THE NEW ZEALAND

Beekeeper

November, 1962

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OBSERVATIONS ON THE ROLE OF THE HONEY BEE AND BUMBLE BEE AS POLLINATORS OF WHITE CLOVER (Trifolium repens Linn.) IN THE TIMARU DISTRICT AND MACKENZIE COUNTRY

By T. PALMER-JONES, I. W. FORSTER and G. L. JEFFERY

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Department of Agriculture, New Zealand, Wallaceville Animal Research Station, Publication No. 17.

INTRODUCTION

The importance of white clover (Trifolium repens Linn.) in the New Zealand economy has been discussed by Palmer-Jones (1959a).

It has often been suggested that pollination, and therefore seed yield, could be increased if bee density on the crop could be raised.

Todd and Vansell (1952) record that in the western states of the United States it is the practice to place one or two colonies per acre on clover seed fields. Oertel (1954) also records that some producers of white clover seed in Louisiana provide colonies of bees for pollination purposes. It should be noted that these authors do not recommend bringing in extra hives for pollination but merely record current practices in two of the main white clover seed producing areas of the United States.

The present study was undertaken to investigate bee densities and the adequacy of pollination in a typical seed-growing and honey-producing area in the Timaru district, and areas in the Mackenzie Country with few commercial apiaries and where seed is not harvested. The Upper Rangitata area with no honey bees at all was also included.

Observations were made over two seasons, 1958-1960.

EXPERIMENTAL

The white clover observed throughout the experiment was New Zealand certified or a similar type. This comprises 90 per cent of the white clover seed harvested in New Zealand, and also predominates in pasture.

Normal bee density was reinforced in one area (Esk Valley A) by bees from five groups of four hives brought to the site for the 1958-9 season only. The other seed crops depended for pollination only upon bees from nearby commercial apiaries.

Cages

The portable field cages used were designed by Palmer-Jones (1959b). The small cages measured 5ft. x 2ft. 6in., and were 2ft. 6in. high. Six were set out on typical areas of a clover seed crop in the Timaru district. Before enclosure all flower heads were removed. The leeward sides of two additional cages were removed to allow access to bees and to find if clover growth and seed set were affected. Four cages were used similarly to exclude bees from areas in different parts of the Mackenzie Country.

Although flowers in the closed cages looked different from ones outside, this was solely due to the florets withering more slowly through lack of pollination.

Large cages, measuring 30ft. x 10ft. and 6ft. 3in. high, were used to saturate areas with bees. Enclosed nucleus hives were provided with honey, pollen, and water. The cages interfered little with the normal passage of light or air; temperature and humidity increased only slightly inside a cage, so plant growth was normal. Flower and seeded head counts in the large cages were comparable to those of the open field. Floret counts also were similar.

Two large cages erected in the Timaru area were each provided with a nucleus hive. Frequent counts were made of bees visiting clover flowers on the pasture enclosed by each cage; bees flying within the cage or on its walls or roof were not counted. Although a few bees tended to cluster against the gauze in an attempt to escape, the majority were unaffected by enclosure. Bees worked the clover flowers as usual, although not so intensively as under normal conditions.

Enclosures

In districts such as the Mackenzie Country all clover is grazed or shut up for hay; none is shut up for seed. Under grazing conditions it is difficult to collect seeded heads for pollination studies.

In the 1959-60 season this problem was overcome by fencing off enclosures one yard square.

Bee Density

This has been indicated in three ways:—

(1) Hive density (i.e., acres of flowering crop per hive).

A complete census of hives in the area was available and it was considered that bees from wild swarms would make little or no contribution to the overall bee population.

White clover pasture or seed crops do not cover a district completely. Allowance must be made for land taken up by roads, rivers, buildings, ploughed fields, and non-flowering crops and trees. The present authors consider that about four-fifths of the total areas would be unattractive to bees.

(2) Bees per acre.

Counts of honey bees and bumble bees in each experimental area were made by two operators. Typical sections 100 yards wide and usually comprising at least a quarter of the experimental areas were marked out with poles and tape. Two operators walked slowly across the 100 yard width of the marked area, counting all bees in a strip approximately one yard wide. Approximately 10 minutes were occupied in making each strip count.

Bee counts were made under weather conditions favourable for bee activity, that is, when wind speed was below 10 m.p.h., temperature at least 65 deg. F., and rain not falling or imminent. Cloud cover may be disregarded, provided light intensity is high. No attempt was made to assess bee activity.

(3) Bees per 10,000 flowers.

Flower Head Counts

Heads were counted within the areas where bee counts were made. The only heads counted were those with at least six florets remaining turned up (indicating they were still in a condition attractive to bees).

The operator made random placements of a quadrat of such a size as to give counts averaging approximately two flowers per placement.

Degree of Pollination

Since the amount of seed harvested is not a reliable guide, a more precise method of assessing seed set was developed by Forster et al. (1962).

Degree of pollination is expressed as the percentage of florets which have seeded. It is a convenient measure because it is independent of seeded head counts and so can be applied to scattered pasture in areas such as the Mackenzie Country.

When crops were ready for harvesting, from 50-500 seeded flower heads were collected at random in the field and the degree of pollination determined.

RESULTS

Clover growth and seed set were normal in the cages to which bees had access.

Effect of Zero Bee Density on Percentage Pollination

Examination of spent heads in the small cages showed that no seed set had occurred. This also applied to alsike clover (Trifolium hybridum Linn.) and red clover (Trifolium pratense Linn.).

Effect of Abnormally High Bee Density on Percentage Pollination

A maximum count of over 23,000 and an average count of about 14,000 bees per acre were recorded in the large cages. On the basis of bees per 10,000 flowers the maximum was 694 and the average about 260. Under these conditions 97 per cent pollination was achieved.

Percentage Pollination and Bee Density of Typical Seed Crops in a Honey-Producing Area

Results are shown in Table 1.

TABLE (1): Pollination and Bee Density in the Timaru District

Area	Acres of flowering clover/hive (within 1 mile)	Maximum bees/acre	Maximum bees/10,000 flowers	% pollination
Esk Valley A 1958-9†	5	3800	76	94
Esk Valley J 1959-60	16	2100	33	93
Esk Valley B 1958-9*	5	3600	40	94
Kingsdown C 1958-9	7	3100	31	90
Kingsdown K 1959-60	4	3700	46	93
Kingsdown D 1958-9	8	2100	26	89
Seadown L 1959-60	9	3700	30	98

†Twenty hives brought to site this season only.
*One mile from nearest apiary.

There were about one million flower heads of clover per acre shut up for seed or hay at the peak of flowering.

Bumble bees were observed only occasionally on crops in the Timaru district.

Percentage Pollination and Bee Density in Areas Producing No Commercial Honey at the Start of Experiment

Results are shown in Table 2.

Bumble Bees as Pollinators

In the absence of honey bees, bumble bees can effect pollination as shown in Table 2. In the 1959-60 season, after hives were introduced to the Mackenzie Country, further observations were made in the Upper Rangitata area. Here there were no honey bees at all, but bumble bees were present, and up to 90 per cent pollination was achieved.

Individually bumble bees are superior to honey bees as pollinators because they are less affected by low temperatures, and work for longer hours. However, marked variation in bumble bee population occurs between areas and from season to season. No explanation can be given.

The main species of bumble bee observed on white clover in the Mackenzie Country and Rangitata was Bombus terrestris.

Other Insects as Pollinators

Solitary native bees, probably of the genus Paracolletes, were observed working white clover in several areas of the Mackenzie Country. These insects worked purposefully, gathering quantities of pollen, and might be of some value as pollinators.

TABLE (2): Pollination and Bee Density in the Mackenzie Country

Area	Acres of flowering clover/hive (within 1 mile)	Maximum bees/acre	Maximum bees/10,000 flowers	% pollination
Tasman Downs 1958-9	—	20B	0.2B	5
Tasman Downs 1959-60*	6	2400H	55H	95
Glentanner 1958-9	—	400B	5B	48
Glentanner 1959-60 Honey bees from swarm	—	100B 800H	12(B+H)	85
Pukaki Downs 1958-9	—	500B	8B	65
Ailsa Craig 1958-9†	9	500B 100H	10(B+H)	37
Ailsa Craig 1959-60	9	1000H	29H	87
Rhoboro East 1959-60*	7	3600H	35H	85
Rhoboro West 1959-60* Rhoboro West was the only area where bee counts were made under unfavourable conditions.	25	150H	6H	85
Ben Ohau Flats 1959-60*	11	1500H	25H	91

*Commercial hives introduced.

B=Bumble bees. H=Honey bees.

†Commercial hives introduced only at end of season, January 17, 1959, to reinforce three established hives.

Mr. L. J. Dumbleton, an entomologist of the D.S.I.R., considered that, apart from honey bees, it was unlikely that the insects present in the Timaru district would be of account as pollinators.

Clover case-bearer moths (Coleophora spp.) were present but, although little is known of them as pollinators, it is unlikely that they are of much importance.

At Tasman Downs in 1958-9 only a few bumble bees were present, and floret pollination was at the extremely low level of 5 per cent. Sweeps with a collecting net showed the presence of a normal range of insect life, similar to that met with in the Timaru district, with the exception of honey bees. When an apiary of 50 hives was established the next season there was a dramatic increase in floret pollination from 5 per cent to 95 per cent, suggesting the ineffectiveness of native insects as pollinators compared with honey bees.

DISCUSSION

It is not possible to compare our results with those of other workers (Dunham 1957; Green 1957; Weaver 1957) because different species or strains of clover were studied, environmental conditions were different, and methods of estimating bee density and degree of pollination were not the same.

The highest count recorded on white clover was 3800 bees per acre. However, normal concentration under favourable conditions was in the vicinity of 3200 per bees acre. During previous work, when testing the effect on bees of agricultural chemicals, maximum counts were 3100 bees per acre at Hastings (Palmer-Jones et al. 1958) and 4200 bees per acre at Methven (Palmer-Jones and Forster 1958). Bee counts in these parts of New Zealand are thus comparable to counts in the experimental areas. Under existing field conditions the upper limit to bee concentration seems about 4000 bees per acre (almost one bee per square yard).

Apparently there is also a natural upper limit to the bee density on the flowers of a crop. In the case of white clover it appears to be approximately 75 bees per 10,000 flowers.

Little increase in pollination occurred in the cages where very high bee densities were established. Under these conditions bees were unable to leave for alternative nectar sources. Concentrating 20 hives right on the crop gave no marked increase in bees per acre. A similar degree of pollination was seen in a crop a mile from the nearest apiary.

No satisfactory criteria can be established for adequate pollination, since these will vary according to the purpose for which the crop is grown. For example, in pastures grown for grazing, it is probable that a fairly low degree of pollination would provide sufficient seed for regeneration, but in seed-producing areas such as the Timaru district 89-98 per cent pollination was achieved with existing bee coverage. Although it is not possible from these figures to define minimum bee densities necessary for adequate pollination, present results suggest that one hive to eight acres of crop, 2000 bees per acre or 25 bees per 10,000 flowers, is ample.

In the Timaru district, no advantage would be achieved by increasing hive density to one or two hives per acre as is currently practised in some United States white clover seed producing areas.

ACKNOWLEDGMENTS

The authors are grateful to Mr. T. G. Robertson of the biometrics group, Farm Advisory Division, Department of Agriculture, Wellington, for assistance in designing counting techniques. They are also indebted to Mr. L. J. Dumbleton, Entomology Division, Department of Scientific and Industrial Research; and officers of the Farm Advisory Division, Department of Agriculture, Timaru, Oamaru, Fairlie, and Wellington.

It is a pleasure to record the co-operation of the many farmers who provided facilities for this work.

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National Diploma in Apiculture

The Royal New Zealand Institute of Horticulture (Inc.) Examining Board is now receiving formal applications for the granting of Honorary Diplomas in Apiculture. Already several names have been submitted. Authority for the Board to issue these Honorary Diplomas (without examination) will expire on September 8, 1963. Persons not less than 40 years of age who have practised beekeeping for not less than 20 years are eligible to apply. Period of service in H.M. Forces during World War II may be taken into consideration in fixing the 20-year period, where applicable. Any person becoming eligible during the intervening period up to September 8, 1963, is advised to write to the Secretary of the Examining Board now stating this and tentatively registering his name, lest when the time comes he inadvertently overlooks applying until it is too late.

Application forms are available from the Secretary of the Examining Board, Mr. K. J. Lemmon, P.O. Box 450, Wellington, or from any Branch of the National Beekeepers' Association or from any officer of the Apiary Section of the Department of Agriculture.

The Examination Prescriptions are set out in Examinations Approval Notice 1961-162 and a Copy will be readily supplied by the Secretary of the Examining Board to any persons interested in sitting the examination for the National Diploma in Apiculture. The examinations are held in November each year.

Misquoted

The Chairman of the N.Z. Honey Marketing Authority (Mr G. E. Gumbrell) has drawn our attention to an apparent error in the report of the 1962 Association Conference published in our August issue, concerning his remarks on the effect that an extra grant to the Association from Seals Funds would have on the payout to suppliers of the Authority. Mr. Gumbrell states that his reference to ½d per lb. reduction in suppliers' returns related to the Nelson Conference proposal for an increased grant of £2500 p.a. and **not** the Tauranga Conference proposal for an additional grant of £1000 p.a.

SPECIAL APPEAL

On October 31 the Executive placed special submissions before the Hon. B. E. Talboys (Minister of Agriculture) requesting an opportunity for close consultation between the Association and the Department on all matters affecting the vital interests of beekeepers. As a result of these representations the Minister has promised to provide facilities for an initial meeting whereat a full and frank interchange of ideas may be possible on the basic weaknesses in the industry's functioning and the manner in which the Department can best assist the industry in its various problems. Initial planning is for such joint meeting to be held on December 6 and 7, 1962, with Committee sessions on December 5.

THIS MEETING IS VITALLY IMPORTANT TO THE FUTURE OF EVERY BEEKEEPER.

Branches will be aware, however, of the serious financial position in which the Association is at present placed and the holding of this necessary meeting will strain our financial resources to the limit and could well prejudice the Association's work for the balance of the year.

For this reason the Executive invites the aid of Branches and individuals by way of DONATION towards the extra costs which this meeting will involve for the Association. Any assistance will be greatly appreciated.

U.K. HONEY PRICES

The honey season is about to start in the United Kingdom and some hardening of prices is anticipated. In the meantime New Zealand clover and extra light amber grades are unchanged at 185/- plus and 165/- plus respectively. Light amber has firmed slightly at 115/- to 120/- and medium amber is quoted at 90/- to 105/-. Most honey from other sources has remained firm.

(From the Bank of New Zealand Market Review, 26/9/62).

Personal

Congratulations to Dominion Vice-President Trevor Wheeler and Mrs. Wheeler on a happy family event. Already blessed with three sons they have recently become the parents of a baby daughter.

Sir Edmund Hillary and his family have been spending an outdoor holiday tramping and fishing in far away Alaska, as an interlude in their lecture tour in North America. It is reported that Sir Edmund plans to return to the Himalayas in March of next year to establish further schools and amenities in the villages of the Nepal-Tibet border.

Mr. Richard St. Barbe Baker is travelling through New Zealand from north to south on horseback. Mr. Baker looks forward to seeing as much of the country as possible and will be able to pursue his special interest in trees and forestry.

Big Beekeepers

New Zealand's largest beekeeper, Mr. Percy Berry, and his youngest son, Russell, returned recently from a visit to Mexico and other parts of the Pacific. The highlight of the tour was a visit to the world's largest beekeeping firm, Miel Carlota, operated by Arturo Wulfrath and Dr. H. J. Speck in Mexico. This colossal outfit produced 4000 tons of honey last year. Mr. Berry returned by way of Japan and various eastern ports. We hope to be able to publish some of his comments on a most interesting journey.

Carton Specialties Ltd. Open New Factory At Henderson

A new 33,000-square-foot factory has been built on a three-and-a-half acre site in Henderson by Carton Specialties Ltd.

Carton Specialties Ltd., is a subsidiary of Frank M. Winstone (Merchants) Ltd., and markets all of its products through the parent company.

In 1941 Carton Specialties Ltd., built a 20,000-square-foot factory in Manukau Road, Epsom, Auckland, primarily to manufacture round nesting paper containers for packing a variety of foodstuffs, mainly honey, seafoods, cream, meat products and ice cream.

One of the main factors contributing to the expansion of Carton Specialties Ltd., and the need for the new modern factory at Henderson has been the association made about five years ago with the Lily Tulip Cup Corporation of America, which is the world's largest manufacturer of nesting paper cups and containers with an annual production value in excess of £50,000,000.

Carton Specialties Ltd., are now manufacturing a range of paper cups and dishes on American Lily Tulip machinery.

The opening ceremony of the new Henderson factory was performed by Mr L. J. McWain, president of Lily Cups Overseas Ltd., who was introduced to the 200 guests present by Mr Alan Winstone, the chairman of directors of Carton Specialties Ltd., who remarked on the friendly and valuable association his firm was experiencing with the Lily Cup organisation.

In a happy opening speech, Mr McWain congratulated Mr Winstone and the firm on the new modern factory and extended his best wishes for success in the years ahead.

Mr. and Mrs. J. R. Barber engaged in a discussion on honey containers.

Obituary

MR. A. E. DEADMAN

Mr Albert Deadman, who died recently at Tirau, started his beekeeping career as a young man of 18 years of age in the Taumarunui district in 1919. In the year 1920 he was one of the first part time inspectors to be employed by the Department of Agriculture in the scheme to eradicate B.L.

Albert Deadman always took a keen interest in National Beekeepers' Association affairs, having joined the South Auckland Branch in 1920, serving as Secretary to that branch for some years.

Realising the potential of newer areas, he moved to Tirau in 1933 with 600 beehives, purchasing an old dairy factory which he turned into an up-to-date and efficient honey factory.

At the time of his death, aged 61 years, Albert Deadman was running some 1500 hives with the help of his son Maurice and one employee.

The late Mr. Deadman leaves a wife and two children, Maurice and Joyce.

MR. T. MANNIX

Mr. T. Mannix died recently at the age of 72. He started beekeeping in Eltham as a youth and about 40 years ago moved to Waihou, near Te Aroha. At one time he operated about 2000 hives and was probably then the largest beekeeper in New Zealand. Before coming north, Mr. Mannix spent a year with a honey producer in California and adopted many United States methods.

A brother intends carrying on the business until arrangements are made for its disposal.

MR. W. J. TROWNSON

Mr. W. J. Trownson died recently at his home at Matangi.

Mr Trownson was born at Dunedin and was in business as a basketmaker in Wanganui. He then moved to Matangi and was beekeeping there for over 25 years. He was a member of the South Auckland Branch for many years and served a term as president. Mr. Trownson was a keen golfer, but after his retirement from beekeeping took up bowls and chess.

He is survived by his wife.

Fatal Collision

In a tragic accident near Lincoln on August 17 a young Lecston beekeeper, Hohepa Parata Taiaroa, was killed instantly when his light van left the road and collided with a power pole. Aged 23, Mr. Taiaroa had worked for some time with Messrs. Bray and Gossett at Leeston and he was highly regarded by his many beekeeping friends.

Conference Resolutions

REPLIES FROM H.M.A.

P.O. Box 2615, Auckland C.I.
October 19, 1962.

The General Secretary, N.B.A.,
P.O. Box 19, Foxton.

Dear Sir,

Your letter of October 12, 1962, listing six Conference Resolutions pertaining to the operations of the Authority has been referred to the Authority at its recent meeting.

All items with the exception of No. 4 had already been dealt with by the Authority and the respective requests had all been favourably received.

Commenting on each one individually:

(1) Last season's system of advance payments will be continued.

(2) A pro-rata scheme has been introduced for Kamahi, therefore all graded honeys except straight purchases and those grading below 30 colour and/or 75 flavour and/or 1.410 specific gravity will be paid for on a pro-rata basis.

(3) A receipt will be sent to suppliers supplying honey.

(4) It was the unanimous opinion of the Members of the Authority that this remit was lost at Conference and has been included in error.

(5) Six category classifications have been established in the final payment about to be made. Last season there were three.

(6) The penalty on L.S.G. honey from 1.415 to 1.419 has been reduced to ½d per lb. The penalty of ¾d per lb. is retained on honey with an S.G. of 1.410 to 1.414.

Yours faithfully,
C. T. GOSSE,
General Manager.

P.O. Box 2615, Auckland, C.I.
October 19, 1962.

The General Secretary, N.B.A.,
P.O. Box 19, Foxton.

Dear Sir,

In reply to your letter of October 12 requesting the comments of the Authority on the Dominion Conference Resolution concerning the increase of our Annual Grant to £2,000, I have to advise that this matter was considered by the Authority at its recent meeting.

It was anticipated by the Authority that the Minister would, in accordance with his usual practice, refer your approach to the Authority for comment in due course. As the Authority may not be meeting again for some time it was decided that a decision should be made as to the attitude of the Authority so that a prompt reply can be given to the Minister when this approach is made.

The attitude of the Authority was that it was sympathetic towards the request but in view of the reduction of payout to a big section of suppliers due to lower overseas realisations it did not feel justified in imposing what amounted to a further reduction if the seals levy was depleted by an additional £700. When the effect of the amendment to the Seals Levy Regulations has been reflected by increased revenue the matter will be reviewed in the light of the conditions then prevailing. In the meantime, however, the Authority must reluctantly recommend that the request be declined.

Yours faithfully,
C. T. GOSSE,
General Manager.

RECIPE

Honey Sponge Cake

Three eggs, 1 scant teacup honey, 1 teacup flour, 1 small teaspoon baking powder, pinch of salt, 2 dessertspoons cold water. Separate whites and yolks of two eggs. Beat the two whites with the honey till stiff. Beat up the third egg and the 2 yolks, and gently stir into the first mixture. Now fold the flour in lightly, well sifted with the salt and baking powder, and gently mix in the water. Bake in well-greased sandwich tins in moderate oven.

Filling: Two tablespoons each of butter and honey, with vanilla to taste, beaten to a cream.

EXECUTIVE MEETING

A meeting of the Dominion Executive was held in Wellington on October 31, those present being Messrs. J. R. Barber (President), T. S. Wheeler, J. K. Bray, H. Cloake, D. L. Ward and the General Secretary (Mr. R. A. Fraser).

The main business of the meeting was to meet the Minister of Agriculture (the Hon. B. E. Talboys) and submit the industry's concern over various features of production and the services of the Department of Agriculture. A copy of the President's statement to the Minister is published in this issue.

H.M.A. Representative's Report: The Chairman presented a written report on the meeting of the Honey Marketing Authority held in Auckland on October 16 and 17, 1962, and discussion ensued on the various matters referred to therein. The Chairman drew attention to the reduced returns which producers of darker grade honeys would this year receive in view of lower overseas realisations and considered that the position of many of these producers could be serious as a result of the substantially lower returns. He felt that after suppliers to the Authority had received advice of the payout and branches of the Association had had an opportunity of considering the matter that the Executive may well be obliged to give special consideration to their position.

Association Finances: Mr. Cloake drew attention to the serious state of the Association's finances and considered that immediate attention should be given to ways and means of improving the position. Various proposals were advanced and discussed and the history of some previous proposals which had received Conference endorsement was traced. It was considered that as Government was unwilling to sanction any further grant from the seals levy fund and that the industry had consistently opposed any suggestion of increase in the seals levy that a full re-appraisement should be made of the Apiary Registration Fee Scheme which had previously been considered and passed over. The reasons behind the dropping of the scheme were again considered and discussed fully. Amongst other considerations it was recalled that the effectiveness of the scheme as a revenue producer had depended largely on the inclusion of a large number of hobbyist hives throughout the country. The Minister at that time had indicated however, that he would not be prepared to consider legislation introducing a hive levy without substantial evidence of overwhelming support from those who would be affected by the payment of the levy. It was considered by Mr. Ward that if an effort were made the support of the hobbyist beekeepers could be obtained especially as the levy would be an essentially low one. He felt that branches could canvass all registered beekeepers in their areas and obtain a substantial majority of support for the scheme. After considerable discussion it was RESOLVED (Wheeler/Cloake): **"That Mr. Ward be authorised to investigate in his own apiary Registration District the degree of support which all registered beekeepers would accord the imposition of a hive tax to provide the Association with necessary finance to ensure its continuing service in the interests of all beekeepers."** This would be a pilot effort and dependent upon results achieved in his area consideration could be given to the feasibility of extending the survey over the whole country. It was suggested that a percentage of the survey should be conducted by postal questionnaire and a small percentage by personal contact. In this way the effectiveness of both could be gauged in relation to time and money expended in carrying out the survey.

DEPARTMENTAL SERVICES

Following upon the Minister's broad approval of a joint meeting to be held between Departmental and Association representatives arrangements were made for the preparation of submissions stating the needs of the beekeeping industry.

It was further decided that all Branches of the Association be advised that the Executive would be involved in considerable expense in holding a joint meeting with the Department which was of extreme importance to the industry, and that an appeal be made to all Branches and members for donations to assist in meeting these expenses.

SUBMISSIONS TO MINISTER OF AGRICULTURE

Presented by the Dominion Executive in Wellington on October 31, 1962.

Hon. B. E. Talboys, M.P.,
Minister of Agriculture,
Parliament Buildings, Wellington.
Sir,

Over the past 18 months the Honey Industry has been confronted with and continues to face some most serious problems. Problems of lasting, if not growing significance. These matters have not only caused your Department to take most serious measures to meet various difficulties but have also given rise to a new outlook by the industry itself in a rapidly growing awareness of our vulnerability and a strong concern over the part which Government through its Department of Agriculture is playing and might in future properly play in conjunction with producers if the beekeeping industry is to continue its great service to agriculture through pollination and survive as a self-supporting and economic business for those engaged in its difficult pursuit.

BACILLUS LARVAE DISEASE

This is perhaps the most important single problem facing the industry from the point of view of sheer survival. So seriously has the industry regarded this menace that your predecessor agreed to call a special conference between Association representatives and your Department to thoroughly investigate the problem and determine ways and means by which improvement in the disease position might best be affected. The report and recommendations of that joint meeting have had the full and unqualified endorsement of my Dominion Executive and it is our earnest hope and plea that the various recommendations will be implemented without further delay.

TOXIC HONEY

You are, Sir, well aware of the new and serious threat to apiculture which has arisen this year (and will continue) through the passion-vine-hopper and the tutu plant, which, combined, have threatened the closure of vast areas to beekeeping and have involved Government in an expenditure of several thousand pounds in ex-gratia payments to producers. Here again the closest liaison between the Association and the Department has been necessary in order that proper decisions might be made in the interests of consumers, Government and the industry.

AGRICULTURAL CHEMICALS

Not long ago the complete destruction of a large commercial producers' beestocks through aerial application of pesticides accented problems of such importance as to lead to the establishment of an Agricultural Chemicals Board. The danger to beekeeping of new pesticides is a day-to-day one with every new development in the field of farm chemistry and every new introduction of new formulae.

These are but three of very many important and continuing problems on which my Association has been obliged to make strong representations over a relatively brief period. In all cases the very closest consultation between the industry and Government through its various agencies has proved essential to the solution of the problems of the day and has aided the determination of these problems in a manner which has been mutually acceptable and beneficial to all interests. It is a regrettable fact, however, that in all of these matters it has taken the strongest possible representations from the industry to produce a meeting of the parties. This is a statement of fact! We hasten to add, however, that we cast no aspiration on either yourself or your predecessors from whom we have always received the greatest consideration. If we, in all humility, point a finger, we do so at the system of Departmental working rather than at the Department itself. Every joint meeting of Association and Departmental representatives on the problems referred to, has been a joy in the greater

understanding and mutual appreciation of each others position which they have produced. The pity is that these have always been too quickly forgotten and no provision has existed for an automatic follow-up of essential liaison.

One thing is outstandingly clear! That the Department of Agriculture and the producers are joint partners in the furtherance of the industry's welfare. The industry is reliant upon Government through the Department of Agriculture for services which it cannot provide itself. Government is reliant upon the industry for that pollination service which is so important to the welfare of the nation in its high level of primary production and upon which the country depends for its very existence and standard of living. If this inter-relation of interests is accepted then the principle of continuing close liaison must be recognised as a prime requisite to the industry's future and the solution of its various problems. Beekeepers, despite their unique position of importance, do not wish to hold the country to ransom. All they desire is a reasonable return for their efforts and that reasonable degree of assistance from Government agencies which is necessary to ensure an identical degree of security to that enjoyed by other primary producers.

To ensure this position we believe:—

(1) That continuous and close liaison between the industry's administrators and your Department is essential if both the industry and the Department are to achieve that success which modern conditions demand.

(2) That the industry and the individuals who comprise it must accept a greater degree of responsibility than heretofore.

(3) That the number of personnel and specialist personnel made available to the industry by the Department must be increased to meet the challenge of new developments and to complete essential work on long-standing problems.

(4) That the administrative structure of that section of the Department assisting the industry must be so organised as to enable it to work efficiently in the proper performance of its functions.

To elaborate briefly on these points we would submit:—

LIAISON

The vital need for a continuing close understanding and liaison is recognised and expressed in the official report of the joint meeting on Bacillus Larvae disease with a recommendation that a Stautory Advisory Committee be established under section 16JK of the Apiaries Act. The problems of toxic honey and pesticides only give added weight to this view and encourage our belief that a body should be established with more comprehensive terms of reference to include consideration on all of the industry's production problems and the part played by the Department in relation thereto.

INDUSTRY RESPONSIBILITY

As previously stated we acknowledge that the industry itself has a great responsibility in any program of advancement. That we appreciate this point and are prepared to assist your Department in every way possible will be apparent to you upon a careful study of the report on the joint meeting on Bacillus Larvae disease.

STRENGTH OF DEPARTMENT'S APIARY SECTION

Over recent years the growth of problems has clearly demonstrated the weakness of the Apiary section of the Department both as regards numbers and numbers with technical ability. On every occasion that a crisis has arisen (and there have been many apart from those mentioned in this submission) work has been hampered by shortage of staff and/or qualified staff.

ORGANISATION OF APIARY SECTION

Various acts and omissions of serious consequences to the industry over the past 12 months have drawn our attention to a number of apparent anomalies in the organisation of the Section which seriously prejudice that service which the industry might rightfully expect.

We appreciate Sir, that the tremendous calls upon you in the onerous Portfolio of Agriculture must primarily limit your attention to matters of principle or policy and that in detailed matters you must of necessity rely upon the advice and assistance of your chief executive officers and specialists. For this reason we make only two requests of you, which, we feel, fall within the category of principle or policy and so might fairly merit your consideration at this meeting:

(1) That you authorise the establishment of a Research, Advisory and Regulatory Committee under Section 13 of the Department of Agriculture Act, 1953, to comprise representatives of the Department and this Association so as to ensure a regular meeting of minds on the industry's important problems and the measures properly required for their solution. In this, could be achieved that mutual sense of joint ventureship and common responsibility which is so vital to all interests. On past experience it could achieve nothing but good.

(2) That you give your consent in principle to a complete reassessment of the Apiary Section staffing, functions and method of organisation and authorise your Director-General to call a joint meeting for such purpose.

If you would kindly consent to this request then we would hope to have preliminary discussions with Mr. Webb while in Wellington today on the composition of the Committee, suitable dates, format, etc.

We trust, Sir, that you will see in these requests only an earnest desire on the part of the industry to play a full and helpful role in what are our joint responsibilities and for this reason we rest confident in your fair minded reception of these proposals. We thank you sincerely for this opportunity of placing our views before you, and would also like to reiterate our thanks for your assistance in the recent toxic honey crisis and assure you of our absolute confidence in your good self and your Director-General in all matters affecting our mutual interests.

For the National Beekeepers' Association of New Zealand Incorporated.

J. R. BARBER, President.

Honey Marketing Authority

CHAIRMAN'S REPORT

The Authority held a two day meeting in Auckland on October 16 and 17, when a very full agenda occupied all available time. The survey of the past year's trading activities coupled with the Provisional Accounts, the Final Payout for the past season, and the plans for the coming season were the main topics under review.

During the coming season a trial shipment of honey will be packed in 44 gallon drums and white clover honey from the South Island will be received in single tins in a corrugated cardboard outer. The Authority is doing everything possible to ensure a uniform pack and the co-operation of producers will ensure the success of this new medium of supply.

FINAL PAYOUT RATES have been fixed as follows:—

	pro rata Points		
Category A	93.25 and better	equiv. White Clover	15d per lb. pro rata
Category B	91.00 to 93.24	equiv. Clover mixed	14½d per lb. pro rata
Category C	87.55 to 90.99	equiv. E.L.A. 76/85	13½d per lb. pro rata
Category D	79.25 to 87.54	equiv. L.A. 60/75	12½d per lb. pro rata
Category E	75.75 to 79.24	equiv. L.A. 50/59	11¾d per lb. pro rata
Category F	72.25 to 75.74	equiv. M.A. 40/49	11½d per lb. pro rata
Category G	72.24 and under	equiv. M.A. 30/39	11¼d per lb. pro rata
Manuka			8½ per lb. flat
Kamaki			11d per lb. pro rata

CONDITIONS OF SUPPLY SEASON 1962/63

The main points incorporated in the coming season's invitation to supply are:—

Advance Payments:

(a) Preliminary Advance—payable on application and declaration on honey as soon as it is tinned in the suppliers' shed . . £1 per tin

(b) Depot Advance—this will be paid automatically on all honey received into depots other than Auckland upon receipt of the depot's form of receipt . . . . . £1/10/- per tin

(c) Pro rata Grading Advance—payable on grading:

87.55 points and better	11d per lb. pro rata
87.54 points and under	10d per lb. pro rata

(d) Manuka—payable on grading . . . . 6d per lb. flat

(e) Kamahi—payable on grading . . . 8d per lb. pro rata

Pro rata points will be allotted on the basis of 100 points for Kamahi flavoured honey. Colour 85 and better; flavour 85. For each colour or flavour point below 85 one pro rata point is deducted.

LIQUID HONEY

The liquid honey penalty of ¼d per lb. is retained but in the case of personal deliveries to the Auckland store, where special arrangements have been made with the manager, liquid honey will be accepted without penalty.

LOW SPECIFIC GRAVITY

The penalty has been reduced to ½d per lb. for honey with a specific gravity from 1.415 to 1.419. The penalty of ¾d per lb. is retained on honey with a specific gravity from 1.410 to 1.414.

SINGLE TINS AND CARDBOARD OUTERS

These will be introduced but will be restricted to South Island white clover honey.

NEW DEPOTS

A depot has been established at Napier and also at Tauranga. There will be certain restrictions as to the producing areas permitted to supply the Tauranga depot.

Full details on all the above points will be given in a circular distributed to suppliers with their Final Payment cheque and in the Annual Circular mailed to all honey producers.

SALES

(1) **Export:** These have been very good and we will enter the new season with a relatively small carry over. In view of the large intake, this is very satisfactory. As was predicted in my report to the "Beekeeper" last November, honey of light amber grading and lower has shown reduced average returns. A new market in Scandinavia has absorbed a good quantity of last season's production.

(2) **Local:** The sales of "Imperial Bee" remain steady and it has been found expedient to stabilise them at their present level. "Honeygold" sales have risen sharply and a useful amount of this light amber honey has been disposed of within New Zealand.

PLASTIC POTS

Beekeepers will by now be familiar with the new plastic pot which the Authority recently introduced to the retail market. The introduction of this new material for honey containers involved considerable time and expense in overcoming certain unexpected difficulties. Having satisfactorily launched this container on the market, the Authority has now released the clear plastic container for the general use of the honey packing trade.

ADVERTISING

A steady amount of advertising has been done both for the industry in general and for the Authority's packs. On March 1, 1963, we start on a specially prepared advertising campaign. This will be of a very comprehensive nature and should be a big asset to the industry.

GIFT PARCELS

This year orders have been received for 2200 parcels, an increase of 175% on last year. This can develop further still and become an excellent advertising medium in the United Kingdom and elsewhere.

COMB HONEY

Last September a meeting was convened of comb honey producers to consider the question of marketing this honey under a sole agency basis. The unanimous decision of producers was that they wished to continue as in the past. The Authority will therefore be pleased to accede to their decision.

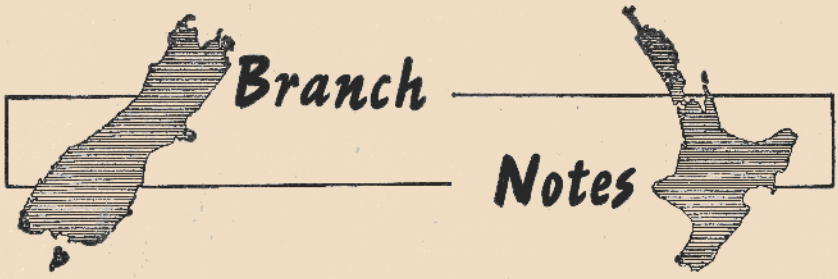
THE YEAR IN RETROSPECT

This has been a particularly busy year and many worthwhile changes have been effected. Detailed costings have shown us where certain weaknesses in our policy lay and we have pursued a policy of enterprise and initiative. When overseas I was able to get first hand knowledge of export marketing problems and there is no doubt whatsoever that the trip was well worthwhile from all points of view.

Several of the changes made in procedure and policy of the H.M.A. have been the direct result of representatives from certain sections of the industry and I would like to express the Authority's thanks for the help and co-operation of these beekeepers. The Authority members are well spread throughout the Dominion and I do urge that you make use of these members at Field Days and Branch Meetings.

I wish you all a happy Christmas and a bumper crop.

G. E. GUMBRELL, Chairman



SOUTH AUCKLAND

Reports during October indicated that the bees generally were rather backward after coming through the winter poorly. It has been a bad season for heather and with a continuation of unsettled weather heavy feeding has been necessary in many apiaries.

BAY OF PLENTY

With Conference fever over beekeepers are once again settling down to real business. Did many beekeepers go back home from Conference with tropical sickness?—I believe General Secretary Bob Fraser and Jasper Bray did, but they called it confounded flu!

Beekeepers are having a very tiring time at the moment with the continuous wet weather. Hive stores are dangerously low in many apiaries. Rewarewa flowering is excellent, and has been some two months earlier than usual. The budding of the rewarewa takes place in the autumn, and with the start of the cold weather bud growth is halted until the arrival of warmer conditions around October, eventually flowering during November. With the unusually mild weather, as was experienced this year continuing into June, the rewarewa budding progressed to such an extent that some trees had flowers on in mid September. Beekeepers with 20 years' experience have never witnessed this previously.

Yields from willow sources this year appear to have been very poor.

On October 25, beekeepers met to hear Mr. Colin Gosse, Manager, N.Z.H.M.A., give an address on the new pro rata final payment on honey, and matters relating to the H.M.A. With the proposed opening of a honey receiving depot in Tauranga, to serve the Bay of Plenty and Rotorua area, the president of the Bay of Plenty Branch and executive members, and Mr. Gosse made an inspection of the various buildings available for storage of honey, eventually finding a suitable building.

—Don Barrow

HAWKES BAY

Thanks to some welcome recent rains most of Hawkes Bay can look forward to a fair season. Bees have opened up well in most districts and local Beekeepers are confident of the coming crop.

Our congratulations to Bill Ashcroft on his re-election to Havelock North Borough Council.

George Gordon leaves for the Empire Games early next week, and is to be one of the three judges for the Boxing. Congratulations from all Branch Members, George!

Percy Berry is safely home from his trip to Mexico, and several calls in the South Pacific.

The Branch should be able to look forward to some interesting meetings, with news of both George's and Percy's travels abroad.

—F. D. Maultsaid, 1/11/62.

CANTERBURY

Our Annual Field Day was heralded a few days previously by a radio interview with Mr Kevin Ecroyd, in which he discussed our forthcoming gathering at the Tai Tapu Domain. He assured the interviewer that although there would be hives of bees present, the public would be quite safe as no one had ever been stung at a field day yet!

Perhaps it was the perfect day or maybe it was Kevin's advance publicity, but by 10.30 a.m. on October 13 the Domain was the scene of summer frocks and groups of shirt-sleeved men

eagerly discussing the prospects of the forthcoming season. It was most gratifying to see so many hobbyist beekeepers present. With a total attendance (children excepted) of nearly 200 persons, some from as far away as the Coast, Timaru and Marlborough, the committee felt that its effort had been worthwhile.

At the invitation of our Branch President, David Penrose, Mr Ivor Forster, Apiculturist of the Department of Agriculture at Oamaru, opened the Field Day, with a very happy speech describing beekeepers' problems. Three practical demonstrations followed, the first by Jasper Bray on the use of dry raw sugar as supplementary feed. A hive which had been wintered on two combs of honey and about 20lbs. of sugar was found to be in good heart. Raw sugar was fed in a top feeder like a lid upside down with a 2in. funnel in the centre. It was emphasised that this method was not suitable for weak or starving colonies.

Ron Newton requcened a hive with a young queen by introducing a nucleus over newspaper and removing the old queen with some brood and bees to establish another nucleus. His practice is to use wintered-over nuclei in August and September on his early areas and with the "exchanged" nuclei rear more queens on the willow flow for introduction in later areas.

Our Apiary Instructor, Mr L. A. Griffin, then discussed spring manipulations to encourage brood production, methods of swarm control by using the Snelgrove board and an easy method of raising a spare queen without using a nucleus box.

Enthusiasm for the craft mounted during the day as was indicated by an auction of surplus equipment later in the afternoon. Tanks, extractors, hives in the flat, capping cans all met with a ready demand and little equipment went back on the vehicle on which it came. Dick Robins, who had done all the hard work preparing for the day, supplied two hives for the demonstrations. One of these sold for £6 10s and three breeder queens in nuclei were keenly sought after, selling for £2 10s to £4 5s. Ten per cent. commission on the sales went to the Branch. The committee agrees that an auction sale will be on the agenda for next year. Who knows, Tom Pearson may sell that uncapping plane again next year!

The highlight of the day was Ivor Forster's address on pollination, illustrated by slides. We are usually concerned with what bees will do for us but today we learned details of their immense value to the farmer and everyone. It is to be hoped that this address will be recorded or filmed for use throughout the country.

Great interest was shown in a demonstration in the series "Beekeeping made easy," part 5, by Tom Pearson, of introducing a queen by yet another method. Cries of "Well, look at that!" "What do you know?" "Probably wouldn't work for me" greeted the amazing acceptance of the queen.

During the day David Penrose and Ivor Forster were interviewed by the N.Z.B.C. representative, who produced a worthwhile tape which was heard in the following week's Farmers' Session. The "Press" likewise reported highlights of the day which appeared at intervals during the week. —J.K.B.

WEST COAST

There was just no winter on the Coast this year, though a very wet October with 13 inches of rain falling on the first 10 days. Result, an early build-up; already I have had phone calls inviting me to take swarms.

Our Field Day held at Mitchells at the south end of Lake Brunner on October 27 was very enjoyable and most instructive; though local attendance could have been better.

Ralph Glasson, after performing the usual Presidential duties, proceeded to give a practical demonstration of pollen value and requirements. In certain Coast areas noted for good quality and fairly heavy nectar yields there is practically no pollen till November and a form of migratory work is necessary. A rough estimate of requirements is four frames of fresh pollen for the build-up.

Along came Mr Hobbs and if Coast folk don't know how to introduce a queen it is perhaps because there are too many accepted methods. The big factor in requeening is not the cost of the queen bought or reared but the loss of crop arising from poor queens. Requeening can be likened to the introduction of a new wife to a home —choose the time and methods wisely and all will be well!

Following lunch Mr Richardson, one of our up-and-coming young beekeepers, open up a symposium on ways to make and preserve field equipment—something not easily done at a large gathering as it tends to get out of hand!

Continuing the program Mr T. Holland discussed for the benefit of the small or back yard man the debatable value of Split board, Division board and Snelgrove board. Admittedly, these are sometimes laughed at yet many small folk would profit if such articles were used more at the right time. One thing certain is that though our own womenfolk have learned to tolerate bees this may not be so next door, so we have to manage our stock in a manner to avoid making a public nuisance.

Ron Buchan spoke briefly on his experience with an improved queen bank, and somewhere in between was a frame wiring and embedding demonstration by Jack Fitton, also many useful hints from our ever-welcome Canterbury visitors.

A tip for embedding foundation—a couple of sheets of blotting paper or damp cloth on top of the block over which one lays foundation reduces the risk of cutting if the power is rather hot. —Tom Holland

SOUTH CANTERBURY

A field day for beekeepers, which was to have been held at the apiary of Mr. J. G. McKenzie at Kelcy's Bush on November 3, had to be held in the Methodist Church Hall on account of the weather.

This meant changing the program somewhat, but keen interest was shown by the 52 beekeepers present from as far north as Christchurch and Lake Hawea and Kyeburn in the south.

A welcome was extended to all the visitors by the branch President (Mr. H. Knibb, of Geraldine). This was followed by the screening of most interesting films on beekeeping by Mr. I. Forster, Apiculturist of Oamaru, and Mr. Vincent Cook, Apiary Instructor, also of Oamaru. Following this, a short address was given by Mr. H. Cloake, of Timaru, on matters dealing

with a recent meeting of the National Executive, of which Mr. Cloake is a member. This informative talk brought us to the lunch adjournment. It was at this stage our worthy President, who was to have brought the tea and sugar, discovered he had left it in Timaru in his own car, which he left there, continuing his journey with our Secretary, Mr. R. Davidson, of Timaru.

This matter was soon rectified by a walk up the street for tea and sugar but it was not only the President who was absent minded because the Secretary left his case of books behind as the writer discovered when clearing up the hall; never mind, these men have a lot to think about.

After lunch a talk was given by Mr. G. Gumbrell, chairman of the H.M.A., who gave us up-to-date information, and was thanked for his address.

This was followed by Mr. I. Forster on queen bee rearing and selection of a breeder queen. A demonstration by Mr. V. Cook on queen bee raising, using empty hives to show different set-ups for queen bee raising on a large scale, proved very interesting and brought forth many questions from experienced beekeepers.

Next on the list was a demonstration by Mr. K. Tudor, of Hawea, of transferring larvae from a brood comb to artificial wax cell cups. To pick up the small larvae Mr. Tudor used the end of a feather and one had to see him in action to believe the job could be done so quickly. Ken has certainly mastered the art of grafting and thanks were expressed to him for his demonstration.

The gathering then moved outside to the back of the hall where Mr. Allan Ward, of Hawea Flat, had some baby nucs on a truck complete with bees and queens. Mr. Ward fully explained the use of Baby Nucs in queen raising and of special interest was the fact that the nucs were made from 10lb. honey tins, which he claimed were quite successful. Mr. Ward answered many questions and his talk was much appreciated, especially as he had travelled 150 miles for our benefit.

After further general discussion the members enjoyed afternoon tea served by the ladies, which was very much appreciated. Altogether a very happy spirit prevailed and all present found the day very worthwhile and for the time being the gloomy skies were forgotten.

I cannot close this report without making special mention of the work of Mr. I. Forster and Mr. V. Cook, who had made four or five trips at least up to my apiary at the bush and had prepared 10 hives for various demonstrations and had worked under atrocious weather conditions, getting drenched to the skin. On one occasion in pouring rain they arrived on my doorstep clad in overalls and gumboots and informed me they had just been up at the bush grafting queens. I gave them one look and called to my wife to put a cup of tea on quickly as they certainly looked in need of a reviver.

We are fortunate to have men who will work under such conditions for the benefit of beekeepers in general.

It was indeed unfortunate that their effort was spoiled by the wet weather. However, the 36 cells raised will be put out tomorrow and will not be wasted. We trust next time the weather will be more kind and we can meet at the apiary. —J. G. McKenzie.

NORTH OTAGO

The prospects for the coming season in North Otago are good. There was an average willow flow to set the hives going and we have just had a good rain which has added further to the picture. All we require now is the good weather, as the hives have wintered well and are in good heart.

Preliminary arrangements are well in hand for next year's Conference and fuller details will be given in the next issue of the Journal. However, if any member has any problem please contact the Branch Secretary.

It is with regret that we record the death of one of our members, Mr Gordon Rawcliffe, on October 29, aged 52 years. Gordon took over the beekeeping business of Mr Roy Paterson when the latter left Corriedale, and since that time he has been a very successful beekeeper. Three years ago he retired to a farm in Ardgowan but he kept a few colonies to retain his interest in beekeeping. As a long standing member of the Branch he was well known in local activities and will be missed by his many friends in beekeeping circles. Mr Rawcliffe is survived by his wife and two daughters.

—Stan Wilson

Notes for Beginners

Once again the season's inspecting of apiaries has been completed and, as usual, the joys and trials of the beekeeper have been rehearsed in great detail. What a pleasure it is to meet those beekeepers who take an interest in their bees and equipment but to see some apiaries makes me want to stand on an apple case and make a speech. Poor equipment robs some beekeepers of much of their crop.

Bottom Boards

Rotting bottom boards are the foundation of many a poor hive. The mouse loves a warm home for the winter and with a table amply spread with pollen and comb, he has everything he needs and he can live in luxury while the beekeeper loses heavily.

Supers

Too many supers have rotten and broken corners and too few nails. Some have only four nails at each end. It takes 24 nails to hold a super together and 28 will do the job better —seven at each corner and let the nails be 2½ inch flat heads—galvanised or cement coated. A well made, properly painted super is an investment but a poorly assembled super soon loses profit for its owner.

Frames

Frames of drawn comb where mice have built nests soon have large patches of drone comb and all the work spent by your bees in raising drones would be much better spent in collecting nectar. You cannot tell the works foreman to direct your thousands of employees what they must do but you can give them the conditions where they will be glad to do what you want them to do. Frames of worker comb are money-savers.

Nine or Ten Frames to Super

There are still occasional old-fashioned domestic beekeepers who keep each super choked with 10 frames and the apiary inspector, despite all his care, cannot help lifting the top bar from an occasional frame while the supers with nine frames never suffer that way. Nine frames in the two bottom supers of brood and eight frames in the honey supers is the accepted practice with some of the most successful commercial honey-farmers these days.

Lids

A folded sack or a piece of roofing iron held down with half a dozen stones does some sort of a job but the lid that does the job properly is weather proof outside and has ventilation inside. Too many lids are failures because they don't do the two jobs of keeping the rain out while still allowing ventilation at the top of the hive.

Location

Just beside a row of trees seems to be the most popular place for a row of hives. It has many disadvantages and I notice that the colonies out in the open usually winter better. When working with hives close to trees, there are branches to be dodged and roots handy to stumble over. If winds sweep through the trees, the situation can be draughty and far from ideal.

Colony Management

Too many colonies were struggling to keep warm through lack of honey and pollen from last season and empty supers over the top of the cluster left too much air space where the bees lose their heat. The colony should be wintered in as few supers as is necessary to live comfortably and the supers can be added as the brood expands and as the honey harvest increases. Some of the colonies were only strong enough to be nuclei and they will probably not get more than enough stores to carry them over next winter. It is far better to have six hives that each have three supers full of bees at the beginning of the honey flow than 15 hives of one super strength. Every year, just at the start of the

honey flow, I unite all colonies of less strength than two supers full of bees to other colonies.

Colony Temper

All bees sting and the bee that hasn't enough spunk to defend the colony properly won't put much energy into collecting nectar but there are willing defenders and bad-tempered marauders. There is a difference. What a pleasure it is for the inspector to waft a wisp of smoke across the front of a hive and then set to work to check for disease without waves of Stukas diving at him all the time.

Some small beekeepers carefully note the behaviour of their colonies and breed from those that show the best characteristics. This selective breeding has rewarded them with a gentle bee that gathers a profitable crop. It is worthwhile for their enjoyment of their beekeeping and certainly it helps the inspector to enjoy his visit.

Between the heap of rotting frames and supers sitting on pieces of roofing iron that makes the apiary inspector spit sparks (but he can do nothing more unfortunately) and the immaculately kept apiaries of the enthusiasts, there runs a procession of hundreds of colonies in varying degrees of success. Viewing them in retrospect, the sum up would be that many of the small beekeepers would benefit from studying a few elementary books on beekeeping and by closer attention to good equipment.

Too many of these beekeepers will not read these notes as they are of the type that is mostly interested in keeping some hives of bees to get some honey. A study of some useful literature would show them how to keep less bees and get more honey.

Now That's a Good Idea!

This exclamation from one beekeeper when he sees a gadget used by another happens quite often but too often the "great idea" does not become very widely known unless it is shown at a Field Day or is described in the Journal. One beekeeper found that his colonies were sometimes knocked about by sheep. He therefore made the bottom boards without cleats and made the sides and back of the first super ¾in deeper. This bottom board he then nailed direct on to the extra deep super. The sheep, when brushing past, don't knock these hives about because the whole hive moves—bottom board and all.

Book of the Season

If the beginner in beekeeping looks for a suitable book, he finds it difficult to find one that is just right for New Zealand conditions and one that is written in language simple enough for the learner to understand.

"Beekeeping in New Zealand," produced by the Department of Agriculture, will earn its cost of five shillings many times over. It has many of the answers—specially for New Zealand.

A New Queen

Many and varied are the methods of introducing queens and here is yet another to add to the list. At the recent Field Day in Canterbury, Mr. Tom Pearson demonstrated a method which has been used by Mr. A. E. Spriggs of Oxford for many years. With a mustard tin he scraped some bees off a fairly thickly populated comb from the hive into which he was introducing the queen. These he placed in a 1lb honey jar with the young queen and sprinkled them with a very weak solution of sugar syrup. The lid with some holes for ventilation was screwed on and the jar placed on the shady side of the hive. After ten to fifteen minutes the jar was emptied into the now dequeened hive and presto! the bees could be seen fanning vigorously and cleaning up the new queen. —J.K.B.

Griff's Graphs

Mr. L. A. Griffin, Apiary Instructor in Christchurch, has an amazing graph of the honey production in Canterbury which shows that the seasons run in definite cycles. This year we are due for a bumper, and next year, a super bumper. Beekeepers, after three dud seasons out of four, are almost convinced there is something in it. Well, with a little more rain (and according to averages we are due for it) the stage will be set for it. Griff, we hope you are right! —J.K.B.

Plastic Frame Trials

By G. de la M. NICHOLS, Scientific Officer,
Ruakura Animal Research Station.

Six plastic frames were acquired for tests at the beginning of November, 1961. The plastic frames together with control frames fitted with normal wax foundation (fig. 1) were placed in various colonies. The frames were inspected at intervals from November, 1961, to January, 1962.

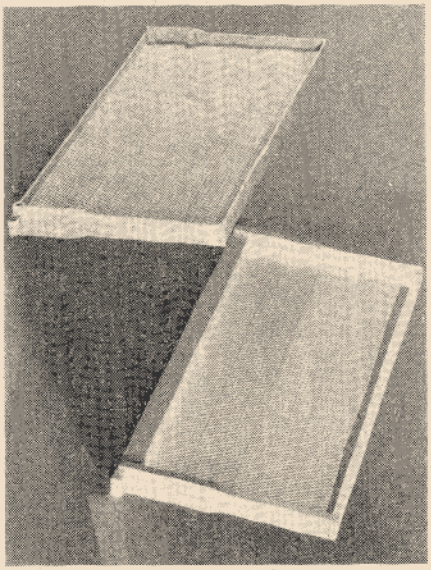


Fig 1: Plastic frame and foundation compared with normal wooden frame and wax foundation.

Experiments

(1) A very strong colony in three boxes was selected at Ruakura on November 2, 1961. Plastic frames and normal frames with wax foundation were placed in the bottom and middle boxes, the plastic frames occupied position four of the nine frame boxes and the normal frames occupied position six. Position five in both boxes was filled with a frame of brood.

A week later, November 9, the wax foundation had been half completed on either side in both boxes. The plastic foundation in the bottom box had a small ellipse of wax 2in x 1in drawn out on one side, and nothing on the other side. The plastic foundation in the middle box had a 3in x 1in patch of wax drawn out on one side, and nothing on the other side.

At the end of a fortnight, November 16, both wax foundations had been beautifully drawn out in worker comb and were occupied with worker brood. The plastic foundations both had two pieces of comb about 4in x 3in on one side with a few smaller pieces of comb, whilst the other sides were still untouched.

At three weeks, November 23, the bees had made some horrible drone combs hanging away from the plastic foundation on one side, whilst the other side had the beginnings of some good worker comb. The bottom frame contained pollen and the middle frame contained honey.

On December 5 the drone combs were worse on one side, whilst the

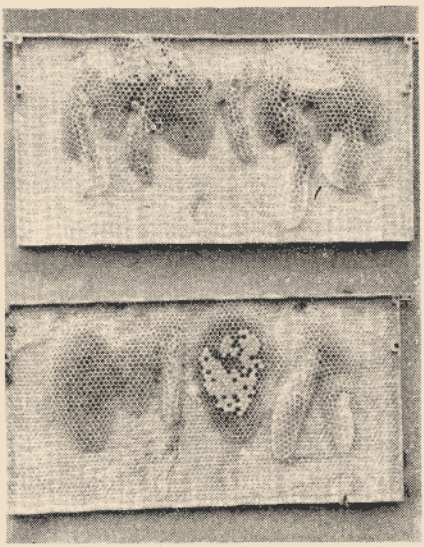


Fig. 2: Two plastic frames with hanging slabs of drone comb.

Fig. 3: A plastic frame with good worker comb filled with honey.

other side was partially pulled out in good worker combs. The remainder of the good sides had the plastic hexagons outlined in wax. No further progress was made and the combs were removed for photography (fig. 2).

(2) The second experimental hive at Scotman's Valley was very strong in three boxes at the beginning of the experiment on November 5, 1961.

Three plastic frames and three normal wax foundation frames were placed one pair in each box in positions four and six as before.

By December 9 the experiment had followed the same course as in the first hive at Ruakura for the bottom and middle boxes, but the plastic foundation in the top box was being pulled out in beautiful worker comb on both sides.

On December 14 the plastic foundation was completely pulled out, and on January 9, 1962, it was full of honey (fig. 3). This frame was placed in the extractor with other normal combs of honey, and the extractor was driven fast enough to smash the normal combs. The plastic comb was undamaged.

The other two plastic frames had raised slabs of drone comb on one side away from the plastic foundation, and a fair amount of good worker brood on the other side.

(3) For the last of the six plastic frames a colony was selected which had arrived as a swarm on November 5. The frame was put into the middle of the cluster on November 17 after the initial wax building and removed untouched on November 24 as a new swarm had been taken from the Waikato Hospital.

It was placed in position in the middle of the cluster on November 24 with ordinary wax foundation on either side.

By December 24 one side was pulled out in the usual slabs of drone comb, whilst the other side was covered with fairly good worker comb.

Conclusions

(1) Five very poor combs and one very good were produced on plastic foundations.

(2) The one good frame filled with honey showed exceptional strength during extraction.

(3) The poor combs showed remarkably similar patterns: Hanging slabs of drone comb attached at intervals to the plastic foundation on one side, and good worker comb nearly complete on the other side. Now, it was noticed on receipt of the frames that the plastic foundations were covered with traces of bees' wax. It seems very probable that the manufacturer had failed to coat these five frames with sufficient wax, whilst the sixth had been coated correctly.

Further Experiments

It is intended to strip the five poor combs of wax and to re-coat the plastic foundation properly. The experiments will be repeated in the 1962-63 season.

What To Do When The Queens Arrive

By CHRIS DAWSON

Does Royalty arrive just when it is wanted? Certainly not! It's either a couple of days too soon or a week too late. To keep the queens in good condition until needed is now the problem. It is not difficult. It is too sad to hear that a beekeeper received his queens in good condition but he . . . "placed them on a window ledge in the sun and they all died," or . . . "kept them on the rack over the stove and the candy melted," or some other murderous procedure.

The easiest way is to cover the candy hole with something the bees cannot chew through (a broad rubber band will do) and then place the cages in a colony from which the queen has been removed. The cages can be stacked between frames of brood or laid gauze side down over the frames in contact with the cluster. The bees of the colony will keep the cages at the correct temperature and feed the queens, and even after all the escort bees have died, the queens will be thriving.

A better way is to place the cages in a colony after the escort bees have been removed. To remove the escorts, open the cage close to a window. The bees will fly to the light and if the queen escapes she can be replaced in the cage. Pack the cages in an empty frame, candy end down (they can be tied in with wire). Divide a two-storey colony and place the queen in the lower storey. Cover with a queen excluder and then in the second storey place the cages of queens amongst the brood and stores. The bees will feed the queens and keep them in good condition for a long time. Be sure they have ample stores if there is no honeyflow.

When taking queens without escorts to be introduced to colonies, the chance of being chilled is removed if the cages are carried in a nuclei.

If the queens do not arrive just when you expect them, do not be too hasty in blaming the queen breeder. When he accepts your order, he does so in good faith believing that he will be able to deliver as promised. His promise is based on his experience of past seasons and his previous production program. Should an unusual spell of weather or some other unallowed-for contingency arise, he may not be able to keep his promise but he makes his greatest effort to do so and he appreciates the thoughtful consideration of those who make due allowance for these happenings.

Swarm Control

A recent series of articles by R. L. Venables in 'Bee Craft' puts forward the theory that the queen alone takes the initiative in the swarming process. He compares honeybees with other related insects (ants, wasps and bumblebees) whose queens set up new colonies of their own volition. In the tropics queen wasps from perennial colonies are sometimes accompanied by workers in founding new colonies.

Working from this point Venables investigated the idea that queens respond to the influence of light, acting on the ocelli, which are situated between the compound eyes, near the top of the head. Normally averse to light, the queen at certain phases of her life is attracted to it (positive phototaxis) and this incites her to leave the hive on mating flights or with a swarm.

Venables then experimented with swarm control by removing the light stimulus from the queen. First he tried blacking out the hive, using light baffles, but he found this hardly practicable. Next he tried painting over the ocelli of the queen to keep out the light stimulus, using a plastic enamel paint containing amyl acetate as a solvent. This he believes to be the solution to the problem of swarming. In trials extending over three seasons he claims that the system has given him complete success.

Control of Swarming

By M. W. BROOKER

Since reading in the November, 1961, issue of the tests on the "Apidictor," the electronic swarm predictor devised by Mr. E. F. Woods, I have felt moved to write to you on the subject of swarm control. Although I have not used the "Apidictor" I saw it demonstrated in 1955 by Mr. Woods at a concourse of beekeepers in Surrey before I came to New Zealand. You rightly observe that there does not seem to be any practical merit in a device which detects, however reliably, that a colony has developed the swarming impulse, for according to conventional methods, it is then too late to do anything useful about it. However, it is here where I would like to draw attention to a method, devised by Mr. L. E. Snelgrove, which may not be well known to your readers, but could well provide the answer. It was described by him at the same beekeeping concourse mentioned before and later published by him in the tenth edition (1956) of his work on the subject: "Swarming—Its Control and Prevention." I had already made much use of one of his earlier methods and had found it to be absolutely reliable. My experience with the newer method, limited to two seasons in England, but encouraging, induced me to try it also in New Zealand. The earlier methods have the disadvantage that the young queens are raised under emergency conditions, whereas it is better to have naturally raised queens, that is those produced either under the natural swarming impulse, or by supersedure. This is where Mr. Snelgrove's latest method is better, for the young queen is naturally raised.

The Method

The method may be briefly described in its consecutive stages as follows:—

(1) In the previous or early in the present season, arrange the brood compartment to consist of one box of deep combs surmounted by one half depth box with shallow combs. As the season advances add queen excluder and supers as required.

(2) Examine every six or seven days for queen cells by separating the two brood boxes, by tilting, preferably with the help of an assistant, or use of some mechanical aid. If queen cells are under construction, some are practically certain to be visible here.

(3) When queen cell building is observed, examine the combs more closely and determine when the first cell is likely to be sealed, that is, the earliest date for the prime swarm.

(4) Insert a "Waldron" type queen excluder under the lower brood box two days before the expected swarm date. A section of excluder across the entrance is unsuitable, as it will choke with drones.

(5) After the colony has attempted to swarm, but unsuccessfully owing to detention of the queen, find her and place her in a box on the same site, still over the Waldron excluder, and provided with foundation frames and drawn combs, preferably containing some stores, but no brood or eggs. The queen will be happier if accompanied by some bees from the comb on which she is found.

If it is not known for certain whether there has been an attempted swarm make sure, while finding the queen, that some of the queen cells are sealed. This is essential, as Mr. Snelgrove points out, and as my experience will illustrate. If there are none sealed, but only signs of breaking down, a rare possibility, it would be best to leave everything as at stage 4 and try again a few days later. This will establish whether the impulse is still present.

(6) Assuming that all is straightforward and the queen is now in the new box on the original site, arrange the other boxes on a second floorboard close to the side of the queen's box, and facing the same way. Assemble these boxes, including supers, in their original order and roof over. Flying bees will join the queen and thus form a strong artificial swarm, which will give up the idea of further swarming.

(7) After not more than seven days check that the queen is laying normally, remove the excluder from under the swarm and place it above. Transfer the supers with bees from the brood stock to the swarm.

(8) At the time when the first young queens should be emerging, move their hive to the other side of the swarm. If increase is required move it to a more distant location. This will further strengthen the swarm and lessen the risk of casts.

(9) If increase is not required wait till the young queen is mated and has developed a good quantity of brood, having limited her to one box, and then unite with newspaper to the swarm. The young queen will depose the older, particularly if placed on top. The united stock will become very strong, but having now a young queen will not swarm again in the present season.

If increase is not required, stages 6 and 8 may be carried out without the extra floorboard and roof, by the use of the Snelgrove screen board, described in his book.

An Experience

To complete the story I must recount my experiences in using this method in New Zealand. In the 1960-61

season I made the mistake of not starting the inter-brood examination early enough. In England the date for commencement of this operation was towards the end of May, and so I proposed to start in November. However I lost a prime swarm late in October and decided to profit by the experience next season. In the 1961-62 season I started inter-brood checking early in October and detected queen cell construction two weeks later. Careful examination showed that one rather small cell was already sealed and several others were in the early stages. An excluder was put under the lowest box immediately. A few days later it was assumed appropriate to perform stages 5 and 6. Subsequent happenings showed that I had acted about two days too soon, and that the sealed cell was either unoccupied or its occupant dead, for it failed to hatch out a queen when it should. The artificial swarm was found to be raising queen cells, and therefore I had to repeat the stage 5 operation. This time I witnessed one of the attempted swarms, and after performing stages 5 and 6 for the second time, early in November, the impulse died out as it should. In due course I had two strong nuclei headed by young queens. The second one was used to strengthen a weak stock. The first one was united on Christmas Day, with the swarm, which was thus requeened. The total yield taken from this hive, progressively during the season, was 175lb. The best yield I obtained from one of several similarly worked hives in England was 130lb.

The easy application of this method on a commercial scale would, I feel, justify the use of the "Apidictor," to facilitate stage 2, and preferably some simple device for placing the Waldron excluder screen board under the brood boxes.

Book Review

Anatomy and Dissection of the Honeybee, by H. A. Dade

This excellent book is designed for beekeepers, naturalists and students who do not have the scientific training which is necessary to appreciate Snodgrass's monumental work 'The Anatomy of the Honeybee.' Mr. Dade, who is an expert in microscopy, established a reputation as a teacher in the University of London and he discusses his subject with an eye to clarity and simplicity.

The first part of the book is an outline of the anatomy of the bee, its evolutionary background, external features, nutritional processes, and respiratory, nervous and reproductive systems. The second part discusses the dissection of bees; the equipment and technique used in 'unpacking' the contents of the body by dissection as a form of practical study. The illustrations are very clear and there are 20 full-page plates which are arranged to unfold so that they remain in sight while pages are turned. Published by the Bee Research Association, 678 Salisbury House, London Wall, London E.C.2. 180 pages. Price 30/-.

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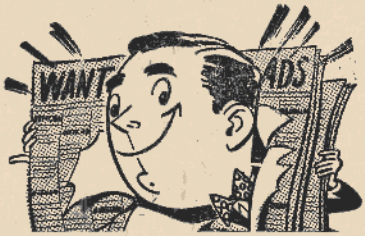

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Catkins of the straight willow, a well known source of pollen and nectar in early spring.

—Photo by C. R. Paterson.