

National Beekeepers' Association of N.Z.

ANNUAL CONFERENCE, June, 1916.

The Annual General Meeting of the National Beekeepers' Association of New Zealand and the Annual Conference of the beekeepers of the Dominion was opened in Edmanson's Hall on Wednesday, June 7th. There were present: Mr. J. Rentoul (in the chair), Mr. F. S. Pope (Secretary of Agriculture), Mr. T. W. Kirk (Director of Orchards and Apiaries), Mr. Baden Powell (of the Bristol and Dominions Producers' Association), Messrs. E. A. Earp, F. A. Jacobsen, L. Bowman, G. V. Westbrook (Apiary Instructors), W. E. Barker, Miss M. Shepherd, Messrs. C. A. Jacobsen, Jas. Allan, J. C. Hobbs, A. Ireland, H. W. Wareup, H. W. Gilling, J. Rentoul, R. W. Brickell, Miss Meek, Mr. A. Davis, Mrs. Robt. Palmer, Messrs. E. W. Sage, H. C. Wedde, J. Finlay, S. Rhodes, W. Parrent, Roy Parrent, Mrs Flannagan, Messrs. G. W. Flannagan, E. J. Pink, R. J. H. Nicholas, P. M. McKay, H. R. Penny, R. G. Doyle, F. W. Adams, R. H. Nelson, A. C. Askew, W. B. Bray, Ernest Horsman, W. Brown, W. J. Trounson, J. Ross, W. L. Feist, Mrs Unsworth, Miss Miller, Miss D. Hart, Messrs. T. J. Mannix, R. Stewart, G. H. Brown, E. O. Trerise, A. L. Pearson, O. R. Bostock, V. Phillips, R. Walker, W. Heseltine, A. A. Pallant, H. Bryans, W. Bryans, J. Irving, R. Askew, F. Burnley, Wm. Rossiter.

Before the Conference opened, the Chairman read a Press extract announcing the death of Lord Kitchener, and moved—

“That members of this Conference express their deep sense of the loss the nation has sustained in the death of Lord Kitchener recorded this morning, and confirms their loyalty to the Crown in the crisis through which the nation is passing.”

This was carried by all standing.

The President (Mr. J. S. Cotterell), owing to ill-health was unable to be present, and sent greetings to the Conference, together with the following address:—

As your President, you naturally look for an account of my stewardship, but I feel what little has been done on my part does not offset the honour you have done me by electing me to the responsible position as President of your Association. The work of the Secretary has covered all the necessary items, and apart from answering numerous letters, little else has been done on my part.

As you are aware, it was an instruction to the Executive to register the National under the Act, and this we endeavoured to carry through. The reason for non-completion will be set out in the Annual Report.

Co-operation is a live topic, and by our organisation, and, I think, together with the N.Z. Co-operative Honey Producers'

Association, we may claim to be one of the best-organised bodies of honey producers in the world. I would here like to emphasise the fact that we are an organised body of workers, and this should be kept well in view in your deliberations, and let nothing intervene to impair this organisation, for it is one of our best assets.

Whilst apiarists in many parts of the world who make their living by the sale of honey tend to discourage new recruits in the business, I think I may safely say that we welcome all such, and assure them that with the high standard New Zealand honey has obtained, there is now a good and steady market for its disposal both locally and overseas.

It is somewhat disappointing that the honey crop for the past season was far below the average, when we have an open market for all the honey this Dominion can produce; yet the failure will have the effect of showing that there are two sides to the business of beekeeping, and we cannot always count upon a bumper crop of honey. It is to be hoped that this Government will see their way to re-establish a queen-rearing apiary on a large scale, where early queens may be procured, for it is my firm conviction that, given early well-mated queens in the spring, the honey crop can be augmented to an unprecedented extent.

With the suppression and control of infections bee diseases which in the past have caused much loss and discouragement, a bright prospect for the industry is assured.

Professor Burton Gates says, and I think it very true: "To the majority beekeeping is mysteriously fascinating, so that once a beekeeper always a beekeeper is almost proverbial. But it cannot be too strongly emphasised that bees **require attention**, and this at precisely the proper time. They respond in proportion to judicious manipulation. Thus, neglect means failure and disappointment."

Perhaps the best qualities which a beekeeper acquires are punctuality and precision.

May 29th, 1916.

J. S. COTTERELL, President.

Mr. Jacobson moved that a letter be sent to Mr. Cotterell regretting his absence, and assuring him of the sympathy of all present.

The adoption of the Annual Report and Balance Sheet was moved by the Chairman, seconded by Mr. Allan, and adopted as read.

Mr. Askew moved—"That a Special General Meeting of the National Beekeepers' Association be held on Thursday, at 10 a.m., for the purpose of passing a resolution that the Association be registered under the Unclassified Societies Act."—Carried.

Mr. W. E. Barker read a paper on "My Ideas of the National"; Mr. W. Hooper Teed, "Is the Executive of the National as at present constituted on the best possible lines?" and Mr. E. Ward forwarded a paper, "Have the Branches as at present constituted outlived their usefulness?"

A considerable amount of discussion took place as the result of these papers, the general opinion being that the time for a change had arrived.

In order that the views of all parties might be brought before Conference in concrete form, it was resolved—“That a Committee of representatives of all the Associations present be appointed to report before Conference closes on the advisability of the adoption of a uniform Constitution, and to advise on the relationships of the branches and the National.”—The Committee, as the result of a ballot, were Messrs. Gilling, Allan, Barker, Jacobson, Wedde, and the Secretary.

Resolved that Conference meet at 9.30, adjourn at 12.30; meet at 2, adjourn at 5.

WORK OF THE INSTRUCTORS.

Mr. T. W. Kirk, Director of the Horticultural Division of the Agricultural Department, in an address to the Conference, referred to the exhibition stand of samples of honey from various parts of the world which was on exhibition in the hall. Every class of honey likely to come into competition with New Zealand honey was represented. In dealing with the year's operations, Mr. Kirk referred to the work carried out by the apiary instructors. There were only four of these officers; therefore beekeepers could not expect a weekly visit from them. The Auckland district instructor reported that he had found 240 colonies showing foul-brood. The Wellington district instructor reported a considerably lower number of these diseased colonies for the year.

During the past year the number of visits paid by the four instructors in their respective districts was as follow:—Auckland, 280 apiaries; Wellington, 503 apiaries; Christchurch, 371 apiaries; Otago, 599 apiaries. These four instructors also had to do all grading for export. Last year 2,290 cwt. of honey were exported, valued at £6,677.

Mr. Kirk was listened to with close attention, and Conference expressed their appreciation of the efforts of Mr. Kirk and his officers, who were working under the usual difficulties of a small staff with a lot of work.

Remit from Geraldine—“That this Conference urge upon the Department a more rigid enforcement of the Apiaries Act in dealing with box hives, as disease was rampant in that district.”—After considerable discussion the motion was lost.

A motion—“That it be a recommendation to the Government that two additional apiary instructors should be appointed”—was carried unanimously. It was resolved that a deputation should wait upon the Minister.

Mr. J. Rentoul moved a number of formal resolutions being additions to the Constitution. These were all carried without discussion.

Resolved—“That the Department be urged to bring in the necessary regulations re registration of apiaries with as little delay as possible. It was unanimously agreed that very little improvement in the condition of the industry can take place until registration is enforced.

Southland remit—“That the Bluff be gazetted as a grading port for the export of honey.”—It being moved by Mr. Allan, was agreed to. It was pointed out that Bluff will in the near future handle very much more honey than will Dunedin,

and an amendment to close Dunedin grading port was not accepted by the Southland representative, and the motion was agreed to.

Taranaki remit—"That the interests of the industry would be better served were the Government subsidy transferred to the New Zealand Co-operative Honey Producers' Association for organising purposes."—Moved by Mr. Gilling, and after some considerable discussion was adjourned pending the report of a conference between the Executive of the National and the directors of the N.Z.H.P.A.

EVENING SESSION.

At the evening session there was a very large attendance. Mr. C. A. Jacobsen exhibited a queen-mating nuclei which he had designed, and by which it is possible to keep a queen during the whole of the winter months. Considerable interest was taken in this exceedingly useful appliance, and at the conclusion of his remarks Mr. Jacobsen was urged to write a paper describing a hive and his method of wintering.

The Department of Agriculture had staged a large number of samples of honey procured from all parts of the world. These were examined with considerable interest by those present, and proved most interesting and instructive.

A number of other appliances were also on exhibition. These came in for a good deal of criticism, complimentary and otherwise.

Most of the time was spent in informal discussion and friendly chats, and altogether a most enjoyable evening was spent.

SECOND DAY.

On resuming, Mr. Askew moved—"That the National Beekeepers' Association become incorporated under the Unclassified Societies Act, 1908, under the name and title of the National Beekeepers' Association.—Carried unanimously.

CONSTITUTION.

The Committee set up to consider the question of a uniform constitution for the existing and prospective Beekeepers' Associations, reported as follows:—

- (1) That a system of branches of the National Association be continued and encouraged.
- (2) That each and every branch be asked to change its name to the National Beekeepers' Association, registered branch.
- (3) That the system of finance be altered, and that all fees collected be paid to the general secretary-treasurer.
- (4) That the general secretary-treasurer pay to each branch secretary a sum of money not less than 75 per cent. of the amount collected by the branch.
- (5) That the Executive be given authority to pay a further sum or sums should the branch at any time be in need of assistance to carry out any work of which the Executive approve.

- (6) That the beekeepers may be either direct or branch members of the Association, at their option, and circulars to beekeepers shall state that it is desirable that they join a branch where one exists. Only those who pay to branches shall be considered members of the branches.
- (7) That it be the duty of each branch to thoroughly canvass its district for new members, and it shall be the duty of the incoming Executive to take active steps to open further branches and secure more members.
- (8) That the general secretary supply to all branches stationery and printing matter free of charge. The branch shall use such stationery exclusively.
- (9) That the branches forward for information of the Executive a report of every meeting held, and a copy of their annual report and balance-sheet.

The report met with the unanimous approval of Conference, and Messrs. Sage, Warcup, and the Secretary were instructed to incorporate the recommendations into the Constitution.

THE EXPORT TRADE.

Mr. Baden-Powell, representing the Bristol and Dominions Producers' Association, addressed the Conference on the subject of the export trade. The wholesalers were selling Californian honey in jars to retailers at 8/6 a dozen, or 8½d. per lb. The grocer had to sell to New Zealand product to the public at 9d. Analysis went to show that the New Zealand article was superior to any other. The margin of profit was too low to allow his Association to compete unless they got regular supplies. They would only get 60 tons this year, which was merely a drop in the bucket. Demands were frequently made for New Zealand honey which could not be supplied. This was only paving the way for selling cheap Californian honey as New Zealand. His Association paid 6 per cent. dividend last year, but this was not made out of honey. All the New Zealand honey was being sold in the producers' mono-vessels, with the N.Z.C.H.P.A. label. Mr. Baden-Powell read some of the advertisements of New Zealand honey circulated in Britain. Continuity of supply was absolutely an essential. What his Association could do for New Zealand honey depended entirely on the producers themselves. They should look not at to-day, but to-morrow. If they did not get supplies his Association would have to drop the business, and he was pretty sure no one would take it up. The producers should stick to export, even if it meant some slight temporary loss. His Association was handling honey at present without making a profit in order to build up the business.—(Cheers.)

Mr. Allan advocated making an effort to keep up the export of honey. There was at the present time a tendency to be satisfied with the local market. That would mean that unless beekeepers gave their attention to the export trade, producers would soon find themselves obtaining the old price of 2½d. or 3d. a pound.

It was resolved that it be a recommendation of the Conference that for the ensuing year the Association and all its branches should focus their efforts in organising work for the export trade, working in conjunction with the New Zealand

Co-operative Honey Producers' Association, and that a Conference of the Executive of the National Association and the directors of the C.H.P.A. be arranged as early as possible to devise ways and means.

THE PRESENT AND FUTURE SOURCES OF HONEY IN NEW ZEALAND.

by A. H. Coekayne, Biologist Department of Agriculture.)

In all agricultural industries the production of the raw materials on which the industry depends is of paramount importance. In this respect beekeeping is no exception to the rule, and the thorough study of the sources of supply of the raw material and of methods tending towards increasing them should be of great value. Beekeeping is one of the few rural industries where the production of the raw material is not generally directly carried out by the person primarily interested. In certain cases the apiarist may also be a farmer, but this is rare, and the beekeeper in general relies for his supplies of nectar on plants that may comprise either the natural vegetation of the district, or on the intentional or unintentional crops grown by the farmer. From time to time suggestions have been made for the growing of special plants for the express purpose of honey production. It can, however, be said that with extremely rare exceptions the growing of crops for the sake of their nectar alone is not a payable proposition, and thus if the bee-farmer attempts to produce his own bee pasture he must select such crops as are of themselves payable, and the nectar produced should be looked upon as a by-product. In such cases the beekeeper has to combine the duties both of an apiarist and a farmer, and as the management of bees and the work of preparing the honey for market is fully sufficient to occupy the whole of his attention. Such dual purpose bee-farmers are unlikely to be uniformly successful. Thus the bee-farmer is forced to rely almost entirely on the natural honey resources of his locality, and on the honey plants that come within the scope of ordinary farming operations. It might be said that as the apiarist has virtually no control of the matter, he need give no attention to the sources of supply, as such are beyond his jurisdiction. This, however, is not true, and the beekeeper should at the least pay particular attention to the general trend of the agricultural development, and encourage with all his power any methods that are payable to the farmers and at the same time are likely to increase the honey yield of the district. The farmer naturally will not grow crops that are primarily only of value to apiarists, but his attention can well be directed into channels highly profitable to himself, and indirectly of great benefit to the bee industry. It is thus seen that a consideration of the general trend of agricultural development in New Zealand, and in what directions these can be correlated with beekeeping, is very necessary in dealing with the sources of honey. What may be termed the botanical side of beekeeping has not as yet been given the attention it deserves. This is due very largely to the fact that failure, as far as profit is concerned, has been the rule with regard to the specific growing of honey yielders.

The beekeeper thus trusts almost entirely to luck for his nectar supplies, locating himself, of course, to what are known as "good" districts. He, however, makes few attempts to regulate the agricultural development of his locality into directions beneficial to the supply of the all-important raw material, on which his livelihood depends.

Before enumerating some phases of soil utilisation that may benefit the honey industry, it will be well to briefly deal with the natural honey sources.

Natural Honey Resources.

Honey produced from the nectar from natural vegetation may be classed under the generic name bush or wild honey, and this includes not only the honey harvested from forest, but also that from the natural open and heath lands.

The following is a partial list of the main native honey plants:—Manuka, various species of rata, various species of Senecio, Olearia, and similar composites (the composite or daisy family are nearly all important honey plants, the introduced cats-ear being especially notable in this respect); Phormium, cabbage trees, certain buttercups, Parsonsia, willow-weeds (especially in swamps), Rubus, Saulthenia, certain Veronicas, Avicennia, rewa-rewa, Lorenthus, Astelia, Bulbinella, Mahoe, Fuchsia, and many others. Manuka, rata, cabbage-tree, and flax, together with the composites, can be looked upon as the most important. Bush honey is almost always of poor colour, and pure manuka honey is extremely difficult to extract. Southern honey reputed to be gathered from manuka have frequently a large admixture of other nectars. In passing, it will be well to mention that certain bush honeys are reputedly poisonous, and authentic cases of poisoning have been reported. I am, however, a little bit dubious whether the nectar of the plants suspected really is the cause of the trouble or not. It is difficult to locate the source of bush honeys with any degree of certainty, pollen grain examination not being very satisfactory when a large number of species have contributed to the sample. The amount of honey produced from natural vegetation is large, but as time goes on this source will, through the breaking in of forest, manuka, and swamp lands, steadily become less and less. It is towards the flora of the lands under occupation that one must turn in order to determine the source of the higher grade honeys, and to certain special developments of soil utilisation that may lead to improved conditions so far as honey production is concerned. I would like to point out here that it is the custom to treat nearly all the better coloured lines of honey as white clover honey. The term has to a large extent become a trade term, and it by no means follows that all "white clover" honeys are mainly gathered from white clover. In certain cases cats-ear nectar is really the more important from which such honeys are derived. Various members of the composite, leguminous, wild horage, sage, and turnip families produce honey that in general appearance can be called "white clover" honey. Clovers, especially white alsyke, strawberry, suckling, top trefoil, lotus trefoil, and lucerne, especially in a pastoral country, will always supply the bulk of the honeys. The importance played by other groups of plants, however, should not be overlooked.

Forestry.

Each year from two to three thousand acres of land are forested by the Government, and the annual foresting and plantation work of local bodies and private individuals runs into many hundreds of acres. Forests are the longest maturing of any agricultural crop, and the attention of beekeepers has been in other countries directed from time to time to the problem of whether beekeeping and afforestation can be combined. Before detailing any possibilities in this connection with regard to New Zealand, it will be well to outline briefly the general trend of afforestation in New Zealand. The report of the Forestry Commission clearly demonstrated that the only trees likely to pay in forestry operations are those of short duration, half a century being placed as the maximum period for any rotation. Again, the main types of trees required are those providing a rapid growth of timber suitable for constructional and conveyance purposes, and those of a hard wood nature suitable for withstanding long periods of exposure. For constructional and conveyance purposes various pines are the most suitable for New Zealand conditions, especially such a rapid growing species as *Pinus radiata*, better known as *Pinus insignis*. For hard wood purposes various species of Australian eucalyptus stand out as pre-eminent. So far as the pines are concerned, they are valueless for bee-farming purposes, being nectarless, and producing a resinous pollen unsuitable for bee fodder. All the species of eucalyptus secrete nectar abundantly, but in general the quality of the honey is inferior, of bad flavour, and difficult to extract. In this latter respect they resemble pure manuka honey, and it is interesting to note that this plant and the gums are botanically related. It would appear as if the gums were not suitable for honey production, but the quality produced by different species varies enormously. It is quite probable that certain species would produce good marketable honey, as is the case with *Eucalyptus rostrata*. If certain species combine good timber and honey production, it would certainly be advantageous to restrict the planting to these. This matter requires careful investigation, and I recommend such an enquiry to the members of your Conference. Again, certain species of acacia might be found to combine good timber and honey-producing qualities. It will thus be seen that I am not very enthusiastic on the part that afforestation in New Zealand may be made to play in the furtherance of the bee industry. Certain trees, like the false acacia (*Robinia*) might be profitably planted, and fulfil the dual purpose of providing fencing material and bee forage, as has been done with this tree on an extended scale on the sandy soils of Hungary. It may be said, "Why not plant important nectar-producing trees like the limes, perhaps better known to beekeepers under the name of basswoods?" The answer is that broad-leaved trees of this description are unsuitable for general planting in New Zealand, and efforts in this direction have been quite unsuccessful in the past. The limes are not tolerant of exposure, and even for street or avenue planting are far excelled by many other trees, such as the Oriental plane. In sheltered situations limes have grown well, and many beautiful trees of both the European and American lime may be seen

as specimens, especially in Christchurch Gardens, but on the whole they can be looked upon as quite unsuitable for forestry purposes. From the beekeepers' standpoint the timber is valuable, but not more so than many other quicker and more readily grown trees. It is possible that certain species of willows might prove valuable, but their timber is not of such general utility as either poplars or pines.

Let it be understood that I am fully seized of the importance of deriving revenue from forest trees during the long period between planting and conversion. If such could be accomplished, that bugbear of forestry—compound interest—might be obviated; but with the exception of the eucalyptus—and with them even it is more or less conjecture—there appear to be no trees suitable for extensive general planting that might combine timber and honey production. Of course, for ornamental planting, and to a limited extent in plantation work, certain nectar-producing trees, such as the acacias, false acacias, willows, and perhaps in special localities limes, especially of the smaller leaved and more readily grown European species, might be planted. Other trees naturally suggest themselves for this limited purpose, but their extensive planting need not be entertained.

Seed-raising.

Seed-raising opens up a very promising field for the apiarists. This is especially true of clover-growing, of those types suitable for honey bee forage. Each year about 300 tons of the smaller headed clovers are annually imported, and there seems to be no valid reason why all the required local supplies should not be grown in the Dominion. If this were done, about 5,000 acres, additional to that already devoted to the crops, would consist of pure clover, and provide excellent bee forage. To the clover grower the presence of bees is indispensable, so that in this respect clover seed growing would be mutually beneficial both to the apiarist and to the seed raiser. Another seed which is largely imported and which should be grown locally is rape, a valuable honey producer. Between six and eight hundred tons is annually brought into the country, and, were the seed grown here, in the vicinity of 2,000 acres of high-class bee pasture would be secured. Certain crops, such as buckwheat, might be though off-hand as likely to prove valuable, but there is no likelihood of this crop being grown except in extremely limited amounts. Still an increase in clover seed production and the development of the rape seed growing industry would of themselves materially increase the honey resources of the country.

Increasing the Clover Content of Pastures.

An increase in the clover content of New Zealand pastures would enormously increase the nectar supply for honey production. In this connection nearly all the species of short-tubed clovers are valuable, the most important, however, being white clover, alsyke, trefoil, and perhaps some of the hop trefoil, Lotus, and suckling clover types. Red clover, of course, until such time as a race of honey-bees with longer tongues or a race of clover with shorter flower-tubes is evolved, is of no

value in this connection. In certain dry seasons when the red clover flowers are small, and especially with a late crop, a certain amount of nectar may be gathered from them by honeybees, but this condition is too unusual to look upon red clover as of any value.

It is highly probable, and the experiments at present being carried out at the Experimental Farms will determine this point, that an increase in the clover content of pastures is a desirable feature. This should be more particularly true of pastures of a temporary or semi-permanent nature, and such types of pastures are on the increase. I look upon increasing the clover content of pastures as probably the greatest forward movement that could be given to beekeeping, and apiarists would be well advised to study this question in their respective districts, and determine from the farmer's point of view whether to increase clovers in pastures is a payable policy to adopt. It cannot be too strongly impressed that an increase in bee forage must be correlated with some advantage to the farmer before he will adopt any method that may indirectly secure this end. On the whole the pastures of New Zealand must be looked upon as the main bee forage. That in this respect they are easily capable of being improved can be seen by the fact that the total number of colonies in New Zealand is less than 80,000, and the sown pastures occupy some sixteen million acres, or one colony to every 200 acres of pasture; and this does not take into account the very large number of colonies that collect almost entirely from natural vegetation. With regard to grass lands, those devoted to cattle are in general better from the apiarist's standpoint than sheep ones, as in the latter the close cropping of the turf lessens flower production. The general trend of the better class lands towards dairying should prove valuable to the beekeeper, provided there is a tendency towards increasing the clover content. The high price of clovers during recent years has, however, led to a curtailment of the quantities used, but such high prices need only be looked upon as temporary.

Lucerne Growing.

One of the most important agricultural movements in New Zealand, although as yet quite in its infancy, is the cultivation of lucerne on an extended scale. This plant is probably destined to become the premier agricultural crop in all districts suited to its production. From the beekeeper's point of view, lucerne is extremely valuable, yielding as it does large supplies of nectar during the greater part of the summer, and rarely failing in its annual supply once the crop has been established. The honey is rather light in colour, but this is not a serious defect, and the flowers produced after midsummer yield a darker honey than those produced earlier. The main objection to the growing of lucerne from the apiarist's point of view is that the crop is likely to be very largely used as a grazing one and be kept closely cropped, thus limiting the production of flowers. It is, however, certain that a great deal will be cut for hay, and although for this purpose the crop should be cut soon after the expanding of the flower buds, in many cases crops would yield large amounts of nectar before being cut for hay. Again.

with an increase in lucerne-growing seed crops will be numerous, and these will provide magnificent bee forage. Beekeepers are well advised to do all in their power to foster the growing inclination of farmers to cultivate lucerne on an extended scale. The direct advantages to the apiarist are so great that work in this direction is as important as any I can think of in furthering the honey industry. The virtually unfailing source of nectar supplied by this plant in New Zealand renders it particularly important, as you all know the difficulty with what are termed "bad seasons" with regard to most honey plants.

Orcharding.

To anyone acquainted with the modern development of agriculture in New Zealand, that of fruit-growing naturally occupies an important position. To the beekeepers, however, orchards are not looked upon with the favour that one might expect when viewing one in full bloom in the spring. Commercial orchards are now planted with few varieties, and the blossoming period is short. For the greater part of the year an orchard provides exceedingly bad bee forage, except in those instances where cultivation is neglected, and honey-producing weeds, such as yarr, smartweed, fimitary, shepherd's purse, thistles, and groundsels are produced in abundance. The fact that neglected orchards are better from a beekeeper's standard than properly cultivated ones suggests the idea that the use of certain cover crops in orchards might lead to them becoming valuable from a honey-producing point of view. At the same time they would be valuable in improving the fertility of the soil. This is a matter concerning which the Orchard Division has given considerable attention, but of course the main objection is that most cover crops require to be ploughed in before having completed flowering. This difficulty might be got over by using comparatively low-growing plants, even if on ordinary farm lands they are looked upon as weeds. Smartweeds and yarr have always impressed me in this particular. With regard to yarr, troublesome weed as it is, it is a valuable honey-producing plant, as Southland apiarists know full well. Crimson clover, certain vetches of the grass pea type, are suggested as useful honey-producing cover crops.

If some method of increasing the period during which bees may profitably work in orchards is not formulated, such areas must be ranked of little importance for honey production, and as bees should always be kept in orchards for pollenating purposes, this would be very regrettable.

Live Fences.

Live fences are not particularly favoured in New Zealand, but their capability of producing supplies of nectar should not be overlooked. One has only to think of the value of the African box thorn in the production, in combination with white clover, of much of the excellent Taranaki honey, to appreciate the value of live hedges of useful honey plants. Unfortunately, the main plant originally used for this purpose (gorse) does not appear to be a large nectar producer, and in this it seems to behave differently to what it does in other lands.

It is, however, valuable from the pollen point of view. *Hakea*, although a noxious weed in the districts where most abundant, yields considerable amounts of nectar. Certain species of barberry and hawthorne in certain localities have been popular for fences, and are useful honey plants. The tagosaste, again, is reputedly valuable. In general, however, the trend is towards the elimination of live fences, and their substitution, so far as shelter purposes are concerned, by plantations of trees that are of no moment in honey production. Still, so far as the beekeeper is concerned, he should favour living fences when they are composed of honey-producing plants. It is not, however, really known whether they are an economic proposition in such a country as this, where labour is neither easily nor cheaply available; so that whether their value compensates for the expense of keeping them in order is really not known.

Waste Place Planting and Weeds.

In considering the feasibility of growing any special crops for honey production alone, one is forced to admit that the only case when this is at all feasible is with regard to waste land, and especially on waste sandy land near the sea. If it is possible merely by surface sowing a few pounds of cheap seed that a permanent crop rich in nectar could be produced, then possibly such an operation is justified. Melilot clover is especially suggestive in this connection, and certain of the brooms also might prove valuable. With regard to the latter, ordinary broom is a "noxious" weed in many districts, and this brings me to the point of the really great part that weeds, or, at least, plants not intentionally cultivated, play in our present honey production. In looking up the Noxious Weeds Act, I noticed that out of thirty gazetted noxious weeds no less than twenty were good honey plants. One has only to think of the value of the following to appreciate the part played by weeds: Cats-ear (probably as important as white clover), capeweed, dandelion, hawkbit, ragwort, smartweed, yarr, blackberry, Californian thistle and other members of the thistle family, wild turnip, shepherd's purse, viper's bugloss, burr clovers, melilot, ox-eye daisy, pennyroyal, and a host of others. It is clear that the modern trend of agriculture will be in the direction of very greatly reducing the amount of our weed flora at present available as bee forage. Extraordinary as it appears, the systematic control of weeds, important as it is to the country as a whole, would, unless their place is taken by equally valuable honey plants, prove quite harmful to the bee industry. However, certain weeds, such as cats-ear, which forms an integral part of all pastures on certain types of land, will always be with us.

There are many other points, such as closer subdivision, the effect of gardens, and green manuring, that I should have liked to touch on, but I have already taken up more than enough of your valuable time.

In conclusion, let me again urge on you the importance of keeping an eye on the general trend of agricultural development. It may be shown to be quite feasible to modify certain agricultural operations with good results from the apiarist's point of view, and it is one of the duties of the beekeeper to

prove that such modifications are payable propositions from the farmer's standpoint, apart from being of value to the honey industry. If this is done systematically and thoroughly, there seems little reason why the sources of honey supply should not be very appreciably increased.

Several members expressed their thanks to Mr. Cockayne for his interesting and instructive paper, and it was resolved that the incoming Executive be instructed to give careful consideration to Mr. Cockayne's paper, and to take such steps as are necessary in order to carry out his recommendations.

N.Z. HONEY PRODUCERS.

ANNUAL MEETING.

The Annual General Meeting of the shareholders of the New Zealand Co-operative Honey Producers' Association was held in the Esperanto Hall on Thursday, June 8th, Mr. H. W. Gilling (chairman of directors) presiding.

The annual report for the year ended December 31st, 1915, stated that there had been a considerable expansion of the Company's operations during the year. A contract had been entered into with the Bristol and Dominions Producers' Association to supply them with a minimum of over 100 tons per annum, on which they agreed to advance 4d. per lb. on all first-grade honey. New Zealand honey was selling freely at good prices in the United Kingdom. The Association had exported 108 tons during the year, and the agents stated that a much larger quantity could be placed at satisfactory prices. The local market had been satisfactory. As a direct result of the Association's efforts the price of honey had greatly advanced, and prices were now obtained which formerly had been deemed impossible.

The Chairman, in moving the adoption of the report, said the Association was quite able to provide all the honey required in New Zealand, and also exports. Every beekeeper should be a shareholder in the Association. He suggested that the Association should assemble its own tins.

The report and balance-sheet were adopted.

Mr. Eric A. Wills was re-appointed auditor.

The following officers were elected:—Directors—Messrs. H. W. Gilling, R. W. Brickell, J. Rentoul, A. Ireland, E. J. Pink, A. H. Davis, and H. C. Wedde.

PROHIBITING THE IMPORTATION OF HIVE BEES INTO NEW ZEALAND.

By I. HOPKINS.)

Mr. President, Ladies and Gentlemen,—

I was asked to contribute a paper to be read at this Conference, and after some thought I considered that I could not introduce a more important subject for your consideration and discussion at the present stage of our beekeeping industry than

that of prohibiting in the future further importations of bees into this country. My object in choosing this subject is to bring clearly to your notice the great risk we are running at the present time of introducing one or other of the serious and so-called mysterious diseases (mysterious because of their sudden outbreak now and again without apparent cause) prevalent in other countries and which have so far defied all efforts to discover effective remedies.

In parts of Australia every now and then we hear of an outbreak of what is popularly known as the "Disappearing Trick," of which I shall have more to say later. Then again in the Western and North-Western States of America quite recently there were very serious losses of bees by an outbreak of a strange disease. Now, the physical symptoms of these "strange diseases" in both countries mentioned are similar, and both approach very closely those of the "Isle of Wight" disease—in fact, so closely that those best able to judge declare them to be one and the same disease. In view of this opinion it may be well to refer to it and its ruinous results in Britain.

"Isle of Wight" Disease (Microsporidiosis).

Doubtless most of you have read more or less about this disease, and are aware of the tremendous losses of bees caused by it in Britain, which losses are still occurring without check where there are any bees left to be attacked. I may safely say that every issue of the "British Bee Journal" contains reports of losses from different parts of the country, and the prospects before British beekeeping from a commercial point of view is at present almost hopeless.

Some three years ago the President of the British Board of Agriculture and Fisheries officially stated that the losses of bees up to that time through the "Isle of Wight" disease were valued at more than £1,000,000. It must be much greater now.

History of the Disease.

There appears to be strong evidence that the disease is not a new one, that in its features and effects it resembles that known on the Continent as "Mal de Mai" (May pest), "Mal de Maggio," "Mai Prankheit," and in English-speaking countries as bee paralysis and vertigo, dizziness (Dadant). The symptoms vary, but the distention of the abdomen and the inability of the bees to fly are the chief ones.

The outbreak under consideration was first noticed in the south-eastern districts of the Isle of Wight (hence its popular name) in 1904, from whence the disease rapidly spread over the whole island, and so deadly was its effect that in 1908 scarcely a live bee remained in any part of it. In 1906 the outlook had become so serious that the attention of the British Board of Agriculture and Fisheries was evoked, and Mr. A. D. Imms, M.Sc., of Christ's College, Cambridge, was appointed to investigate the disease. His report was published in 1907. In 1909 the disease had spread to the mainland, and so rapidly did it expand that in 1911 cases were reported from the South of England, East Anglia, Wales, and as far north as Blair Athole, in Scotland, and Stornaway in the outer Hebrides. In

1911 a commission consisting of four scientists and one practical beekeeper was appointed to investigate the disease. In May, 1912, their first report was published, and a further report appeared in July, 1913. They are very complete and comprehensive, covering between them 190 pages. Briefly, the result of their investigation is that the disease affects adult bees only and not the brood; that it is due to a parasitic bacteria named by Dr. Zander *Nosema Apis*; that it is very infectious, and that the chief sources of the spreading of this disease is "infected carriers." Now, I wish this Conference to take particular note of this, because it is on this fact that I chiefly base my statement of the great risk we are running in importing bees from where these so-called strange diseases exist.

"Carriers" are individuals in the animal world which, while infected with death-dealing germs themselves, seem to be immune to them, but spread disease wherever they go. The report says:—"Infected carriers are probably the most important agents in spreading the disease by infecting water and food with their faeces, as well as in keeping it in existence from season to season," and "the trade in bees from infected districts helps to disseminate the disease over greater areas than would be reached by natural means."

I will now refer to what appears to be similar outbreaks in Australia and America.

Australia.

Several present will no doubt remember a serious and sudden outbreak of a strange disease that occurred in Victoria in the spring of 1909, when the bees in some districts—notably those near the Grampian Hills—were nearly wiped out. Mr. Beuhne, the Government Apiarist for Victoria, stated before the Victorian Apiarists' Association in 1909 that the trouble was not new to Australia, and that he sustained a heavy loss from the "Disappearing Trick" nine years before. The losses were so severe in 1909 that an investigation into the cause of the disease was conducted by Mr. Percy Williamson, Commonwealth Analyst, and an officer from the Commonwealth Customs Laboratory. After a very complete investigation and inoculation experiments, the following report was issued:—"The results of this investigation lead to the conclusion that the disease observed in Victorian bees is due to an organism known as *Nosema Apis*, first described by Dr. Zander, of Erlangen." Some bees (diseased) were sent to Dr. Zander, and he confirmed the above opinion.

America.

Those who keep themselves posted on what is occurring in the bee world outside of our own country will be aware of the periodical outbreaks of a strange disease of adult bees in America. Quite recently there were severe losses in the Western and North-western States. From the report of symptoms from different quarters published in the bee journals, they so exactly correspond with those of the Isle of Wight disease that the junior Editor of the *British Bee Journal*, than whom no one should be a better judge, unhesitatingly pronounced in "Gleanings" that the disease is Microsporidiosis.

New Zealand.

Let us now consider our own position at the present time. Apparently we have had only the one bee disease (*Bacillus larvæ*) to contend against all through (I hope the item on the Order Paper is not to be taken as a hint that we have Isle of Wight disease or a suspicion of it), and this we are dealing successfully with so far that it now gives careful beekeepers little trouble or anxiety. The position and future prospects of our industry could scarcely be better, but we must not forget that it has taken nigh on forty years of strenuous work, and much soreness of heart has been experienced before it reached its present stage. Taking all these matters into consideration, and comparing our position with that of the industry in other countries where these strange diseases occur, and from where we are importing queens that may be "carriers" of these diseases, would it not be suicidal on our part to continue to run the risk we have done hitherto, and undo the grand result of nearly forty years' work? Remember, there is no known cure for Microsporidiosis, that queens (according to the report) are "parasitic carriers" as well as workers and drones, and that when once introduced we may expect outbreaks to occur every now and again, as is the case in other countries.

In conclusion, Mr. President, I hope the Conference will give the matter its earnest consideration, and take such steps as it deems necessary to eliminate all risk of introducing bee diseases from other countries, and urge the Department of Agriculture to act promptly.

Mr. Ralph Askew said:—

The first mention of an epidemic among the bees of the Isle of Wight appears to have been made by Yank in 1906, who describes the bees as crawling in the autumn and the death of stocks after packing down for winter. Another writer says the abdomen of the affected bee is not distended in every case, while the wings are often twisted back, having the appearance of being dislocated.

Early in 1911 the disease was known to be present in several parts of England, and had been reported from Scotland. The great bulk of evidence obtainable pointed to the disease being infectious, and probably produced by some bacterial or protozoal parasite.

Dr. Malden had proved that no bacteria could be found in the tissues of diseased bees except those in the alimentary canal. Drs. Fantham and Porter, who worked for a number of years on this disease, had found a protozoa, also discovered by Zander in Bavaria named *Nosema Apis* was commonly present, often in large numbers, in the intestines of bees, exhibiting the symptoms of Isle of Wight disease.

When the beekeepers of the Isle of Wight in 1906 described an epidemic which was devastating their apiaries, and of which the symptoms were abdominal distension and inability to fly, their statements were received with incredulity; but investigation by Mr. Imms, of the Board of Agriculture, and Dr. Malden showed that the statements as to the deadly character

of the visitation had not been exaggerated. The first cases reported from the mainland in 1909 occurred in counties nearest the Isle of Wight, and was thought to have been introduced with bees from the Island.

A more careful study of the records and more extensive knowledge of the symptoms prove that the idea that all cases can be traced to the Isle of Wight outbreak is no longer tenable. We now know that the disease manifests itself in various ways, and that outbreaks of the disease, characterised by similar symptoms, have occurred in all parts of the world. This being the case, we naturally want to learn all we can of the symptoms. Certain symptoms, such as the inability to fly, the presence of numerous bees crawling on the ground in front of the hives, and the gradual dwindling of stocks, are common, but many other symptoms have been recorded, and no one symptom is characteristic of the disease. The only essential feature is the death of large numbers of bees, and often of the whole stock, especially during wet and cold periods of the year or during winter months.

Malden says the disease is probably endemic, but that, owing to lack of observation, it often passes unnoticed in mild seasons, the loss of bees being attributed to cold, starvation, dying, dwindling, diarrhoea, and other causes. It is only in severe epidemics that the disease attracts much notice. All the investigators, both in England and on the Continent, emphasise the fact that the disease cannot be diagnosed with any certainty without careful microscopical examination.

To prove that *Nosema Apis* is responsible for this disease, a number of experiments were made. By feeding honey or syrup containing spores to healthy bees, placing bees dead of the disease in cages occupied by healthy bees, and placing healthy bees in cages in which diseased bees had travelled. Some experiments seemed to indicate that partially immune stocks exist, but which may harbour the parasite, and act as centres of infection to susceptible stocks. The *Nosema Apis* mainly develops in the cells lining the chyle stomach, and during the process the cells are injured and often destroyed by the immense numbers of young parasites which are produced, and the infected bee may die either before or after the spore stage is reached. It has been proved that *Nosema* is usually found in the intestines of bees exhibiting signs of the Isle of Wight disease, but not in the intestines of bees from healthy stocks.

As far as treatment is concerned, nothing has been found of any or very little success in preference to drugs, and it is improbable that any successful drug treatment will be found. The methods of prevention most likely to prove of any use are provision of pure water, destruction of all dead bees and infected matter, destruction of diseased stocks, &c.

The discussion which followed these papers was continued for some time, and eventually it was

Resolved on the motion of Mr. Ireland, seconded by Mr. Askew, and carried by 24 to 9—"That the importation of queens and bees be prohibited while there is any danger of introducing the Isle of Wight disease into the Dominion."

ELECTION OF OFFICERS.

The election of officers for the ensuing year resulted as follows:—President, Mr. J. Rentoul; Vice-President, Mr. W. E. Barker; Secretary, Mr. R. W. Brickell; Executive: North—Messrs. H. R. Penney and E. W. Sage; South—Messrs. A. Ireland and W. B. Bray.

EVENING SESSION.

The evening session was devoted to a lantern lecture by Mr. O. R. Bostock. The attendance at this meeting was small and the entertainment spoilt through some defect manifesting itself in the lantern. What was shown was highly appreciated.

THIRD DAY.

On resuming, the Constitution Committee—Messrs. Sage and Warcup—moved the adoption of the amendments to the Constitution. These were carried. Very little discussion took place, and the amended following Constitution was adopted unanimously.

CONSTITUTION OF THE NATIONAL BEEKEEPERS' ASSOCIATION.

1. The organisation shall be known as the National Beekeepers' Association of New Zealand.

2. The Registered Office of the Association shall be at 50 Castle Street, Dunedin, or such other place as the Executive may from time to time determine. Due notice of any change shall be sent to the Registrar.

3. The Association shall have a Common Seal, which shall be kept in the custody of the Secretary, and shall only be affixed to documents at meetings of the Executive, and the affixing of the same shall always be attested by at least three members of the Executive. As regards third parties, the Common Seal shall be deemed to have been duly affixed if such affixing purports to be attested by three members of the Executive, and that notwithstanding any invalidity in the appointment of any member of the Executive or any irregularity in the meeting at which same was affixed or in any other matter connected with the affixing of the same; and as regards third parties the signatures of the persons purporting to attest the affixing of the Seal shall be sufficient evidence that those persons are members of Executive.

4. The object of the Association shall be the improvement of the beekeeping industry, furthering the interests and the prosperity of the beekeepers throughout the Dominion.

5. Membership shall be extended to any beekeeper who is in accord with the aims and objects of the Association, and who pays an annual subscription on the following scale:—

Up to 15 col...	5/-
Up to 50 „	10/-
Up to 100 „	15/-
Up to 200 „	20/-

and 5/- for every additional 100 or portion thereof. Hon. members' subscription shall be £1 ls. per annum.

6. Subscriptions to the Association are due and payable on June 1st in each year, and must be paid within two calendar months from that date. Members who do not resign by notice under their hand on or before July 31st in each year shall be deemed to be members of the Association for that year, and their subscriptions shall be due and payable.

7. District Branches of the Association may be formed where there are seven or more beekeepers desirous of forming a Branch, such Branch to be known and to work under the name and title of the National Beekeepers' Association of New Zealand, registered,Branch.

- (a) The Branch Secretary shall, as far as possible, collect all fees from members of his Branch, and shall remit the same to the General Secretary at the end of each quarter. The General Secretary shall immediately pay to all Branch Secretaries a sum of money being not less than 75 per cent. of the money collected by the Branch.
- (b) The Branches may be paid a further sum or sums of money should they at any time be in need of assistance to carry out any special work which the National Executive approves.
- (c) The Branches may also apply to the National Executive for an advance to meet their current expenses, and the National Executive shall advance such sums of money on request.

8. Beekeepers may be either direct or Branch members of the Association at their option. All circulars and notices issued by the General Secretary shall state that it is advisable that members be attached to a Branch where one exists. Only those who pay their subscriptions to the Branch Secretary shall be deemed to be members of a Branch.

9. It is specially provided that any existing Association may automatically become a District Branch of the National by the passing of a formal resolution adopting the National constitution subject to the provision of Clause 7.

10. The Executive shall consist of a President, Vice-President, Secretary-Treasurer, and four members (two being from each island), who shall be elected at the Annual Meeting. Should any vacancy occur during the year the Executive shall fill the vacancy. The duties of the Executive shall be:—The general control of the Association's business in furthering the interests of the Association; the publication of reports; advertising and marketing of honey, and any other business which may be deemed advisable in the general interest of members.

11. The President shall preside at all meetings of the Executive, and also sign all cheques. He shall have a deliberative as well as casting vote.

12. The Vice-President shall occupy the chair in the absence of the President, and in the event of the office of President becoming vacant he shall act until a new President is appointed.

13. The General Secretary-Treasurer shall collect all money due to the Association, except as is provided in section (a), Clause 7; keep such books and accounts as the Executive may require; countersign cheques; conduct the correspondence;

keep the minutes of the meetings, and do any other such work as is necessary or the Executive may direct; he shall also write the Annual Report and prepare the Balance Sheet, which must be signed by the Auditor.

14. The General Secretary shall forward to the Branch Secretaries reports of the meetings of the Executive, and the District Secretaries shall forward for the information of the National Executive a report of the meetings of the Branches and a copy of the annual report and balance-sheet.

15. The General Secretary shall provide the Branches with printed stationery and circulars free of charge, and the Branches shall use such stationery and circulars exclusively.

16. The Annual General Meeting of members shall be held in June or as near thereto as may be deemed advisable for the purpose of receiving the Report and Balance Sheet, the election of Office-bearers, and the appointment of Auditors for the ensuing year, the discussion of any subjects of interest to the beekeepers which may be brought forward, and general.

17. At the Annual or Special General Meetings delegates may represent the District Branch and vote on the following terms:—On all questions of which notice of motion have been given, the delegate or delegates may exercise one vote for every financial member of their Branch.

18. This constitution may be amended at any Annual or Special General Meeting called for that purpose, provided that sixty clear days' notice of the proposed amendment be given by circular calling the meeting to each member of the Association and to the District Branches.

19. It is specially provided that should any question arise which in the opinion of the Executive should be decided by the members, they shall issue to each member of the Association and to the Secretary of all local Branches a clear statement of the position, and provide a voting paper so that members may vote on the question by mail. The voting shall close not less than thirty days from the date notices are posted. The voting paper shall state the date on which the poll shall close.

20. Dissolution.—The Association may be dissolved at any Special General Meeting called for that purpose, provided that all the liabilities of the Association have been discharged; two-thirds of the members present; Rule 10b applying, the meeting may resolve that the Association be dissolved as from the date named in such resolution. The property and the funds of the Association after such dissolution shall be divided amongst the financial members of the Association in the proportion of the fees they have paid during the year that the dissolution takes place.

Messrs. Allan, Sage, Askew, and Warcup were appointed a deputation to wait upon the Minister of Agriculture to bring under his notice the resolutions of the Conference; and after interviewing the Minister they reported that they had been very well received, and the Minister had promised to give the matters brought under his notice careful consideration, and where possible requests will be complied with.

Two Additional Apiary Instructors.—There was not very much chance of two additional apiary instructors being appointed during the currency of the war, it might be possible

to appoint a clerk, who would relieve the present inspectors of a good deal of their clerical work.

State Apiary in the South Island.—That this matter would be kept in view, and would be given favourable consideration when the South Island State Farm was under consideration.

That the freights were under consideration at the present time, and the tendency was to increase, but the Government would consider the advisability of reducing the charges on honey for export at any rate.

That the prohibition of the importation of bees could be promised from such countries as were known to be affected with the Isle of Wight disease, but they could not promise whether the total prohibition was possible.

The Bluff could be promised as a grading port for the export of honey.

Mr. E. P. Turner (Forestry Department) gave an interesting and instructive address on "Trees for Timber" (to be published next month), and at its conclusion a hearty vote of thanks to Mr. Turner was carried by acclamation.

It was resolved, on the motion of Mr. W. B. Bray—"That in view of the well-known fact that the existing timber will not last many years, this Conference of beekeepers is of the opinion that the Government should provide for the need of future generations by making extensive plantations annually of the quicker-growing trees, especially pinus and signus for casing purposes."

Resolved on the motion of Mr. Pink—"That the Executive be instructed to prepare and report to next Conference a scheme of finance embodying a similar idea to that adopted by the Fruitgrowers' Federation."

Mr. J. C. Hobbs read a paper.

THE MANAGEMENT OF OUT APIARIES.

In dealing with this subject, it seemed advisable to take my hearers with me in my trips to the apiaries worked by me, and explain and show what is done on each occasion.

After the honey is harvested and the bees are snugged up for winter, the first visit is usually made in July. The long grass is then pulled or cut away from the entrances, and if there is grass or weeds touching the hives it is cleared away. The hives are then "heffed"—that is, the weight of the hive is tried by lifting. Just one end is tipped up an inch or so with one hand. If the hive is, say, four or six storeys and full of honey, it is not usually lifted. Colonies with honey to spare are marked by putting a little tuft of grass under the lid at the back. If the weight of a hive indicates that it is short, it is opened up and a tuft of grass pushed under the cover in front, previously removing an empty comb or two, thus making room for comb honey taken from hives with super-abundance

After the apiary is gone through, the number of combs of honey wanted is counted; then they are taken from hives marked as described, and fed to those short, this being done towards evening so as to prevent robbing. If any queenless colonies are found they are united with single story hives.

Drone layers are killed and similarly treated like the wise fertile workers.

The hives of dead or robbed "outs" are turned, the entrance and back facing where the sides were, so they can be distinguished all over the apiary as empties. If there is too much old pollen in the combs they are taken home in the light brake used for running round the apiaries to be boiled down. After going through my eight apiaries in like manner, there is usually nothing more to do to the bees till the 1st of September.

September is a very important month with me, and all the apiaries are visited twice; during that time the second and third trips are made. If any of the apiaries are short of honey, syrup-feeding begins. This may be half-boiled honey and half sugar; heavy syrup is fed this time of year so as to save labour and avoid over-stimulation. Weak colonies are not given syrup but a comb of honey in case they get robbed out. The boiled honey is carried round in old honey or benzine tins. The feeding outfit consists of a shallow tank about 3 ft. long, 2 ft. wide, and something near 6 in. deep. The strainer is the bottom half of a benzine tin with numerous holes punched in the bottom from the inside the size of No. 3 shot and half an inch apart all over bottom of tin. Two opposite sides are bent over half an inch to lift it by. Three or four benzine buckets with proper bucket handles in, if you don't care to cut your hands; if you don't mind, ordinary fencing wire will do, and one or two shallow trays to catch drips of syrup complete the feeding outfit. I must not forget a piece or two of canvas or hessen to cover things up from the bees while filling syrup into combs. To set up the outfit, four supers are put down in pairs side by side to place the tank on. Suitable empty combs are placed in supers in the most convenient position. Three gallons of water are poured into the tank, 56 lbs. of No. 2 sugar are then tipped into the water, another three gallons of water added, and stirring begins; a piece of board or newc. hive lid has been found the most suitable thing for this purpose. Everything is now ready to fill combs. Place one or two empty combs at one end of tank floating on syrup. The strainer is dropped into the syrup at the other end, when it instantly fills with the syrup. It is then lifted over the combs, and the syrup rained into them till one side is filled; then the combs are turned over, and the other side is similarly treated. The filled combs are then placed in supers, with drip trays underneath. To carry round to the hives, the filled combs are placed endwise in buckets. In September the work of taking off empty combs and cleaning bottom-boards is begun; if the weather is suitable the examination for foul-brood commences.

During October the apiaries are visited every eleven days, and as many colonies as possible examined for foul-brood, swarming, and supercedure. Queen-rearing also begins wherever conditions are found favourable. If any cases of foul-brood are found, these are generally taken home to the quarantine apiary, to be cured there. These are wrapped in hive sheets made of fine sugar bags sewn together. The odd bag is cut in two and goes on the end of the other four. To pack a hive for travelling, place a lid or a stool down at the

back or front of the colony lengthwise with the hive. Spread a hive sheet over it the length at right angles to the hive; smoke the bees gently if they are likely to fly; lift the hive carefully on to the middle of the hive sheet (the stool or lid underneath should be in central to the hive sheet); lift the hive carefully on to the sheet, draw the nearer end tightly over the top of the hive; this should keep in all the bees; deal likewise with the other end of sheet; now wrap the whole thing up like a grocer does a parcel, drawing the cloth tight at the corners. The two ends are stretched over the top and pinned with 2½-in. nails, which are kept handy for the purpose. The writer has served nine years at the grocery trade, so it comes quite natural to him to pack a hive for shifting this way. A thin mat or two is usually placed over the frames of the hive to keep bees getting at one when the lid is taken off. If the colony is weak or has plenty of room, the lid is sometimes left on. Infected colonies are given their own lids and stools when taken home, as these have to be disinfected by boiling when the spring cleaning-up is made.

The first signs of superceding and swarming are welcomed, but I sometimes get very sick of swarming before the season is over. The first indication of superseding or swarming is the building of embryo cells; the second, I take it, the enlargement of the cells, which prepares them for the queen to lay in. If early queens are wanted very much, it may be all right for the beekeeper to start a batch of cells from such a hive if other conditions are favourable, such as drones on the way, colonies very strong, the apiary in a sheltered position, and a flow of honey to encourage the bees. Daily feeding would be very advantageous during cell-building and mating time, but with me this is impossible unless I can manage to do it automatically by clock-work. It could be done, I believe, but would it be worth while? The man that built the Strasburg clock could have done it, or another man like him would be doing it now.

Any colonies that need their queens superseding are marked by placing a wire peg at the left-hand corner while standing facing the hive. These are dealt with throughout the queen-rearing season. Says a writer in "Gleanings":—"The best time to rear queens is from the beginning of the swarming season until the main honey flow commences." I think that will appeal to everyone.

The fourth round to the apiaries is made in the beginning of October. If strong colonies are found with queen cells, queen-rearing begins a la Doolittle, or else their queen and all their brood are taken away, and a comb containing many eggs and unsealed larvæ placed in the hive. This comb is, of course, taken from a breeding colony; if conditions are suitable and time allows a batch of grafted cells is also put in alongside the comb of brood, drone larvæ and eggs are cut out of the comb as much as possible, as the bees have a trick of attempting to build cells with such. In case the weather is bad for the next ten days, combs containing plenty of pollen are also supplied. The bees should be crowded somewhat.

A mat is placed over the combs, with a space for bees to come up to the combs of syrup placed in an empty super on top. Cell-building hives are given two marks of identification—

a wire peg at right-hand corner. This means the colony is queenless, and an empty super set on top of lid; that indicates that the colony is cell-building. Sometimes two or more hives are set for cells, as some colonies will only build a few cells, while others will start and finish dozens. In September and October weak colonies that have two or more storeys are reduced to the brood chamber only. Most colonies will, however, continue in two and three storeys, some even four. The search for foul-brood and the cleaning of bottom-boards is in full swing this month. The colonies with the most inferior queens are dequeened at this trip, and if it seems advisable some very strong ones are divided by putting a queen excluder between the brood—half the brood above and half below. The queen can be either top or bottom: what does it matter? There is no need to waste time looking for her.

The sixth trip, towards the middle of October, is one of great interest. The first thing to do when arriving at the apiaries is to examine the cell-builders, and cut out the cells and place them on top of the frames among the bees with the points hanging down. To do the cutting out of cells, a thin sharp narrow-bladed tapering pen-knife is preferred; if the blade is first wetted with fruit juice or honey it is not so likely to drag. When three cells are side by side, it will be necessary to cut through the middle one, and only secure two for placing in other hives. Plenty of butt must be left on the cells, or if the cell is cut into the very least bit the bees will destroy it. When the cells are all cut out and placed in a row between two frames the hive is closed up, leaving things handy to get at the cells when wanted. The next thing to do is to proceed to the colonies that were dequeened last trip, and give them a heavy smoking. This takes the fight out of them. Their own cells are carefully destroyed, and a cell from the cell-builder queen pressed into the middle of the brood. With hives previously prepared for dividing a cell is given the queenless half. It is usual to leave the laying queen or the old stand, and place the one with the cell on a fresh position; but I find it best to do the reverse, and give the cell to the old stand, but have not tested this extensively enough to be dogmatic about it. If the bees are well smoked before dividing up, they won't desert their new location, thus allowing that work to be done first thing in the morning, giving time in evening for feeding, &c. I have only tried that plan one season, but am very favourably impressed with it, as when making nuclei hives in evening or dividing, and using little smoke so as not to disturb bees and cause them to fly back, they would sting enough to drive one nearly mad. Now it is done at a more convenient time without stinging, and the bees thoroughly subdued and completely under control. All hives with cells given them have a peg placed in the centre of the front, so that in following-trips they can be distinguished from other colonies. It is sometimes best not to examine these colonies till the trip after next, as the bees occasionally ball the queen when she is just mated or only starting to lay. I lost three nice queens that way last year. On the other hand, if the cell or queen have failed, something can be done for them.

Throughout November about three more trips are made round the apiaries, or a visit every eleven days. Queen-rearing continues, nucleus hives are built up with brood from extra strong colonies, strong hives have an extra super of combs given them. Combs most likely to be attacked with moths are used first, so as to preserve them, such as combs containing pollen, and those that have been a long time off the hives. When overhauling a colony, it is a good thing to put the outer bottom combs into the position of the middle top combs, say a hive is in two storeys. The bees then give these combs that have been neglected a good cleaning out. Moths must be kept down by every means possible.

In December supering is in full swing, also dividing, queen-rearing, and the building up of the young laying queen with brood. All the old bees should be brushed off so as to minimise the risk of losing the queen simply by opening a hive; but it has got to be done.

If a good flow is coming, two or three supers are often put on at one jump, and I am sometimes rewarded by finding them nearly full at next trip.

There is so much to be said about supering and extracting that it must be left for a future occasion. If each of us develop a system of working suitable to our conditions and locations, do our work thoroughly, putting our hearts and plenty of enthusiasm into our work, keep our work well forward, have everything in readiness for the honey flow, such as combs, foundation in frames, tanks, honey packages, &c., do the right thing at the right time, and do it the right way too, we shall all succeed in the end.

Mr. G. V. Westbrooke gave the result of his experiments with the hydrometer as follows:—

TESTING HONEY FOR RIPENESS.

The fact of knowing that by the use of the hydrometer a considerable amount of worry and anxiety could be avoided by the beekeeper induced me to take a special interest in this instrument. It was whilst carrying out experiments that I realised that it was almost impossible during the summer months (at least in the north) to reduce the temperature of honey down to the standard required—i.e. 60 deg. F.—without the aid of ice. As this is rarely procurable by the average beekeeper, experiments were carried out with a view of ascertaining if it were possible to know the specific gravity at 60 deg. if tested at a higher temperature. It was whilst reliquifying the honey for the Panama Exhibition that I discovered it was possible.

A number of samples were then tested at various degrees of temperature, and it was found that if taken at 80 deg. F. and tested with a "Twaddles" No. 4 hydrometer, and it registered 83. By adding 1 point on the hydrometer reading for each 10 deg. of heat above 60, it would bring it to the same as if taken at 60 deg. Thus, 83 at 80 deg. equals 84 at 70 deg. and 85 at 60 deg.

The following are a few of the tests recorded:—

No. 1.—A. E. Mikkleson, Waihou.			
	Temperature (Fah.).		Hydrometer Reading.
	80°	83	
Reduced to	70°	84	
“ “	60°	85	× 5 equals 1.425 correct sp. gravity.
No. 2.—W. Hooper-Teed, Waihou.			
	70°	83	
Reduced to	65°	83½	
“ “	60°	84	equals 1.420 sp. gravity at 60°
No. 3.—Messrs. Jones Bros., Pirongia.			
	100°	79½ (a)	
Reduced to	90°	80	
“ “	80°	81	
“ “	60°	83	equals 1.415 sp. gravity.
No. 4.—Messrs. Pearson Bros., Hamilton.			
	100°	82½ (a)	
Reduced to	80°	84	
“ “	70°	85	
“ “	60°	86	equals 1.430 sp. gravity.

(a) Note.—It is not reliable if taken at a temperature over 90°, as the honey then reaches almost its maximum of thinness.

From these it will be seen that it is quite possible to test honey at any temperature ranging between 60° and 90° F. with certainty, and so show the gravity that it would be at 60°.

Testing Thick Honey.

Sometimes the honey is so dense that the hydrometer will not sink into it. When such is the case, take equal parts of honey and water by measure (not by weight), mix thoroughly, then test with Twaddles No. 2 hydrometer (ranging from 24 to 48), multiply the result by 2, which gives the same result as a No. 4. Thus, if it registers 42 with water, multiply .42 by 2, equals .84 × 5 equals .420, to which must be added the specific gravity of water 1.000; therefore 1.000 added to .420 equals 1.420, the correct specific gravity. It was a few weeks ago that I found that taking equal parts honey and water by weight was inaccurate. Having some granulated honey to test, to save the time required to reliquify it I proceeded to test by the method advocated for dense honey. I weighed out a quantity of honey and added the same weight of water, and then inserted the hydrometer, and found it registered only 37, which was equal to a specific gravity of 1.370. This I knew must be wrong. I then reliquified the balance of the honey and tested it with a No. 4 hydrometer, and it registered 85, equal to 1.425 gravity. I then tried the former method by **measuring** (not weighing) equal parts of the honey and water, and found it registered 42½, which is equal to a gravity of 1.425, and was correct. To make sure, another sample of honey was then tested, and showed the same proportionate result.

These are the records of two samples of honey:—

- No. 1.—Cassrell's Honey, Paeroa.
No. 4 Hydrometer.—Taken at 60° F. 85 equals 1.425 sp. gravity. (Correct.)
No. 2. Hydrometer.—Equal parts honey and water by **weight**, 37×2 equals 74 equals 1.370. (Wrong.)
No. 2 Hydrometer.—Equal parts honey and water by **measure**, $42\frac{1}{2} \times 2$ equals 85 equal to 1.425. (Correct.)
No. 2.—T. Abbott, Pipiroa.
No. 4 Hydrometer.—Taken at 60° equals 84 equals 1.420. (Correct.)
No. 2 Hydrometer.—Equal part honey and water by **weight** equals 72 equals 1.360. (Wrong.)
No. 2 Hydrometer.—Equal part honey and water by **measure**, equals 42×2 equals 84 equals 1.420. (Correct.)

Perhaps the simplest and quickest way for the beekeeper to test thick honey is for him to have a large glass or beaker on which is a mark to contain about 4 ozs. water. Fill this with water up to the mark, then pour it into another vessel and fill again up to the mark with honey; then add the water previously measured to the honey, and mix thoroughly. Then test with a No. 2 Twaddles hydrometer, and note the number to which the instrument sinks, and multiply it by 10. Place the decimal point before the result and add 1,000. This gives the correct specific gravity. Thus, if it registers 43—

$$\begin{array}{r} 43 \times 10 \text{ equals } .430 \text{ add } 1000 \\ 1.000 \\ \hline 1.430 \text{ specific gravity.} \end{array}$$

It is generally recognised that honey having a greater density than 1.420 is sufficiently ripe for keeping purposes, and a safe standard for export. Should your honey come below that standard, it would be advisable to place it on the local market as early as possible, that it may be consumed before the following spring, as it would not be likely to ferment during the cooler months, but would probably do so when the warmer weather prevailed.

Mr. F. A. Jacobsen congratulated the members present on the good Conference, and urged those present to follow the co-operative movement.

JOURNAL.

Considerable discussion took place, principally on the advisability of increasing the subscription of the Journal to 4/6 or 5/-. A number of members spoke in highly eulogistic terms of the Journal, and stated that the Association could not possibly afford to do without it, and they urged everyone present to use every endeavour to secure subscribers for the coming year. In order to give it a start a number paid two subscriptions for the current year. On the matter being put to the vote, it was decided to carry on the Journal for another year, and to leave the subscription rate at 3/6, as at present.

SECOND-HAND CONTAINERS.

Mr. W. E. Barker moved—"That owing to the very high price of tins, and the probability of still further advances, this Conference urge the Government to suspend the regulations so as to allow beekeepers to pack their honey in second-hand containers, at least for the local market."

The motion brought forth a considerable amount of discussion, the majority of which being adverse, and on being put to the meeting was lost by an overwhelming majority.

Mr. E. A. Earp, apiary instructor, considered that beekeepers should make every effort to market their honey in up-to-date packages. The time of the second-hand containers has gone, and, moreover, the Health regulations would not permit the use of kerosene and benzine tins. He congratulated Conference on opposing the use of anything but new containers.

Speaking with reference to the packing of honey for the local market, he urged the beekeepers to bottle their own product, and not send the honey in bulk to be spoilt by bottlers in the cities. A great deal of the honey found on the local market was spoilt through over-heating, as the bottlers were not conversant with the maximum amount of heat which honey should be heated. If the beekeeper would market his honey in small packages, better honey would be found on the local market, and consequently the sales of honey would greatly increase.

Mr. Earp made special reference to the loss the beekeepers had sustained through many of their members serving at the front. Quite a large number of commercial beekeepers from Otago and Southland were now serving with the Expeditionary Forces.

The President (Mr. Jas. Rentoul) moved—"That this Conference expresses its admiration for the members of the National now serving at the front, and expresses its sympathy with the relatives of those who have made the supreme sacrifice."

Complimentary remarks from Messrs. Pope, Kirk, and prominent members of the Association present, votes of thanks to the Chairman (Mr. J. Rentoul), and to the Press for the liberal amount of space given, brought a most successful Conference to a close.
