THE NEW ZEALAND BEEKEEPER

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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CORRESPONDENCE.

To the Editor.

"YES-MEN."

Sir,—At a meeting of the Canterbury Branch at Timaru on March 28, the Chairman of the Honey Control Board, Mr. W. W. Nelson, attacked me by stating that as a member of the General Executive of the Association I should work for the adoption of resolutions of Annual Conferences instead of being one of the most hostile opponents of the Marketing Division's Zoning Scheme. Mr. Nelson had a lot more to say about me along similar lines, but that will do for the purpose of this letter.

I rose to interrupt Mr. Nelson, who ordered me to sit down! I refused to be sat on, however, but remained on my feet until I had pointed out to the meeting that I had always been opposed to the scheme and had fought against it tooth and nail at the last Annual Conference, as Mr. Nelson well knew.

Yet, when nominations for the General Executive were called for, I was nominated. So as to ensure that there would be a ballot, I nominated another producer. Despite this, I was returned, which makes it apparent to anyone except, perhaps, Mr. Nelson, that there must be a number of producers well aware of my views who obviously appreciate a representative on that Executive who is not afraid and who is capable of putting up a stiff opposition.

I appreciate the confidence which has been placed in me and wish to state again what I told Mr. Nelson recently. I would not for a moment consider being like a number of other men who purport to represent producers but are simply "Yes-men." I will not be a "Yes-man" to the Executive, or the Board.

I could resign from the General Executive, but I was elected by producers who know my views and who, I believe, expect me to fight or try to fight their battles for them. I intend to remain on the Executive until I am replaced by the free vote of my fellow producers. I do not expect ever to alter my views or opinions on certain matters, but if it is a case of being on the Executive and being gagged, I would rather be free and fight.

Yours, etc.,

T. F. PENROSE.

2nd April, 1942.

Southbridge R.M.D.,
Canterbury.

To the Editor.

MARKETING AND APIARY SITES.

Sir,—Mr. W. W. Nelson's position in relation to the industry is peculiar: a producer himself, he cannot claim to represent the producers. As chairman of the old Control Board, he was the Government nominee, but now the whole Board is comprised of Government nominees. It now functions as an advisory committee to the Minister, the I.M.D. having usurped its functional powers under the Act. It seems that the Government, in its policy of gradualism towards socialism, is using Mr. Nelson to organize among producers a demand for regimentation, i.e., socialism. It is probable that Mr. Nelson's political outlook is such that he is unconscious of the role that has been allotted to him.

If it appears that certain demands come from the industry, the Government is saved the trouble of forcing its policy on those concerned and,

whenever trouble comes, it can fall back on the plea that the industry asked for it. At the recent Timaru meeting, Mr. Nelson admitted that the zoning proposals had come forward to Annual Conference from the Hawke's Bay Branch as a result of a suggestion made by him at a meeting of the Branch. I believe that opposition to the sending of the remit was overcome by the suggestion that Conference would throw it out anyway. Conference would certainly have done that had not a delegates' vote been called for at the last minute. The decision thus rested with a very few individuals. Incidentally, the use of the delegates' vote is a question that will have to be settled if the Association is to be worth anything to producers.

The Licensing of apiary sites is a proposal that arrived in the Conference arena as a result of Mr. Nelson's good work. It has emerged with the blessings of Conference, but it remains to be seen whether those entrusted with drawing up the necessary legislation can get round the fact that licensing implies the right to vest access to private property in someone other than the owner.

To the unwary, I would point out that registration of apiaries cannot be refused. Licensing is different. It implies the power to refuse a license and loss of a license going out of business. It is quite possible that producers who hope to establish a vested interest in a hypothetical range of the bees' flight will find that the licensing system can be used in another way—to make them toe the line in other points of socialist policy. For instance, power could be taken to revoke a license on the grounds that the holder has infringed some other Acts. How useful it could be to put out of business, say, an opponent of Marketing regulations!

At Timaru, Mr. Nelson knew that the meeting was hostile to zoning. He dealt at great length with any subject, but this in the hopes that train time would relieve him of the active opponents. It happened, that day, that a late race excursion was running, and eventually he had to listen to a great deal of criticism.

Exponents of State marketing assume that the industry exists to serve the I.M.D. We in the South believe that the I.M.D. should serve the industry and the public where the producer himself cannot give that service. Why should honey be hauled to Auckland to be packed and back here where the producers have all the facilities to pack and can supply the wholesale trade with a cheaper and more suitable honey than a blend of doubtful origin? Packer producers here are equipped to give the consumer a better honey than that of the I.M.D. They do not look forward to the time when the I.M.D. is the only buyer of their honey. Competitive selling is held up as a bogey, but the elimination of competitive buying can be worse. The past performance of the I.M.D. in using reserves from first and second season operations to pay out a big return in the third season could not be defended by Mr. Nelson. He was not even aware of the figures and when he began to question their accuracy he had to subside because the figures were quoted from a Parliamentary report.

Beekeepers here are individualists and they intend to keep State departments to their proper spheres as servants of the public, whether producers or consumers.

I am, etc.,

W. B. BRAY.

Christchurch,
4th April, 1942.

To the Editor.

MILITARY SERVICE.

Sir,—Many beekeepers will be facing the possibility of being called up for military service. Where adequate arrangements can be made to have work carried out by someone not likely to be called up, there is no difficulty. In most cases, no such easy alternative is available. There is, therefore, a conflict of duties in the mind of the man called up. Does his duty lie in producing honey or in going to camp for the duration? The evidence for the industry should be set out by those competent to do so, and be made available to Manpower Committees.

In his recent South Island tour, Mr. Nelson has indicated that we are 1,000 tons of honey short for the needs

of the armed forces and our quota for Britain. Besides this, there is a shortage on the home front. The poor season over almost the whole of New Zealand has left us dangerously short of an essential food. With the possibility of enemy action affecting imported stocks of raw sugar, we need much heavier stocks of honey than are normally considered necessary.

It is not generally known that there are only about 200 beekeepers with 200 or more hives. Although there are over 5,000 registered beekeepers, 200 commercial apiarists own half of the 136,000 hives, averaging about 350 hives each. Not all of these 200 men are physically fit for military duties, and certainly not all are of military age. It therefore follows that if all liable for military service were taken, the manpower addition to the army would not be very appreciable, but there would be a big drop in the production of an essential food. It is easy to let hives go out of production, but not so easy to restore them to profit, as every beekeeper knows. This war requires the efforts of primary producers as well as of trained soldiers, but soldiers as well as civilians require to be fed. It is more production of honey and not less that is needed.

My reason for writing to you on this subject is to indicate the need for the evidence on behalf of the industry being more readily available. Mr. Field and Mr. Nelson have already given evidence before Manpower Committees on behalf of the industry. When expert evidence is tendered, it seems to be the practice of the committee to instruct the appellants to enter camp for training during May, June and July, and to produce honey during the remainder of the year. No reasonable beekeeper will cavil at this arrangement.

I would suggest that the General Secretary obtain statements from Mr. Field, Dominion President; Mr. Nelson, Chairman of the Honey Control Board; Mr. Rentoul, Manager of the Honey Section; from the Food Controller and the Minister of Marketing. Duplicated copies of these statements could then be made available at nominal cost to beekeepers requiring to place their cases before Manpower Committees. This would ensure a uniform and authoritative presentation of the case for the industry.

I am, etc.,
W. J. LENNON.

Omakau,
10th April, 1942.

BEEKEEPING IN AUSTRALIA

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The Editor,
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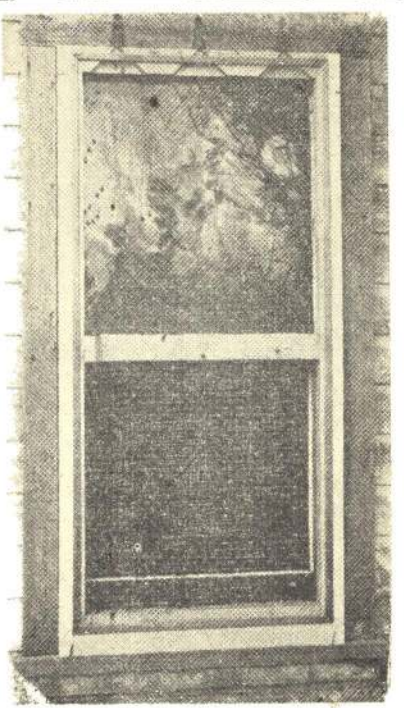

Screen on the windows of the honey house of apiary at School of Agriculture, Vermillion, Alta., operated by the provincial government. Picture shows a fine type of bee escape distinctly.

N.Z. HONEY CONTROL BOARD

It has now become evident that the honey crop has proved to be one of the poorest ever experienced. Many beekeepers have obtained no honey at all. At the same time it is known that certain trading concerns are holding considerable stocks of honey purchased direct from those beekeepers fortunate enough to gather a crop.

The question arises as to whether proprietary concerns should be allowed to carry over appreciable quantities of honey while certain essential branches of the armed forces are practically without supplies.

The value of honey as a wartime food is now well recognized. It requires no refrigerated shipping space; it takes up a little over the per ton space of butter; in bulk, it will remain sound in condition for at least two years in any climate. These factors have created a keen demand by army units for considerable supplies—especially prisoner of war parcels and hospitals.

It would appear that the time has arrived when the Food Controller may have to take over from those holding stocks at least a proportion of what honey is available to meet the most urgent needs of certain branches of wartime Services.

There is also the matter of finding 460 tons to meet our quota to Great Britain.

It is plain that the amount of honey available in the country is very far from adequate to meet all demands and the problem is to establish an equitable distribution of what supplies are available, with the least possible interference with everyone concerned in the production and marketing of honey.

The Board has received an assurance that any honey taken over by the Food Controller will be paid for at the same rate, according to grade, as that observed by the Internal Marketing Division.

Beekeepers are again urged to forward to the Division, with the least possible delay, the maximum amount of honey possible.

W. NELSON, Chairman,
N.Z. Honey Control Board.

It has been estimated that a standard comb of honey is required to produce a standard comb of brood and that one pound of pollen is needed in the production of one pound of bees.

One can tell from the manner in which the bees are flying whether or not nectar is coming in. Bees that are filled with nectar fly straight for the hive entrance and usually land heavily.

BRANCH ACTIVITIES

CANTERBURY BRANCH.

The meeting held at Timaru on March 28 was the largest for many years. The Branch President, Mr. R. McConnell, was in the chair.

Mr. W. W. Nelson, chairman of the Advisory Committee to the Minister of Marketing, was present by invitation and, after some routine business had been disposed of, gave an outline of his committee's activities in connection with the supply of petrol for beekeepers in the emergency, and also in connection with appeals for exemption from military service on the part of some producers.

Mr. Nelson gave details of honey already received by the Internal Marketing Division, and made an appeal to beekeepers to send in as much as possible. He was closely questioned on the Division's policy in regard to the payout in the present and past seasons, and the disposal of various reserves.

Questions in regard to the zoning proposals brought expressions of disapproval on the part of numerous producers and, after a vote of thanks to Mr. Nelson had been carried, the following resolution, on the motion of Mr. W. B. Bray, seconded by Mr. T. E. Pearson, was carried unanimously:

"That this Branch of the National Beekeepers' Association is totally opposed to the zoning proposals of the Internal Marketing Division."

The Wellington Branch has offered to donate prizes for one quarter's Essay Competition.

WEST COAST.

We have had a very poor season. I should say about 12½% of normal. Petrol restrictions have curtailed our activities and the Field Day planned for January 3 had to be cancelled. Instead of meeting monthly, we now meet quarterly.

The territory of the Apiary Instructor (Mr. E. Smellie) has been extended and he now has the responsibility of Canterbury as well as Nelson, Marlborough and West Coast.

PERSONAL.

Mr. E. Smellie, Apiary Instructor from the West Coast, was introduced to Canterbury beekeepers at Timaru recently. He has taken over Mr. R. Walsh's duties since Mr. Walsh has been transferred to Auckland.

Mr. Walsh was presented with a cheque and wished every success by Canterbury beekeepers, many of whom also paid tribute to the good work done by Mrs. Walsh during her husband's term of service in Canterbury.

CENTRAL OTAGO.

Crop is from one-third to half of normal.

STABILISED PRICE FOR HONEY MUST BE OBSERVED.

The Price Tribunal has stated that it has been advised of the smallness of this season's crop.

Honey was included in the list of commodities stabilised in price as at September 1, 1941, and in this connection the Tribunal has learned that some apiarists are endeavouring to effect sales of honey at prices higher than those which operated last season.

Needless to say, any sales effected at rates higher than those for last season constitute a breach of the Price Regulations and leave the parties concerned subject to legal action in the terms of the regulations.

INTERNAL MARKETING DIVISION
(HONEY SECTION)

SUGAR FOR BEE FEED

Under the sugar rationing system now introduced, beekeepers will now need to apply to their local Food Controllers, at Post Offices, for Special Licenses to obtain sugar for feeding bees.

The procedure outlined in circular No. 17, dated 19th February, 1942, is no longer operative.

HONEY SUPPLIES.

Probably the past season has been the worst on record since honey production acquired the status of an industry. Only one district in the Dominion has secured anything approaching an average crop. This crop shortage, coupled with the heavy demand for honey as the result of conditions brought about by the war, has resulted in many producers disposing of all their honey by direct sales. The effect of this is that the Honey Section is short of honey for Army requirements and that there is a very unequal distribution throughout the Dominion, some stores carrying sufficient stocks while others have none. Apparently a similar condition has existed in the United Kingdom, and the Ministry of Food is meeting the position by taking control and rationing honey.

In the meantime, we can only appeal to producers to cut out some of their private sales and send increased quantities of honey to the Marketing Division so that supplies, at least for Army services, can be kept up until next season's honey comes in. Unless additional supplies are received, it is probable that the supply to these vital services will stop about the end of July.

South Island suppliers have a difficulty in that it is a considerable time before their honey reaches the Depot owing to the heavy demand on shipping space, and there is a consequent delay in the Honey Section making payments. In order to relieve this position, a preliminary payment of 3d. per lb. net will be made to South Island suppliers if a receipted copy of the consignment note is sent together with the advice notes. It is hopes that this will enable South Island producers to increase the quantity of their supplies.

ASSOCIATION MATTERS

ASSOCIATION FINANCES.

Government Assistance?

The Minister of Marketing and Agriculture has been reminded of his promise that, as he appreciated the fact that the Journal is a useful medium for information, he would give further consideration to the possibility of making a further grant of £100 to the Association.

TRUCK IMPRESSMENTS.

Representations were made last January to the Minister of Marketing and Agriculture regarding the position of beekeepers who had had their trucks impressed. These were referred to the Minister of Transport, who wrote:—

"The regulations provide for a right of appeal against impressment to the appropriate Transport Licensing Authority whose decision is final, and I regret that it is not competent for me to intervene in the determination of appeals."

APIARY CONTROL.

The members of the General Executive are at present considering full details of a scheme which has been prepared to implement the resolutions carried at the past three Annual Conferences of the Association.

The Director of the Horticulture Division, Mr. W. K. Dallas, accepted an invitation to meet the Dominion President and the General Secretary at Palmerston North during February. Mr. Dallas made it clear that it was not the desire or the intention of his Division to introduce new regulations governing the honey industry unless the industry asks for them.

On the other hand, the General Executive is anxious that any regulations will do all that is required and meet in advance any objections which might be raised by producers who might suspect any proposals as being an attempt to introduce regimentation of the industry. Great care has therefore been given in formulating proposals.

At the same time, it was felt to be necessary to make sure that any suggestions would be practicable and workable from the viewpoint of the Horticulture Division, which would be responsible for their administration, and the co-operation of the Director and his staff was sought and readily given.

It is intended to acquaint all Branches of the Association with the proposals before they are taken to the Government for implementation.

ANNUAL CONFERENCE.

It is not yet certain that a Conference will be held this year. If not, it is probable that the General Executive will meet in Wellington.

HIVE MATS.

The procedure for ordering Hive Mats is that purchasers should write direct to the Manufacturers, N.Z. Woolpack & Textiles Ltd., Foxton, enclosing cash with the order. Cheques should have exchange added. There are 250 mats to the bale, and the price is £1/6/- per bale.

ESSAY COMPETITION.

Gore Branch has contributed 22/6 to cover prize money for the January competition, and the committee of that Branch has intimated that it strongly favours continuing publication of essays.

West Coast Branch members consider the competition very good and useful, and as they would not like to see it fall through owing to lack of finance, have undertaken to pay the next prizes awarded.

Wellington Branch has also offered to defray prize money for one quarter.

This is gratifying, and our thanks have been conveyed to members of these Branches.

There have been no entries for April, but we invite them for July. They should be to hand not later than June 15, and successful entries will be published in the July number of the Journal.

APIARY NOTES.

WINTER REQUIREMENTS AND SHELTER.

During the colder months it is essential that the hives should be kept as warm as possible and the apiary protected from cold winds. Nothing is more detrimental to the health of the colony than damp mats and combs during the dormant period.

After heavy rains the hives should be quietly examined without disturbing the bees to see that the mats on top of the frames are dry. Should any be found moist, they should be immediately removed and replaced by a dry mat or mats. At the same time the cover of the hive should be examined to ascertain the reason for any dampness.

It will sometimes be found that a small crack has been overlooked and that through this the rain has leaked into the hive. Any defective covers should be replaced by sound ones. Faulty covers can then be taken to the workshop and mended. Sometimes these cracks can be filled with putty, and, when given a good coat of paint, will be again leak proof.

Good Mats Essential.

Clean corn sacks, if cut to the right size, make excellent mats, but perhaps an old thick carpet is better. All mats must be cut to fit exactly inside the cover. Should any part overlap, it will become wet during the rainy season. A zinc queen-excluder makes an excellent gauge for the cutting of mats. If corn sacks or similar material are used it would be best to use two or even three of them in the colder parts of the Dominion.

Sound Hives.

Not only should the covers of the hives be kept free of cracks, but the hive itself and the bottom board should be kept sound so that no moisture or cold draughts can injure the bees. Reasonable warmth and sufficient stores during winter will mean strong healthy colonies in the spring.

Shelter.

The ideal situation of the apiary should be where it is sheltered from prevailing winds and obtains the maximum amount of sunshine available.

Beginners are often inclined to give the hives too much shelter by placing them right under thick trees or hedges. By so doing they prevent the bees getting the sunshine so necessary for their health. Bees kept too shaded are inclined to become cross, even in the spring and summer months. Hives should therefore be placed far enough from hedges to allow access all around.

All bottom boards should be placed on four bricks or two pieces of 4in. x 3in. timber to allow a current of air to pass right under the hives. Grass and weeds should also be kept down, otherwise the entrance and bottom boards become damp and mouldy.

Beginners who read bee journals published in America are sometimes concerned at the elaborate precautions advised in that country, such as packing the hives in boxes or wintering them in cellars. These precautions are necessary only in extremely cold climates and do not apply to New Zealand conditions, where our climate is comparatively mild.

If the advice given above and that given by our local writers is carefully followed there should be no doubt of the bees wintering well.

Permanent Shelter.

Bee-keepers taking up new sites for their apiaries are frequently concerned about shelter. This can be overcome by putting up a plain wire fence around the site. This should not be strained tight. Then, by cutting scrub (such as ti-tree) and interlacing it between the wires a good temporary shelter from the prevailing winds will be made. This is, however, the time of the year to consider the planting of

quick-growing hedges or trees to provide permanent shelter.

In deciding the kind of scrub or tree to be planted for permanent shelter one of the first considerations will be quickness of growth in order to attain shelter as early as possible, but at the same time the value of nectar-producing plants that would be of service to the bees should not be lost sight of, especially those which flower either in early spring or late autumn, when every little bit gathered will be of use either in brood rearing or in augmenting winter stores.

Making a Choice.

In making a choice one must, of course, be certain that the plant selected will grow in the district. In many parts of the North Island one of the quickest growers is the Lopantha Albizzia. This is often mistakenly named Acacia lopantha, or the "pussy wattle." This flowers in the second year from May to July or August, and is greatly visited by the bees for both nectar and pollen. The seed of this plant has a very hard husk, and should be steeped in very hot water before sowing.

If it is to be made a permanent shelter it should not be encouraged to grow too high, but should be kept topped to ensure a thick growth close to the ground. Before planting, beekeepers should, however, consult with a local nurseryman or with the local Apiary Instructor, who will be in a position to advise them as to the most suitable shelter for their district.

—(G. V. Westbrooke, "N.Z. Journal of Agriculture.")

NECTAR CONCENTRATIONS.

Tests by the Pacific States Bee Culture Laboratory, Davis, Calif., indicate that the average sugar content of nectar is 25 to 30 per cent. In some nectars, however, it is as high as 70 per cent. and in others as low as 3 per cent. If the average concentration is 30 per cent., bees would have to handle 266 pounds of nectar in the production of 100 pounds of honey.

LOSS OF FIELD BEES.

Three or four years ago, at Conference, I spoke of field bees needing blood sugar in order to fly, and that when this blood sugar ran out, it needed to be supplied again from honey in their sacs to give them power to fly further. With blood sugar gone, and sacs empty, the bees came to a stop much as a motor bus stops when the petrol tank is dry. Resting will not restore flying power.

In the discussion following, Mr. D. Penny, of Naracoorte, remarked that this fact seemed to explain the sudden loss of strength in his colonies just after Red Gum bloom. The sudden cutting off of the flow would send the bees out foraging with the usual small supply of blood sugar or its equivalent in the honey sacs, and not finding nectar at the former places, they would go on till they were out of fuel, and never get back to the hives.

This seemed a likely explanation, and last June, Mr. Penny on his way to Conference, called in, and told me of an incident of last year's beekeeping. He had his bees on a flow of Stone Mallee, a light widely scattered bloom, about 30 miles from Naracoorte; they were breeding up strongly and one day Mr. Penny went out, intending to make up a lot of nuclei. To his surprise, he found his apiary very light in field bees, though they had been brooding strongly, and had lots of brood. The disappearance of the field bees was quite recent.

He remembered then that they had had some days of hot winds, real brickfielder weather, cutting off the flow. He reckoned that the bees went foraging as usual with light supplies of fuel, and finding no nectar wandered about searching, till they could not reach home again.

(R.G.M. in "Australasian Bee Journal.")

THE SICK BEE.

By JOHN CROMPTON.

(In "Blackwood's" Magazine.)

The members of certain bee societies may frown when they see this article. They maintain that beekeepers must not mention bee diseases—not to the general public, at any rate. Quite why, I do not know. I suppose they think people might refuse to buy honey lest they should catch some mysterious bee complaint. As well might the public refuse to buy bread because the baker's infants were not immune from mumps. This is not a good illustration, because there is a certain amount of logic in it. One **can** catch human diseases in many devious ways; under no circumstances can one catch a bee disease, unless one is a bee oneself, or at any rate an insect. Still, apart from that, the topic of diseases—bee or otherwise—is not of great appeal, so I will say hastily that I am only going to deal with one disease. It was a disease that had far-reaching consequences and many unexpected turns. Moreover, strictly speaking, it was not a disease at all: it was an attack by one British insect on another.

In 1904 beekeeping in Britain was booming. A new type of hive and various recently invented gadgets had enabled 100 or 200 lbs. of honey to be gathered where but 20 or 30 were obtained before. The market, in short, was 'active,' and the sale of bees alone an extremely profitable side-line. Of course, at the rate things were going, a slump was bound to come. Bees, like cattle, must have pasturage. There is always a saturation point. Knowledgeable beekeepers foresaw and dreaded this slump. The slump came, but not in the way they expected. It came from lack of bees and not from too many.

I remember being impressed in my youth by the story of the prophet in Roman times who kept calling out in the arena. At that time mass executions of Christians was extremely popular. So much so that even the vast amphitheatre of Rome could by no means hold all the spectators. The result was confusion and a lot of treading underfoot of spectators and a lot of protests at the bad management to the Emperor. Loud above these protests, every day, rose the voice of the prophet spectator: **In but a few days more there will be room and to spare.** There was an ominous edge to these words which came true when Rome was smitten with a fell disease and the amphitheatre became half empty. Incidentally, the prophet was executed. No such voice called out to beekeepers at the beginning of this century, but if it had it would have been equally apt. A fell disease was on its way which threatened no less than the complete extermination of the honey-bee.

It was in Newport, Isle of Wight, in this same year of 1904, that a beekeeper, talking with fellow beekeepers, mentioned the peculiar behaviour of two of his hives. No one took much notice; all were too busy talking about the peculiar behaviour of some of **their** hives; for bees are always doing peculiar things according to their 'owners,' and the 'owners'—to hazard a guess—do even more peculiar things according to the bees. However, a few weeks later, one of the beekeepers of the party asked the first to state exactly what it was his bees had been doing when he was talking the other day. The first beekeeper did so. Boiled down, his story was that his bees had got very fat and were holding processions—large processions that marched every day steadily and orderly out of the hive and continued their progress like a moving carpet along the grass. They seemed full of the joy of life; for as they marched they waved their wings exuberantly, and, like schoolboys, climbed up all the tall grasses they encountered. This would go on for some time, and then a more sober attitude would come upon them. They would split up into small groups that would crowd together on

any raised place such as a stone or clod of earth, and there stand, heads bowed down as if in prayer. The symptoms really were not unlike those of some Welsh Religious Revival, except that there was no singing. The second beekeeper said that it was strange, but three of his hives were doing the same thing, and he was worried about it because none of those processions ever returned.

Whatever was the cause of this behaviour among the bees it caught on. The next year almost every apiary in the Isle of Wight had one of these peculiar hives, and the year after that there was hardly a stock which was not, so to speak, walking out on itself. Obviously something was amiss. The Board of Agriculture, badgered into it, sent an inspector down, and later, on his recommendation, a scientist. In 1908 the scientist was able to report that all the original stocks of the Isle of Wight were exterminated, and that stocks imported since were in the process of being exterminated too.

The Isle of Wight is, normally, a good place for bees, and large returns are obtained. But few people now envied beekeepers who lived there. That was all it amounted to; the rest of Britain said it was just too bad for the Isle of Wight. We should feel the same if we heard there was some peculiar complaint among the sheep, for instance, of the Isle of Skye—mildly sorry for the Isle of Skye. That attitude, however, changed very abruptly in 1909, when bees affected with what was now known as the Isle of Wight Disease were found in Hampshire, and almost immediately afterwards in Sussex. After that the plague spread like a prairie fire through the whole of Britain.

The Board of Agriculture, thoroughly aroused at last, appointed a board of scientists from Cambridge to investigate. Their investigations took a long time, but in 1912 they issued their report. There is a well-known bee disease called **Nosema**. The scientists said that they had found **Nosema** spoors in many of the affected bees, and that **Nosema** was the trouble. They did not put it quite in that way, for it was an exceedingly long report, but that was what it amounted to: they had found the disease, and it was **Nosema**. The only other thing of real interest in their report was a suggestion that the disease should now be called **Microsporidiosis**. One can well understand how a word so easy to pronounce as **Nosema** must have grated on scientific ears. Having come and seen and conquered, they then went back to their normal activities in Cambridge.

Quite what good they thought they had done it is difficult to understand. No cure had been suggested or even looked for, and bees were dying in vast quantities all over the country. Moreover, a lot of people were puzzled. When learned men state a fact in a voluminous report one feels it impertinent to doubt their word. The Isle of Wight disease was **Nosema**. They had said so. And **Nosema** spoors had been found in the stomachs of infected bees. Quite. But why was it that other bees obviously and definitely in the last stages of Isle of Wight disease were free from any spoors of **Nosema**? That had not seemed to bother the Board of Scientists or, strangely enough, the Board of Agriculture. But, as I say, it bothered some people. Among these were two Scotsmen, and the more they thought about it the more dissatisfied they were, until, in the end, they decided to investigate on their own account. But money was needed. Investigations of this nature may take years, and scientists must live. It was no use applying to the public. The public is not interested in bee diseases. All the public wants is honey, and it thinks that a creature like a bee has no right to have a disease in any case. Luckily, in the end, a Mr. Wood of Glassel stepped into the breach and provided the bulk of the funds. Doctors Rennie and Anderson of Aberdeen University then began their investigations.

They started full of hope, but at the end of five years they had accomplished exactly nothing. The disease eluded them. No germ or spoor of any kind could be found, except, occasionally, **Nosema**. And they still held to their first opinion that, if **Nosema** was the cause, its spoors would be found in every bee examined. It says much for their dour northern persistence that they went on. But they did. At least Dr. Rennie did. Dr. Anderson may have done so also,

but his name drops out of the later reports. Then came one of those chance discoveries that so often (more particularly in chemistry) have proved a turning-point. A Miss Harvey, one of Dr. Rennie's assistants, while examining a dissected bee, found a mite in the upper portion of the lung. No one thought anything of it, and she less than anyone else. In fact she did not mention it for some time. Mites are often found on bees, though none so far had been found in them. In any case the symptoms of Isle of Wight disease were swollen abdomen and dysentery. Naturally the germ was looked for in the stomach and intestines. The inability to fly was put down to general weakness; for flying to the bee—with its small wings—is a feat of tremendous energy, demanding eight times the exertion of walking. By now Dr. Rennie feared that the germ was one of those baffling filter-passing organisms such as defy detection in several human complaints. He was interested when he heard about the mite, though he regarded it as of no importance. In his spare time he looked for others. He found them, and gradually the fact emerged that every bee infected with Isle of Wight disease had mites in the top tubes of the lungs. At long last they were on the scent.

Probably the truth dawned suddenly on Dr. Rennie. These mites, and not a germ, were responsible for the disease. The mites invade the two big tubes in the upper portion of the thorax. These two tubes supply oxygen direct to the wing muscles. If the tubes are choked with mites, the wing muscles can get no oxygen. Therefore the bee cannot fly. As for the swollen abdomen and the dysentery, that also became clear. The cleanly habits of the bee were responsible. A creature that cannot tolerate a speck of dust naturally does not allow the voiding of faeces inside the hive. Even in the cold of winter a bee must wait till it can go outside. As a result of this age-old prohibition the bee has become practically incapable of voiding its faeces except on the wing. When it cannot fly, therefore, its waste matter accumulates and dysentery ensues. It is at this stage that the bee walks out of the hive to die. The first few bees are unnoticed, but once it has got a footing the mite breeds rapidly. Pregnant females in numbers emigrate from the first bee infected and invade other bees, from each of which in due course emerge other bands of pregnant female invaders. The whole hive becomes infected with some stage of the disease, so that every day large numbers of those about to die march out.

The problem was solved, though it had taken twenty years to solve it. In honour of the man who supplied the funds the mite was called **Acarapus woodi.** The indefatigable Dr. Rennie now set out to find out all about its life-history. It was a difficult task, but he succeeded. We will not go into it here, but we may as well mention one or two points about this hitherto unknown insect. It is a mite a quarter the size of the common cheese mite, and therefore invisible (just) to the naked eye. It is a perfect insect, having a breathing apparatus exactly similar to that of the bee, laying eggs which turn first into nymphs and then into mites. It has six legs and a pointed snout, with which it can puncture the lining of the tube wall and suck the bee's blood. In place of a tail the female has one long hair and the male three. The males are the stay-at-homes; only the females migrate and found fresh colonies in other bees.

The problem was solved, certainly, and scientists everywhere (except presumably, those at Cambridge) felt very pleased about it. Beekeepers were not quite so pleased. One supposes that they were interested in the discovery, but one could not expect them to be exactly jubilant over the fact that their bees were dying from mites in the lung instead of germs in the stomach. The sad fact was that beekeepers (and bees) were no better off than they had been before. What they wanted was a cure; something which would kill the mites in the lungs without killing the bee—not an easy thing to find. To get a picture of the difficulty and the comparative size of the mites, you must imagine a man with his bronchial tubes full of cockroaches. Something has to be found that that man can breathe in to kill those cockroaches. There are many agents which would do this—but they would also kill the man. An

added difficulty was that the eggs of the mite must be destroyed also at one and the same time. Dr. Rennie now set himself the task of discovering a cure. We have seen that he was no defeatist; that he went on and on. He did so now, yet in the end he was forced to announce definitely and sorrowfully, but without equivocation, that there was no cure for Isle of Wight disease—or Acarine, as it was now called. Science, in short, threw up the sponge.

Then came another surprise. Where scientists with their knowledge, apparatus, and paid time failed, a stationmaster succeeded. A Mr. R. W. Frow, stationmaster of Wickenby, Lincs., announced in a bee journal in 1927 that he thought he had discovered a cure. He gave the prescription too, and a remarkable mixture it was, including petrol, nitro-benzine, and saffrol oil. The idea was to apply it to the hive on a pad so that the fumes permeated the whole hive. The bees (he said) would breathe it and (perforce) the mites, and the mites would be killed and the bees would not. Not only this, he claimed that it would kill the eggs of the mites as well. A number of beekeepers tried it immediately, including several of that class who think that if a stipulated dose of medicine is doubled it will do twice as much good. I had a friend like this who had a dog with worms. He bought a strong medicine, starved the dog for twice as long as the instructions directed, and gave four times the required dose. He was fed up with those worms and wanted to kill them properly. Whether he did or not he certainly killed the dog. He then wrote an abusive letter to the proprietors, and warned all and sundry against the medicine in question. That is exactly what happened with Mr. Frow's remedy. Certain people made doubly sure of killing the mites, and then wrote to bee journals saying that they found all their bees dead the next morning. Those who gave the correct dose were not in a position to give an opinion. Even on bees dissected and examined it is a month before any result can be seen. It may be four months before the ordinary beekeeper can be sure his stock has been saved. Once these overdosers gave their verdict the usual crowds who decry anything new arose and in various papers poured scorn on Mr. Frow. To make matters worse, Mr. Frow's first suggested dosage was a little on the strong side, and some stocks died. The one and only cure for Acarine disease went within an ace of being stillborn. Then the third of the trio who saved our bees arose. This time it was an army man (a strange trinity: a scientist, a stationmaster, and a soldier). The task of Colonel Holsworth of Devonshire was less spectacular, but it came at a crucial time. Instead of joining the pack now in full cry running down Mr. Frow, this private beekeeper conducted a series of the most painstaking and exact experiments. He sacrificed his stocks wholesale, but in two years he found that the cure was a cure, and he ascertained the correct dosage—and it is a hair's-breadth matter when both the mite and its host are breathing in a poison: fortunately the mite is a little more susceptible. And here it must be added that Mr. Frow—who could have made a fortune—gave his discovery to the world free, gratis, and for nothing. Already Acarine was appearing on the Continent. It would have spread. But for him the honey-bee—in the Old World at any rate—might have become extinct.

And so, in twenty-five years, the mysterious bee disease that first appeared in the Isle of Wight was conquered. The question may be asked, if the disease spread so fast and was so devastating, how was it that any British bees survived at all? The answer is simple: none did. The bee that worked in our gardens twenty or so years ago is with us no longer. It is a pity; for it was a splendid bee and knew our climate (or rather its own climate, for it had been in Britain long before mankind) as no bee knows it now. For while the disease was striking down British bees, beekeepers were busy importing other races. French, German, Russian, Italian, and other stocks of bees were shipped to this country in large quantities. This was not only to keep up the supply; the idea was prevalent that since it was British bees that had been attacked, the bees of other countries might be immune. And for every new race imported, the cry went up that

a 'resistant' breed had arrived. Of course, it was only a matter of time. **Acarapus woodi** cares nothing for the nationality of its host; it invaded one and all, and when the jubilations were reaching their loudest the dreaded symptoms appeared and the processions started. The finding of a 'resistant' bee was all the rage then. Actually the bee has as much hope of being resistant to the mite as a man has of being resistant to fleas. Lastly came Dutch bees, and this time the cry went up so loudly that a resistant race had arrived that the Government took a hand and brought them over by the ship-load. They **did** seem immune, too. While other stocks were dying they remained unaffected, and great was the rejoicing. But at last they, too, began to 'crawl.' Their seeming resistance was due to the fact that they bred so fast and swarmed so much that they almost kept pace with the ravages of the mite. Not quite. The end, though protracted, was equally sure. So now we have a mixture of all these races. British blood is there, but nowhere is it pure.

The origin of this wretched mite is still unknown. Actually it was only due to a slight lapse on Nature's part that it was able to attack bees at all. Bees (and all insects) have a far more efficient breathing apparatus than any animal. Animals breathe through one small tube which is also used, in part, for the conveyance of liquids and solids—a very poor and rather dangerous arrangement. Insects breathe through a whole crowd of tubes relegated to that purpose only and which do not interfere with the mouth and throat. This is why insects have such amazing vitality and can fly and dart about all day (and all night as well) without any exhaustion. These tubes are all in the thorax, and are very small except for the two main tubes called the **trachae**, which have been mentioned before as supplying oxygen to the wing muscles. The openings to these two tubes (called the **spireae**) are also comparatively large, and therefore are a possible source of invasion by germs or very small mites. To guard against this they are provided with a 'shutter,' which operates much in the same way as our noses when we sneeze. Now with bees this shutter does not operate properly until they are five days old. After that it is perfect. I cannot say why this should be, but it is so. And those five days are the mite's opportunity. A bee over five days old is quite immune from **Acarine**—provided it has not already contracted it. But once **Acarapus woodi** is in a hive those five days are quite sufficient for its purposes. To go back, where did **Acarapus woodi** come from? It was in Britain somewhere in 1904, and it had already developed its life-cycle in the interior of some insect—but not, until then, in the bee. One thing is proved and known, it cannot 'crawl about.' It can only invade another bee by direct contact, shoulder to shoulder, so to speak. Dr. Rennie examined insects of every sort: wasps, bumblebees, flies, ants, and others. In the **trachae** of none did he find any trace of invaders. Still, this proves nothing. I think we may assume that in some place, some time round about 1904, a bee rubbed shoulders with some insect that was the normal host of **Acarapus woodi.** Probably it was in a spider's web. At any rate it was a chance encounter that might not have happened again for another thousand years, if at all. By a mere fluke like this was our British bee exterminated.

(To be Continued)

FOOD VALUE OF HONEY.

Recent investigations conducted by the Divisions of Entomology and Agricultural Biochemistry of the University of Minnesota emphasized still further the food value of honey. In a joint paper by members of these divisions presented by Dr. M. H. Haydak at the convention of the American Association of Economic Entomologists, in San Francisco, December 29, it was pointed out that honey, due to its iron and copper content, was found to be helpful in the formation of hemoglobin, the red pigment of blood cells. Honey was found to contain vitamins B1 (thiamine), B2 (riboflavine), B6 (pyridoxine), C (ascorbic acid), nicotine acid and pantothenic acid in variable amounts.

—("Canadian Bee Journal.")

THE MIRACLE OF HONEY.

By Esther R. Hauver.

(Reproduced from "Physical Culture" for February, 1941.)

To the ancients, honey and health were inseparable. Honey was popular as a medicine, internally and externally. Not only was it used for surgical dressings, but it had curative values for burns, ulcers, and inflamation of the eyes.

Scientists and nutritionists to-day are finding so many uses for honey in promoting health from infancy to old age that a new and deep respect has been gained for the early claims made for it.

For sixty centuries honey was man's only sweetening agent and his most favoured food, delicacy, and medicine. To it was attributed longevity. A modern medical man points out that it makes common sense to conclude that a food which is adapted to the requirements of babies and small children should be equally useful to old people. Man has always strived to attain longer life and the wise men of all ages have realized that moderation and natural foods like honey, milk and fruits contributed greatly to that end. "Father Time, though he tarries for none, often lays his hands lightly on those who use him well," said Charles Dickens.

The physical qualities of honey are so generally known it is only necessary recalling its chemical qualities which account for its remarkable value to mankind as a food and as a medicine. The United States Department of Agriculture in a general statement calls attention to the ease of assimilating honey because it is composed almost entirely of simple sugars. Most sugars require action by the intestinal secretions to break them down into simple sugars similar to those occurring naturally in honey.

Because it is easily assimilated, so the authorities say, honey is of importance where normal digestive activities have been impaired by disease or old age. Honey can be utilized by the body without placing much of a burden on an enfeebled digestive tract. It is also recognized for that reason as a valuable food for babies and young children.

To realize that the nutritive value of honey has captured the interest and imagination of many of our leading scientists, one has only to enter the office and laboratory of Professor H. A. Schuette of the department of chemistry, University of Wisconsin.

Professor Schuette literally lives with his honey. There was honey everywhere—on his desk, on the shelves, in glass, in cans in shades of varying degree from white clover to buckwheat. Here indeed was a miniature honey world with as many kinds of flavours as there are varieties of trees and flowers in the fields and gardens.

While you may be trying to delve into his mineral findings which have occupied many hours of research for the last fifteen years, he will modestly assure you he hasn't done much.

"No, we have made no nutrition studies," he quickly adds, while you are marvelling at his discovery of every mineral in the alphabet. He has laid the corner-stone for research that will be of inestimable value to future generations.

"Yes, copper, iron, and manganese, together with the other nutritional minerals, are small in quantity but important in tissue building. Iron," Professor Schuette continued, "is important from a nutritional standpoint because of its relation to the colouring matter of the blood, or hemoglobin."

With these mineral findings as a background, interesting nutrition studies have been made. The Frauenfelder Home in the Canton of St. Gallen, Switzerland, is famous for its milk and honey cures in weak and pallid little folks. In studying two groups of children it was proved that the group which received honey, but otherwise on the same diet as the other children, improved their hemoglobin content twelve per cent.

Infant feeding experiments are numerous and well known to the average mother, one of whom was most enthusiastic about the value of honey as a laxative and builder of hemoglobin. This mother's statement was followed the same day by a letter dated July 10, 1940, in which Dr. John R. Phillips of Allentown, Pennsylvania, says, "I have used honey in infant feeding with perfectly satisfactory results."

Much credit is due Dr. J. Martin Johnson of Ripon, Wisconsin, for his outstanding success and enthusiasm in using honey for infant feeding. Dr. Johnson traces his first interest in the subject to a colourless baby who was brought him for treatment some years ago. What to do with such an appalling and discouraging little bundle of humanity was not in the realm of ordinary procedure. Even its weight was less than at birth. It was with slight trepidation, Dr. Johnson confessed, that he decided to substitute honey for syrup in the milk. Within a week this baby had improved so much it had completely changed. Its colour was good and weight increased. Instead of crying feebly as it did a week ago, it now gurgled contentedly. From that time on the baby gained steadily and rapidly.

Dr. Johnson reported that he has found the formula consisting of equal parts of evaporated milk and boiled water, to which is added seven per cent. of honey, to be the best baby food. When he puts normal infants on the honey formula they thrive so well that usually he doesn't see them again except at a chance meeting in the street.

Dr. Johnson regrets that we as a nation neglect healthful, natural foods such as honey and substitute for them many manufactured foods of doubtful health value.

Honey in medicine has so many uses it is impossible to do much more than catalogue them. However, at the outset it is vital to remember in this connection that honey should not be used for medical purposes without the advice and order of a physician.

Did you ever wonder what primadonnas resort to in treatment of throat affections? You guessed it. It's honey—a simple combination of milk and honey which is excellent for any husky throat.

A prominent lecturer and medical authority, Dr. Arnold Lorand, of Carlsbad, Czechoslovakia, suggests honey particularly for people with a weak heart. He explains further, "A weak heart is most frequent in severe diabetes, as in such a condition the sugar ingested cannot be utilized and entirely eliminated. As the best food for the heart, I recommend honey. It does not cause flatulence and can even prevent it to a certain extent." Dr. Lorand also observes that before and after muscular exertion honey should be given in a generous dose; no coachman would allow his horses to run for hours without giving them food at the resting intervals. Only man is so unreasonable as to undertake heavy exertion often with an empty stomach.

Probably there is no more engaging conversation when a group of hay-fever victims get together than their own malady. Be they baseball fans or ardent golfers, no subject gets such a thorough going over as "What to do for my hay-fever."

Dr. George D. McGrew of the Army Medical Corps of the William Beaumont General Hospital in El Paso, Texas, stated in an article published in the **Military Surgeon** that during the 1936 hay-fever season, thirty-three hay-fever sufferers obtained relief through the consumption of honey produced in their vicinity. The brood cells contain a considerable amount of bee-bread (pollen) stored by the bees for their young and when this is orally administered it will produce a gradual immunity against the allergic symptoms caused by the same pollen.

Dr. McGrew found particular relief for patients when they chewed honey with the wax of the brood cells. The hospital staff also made an alcoholic extract from pollen and administered it in from one to ten drop doses, according to the requirements of the patients. The above report on hay-fever is reprinted from Dr. Bodog F. Beck's **Honey and Health.**

Many modern lotions and face creams contain honey. It generally is accepted that honey has an antiseptic, astringent, and bleaching effect on milady's skin.

For quick energy building, for physical and mental fatigue, soldiers and athlets subscribe to the fact that honey has no equal. Honey-fed athletes of an Oklahoma high school sum up the advantages of honey in a letter to all the state coaches:—

1. It is non-irritating to the delicate membranes of the digestive apparatus.
2. It is assimilated rapidly and easily.
3. It quickly furnishes the demand for energy.
4. It enables the athlete to recuperate rapidly from severe exhaustion. The men using it show less evidence of fatigue, according to standardized medical tests.
5. It has a natural and gentle laxative effect.
6. It is easily obtained and inexpensive.

Honey in the kitchen? There is so much to be said on that enticing subject that there is not space for even a peek into a honey muffin.

What the science of nutrition and medicine has done for countless folks who are now honey enthusiasts, it can do for you. When you have discovered its appearance on diet lists of eminent pediatricians you will wonder why you, too, don't seek good health by keeping a jug of your favourite honey on your family dining-table.

1. For centuries, honey was primitive man's most favoured food, delicacy and medicine.
2. The ancients attributed good health and longevity to the magical food of honey.
3. Primitive people have long known of the power of honey to heal ulcers and burns.
4. Opera stars have found that honey mixed in milk is excellent for a husky throat.
5. Scientists recognize honey as one of the most valuable elements in infant feeding.
6. Many athletic coaches use honey as a means of building and maintaining physical energy.

WEIGHT OF THE HONEY BEE.

"The weight of a new-born bee is approximately 100 milligrams. Ten of these bees are required to weigh a gram. In the course of two of three days the bee has increased to 104 milligrams. While secreting wax the bee attains its greatest weight, 165 milligrams, as a result of eating large amount of honey. The bee which flies to the field is much lighter than its younger sisters and weighs about 30 milligrams less. When nectar is scarce, is may weigh about 4 milligrams less. When nectar is plentiful a bee may carry a load of 40 to 60 milligrams and this load corresponds to approximately three-quarters of the bee's weight. The bee in a swarm carries a load of about 20 milligrams which is much smaller than the load carried by a field worker. In a well-provisioned swarm about 10,000 bees are required to weigh 1 kiligram (2.2 lbs.) while in a hungry swarm about 12,000 are required for 1 kilogram."

—R. Goeldi, Schweizerische Bienen-Zeitung.

BEES IN THE CARBONIFERAS.

In the fall of 1869 my grandfather, Wm. Stover, and my father, J. W. Stover, went to a strip mine near Cartersville in Williamson County Illinois, to get a load of coal. They found one large lump, which was unusually heavy, and were inclined to discard it thinking that it might contain a boulder. However, because it was quite large, they took it home.

A few months afterward it was broken with a hammer and was found to contain a carbonized colony of bees. Comb, bees, larvae, and even pollen were easily identified. The lump was kept for many months until it finally disintregated.

This proves to me that bees as we know them to-day evolved long before man inhabited the earth. I was only a boy at the time but I have a vivid recollection of the coal lump and its interesting contents.

—F. J. Stover, San Antonio, Texas ("The Beekeepers' Item").

BEESWAX MINES IN MALAYA.

H. E. Coffey, San Antonio, Texas, in "The Beekeepers' Item."

I am always running across something new under the sun—at least to me—about bees. Texas has its reputations for fabulous cave-mines of honey; but to the Malay peninsula goes the cake for beeswax mines. I only learned this from reading the other day a copy of Carveth Well's "Six Years in the Malay Jungle," published way back in 1924 and loaned me by one who has himself had a fling at the tropics, Justice Bat Corrigan.

But let Wells speak for himself (his book, by the way, is now out of print), and you beekeepers see if you can believe it:

"Some of the old naturalists used to speculate as to whether Malay bees made honey, when there was no need of a winter store of food since there is no winter. Strangely enough they do make honey but they do not eat it. They live on nectar with the result that their honeycombs get bigger and bigger until they are sometimes hanging six feet long from the branch of some tall tree. After a while these huge honeycombs become so heavy that they fall down and at the base of some of the large jungle trees there are beeswax mines where people go to dig up beeswax.

"The Malays are as anxious as we are to collect honeycomb, and if they see a big comb hanging on a tree, they make a lot of hardwood pegs and hammer them into the trees, one above the other, so as to make a kind of step ladder all the way up. When they have climbed to the honeycomb they light a bunch of grass, smoke away the bees and cut the honeycomb off. Frequently it crashes to the ground and they lose all the honey, which is not such a great calamity to the Malays because they don't eat the honey very much. They eat the young bees!"

Wells declares with all seriousness that everything he relates is the whole truth and nothing but the truth. Here is his description of a jungle bee hive:

"I saw an immense jungle tree not long after this, about two hundred feet high, with queer-looking brown objects hanging upon the lower branches, nearly a hundred feet from the ground. I shot at them with a rifle and every time I hit one it turned white. Then it gradually turned brown again, and I discovered that the objects were huge honey-combs, some of them six feet long. They were covered with bees, and when the bees were disturbed, they flew away and exposed the white comb that hung upon the tree. As the bees returned, the comb gradually turned brown again!"

But here is his description of a bee tree:

"That morning I saw high up in the trunk of a dead tree a large hole through which was pouring a constant stream of bees, some entering, others leaving. As I watched them, I was astonished to see emerge from the bee-hive and dive into the river ahead of us a wonderful pink, green and blue kingfisher. He looked like a jewel as he flashed from the hive into the sunlight and splashed in and then out of the water, carrying in his beak a small fish. With this he flew straight to the old tree and disappeared into the beehive again. 'He's clever,' said Sahar, and he obviously was, because the bees took no notice of their lodger, and I'm certain no human being would have willingly robbed that bird's nest. Of course, the bird may have been there before the bees, and the bees may have decided to prepare a new kind of honey flavoured with fish—you never can tell."

POLLEN TRAPS.

NEW DEPARTURE IN BEEKEEPING.

This has to do with pollen traps, pollen storage in times of plenty, and its use along with soy bean flour as a supplement in times of scarcity.

Last month we received a bulletin from the U.S. Department of Agriculture—"The use of Pollen Traps and Pollen Supplements in Developing Honeybee Colonies," by C. W. Schaefer and C. L. Farrar. This was first published in March 1941, and gives the results of three years' experimenting and observation. We summarise here some of the results.

Some Facts About Pollen.

A good colony uses from 40 to 50 pounds or more of pollen a year, and as much as 71 pounds have been trapped from one colony in a year.

One pound of pollen will produce 4,540 bees. A strong colony will rear up to 200,000 bees in a year, and will thus require about 44 pounds of pollen. Forty-four pounds of pollen in uncrushed bee-load pellets will fill 66 pint jars.

The pollen traps show that, of pollen gathered, 20 per cent. of the pellets are large, 72 per cent. medium, and 8 per cent. small. It has been estimated that ten average bee loads of pollen are needed to rear one bee, 112,000 loads to produce a 3 pound package, and two million to bring in the year's supply for the brood rearing of one large colony.

In combs of pollen, the cells on an average are slightly over one-half full, and the packed pollen in a cell is enough to rear one and a-third bee —or three cells will rear four bees. One hundred square inches of pollen in the comb are needed to rear a pound of bees, and 22 full frames to keep a strong colony going a year.

What a Pollen Trap is Life.

The essential points in a pollen trap consist of a wire mesh, five to the inch, doubled U fashion, with the arms of the U about half-an-inch apart. This is arranged so that the bees have to go through it to get into the hive. (They take a few days to get used to it.)

Beneath the trap is a pollen tray, the length of the trap, and about three inches by three. It is covered on top with a mesh 7 or 8 to the inch, to let the pollen drop through and to keep the bees out of the tray.

Then there is a storm shield, over top and sides of trap and tray to keep out the rain. About eight inches projection.

These are the essentials. The hive needs to be raised off the ground to fit the tray under the trap, and the bottom board needs to be flush with the hive at the entrance. But a handy man can easily fix things to make the only hive entrance through the trap, and at the same time have trap and tray and storm shield handy and detachable.

Drying the Pollen.

During a good pollen time the tray may need emptying in two to five days. In dry Summer weather the pollen can be spread to half-an-inch deep on shelves, under shelter, to be air dried. When so dry that the pellets will not stick together they can be stored in jars or tins. A 60 lb. honey tin makes a good receptacle. It is important to keep out **moisture** and **moths**. Moisture makes mould, and wax moths breed in pollen. In damp weather the pollen can be spread out in a warm dry room.

Trapping the Pollen a Season Ahead.

The main idea in pollen trapping is to have surplus pollen from good times stored for use, along with soy bean flour, against times of pollen shortage. In American experience a year's gathering of one good colony, say fifty pounds of trapped pollen, used along with soy bean flour, will carry fifty colonies, in full breeding, over the year's pollen shortages.

American main need seems to be to get the bees going early, for Winter and Spring breeding, to have bees enough for early Summer flows.

Stored Pollen with Soy Bean Flour.

The most economical use of these materials seems to be to use 25 per cent. of pollen with 75 per cent. of soy bean flour. But half and half mixtures can be used.

Soy bean flour can also be used by itself when there is just a sprinkle of pollen coming into the combs, but not enough to allow full breeding. But soy bean flour, without any pollen, is no good after about ten days, when the bees have exhausted what they have in their systems. Soy bean flour is a **Supplement**, not a **Substitute.**

Making and Feeding the Mixture.

It is best to make the mixture into one pound cakes, about half-an-inch thick. Place a cake on top of the frames just over the cluster, and cover with waxed or paraffined paper to prevent drying. Generally new cakes will be needed in from seven to ten days, and they should be given before the old ones are consumed.

The formula for making fifty one-pound cakes is as follows: 4 lbs. of dry pollen is softened with 2½ cups of water. This moist pollen is added to 30 pounds of thick sugar syrup made with 20 pounds of sugar dissolved in ten pounds (one gallon) of hot water. Twelve pounds of soy bean flour is added and stirred till the whole is a uniform dough-like paste.

The more pollen is used in making the paste the less syrup is needed. Making paste of soy bean flour without pollen more syrup is needed.

Different Kinds of Soy Bean Flour.

Many grades of soy bean flour are on the market, but not all have been tested as pollen supplements. It is recommended to select a flour having **a low fat content** (0.5 to 2 per cent.) and containing about 50 per cent. protein "refined by the heat-treated expeller process, rather than by the chemical-extraction process."

—(R.G.M. in "The Australian Bee Journal.")

POLLEN POINTS.

A bulletin from the U.S. Department of Agriculture, entitled "The Role of Pollen in the Economy of the Hive," furnishes the following information:

"Insects, like mammals, have definite needs for various kinds of foodstuffs, including carbohydrates, proteins, fats, minerals, vitamins, and water. The honeybee derives these foods from honey, pollen and water.

Nectar is the chief source of carbohydrates . . . Honey is a highly concentrated source of energy . . . for flight, vital processes, fanning the nectar, and its many other activities. The sugars in honey are also converted into beeswax.

Pollen is the chief source of all other foodstuffs required by bees, except water. Much of the material for making royal jelly . . . The material out of which are made muscles, vital organs, hair, wings, etc. Also for the repair of worn out tissues.

Chemical analyses of pollens have shown them to be rich in protein and fats, and also to contain various carbohydrates—sugar, starch and cellulose. In them have been found various minerals, calcium, magnesium, phosphorus, iron, sodium, potassium, aluminium, manganese, sulphur, as well as vitamins, enzymes, and colour pigments.

The composition of pollen is by no means uniform. The analyses of 34 samples gathered by bees from various sources showed that the protein content varied from 7 to 35 per cent., and that fats, starch and minerals varied widely. Certain vitamins may be present or absent. The food value of pollens therefore differs widely . . . and perhaps a mixture of various kinds is necessary to give bees a complete diet."

—("The Australian Bee Journal.")

Dear Mr. Editor,
Here is my sub.
I'm sorry it's late,
'Cos I know at the pub
I get no tick at all,
Nor much from the draper,
The butcher or milkman,
So, why from the paper?

BEE VENOM.

All the Sensation of a Bee Sting except Buzz given for Rheumatism.

At Sealy Springs, Alabama, there is a sanitarium where hydrotherapeutic baths are given for rheumatism and allied disorders; young Dr. Josef Silbermann, the bath-house director, uses the ancient folk remedy of bee stings to hasten the regular treatment of rheumatic conditions such as arthritis and neuritis.

Bee venom comes in the form of a white powder or solution which is put out by at least two drug manufacturers in America and numerous others in Europe. In times past when the syringe and hypodermic needle were unknown and pharmacists did not understand how to prepare stable extracts of bee venom, patients were simply exposed to the sting of bees in apiaries, and so the first medical reports and records on the subject are based upon the administration of natural bee stings. Modern pharmaceutical progress made the preparation of bee venom possible and helped to overcome the fear most patients had of bee stings.

The Viennese physician, Terc, published the first article on this subject as early as 1888, describing his results in about 170 cases. Langer was the first to make a preparation of bee venom in 1914 and published his observations in a German medical journal devoted to diseases among children.

Bee venom as a remedy dates back to primitive times, as does also the use of water in the treatment of rheumatic diseases. The use of bee venom in rheumatic conditions is based upon the observation of laity and medical profession that people suffering from rheumatic disturbances of certain types when accidentally exposed to the proper amount of bee stings showed surprising improvement as it concerned pain and swelling. It was noticed as early as the middle ages that beekeepers seldom suffered with rheumatism and the custom of having a few bees sting the patient over the affected parts developed as a result. The remedy is recognised in modern medical practice, although it is not used by physicians of the present day to the extent that current literature on the subject would seem to warrant.

"The physician administers a solution of bee venom into the cutis, a special tissue layer of the skin," Dr. Silbermann said in discussing the procedure at Sealy Springs. "Soon the patient experiences all the sensation of a bee sting except the buzz. The skin shows exactly the same symptoms one observes after a sting."

Meanwhile the physician watches for two reactions, the primary one consisting of a small white weal surrounded by a red halo as in the case of a bee sting. The secondary reaction is that of more extensive swelling accompanied by burning and may even have some diagnostic value as it occurs most often in non-rheumatic cases.

The bees are killed with cyanide. The venom glands are then removed and placed in alcohol in which the venom is precipitated, sterilized and freed of extraneous matter. The alcohol is poured off and after drying the venom is represented by a residue in the form of white amorphous powder.

The powder is almost permanently effective while kept in a vacuum. Shortly before administering, the physician prepares a solution of the venom which is itself effective for four to six weeks, but has to be kept in a refrigerator to prevent early deterioration and ensure preservation of its effectiveness.

Other venoms like that from poisonous snakes are also used for medical purposes, as for instance, in the alleviation of pain in cases of cancer.

Medical science has learned the amount of bee venom to prescribe without harmful effect to the general health. The dose is given in units of about one-tenth the amount of venom in a single sting each. A course consists of several injections of these

units in increasing quantities. It is sometimes necessary to repeat the course after a certain interval. The venom is applied even in cases where the rheumatic condition has affected the heart and kidneys. Most authorities forbid the use of alcohol internally or externally at the time of taking a course of bee venom as the alcohol might interfere with the curative effect of the venom.

"The treatment of rheumatic conditions, especially those in which joints and nervous tissue are involved, is sometimes very hard," said Dr. Silbermann. "One of the dominant features is the frequently intolerable pain due to swelling and inflamation. Bee venom is often used successfully in connection with the hydrotherapeutic treatments at Sealy's Hot Salt Mineral Springs."

JOHN W. RABB.

Sealy Springs, Ala., U.S.A.

SWISS BEEKEEPING NOTES.

Gygli has observed bees waylaying other bees as they return to their hives with a load of nectar. When heavily laden bees rested in front of their hive on the homeward flight other bees were observed to fly to them and to coax them to give up their load of nectar. He has observed this occurrence many times in his apiary. Pollen gatherers were not molested.

Dr. Burri of Lieberfeld has recently succeeded in growing the causative organism of European fb. on artificial culture media for the first time. He has proved that the causative organism, **Bacillus pluton**, as isolated by White exists in two forms, a bacillus (rod shaped) form, and a coccus (spherical) form. When grown on suitable cultural media one form will change to another. This discovery is a great forward step in the diagnosis of this disease. In the past the two forms of the organism led to much confusion. Dr. Burri suggests the organismo should be called streptococcus pluton.

—C. M. Pounders, Dallas, Texas ("The Beekeepers' Item").

TRAGEDY OF THE APIARY.

FATAL STINGS.

One of those extremely rare tragedies of the apiary has occurred in England where a Chingford woman beekeeper died within ten minutes of being stung by bees because of a hereditary condition. As beekepers might be interested in the opinions expressed by the pathologist who conducted the post mortem examination, we have made some extracts from the report of the Coroner's inquest.

An inquiry, conducted by the Coroner (Dr. P. B. Skeels) was held concerning the death of Mrs. Margaret Marie Louisa Watterson, aged 43, of 88 Connaught Avenue, Chingford, who died within ten minutes after being stung by bees.

Dr. C. K. Simpson, pathologist, who made a post mortem examination, said there were four fresh bee stings—on the left ankle, on top of the right foot, and two on the right calf, just below the knee. There were none elsewhere. Externally there was no re-action, but internally there were considerable changes in keeping with most violent respiratory distress. Death was due to a respiratory form of allergic shock resulting from the bee stings.

DOCTOR'S EXPLANATION.

The Coroner: What is meant by allergic shock?—A violent reaction to the entrance of foreign proteins into the body, through the skin, mouth, nose or stomach. It may take the form of respiratory distress, a violent skin eruption, fainting, or pains in the head. It may be so violent as to cause death.

You have heard the evidence of Captain Watterson and his daughter. Does this allergic condition run in families?—Yes. The symptoms of which the daughter complained are characteristic of allergic shock.

Further questioned, Dr. Simpson said there were methods of de-sensitising a victim if the protein was known. The condition might have been caused by pollen, which the bee

had carried from flowers, and not necessarily as a result of the poison from the stings. It was clear that death was not due to blood poisoning resulting from the stings, and neither was death due to shock, fear or emotion. —("The Scottish Beekeeper.)

RESEARCH NOTES FROM "THE BEE WORLD."

Vitamines in Royal Jelly.

R. M. Melampy (A.B.J., August) discusses the composition of royal jelly as compared with milk. There is more fat than in the milk of the cow, goat, mare or woman, but less than in sheep's or sow's milk. Royal jelly has less water and more protein and carbohydrates than any of the milk named. Of the vitamins, there appears to be no A, about as much B as in whole wheat (no details as to the different members of this group), no or very little C, and not enough E to permit normal gestation in animals deprived of this vitamin. The author concludes that either the queen bee does not need these absent vitamins, or else they are present in amounts too small to be detected.

Foul Brood Spores Difficult to Kill.

C. E. Burnside has investigated the thermal resistance of Bacillus larvae (J. Econ. Entom. 33, 1940). At least 8 hours at boiling point is necessary to prevent the germination of exposed spores, and those in scales germinated after periods up to 46 hours, though 93 hours and 6 days at 98 deg. C precented growth. In wax, growth occurred after heating at 100 deg. C for 119 hours—nearly 5 days. This confirms the accepted view that an autoclave is necessary to sterilise wax effectively; but even in an autoclave, at 15 lbs. above atmospheric pressure, spores in scales were not killed under 30 hours (wet) and 50 hours (dry).

It appears that spores vary much in their resistance to heating, and this variation is shown by spores from the same scale. Spores which survive heat are more exacting in their food requirements than the average, and the author points out that it is desirable to enrich media used for testing the heated spores, else one may conclude that they have been killed when this, in reality, is not so. It is also necessary to observe such cultures for some time, as germination is often much delayed by heating. A large inoculum needs longer heating than a small one before it gives a negative result when cultured. The spores that do survive heat appear to have their vaibility reduced. The fact justifies the use, in suitable cases, of heat to make hives, etc., safe for further use. If it were necessary definitely to kill all the spores, this would scarcely be possible, according to the author's results.

CHINESE ARMY ENLISTS BEES.

Bees are in the army of the Chungking government. The Chinese are using the knowledge that as long as the same queen bee rules the hive it can be moved a distance of miles, and the bees will return to it.

By microphotography plans and messages are transcribed on tiny pieces of paper and sent through enemy areas attached to the bee. At the destination the message is deciphered with a microscope.

The "bee mail" travels 30 to 40 miles an hour, the insects being almost invisible and safer than pigeons. —H. R. FORSYTH, in "The Beekeeper Item."

A clipping from the "Toronto Telegram," tells of a young soldier of this war, a bomb-casualty, recently returned to Canada, who had suffered second-degree facial burns, yet "to-day his face is as clear and scarless as ever it was." The cure was the result of smearing the face with honey and olive oil, followed by bathing the wounds with a saline solution. "For five months the young man remained in hospital, and now he has a completely new skin." Another boost for honey!

HONEY CURES WHOOPS.

I am enclosing a wonderful recipe for a mixture for Whooping Cough. I hope there are few who need to use it, but it is invaluable for this dreadful complaint. My three children have it; the girls began to cough about three weeks ago.

I was treating them for common cold and nothing did them any good. The cough steadily got worse, until the whoop set in. Then in an American doctor's book I found this recipe, and now, after three days' treatment, they are much better, having very few fits of coughing, and are able to eat. The treatment would be good for any cough.

Whooping Cough Mixture with Honey.

Take 1 lemon and slice thin, add ½ pint of flax seed, 2ozs. honey, and 1 quart of water. Simmer but do not boil for four hours. When cool, strain, and if there is less than one pint of the mixture, add sufficient water to make a pint. Doses: one tablespoonful four times a day, and in addition a dose after each severe fit of coughing. It is not unpleasant to take and if given to the child before the whoop starts it is more beneficial. It is in the form of a jelly and is a little awkward to strain, but a coarse gauze strainer or a jelly bag is very good.—(Mrs. E. L. Evans in "Australasian Beekeeper.")

GO AHEAD.

You always use white sugar? Go ahead,
Don't try some brown, or honey, in its stead;
But, your bones will not be strong
And your teeth won't last so long,
Still, no doubt, you'll get along,
So go ahead.

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