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OFFICIAL ORGAN of the
NATIONAL BEEKEEPERS' ASSOCIATION
OF NEW ZEALAND

(An Organisation for the advancement of the Beekeeping Industry in New Zealand)

Better Beekeeping | Better Marketing

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The New Zealand BEEKEEPER

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EDITORIAL.

THE NEW YEAR.

In spite of the confident predictions of some allied military leaders that the European War would finish with the old year, we find our armies still striving in open country far from Berlin. These predictions had their inevitable effect on civilian outlook. Too often and too loud we heard the cry of "back to business as usual." Unfortunately, we shall require to anticipate further heavy sacrifices of life. We shall still require to modify our way of living in order that our fighting forces may be adequately supported. We do not lack confidence in the final outcome of the fight against oppression, but that confidence requires to be sober and far-seeing.

We wish our readers health and prosperity that results from work well done and services faithfully rendered.

MARKETING.

The Regulations governing the sale of honey for the 1945 season are now in the hands of producers. On the main points of the percentage of supply, there will be fairly general agreement. We believe 30 lbs. per hive to be a reasonable figure for this season. Some will think it should have been lower; a few will think that any figure is too high. In any case, it is wise to reserve decision in the meantime on this point.

We would have liked to see the 5 lb. limit on apiary sales abolished, both from the desire to give the producer more freedom of action, and because reasons for it seem to be cancelled out by reasons against it. The effect of its retention is to make the producer feel he is being humbugged. The intention is to prevent too much honey being sold in areas near the apiarist, and thereby to secure a more even distribution. With this intention, we are in hearty agreement. We would urge on producers the desirability of spreading their sales widely. The I.M.D. will sell chiefly in city areas and only in those country zones not supplied by producers. Producers have the opportunity now, under the revised regulations, of building their markets for future years. Fruit will be scarcer this year and honey will be in greater demand. See to it that as many people as possible get some honey and learn to regard it as necessary. And see that the consumer gets quality!

Several things will be achieved by making this year's Regulations a working proposition. We believe it will give that balance in our marketing policy that has been upset in the previous war years; it will build a sizeable seals' fund each year for a higher price on bulk honey; it will give the average producer a greater measure of marketing freedom and increase his income; it will secure sufficient honey to enable the Honey Section to operate economically—we believe in the existence of the Honey Section as a balancing unit in our organisation. If a good season results in the Section receiving much more than the 1000 tons budgeted for, then let's see that a reserve of honey is built up for future needs. We should be earmarking some for England and some for devastated Europe as soon as shipping is available. Let us see beyond our own door sales to the needs of our whole community and even to the needs of the communities beyond our own shores.

Producers would be wise to regard the 1944-45 Regulations as a considered step in the transition from

war conditions to those of peace time. We secure stability more surely by making changes gradually and, having secured stability, we are better able to meet the marketing situation of the post-war years.

THE PRICE OF BULK HONEY.

Sevenpence per lb., plus a bonus, that is expected to be not less than ¼d. per lb, is the price for honey supplied to the I.M.D. We think that the time has come to revise this bonus payment—upwards and retrospectively over the past two years. We are pleased to note that the Chairman of the Honey Control Board states that his Board supports this increase.

Our industry has obsorbed increased costs with little compensation. Those who have supported the Regulations have done so at a sacrifice, and little action seems to have been taken against those who have failed to supply according to the rules. We are not anxious to see brother beekeepers prosecuted, but we are anxious to see the law proved valid. Official reports state that 70% of production has not been delivered by many producers. These producers have already—rightly or wrongly—received an extra payment by marketing outside the Regulations.

An increase in the bonus payment from the considerable reserves in the Seals' Fund seems to be indicated. It is also to be expected that trading profits on 1200 tons supplied last year will be available. An increased bonus payment in the future is ensured by seals' revenue from the increased amount of honey packed by the producers for sale through the ordinary trading channels.

EXECUTIVE MEETING.

The Executive expects to meet about the middle of February, when such matters as the Honey Marketing Council, Amendments to the Constitution on Voting and Subscriptions, the Price of Honey, and the place and time of next Conference will be discussed.

DEPARTMENT OF AGRICULTURE
HORTICULTURE DIVISION

HONEY CROP PROSPECTS.

The following is a summary of reports received from Apiary Instructors at the end of December concerning honey crop prospects for the 1944-45 season:—

AUCKLAND AND NORTH AUCKLAND.

At the end of December colony strength was below average for this time of the year, due to unseasonable weather conditions and lack of stores at critical periods earlier in the season. In Auckland areas December was an exceptionally wet month, the rainfall (5.35 inches) being more than double the average, while in the Whangarei district the rainfall was well below average.

The manuka failed to yield any appreciable quantity of nectar, but the pohutukawas bloomed early and have continued much longer than usual. Crop returns from this source may be above average.

HAMILTON.

Cool windy weather conditions prevailed during the early part of December and losses of field bees were heavy in many localities. Artificial feeding was necessary to a greater extent than usual. Conditions generally improved about the middle of the month, and honey crop prospects are now much brighter. An average crop is fairly sure from colonies which were able to maintain a strong force of worker bees, while depleted colonies may take some time during the main honey flow to build up to full strength.

PALMERSTON NORTH.

Heavy gales greatly reduced colony strength and artificial feeding was continued in mny locations right up to Christmas.

Swarming has been a common occurrence. Continued rain has caused rank growth in pastures with a poor showing of clover blossom. Ratas are very late this season, while blackberry on waste lands has bloomed freely.

Unless there is an early improvement of weather conditions light crops will be harvested.

HASTINGS.

In Wairarapa and southern Hawkes Bay the bees were late in building up due to cold, wet and windy weather conditions, while in other parts of Hawkes Bay conditions were much better, enabling the bees to secure ample food supplies and build up colony strength. Food supplies were limited in Poverty Bay due to continued drv weather conditions there. Prospects at the end of December were for good surplus crops of honey in Hawkes Bay; Wairarapa, probably light; Poverty Bay fair to medium.

WESTLAND, NELSON AND MARLBOROUGH.

Kamahi was the main source of nectar supply during December in Westland. Cold and wet weather was general with strong southerly winds. The ratas will bloom later than usual this season.

In Nelson weather conditions prevented the bees working manuka and clover with their usual vigour. The season to date has been disappointing.

MARLBOROUGH.

Clover, manuka and borage are all blooming profusely; but the weather has been much wetter than usual during December. There is time for very good crops of honey in Marlborough, provided weather conditions are warmer during January.

CHRISTCHURCH.

In all Canterbury areas heavy rains have been a feature during De-

cember. Temperatures have been cool and very little nectar has been gathered from the present prolific clover bloom, particularly in heavy soil areas. The season generally is approximately four weeks later than usual.

The bees in southern areas have slightly more surplus honey than is the case in mid and north Canterbury districts. With the wealth of clover bloom showing, results so far are extremely disappointing, but with suitable weather conditions during the balance of the season average to better than average crops could be secured.

OTAGO AND SOUTHLAND.

December was a difficult month for hive management. Heavy artificial feeding was necessary in most parts right up to Christmas, and preparation for swarming was noticeable in strong colonies. Weather conditions improved considerably after Christmas. There is plenty of moisture in the ground and pastures are in good condition. The season is much later than usual, but there is every prospect of good honey crops if suitable weather conditions continue.

Yours faithfully,

W. K. DALLAS,

Director of the Horticultural Division.

APPOINTMENT OF APIARY INSTRUCTOR.

Mr. I. W. Forster was appointed to the temporary staff on November 7th last as Apiary Instructor in charge of the Invercargill-Dunedin district, vice Mr. L. I. Box resigned.

As a youth, Mr. Forster received two years' training with one of New Zealand's largest commercial beekeepers, and altogether has had twenty years' practical experience of commercial beekeeping. He also served on the executive of a local branch of the National Beekeepers' Association. It is confidently expected that his services will be of great value to beekeepers in that district.

BEEKEEPERS' HIVES

All beekeepers are required by the Apiary Registration Regulations, 1937 (Regulation 6) to notify the Horticulture Division, Agriculture Department, Wellington, not later than 31st December each year, of any increases or decreases in the number of hives kept at each registered apiary on 1st December of that year.

Every person failing to comply with the Regulations is liable on conviction to a penalty not exceeding £20.

Those beekeepers who have not yet attended to this matter are now requested to do so as soon as possible, to enable the apiary register to be brought up-to-date.

BRANCH ACTIVITIES

OTAGO.

The August quarterly meeting of the Branch was held in the Otago Pioneer Women's Hall, 362 Moray Place, Dunedin. There was a good attendance to welcome the speaker for the evening, Mr. Horn, President of the Central Otago Branch. Mr. McFadzien, President, extended a cordial welcome to Mr. Horn and introduced him to the members of the Otago Branch. Mr. Horn took for his subject Honey Production and Swarm Control. His own method and also the Demaree method. He also showed a "gadget" for opening hives instead of the usual method of the hive tool. Close attention was paid to the speaker and many questions were asked and answered in detail. Mr. McFadzien, in moving a vote of thanks to Mr. Horn for his address to the members of the Otago Branch, also thanked Mr. and Mrs. Horn for the great assistance they had given at the stand at the Winter Show; both had been untiring in their efforts to make this venture as interesting to the public as possible. Mr. Horn replied. Supper was served by the ladies and a pleasant hour was spent.

At the November quarterly meeting of the Otago Branch of the N.B.A. there was a large attendance of members. Mr. McFadzien, President, in the chair; after routine business was over, the meeting tuned in to listen to Miss Pearce on her experience on work done in a season on Mr. W. S. Herron's model apiary in Southland, and included a practical demonstration on the miniature hive owned by the Branch, of Mr. Herron's method of the modified swarm control. This created a good deal of discussion, and Miss Pearce was plied with questions and answered them all in a convincing manner. At the close of her address Mr. McFadzien moved a hearty vote of thanks, which was heartily accorded. Miss Pearce briefly replied. Supper was served by the ladies and a pleasant hour was spent.

WELLINGTON.

The branch secretary has sent in the notice of the January Field Day All details are given of train arrangements, and alternatives should the day be wet. It shows good organisation. And here is the result! They have nearly 200 members. When we last heard from Wellington their target was 150. Congratulations, Wellington.—Editor.

N.Z. HONEY CONTROL BOARD

As beekeepers are now aware from official notices sent out by the I.M.D., the revised emergency war-time Marketing Regulations, which were supported by the Honey Control Board and the executive of the National Beekeepers' Association, are now in operation.

The principal feature of the revised conditions is that beekeepers are now required to send forward 30 lbs. per hive holding to the Division, instead of 70 per cent. of their total production as was previously required. A still further concession is made under the new arrangement by granting exemption from the Regulations of the production of the first 20 hives. Beekeepers with a normal honey crop are therefore free to sell a much greater portion of their crop through ordinary trading channels. Beekeepers should, however, bear in mind that these revised regulations are not intended to imply that beekeepers are expected to limit their consignments to the I.M.D. to the bare 30 lbs. per hive holding. The I.M.D. will be glad to accept as much honey, above the limit laid down in the regulations, as the beekeepers choose to send forward. It is the responsibility of the Honey Section of the I.M.D. to provide supplies to the various units of the armed forces and also to create a pool that will ensure an equitable distribution to the civilian population. This briefly explains the necessity for the existing Marketing Regulations.

Another point that must be kept ever in mind is that a minimum volume of honey is required to maintain the existence of the Division as an economic unit. If the Division fails to obtain adequate supplies for this purpose then obviously the Division cannot be expected to provide satisfactory service to the industry either in the matter of establishing stabilised marketing or in making a satisfactory pay-out to suppliers.

THE PAY-OUT.

The pay-out of 7d. pro-rata is quoted in the Regulations. Those who have expressed dissatisfaction with this price should bear in mind that the Division has no authority to increase the pay-out which has been established by the stabilisation committee. The Board has already recorded its support for an increase in the return to Division suppliers and will put forward its best efforts for an increase in the bonus payment of ½d. per lb. over the past two seasons.

WALLACE NELSON,
Chairman, Honey Control Board.

SECOND-HAND TINS.

North Island beekeepers are reminded that the Honey Section has a quantity of SECOND-HAND TINS and CASES for sale.

The price of the Second-hand Tins is: For double-tight lids, 1/2d each. Push-in lids, 1/- each, and cases, 1/10d each. All prices F.O.R. Auckland.

APPLES DEPEND ON BEES.

Research work in Nova Scotia has proved that the apple depends almost entirely on insects for pollination; in fact the apple industry is almost wholly dependent on the hive or honey bee.

It is doubtful if many apple growers fully realise that fact because, in their spraying operations, they show little or no concern for the beekeepers who in some districts have suffered serious bee mortality through spray poisoning—occasioned by spray being applied during full bloom instead of at petal fall.

The average number of blossoms visited by a colnoy of bees in a single day has been estimated as being around 21,600,000, or the total number of blossoms on 20 acres if all were in blossom at one time, according to Dr. F. J. Dyve, in " Canadian Beekeeper."

CORRESPONDENCE.

Te Kawa.

(To the Editor.)

Sir,—

I am accepting the Honey Control Board's invitation to contribute constructive criticism.

The I.M.D. can secure further supplies by meeting our increased costs since April 1940. Any other approach should be abandoned. In future the I.M.D. should handle a minimum of honey, consistent with ability to maintain its service. The dream of the I.M.D. and the H.C. Board was to handle a maximum and run the Central Store on a lavish scale, with wasteful freights and distribution charges, which the producers cannot afford. The Control Board still considers that the Central Store will be able to maintain its prices when there is oversupply.

The present system of an advance payment will prevent panic selling, but cannot prevent a lowering of prices when honey is plentiful. The local market is protected by the export of honey, but a low export price soon brings extra supplies on to the local market with a general fall in price. The solution suggested is a guaranteed price for export.

The wartime demand is responsible for retail prices holding; it is not due to the selling ability of the I.M.D. It is hoped that apiarists will realise the position and support advancement that will save extreme disappointment if and when purchasing power is reduced.

The difficulties at present are caused by the Government ideas that primary producers can absorb increased costs indefinitely, and also because the Control Board has allowed the position to drift since 1940, the Board being not in sympathy with the smaller producers.

ALEX MAWHINNEY.

Referred to Mr. Nelson, Chairman of the Control Board, who says:—

Mr. Mawhinney's "solution" to the problem he conceives to exist is a guaranteed price for export. Also an increase in the I.M.D. pay-out to the extent that will cover the additional cost of production since 1940. As both of these proposals are quite at variance with the procedure desired by the beekeepers, the Board will cheerfully accept any criticism Mr. Mawhinney chooses to offer for having failed to follow his lead. What the beekeepers want (if resolutions passed at their annual conference and local meetings are any guide) is a price based on the actual present-day cost of production. The Industry does not concede that the price paid out by the I.M.D. in 1940 was adequate in this respect. Consequently it is argued by representatives of the Industry that as no official enquiry has ever been made into the cost of producing honey it is unfair to have the price "pegged" on the basis advocated by your correspondent. It was on a cost of production basis the Waikato beekeepers drafted out their case in detail and the Board has already recorded its full support of this case.

If Mr. Mawhinney would take the trouble to read the Board's reports from time to time, he would learn that apart from essential wartime requirements the Board has never advocated control beyond the point that will ensure the operation of the Central Depot as an economic unit. Evidence of this may be noted in the fact that under the revised regulations the amount of honey which beekeepers are required to supply the I.M.D. is appreciably reduced to the bare urgent wartime requirements.

The Board has never stated, as alleged by Mr. Mawhinney, that the Central Depot will maintain its prices in times of over-supply. Everyone surely has sense enough to recognise that purchasing power of the masses is the factor which in the final analysis determines the price level of any commodity. The Industry has, however, had costly past experience of chaotic marketing and ruinous prices due solely to unrestricted competitive selling among producers and

the operations of commercial concerns whose only interest in the honey business was a " turnover " at the greatest margin of profit to themselves. The plight of any producers under such circumstances is a sorry one and the I.M.D. exists for the purpose of protecting the producers from a repetition of the past experiences.

WALLACE NELSON,
Chairman Honey Control Board.

Havelock North.

Dear Sir,—

Having at last received a copy of the Honey Marketing Regulations 1944-45, I would like to make some pertinent criticism of same, both detailed and general.

In the first place why is the limit of 5lb. per sale retained? It would be hard to find a regulation more stupid or, what is more to the point, so utterly useless in effecting its alleged purpose. Had the Internal Marketing Division been game to allow us to hold our Annual Conference in 1944, they would have heard some home truths on the matter.

Then no provision is made for nucleus hives. You cannot expect a beekeeper to supply honey from a nucleus. This omission and the sending out of demands for honey to commercial beekeepers in December, when the figures of the number of hives are not available until 31st December, shows that the I.M.D. has very little knowledge of or sympathy with the beekeeping industry.

And what justification has the I.M.D. for requiring particulars as to whom you sell your free honey? They can get the number of your hives from the Department of Agriculture and thus the amount of honey due. It is just sheer impertinence to require lists of customers.

But overriding every other consideration is the question:—

WHAT JUSTIFICATION IS THERE FOR ANY REGULATION AT ALL?

War purposes can no longer be advanced as a reason, to judge from the I.M.D.'s own transactions last season when they had 1200 tons. For instance we were told England needed 460 tons—she got 100. Prisoners-of-War required 8000 lbs. per week (188 tons per year)—they got 10 tons, and so on.

It seems quite clear that the Internal Marketing Division, having without the beekeepers' consent established a needlessly large and expensive packing plant at Auckland, now finds that the only way they can avoid showing a loss is to commandeer honey at a price below cost of production, hence the Regulations.

And to those beekeepers who say we must keep the I.M.D., Honey Section, going in preparation for a slump I say this: " If the I.M.D. cannot or will not pay a better price for honey now, what will we be paid when times are hard?

Yours, etc.,

WM. J. C. ASHCROFT.

We agree with the correspondent on the 5lb. limit.

It was the Executive of the National that decided not to hold a Conference in 1944, because the Minister of Railways would not grant permits even to delegates.

Under Clause 6 (c) of the Regulations beekeepers are only required to " keep records showing " the particulars of sales, for inspection if required.

We have referred the letter to the Manager of the Honey Section for comment on further points raised—Ed.

It is hard to understand the above letter, particularly as in the October Journal, a general outline of the discussions held between the National Executive and the Internal Marketing Division was given to all producers. The reason for the limit of 5 lbs. per sale being retained (this of course only refers to retail consumer sales at the apiary), is because certain beekeepers will sell to consumers one or more 60 lb. tins, and this does not assist in a wide distribution.

The Internal Marketing had no knowledge of the Annual Conference

being postponed until we were notified by the National Executive, who stated that it had to be postponed owing to rail restrictions.

With reference to neucle hives, an exemption of the first 19 hives has been granted to every producer, together with the fact that he is only asked to supply 30 pounds for every hive registered. Surely this must be some assistance to help cover neucle hives.

Particulars in connection with the selling of honey may or may not be required, but it is the duty of producers to keep these records in case they are.

In connection with Mr. Ashcroft's statement, "What justification is there for any Regulation at all?" it would appear that Mr. Ashcroft has his head so far in the clouds that he is really in another world and has forgotten that there is still a war on. Foodstuffs are just as important as men in an army, and besides this, the public in the more populated areas are just as entitled to have portion of any crop produced in the country as the neighbours of the producers.

The 460 tons mentioned for England was the allocation given to your Marketing Organisation during the early part of the war, but was eventually eliminated owing to shipping space. Last year, a portion of this was reinstated and it is hoped, subject to supplies being available, that additional quantities will be sent this year. The drop in Prisoner-of-War parcels is accounted for owing to the fact that during 1942 season, supplies were not available in sufficient quantities and substitutes were found. However, many Provincial Patriotic Societies are again drawing supplies and it is anticipated that these will be larger again this year.

As far as the Regulations are concerned, we can only reiterate the Minister's assurance that these are war-time Regulations only. Finally, instead of producers writing pertinent criticism as above, would it not be better for some constructive criticism to be offered, and thus assist your own industry to consolidate a marketing organisation which the majority of the producers require.

INTRODUCTION OF QUEENS.

Two years ago, at a field day in Whangarei, I gave a demonstration of introducing queens by the use of a paper bag as advocated by Mr. A. H. Keen, of Woodbury, Canterbury. Briefly, this method is to place the queen without escort in a thin paper bag which is pierced in several places with a fine nail. The bag is then opened under a cluster of bees from the hive into which the queen is to be introduced, and about a tablespoonful of the bees scooped into it. The bag is then closed by screwing the top and is placed between two combs of brood in the centre of the brood nest.

Mr. White has altered this procedure slightly. He uses a rather larger bag, 7½in. x 6in., in which he makes three lines of perforations in the lower half by passing under the needle of a sewing machine. Into the bag he scoops between one and two tablespoonsful of bees in the first place, and gives them a good shaking; waits two minutes, then shakes the bag again, and immediately drops the queen in amongst the bees, continuing to shake well until the bag is placed between two of the centre brood combs. The queen is usually out by the next morning. Important points to remember are not to look into the bag after the queen is dropped in and not to take the bees that are put into the bag from outside the hive but from the brood combs within the hive. Mr. White has introduced hundreds of queens in this manner and has not had a single failure.

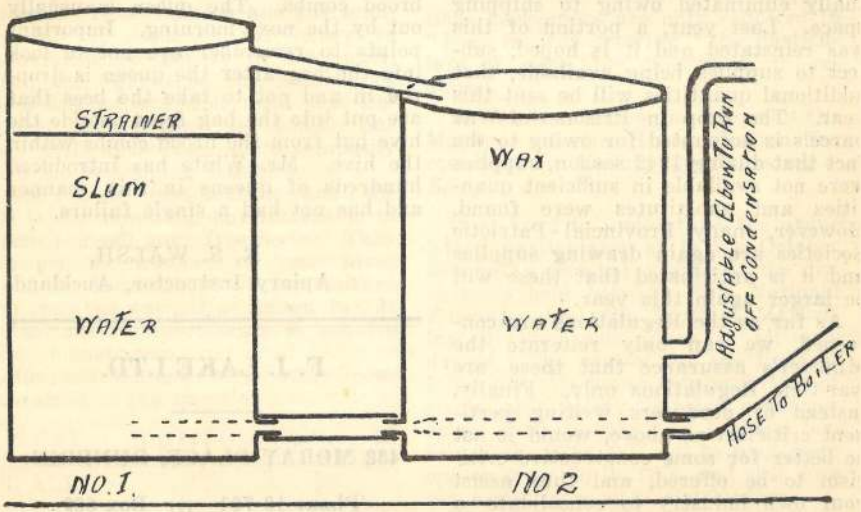
R. S. WALSH,
Apiary Instructor, Auckland.

A WAX BOILER

According to reports there are many beekeepers like ourselves who have lost quite a number of colonies through Spring Dwindle, or D.T. (Disappearing Trick), and who may be taking the opportunity of culling out some imperfect combs. To these I will describe a method of boiling out wax, which is not as effective as a good press, but may be of use where man hours are of much more value than boiler hours.

Two drums, size optional, are connected near the bottom by short length of hose as per illustration. The pipe in No. 1 ending about the middle. A steam pipe is placed through the opposite side of No. 2 with a contracted nozzle within about ¾in. of the end of connecting pipe in No. 2. Combs or slum are put into No. 1 which should be swedged a little distance down from an overflow into No. 2, or a stout wire soldered around inside. A fine wire screen is made to fit below this in the manner in which a tail light glass is held in a tail lamp. This fine wire screen would be better if backed by one of a heavy coarse gauge to strengthen it. This screen is to hold the combs below the surface of the water of which the drums should be ¾ filled. When steam is turned on a vigorous circulation is caused. No. 1 will overflow and No. 2 will lower correspondingly. No. 2 becomes a wax separator as the wax flowing to the top of No. 1 flows over to No. 2. This may force several hundred gallons of water per hour through the combs, depending upon the boiler pressure and the efficiency of the nozzle injector. I am giving no dimensions as anyone wishing to try it out can use his own ingenuity in that matter. I trust that I have been able to transmit the idea. —Alf. E. Norton.

Gravies, made after a roast of meat, are improved by the addition of a teaspoonful of honey, added just when the gravy thickens.



THE NORTON WAX BOILER

WAIKATO CONVENTION.

ADRESS BY CHIEF APIARY INSTRUCTOR.

There appears to be some confusion in the minds of many beekeepers, especially those who have more recently taken up beekeeping, in regard to the organisation and duties of my Department insofar as the beekeeping industry is concerned; so much so that an explanation of the position is most desirable.

The Department of Agriculture employs seven fiield Apiary Instructors stationed at convenient centres throughout New Zealand, and one Honey Grader. It is their job to service the beekeeping industry in every way possible, including the inspection of apiaries for the control of bee diseases, giving instruction where required in the establishment of bees, apiary management, queen-breeding, harvesting and packing crops of honey, and generally to administer the regulations under the Apiaries Act. 1927. In short, the work has to do with all the essential activities connected with honey production up to the point where your honey is packed in final containers for marketing purposes, and there their duty ends so far as your honey is concerned, with the exception of grading. The Grader attends to this work. Here also there appears to be some confusion in the minds of many producers, who imagine that the Grader works to his own ideas in regard to values, which is not the case. Honey standards are actually set by the consuming public, by their choice of quality according to their taste and needs in normal times.

A careful check is kept on the likes and dislikes of the consuming public, also overseas requirements, and from the knowledge gained standards are set. Grading which follows is a reflection of these standards.

Honey grade certificates are a means of facilitating pay-out to producers, blending, packing and sales of honey. No marketing organisation could afford to ignore the desire of those who buy and consume your produce.

To maintain the production of honey at as high a level as possible under existing conditions, seventy competent beekeepers were appointed as part-time apiary inspectors to assist the Department's permanent Apiary Instructors in the control of bee diseases, and although a number of these men were unable to carry out inspections due to pressure of work in their own apiaries, a great deal of good field work was accomplished. Reports to hand indicate that there was an improvement in the disease situation generally last season.

As part of the general plan to provide a more adequate service to ensure the progress of the beekeeping industry in New Zealand, the Department of Agriculture has decided to provide facilities for research on general problems affecting the apiarist, including:—

- The investigation of bee diseases (brood and adult bee troubles).
- Pollen substitutes to offset serious shortage of natural pollen in some areas.
- Humidity in relation to low specific gravity of honey.
- Storage and protection of extracting combs between seasons.
- Spring and summer dwindling of worker bees.
- Contamination of honey during harvesting and packing operations.
- Methods of wintering bees under varying conditions in New Zealand.

After dealing with each item in detail, Mr. Winter explained that this work will be carried out at the Animal Research Station, Wallaceville, and attention concentrated on major problems affecting the industry as time and facilities permit.

Rehabilitation: Ex-servicemen should make all enquiries from the nearest Rehabilitation Officer.

There is no Government institution

where prospective beekeepers could be given instruction in beekeeping. The desirability of providing a central apiary for this purpose has been given consideration, and it is most unlikely that one will be established. It is felt that the employment of trainees (ex-servicemen) in established commercial apiaries (on a subsidised wage basis) for one or two seasons according to their qualification would offer an excellent opportunity for the men concerned to acquire suitable practical training, and at the same time would enable trainees to participate in the hard work and to experience some of the hazards connected with commercial beekeeping before engaging in the industry as established commercial beekeepers.

The Department of Agriculture has agreed to its Apiary Instructors being co-opted when required to assist the rehabilitation sub-committees, and to give evidence when applications from ex-servicemen are being considered.

Apiary Instructors are in a position to give reliable information in regard to the economic aspect of each application, including the disposition of established apiaries in the areas under consideration, the type of honey likely to be produced there, and generally to indicate to the applicant and to the committee the best course to be taken to give the applicant a reasonable chance of making a success of the venture without interference with those already engaged in the industry. There is limited scope in New Zealand at present for increased production of good quality honey in new areas, and, if the present arrangements in regard to this subject are carried out, commercial beekeepers need not fear any development likely to upset the present economy of the beekeeping industry.

Mr. Winter also discussed the proposals put forward by the National Beekeepers' Association for the regulation of apiary registration.

OBITUARY.

Mrs. Lennie, wife of Mr. A. Lennie, branch president, Southland, died recently. Members and friends extend to Mr. Lennie their sincere sympathy.

LEAVE AMPLE STORES.

Honey on the hives is like money in the bank. Reserves of honey enable the bees to build strong colonies to take advantage of the honeyflow when it comes. The following letter from A. G. Woodman tells the story of substantial profit from reserve stores:

"It is the same old story in Michigan, the great majority of bees were not in gathering strength when the comparatively short honeyflow opened in June. As you know heavy winter losses, at least 25 per cent. among good beekeepers on the average, due mostly to shortage of stores, followed by no early honey from fruit bloom and other early sources, no honey until June.

"I ran one little yard of 20 colonies in Dadant hives. Six of these had ample stores for both winter and spring and with a little stimulative feeding they were prime and ready for the honeyflow—gathered from 200 to 300 pounds of surplus. The average on this yard is about 100 pounds."

The six colonies with ample stores for winter and spring gathered from 200 to 300 pounds each while the others got so little that the average for the yard was only 100 pounds including the heavy yields of those well provided. Certainly the good supply paid big returns.

With honey prices higher than for several years there is a temptation to rob the bees too closely and take a chance on early nectar from willow, maple and dandelion. The higher the price the better the return for leaving plenty of stores for the bees. Not less than fifty pounds should be left on every hive and seventy-five is better.

The first essential for successful beekeeping is to provide ample stores at all times.

—American Bee Journal.

BOOK REVIEW.

Two books have come to hand too late for review in this issue. They are "Honey Getting," by E. L. Sechrist, and "The Bee Craftsman," by H. J. Wadey.

They will be reviewed in the April issue.

TALKS TO BEGINNERS.

First of all Skep wishes all readers a happy and prosperous New Year. In more ways than one this is the beekeepers' New Year. The manner in which a hive is managed in the autumn determines very largely the type of hive you will have next spring.

You must have adequate stores to see the hive through to the next honeyflow. Stores is not only honey that is sealed, but pollen as well. In most districts of N.Z. there tends to be a shortage of pollen before the honeyflow. If you have heavy pollen combs during extraction, keep them aside, as they come from the extractor, and cover well from pests. You may need them next November, but we will have more to say about that at a later date. As well you must have a good queen. A good queen in the autumn means that there will be a good population of young bees to carry over the winter. Any two-year old queens should be replaced this autumn. As soon as the honeyflow is tapering off you should begin to requeen.

We will suppose that you have most of the surplus honey removed and your few hives reduced to three stories—the top box being sealed honey and the middle one about half full of honey and brood. Remove this middle box to a new stand and see that the queen is in it. Make sure there is some brood left on the old stand and particularly a frame with eggs. Now you will have the old hive reduced to two boxes and a new hive of one box. Leave the old hive for one week, open it up and destroy all cells. Remove one comb and replace it with a comb of eggs from your best hive. Close it up and leave the hive for another week. At the end of this second week from the time you removed the old queen, open the hive again and you should find several good queen cells well drawn out. Destroy the poorest leaving two or three. You can now leave the hive for six weeks to enable the young queen to hatch, mate and commence laying. You can go a stage further and kill the old queen at the time you break down the poor cells. Three days after this you can give one of the cells to the single hive. Now do not try this method on all your hives, or if you do, do not kill all your old queens. Instead of killing the old queen you could make a nucleus and introduce the cell to it. (See Mr. Stewart's "Answers and Answered" in the Oct. 1944 issue of this Journal for advice on introducing cells.) The method I have outlined has many advantages. It retards brood rearing at a time when it is not needed. It gets a new queen in the hive—provided the weather is not too bad for mating. There are plenty of drones at this time of the year and the weather is usually good in our late summer. The young queen lays up a sufficient force of young bees for successful wintering. And this is important: you are six months ahead and you are not dependent on the vagaries of spring weather to get young queens successfully raised. Of course there are criticisms of the method as well. You can try other methods. (See Mr. Paterson's article in the November 1944 N.Z. Journal of Agriculture.)

If you begin to think of the next season's honey crop now and take the necessary steps in time, you are learning to be a real beekeeper.

Some of you will be worrying over the handling of your honey for this season.

Make it your aim to put out a first grade article, well treated, clean and well packed. You are an ambassador for honey, the finest sweet on earth. If you put out a poor pack you damage yourself and others as well. If you are producing extracted honey be sure you have a fine grain. You can easily secure this by getting a pound or so of the finest grained honey in your district, and stirring it into about fifty pounds of well-strained liquid honey. Cover and place in the coolest place you can find for about a week, stirring well each day. The whole amount should granulate to the fine grain of your starter. You now

have enough starter to stir into about a ton of honey, which will granulate with the same grain. Prepare your starter a week before your main lot is extracted. Even a dark and even strongly flavoured honey, of fine grain, is more appreciated by the consumer than the finest white honey that is of a " sugary " grain. Selling a coarse-grained honey is bad beekeeping. For prices to be charged see the October Journal.

The Editor says this will have to do now, but here are some interesting questions that have been asked.

Q. What is the most critical time for pollen and honey in any district?

Ans. Undoubtedly the month between willow and clover flows. In some districts there is a greater pollen shortage than is realised at this time.

Q. Have beekeepers any suggestions as to how to maintain an ideal flow of honey and pollen in any district?

Ans. This is addressed to "beekeepers," which lets Skep out. Let's have your answers for next issue.

Q. What results have been obtained in using pollen traps, or reasons why they are unnecessary?

Ans. In Australia and America excellent results have been obtained. The pollen is used to mix with soybean flour which is a substitute. In this country isolated efforts have been made which indicate promising results. There is a large scope for experimentation. Traps are unnecessary in districts where pollen is not scarce. On the other hand these districts could be trapping pollen for use elsewhere.

Q. What results have been obtained by using a two-queen hive or reasons why it is impracticable?

Ans. Excellent results have been obtained by some N.Z. beekeepers. It is a form of intensive beekeeping. Too many producers in this country suffer from megalomania. They think it necessary to have many hives to be successful. More honey could be obtained from fewer hives, with less total effort, if our practises were more intensive and less extensive. The two-queen system is a practical and intensive method.

Q. How does Black Locust (Robinia pseudacacia) yield in N.Z.? It is said to be a very durable post timber. The Americans use it in erosion control—but it spreads by suckers.

Ans. Robina pseudacacia is known as black locust in the U.S.A. and as spiny acacia or false acacia in New Zealand.

The greatest value of spiny acacia is for post timber. As a shade tree in summer it is also rather popular in the Cambridge-Te Awamutu district. It is a very hardy tree which stands a considerable amount of cold. In the Manawatu and Wairarapa districts, however, it does not grow well. There appear to be a number of types in the species which are very attractive to bees in the spring, principally for pollen and possibly a little nectar; but so far as I am aware there is no record of any surplus honey being stored from this source in New Zealand.

(The Answer to this Question is provided per favour of the Director of the Horticulture Division.)

A further question on sweet clover is held over till the April issue.

" Skep " thanks inquirers and invites more questions.

Wishing you all a good season,

SKEP.

(Skep had an interesting article on swarm control and section honey management prepared for the previous issue. The Editor apologises for the omission of " Talks to Beginners " in the previous issue.—Ed.)

THE BEST METHOD OF RECOVERING THE MAXIMUM QUANTITY OF BEESWAX FROM OLD COMBS AND SLUMGUM.

From " The Australian Beekeeper."

FIRST PRIZE.

We all no doubt have different methods of recovering the maximum quantity of beeswax from scrapped combs and also we all have a certain amount of slumgum every year from our cappings reducers, for no matter how efficient our machine is it leaves a certain amount of wax in that slum to be handled by some other means or method.

Now in the handling of slum and old combs I believe there enters two factors (i.e.) heat and pressure, and it is the ideal combination of these two which will give you that last ounce of beeswax from the two items under consideration.

I have devised a press which comes very near perfection in combining heat and pressure and which I find leaves an absolutely dry mass of cocoon and dirt when the matter has been treated by this process. While we can boil to obtain heat and use a wax press to obtain pressure it is the combination of these two at once which I found gave me the most satisfactory results. To do this I used a large drum about size of 44 gallon, inside which I constructed a press using a pressure screw with a ratchet handle, with which I am able to exert about 2 ton pressure. The idea is to place this down over a fire and thus keep water boiling around the bag containing slum while you apply pressure.

To start I first take old combs and slum and place in tins over fire with tins about quarter full of water using say old honey tins with tops out and handles for easy handlang, and bring to boil. With an iron rod keep stirring to break up combs and bring whole to as liquid a state as possible to separate cocoons of combs. It is better of course to soak combs a few hours before you commence boiling. When it has been boiling for say an hour and a half tip into the bag in the press basket, making sure the bag is sound and no holes. I prefer a wheat or corn sack. Make sure that you already have boiling water in the press container up above the bottom of the basket. My press will hold about 5 tins of slum. Now apply pressure but remember to keep the water boiling around the basket and bag. By gradually increasing the pressure and at the same time lowering the water height by means of a flexible hose on side of drum you finally have water and wax below the bag. While you now keep water at this level by running off with hose you tip 2 or 3 tins of boiling water over the bag and press basket from top; this will carry any particles of wax that may be sticking to the press cage or outside the bag. I have found that this method gives, as before stated, that last ounce of wax from old combs and slum which when tipped out are just so much dirt and cocoons.

A. F. LUBKE.
Rakerawa Apiaries, Tumut.

SECOND PRIZE.

The best method of recovering the maximum quantity of beeswax from old combs and slumgum is as follows:—

Obtain a water-tight vessel 2 feet high and 3 feet 3 ins. square. (I use an old ship's tank with about 1 ft. 3 ins. cut off the top half.) Next make a square framework out of 2 x 1 hardwood, without top or bottom on it. The square must fit loosely into tank, having about 1 inch play on each side, and must be one foot high. On to the sides of this frame nail ¼ inch dairy gauze one foot wide; you then have a gauze cage without top or bottom, that can be placed right down on the bottom of the tank. Now make a square cover out of 2 x 1 hardwood that fits very snugly on the cage. Nail ¼ inch gauze on to this square and you have a removable lid on the cage.

Method of extracting wax from old combs: Place tank on fire, run 5 inches of water into it, place cage in tank and bring water to the boil. Place combs in boiling water. (It will take up to 250 combs in one boiling.) Break up combs well with a paddle and boil for 15 minutes. Now place gauze lid on cage and load with very heavy weight or it will not stay on. Fill tank with cold water to within 3 inches of the top, bring to boil and let boil for five hours (but do not allow to boil over), then leave 40 hours to cool. Slumgum can be mixed with comb when this process is used.

After having cooled off, it will be found that wax is set on top of the water and the refuse enclosed in the cage. One thing must be remembered, that it does not harm beeswax to boil it plenty, but it must have a lot of water; not less than half a gallon of water to each comb. You will note that my tank holds about 130 gallons of water to 250 combs.

This process produces far more weight in lbs. of wax per 100 combs than pressing. Matter of fact, beekeepers in this district are discarding pressing altogether and bringing combs to my place for processing.

As for quality of wax obtained, I have an unlimited demand. My wax can always be sold when others cannot.

R. J. BESTMANN.
King St., Caboolture, Queensland.

WINTERING FALL NUCLEI.

By W. L. ARANT, in American Bee Journal.

It is a common practice among some of my fellow-beekeepers to winter a minimum number of colonies and increase in the spring by dividing. They say it helps to control swarming, and being done during the building-up period, has the conditions that insure success.

If preparing for a late honeyflow, such as fireweed, I have no argument with them; otherwise, the wintering of nuclei made up in the fall has, in my opinion, much the best of the argument. That these nuclei can be wintered successfully with a minimum of material and labour has been proved by practice in our yards for a dozen years. First, may we submit the argument in their favour:

1. There is no decrease in the honey crop, since divisions are made after the main flow is over.

2. Better queens are obtainable in late summer than in early spring, and if purchased they cost less.

3. Wintered nuclei with late-summer-reared queens show great vigour in building up the following spring. In this respect they resemble package bees.

4. A nucleus will winter on less honey than a full colony. Fifteen pounds if often enough.

5. A colony built up in the spring from a wintered nucleus (with a queen as described above) will seldom try to swarm, if given reasonable care in the matter of ventilation, good combs, sufficient room, and shade if shade is needed.

6. They require a minimum of labour during the busy season. No requeening is normally necessary during the honeyflow, and there is practically no swarming problem.

7. Unless the main honeyflow is quite early, the yield will be greater than that of old colonies; reasons: 1, 2, 3, and 5 above. In a locality where there is a tendency for bees to reach the peak of brood rearing too early for the main honeyflow, the wintered nucleus is ideal.

All this nevertheless is like giving the fine points of a dead horse unless these nuclei can be wintered in a practical way. We give herewith a method we have used west of the Cascades where winters are not severe, but where temperatures as low as 15 or 20 degrees are not uncommon, and below-freezing temperatures may last intermittently for several weeks. We believe it might work where winters are colder.

Two four-frame nuclei are placed in a ten-frame standard hive body in which a bee-tight partition has been fastened in the centre. If you prefer, you can place this partition slightly off-centre and make room for one four-frame and one five-frame nucleus. This partition is preferably of half-inch lumber and permanent. Over this is an inner cover sawed into two parts such that they join directly over the partition, making it possible to open and examine one nucleus without disturbing the other. We make a special bottom board and nail it to the hive body for convenience. It has two-inch entrances for the nuclei, at opposite ends, to keep them apart in flight and prevent drifting from one to the other.

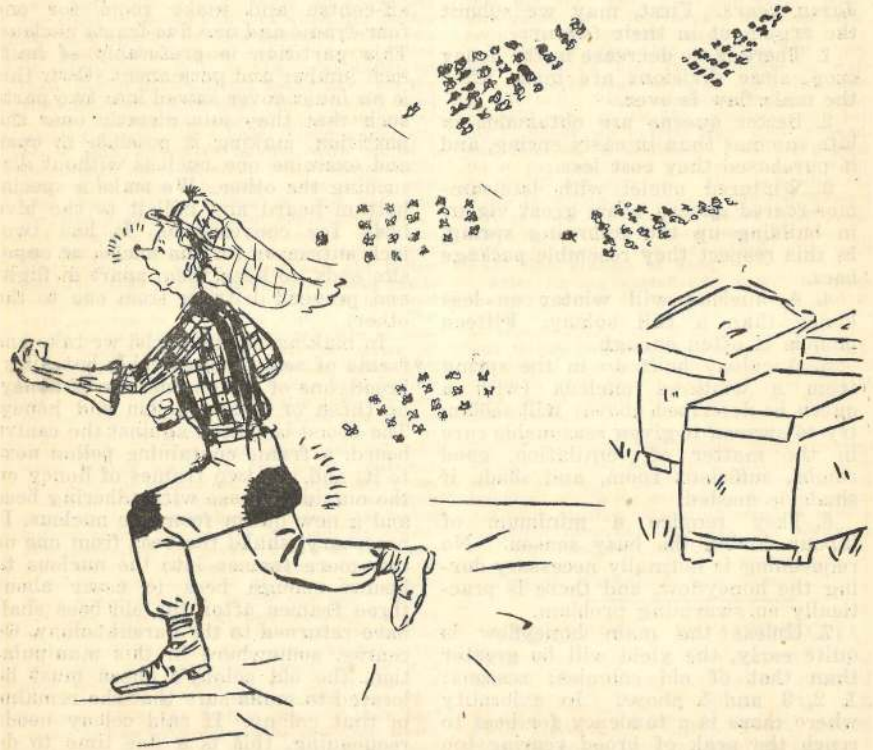
In making up the nuclei we take one frame of sealed (preferably hatching) brood, one of pollen and two of honey, or three of mixed pollen and honey. The brood is placed against the centre board, a frame containing pollen next to it, and the two frames of honey on the outside. These with adhering bees and a new queen form the nucleus. If necessary, shake the bees from one or two more frames into the nucleus to insure enough bees to cover about three frames after the old bees shall have returned to the parent colony. Of course, somewhere in this manipulation, the old colony's queen must be located to make sure that she remains in that colony. If said colony needs requeening, this is a fine time to do it. Only colonies that can spare brood and bees without jeopardizing their

own winter condition should be used for this purpose, unless the entire colony is divided into several nuclei, in which case they should all be moved to another yard.

Late February is the best time to make these divisions, but we have done it successfully in March. From two to four weeks after making them up, an examination must be made to see that the queens are laying and to provide each nucleus with enough additional stores to equal three full frames of sealed honey. (Corrected to N.Z. conditions.—Ed.)

It will be found that both nuclei will cluster against the centre board, and they will together form one spherical cluster. Spring brood-rearing will start in those combs adjacent to the central board, hence nearest the centre of the composite cluster.

Additional frames of honey might be needed in the spring after brood-rearing is under way; but with a favourable spring and early honey-flows from willow, maple, etc., they are not needed. When the nucleus expands and becomes crowded it is lifted out into a full size hive and given more empty combs or foundation. When both are so treated, we have two full colonies side by side but with entrances in opposite directions. Whether to leave them so, shift them around, or move one to another yard (not to mention other possibilities) is left to the convenience and preference of the operator.



AIR RAID OVER ENEMY "BASE" YESTERDAY.

BREEDING—THE CORE OF PRODUCTION.

By G. SWANSON, Waikaka Valley, Southland.

Having been brought up from childhood on a Scottish stud farm, and having for the last 15 years taken up beekeeping as a profession, queen rearing appeals to me more than any other branch of apiary work.

The breeding of good queens is the core of production. It behoves every beekeeper whether he has only one hive or 1000 to keep none other than pure stock. No easy matter; yet each beekeeper, by careful observation and selecting, can go a long way towards improving his bees. I have worked with only one race of bees—Italians. There are many types in the breed. There are bad-tempered ones and good-tempered, good workers and indifferent ones, also types that swarm and others that are almost non-swarming. There are thrify bees and bees that consume about twice as much honey as others, yet gather no more surplus.

The fundamental principles which apply to the breeding of cattle, sheep and other domestic animals, apply also to queen rearing. However, we work under one tremendous handicap in that we have no control of the mating; yet that handicap can be partly overcome by the elimination of the drones of poorer types and increasing the drones in the hives of the better types. In my opinion, the beekeeper who doesn't requeen the swarms is heading for the type of bee that is prone to swarm and thus lower his production. It is possible to breed bees that will not swarm under intelligent manipulation. I have a hive in my home yard that I haven't requeened for eight years and they have never swarmed. What happens is that at the latter end of the honey flow every second year—one one occasion, the third year —the old queen is superseded. I have naturally bred hundreds of queens from this hive, but I can claim only about 10% success in rearing the same type and traits as the parent colony. Yet it's been worth while, because I am that much better off and the chances of breeding bees of that type are increased ten-fold. I have had bitter disappointment in breeding queens, but my successes convince me that adhering to one good type or strain is preferable to breeding from a variety of types. I do not suggest that all beekeepers keep the same type of bees. Each commercial honey producer should know the type of bee he desires most and should stick to the principle of keeping to the same strain. The system might be slow, but it is exceedingly sure.

The bees I desire most are non-swarming and good workers, and last, but not least, thrifty bees. Nothing gives me greater pleasure than to open up a hive in mid-September and find 8 or 9 combs of honey full to the bottom bar, and plenty of bees in the hive—more especially when working a number of out-apiaries.

RADIO TALK ON HONEY.

By PROFESSOR OSBORNE. (From the "Australian Bee Journal.")

The use of sugar as a sweetening agent is really quite modern. The old civilisations of Egypt, Babylon, Greece and Rome had no sugar and during the greater part of the Middle Ages it was also unknown. Modern confectionery dates from the first International Exhibition in the Crystal Palace in London in 1851, when the Scotch sweetmeats excited much admiration and started the vogue of candy in America, sweets in England, and lollies in Australia. Before the advent of sugar honey was the one sweetening material and the keeping of bees was prosecuted wherever there was abundant blossom. The Romans excelled in bee culture and to this day the best stock of bees is obtained from Italy. Wild honey is frequently mentioned in the Bible, and is, I am informed, still to be seen in Palestine.

If you buy honey in the comb then 90 per cent. is edible; if you buy clear honey then the water content is about 20 per cent. There is approximately 80 per cent. sugar in honey but 85 per cent. in golden syrup, which is therefore richer in sugar and gives correspondingly more calories; to be exact, one pound of clear honey yields 1,484 calories, whereas one pound of golden syrup yields 1,591 calories. But honey has advantages which golden syrup has not. In the first place honey has a highly aromatic and pleasant flavour due to the nectar of the flowers from which it is gathered. This marked bouquet makes honey alone more acceptable and further it has the interesting property of not fatiguing the palate so that other sweet things do not appear to have lost their sweetness if eaten immediately after. On the other hand this aromatic content limits its use; no one would care to sweeten tea or coffee with honey as there would be a conflict of flavours and each would annul the other; but honey can be used to-day as in the ancient civilisations in the making of cakes. Honey has therefore not the universal use of sugar in the sweetening of foods, but spread on bread it can give delight not only to children but to grown-ups as well. The sugar which comes to our table is chemically pure, the purest substance eaten and freer from admixture with other materials than even salt. Honey not only possesses aromatic ingredients but vitamins as well. We do not know the whole story about the action of vitamins in the body, but this much is certain that carbo-hydrate food, starch and the several sugars, cannot be utilised unless certain vitamins are present. There may be plenty of petrol in the car but unless there is ignition the car will not go. In some similar sort of way the vitamins condition the oxidation of the carbohydrates and so the energy stored in them is liberated. Sugar contains absolutely not a trace of any vitamins and so as a food is so much dead weight unless the missing vitamins are supplied in other foods taken at the same time. Cornflour and polished rice are similarly dead weight and to a lesser extent white bread. Now honey has B1, B2, nicotine acid (the anti-pellagra factor), and C, the anti-scurvy vitamin. It is true that the amounts are small, but they are still there and can play their part in a manner denied to golden syrup. There is an extraordinary vogue to-day fostered by faddists and by commercial interests in the exaggerated emphasis laid on glucose. There is glucose confectionery and glucose syrup is sold in jars. A very elementary knowledge of physiology would tell one that all the starch we eat in bread, potato, breakfast cereal and pudding is transformed into glucose in our intestines and is absorbed as such. So why buy glucose when we make our own? If I want particularly to eat glucose I buy grapes for these contain 24 per cent. glucose and moreover the necessary vitamins are there in abundance, whereas there are no vitamins whatsoever in glucose syrup. Far, far better to get honey than to waste good cash on glucose. Honey also contains some lime, iron, and phosphates which glucose does not. Australia produces a high class honey in such quantities that many tons remain unexported and unconsumed. This is a pity.

HONEY AS SEEN BY THE FOOD CHEMIST.

Extracts from an Article by George P. Walton, Agricultural Chemical Research Division, Bureau of Agricultural Chemistry and Engineering, U.S. Department of Agriculture, in "American Bee Journal."

First, let us consider the "classical" definition of honey: It is the nectar of flowers, gathered, modified, and stored in the comb by honeybees. It is a natural foodstuff, probably the sweetest directly produced in great quantity in nature—adapted from time immemorial to the diet of mankind.

Since scores of flowering plants serve as the source of the nectars gathered by bees, honey is not a definite, uniform commodity.

From the food chemist's—or rather, the food technologist's—viewpoint, however, liquid honey is too often just a heavy sugar syrup containing about 5% of minor miscellaneous constituents. These miscellaneous constituents, although minor with respect to the amounts in which they occur in honey, nevertheless account for its color, flavor, aroma and certain other properties. Together they constitute a most important difference between honey and a good, heavy-bodied invert sugar syrup. Another important difference is, of course, the preponderance of the sugar levulose in honey. The "minor" constituents account, also, for the great differences in color, flavor, aroma and characteristics among honeys of different floral nectar types. What may be called the generalised average composition of American honeys, but an analysis which possibly does not fit an individual type of honey would be: moisture, 18%, levulose 40%, dextrose 35%, sucrose about 2%, dextrine, say, 0.8%, acidic substances 0.1%, ash, or mineral matter, 0.1%, and approximately 4% of what has been described as "undetermined."

Since extracted (liquid) honey

ordinarily is 93 to 98 per cent. (the above analysis shows 95 per cent.) sugar syrup, let us first consider the sugars of honey.

Straight floral nectar honey contains only the three sugars, levulose, dextrose and sucrose, in noteworthy amounts. A fourth sugar occurs in relatively large amount in one type of honey, namely honeydew honey. This is the trisaccharide sugar, melezitose, the occurrence of which is comparatively rare except in honeydew honey. Levulose, also called fruit sugar, or fructose, is probably the sweetest of the common sugars, and is the one that occurs in largest amount in ordinary honey. Because of its high solubility in water, levulose rarely, if ever, crystallizes out of honey. Dextrose is commonly known as d-glucose, corn sugar, or sometimes as grape sugar, since it occurs in that fruit. Less sweet than either levulose or sucrose, dextrose is also less soluble in water. The lower solubility of dectrose accounts for the fact that under favourable conditions it commonly crystallizes in honey, producing what is called "granulation." Sucrose, the third sugar, of which rarely more than 8 per cent. (usually 1 to 3 per cent.) is present in honey, is common table, or white sugar.

The proportion of the two principal sugars, levulose and dextrose, vary considerably in different honey; for such honey as those which are prone to granulate, the ratio of levulose to dextrose (or quotient obtained when we divide the percentage of levulose present by that of dextrose) is around 1 to 1.1. For honeys that show little or no tendency to granulate, the ratio of levulose to dextrose varies from around 1.25 to 1.45; and finally, for honeys that rarely, if ever, granulate, this ratio averages around 1.70.

Now, since granulation of honey is the crystallizing-out of the dextrose sugar—and levulose rarely, if ever, crystallizes—it is evident that this ratio plays an important part in granulation. Not only does the levulose sugar not crystallizee out of honey, but there is evidence that it assists in keeping the dextrose in solution. Levulose also may be credited with much of the desirable moisture-retaining property of honey when used as an ingredient of breads, cakes and other baked goods.

While on the subject of sugars in honey let us consider the sweetening power of honey in relation to that of individual sugars. Very little direct experimental work has been done to determine the relative sweetening power of honey. But the relative sweetening power of common sugars has been determined by actual tests, employing a jury of tasters for the purpose. On this basis, with sucrose, or common white sugar, rated as 100, levulose sugar has an average rating of about 175, and dextrose 66. It is therefore easy to calculate roughly the relative sweetening power of a given honey, knowing its composition. Applying these figures to our generalized average analysis for honey we get a relative sweetening power of 95, and for tupelo honey, containing more levulose, we get a figure of 101 (both are on the basis of sucrose being 100). These figures show no great difference in sweetening power between the various honeys and mean that, roughly, we may consider honey about equal in sweetening power to common white sugar.

The facts that have just been brought out regarding sweetening power and sugar content of honeys provide a basis for prescribing the quantities of average honey in comparison with the quantity of sucrose (table sugar) that should be used for a given purpose in food industries. Where honey is to be used for its total content of sugars, irrespective of sweetening effect, one could prescribe 1 1/3 pounds of average honey as being the equivalent for each one pound of sugar. Where total solids content is the basis for comparison, 1 1/5 to 1¼ pounds of honey ordinarily would be the equivalent of one pound of sugar, and the food technologist should remember that in the case of honey the extra 1/5 or ¼ pound is water. For sweetening power, pound for pound appears to fit the available information, although this ratio may be subject to some variation.

The "minor constituents" make up around 5 per cent of average honey. Among these constituents, those occurring in greatest amount are dex-

trins and a group of substances called "colloids" which are chiefly made up of nitrogenous substances, probably of protein-like nature. Although honey dextrins appear to be carbohydrates they should not be confused with commercial dextrins, which are converted starch products. Honey dextrins have been reported to be of a simpler nature, more like sugars of high molecular weight. Although the average dextrin content of honey may be considered to be around 0.8 per cent., true honeys occasionally contain upwards of one per cent. of dextrin. On the other hand, honeydew honeys commonly contain much higher percentage of this constituent, the dextrin content is, therefore, of importance to the chemist in differentiating between true floral nectar honeys and those produced from honeydew.

Colloids of honey ordinarily amount to from 0.1 to 1.0 per cent. Over one-half of the colloidal material of honey consists of proteinlike bodies. These substances play a part in undesirable scorching and darkening of honey when it is heated or cooked. They are also a handicap to the use of honey in carbonated beverages. Probably the undesirable turbidity and even the formation of flocculent precipitates in such beverages are due to the colloids present when honey is used as an ingredient.

Substances responsible for the acidity of honey ordinarily amount to around 0.1 per cent. if the calculation be based upon the assumption that the acid is formic acid. Actually, formic acid constitutes only a part of the total acidity of honey. A more practical measure of acidity to the food technologist is the pH value, which expresses the active acidity or alkalinity of a dissolved substance. The pH value of honeys commonly ranges between 3.6 and 4.2. The lower the pH value, the higher is the active acidity. Extreme ranges reported for honeys are 3.2 to 4.9. Now vinegars show pH values from 2.4 to 3.4, the average being about 3.12. Strange as it may seem, therefore, the most acid honeys have an active acidity equal to that of the least acid vinegars. This means that were it not for the sugar content of the most acid honey, they would taste as sour as some vinegars. The pH value of honey is an important factor to the food technologist when he attempts to combine honey with milk products.

After allowing for the water, the sugars, the 0.8 per cent. of dextrin, the 0.1 per cent. of acidic substances, and the 0.1 per cent of ash or mineral matter of average honey, we still have to account for approximately 4 per cent. of undetermined constituents. This "undetermined" 4 per cent. is not entirely undetermined. We have mentioned that the colloids may amount to an appreciable fraction of 1 per cent. The balance includes the substances that impart color, flavor, aroma, and "biological activity" to honeys. In this last category are the wild yeast cells, the active digestive agents (enzymes) and pollen grains. Other constituents occasionally occurring in appreciable amounts in honey are tannins and particles of beeswax. Some of these substances—including wax particles, the larger pollen grains—and others less well defined—cause the natural turbidity of extracted honeys.

Tannins are responsible, at least in part, for the dark colors of some honeys. Substances of this natural chemical group darken upon contact with oxygen of the air. Furthermore, tannins combine with dissolved iron to form dark pigments, of which the coloring matter of common black (nut-gall) ink is a good example. This is one of the reasons why honey should not be allowed to come in contact with uncoated iron equipment.

Most unheated honeys are known to contain three active enzymes in significant amounts—invertase, diastase and catalase. The diastase or starch —digesting enzyme is of importance in the use of honey in baking since the baker must take it into account in connection with the handling of his doughs. Invertase is responsible for the small contents of sucrose and large amounts of dectrose and levulose in honey. Due to the presence of invertase, the sucrose has been inverted to reducing sugars.

Among progressive members of the honey industry, there has been increasing realization that more must be learned about the "extra dietary" and health value of honey. These

extra values have not, up to the present, been demonstrable from the known content of basic nutrients in honey. There has been a growing demand for more knowledge about the "undetermined 5 per cent." of average honey, in the belief or hope that the presence of some substance having therapeutic value or some vitamin fraction or new accessory food substance, may be discovered. However, this is more in the province of "What We Do Not Know About Honey."

The vitamin question is much to the fore at this time, as all of us realize, but so far as honey is concerned, the Department's specialists in vitamin work hold that ordinarily honey does not contain significant quantities of the common vitamins. This does not necessarily mean that vitamins are ruled out entirely. German workers in nutrition have reported from time to time that an occasional lot of honey contains one or more of the vitamins. But, more important, perhaps, is the possibility that there has not as yet been time and opportunity to investigate honeys as to their content of the newly discovered vitamin fractions, or food factors.

EXAMINING A COLONY OF BEES.

FOR BEGINNERS.

Most beginners find their courage evaporating when the time comes to make the first examination of their colonies, but really there is little or no danger in it provided proper precautions are taken.

A colony of bees should be opened only during bright, warm weather when the bees are flying freely and the examination should be completed reasonably quickly. Unless one is entirely immune to bee stings, a veil should be worn to protect the face. Gloves also may be used, but they are a nuisance and, in most cases, soon discarded.

The smoker is the best tool in the apiary, and everyone handling bees is well advised to use it in spite of any device to the contrary. Any material that will produce a heavy volume of smoke may be used as fuel. Before opening the colony, send one or two puffs of smoke into the entrance of the hive, then remove the hive covers and direct a few more puffs down between the combs, an occasional puff may be necessary to keep the bees quiet during the examination. Experience will soon teach one the right amount to use.

Procedure

In making the examination the operator should stand on one side of the colony, preferably with the sun behind him so that the light may fall into the cells. Remove the comb nearest to the side of the hive and examine it closely for the queen. Whether she is there or not, stand this comb on end at one side of the hive, but never in front of it for there it will obstruct flying bees and cause trouble. Now separate the remaining combs and examine them one by one, holding them over the hive while doing so, for should the queen drop off she will fall back into the hive. Make the examination as brief as possible for fear of chilling the brood. Return the combs to the hive as examined and in the same order as removed.

Reasons for Examination

A colony should only be examined to see that: (1) It is headed by a vigorous queen producing worker brood, otherwise she should be replaced. (2) The bees have a plentiful supply of food; no colony should have less than 15 to 20 pounds of food at any time. (3) The queen has sufficient comb space for all the brood she can produce. (4) The bees have ample room for the storage of surplus nectar. (5) The brood is healthy. Healthy brood is pearly white in color; if uncapped, it is curled at the base of the cell, but if capped, the cappings are flat and of the same color as the surrounding comb. (6) The bees are not making preparations for swarming by having eggs or larvae in queen cells.

Begin Early

The first examination should be made on the first bright warm day of spring when the bees are flying freely. Having found or restored the colony to a normal condition at this examination, it need not be disturbed again for two or three weeks.

("Canadian Bee Journal.")

DIFFERENTIATING CHARACTERISTICS IN THE DIAGNOSING OF BROOD DISEASES.

Characteristics to observe.	American foulbrood.	European foulbrood.	Parafourbrood.	Sacbrood.
General appearance of brood combs.	Brood irregular; intermingling of capped, open, and punctured cells; much dead brood in capped cells, cells with punctured cappings, and cells uncapped by the bees.	Brood irregular; dead brood mostly in open cells.	Brood irregular; most of dead larvae in open cells; varying amount of dead brood in sealed cells.	Brood slightly irregular; dead brood mostly in cells with punctured cappings or in uncapped cells.
Appearance of cappings over dead brood.	Many punctured, sunken, and discoloured.	Few cappings sunken, punctured or discoloured.	Cappings over dead brood punctured, discoloured, sunken, or thickened and sharply depressed in the centre.	Usually punctured.
Proportion of brood dead.	Varying from 1 or a few to 75 per cent. or more.	Varying from a few coiled larvae to most of the larvae in open cells, also a few larvae in capped cells.	Varying from few larvae to practically all the brood.	Small amount of brood dead; in severe cases, 50 per cent. or more.
Age at time of death.	Late larval and early pupal stage; rarely coiled stage.	Coiled stage; occasionally late larval stage.	Coiled larval stage; occasionally late larval and early pupal stage.	Late larval stage; occasionally coiled larval or pupal stage.
Position of dead brood.	Fully extended on floor of cell; tail turned up on bottom; head lying flat; great regularity.	Coiled on bottom or twisted on side walls; few larvae fully extended on floor of cell; very irregular.	Coiled on bottom, twisted on side walls, or fully extended on the floor of the cell; great irregularity.	Fully extended on floor; heads prominently raised; great regularity.
Colour of dead brood.	At first dull white; then light brown; later coffee brown, dark brown, or almost black.	At first dull white, grayish white, or yellowish white, often becoming brown, dark brown, or nearly black.	At first dull white or grayish white, becoming light brown, brown, reddish brown, or dark brown.	Grayish to straw-coloured, becoming brown, grayish black or black; head end usually darker.
Kind of brood affected.	Mostly worker; occasionally drone; rarely queen.	Worker, drone, and queen.	Worker, drone, and queen.	Usually only worker, but sometimes drone.
Consistency of dead brood.	At first watery or slightly viscid, becoming ropy; finally brittle.	At first soft and watery; afterwards pasty, rarely viscid and ropy; scales tough, rubbery, or brittle.	At first soft and watery; in open cells becoming pasty and brittle; in capped cells frequently becoming ropy, finally tough or leathery.	Skin fairly tough; contents watery and granular; scales tough, brittle when completely dry.
Scales	Uniformly extended on lower side wall; tail curved up; dead pupae with tongue extended upward, often attached to upper cell wall; difficult to remove from cells.	Usually coiled on bottom of cells; often irregularly twisted; sometimes fully extended; tracheae often clearly visible; tough and rubbery; easily removed from cells.	Coiled on bottom, irregularly twisted on side walls or fully extended in the cell; tracheae sometimes visible; easily removed from cells.	Uniformly extended on lower side wall; head prominently raised; outline wavy; grayish brown to pearly black; head darker; easily removed from cells.
Odour	No odour at first; distinctive odour different from gluepot odour in early stage of decap; gluepot odour in brown ropy remains and scales; odours constant.	Usually no specific odour in dead, coiled larvae; sometimes sour odour in partly decayed remains; decayed meat odour often present in decaying brood in sealed cells, finally penetrating and acidlike; odours variable.	Variable, resembling odour in European foulbrood but much more intense in ropy remains.	Absent or slightly sour.

The above is taken from circular No. 392 issued July, 1936, entitled, "Diagnosing Bee Diseases in the Apiary," by C. E. Burnside, Assistant Apiculturist, and A. P. Sturtevant, Associate Apiculturist, Division of Bee Culture, Bureau of Entomology and Plant Quarantine of the U.S.A. Department of Agriculture, Washington.

INTERNAL MARKETING DIVISION
(HONEY SECTION)

All producers should have now received a copy of the Honey Emergency Regulations 1944, together with an advice of the quantity of honey they will have to supply to the Division. These Regulations are a complete change from our previous regulations and the beekeeper has been relieved of the necessity of forwarding returns each month. They also give the producer more freedom and subject to the season an additional supply of honey for his own sales. It must be pointed out, however, that unless each producer co-operates to the full, the Honey Section will not receive the quantity of honey required to meet their requirements. Many beekeepers will be writing asking for a small concession or exemption, which naturally must be declined, as it has to be remembered that the Honey Section operates for the good of everybody in the industry and that any concession or exemption given to any one beekeeper must be one that can be granted to all beekeepers.

FORWARDING HONEY.

As extraction returns this year have been eliminated, the Honey Section will be unable to forecast the quantity of honey available and when it will be coming forward, and it is requested that beekeepers assist the Division by forwarding their honey as soon as possible, as at the present time no bulk stocks are held by the Honey Section.

Within the course of the next few days, instructions for delivery to South Island beekeepers will be issued.

It is the present intention of Mr. H. Stoupe, Manager of the Honey Section, to visit the South Island Associations late in January or early in February.

H. STOUPE,
Manager Honey Section.

A FEW WORDS ON TREATING QUEENLESS HIVES.

These fall into two classes. First—those not worth treating, such as a colony with only a few old bees left, and one with a large number of laying workers; this last is the worst type, and no treatment is of any use, and they should be destroyed and never united with another hive.

All other classes of queenlessness, if able to cover four frames or more, should be given one frame of hatching brood, and another with a patch of eggs and very young brood. If they start one or several queen cells within 36 hours, you can, if available, introduce a queen at once, or give a ripe queen cell if one is available. If none are on hand, let them carry on with the cells they have started, leaving them one or two of the best. This young queen can be left to carry on if she comes from brood from good stock, or done away with later on when a new queen can be procured. As soon as a laying queen is in the hive it can be boosted along by giving one or two frames of hatching brood taken from a strong colony, and this done a couple of times, and seeing they don't get short of stores, will soon turn it into quite a strong colony.

If you find a colony with no brood, fairly strong in bees but showing no other signs of queenlessness, don't conclude it is queenless, but give it a frame of eggs and young brood from another colony. If cells are started, you then know that it is without a queen, and can either be left to rear a queen from its own started cells, or else by introducing a laying queen if procurable. Where no cells are started, there is probably a small-size virgin queen, and no new queen will be accepted till she is found and destroyed. In the early part of the season, early September to mid-November, it is best not to open up weak or medium colonies from 11 o'clock to 3 or 4 o'clock on warm sunny days, when bees are flying in large numbers. The bees under the above conditions get panicky, the queen also, and quite frequently in the confusion mistake their own queen for a stranger and kill her in the excitement. This is the reason hives quite all right on the first early season inspection are found either queenless or else with an under-sized virgin queen, and the remains of several queen cells where their brood should be, when opened up three or four weeks after the first inspection.

—Robert Stewart, Heriot.

OUTLAY TO ESTABLISH 100 COLONIES.

In view of the increased demand for bees and equipment the following list has been drawn up showing the actual capital outlay at present-day prices in establishing 100 colonies of bees and sufficient supers to handle a crop. The prices quoted are drawn from price lists of firms turning out standard quality equipment. It is hoped that these figures will assist in determining the value of any established colonies that may be for sale, due regard being given to the age and condition of the equipment as compared with new material.

The labour assessed in assembling equipment is based on the output of the average methodical worker.

The figures below can be taken as the maximum cost at which hives can be established. The beekeeper who is handy with tools and has a knowledge of carpentry will see many avenues in which this price could be reduced to a lower figure.

C. R. PATERSON,
Apiary Instructor, Hamilton.

PRESENT COST OF MATERIALS.

	£	s.	d.
SUPERS: 400 at 3/3 each	65	0	0
FRAMES: Full depth Hoffman, 3,300 at 25/- per 100 (100 hives with 10 frames each, 300 supers with 9 frames each—Less 400 frames supplied with nuclei)	41	5	0
LIDS: 100 with metal covers at 5/3 each	26	5	0
FLOOR BOARDS: 100 at 3/3 each	16	5	0
FOUNDATION COMB: 413lb. (medium brood) ..... Beeswax at 2/- per lb., plus cost of converting into foundation with freight in an out, 10d. per lb.	58	10	2
NAILS for supers, lids and floor boards, 32lb. at 1/- per lb. (Approx. 320 2-inch cement-coated nails to the lb.); Frames, 15lb. at 10d. per lb. (approx. 1,200 1¼ inch cement-coated nails to the 1lb.)	2	4	6
WIRE: 12lb.	2	13	0
PAINT: Primer, 4 gals. at 25/- .... 5 0 0 2 and 3 coat, 4 gals. at 35/- .... 7 0 0 1 gal. oil 19/- 0 19 0	12	19	0
One gal. thick primer covers approx. 80 supers. One gal. 2 or 3 coat covers approx. 160 supers.			
NUCLEI: 100 4-frame at 32/6 each, delivery October	162	10	0
Freight on nuclei and material (based on 50 miles rail freight)	7	10	0
	395	1	8
SUPPLEMENTARY FEED: 10lb. sugar to start off each nuclei, 15 bags at 23/-	17	5	0
	£412	6	8

ASSEMBLING STATISTICS.

LABOUR:		Hrs.
SUPERS:	Painting ends and nailing up 8 per hour	50
	Painting—priming coat, 20 per hour	20
	2 and 3 coats, 35 per hour	23
LIDS:	Assembling woodwork and painting, then fitting metal cover, 4 per hour	25
FLOOR BOARDS:	Nailing and painting, 12 per hour	8
FRAMES:	Nailing up, 50 per hour	66
	Wiring (3 parallel wires), 40 per hour	82
	Fitting foundation, waxing, and electric embedding, 80 per hour	41
		315 hrs.

Labour based on 2/6 per hour .... £39 7s. 6d.

Establishment cost is therefore £451 14s. 2d., or approx. £4 10s. 6d. per colony.

(From *The N.Z. Journal of Agriculture.*

ASKED AND ANSWERED.

By ROBERT STEWART, Heriot.

Q. Picking a breeding queen.

A. In choosing a breeding queen quite a few things must be considered. First her bees must give good working results, be quiet to handle, and be of evenness in colour. She must have even combs of brood. Never breed from a queen that has her brood at all stages in every comb or part of a comb, but pick one whose brood hatches out in fairly regular lines across the combs, and that keeps her brood nest compact. If you are in an area where Black or Hybrid bees are to be found, even ten or twelve miles away, be most particular in picking your breeder, with the colour well developed in the three yellow bands. If her young queens have good even colour any that get mismated can be more easily detected, by the dark variation in their young bees later on.

Q. How far will drones travel from their hives on fine days?

A. Eight, ten, or twelve miles, according to the weather conditions. If one remembers that a drone's speed is easily one mile per minute, and they will fly out for up to one hour at a time between noon and three in the afternoon, it is easily seen that a few miles is nothing to them. In contrast, a queen rarely stays out on a flight more than ten to fifteen minutes. This explains why mismating is usually more common at the height of summer than later in the season. Owing to the cooling of the atmosphere, as days get shorter, drones do not fly either so far nor so vigorously.

Q. Why are dark drones often found in light coloured colonies?

A. One reason is that young drones on their first flights tend to return to any colony that happens to have young bees in numbers having their first flight. Hence large numbers of drones do not remain in the colony in which they were reared. Drones also tend to vary more in colour than workers at any time, and so far as is known the mating of a queen does not influence the colour of her drones, but does influence the colour of the drones produced by the queens bred from her. The influence of mating lags one generation behind in the drones produced by any queen.

Q. How to keep drones in plenty for late mating of queens, in March and early April?

A. When you find the bees closing down on drone rearing about late February or a little earlier, according to the season, pick out two or more hives—nine or ten hives if you are in a big way—but two to four will be enough for most beekeepers. If they have old queens you want to replace, so much the better. Remove the queen, place all brood in one story, and a super of honey underneath. Sort out any combs in the brood nests now on top that have little brood in them and replace two or so of these with the best combs of drone brood from other colonies. See that they have a frame of brood with a small amount of eggs and larvae to start queen cells on, from a good colony. Allow one young queen to hatch out. Once she starts to lay, at latest, put in a division feeder and give a light feed of syrup every two or three days to keep them going. As soon as their first brood is about a week sealed over, remove their queen, and start them over again. If left queen-right they will dispose of the drones or at least not feed them as soon as their queens and young brood start to hatch out. To keep up the strength of the colony, extra young bees or hatching brood, whichever is available, can be given to such drone-holding colonies. These colonies must never be allowed to feel they are short of stores as long as the drones are wanted. If pollen is scarce, a well-filled comb of pollen put in will also help to keep them going. The amount of feeding they will require after the first two weeks will show what it takes to keep a large number of drones going.

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