Profit before Tax (or $43.55 per hive)	$740.34

These costs assume no new equipment is being used.

CONCLUSIONS:

Before any conclusive evidence can be gauged the trial must be conducted over a period of at least three years. Also it must be carried out on a larger scale, covering many and varied areas. This is being planned.

To the persons carrying out the trial it has proved that good management, adequate feed, good queens plus the substitute has great benefits.

Particularly in this southern region with the critical build up in November often being poor due to climatic conditions.

No swarming took place in the apiary and no controls were taken. Perhaps this can be attributed to management plus a good supply of feed and protein.

The additional costs of a nominal amount of extra sugar and the substitute was well warranted.

In the final analysis the apiary used was lifted in production from a below average apiary to one of the top producers.

To this end I would consider the project a success and a lot has been learnt and this will benefit further trials.

Nectar for Novices: A Section for Hobbyists, Amateurs and others

By P. W. Marshall, Hastings

About The Bees

Published by arrangement with
SCOTTISH BEE JOURNAL
Printed and Published by the Editor: Mr R. N. H. Skilling, 34 Rennie St, Kilmarnock, Scotland. Subscription: 90p per year.

ECONOMIC IMPORTANCE OF THE BEE

Beekeeping is one of the oldest branches of agriculture. From the earliest times man has tried to domesticate the yee and exploit its outstanding energy and industry.

Honey

The economic value of the bee has been known and appreciated since prehistoric times. To the ancients, honey was probably the only sweetening agent, and they must have realized its importance as a source of sugar.

Wax

Beeswax is a valuable by-product of the industry. It has many uses, ranging from the production of cosmetics to medicine and formerly was used in witchcraft.

In old times, sculptors used bleached wax to hide any defects in their work. The best, however, prided themselves that their statues were "sine cera" that is, without wax. Hence our modern phrase "Sincerely yours".

Pollination

While the bee is valuable as a producer of honey and wax, it is of greater value as a pollinating agent. Fertilisation of the blossoms by the bees is essential for the production of all kinds of fruit, the clovers and many other plants. Without pollination by the bees fruit and seed production become uneconomic if not impossible.

Honey bees are the only insects present in sufficient numbers in the spring to carry out effective fertilisation of the blossoms.

Life Story of the Honey Bee

There are over 750,000 species of insects, of which the silkworm and the honey bee are of most economic importance to man.

Evolution

The bee colony represents a highly developed social insect community. This community did not evolve by chance, but has developed from quite lowly ancestors, and several stages in its development may be traced today among the so-called "wild" bees. Remember that the honey bee is really in its original "wild" state, even though we say that it has been domesticated.

In addition to the honey bees as we know them there are also Solitary bees, Bumble bees, Tropical bees, and Indian bees and many others.

Honey Bee (Apis mellifica)

The bee is characterised by the division of the body into three parts: head, thorax (or middle part) and abdomen. Three pairs of legs and two pairs of wings are carried

on the thorax and the insect breathes by means of finely branched tubes or tracheae. It has no lungs, oxygen being conveyed to the body fluid (or bee blood) by these air tubes, which open in ten paired spiracles (breathing holes) placed on the outside of the body.

The Colony

Honey bees would die as individuals, a social life being essential to existence. Their problem of winter survival is solved by the formation of a colony. It is the colony that matters and in this organisation a strict division of labour exists. Every member works, not for itself, but for the benefit of all. Two facts support this. First, during the honey-gathering season, comparatively large quantities of food are stored by the workers; but these creatures literally working themselves to death, do not live long enough to enjoy the fruits of their labours.

Second, when the worker bee uses its sting, it dies after a few hours. The sting has a barb at the point which, once inserted, cannot be withdrawn. Such a "weapon" is obviously of no value to the individual bee since it commits suicide when the sting is used.

Three types or castes of bees are found in the colony: Queen, Worker and Drone. They are complimentary and each has its special task.

BEES AND THEIR BEHAVIOUR

The Queen

The queen is the largest bee in the colony and is recognised by her long slender body, large legs and comparatively short wings. The queen is the egg-laying bee.

During the egg-laying season, she is carefully tended by the "attendant" bees, which form a circle around her and offer her food and stroke her abdomen. The queen responds by laying her eggs, but this is not a continuous performance. After depositing a few eggs, she will rest for some minutes, then, refreshed by food, she continues her task, taking from 30 to 60 seconds to lay each egg.

The queen is in no sense a ruler. She is capable of egg production only and does not nurse her brood. Laying usually begins in February and the queen gradually increases her output until a peak of production is reached about mid-summer. By August it is decreasing, and by mid-October has virtually ceased.

A good queen can lay about 1500 eggs per day during the height of the season.

Normally, only one queen is found in the hive. She is the most permanent member of the colony and may live four or five years. When she becomes too inefficient she is usually replaced or superceded by the workers.

The Worker

The worker bee has wonderful versatility, for it must perform almost every task in the maintenance of the colony. Parts of its body are especially modified to enable it to carry out these tasks, and it is much smaller than the queen.

In one sense the worker is a chemical laboratory, since it is capable of inverting cane sugar, as found in nectar, and manufacturing honey from it, as well as producing wax for the construction of the combs.

Three distinct phases may be observed in the life of the worker bee:

(1) The "nurse bee" phase lasts about a week. The young bee, for the vrst day or so, has a silvery coat of downy hair. At first she helps in incubating the brood and preparing the brood cells.

Next comes the feeding of the older larvae. They receive a mixture of honey and pollen gathered by the foraging bees. About three days later the special brood food glands in the head of the worker become active and the young bee goes to the very important task of feeding the younger larvae with a concentrated milky secretion from its glands, known as "royal jelly" since this plays a prominent part in the development of the queen.

(2) The "domestic" phases. This also lasts about a week. She does various hive duties such as storing the honey received from the foraginging bees, building and repairing the comb, cleaning and tidying the hive.

At this period, it makes its first play or orientation flights and it must also carry out guard duties at the hive entrance. Honey bees have a high sense of duty and are prepared to defend the hive against any marauding bees or other creatures.

(3) The "field" bee or forager. The bee is now about 14 days old. Foraging may last two, three or four weeks according to the amount of energy expended.

Honey bees forage for four substances: 1, Nectar (which they manufacture into honey); 2, Pollen (which forms the protein and fat portion of the larval and adult bees' diet); 3, Water (essential for the maintenance of life); 4, Propolis (or bee glue). This last substance is resinous and is used by the bees to close up any small openings in the hive and to fasten securely the various parts.

Honey is conveyed to the hive in the "crop" or honey sack, while pollen and propolis are carried in the "pollen baskets" situated on the hind legs.

The life of the adult bee during the active season is about six weeks. On the other hand, bees born during the latter part of the summer are able to live through the winter, when the colony is "inactive"; but all will have died by June of the following year.

This short life means that there is a continual interchange of personnel in the hive, and explains why the queen must be able to lay many eggs. If she is inefficient in this respect, the death rate in the colony exceeds the birth rate and the stock gradually becomes extinct.

Normally, worker bees do not lay eggs; but they do possess rudimentary ovaries and are capable of laying a certain number of eggs. These eggs will produce male bees only.

The Drone

The drones are bigger than the workers, possess large strong wings, and are powerful "flyers". They are the male members of the species and their sole function is to mate with the young queens in midsummer. Drones are seasonal creatures, living approximately four or five months. When the mating season ends, they are forcibly expelled from the hive. The average

production colony will possess 200 to 300 drones during the summer. Although they appear to be superfluous after the queen is mated, they are nevertheless an essential part of the functional hive.

Metamorphosis

The honey bee undergoes a complete metamorphosis (or process of change). The four stages — egg, larva or grub, pupa and adult insect — are clearly defined.

The queen is capable of laying two types of egg: fertile eggs which produce worker or queen bees, and "infertile" eggs which produce drones.

The egg when newly laid stands upright in relation to the base of the cell where it is deposited. As the embryo develops within it, a change of position may be observed and the egg gradually falls over on its side. After three days and just prior to hatching, the egg lies horizontally and is usually surrounded by a minute drop of bee milk. This applies alike to the development of queen, worker and drone.

Lessons In Beekeeping

L. M. Thake

It is generally accepted that one bases his beekeeping methods on lessons learned from books, lectures and demonstrations. Unfortunately such lessons are easily forgotten and we fall back on a fourth source which makes a more lasting impression. My old mother often used to quote "Experience keeps a dear school, but fools won't learn in any other," and I suggest that we learn more from our mistakes and accidents than from any outside teaching. The trouble is that you do not realize that mistake or accident until you are making or having it. Looking back one realizes one's stupidity and seldom repeats it, and thus a little more is added to one's knowledge and experience. Some mistakes can be quite costly as I found out many years ago. I had been extracting on the Saturday and left the straining tanks to clear overnight. On Sunday morning I took a walk along and noted the tanks were cleaned so I stuck a 28 lb pail under and opened the tap. The honey was thick and running so slowly that I took a walk to the hives. Then my wife called in no uncertain voice that I was supposed to be taking her to church, so naturally I went at once, quite forgetting I had left a tap running. On my return, I was met by an apiary in an uproar and a cloud of bees round the honey house door where the honey was oozing from under it. With a smoker and gallons of water I restored order and although the 27 lb tin was full the straining tank was empty, but I do not recommend honey as a preservative for a wooden floor.

As a result of that lesson I can never leave my house house without making sure no taps are running and all light and power is switched off.

Although I pass on this lesson I do not expect it to have quite the same effect on everyone but few mistakes would be a change from reading only the success stories.

On second thoughts there may be another lesson to be found in the incident and that is not to allow beekeeping to affect your church-going or dare I suggest that you should not allow church-going to affect your beekeeping?

A Sticky End

I am a dairy farmer and I find it convenient to use my milk house for the extraction of my honey — when I have any to extract. A few years ago I had extracted about one hundredweight and decided to run it into 28 lb cans. I had just placed the first can under the tap of the ripener when my wife called me to say that friends had arrived. I hurried through to say "Hello" — and forgot all about my honey running into the can. My friends

departed some time after midnight. We hurriedly set about closing up and my wife went through to lock up the milk house. She did not put on a light. Suddenly there was a scream and I dashed through. My feet shot from under me and there we were wallowing in a thick carpet of best Ayrshire honey, covered from head to foot.

—J. McDonald.

For Inexperienced Readers

Published by arrangement with

BEEKEEPING (ENGLAND)

The magazine of the Devon Beekeepers' Association. Editor: Mr. C. B. Dennis, Valleys End, Waere Giffard, Bideford, EX39, 4QU, England. Overseas subscriptions (8 issues) £1stg per year.

The first three and possibly four months of the year (season) are usually the most worrying time of the year for beekeepers. Will the bees survive; should they be fed; what should we do if there is a lot of snow; how wide an entrance should there be and many more queries come to mind. Space will not allow of more than a few points being discussed in this issue, but anyone with specific problems could seek the advice of a local experienced beekeeper or if they write to me I will try to advise by post. Should something of general interest be raised, I may comment in a future issue as well, but will not publish any letter without the consent of the reader concerned, and in any event respect his anonymity.

Unless the weather is exceptionally mild for a long spell and colonies are kept too warm, there should be a few weeks at least when there should be no brood in our colonies. This is a very good thing and should be encouraged by giving plenty of ventilation and having no warm insulating packing over crown board or quilt, at least until the middle to end of February. In the last issue I mentioned removing these and all covers except a queen excluder. The excluder is only a protection in case mice can get in through a faulty roof or other hive defect. An additional advantage of this uncovering of the frames is that the cluster and tops of the combs can be seen on removing the roof and without any disturbance. It is also possible to feed, using a "contact" feeder at once if it is apparent that food is short.

The old custom of giving a cake of candy at or about Christmas time is a bad one which should be avoided. Any winter feeding should be done as rapidly as possible to reduce disturbance which causes the bees to raise the temperature in the cluster as long as feeding goes on. Candy, being a product which takes a long time to take and store, creates prolonged heating and results in weakening of the colony. Probably more colonies have been seriously weakened or even died out as a result of candy feeding than have been saved when it has been given to colonies on the point of starvation.

Whenever a day is warm enough and fine, bees will fly from the hive for cleansing flights and to collect water. There must be few localities where bees in Devon have far to go for water so the

provision of drinking places is rarely essential, but, on the other hand simple drinking fountains a few yards from the hives and in a sunny, not shaded position can be both useful to the bees and instructive to the owner. Bees do not like falling into water or getting their feet very wet, so stones, sand or pieces of wood for them to stand on should be provided. The supply of water should never be allowed to dry up, otherwise the source may be deserted in favour of a more distant but reliable source. In spring and summer, when there is little nectar about, water will be needed as stored honey is used. When nectar becomes available, able, fewer bees will collect water, so one can have a useful indicator as to whether food is coming in or being consumed.

We do not hear so much about Acarine disease compared with the epidemic years of the past. It is still with us and causes losses or weakening of colonies. If you know it to be present in your colonies, or suspect it, early February to the end of the month is a good time to give the "Frow" treatment, before brood rearing gets going. The single dose treatment at this time can virtually clear a colony, and there can also be a bonus in that it appears to be effective in dealing with the bee louse Braula caeca, which is common in Devon.

Snow we have had in December, and more can be expected, at least in some localities. There is the old advice to shade the entrance in bright weather to discourage flying. This is of very doubtful value. I have noticed that even with the sun shining into south-facing hives and reflected from snow, no bees are attracted out unless a cleansing flight is really needed, and then this commonly indicates a greater or less degree of adult bee disease, which may be Nosema, Amoeba or Acarine disease or a combination of them. Certainly, if the entrance is blocked by drifted snow, do the most difficult thing; leave it alone! Do, however, look around your hives in such weather and look for tracks of mice. You may think that all is well, but the little pests can sometimes get in through accidental movement of a mouse-guard or a fauly W.B.C. lift which has warped slightly.

Successful Beekeeping For Beginners

What are the underlying factors which lead to success with bees? Why do some people remain keen and dedicated to the craft for a lifetime and others give up after two or three seasons?

As regards the production of honey from a paying or commercial point of view, one overriding answer to the first question is the placing of colonies in situations where good regular nectar flows are likely to occur. Also maybe, moving them from time to time to seek the utmost advantage of different situations. This needs knowledge, experience, and where many colonies are involved, a

capacity for real hard work.

Lucky indeed in these days is the person who gets heavy crops consistently from bees stationed within sight of his back door. There are still a few such places, and more than once I have come across people with quite high reputations as amateur producers and found that their actual beekeeping skill was quite minimal; just the luck of the district.

Skill and knowledge are two other important factors which make for success. Combined with the site or district factor there are then the highest possibilities. Great Britain, in relation to its climate and flora has not really great potential as a honey producing country, compared with some others. Not for us the 300 lb averages, although as with our fruit and vegetables, quality can be superb, and that is a justification in itself. I often think that some of our beekeepers who do get regular, if small, crops year after year, have to exercise more skill than many who get huge crops elsewhere.

To acquire skill needs practice, patience, and the guidance of good teachers. Knowledge grows with skill, but should be supplemented by reading.

The keen beginner needs to look at every aspect of the craft, but has to be careful not to get bogged down in complexities which may not at this stage be of great importance to his own development. Many of the things which arouse old hands to excitement can be ignored for some time. After all, if A uses X hives and P method of swarm control, while B uses Y hives and Q method of swarm control, *and both seem to do well,* then the differences, in their essence, cannot be very important. Rest assured that weather conditions and the local flora will have a greater influence than these variations in practice.

Of vital importance to you is the acquirement of the ability to handle bees calmly and confidently and to *read* a colony. That is to take in through a brief glances its entire condition; how much brood is being produced, whether it is healthy, if the queen is laying a regular pattern, as a good queen should; whether queen cells containing larvae are present. Above all every time a colony is opened an assessment should be made of food stores. Is there more or less than when you last looked, and why? A good beekeeper never allows a colony to get desperately short of food, that can cost you pounds of honey in the spring and other troubles at other times. The feeding of sugar syrup is not necessarily guided by dates on the calendar. When they need it give it to them.

I have written before on the finding of queens and will just repeat that this is a matter of conscientious practice, and no effort should be spared in learning what a queen bee looks like; for that is what is needed. The knowledge is of tremendous value. Better still, learn to pick a queen up with confidence. Far too many beekeepers seem to be terrified of doing this and no one can be called a beemaster if he cannot.

Keeping Bees in a City or Suburb

"Keep in mind that the neighbours have a right to be inquisitive about your bees. You must educate them so they understand there is nothing to fear about bees in a city."

CARLTON GREVE
Graduate Student, Apiculture
Univ. of Md., College Park

Keeping bees in a populated area presents more problems than keeping them in the country. People who live in the city are generally wary of honeybees because the only thing they know about bees is that they can sting. If you are on bad terms with a close neighbour it is better to find a place in the country where you can locate your colonies. If a neighbour insists on making a fuss you will probably have to move your bees. Although most communities do not have laws pertaining specifically to honeybees, they do have nuisance laws. Your bees could be adjudged a nuisance by a local magistrate.

It should be emphasized that you must be knowledgeable about the habits of bees if you plan to keep them in a densely populated area. One mistake could mean the end of your city beekeeping even though the same mistake in the country would have no adverse effect.

Read several of the many good books available on beekeeping and take a correspondence or short course from a university before you get your bees. Take the time to read up on the subject so you will not make many of the mistakes that often give the city beekeeper a bad name. Join a beekeeping organisation where you will meet other people with experience in city and suburban beekeeping.

Call your county agent for literature about wasps and hornets because these insects cause most "bee" problems in the city. Although the names can be confusing it is good to be familiar with the different wasps. "Wasps" is a general term. More specifically hornets are wasps that build aerial nests surrounded by a paper envelope. Yellow jackets are wasps that nest in the ground.

Yellow jackets are very common in suburban areas. Few city people know the difference between a honeybee and a yellow jacket because they look similar. Yellow jackets will annoy your neighbours when your neighbours eat their meals outside. The yellow jackets are searching for meat, fat and sweets to take back to their nest. Yellow jackets or other wasps may construct a nest in one of your neighbour's yards or on or in their house. Your bees will be blamed for these wasp problems but, hopefully, the bees are not at fault.

You will get a phone call from troubled neighbours informing you that your bees are bothering them. They may threaten to call the police if you don't do something.

This complaint can be easily overcome if you take the time to make an insect collection containing several kinds of common bees (honeybee, bumblebee, carpenter bee), wasps (paper wasp, mud dauber wasp), hornets (yellow hornet, bald-face hornet), and a yellow jacket. It should be possible to collect one specimen of everything you need.

Mount the insects in some kind of display case and label them with big labels that are easy to read. Take the collection to your neighbours when you receive their complaint. Take along an insect net and catch some of the insects that are bothering them. Compare the insects you capture with your mounted specimens and show the neighbours. They will be surprised to learn the difference between yellow jackets, hornets and bees. Your neighbours will be impressed with your knowledge.

While you are showing the neighbours your collection you can tell them about yellow jackets and other wasps. Explain that wasps are basically meat-eaters and they are searching for meat or sweets around your neighbour's dinner table. If your neighbours have a nest of wasps in their yard, tell them that a queen

started the nest by herself in the spring and that she is raising her family there now. Her family may contain several thousand wasps by the end of the summer. They leave the nest in search of food and return when they find it. That is why they are going and coming.

Sometimes a nest of hornets grows to considerable size before it is noticed. When it is discovered your bees get blamed for swarming into your neighbour's house. If the nest is large or if many wasps are seen leaving and entering the nest you can tell your neighbour that they have been there for some time. If they were causing any real trouble they would have been noticed sooner.

In any case, if a nest is present, offer to exterminate it without pay. Explain that most exterminators do not destroy wasps without charging a considerable sum of money. Your neighbour will be very pleased to have the wasps killed without charge. This is a real service to your neighbour and it builds good will.

Watering your bees in the city is a necessity. If you don't provide water for them they will undobtedly frequent one of your neighbour's bird baths or swimming pools. Provide a water source very early in the spring so your bees can find it when they search for water on the first flight days. Once they become accustomed to your water feeder they will use it. Make sure the water is constantly available and don't let the supply dry up for even a day or two as they may then go elsewhere. Construct the water feeder so that bees don't fall in and drown while visiting it. Don't wait until someone complains before you provide water for your bees. It is much easier to prevent this problem than it is to solve it.

Be very careful when manipulating your colonies. Use plenty of smoke and work slowly and carefully to avoid getting the bees upset. If they fly at your veil and attempt to sting it is best to stop working with them. Try again on a better day when the bees are too busy to notice your interference. Angry bees can sting your neighbours. Getting the bees alarmed to the extent that they sting neighbours is the worst thing a city beekeeper can do. Make sure such a thing never happens.

Never let your bees start robbing. When bees are robbing they tend to fly around the doors and windows of houses looking for food. If any neighbours notice this they may complain. Robbing will start if you leave any honey exposed during a dearth of nectar so be very careful to keep honey well covered. Remove your honey with the use of bee escapes and make sure that the hives are bee tight in the supers so robbers can't gain access to undefended honey stores. The use of bee escapes in a city is advantageous because the bees do not get as excited as with other methods of honey removal.

Always extract your honey indoors and make certain all doors and windows are closed. Bees will be attracted to any that are left open. They will also fly around your neighbour's houses searching for honey.

Feeding bees in the city presents problems. A Boardman feeder should not be used because these invariably increase searching behaviour and may start robbing. If your bees must be fed, use a friction top pail inverted over the inner cover or top bars. Never spill any syrup because this will cause some bees to fly all over the neighbourhood in search of food. To be safe, start feeding at dusk when the bees have ceased flying for the day.

It is very important for the city or suburban beekeeper to get gentle bees from a reliable breeder. If you collect swarms from hives other than your own, re-queen them with a queen that you know will produce gentle bees. Gentle bees are absolutely necessary in the city.

Give all of your close neighbours some honey at least once a year. Most people like honey and they often are happy to eat honey that was produced next door. Spend some time with your neighbours explaining how

honey is collected and extracted. This simple act can go a long way towards keeping a good relationship with your neighbours.

Swarms are another problem in the city. Try your best to prevent them. A swarm of bees in your neighbour's tree or bush may produce quite a stir. Always collect swarms promptly before children start throwing rocks at them. Inform your neighbours that if a swarm should settle in their yard, it will be removed promptly. Also tell your neighbours that bees in a swarm are usually gentle and not inclined to sting. However, they should keep away from them until you can remove them. Keep extra equipment available to hive your swarms.

Don't stretch your luck with the number of colonies you can safely keep. Never have more than four or five colonies on a city lot. One, two or three colonies is best. Perhaps an observation hive is all you can safely keep. In any case, start with one colony and don't increase until you become familiar with the habits of bees.

Swarming bees may give you more colonies than you can safely keep. Remove the extra colonies to the country or sell them. When this is not possible it might be best to destroy your swarms. After all, it is better to have three colonies than to have none at all. Neighbours will get apprehensive if you fill up your whole yard with bees.

Many of the problems can be minimised if you keep your bees in a concealed spot. If possible, don't place them where they can be seen from the sidewalk or street. When the bees are in an open area your neighbours will be reminded of their presence every time they walk or drive by your house. If your neighbours do not see your bees often they will not be inclined to think about them. Place the hives behind vegetation where they will be hidden. When vegetation is not available, locate them on a flat roof. The flight of the bees will be well above the head of passersby if your bees are on a roof or surrounded by big bushes.

A hive can be placed in a window of your house. A pane of glass is replaced with a piece of plastic that has a hole cut in it for an entrance. The hive rests on the window sill and can be supported by a wooden framework to make sure that it doesn't tip over. A second floor window is best so the flight of the bees will be well above the ground. If you want to put the hive on the first floor select a window that has a big bush or tree growing in front of it to hide the entrance as much as possible. Always keep the shade pulled to prevent overheating from direct sunlight.

Most textbooks recommend white as the best colour for hives but darker colours can be used if the hives are shaded in the summer. If you decide to keep your bees outside, it is a good idea to paint the hives green or light brown. Camouflage colours make them much less noticeable. People have a tendency to think of bees if they see white boxes in your yard but the association is not so readily made if the hives are painted a less noticeable colour.

Vandalism can be a problem anywhere but city beekeepers have more than their share of it. Sometimes kids dare each other to knock a hive over. More destructive kids may spray your hives with an insecticide. This can be very discouraging. Once in a while city beekeepers are bothered by someone stealing honey from their hives. In extreme cases honey thievery prompts city beekeepers to lock their hives. Locking your hives with a chain and padlock is laborious but it may prove beneficial if you must keep your bees in a trouble spot. It may discourage kids from annoying your bees or tampering with them.

An alternative to locking your hives is to build a chain link fence with a lockable gate around your apiary. Honeysuckle or some similar vine can be grown on the fence to hide the hives from public view. Of course, this is expensive. It helps if you can maintain rapport with the neighbourhood kids. The kids won't be inclined to destroy your bees in the first place if they think of you as a friendly per-

(Continued on page 67)

The Inside Story of Feeding Sugar to Bees

By Murray Reid, Apicultural Advisory Officer, Christchurch

The practice of feeding sugar (either dry or as a syrup) is becoming more and more popular with beekeepers. This trend partially reflects the increasing price paid for honey, also the need for extra winter stores due to the paucity of late autumn and early spring nectar sources.

Many beekeepers pour the sugar into the hive, close the lid, then hope for the best. Sometimes when they come back the bees have converted all the sugar into ripened stores. In other hives, maybe an adjacent one, the sugar (either dry or in a syrup) is still in the feeders and could be in various stages of fermentation. It is a strange fact that two hives can appear equal in bee strength, brood and stores, yet one will readily store sugar while the other will not, especially if dry sugar is fed. **I wonder if anyone has noticed any correlation between the productivity of a hive and the rate at which it stores sugar?** In other words does a hive that produced a good crop of honey, relative to others in the apiary, also store sugar more readily?

What does the bee do with the sugar?

Bees must invert or "digest" the sucrose molecules, before they can assimilate them, as well as reduce the water content. In the case of dry sugar the bees **add** a great deal of water to the crystals, more in fact than to concentrated sugar syrups or honey. This will mean the bees have to make extra foraging flights to collect water. According to Simpson, food containing more than 50 per cent or more sugar is diluted first before being ripened. The enzymes (particularly invertase) which are necessary for reducing the sucrose molecules are produced in the hypopharyngeal glands of the adult bees. These are the same glands that first produce royal jelly for feeding larvae and the queen, and are most active in bees aged 5-13 days. From 17 days onwards during the summer, the glands rapidly shrink in size, and cease producing royal jelly, but the amount and activity of the enzymes secreted is increased. Enzyme production, naturally enough, reaches a peak after three weeks when the worker bees begin foraging. In the winter time bees of all ages have large glands rich in invertase.

Effect of disease on the hypopharyngeal glands

Nosema disease is known to affect the glands of bees and reduce the amount of royal jelly produced. Nosema also affects the levels of protein and amino acids in the blood but it doesn't seem to influence the levels of blood sugar at all.

The effects of enzyme production on honey yields

Some recent research work carried out in Russia suggests that the honey production in a hive could be related to the efficiency of enzyme production by the bees and that this efficiency varied from hive to hive. Naturally the strongest hives, with bees producing most inverting enzymes also produced the most honey.

Storage of sugars in the body

Bees have the ability to store surplus protein in their fat bodies and also in their blood. However, they do not have any storage organs as such, for sugars. Rather the sugars remain free in the blood and the levels are not regulated as in mammals, but fluctuate markedly according to the diet and activity of the bee. Thus, when a bee first emerges or when it is resting on the comb it has very little sugar in its blood. However, when it is out foraging, blood-sugar levels become very high.

Physiological demands on the bees

Converting sugar into honey and storing it is a very exhausting process, in terms of energy used by the bees. The bees must first produce the enzymes, and secrete them, they must suck up the syrup and invert it, they need to keep the hive temperature high to evaporate excess moisture from the syrup, as well as secrete and manipulate the wax to store the honey in. Let's look at some of the processes involved and see how we can help the bees to be more efficient. In all these considerations timing is reasonably important. In most areas April-early May would be suitable for feeding sugar to winter the bees on.

(a) Inverting the sugar

We want to get the sugar inverted and ripened while the maximum number of older bees with active glands are in the hive. These bees are mostly expendable and will not survive long into the winter anyway. Ideally we want a balance between having enough older bees but not too many to consume excess food.

(b) Heating the hive

Bees generate a lot of heat from the sugars they eat. Of this heat Wedmore calculated that 60-70 per cent is used to heat the bees, 20 per cent is used to evaporate water, and 10 per cent is used to heat the air, so a significent amount is used solely to evaporate water. And as warm air is able to hold much more moisture than cold air it is to our advantage to feed the sugar before the weather gets excessively cold and damp. The warmer the ambient or surrounding air the less energy the bees need to consume solely to keep themselves warm and evaporate moisture.

(c) Eliminating the water

The energy required for ripening large quantities of nectar is appreciable; for instance Ribbards calculated that the elimination of each pound of surplus water involved the wastage of 4-5 ounces of sugar. This is about 25 per cent and approximates Wedmore's figure of 20 per cent.

Further the actual consumption of honey also releases water as the "water of combustion" plus the 17-18 per cent water naturally in honey, and this too demands energy to get rid of it. This extra water may be as great as one-half to two-thirds of a pound for every pound of honey consumed. Some of this water is lost by evaporation but the great majority is stored temporarily in the rectum then disposed of during cleansing flights. Again the bees should have ample opportunity for flying during the period in which they are ripening sugar stores.

(d) Wax production

One researcher found that one pound of wax can be built into 35000 cells which would hold 22 pound of honey. Other workers have found that it takes somewhere between 6-10 pounds of honey to make one pound of wax. So a significant amount of our original sugar stores are also going to be used up in producing the wax as well as maintaining a high cluster temperature needed to manipulate the wax scales into comb.

(e) Case study

Let's take an example and see just how much of our original sugar we can expect to be converted into sealed stores. Let's feed 4 gallons of 2 : 1 or 62 per cent white sugar syrup. This will contain 32 pounds of sugar at the rate of 16 pound to the gallon and should weigh in the vicinity of 52 pounds.

Assuming our ripened stores will contain 18 per cent moisture we have to lose 20 per cent water or about 10.4 pounds of water. Now this represents an elimination cost of nearly 3 pounds of sugar, if 4-5 ounces of sugar are lost per pound of excess water. This sugar itself when consumed by the bees will also release excess water of combustion that will require energy to eliminate. However, that is getting a bit complicated.

Now the bees are going to use something like 5-9 pounds of honey or sugar to build enough wax to hold the syrup, although this figure could fluctuate depending on how drawn out the combs were. But from our original 52 pounds of syrup we have lost or used up 10.5 pounds of water, and say 11 pounds of sugar to eliminate the water and produce the wax. This leaves us with about 30.5 pounds of ripened stores. As a rough rule of thumb in estimating stores produced from syrup . . . **the final weight of ripened stores in the comb is slightly less than the weight of dry sugar in the original syrup** — in our case we could expect about 30 pounds of ripened stores from 32 pounds of sugar.

Recommendations

Don't leave your sugar feeding until too late in the autumn. Feed while:

There are plenty of older expendable bees with active glands still present.

It is not too cold to secrete wax.

It is not too cold or damp for the efficient evaporation of moisture out of the hive.

There are still some natural honey stores in the hive.

And remember—

"BEES DO NOT FREEZE TO DEATH—THEY STARVE TO DEATH".

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BEES OF THE WORLD

By B. J. Donovan, Entomologist, DSIR

PART I: WHAT IS A BEE?

All New Zealand beekeepers can recognise honey bees—if not, they would soon be out of business — and probably all can recognise bumble bees. The number of species of insects in the world is estimated to be in excess of one million, so what do honey and bumble bees have in common that distinguishes them from other kinds of insects, and how many species of bees are there in the world?

Michener, 1965, defined bees as insects that have at least a few branched hairs on the body, and have the hind basitarsi (a basitarsus is a segment of a back leg) wider than the following segments. In practice, bees are insects that feed their larvae on nectar and pollen — although there are also a few wasps that do this. These wasps can be distinguished from bees by the lack of branched hairs and the presence of narrow hind basitarsi.

So defined, the bees constitute in the world a group of about 20,000 to 30,000 species of insects (the actual number is unknown because new species are still being discovered). In size they range from individuals only 2 mm long to enormous insects up to 39 mm long. The vast majority of bee species are solitary, that is each female bee makes her own nest and does not co-operate with or have any contact with other females of her species, and not even any contact with her own offspring after the egg has been laid. As with honey bees, the males do nothing but feed and attempt to mate with the females.

Life Cycle

The nests of most bees consist of a hole in the ground or in wood or plant stems. Basically a short tunnel leads to a series of small cavities or cells within which the mother bee stores pollen and nectar for her offspring. After a cell has been fully provisioned with pollen and nectar, the female lays an egg, seals the cell and proceeds to repeat the process until she dies. The larva which emerges from the egg usually stays in the cell until the following spring or arly summer, when it pupates and emerges as a fully mature bee. Males and females mate soon after emergence and after the females complete nest construction towards the end of summer, they die and the species survives the winter as overwintering-resistant larvae.

In species generally regarded as more advanced, such as the honey bee, many adults work together and co-operate in a nest or hive which many survive the winter with the adults living on stored pollen and nectar.

Some bees have become parasitic or more accurately cuckoo-like on other bee species — that is they lay their eggs in the nests of other bees where their larvae feed on the stored provisions, and the adults do not build a nest or collect or store food.

Evolution of bees

It is thought that the earliest land-dwelling insects probably ate plant material, but as millions of years went by, some insects appeared that fed on other insects or spiders. The most advanced plants at this time produced large quantities of light pollen which was dispersed by the wind, much as in pine trees and many other plants of today. One group of insects that fed on other insects or spiders, the sphecoid wasps, a group to which the New Zealand

mason wasp (often called incorrectly the mason bee) belongs, possess all the physical characters from which the physical characters of bees could have been derived.

These wasps store spiders or insects in nest cavities for their larvae to feed upon, and it seems that over millions of years some of these wasps began storing pollen and nectar as larval food rather than insects or spiders. It is an advantage to a plant to produce small quantities of pollen that are carried directionally to other flowers of its species, and to attract insects, nectar, scents and colourful petals and sepals etc were selected for. Bees thus gain from plants both proteinaceous food (pollen) and sugars (nectar), and the plants in return have their smaller quantities of pollen carried to other flowers of their species, thus affecting pollination.

Types of bees in the world

The thousands of bee species vary greatly morphologically when examined under a microscope. The most immediately obvious differences are those of size, colour, and body form, but there are great differences in size and shape of segments of mouth parts and some leg joints, and distribution and colour of plants that make up the body wall, presence or absence of, for example, hairs.

On the basis of many different kinds of similarities and differences the bee species are grouped firstly into genera, these in turn are grouped into families, and all families are grouped in the superfamily Apoidea, the superfamily of all bees. Honey bees are thus classified as follows:

Superfamily	Apoidea
Family	Apidae
Genus	**Apis**
Species	**mellifera**

There are eight or nine families of bees in the world depending upon the classification system followed.

In the brief discussion of each family that follows the nine-family classification is used.

Colletidae

This family has more characters in common with sphecoid wasps than any other family of bees, and is thus considered to be the most primitive family. Species are found throughout the world and are extremely numerous in Australia. The tongue in almost all species is short and bilobed on the end, and is thus well adopted for obtaining nectar from shallow open flowers such as tea-tree or pohutukawa and rata. Nests are made either in the ground or in hollow plant material, and the cells are lined with a thin cellophane-like substance. All species are solitary, and there are extremely few parasitic species.

New Zealand has about 30 species that nest in the ground and four that nest in hollow plant material.

Halictidae

This family probably evolved from a branch of the Colletidae. It is represented throughout the world, and at least five species are native to New Zealand. The tongue is long and narrow, and nests are made in the ground. Many evolutionary lines within this family show development of semi-social or social colonies, although most species are still solitary. In one branch of the family the males die at the approach of winter and fertilised females hibernate over the winter.

Andrenidae

Bees of this family are found mainly in the northern hemisphere and are

absent from Australia and New Zealand. In general appearance and biology, many andrenids are similar to many colletids, but are readily distinguished by certain structural features, and because of the possession of several of these structural features the family is thought to have originated later than the Colletidae and Halictidate.

Oxaeidae

This is a very small, little-known family found only in the New World south of the south-western United States. The family seems to be closely related to Andrenidae.

Melittidae

From the viewpoint of number of species, this is a small family, but does contain considerable diversity in form. It is found throughout North America and the Old World, and appears to be related to the Andrenidae.

Fideliidae

This family has only three genera, two in South Africa and one in Chile. It has some characters such as a long tongue, which are considered advanced, and other more obscure characters which are considered to be primitive.

Megachilidae

This is a large family of fairly distinctive bees and is represented in most areas of the world, except Oew Zealand. Females of non-parasitic species carry their pollen in a scopa beneath the abdomen, not on the back legs, and existing cavities such as holes in twigs are utilised as nest sites. Parasitic species are common.

Anthophoridae

Species of this family are very numerous and very diverse morphologically. Representatives are found in most parts of the world except New Zealand, and although most species nest in the ground, some excavate their own nest holes in solid wood. Parasitic species are very common.

Apidae

Non-parasitic apids have polished scopae on the hind legs for carrying pollen, and most have at least some degree of social development. Most species utilise existing cavities as nest sites, and parasitic species are few. The honey bee is considered to be the most advanced species of bee.

Because of the great diversity of characters among bees, it is not possible to cover any one subject in great detail, but two of the more interesting topics will be briefly discussed.

Flowers and Bees

All bees must obtain pollen and nectar from flowers, so why do bee species differ in size and shape? It is obvious that flowers differ greatly in size and shape, therefore it is reasonable to suppose that some bees physically "fit" some flowers better than they do others. Natural selection has in some cases selected for this trait to such an extent that some bees are physically able, through for example the shape of the forelegs, to collect pollen from only one or a few closely related flower species. The flowers in turn are so constructed that only that bee species can gain access to the pollen.

In the short term this specialisation has great advantages for both the bee and flower. The bee species has a guaranteed source of pollen, and the flower species has a guaranteed pollinator. In the long term however, it is very disadvantageous, for if one member of the pair becomes extinct the other would also.

All degrees of specialisation of bees to flowers are found. The honey bee is one of the least specialised bees in this respect as workers will collect from most flowers, and in the absence of flowers with pollen have been known to collect fungal spores, flour and fine sawdust.

Parasitism

Parasitism has evolved many times among bees and in most families of bees. Closely related bee species usually require similar nest sites, and it would not be unusual for a nest site searching female of one species to discover the nest of another bee species; this is frequently observed in the field. The presence of one bee in the nest of another has undoubtedly often lead to usurpation of the nest by the invading bee, and it is easy to see how the invading bee could use the pollen collected by the previous bee. It is a short evolutionary step from there to sneaking into a nest, laying an egg and leaving before the owner returns. The parasite egg then hatches and the larva kills the host bee egg or larva and consumes the stores itself.

Some parasitic bees, such as parasitic bumble bees, are very closely related to their hosts, and indeed can sometimes be distinguished only by careful observation. Others which have been parasitic for many billions of years do not resemble closely any known species of bee, and their origins are difficult to trace. Some species have lost almost all the characaters they possessed as bees to carry pollen and excavate nests, and have become very like the basic wasp stock from which bees evolved.

Bees are thus a very diverse group of insects. They are found in all land areas and are frequently very numerous in both species and numbers of individual bees in a small area. Because of their success in most areas of the world and their morphological and behavioural diversity, they are regarded by many workers as a rapidly evolving group. The development to a high degree of social organisation in some species places this group of insects at the apex of evolutionary development among insects.

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PART II: NATIVE BEES OF NEW ZEALAND

By B. J. Donovan

The first native bees from New Zealand were described by F. Smith in 1853, and to date about 26 species have been described. I have gathered all the native bee specimens from collections both within New Zealand and overseas, and have also collected many specimens from the field.

The various species are distinguished one from the other on basically morphological grounds, and sorting of species is not yet complete, but all told there would appear to be about 35 well identified species. Several species are known from only one or a few specimens, and a couple of species have been collected only in the alst few years, so I feel quite sure that with intensive collecting throughout the various habitats within New Zealand, quite a number of new species — perhaps 10 or so, will be discovered.

All New Zealand native bees belong to either the family Colletidae (about 30 species) or the family Halictidae (about five species).

Family Colletidae

The Colletidae, as already mentioned in the first part of this series, is usually regarded as the most primitive of the eight or nine families of bees. The Colletidae can be sub-divided into two sub-families, the Hylaeinae and

the Colletinae. The Hylaeinae are small, narrow insects — up to 8 mm in length, and the females carry the pollen internally. Body hairs are almost absent, and the bees look more like small wasps than bees. Only four species are known from New Zealand. These bees nest in small holes in plant stems, e.g., flax stems and the stems of **Cassinia**. The female bees clear the hole of any dbris and construct cells of athin cellophane-like material within which they store food for the larvae. Only one nest has been described, so very little is known of the preferred nest sites of these four species.

All four species appear to be present throughout New Zealand, but in comparison with some other native species are not numerous, and because of their small size are not often noticed. Adults can be found chiefly on tea tree, pohutukawa, rata and native broom, and there are a few records for a small number of other native plants.

The 26 or so species in the Colletinae comprise by far the bulk of New Zealand's native bees both in number of species, size of some of the species, and numbers of individuals in some of the species. As a group the Colletinae are found throughout New Zealand, but most species are found only within certain areas. One large species, and one that is quite yellow in colour, is found throughout the South Island east of the mountains, but not in Westland or the North Island. Another species which is very closely related to it is found only in the North Island.

All bees in this group are very hairy, all carry their pollen on their back legs in well defined pollen-carrying areas, or scopae, and all nest in the ground. A large number of nest sites are known, but not for all species, and the biology of only one species has been studied in any detail. Most of the species appear to be gregarious in their nesting habits, but will construct nests isolated from others of their species. Nest tunnels of several species penetrate to about 20 cm below the ground surface and there branch out to form several tunnels each several cm long that terminate in a cell. The cell is lined with a waterproof cellophane-like material, and in the cells the female bee stores pollen shaped into a sphere and moistened with nectar as food for the larvae. The egg is about 2-3 mm long, and shaped somewhat like a banana. It is laid on the surface of the pollen ball, so the new larva is sitting on a mountain of food. After laying the egg the female bee seals the cell with a plug of substrate, and thereafter has no contact whatsoever with her offspring. The larva consumes all the food in about seven days, and after defaecation, sits about in hibernation until the following summer when pupation and emergence occurs.

The largest individuals of this group of species are as long as honey bees — about 1.2 cm, are somewhat slimmer, but nevertheless are quite robust, and in flight look very much like the black honey bees in New Zealand. The smallest are about 3 cm in length and in flight look much like small flies except for pollen loads on the legs of the females.

Nest sites

Natural nest sites are bare or semi-bare areas of ground that are free of excess moisture, and with the substrate of such a constituency that the female bee can excavate a nest without great difficulty. One species is found nesting only along the upper beach line in dry, shifting sand, but in areas that must occasionally be inundated by high spring tides. Another species nests in vertical or nearly vertical sandstone cliffs along the shoreline of seas, lakes and rivers. Other natural areas are bare soil between plants in the mountainous

areas of both islands, and banks or cliffs eroded by water and/or wind.

Most discovered nest sites are however in man-made bare soil areas such as roadside cuttings and excavations for buildings etc. on hillsides.

On steeply sloping sandy banks where nest numbers may be as high as about 300 per square metre in the height of the nest excavation season a mass of fine sand thrown out from tunnels will accumulate at the foot of the slope. Constant intense nest exacavation each season helps prevent plant growth, and may actually reduce it by undermining and loosening existing plants. The bees nest excavation activity thus may increase the area of the nest site.

Heavy rains may however penetrate well into the substratum through the nest tunnels, with the result that large areas of nest bank may collapse with the destruction of many nests. The newly exposed areas are soon colonised in either that same or subsequent summers.

Plant relations

Species in this group are found on a wide variety of native flowers, but in enormous numbers on plants in the family Myrtaceae — especially tea tree, pohutukawa and rata. In most areas of New Zealand where these plants are some species exhibit preferences for certain plants. Several species are found found, in summer the tops of the trees will be alive with native bees and the buzzing noise is similar in volume to that of honey bees in a commercial apiary. Populations of these bees seem to be particularly high in most areas of Northland, King Country, Marlborough and Central Otago.

I have never found bees that visit Myrtaceous plants visiting plants of the family Compositae — daisies and dandelions and other similar plants. In the South Island a yellow haired species of bee is found only on composite flowers. In the past its only host plants must have been native composite flowers such as celmisias and senecios and many others, but in the Mackenzie Country and Central Otago very large numbers of this species avidly collect pollen from yarrow, and in the valleys at least, this plant now seems to be their main host plant. In Canterbury however, these bees have not been found on yarrow, and in all areas these bees have never been observed on any Myrtaceous plant, even though the bees have had to fly over these flowers from their nest site to get to composite flowers.

Two bee species have been found only on plants in the family Leguminosae —native brooms. These plants are not visited by either of the two preceeding groups of bees, but I have found the bees that visit the leguminous flowers also visiting the introduced sweet clover and lucerne flowers in Central Otago. Native brooms and sweet clover have florets that although very similar in structure to lucerne florets, do not have the same explosive tripping action of lucerne florets. Bees visiting the introduced lucerne receive a very strong unaccustomed blow on their underside from the reproductive column of the lucerne floret. I have observed bees knocked right off lucerne florets by the tripping action, and bees frequently landing on other parts of the plant to rest and groom.

Among plants visited by the smaller bee species of this group are the native cushion plants, chiefly **Raoulia**. Other plants such as **Selliera radicans** and most hebes are very attractive to some of these smaller species of native bees.

Family Halictidae

The remaining native New Zealand bees comprise a group of about five

species which belong in the family Halictidae. This family is found almost throughout the world, and because of certain morphological features and the development of forms of social life in some species is regarded as more advanced than the Colletidae. All New Zealand halictid bees are small, the largest being no longer than about 6 mm.

All species nest in the ground in New Zealand. In the North Island some bees build a horizontal straight clear hole in vertical banks with cells branching off alternately on each side. Some bees in the North Island do nest in flat ground and the tunnel is then vertical, but steeply sloping faces seem to be preferred. This may be because of the high rainfall with the consequent danger of nests on flat ground being flooded. In the Canterbury Plains area, nests are in flat ground and the tunnels vertical.

Life cycle

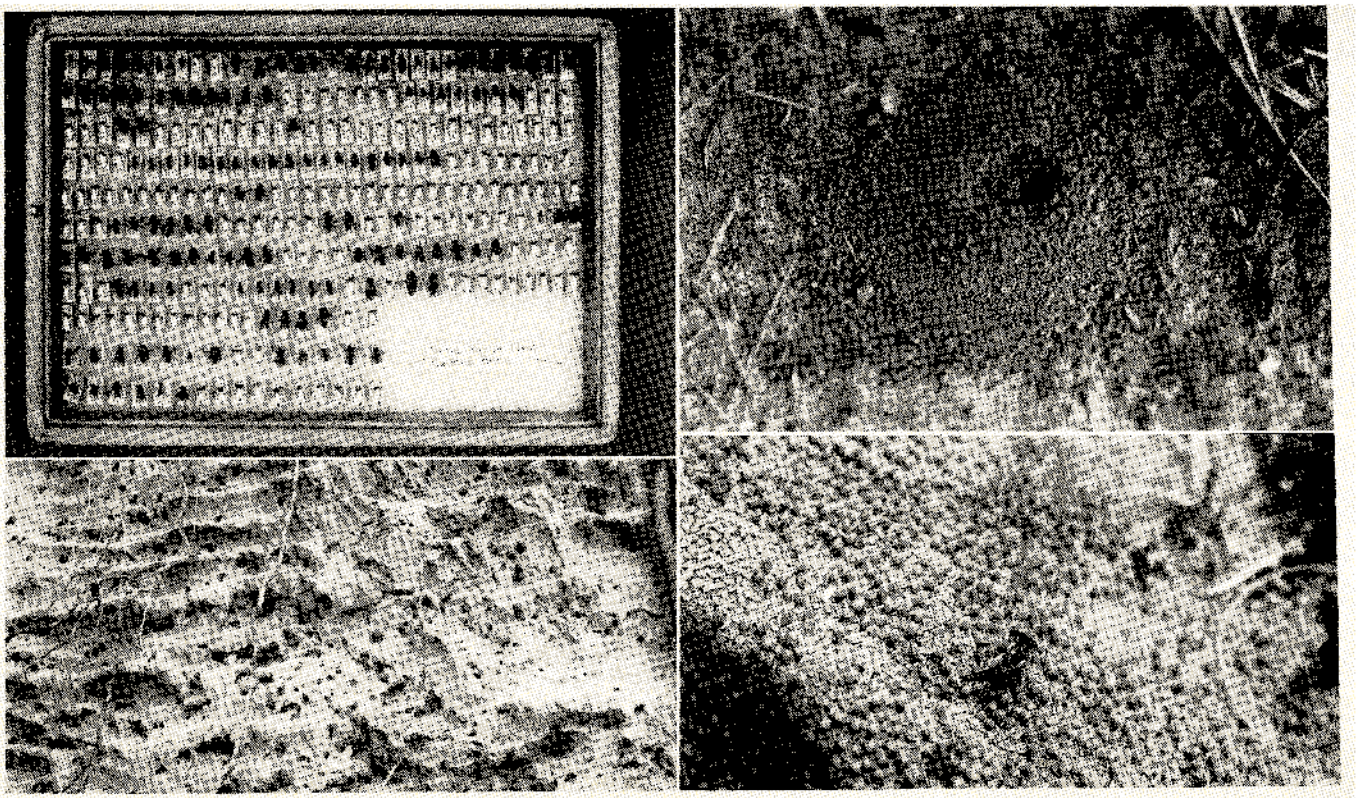
The life cycle of these bees is quite different from that of the bees of the other family in New Zealand, the Colletidae. In our Halictidae the fertilised female overwinters in a nest tunnel, and emerges in early spring to build a new nest. There are no males present for the first several months in the new season, all males having died at the end of the previous summer. The females provision their nests, oviposit and seal their cells in the same way as females of the Colletidae, but the fully grown larvae pupate without a rest period, so new bees, both males and females, appear in early summer. Details of nesting behaviour etc. of the new females are not known, but mating probably occurs soon after emergence ffom the nest, and it seems highly likely that the new females work at nest construction through the summer. If nests are examined through the summer, all stages of brood can be found. As summer goes on, the numbers of males hovering around flowering shrubs such as hebes, increases, and by late autumn most bees in the field are males searching for the last few virgin females. The females cease nesting by late summer, and the old females probably die off about this time. The first winter frosts or heavy rain appear to kill the remaining, by this time old, male bees.

Numbers of these bees in the North Island appear to be fairly low, and this may be due to lack of suitable fine-grained nesting substratum for these small bees. In the Canterbury area of the South Island, bee numbers can be extremely high in local areas where suitable bare nesting areas are available. Most nest areas are along gorse hedges where bare earth is exposed to the sun for most of the day. The bees appear to like hard dry, finely-grained soil as nest sites.

Plant relations

Females of these species have been observed collecting pollen and nectar from many kinds of flowers both native and introduced. Among native plants, hebes and some composites are probably their original preferred host plants. At D.S.I.R., Lincoln, a small number of females have been observed collecting pollen and nectar from kowhai flowers, the only native bees I have ever observed on kowhai flowers.

In spring, great numbers of females avidly collect pollen from the ornamental introduced **Ceanothus** found in many home gardens. Fruit blossoms, brassicas and dandelions are also very attractive, but for most of the season bees are found most commonly on **Hebe** flowers.



TOP LEFT: Representative native New Zealand bees. BOTTOM LEFT: Sandstone cliffs nest area of colletid bees near Auckland. Most nest entrances have been enlarged by the weathering action of rain and wind. TOP RIGHT: Excavated spoil surrounding a nest entrance on flat ground in Central Otago. BOTTOM RIGHT: A native bee collecting pollen from flower of the native cushion plant, Raoulia australis.

Through their sheer numbers native bees must collect great quantities of pollen — but little nectar as honey is not stored for the winter as in honey bee hives. Native bees frequently outnumber honey bees on flowers of tea tree, rata and pohutukawa, plants which are among the major native food sources for honey bees in some areas, but native bees do not visit clovers except in very small numbers in localised areas. Thus although native bees and honey bees undoubtedly compete for food to some degree, the degree of competition is probably very small and the loss of nectar and pollen to honey bees very small.

Diseases and parasites of native bees

One fungus disease of native bee larvae which I found in a nest area near Auckland, is probably a new species very similar to that which causes chalk brood in honey bees. Whether or not this fungus could infect honey bees is unknown, but the absence of this species of fungus from honey bees in New Zealand after their presence here since 1839 possibly indicates that they are immune. Similar fungi have been found on soil and twig-dwelling solitary bees in North America and England.

Mites of the family Pyemotidae have been found on 21 per cent of the bees of one species collected at Auckland, and numbers per bee ranged from 1 to 64. Mites are also occasionally found on individuals of most of the other species of New Zealand native bees, but the life cycle of the mites is such that they would probably not survive on honey bees.

Where bee nests are numerous, thin black wasp-like insects may often be found hovering closely over the nest site suface on fine, warm, summer days. These are parasitic wasps of the genus **Pseudofoenus**. Female wasps sneak into a bees nest while the bee is away and lay their own egg **through** the wall of the bee cell into the surrounding substrate. When the bee returns she completes provisioning of the cell, lays an egg, and seals the cell. The parasite egg hatches and the small larva crawls into the cell where it moves about gnashing a pair of long, curved jaws. Sooner or later it chances upon the bee egg, or, if the egg has hatched, the young bee larva, and punctures it with its sharp jaws. The parasite larva then consumes all the cell provisions and emerges the following summer as a new parasite adult. Because the life cycles of native bees differ widely from that of honey bees, there is no prospect of these parasites infesting honey bees.

Another type of small wasp parasite has been reported for the four twig-nesting species of bees, but again there is no prospect of honey bee infestation.

Other enemies of native bees are birds, e.g., sparrows, that catch females as they enter their nests, spiders with webs in vegetation near flowers and nest sites, and predatory asilid flies that catch bees in flight.

Although native bees are very poorly represented here compared to land masses of similar size in other parts of the world, the species we do have offer interesting opportunities for study. Because of their general resemblance to honey bees or flies, they have been overlooked in the past. Of particular interest is their relationship to native flowers. It is already evident that far more species of native flowers are pollinated by native bees than has heretofore been supposed.

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Lorenzo Lorraine Langstroth

The Father of Modern Beekeeping

The Langstroth hive is accepted as the standard in many of the major honey-producing countries of the world. Read how this hive was conceived and the unique story of the man who is called the Father of American Beekeeping.

By Grant D. Morse, Ph.D.
Saugerties, N.Y.

Comb honey in a glass — a drinking glass. Langstroth reports that it was the sight of such a "fancy" article in the home of a friend that aroused his interest in bees once more.

As a boy, L. L. Langstroth had been interested in insects. Now at the age of 27 the sight of honey and honeycomb in a glass stimulated his interest once more. He immediately went out and bought two "stocks of bees" in common box hives.

But such box hives had grave faults. Even the "bar hives" of that day were poorly adapted to beekeeping. They provided top bars to which the bees were encouraged to fasten their combs. But the two ends of each comb were fastened by the bees to the interior sides of the hives. Accordingly, such combs could only be removed from a hive by cutting them loose with a knife. When a beekeeper performed this operation, he multilated the comb, caused a sticky mess, and aroused the bees.

Hives at that time were not commonly constructed with the expectation that their covers would be periodically removed. When the covers were removed, the top bars adhered to the cover because the bees had fastened them to it with propolis.

Langstroth wanted to find some way in inspect the interior and contents of a hive. He wanted to be able to remove the cover readily. Without such access he could not see in detail what was going on in the brood nest. He could not readily determine if a colony was queenright. He could not rid the colony of wax moths which seem to have bothered his colonies greatly (perhaps because some of them, without his knowledge were queenless).

In an effort to keep the bees from propolising the top bars to the hive cover, Langstroth lowered the rabbets on which the top bars rested by about ⅜ of an inch. To his amazement, the bees stopped glueing the top bars to the cover. He had discovered the principle of bee space! But he did not immediately reconize it.

During the entire season of 1851 (he was 41 years old at the time) he used hives with the bee space between the top bars and the covers. Meanwhile he kept pondering some way to avoid the need for cutting the ends of each comb away from the side of the hive.

It was not until toward the end of the honey season of that year that he realised there might be some practical application of the use of bee space between the ends of the combs and the hive sides.

In his reminiscences (Gleanings in Bee Culture 21, 116-118) Langstroth relates how, upon returning from his apiary late in the afternoon (Oct. 30, 1853), it suddenly occurred to him that the same principle of bee space he had used at the top of the hive could

be applied to the end of the comb, and to the distance of each comb from its neighbour. He relates that the realisation of this suddenly discovered fact caused him nearly to shout in jubilation.

At this hour of his realisation that he had mentally conceived a practical application of bee space to the operation of the hive, he had a visitor, the late Rev. E. D. Sanders, who afterward founded the Presbyterian Hospital in Philadelphia. Together they discussed until late in the evening the results which they thought might come from using movable frames instead of combs attached by the bees to top bars—and subsequently to the hive sides.

After the departure of his visitor that evening, Langstroth could not rest until he had made entries in his Journal. The entries included a record of the new plan in its entirety, also sketches. Langstroth's penmanship left much to be desired. It was often decipherable only by those familiar with it. His sketches, too, were elementary in nature but they fully illustrated the principle involved. Langstroth's original Journal is now part of the E. E. Phillips' beekeeping library at Cornell University.

To a present reader, it may seem rather amazing how fully Langstroth realized the significance of his discovery even before he had a chance to try it out in practice. Here are a few sentences from his Journal dated October 20, 1851:

"If the slats are made so that a and b (the ends of the frames) are about ⅜ of an inch from the sides of the hive, the whole comb may be taken out without at all disturbing it by cutting.

"With the ordinary bar, the work of removal is always difficult and often impossible, and this is the reason why hives with bars, notwithstanding all their theoretical advantages, have been so little used.—This will be a most excellent way of taking the honey where honey in the comb can be retailed to advantage in a market near to the apiary. The bars in the box for surplus honey should be made the same size as those in the main hive, and thus they may be used for feeding destitute colonies and for artificial swarming—

"The use of this bar will, I am persuaded, give a new impetus to the easy and profitable management of bees, and render the making of artificial swarms an easy operation. By the very great ease with which the bar with their combs may be removed, a command over the whole proceedings of the bees is obtained that is truly wonderful."

By artificial swarming Langstroth meant the making up of nuclei. How fully he immediately realised the practical value of his discovered principle! Instantly he comprehended the advantage of the movable frame in serving as a means of providing a colony with combs of honey for feeding purposes in the spring. He understood that the use of such frames made the establishing of nuclei easy, as it had not been before. He recognized how practical it would be to examine a colony to determine the status of the queen.

Lorenzo Lorraine Langstroth

In a later entry that fall in his Journal (November 25, 1851) he wrote:

"I have this day brought my conception of a new plan of hive to what promises great practical results. My open hive offers the greatest advantages to three classes of persons:

1. The scientfic apiarian whose great object is to investigate the habits of the bee. He has a hive

where in a few minutes every comb may be examined. Huber's hive, to say nothing of its cost, cannot be used without injuring the bees, and the work of removing frames for inspection is tedious and difficult. The observation hive is expensive, and a very difficult hive in which to preserve the bees over winter. In my hive, one may with the greatest ease perform all the various experiments to arrive at a more accurate knowledge of the habits of the honeybee.

2. The practical apiarian who wishes for profit to manage his bees on an improved and scientific system finds in the use of this hive the means of making artificial swarms, rearing queens, supplying destitute hives with honey or brood, obtaining honey for sale in the market for immediate consumption, or in boxes or tumblers, just as may be most profitable, protecting his hives against the moth, and in short, of performing any operation that may be desired in the spring.

3. The hive will suit the farmer who manages in the old-fashioned way, as he can get honey at any time."

In a still later Journal entry that winter Langstroth revealed that he was fallible—that is, as we see matters today. He began thinking of a hive constructed according to the "long idea"—one in which the hive space would be interminably extended on a single level. The experience of beekeepers since 1851 has shown that the supering of hive bodies, one above another is preferable to extending a hive body horizontally.

During the first part of 1852 Langstroth applied for a patent on his new hive. It was granted before the end of the same year. I am not able to say whether Langstroth was a good mechanic. At any rate, he employed a skilled cabinetmaker, Henry Bourquin, to make the pieces to attach to the top bars of the frames in his hives. On the first warm spring day in 1852 he shook the bees from his brood combs and attached the pieces that made each comb complete with four sides of enclosing wood. Then he returned the bees to their combs.

Shortly after equipping his apiary throughout with movable frames, and many new hive bodies, he fell ill and was obliged to sell the bees and their equipment. When he recovered, he turned his attention to a new project—the writing of a book, a complete manual for beekeepers.

"Langstroth on the Hive and the Honey Bee"

Before undertaking the writing of his book, Langstroth learned through a friend, Dr. Joseph Frederic Berg (also a minister) that across the Atlantic in Silesia there was another expert in beekeeping, Jan Dzierzon, who had made some discoveries, part of which were amazingly like his own. He learned too that Dzierzon had recently written a book, Theorie und Praxis des neuen Bienenfreundes (1848).

Dr. Berg introduced Langstroth to Samuel Wagner who had translated Dzierzon's book into English. Wagner urged Langstroth to write a book giving American beekeepers the facts about his discoveries. Within a few months he had written a book of 384 pages. You may have it on your library shelves, especially if you are nearing retirement age. (Is there a retirement age for beekeepers?)

This was America's first scientific book on bees and beekeeping. You will still doubtless find it readable, and replete with information, some of which will amaze you even if it is merely because you are intrigued that Langstroth's knowledge of the honeybee was so complete. Following are some excerpts from the book, together with my comments.

"Mr Dzierzon resides in a poor, sandy district of middle Silesia, which, according to the common opinion of apiarians, is unfavourable to bee culture."

This quotation is the more notable because Langstroth himself never had the experience of keeping bees in an area that was significantly flowing with nectar. He began his beekeeping in Massachusetts; continued in Philadelphia, Pa.; and concluded in Ohio. Oxford, Ohio was the best location in which he had experience in operating. It seems that one's geographical location does not determine the intensity of his interest in beekeeping.

Langstroth writes, "As all my hives

are so made that each comb can be taken out and examined at pleasure, those who use them can obtain from them all the information which they need, and are no longer forced to take anything upon trust."

It is evident from this statement that Langstroth fully realized the significance and value of his research. Today, we may be prone to discount how revolutionary his discovery of bee space was. It all seems so evident and simple. But then, many of the most significant facts of science are apparently simple. Nevertheless, man has had to discover each one of them slowly and painfully. Observe how long man lived upon earth before he was able to manufacture a utensil in which he could boil food!

"In my observing hives I have seen the queen lay at the rate of six eggs a minute. The fecundity of the female of the white ant is much greater than this, as she will lay as many as 60 eggs a minute!"

Langstroth was interested in insects in general, not in bees alone.

"Milton is believed by many to have been a better poet for his blindness; and it is highly probable that Huber was a better apiarian for the same cause. His active and yet reflective mind demanded constant employment; and he found in the study of the habits of the honeybee full scope for all his powers."

It is a well-known fact that most outstanding achievers accomplished their goals despite some deficiency or defect. Demosthenes, the great orator for example, suffered from a speech defect. So too with Langstroth. He had to give up two pastorates in New England because of poor health. As we have recounted, he had to sell his bees just before writing his book—all because of illness. If he had enjoyed perfect health, he would doubtless have been so successful either at teaching or at preaching that he might not have had time for the bees.

During his college years at Yale, where he was an outstanding student (earning Phi Beta Kappa awards) he gave almost no time to insect study. It was not until the years subsequent to college, and the occurrence of his physical disabilities, that he found time to turn his attention ot the bees. His keen mind was thereby enabled to serve the welfare of beekeepers and beekeeping—and hence of society.

The Location of Queen Cells

"While the other cells open sidewise, these (queen cells) always hang with their mouth downward. — The queen cells open downward simply to save room! — In order to economise space to the very utmost, they put them upon the unoccupied edges of the comb, as the only place where there is always plenty of room for such very large cells."

In any reading I have previously done, I have not elsewhere seen any accounting of the reason for queen cell placement.

Langstroth Praises the Wisdom of the Honeybee

He writes: "Virgil in the fourth book of his Georgics, which is entirely devoted to bees, speaks of them as having received a direct emanation from the Divine Intelligence. And many modern apiarians are almost disposed to rank the bee for sagacity as next in the scale of creation to man."

I do not know to what extent Langstroth believed honeybees to be dependent in their reactions to instinctive stimulation. But note how restrained he is in making the above statement while at the same time giving the bee a full measure of credit for her remarkable behaviour.

Langstroth was fully aware of the importance of pollen to the rearing of brood. He says: "In many—districts, however, the supply of pollen is often so insufficient that the new colonies of the previous year are found destitute of this article in the spring."

Requisites of An Improved Hive

In Chapter 7 of his book Langstroth enumerates 54 reasons why his hive ideally lends itself to the needs of modern beekeeping. Space here does not permit our covering his 54 reasons but the fact that he could find that number of items justifying its use shows that he had a firsthand knowledge of beekeeping. Most of the reasons he states are correct today.

"It (the hive) should allow the contents of a hive, bees, combs, and all, to be taken out, so that any necessary repairs may be made."

Today, all beekeepers take such a hive for granted. Until Langstroth conceived of the movable frame, and revealed the significance of bee space, such hives were not in use.

Langstroth Aware of the Significance of Ecology

In Chapter 9 of his book Langstroth comments on the deleterious effect upon humans of being too long confined in an atmosphere that is unhealthy. He made the comment because he was emphasizing the significance of proper ventilation in the beehive.

He says: "The importance of pure air can scarcely be overestimated; indeed, the quality of the air we breathe seems to exert an influence much more powerful, and hardly less direct than the mere quality of our food."

Langstroth's Attitude Toward Swarming

Langstroth was fully aware of the less of productiveness of a colony that is permitted to swarm. He says: "I prefer to rely chiefly on artificial means for the multiplication of colonies." He states further: "An eminent apiarian has estimated that ¼ of the best swarms are lost every season."

I venture to suggest that this is pretty much the prevailing percentage today. Langstroth was fully aware of the exploratory work of scout bees in investigating potential new sites to which the swarm might fly when it emerged from an overcrowded hive. He believed that the giving of adequate room to a colony before the swarming season was the single most deterring manipulation in reducing swarming. It still is, although several other manipulations are in current use. He used also the method of division. He called this "artificial swarming." He believed, too, in destroying the old queens. Sealed queen cells were employed by Langstroth to head new colonies.

Loss of the Queen

Langstroth reveals in Chapter 13 of his book that he had a practical turn of mind. He writes: "If a queen is wanting I at once, if the colony is small, break it up and add the bees to another stock. If, however, the colony should be very large, I sometimes join it to one of my small stocks which has a healthy queen.—It must be remembered that I am not like the beekepers on the old plan, extremely anxious to save every colony, however feeble."

Langstroth was a close observer of the honeybee. At one point he says: "—Sometimes they (the queens) are disabled by the rude treatment of the bees which insist on driving them away from the royal cells." Later he says: "Very frequently, in spite of all their caution in noticing the position and appearance of their habitation before they (the queens) left it, they make a fatal mistake on their return, and are imprisoned and destroyed as they attempt to enter the wrong hive." Recent research confirms the truth of Langstroth's statement about queens entering the wrong hive. In some apiaries, including queen rearing apiaries, the loss is enormous. At that time research had not demonstrated how sameness of colour of all hives, and their proximity to each other, with all entrances facing in the same direction, make the returning queen's problem a difficult one. But Langstroth was aware of the end result.

Langstroth's method of uniting colonies reveals that he was fully aware of the danger of a queen's being killed at such a time. "The condemned ones (those to be given to another colony) must be drummed out of their old equipment, sprinkled with sugar-water scented with peppermint or some other pleasant odour, and added to the others. The colonies which are to be united ought, if possible, to stand side by side some time before this process is attempted."

The Problem of Robbing

Langstroth was a close observer of the behaviour of the honeybee. He illustrates this at many points in his text. One illustration makes this evident: "Bees seem to have an instictive perception of the weakness of a colony, and like the bee moth, they are almost certain to attack such stocks, especially when they have no

queen. Hence I can almost always tell that a colony is queenless by seeing robbers constantly attempting to force an entrance into it."

Langstroth was quite aware of the fact that each hive has an odour, sometimes the same odour as that of neighbouring hives, sometimes different. He says that such similarity of odour may encourage robbing without detection by those being robbed.

Some Addition Facts About Langstroth

L. L. Langstroth was born on Christmas day in 1810 in Philadelphia, Pa. His grandfather, Thomas L. Langstroth, had emigrated from England. He was a manufacturer of paper near Philadelphia.

Langstroth, the Father of American Beekeeping, graduated from Yale College in 1831, a member of Phi Beta Kappa. At Yale he took a course in the divinity school. After graduation he taught school and preached—at different times, of course. He was eminently successful at both, but poor health prevented him continuing long at either. His church pastorates totalled approximately nine years. At one time he taught math to Yale freshmen.

Financially, Langstroth was not a success. He had all too little business sense. His strengths were chiefly centred in the mind—a mind that reflected, and contemplated, and oringated. Few can be everything to all men. Langstroth served mankind by making a very significant discovery. That discovery was bee space, and its practical application to the keeping of bees. From it he realized very, very little pecuniary reward. But man does not live by bread alone.

A Backward Glance at Beekeeping History

The colonists brought honeybees to America as early as 1622. But the bees were kept in hollow logs or boxes of various types. They defied inspection. After 1670 American foulbrood began to destroy many colonies. American foulbrood is not American in origin. It came to us from Europe where it caused trouble, too. If the movable frame as discovered by Langstroth had been in existence at the time, AFB might have been brought under control.

The Greeks had for a long time previous to Langstroth's discovery used a top bar in their hives. Dzierzon, a German clergyman, improved the Greek method. Huber, a blind Swiss scientist, then designed a hive in which each comb was enclosed on all four sides and was hinged to spread apart like a page in a book. It was consequently not too successful, being impractical for commercial use.

As we have previously described in this article, no one in America, including Langstroth, seems to have caught the significance of using a four-sided frame because whatever had been used, the bees glued with propolis to the sides and tops of the hive. It was not until Langstroth dropped the level of the rabbets ⅜ of an inch below the level of the hive cover that he discovered the bees would then not glue the tops to the cover.

After using such a lowered top bar for a full season, he suddenly realized that he had the answer. What Langstroth discovered, really, was the significance of bee space — not a four-sided frame or a hive body that was particularly different from many others except for the fact that its dimensions and the height of its rabbets provided just the right space over and around each comb. Bee space was the significant factor.

He patented his design but lacked the financial resources to defend his patent from infringement. Alas, how often that is the fate of the inventor! But truly he was the Father of American Beekeeping, and his contribution to beekeeping has made all the difference.

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THE IMPORTATION OF THE HIVE BEE INTO NEW ZEALAND

42 Years of Beekeeping in N.Z. — 1874-1916

SOME REMINISCENCES By I. Hopkins

This account was published in 1916 and presented to the Cawthron Institute in 1925 under the will of the author.

(Continued from our February issue)

As we finished our first instalment of this historic book, the author, Isaac Hopkins, has been discussing the problem of adulterated beeswax, a subject rarely mentioned these days.

There were immense quantities sold throughout the Dominion. Nearly every grocer, oil and colour man, merchant, and chemist in Auckland was taken in.

The first to come round with the stuff was a German traveller. He found out I was a big buyer of wax, and introduced himself and the composition to me. I will give him credit for not trying to take me in, but he wanted me to take others in. The stuff he offered deceived several who considered themselves experts in wax. It was offered to me in lots of one ton or more, landed in Auckland from Germany, at £46/13/4 per ton (five pence per lb), beeswax at the time being worth over £100 per ton. Needless to say he made no deal with me, and I never heard any more of him.

Some time after, however, a tall, smart-looking man, with all the appearance of an experienced commercial traveller, came to me and said: "You are a large buyer of beeswax, I understand." "Yes," I answered. "Have you any for sale?" "Yes," he replied: "I can sell you several cwt at a price." "Have you a sample?"—upon which he opened his gladstone bag and handed me a sample. I was so used to handling wax at the time that at the first touch of the sample I handed it back to him without examining it, and said, "That is not beeswax." "No?" he queried, as innocently as possible. He then told me he was travelling for a firm who was selling it as genuine wax. I could not contradict him, but told him not to offer it as beeswax or he would get into trouble. Notwithstanding this warning, however, he must have sold some tons of it in Auckland. He was getting 10d per pound for it, and I have reason to believe it was the same stuff that was offered me at 5d.

It was such an excellent imitation of the genuine article that it deceived old buyers. On one occasion a leading Auckland merchant, with whom I had had many transactions in wax, came to me and said he had arranged to buy five cwt of wax. Would I come and look at it? He was a bit suspicious about it owing to the quantity sent to him. He had submitted a sample to the expert buyer of a leading firm, who declared it genuine, and would take it himself if the merchant did not want it. "Oh, but I do want it, if it is genuine," replied the merchant. But this did not satisfy the inquirer, and

he came to me. As soon as I saw it I told him who he had bought it from, which he said was correct, and I condemned it. When the party came for his cheque he was told to take the stuff away, and was threatened with prosecution—he quickly cleared out.

About two years after this an Auckland man commenced to manufacture a fraudulent imitation of beeswax, and must have made a very good thing out of it before he was eventually trapped. Although I knew my man, and what was going on very well, the law at that time was such that it was a very risky thing to accuse a man of fraud without you could bring overwhelming evidence to prove your case. It is different now, when one can invoke the health and food laws in all such cases. Eventually, the culprit was punished by receiving six months in goal. This, I think, put a stop to the fraud, for I have not since heard of any adulterated beeswax being sold.

THE FIRST BEE JOURNAL IN THE SOUTHERN HEMISPHERE.

Previous to leaving the Thames I had it in mind that a monthly bee journal would soon be needed to push the industry ahead. When I broached the subject to Mr Firth, shortly after getting everything into working order at Matamata, he fell in with the idea, with the result that the first number of "The New Zealand and Australian Bee Journal" was published in July, 1883, under my editorship, the annual subscription being 6/-, post free. I was most fortunate in securing some very able contributors; in fact, I do not think any bee journal in the world, before or since, has had better. They came forward voluntarily in the interest of the industry, and without fee or reward.

Although the journal had a fairly large circulation for a magazine devoted entirely to bees, it barely paid its way, and gave nothing for the work entailed in editing and publishing it. As regards myself, it was a labour of love, and I looked for no remuneration. It had, however, done a vast amount of good during its two years' life, and would not have then been given up had not another journal taken it over to continue the bee matter. Mr Henry Brett (the present head of the Brett Printing and Publishing Co. Ltd.) who had just started the "New Zealand Farmer, Bee and Poultry Journal," now "The New Zealand Farmer, Stock and Station Journal," made arrangements with Mr J. C. Firth to take over the "Bee Journal", provided I would edit the bee section. This I agreed to do, and have been in that position ever since — just 32 years. The "Bee Journal" ceased publication after June, 1885—greatly regretted by both New Zealand and Australian beekeepers.

In this connection it may be of interest to state that I have before me the reply to the Chief Postmaster, Auckland, to the request of the publisher that the "Bee Journal" be registered as a magazine for postal rates. It runs as follows:—

"Auckland, 5th July, 1883.—I beg to inform you I have received provisional authority to pass the 'Bee Journal' through the post offices as a magazine. Copies may now be posted at magazine rates.—(Signed) S. Biss, C.P.M."

IMPORTING QUEENS DIRECT FROM ITALY.

Taking matters as they happened as near as may be in their chronological order, the next item of importance was the successful importation of Italian queens direct from Italy, which was then considered a great feat. In July, 1883, I communicated with the late well-known queen breeder, Chas. Bianconcini, of Bologna, and subsequently sent him an order for eight of his best queens at £1 each. In due time I received advice that they would leave Naples on the 10th November, 1883. They reached me at Matamata on January 9, 1884 — a long trip. Four of the eight queens came safely, the rest dead. These were, of course, the first queens to come to New Zealand direct from Italy. Mr Fullwood had previously sent me one from Brisbane—one of some he had imported direct. I had several transactions with Chas. Bianconcini afterwards, and always found him a very decent fellow. He died some years ago. My orders after the first were always for twelve queens (£12), and I usually got six through alive. On one occasion, however, I lost the whole twelve, so that the queen trade was not all profit in those days.

IMPORTING SYRIAN, CYPRIAN, HOLY LAND, CARNIOLAN, AND SWISS ALPINE QUEENS DIRECT.

I was determined on my own account, and in the interests of New Zealand beekeeping, to test all the Eastern bees, which were in vogue at the time. The craze for them had got hold of me, and I felt I must have them; consequently, in May, 1884, I sent an order to Mr T. B. Blow, of Welwyn, Herts, England, who was doing a considerable business with Mr Frank Benton, to arrange with the latter to send me queens of each of the above races or varieties. The "British Bee Journal" of June 15, 1884, had the following paragraph in its columns in connection with my order:—

"We are informed that Mr T. B. Blow has a commission to forward Syrian, Cyprian, Holy Land, Carniolan, and Italian bees to New Zealand. We understand from Mr Blow that he has cimmissioned Mr Frank Benton — of whose connection with Eastern bees our readers will be well aware — to execute the order."

Mr Benton at that time had queen-rearing apiaries in Cyprus, Palestine, in the Carniolan Alps, and other places. The Italians mentioned above came from the Swiss Alps, on the bordering line of Italy, where it was understood the best Italian bees came from.

The queens reached me after some little unavoidable delay. The Carniolan queens were dead, but the others arrived in fair condition. In the meantime another shipment of twelve queens arrived from Chas. Biancocini on September 26th, 1884, six being alive.

Taking into account the great expense attached to importing queens, and the losses, my charge of 15/- for a tested queen of either variety was not all profit. I was calculating as near as I could some little time ago my total outlay for imported queens, and I made it about £200. It is recorded in the "New Zealand and Australian Bee Journal" for December, 1883, when mentioning the fact that a shipment of queens from Italy was expected shortly, that: "We had imported previously 2 colonies from America."—"We," that is, myself.

THE CHARACTERISTICS OF EASTERN BEES COMPARED.

It may be well here, as I had all these bees in their purity, including Carniolans at a subsequent date, to give my experience and opinion of them. I kept very careful records at that time of the comparative value of the different varieties and their crosses, as I realised that ultimately we should have to cultivate one variety — the best.

The Holy Landers and Syrian bees were so near alike in their characteristics that I may bracket them together. I found them fair workers, but not so good as Italians, and of about the same temperament as to handling. They were lighter in colour and a trifle smaller than Italians. The Cyprians, well — I have seen many contradictory statements concerning them — so far as their working qualities are concerned, there cannot be two opinions about them — they are beauties; but their temper for handling, ugh! They are demons. I know that some have spoken very highly of them with regard to their temper; well, mine came direct from the island of Cyprus, sent by the person who bred them there, and I can assure my friends I was no novice at handling bees at that time. If any person had told me before I got the Cyprians that I could be conquered by bees I would have laughed at him, but I confess the Cyprians beat me.

Until the colonies got strong they seemed to be as easily handled as Italians, but when up to full strength they were simply unmanageable. I always worked with my shirt sleeves turned up, and I can truly say that on one or two occasions a pin point could scarcely have been put between the sting on both arms and hands. I was determined to master them, but in the end they were the victors. Smoke made them more vicious, and the more smoke I gave them the worse they were; they would even try to sting the tin smoker. I tried crossing them with Italians, but, if anything, the hybrids were worse. I and my assistant had on two or three occasions to make an ignominious re-

treat; we then considered it time to get rid of them, which we did. Two or three customers who bought Cyprian queens from me before I had fully realised their viciousness had to get rid of theirs. I subsequently sent them Italian queens to replace the Cyprians.

Carniolans were sent me nine years ago from the American Government Apiary — two queens in nucleus colonies. They proved very prolific indeed, so much so that they consumed a very large part of the honey they gathered in providing for their brood, and naturally this induced swarming.

Of all the bees yet tried under domestication none have been found to come up to the Italians; that is the opinion of practically the whole commercial beekeeping world. The majority of British beekeepers, however, seem to prefer the common bees, but that predilection arises chiefly, I think, from the want of experience of Italian bees.

FIRST EXHIBITION OF BEES, HONEY, AND APPLIANCES.

The first exhibition of bees, honey, beeswax, and all the new appliances, such as movable-frame hives, honey extractor, comb-foundation, etc., took place in November, 1879, at the Auckland Agricultural and Pastoral Association's Spring Show, held at the racecourse, Ellerslie, I being the only exhibitor. For business reasons I staged an extensive exhibit, and had my bees in an observatory hive at work, flying abroad through a hole pierced in the wall of the building, while the work going on in the interior of the hive could be seen by visitors through glass on each side of each frame without being interfered with by the bees. I had similar exhibits each year at the association's shows until I left the Thames. It is needless to say that great interest was created in the new bee culture, and very much good resulted in bringing honey to the fore as an article of food.

FIRST GENERAL BEE AND HONEY SHOW IN NEW ZEALAND.

Several comunications had passed between our leading beekeepers during 1883 on the subject of holding a bee and honey show at an early date. It was realised that a large and attractive exhibition of honey, and the appliances used to secure it, would promote the use of honey in the household, and thereby create a greater demand for it. It was considered advisable to arrange if possible, to include our exhibits in that of the next "Auckland Gardeners' Horticultural Society's" Exhibition, to be held in March, 1884.

After making application, and waiting some time, the committee of the society decided to agree to our proposal, but the time then left to prepare exhibits was so short that we almost concluded to abandon the business for that year. As, however, it had been intended to call a meeting of all interested in the formation of a beekeepers' association, we decided in favour of getting as many exhibits together as possible for the show, and holding the meeting on the first day, viz., March 21st, 1884.

The exhibition was held in the Drill Hall, Auckland, and a very fine one it was. The hall was about 150ft long by 60ft wide, and the bee exhibits were allotted 50ft in length of the end staging. Notwithstanding that the time to prepare exhibits was so limited, the show of bees, honey, and appliances was a most creditable one. Distant beekeepers, however, who would have attended and brought exhibits, were prevented on account of so short notice. The principal exhibitors were Bagnall Bros., I. Hopkins, Capt. Daly (Waikato), G. Stevenson (Gisborne) T. J. Mulvany and Son (Katikati), and H. B. Morton, Auckland, and the value of the awards £10/14/-.

FORMATION OF THE FIRST NATIONAL NEW ZEALAND BEEKEEPERS' ASSOCIATION.

As previously intimated, a meeting of all interested in this movement had been called by advertisement for the first day of the show, to meet at the Park Hotel, next the Drill Hall, Auckland, at 4 p.m. The following report of the meeting is clipped from the "New Zealand and Australian Bee Journal" for April, 1884:—

"Meeting of Beekeepers.—A numerously attended meeting of beekeepers

was held at the Commercial Hotel, Auckland, on the evening of the 21st ult. The meeting was called for the purpose of forming a Beekeepers' Association. Mr I. Hopkins was voted to the chair, and Mr H. H. Hayr was asked to act as secretary. The chairman read the advertisement calling the meeting, and asked Mr J. L. Bagnall, the convener, to explain the object to be attained." Mr Bagnall, after going fully into the matter, and explaining the advantages to be gained by beekeepers throughout the land working in unison, moved:—"That in the opinion of this meeting it is desirable to form an association of beekeepers." The motion was seconded by Mr T. J. Mulvany, of Katikati, who said, in support of it—"He hoped an association would be formed embracing the whole of New Zealand, and that provision would be made for forming branch associations in any locality where there were sufficient beekeepers to do so." The motion was carried, and it was then resolved: —"That the name of the association should be the New Zealand Beekeepers' Association, and that a committee be formed, consisting of the chairman, secretary, Dr. Dalziel, Messrs. Mulvany, Newland, Graham, Robinson, Shadwell, and Bagnall, to communicate with beekeepers in all parts of New Zealand, and frame rules to be submitted to a general meeting called by the committee." The committee met on the 3rd June, Mr. I. Hopkins in the chair. A code of rules was carefully considered, and made ready for presentation to a general meeting, and the secretary was empowered to communicate with his Excellency the Governor requesting him to become patron of the New Zealand Beekeepers' Association; also with Sir George Grey, that he become president; and with the Mayor of Auckland and Resident Magistrate, that they accept the vice-presidentship of the association.

The general meeting to consider the rules drawn up was held at the Commercial Hotel, Auckland, on August 7, 1884. On the motion of Dr. Dalziel, the rules were adopted, and it was resolved that they be printed in book form. The election of officers for the first year (the presidentship being postponed) resulted as follows: Vice-presidents, His Worship the Mayor of Auckland and his Honor Judge Smith; committee of management, Colonel Bailey, Major Noake, Captain Daly, Dr. Dalziel, and Messrs. Bagnall, Hopkins, Mulvany, Newland, Robinson, Shadwell, and Stevenson; secretary and treasurer, Mr H. H. Hayr. It was suggested that a reference library of all the standard works on bee culture be formed, and also all bee journals, American and English, be obtained, which was subsequently acted upon, and a library was formed.

THE FIRST BRANCH ASSOCIATION.

A meeting of beekeepers, called by circular, was held in Buchanans' Hall, Pukekohe, Auckland, on February 23rd 1884, for the purpose of forming a beekeepers' association, Mr W. Morgan acting as chairman. Dr. Dalziel, as convener of the meeting, explained the advantages of an association, and it was decided to form one, and that the name be the "Auckland Provincial Beekeepers' Association." The following officers were then elected:—Messrs. J. C. Firth and I. Hopkins had to decline the presidentship of the association owing to want of time to carry out the duties, and the distance they lived from Pukekohe; vice-presidents, Captain Hamlin, M.H.R., Captain Jackson, R.M., Messrs. Pounds, Bagnall, and I. Hopkins; treasurer, J. Collins; secretary, Dr. Dalziel; general committee, Messrs. Allen, Beloe, Brown, Elliott, Jamieson, Morgan, Savage and Sproule. At a subsequent meeting rules and regulations for the conduct of the association were received and ratified.

Both the national and branch associations were now in full working order, and subsequently held regular priodical meetings, from which much good resulted. It may be mentioned that the N.Z.B.K. Association appointed a corresponding committee, consisting of members residing in the different beekeeping centres throughout both islands, whose duty it was to send quarterly reports of the progress of beekeeping in their respective districts to the parent association, to canvass for members, and to promote the formation of branch associations. We found the scheme to answer very well, as it kept us constantly in touch with all beekeeping centres .

ESTABLISHMENT OF A HONEY DEPOT.

Much dissatisfaction had been expressed from time to time by leading beekeepers as to the great differences in the buying and selling prices of honey in connection with the middlemen. While the producer was receiving a low price, the consumer was charged a very high one, and the bulk of the profit was retained by the middle-man. At a committee meeting held on November 21st, 1884, it was decided, on the suggestion of Mr Hopkins, to establish a honey depot in connection with the N.Z.B.K.A., for the sale of members' honey. Mr H. H. Hayr was appointed agent in charge, at a remuneration of 10 per cent on all honey sold, he to find storage room. The following scale of prices was fixed by the committee:—Comb honey (in sections), 10d per lb; extracted honey, 6d per lb, in bulk; 8½d per lb in 1lb tins; and 15/- per dozen 2lb tins or vessels. It was also resolved that honey sold at the depot be for cash or promissory note, the cost of such note to be charged to the vendor. The depot business was not allowed to progress very long on smooth lines, but we were determined to keep it going if possible, and even to put our hands in our pockets to support the scheme rather than the middle-man should rule us.

OUR FIRST TROUBLE.

The committee realised from the outset that unless all, or nearly all, the honey coming to Auckland was sent to the depot to be sold there would soon be trouble, as the grocers and other wholesale purchasers could see that the establishment of the depots and the fixing of prices every quarter would curtail the big profits they had been getting on honey. They at once determined to boycott the depot. In order to induce every beekeeper to send his honey to the depot it was decided that on payment of an annual fee of 5/- to the association any beekeeper could secure all the privileges of the depot without becoming a member of the association, if he so desired.

This, however, had little effect in gathering in many of the small beekeepers owning from half a dozen to ten colonies, of which there were large numbers within a radius of twenty miles from Auckland's centre. The large grocers induced the most of these, by offering an advance on their previous prices paid for their honey, to deal direct with them. The consequence was that the sales from the depot fell to a vanishing point. The beekeepers' action in dealing direct with the middle-man instead of through the depot was really not understandable, as the depot returns to the producer were very much larger, and in cash, whereas the dealings with the middle-men were in most cases by barter, and at a much lower exchange value. Such was the case, however, and the committee, with a determination not to be beaten, authorised the secretary to engage hawkers to hawk the honey from house to house. This succeeded for a time and relieved the depot of most of the honey that had accumulated, but this scheme eventually broke down, and we realised we were beaten through the foolish action of the small beekeepers. There had been such a rush into the beekeeping ranks during the previous three years that in the season of 1884-5 honey was to be seen in large quantities in all the auction rooms. Fairly good honey, put up roughly in kerosene tins, could be bought for 2/6 per tin (60 lbs), and eventually a lot was carted away for nothing, the auctioneers being glad to get rid of it.

THE FIRST CONFERENCE OF NEW ZEALAND BEEKEEPERS.

Arrangements had been made to hold the first annual conference of New Zealand beekeepers under the auspices of the New Zealand Beekeepers' Association at its annual meeting, to be holden in Auckland on March 20th, 1885. Every effort had been made by the committee to bring together a large number of beekeepers from different parts of the country. In conjunction with the conference a number of papers on different beekeeping subjects were prepared for reading, and the first annual report and balance sheet was printed for distribution. At 4 p.m. on the above date the conference was called to order, the attendance being very satisfactory

indeed. Beekeepers were in attendance from such distant places as Gisborne, Taranaki, Tauranga, Southern Waikato, and from districts north of Auckland. Everything passed off very satisfactorily, and the result was that a vast step had been made in the promotion of advanced bee culture.

THE FIRST BEE AND HONEY SHOW HELD UNDER THE AUSPICES OF THE NEW ZEALAND BEEKEEPERS' ASSN.

Realising the great benefit to the industry (in an increased demand for honey) that had arisen as the result of the previous show, the executive committee of the Association were determined to make this, their first exhibition of beekeepers' products, a credit alike to the Association and to the nidustry. How far they succeeded in their efforts may be judged by the extracts from the "New Zealand and Australian Bee Journal" for April, 1885, given further on.

Although this show was held in the very earliest days of our modern system of beekeeping — only seven years after it was introduced into the country — there has never been a bee and honey show approaching it held since in New Zealand, although over thirty years have passed by since then, more's the pity.

EXTRACTS FROM "NEW ZEALAND AND AUSTRALIAN BEE JOURNAL" APRIL, 1885.

"As our readers are aware, it had been arranged by the New Zealand Beekeepers' Association to hold their annual Show in connection with the Horticultural Exhibition on the 20th and 21st of March. The Gardeners' Horticultural Association had obtained permission to held their exhibition in the Government Drill Shed, a large iron building about 150ft long by about 60ft wide . . . The table allotted to the bee department stretched across the end of the shed farthest from the entrance, about 60ft in length."

The whole of this table, which was six feet wide, was fully occupied with our exhibits.

"The central part of the stage was taken up by an exhibit of Matamata clover honey, both comb and extracted (my exhibit.—I.H.). The extracted honey was shown in tins and glass—liquid and granulated. Of this a ton was staged in 2lb, 10lb, 20lb, and 60lb tins, and a small lot in glass. The get-ups of the tins was admired by everyone; the tins had been japanned, and on each was a beautifully lithographed label in colours. A kind of pyramid was formed of the tins, which did much to enhance the appearance of the exhibit. On either side of the tins (as part of the Matamata exhibit) the crates of comb honey in 1lb sections (of which there were 16 each containing 48 sections, 768lb in all) were placed, and on top of these the glass jars of extracted honey; the whole forming a conspicuous feature in this department."

In addition to the above, as part of this exhibit, there was a large quantity of comb-foundation, both stout and thin, made on four different machines.

Messrs. Collins (of Tuakau) and Beloe (of Pukekohe) had very fine and large exhibits of comb honey in sections, and the former had as well a very ingenious shipping crate for comb honey calculated to prevent damage to its contents.

Messrs. Hanlon (of Whangarei) and Blackwell (of the Great Barrier) staged very neatly got-up packages of extracted and comb honey.

Mr G. Stevenson (of Gisborne) was very unfortunate in losing his very fine exhibit while on its way to Auckland on board the s.s. Thomas Russell, which was wrecked. Not to be beaten altogether, Mr Stevenson made up another very fine exhibit of extracted honey in tins and glass, comb honey, and comb foundation, although, as he said, as an exhibit it was much inferior to the one that was lost.

Messrs. Bagnall Bros. staged a complete outfit of all apiary appliances, and also Italian bees and queens, and a stocked observatory hive, which created great interest among visitors.

Mr G. Epping, of Normanby, also sent a fine exhibit of comb-foundation of two grades, but unfortunately it was delayed on the road, and did not arrive till after the close of the show.

THE PRIZE LIST AND AWARDS.

Although the cash value of the prizes offered was not very extravagant, the

(To be Continued)

(Continued from page 66)
list indicates a worthy effort on the part of the Association to provide something to aim for. The following is the list of prizes and awards, which has not been equalled at any similar show held since:—

(Judges, Messrs. J. Newland and E. Parsons.)

	s.	d.	s.	d.
Best Italian queen accompanied by some of her progeny; 1 entry. Messrs. Bagnall Bros., 1	20	0	10	0
Best queen of any other race, accompanied by some of her progency; no entry	10	0	5	0
Best and largest display of bees of any race; no entry	20	0	10	0
Finest extracted honey, not less than 20lb; 3 entries. I. Hopkins, 1; G. Stevenson, 2	10	0	5	0
Largest display of extracted honey; 1 entry. I. Hopkins, 1.	20	0	10	0
Finest comb honey in sections, not less than 2 lb; 5 entries. I. Hopkins, 1; W. Beloe, 2.	10	0	5	0
Largest display of comb honey in sections; 2 entries; W. Beloe, 1; I. Hopkins, 2.	20	0	10	0
Best and neatest got up packages of extracted honey for marketing; 4 entries. I. Hopkins, 1; G. Blackwell, 2.	15	0	5	0

KEEPING BEES IN A CITY OR SUBURB

(Continued from page 40)
son. Give them a little honey to take home and they probably won't consider bothering your bees.

Bees can be kept just about anywhere, even in the centre of a large city. If proper precautions are taken most people will never know you have bees. Keep in mind that the neighbours have a right to be inquisitive about your bees. You must educate them so they understand there is nothing to fear about bees in a city. Most people will accept a reasonable explanation. Take the time to dispel your neighbour's worries. Tell all your neighbours that if any problems arise you will solve them promptly. Keep your word.

Good luck.

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SITUATION VACANT

EXPERIENCED BEEMAN

Wanted for permanent position or for coming season (October to March) or earlier if you can. Leading AUSTRALIAN honey outfit using extensive migratory methods and central extracting. We will pay good wage also either your fare to and from Australia or a bonus on production, whichever is greater. State qualifications, age and reference to:

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Approximately 2000 (nailed)
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QUEENS QUEENS

During the coming season I could accept orders for a limited number of

PURE ITALIAN QUEENS

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CHRIS DAWSON
P.O. Box 423, Timaru

"BATES" HONEY PACKER

Fills 1 lb., 2 lb., and 5 lb.

Complete with gearbox and drive.

(No motor).

Price $275

Replies to:

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APIARY: GOING CONCERN

For sale as going concern, Apiary in Central Otago. On Main Highway. Modern honey house of 1550 sq ft and 250 hives. Good roadside business. Four bedroom wood roughcast residence on one acre section. Owner retiring. Genuine inquiries to:

R. M. HUME
Dumbarton, Millers Flat, RD2, Central Otago

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Either as a going concern or hives for removal. Please send particulars and price to:

S. J. Tweedale
MAIN NORTH ROAD, TAIHAPE

WANTED TO BUY

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SEASONAL CASUAL WORKER

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Hand Operated

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Also a Single Frame Slinger.

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HONEY EXTRACTOR

Eight-frame reversible extractor with motor. Also four-frame extractor, hand or motor. Please advise location and price to:

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EXPERIENCED MAN

One of the best established and most respected Queen-rearers in Queensland has a vacancy for an Exprienced man to work for him in his Queen Rearing outfit. Here is a wonderful opportunity for a New Zealander interested in and experienced with Queens to broaden his knowledge overseas. Full particulars from:

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P.O. Box 95, Beaudesert, 4285
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(For the advancement of the Beekeeping Industry in New Zealand)

'Better Beekeeping—Better Marketing'

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201 to 300 hives	$12.00	1201 to 1300 hives	$52.00
301 to 400 hives	$16.00	1301 to 1400 hives	$52.00
401 to 500 hives	$20.00	1401 to 1500 hives	$56.00
501 to 600 hives	$24.00	1501 to 1600 hives	$60.00
601 to 700 hives	$28.00	1601 to 1700 hives	$64.00
701 to 800 hives	$32.00	1701 to 1800 hives	$68.00
801 to 900 hives	$36.00	1801 to 1900 hives	$72.00
901 to 1000 hives	$40.00	1901 to 2000 hives	$80.00

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All financial members of the Association are automatically indemnified against Public Risk claims up to $10,000 in any occurrence of injury or death to persons or livestock directly attributable to the action of the members' bees and arising from his or her negligence as the beekeeper. The cover is underwritten by the New Zealand Insurance Company Ltd and the premium met by the Association from consolidated funds.

THE N.Z. BEEKEEPER

The subscription rate for all members is $1 per year, all others $2 (NZ) per year. Please check the exchange rate in your country and send an amount to produce $2 (N.Z.) here. For example it now takes $2.90 (US) to make $2 (NZ).

Literary contributions and advertisements must be in the hands of the Editor, Mr N. S. Stanton, P.O. Box 4106, Auckland, not later than the 25th of the month preceding publication.

Nome-de-plume letters must be signed by the writer and address given, not necessarily for publication, but as proof of good faith. Letters accepted for publication do not necessarily express the views of the Editor or the Executive.

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Full Page	$20.00	Per Inch	$2.00
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FRONT PAGE STORY

1974 Dominion Conference Palmerston North

At the invitation of South Western Districts Branch, Dominion Conference is being held in the "Rose City", Palmerston North, from Wednesday, July 17th to Friday, 19th July.

In conjunction with the Palmerston North Public Relations Organisation Inc. an interesting programme has been arranged to supplement the important business sessions.

See pages 6-8 in this issue for full Conference details.

BOUGHTWOOD PRINTING HOUSE, North Shore