

DEPARTMENT OF AGRICULTURE HORTICULTURE DIVISION

ADDRESS BY MR A. M. W. GREIG, DIRECTOR, AT THE 1956 DOMINION CONFERENCE

Mr President,

This year is a jubilee year for Southland because it is 100 years since this city of Invercargill was founded. It is also a jubilee year for Southland beekeepers because it is 50 years since this Association was formed.

It is therefore appropriate first of all to make a review of beekeeping by decades for the past 50 years.

The first registration figures available are at March, 1918, when 4,474 persons registered apiaries with a total of 50,721 hives of bees.

By 1926 there were	7,100	apiaries	and	99,855	hives
" 1936 " "	8,500	"	"	135,000	"
" 1946 " "	10,457	"	"	140,700	"
" 31-5-55 " "	11,166	"	"	180,409	"
				held by	5,237
					beekeepers.

So in the half century whilst the number of beekeepers has increased by 17% the number of hives they have operated has increased by 255%, or more than 2½ times. Today beekeepers with 30 hives and over operate 159,618 hives, or 83% of the total hives in the country.

There is a definite trend towards consolidation of hive holdings by commercial beekeepers, and also a movement of many apiaries to the more productive areas, where better grade honey is likely to be produced.

Production of Honey and Beeswax

The average annual production of honey and beeswax for the past five years has been 5,180 tons of honey and 166,600lbs. of beeswax. The record season was the one before last—that is, 1954-55—when 7,000 tons of honey and 245,000lbs. of beeswax were produced. This past season—1955-56—the production was below average, final figures being 4,600 tons of honey and 161,000lbs. of beeswax. Very difficult beekeeping conditions were experienced in most districts due either to unsettled conditions or the prolonged dry spell experienced in Canterbury and most of Otago. Beekeeping conditions were relatively better in this district—coastal Southland.

For the year ending 29th February, 1956, the Departmental Honey Grader, Mr R. S. Walsh, graded 34,470 cases of bulk honey, each case being 120lbs. net. This honey was received at the depots at Auckland, New Plymouth, Christchurch, Greymouth and Dunedin, and was 9,138 cases more than in the previous year. Bulk honey to the number of 1,286 cases could not be exported because of its low specific gravity. The quantity of honey which fails to reach the minimum grading standard is decreasing and was only 4 tons last year—a considerable improvement on the previous year, when 14½ tons were rejected.

Staff

During the past year a number of transfers of Apiary Instructors has taken place.

Mr F. Bartrum resigned to take up commercial beekeeping in Canterbury, and Mr L. A. M. Griffin was transferred from Hastings to Christchurch.

Mr S. Line, Apiary Instructor here at Invercargill for the past 7½ years, was transferred to Hastings, and Mr D. W. A. Seal, from Greymouth was transferred here to take Mr Line's place.

West Coast producers will be pleased to learn we have now appointed Mr R. G. Hobbs, of Palmerston North, to the position of Apiary Instructor, Greymouth, where he hopes to take up duty on 8th October. Mr Hobbs has had 23 years as a beekeeper, handled 1200 colonies, and for several years was Chairman of the Manawatu Branch of the National Beekeepers' Association.

An important step has now been taken by the Department in its service to the beekeeping industry, in the appointment of Miss L. H. McDowall as Botanist to the Horticulture Division. Pollen analyses of honey were previously carried out to a limited extent by Miss D. B. Filmer at Wallaceville and Mr W. F. Harris, then of Botany Division, D.S.I.R. Last year, Miss McDowall had a short period of training with Mr Harris, who had just returned from a trip overseas during which he collected much valuable information on the types of survey work undertaken in Switzerland, France and England.

A comprehensive survey of the New Zealand honey-producing districts has now been planned. This is necessarily a long-term project as the work of preparing reference pollen slides, district plant lists with information on flowering times, and examination of a number of normal honey types from each area has to be done in addition to Miss McDowall's other work on horticultural botany and plant quarantine. An initial survey has already been carried out in the South Canterbury-Central Otago district, and it is anticipated that the amount of basic work required will decrease in the remaining areas to be visited. As these surveys are completed, the Department will be in a stronger position to assist the industry in overcoming problems such as undesirable nectar sources, which may be wholly or partly elucidated by the use of botanical methods.

In my opinion the most important staff move last year was the overseas visit of the Bee Research Officer, Wallaceville, Mr T. Palmer-Jones. This is the first time, as far as I am aware, that a research worker who spends all his time on beekeeping problems has gone overseas and seen what his associates on kindred problems are doing. Mr Palmer-Jones was absent from New Zealand for eight months last year and in that period he visited Italy, Switzerland, France, the United Kingdom and the United States. He made some investigations on behalf of the Honey Marketing Authority, and the Government appreciates the grant made by the Authority towards the cost of these overseas investigations. Whilst in Britain, Mr Palmer-Jones met a number of people I had met in 1952, including Dr. C. G. Butler, Head of the Bee Department, Rothamsted Experimental Station, Harpenden, and Mr Milne, the senior advisory officer to beekeepers in England. In addition he visited Auchincruive, the West of Scotland Agricultural College in Ayrshire, near Burns' birthplace at Alloway, and these personal contacts made his departmental report of particular interest to me. I have read this report very carefully and I shall make frequent references to it in my remarks today because it is my opinion that his visit was well worth while and that he has brought back to New Zealand, not only techniques of use to him as a research worker, but also practical hints of use to beekeepers and to the Department's Apiary Instructors. He attended a summer school for beekeepers in West Sussex and a four-day course in Warwickshire for the Apiary Instructors of the United Kingdom.

Advisory Work

During the past year, 114 lectures and demonstrations covering a wide range of subject related to beekeeping were given by members of the apiary section. Nineteen well illustrated articles appeared in the "Journal of Agriculture" and 12 radio talks were given. In addition a two-day farm

school for North Island beekeepers was held in Hamilton in August, 1955, the theme being "Advanced Methods in Apiary Management and Honey Harvesting."

To investigate another local problem, Mr Palmer-Jones when in Devonshire visited Buckfast Abbey, close to Dartmoor. There he met Brother Adam, an efficient beekeeper who has specialised in producing and extracting heather honey, which in many ways resembles New Zealand manuka honey, especially in being difficult to extract.

Apidictor

One very interesting piece of equipment seen by Mr Palmer-Jones and one which may have definite value to commercial beekeepers in this country is the apidictor, an instrument designed by a sound engineer, Mr E. F. Woods, of the British Broadcasting Corporation, which he claims will detect preparations for swarming in bee hives. Every year commercial beekeepers are involved in a laborious job dismantling and examining their hives regularly in order to prevent swarming, as this weakens the hives, thus reducing the honey crop. An apidictor consists of a microphone which is inserted into the hive entrance and this picks up the special sounds the bees make in a hive when preparing to swarm. These sounds, picked up by the microphone, are relayed to the beekeeper through an amplifying and screening equipment, and thus the beekeeper knows which of the hives in his apiary require attention. By arrangement with Mr Woods, two of these apidictors are now in New Zealand for experiments this coming spring. If successful I'm sure the apidictor will be of great value to commercial beekeepers in New Zealand.

Inspection of Apiaries

It is pleasing to note that American foulbrood, the most serious bee disease in New Zealand, is now reduced in the main honey producing areas to less than 1.8%, and in some areas it was present in less than $\frac{1}{2}$ % of the hives inspected. This situation is largely due to the policy of destruction of diseased bees and sterilisation of the remaining hive equipment, combined with the regular inspection carried out by Apiary Instructors and part-time Inspectors. Four thousand five hundred and ninety-nine visits of instruction and inspection for disease were made last year. This coming spring the work will be continued, and the emphasis will be on those areas where the disease is comparatively most troublesome.

Whilst on the subject of bee diseases, I must make reference to acarine. This disease, regarded as the most serious of all bee diseases, is at present unknown in this country. Without treatment a hive suffering from acarine is certain to die in one or two years. We do not permit the entry of honey bees into New Zealand from countries where acarine is known to exist, and when queen bees are imported the attendant bees are dissected and examined at Wallaceville for signs of the disease before the queens are sent on to the importer. This system is normally perfectly satisfactory but is not proof against an individual who deliberately sets out to evade it. If all bee importers adhere to the existing bee quarantine procedure through the Wallaceville Research Station we may remain free of this disease for an indefinite period. However, with the speed of modern fast air travel a passenger could easily smuggle in a queen bee from Britain. One instance of this type has already occurred where a queen bee had been brought in, without passing through the quarantine procedure and had been established for some months in a hive before it was discovered and the hive destroyed.

Despite all precautions it is possible that acarine disease could be discovered in New Zealand and it is vitally important that an eradication campaign should have been prepared before such an occurrence and be implemented promptly. Mr Palmer-Jones has discussed this subject overseas and I should appreciate the opportunity to discuss departmental

proposals with your Executive during the coming year so that we could co-operatively tackle such a problem efficiently and promptly. Let me emphasise again that with bee quarantine, and in the eradication of a new and serious disease such as acarine, the co-operation of every person interested in beekeeping is essential—first of all to keep New Zealand free from this disease, and secondly, if it does occur, to eradicate it as promptly as possible.

Agricultural Chemicals

Whilst overseas we asked Mr Palmer-Jones to see how the increasing use of agricultural chemicals toxic to honey bees was affecting beekeeping in various countries and what steps were being taken to protect bees and beekeepers.

In Italy Mr Palmer-Jones reports that insecticides are becoming a menace to bees and are being applied from the air.

In Arizona, U.S.A., bee mortality has been caused by dusting cotton, lucerne and melons with insecticides. In Arizona the application of insecticides is controlled by a board consisting of representatives of farmers, university (research and advisory work) and the beekeepers.

In California last year, 4,000,000 acres were dusted with what they call pesticides, of which 12,000 were registered.

As you know, samples of bees are occasionally sent to Wallaceville, where the Toxicology Section determines whether or not they have died through the use of agricultural chemicals.

The chemical analyses necessary are laborious and recently simple biological tests using living creatures have been developed overseas with a view to decreasing the time required.

These tests will not tell what particular poison killed the bees but simply that they were poisoned. But they can be applied first and so prevent the chemist wasting time looking for poisons which do not exist.

Two of these new biological tests which Mr Palmer-Jones learned about overseas depend on the use of crickets and shrimps. The use of the cricket as a test insect for insecticides was first developed at Bures-sur-Yvette, the bee research station about 18 miles out of Paris. There it was found that very young crickets are best as these are extremely susceptible to all insecticides which affect bees. This is the standard test now used in Italy, where the crickets are fed with pollen suspected to have been poisoned. Two crickets in turn are fed with the pollen and if both die it is held that the pollen had been poisoned.

Another biological test which is regarded as an improvement on crickets is the use being made in the United States with brine shrimps for the detection of bee poisoning through the use of insecticides. Brine shrimps have the advantage of being extremely easy to keep alive and being very sensitive to insecticides. Bees suspected to have been affected by insecticides are ground up, treated with certain chemicals, and then one to three shrimps are added to the solution. If after two hours the shrimps are unable to swim down in the tube or are dead it is considered to be positive proof that insecticides were present on the dead bees.

Research and Experimental Work

To illustrate that research work is international it should be mentioned that many French honeys do not granulate; when once heated they usually remain liquid. They frequently contain excess moisture, rendering them liable to ferment, and great interest was shown in the New Zealand work done by Messrs C. R. Patterson and Palmer-Jones on removing such moisture by means of a vacuum moisture extractor.

One of the strange uses being made of bees was seen in France—the extraction of bee stings. A commercial beekeeper there spends the winter

extracting venom from bee stings and sells it to firms making up preparations for treating rheumatism. In one season he removes 1½ million stings.

Research

After visiting all these research and experimental stations overseas, Mr Palmer-Jones makes a comparison between research facilities and the value of the beekeeping industries in these countries and New Zealand.

Although both New Zealand and Switzerland have beekeeping industries of approximately equal value, Swiss expenditure on beekeeping research is estimated to be five times that of New Zealand.

In England at the Rothamsted Bee Department there is a staff of 20, comprising 6 professional workers, an apiarist and 13 others. In Scotland there are 2 professional workers and 1 apiculturist engaged in research. The United Kingdom tonnage of honey is estimated at only 1,200 tons, or about one-fifth New Zealand production.

In New Zealand today bee research and experimental work can be said to be confined to 3½ workers (1 research officer and 1 technician at Wallaceville, ½ horticultural botanist, Wellington, and 1 apiculturist at Hamilton). This is inadequate by overseas standards and some increase is necessary if the efficiency of the New Zealand beekeeping industry is to be maintained and more time devoted at Wallaceville to diagnostic work and treatment of bee diseases.

I know that the first question the Government will ask when a subject such as this is raised is, What are the beekeepers going to do about it? Is it your opinion that more staff time and money should be devoted to bee research? If so, what is the National Beekeepers' Association prepared to do in financing part of the cost involved?

National Diploma in Beekeeping

A few years ago I mentioned that I thought the time was ripe for the institution in New Zealand of a National Diploma in Beekeeping. During the past year in consultation with your Executive some real progress has been made in this direction. It is now hoped that the Royal New Zealand Institute of Horticulture will sponsor such a move. This institute is authorised by statute to grant diplomas in horticulture, and the definition of horticulture includes work in parks and reserves and nurseries, fruit growing, market gardening and school gardening. If a small amendment were made to the Institutes Act it could issue a diploma or certificate in beekeeping. Working on parallel lines to the diplomas it has already issued, authority would be sought for the granting of an honorary diploma to beekeepers being persons of 40 years of age and over, who had practised beekeeping for not less than 20 years. A fee of £2/2/- per applicant would probably be charged, and I hope that in this Jubilee year, this proposal will have the unqualified support of the National Beekeepers' Association and that it will encourage eligible beekeepers to apply for this qualification, which may thereby become recognised as the hallmark of a qualified practical beekeeper. The syllabus of subjects and examiners for the various stages will be drafted by Mr T. S. Winter, in consultation with your Executive, and I hope also that a reasonable number of younger beekeepers who cannot obtain the honorary qualification, will study for the examinations and sit each year.

I commend this move to the Conference for its favourable consideration.