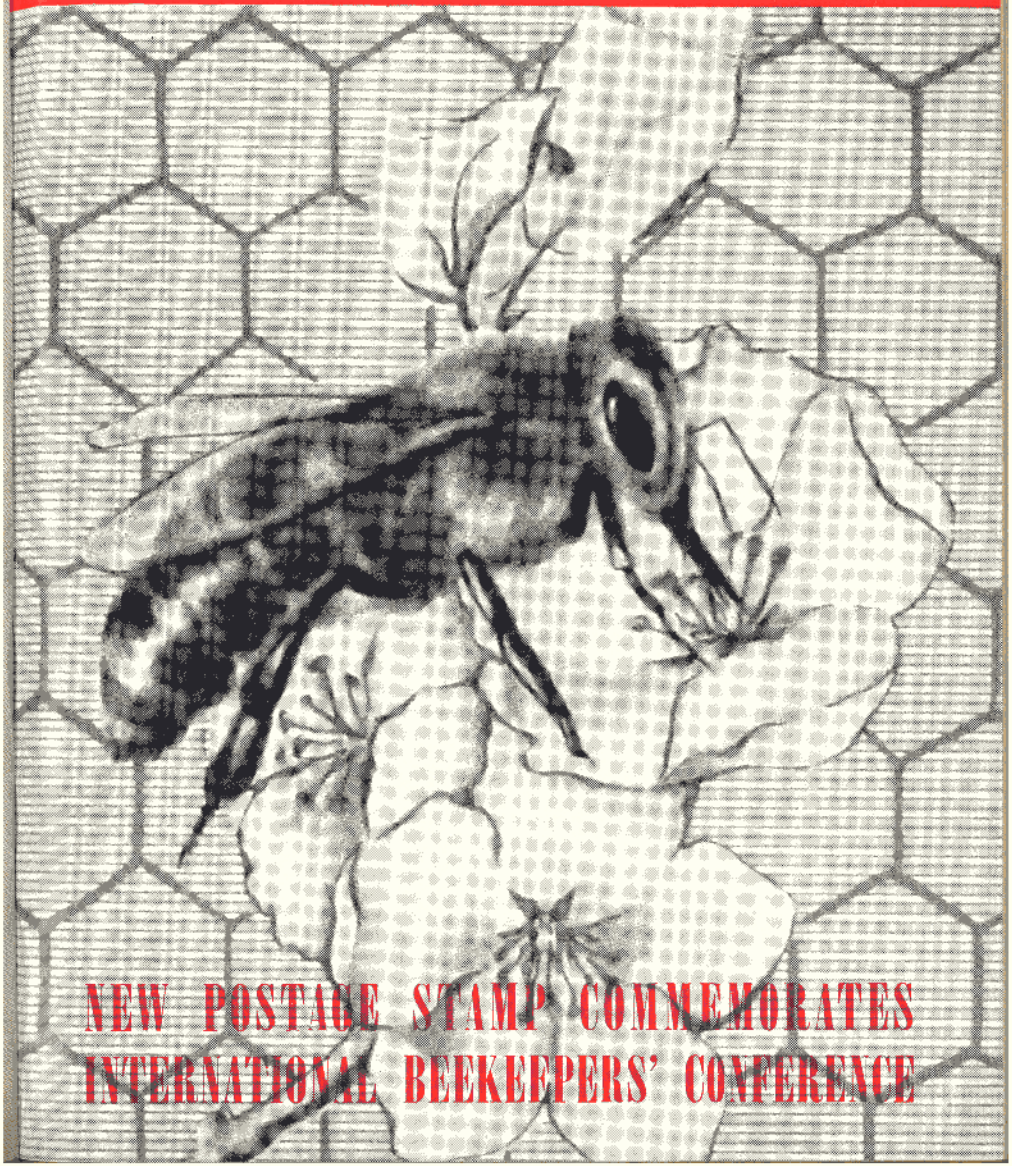
THE NEW ZEALAND BEEKEEPER

NOVEMBER, 1965



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No Racial Discrimination

IT IS ONLY NATURAL that we should all wish for something better, and the incentive to progress in everything we do is an essential corollary to success.

The thought that a strain of bee might be found which would materially increase our yields from the same number of hives is bound to create excitement, particularly since **homo sapiens** would be carrying out precisely the same amount of manipulative work.

It might well be, however, that the devil you know is better than the devil you don't. Take the typical example of the beekeeper who imported 20 African queens into Brazil only nine years ago, with the fond and practical hope that the newcomers would emulate and enhance their native reputation of producing 30 per cent more honey than Italian or German bees.

The queens have produced prodigy at the rate of 450,000 bees each year, none of which have retained their purity. Racial discrimination is non-existent, and the resultant crosses with domiciled drones have resulted in temperaments so fiery that the lives and livelihood of beekeepers in eight states is very seriously threatened.

It is said that very little of the desirable traits of the Italian queens and German drones are apparent in the new hybrids, but that the angry, bad-tempered, sting-on-sight propensity of the African bee has been intensified to uncontrollable degree.

Brazilian beekeepers are faced with the fact that their attempts to produce a new hardworking strain are a complete failure, and once the breed has started, it is extremely difficult to

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National Beekeepers' Association

EXECUTIVE MEETS

at *Wellington October 14-15*

A full meeting of the Executive under the chairmanship of the National President, Mr Harry Cloake, had a busy two-day session meeting at Wellington on October 14 and 15. Also in attendance were the General Secretary, K. E. Moody and the Editor of the "N.Z. Beekeeper," L. W. Goss.

NEW AUDITORS. Following formal business and financial aspects of the Association, it was resolved that the new auditors be Chapman, Ross and Co. of Upper Hutt.

COMPENSATION. On the question of compensation for destruction of hives infected with bacillus larvae, which was the subject of a remit from the last Conference to the Executive, it was pointed out that there was, in fact, provision in the Apiaries Amendment Act, 1927, and subsequent Amendment in 1958, whereby payment **could** be made—if the Governor-General thought fit—out of money appropriated by Parliament for the purpose of compensation for any such destruction or treatment. The operative words are: **Could Be Made.** Very solid grounds would have to be submitted to the Minister **why** there should be a change in the established pattern of Association thinking which for years has been against any such payment. Officers of the Department of Agriculture would have to be first convniced of the wisdom in changing the established policy, for them to place before the Minister a recommendation backed by factual evidence. It is apparent that grounds for change will have to be substantial.

In the meantime, the Executive is gathering information as to established practice overseas, and the situation will be thoroughly investigated before the next Executive meeting.

H.M.A. The Chairman of the Honey Marketing Authority, Mr Jack Fraser, reported to the Executive that the pay-out would be as last year, and a considerable proportion of withholding payments refunded. With the small intake this year, the problem of costs was considerable. Whereas last year's overhead represented less than one penny, this year the cost was 1½d and an Overheads Equalisation Account has been started to deal with fluctuating intakes.

Marketing overseas was beset with additional problems, in particular, the political situation, and the large quantities of good quality white honey offered by the Argentine at £88 a ton on the open market.

Advance payment has been reduced by one halfpenny as a gesture to the Government and to assist the capital position of the Authority. From May-August is the peak period for intake and minimum sales in Europe, and when over-draft requirements are greatest.

Advertising costs have risen very considerably, particularly for radio advertising. A half-minute spot on Auckland television now costs £100, and whereas radio advertising cost £2700 last year, the estimated cost for the same "time" would be £3828 this year. The Authority's appropriation provides for an expenditure of £5000 on home market advertising, including static exhibits of honey at the Wellington Food Fair organised by Mr Graham Kerr. Mr Kerr has also floated a company to promote and export exotic foods ,in which honey from New Zealand would be included.

GIFT PACKAGES of honey to overseas addresses was increasing in popularity. Last year, a total of 2900 tins were shipped, and this year the figure for the first nine months was 2800 with a seasonal demand anticipated for the remaining quarter.

A new agreement has been made with the London selling agents, Kimpton & Co., which stipulates that notice of termination may be made by either side on any one of four dates throughout the year, i.e. each quarter day. Twelve months' notice to conclude or change the Agreement by either side would be necessary. The area of operations had been defined as the United Kingdom and the Continent of Europe only, and relates to bulk sales exceeding 58lbs.

The Authority was not prepared to recommend an increase in price at present, and before any future increase was made, full consultations would take place with the Government and the National Beekeepers' Association.

MR A. M. W. GREIG, Director of the Horticultural Division, Department of Agriculture, was welcomed to the meeting by the Chairman, for an exchange of views.

On the question of pollen substitutes, Mr Greig intimated that there would be no departmental support for the importation of packaged supplies at present, because adequate substitutes were readily available in New Zealand. Wallaceville was evaluating the present position and a report would be issued.

Referring to the remit requesting the Department of Agriculture to initiate a queen testing programme, Mr Greig suggested that the Association should form a queen breeder's co-operative, with technical assistance from the Department. His view was that better progress would be made by the use of proven strains. The Department would not act on its own because of a number of factors.

Note: At a subsequent discussion, the Executive reviewed a number of suggestions from members, and will endeavour to evolve a workable scheme.

Scientific opinion on the testing of imported honey bees was that the risk of bringing in disease was too great to justify the possible result. There was no assurance that any imported strain would produce better results than those already here, neither was it possible to guarantee the maintenance of purity. Elimination of undesirable drones would be extremely difficult. Importation of immature queens presented problems of transportation which could not be lightly overcome, in that a courier would have to travel with them and ensure their safety from dropping or jarring, and a very careful and high degree of care was necessary. Importation along these lines from the U.K. or the Western world would be a very expensive business, and special resources would have to be created to handle them on arrival. The onus would be on the Association to put forward authentic proposals for handling any such importation. The present situation was unsatisfactory in that the temptation for illegal importation remained.

On the tutu problem and the suggestion that the restricted areas be opened for trial periods, Mr Greig explained that current policy was to refuse permission and to await results of the biological work now being undertaken. This policy had been endorsed by the Minister.

Note: The Executive subsequently decided that the Department be requested to set down more test hives in the closed area and that samples of honey be taken from each hive monthly from July. It was acknowledged that biological research work now being undertaken was encouraging and that it was too early at this stage to publish findings.

Mr Greig offered to see if the Department can make available the leaflet on Nectar Sources, and to use his good offices with a personal contact in Canada to assist the Association in furthering a Study Bursary for a young beekeeper. (Despite several letters to an Association in Canada which had previously promised assistance, no answer could now be obtained to correspondence. Funds are available for the project, but adequate assurance must be received of a planned itinerary and support dur-

ing the tour. A youngster could not be sent away without proper arrangements being made and reasonable safeguards for his well being).

Compensation for honey seized under the Food and Drugs Act was not as straightforward as might appear to be the case. Legislation would have to be looked at as a whole, and the Act would have to be amended and could only apply where wrongful seizsure was proven. Honey producers could not be a separate entity, and a concerted approach would have to be made by the whole of the food and allied industries. (Note: Approaches will be made to various organisation and trade bodies with a view to deciding future action).

CAWTHRON INSTITUTE. Dr C. R. Barnicoat, director of the Institute attended during the afternoon session, and explained that a bequest was available to finance suitable research work, and was sufficient to engage a graduate and pay his expenses for at least three years. Discussion had taken place with the Honey Marketing Authority, and the Executive concurred that a research project on the quality, flavour and colour of honey would be well worthwhile. No honey research had been undertaken by the Institute since the mid-1930's. It would be knowledge to know why nectar from one particular source produces honey of a particular shade and flavour, and the chemical compositions entailed in producing different colours and flavours. Exciting possibilities might present themselves during the research work .The first step would be to obtain the services of a suitable graduate to undertake the work, and enquiries with universities were proceeding.

OPOSSUM ERADICATION. The Minister of Forests, Mr R. G. Gerard, had written that everything possible was being done to control oposums in lower altitude bush areas, and 150 rabbit boards are now responsible for destruction, in addition to county councils who carry out control measures in county areas not covered by rabbit boards.

LOAN FINANCE TO INDUSTRY. Loans are available to apiarists of up to 2/3rds of assessed value. Borrowers are advised to take their applications beyond local offices of the State Advances if satisfaction is not obtained.

PRICE STRUCTURE of N.Z. honey in the U.K. This question cannot readily be answered. Packers and distributors in the U.K. would not willingly divulge their financial arrangements. Enquiries are to be made with certain outside sources of information to ascertain whether the subject of the remit is possible to answer.

OVERCROWDING ON APIARY SITES. Despite considerable discussion no practical solution could be evolved, and further investigation is necessary.

APIARIES ACT. A resolution was carried unanimously that "The N.B.A. request that urgency be applied to the Apiaries Act, and be passed and brought into operation this year."

CONFERENCE 1966. The Executive agreed that Conference 1966 be held in Whangarei on July 6, 7, and 8. Branches are requested to hold their pre-conference meetings in early May to ensure that remits reach the General Secretary by May 14 to qualify for inclusion on the Order Paper. Branches are further requested to attach an explanatory note to every remit whenever possible.

DISASTER AREAS. Mr George of the Department of Agriculture attended to explain the definition of a Disaster Area, and the extent of assistance given to farmers directly affected. Where circumstances necessitated, a guarantee was given for a bank overdraft for the purchase of hay, and transportation costs may be paid if stock had to be shifted from the area. Pressed as to whether there was a parallel case for beekeepers in moving their hives or the transportation and purchase of emergency sugar supplies, Mr George regretted that he was not in a position to answer the question. In the event of a district being a Disaster Area it would behove the persons concerned to act immediately in their own interests to save their bees from starvation or destruction, as did farmers with their stock. Self help was the first preogative.

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This review is by apiarist **A. J. Fleming** of Manunui, King Country, who attended the **SCHOOL FOR BEEKEEPERS** at Hamilton.
Opened by Mr I. J. Inkster, Scientist, Agricultural Research, Ruakura, the Seminar was under the chairmanship of Mr E. Smaellie, Superintendent, Beekeeping, Dept. of Agriculture, for the three day session.

Hamilton Seminar a Great Success

Approximately 150 beekeepers from the Far North to Hawkes Bay, and one or two from the South Island, converged on Ruakura, Hamilton, on September 9th for the first North Island Beekeepers' Training School. The solid programme, the arrival of interesting looking machines, and even the weather, induced an air of enthusiasm that was maintained to the closing on the third day.

Congratulations to Messrs Walsh, Bennett and Rope of the Department of Agriculture, and Messrs Wheeler, Barrow and Forsyth of the Association, for organising a highlight of the beekeeping year.

Mr Colin G. Rope began the lectures with "The Nature of Honey". This talk included material that would take weeks to find from reference books, and some material that would not be available at all, such as the actual colour losses in blending and storing honey. Many beekeepers hoped that this important paper could be published in full.

Mr Ivor W. Forster in "The Economics of Beekeeping" said that beekeepers must produce more honey PER HIVE. The economic position has deteriorated since 1950, and to offset this, beekeepers must really be on their toes and plan more carefully and exactingly.

Mr G. R. Paterson in his lecture on beeswax claimed that the beekeeper is by far the worst culprit in discolouring beeswax by the use of dirty utensils. He also stated that the time is long past when a standard wax mould should be used, and that beeswax should be neatly packed in distinctive cartons for the market.

In "Honey Houses—the Beekeeper's Largest Permanent Investment", Mr L. H. Johnson said that the young beekeeper must make a bold approach to this problem. Together with much practical advice he showed slides of some "show piece" honey houses of brick veneer, plastic covered floors, contempory architecture, and some very beautiful gardens.

"Queen Cell Raising And The Management of Queen Banks And Honey Crop And Hive Concentrations", were the subjects of Mr L. A. Griffin's lecture. His graph on the last subject for part of Canterbury over the last 17 years showed a definite pattern, with a honey crop peak about every six years. He said that the benefit of new areas is partially lost by overcrowding of hives, and estimates that 1000 tons of honey and pollen are required just to keep these extra hives in this area.

Mr Bob Walsh presented 84 colour slides of plants and flowers in "Nectar Scources". These were part of a collection of 200 plants which have been accurately identified by their pollen characteristics. Together with the nectar secreting information that went with them, these slides must be unique.

No one was prepared to argue with Mr Vince Cook on "Anatomy of the Bee". It is astounding that a colony of bees is a group of robots with purely automatic responses!

Mr Briscoe displayed a stainless steel liquid honey dispenser between lectures. This worked at 5 lbs. pressure, and had a beer serving valve on the end of a plastic hose.

Mr M. Bradstock (honey blender and packer for the H.M.A.), a broad Scot, spoke on the care of honey pumps and equipment, and exhibited a plastic covered electric switch that will float in honey, and would be of great value to any beekeeper.

A panel consisting of Messrs Carey, Lorimer, Cloake and Wheeler, and

chaired by Mr Bob Walsh, bravely answered 13 questions put in writing by attending beekeepers. Considering that this was unrehearsed, it proved a most popular part of the programme and provided some amusement. A serious question was: "What emergency measures could be taken by a beekeeper finding an apiary of 20 hives in advanced stages of swarming if he did not have time to find the queens?" Mr Dudley Lorimer said that he had tried swapping the top supers to other hives over division board with about 70 per cent success and then in 10 to 14 days finding where the queens are and reuniting.

Mr R. Blade (Blades Fumigation Ltd) gave a demonstration outside the hall of the control of wax moth and vermin. Mr Blade has four years' experience with methylbromide treatment of combs, and has evolved a system that seems here to stay. Mr Chalmers of the Department of Agriculture complemented Mr Blade's talk with advice on the handling of "killer" gases.

In "Aspects of Bee Breeding", Mr Ivor Forster brought some of the old theories up to date. One in particular is that queens require at least five matings. Recent research shows that some queens have as many as nine matings, providing an almost impossible predicament for the breeder.

It was pleasant to go outside again for Mr L. Wilsher's "Management of Baby Nuclii", for the weather was magnificent. Mr Wilsher demonstrated from start to finish with the genuine ingredients in Graham Kerr style. Every time the bees warmed up he drenched them with a watering can ("A little drop more won't hurt 'em"), so that in the end they were so full of water they could not sting. One point not generally known is to give each nuclei a carton of raw sugar three days after putting them out.

Finally, Mr C. R. Paterson showed his miniature honey drying vacuum plant in operation. This is really a masterpiece of invention and ingenuity. A full scale plant constructed partially from milking machine parts has been operating successfully for several years, and will treat two to three tons of honey a day.

The School was officially closed by the National President, Mr H. Cloake.

The trend among beekeepers to share knowledge was quite apparent from the number of machines and gadgets that were on display. These ranged in size from a hive tool to an enormous boom loader, and provoked much interest at the lunch breaks. An aspect of the school that was appreciated by all was the morning and afternoon teas provided quickly in the adjoining hall, where those present mixed in a most friendly atmosphere.

The Department, the organisers, and all those who contributed to the School deserve the highest praise for their efficiency and the selection of the programme, and can most assuredly count on increased support for the next North Island School.

"Denis the Menace"

The ever popular **"Denis the Menace"** appears in newspapers throughout the world. This cartoon recently published in N.Z. is reproduced with acknowledgements and thanks to the copyright holder.

Hamilton Seminar

THE NATURE OF HONEY

By Colin Rope

Mr Rope's 90-minute lecture at the Beekeepers' School was illustrated throughout with colour slides. The topics he discussed collectively formed a balanced impression of the nature of honey.

The unstable chemical composition of honey, together with its various physical properties, and the effects upon colour, flavour and condition due to faulty storage and processing were explained. Fermentation, crystallisation and the key role of specific gravity in honey was illustrated.

The address was of value to beekeepers and packers wishing to improve the quality of their honey.

There is room for only one aspect of Mr Rope's address in this issue but it is hoped to publish other extracts in subsequent editions.

COLOUR LOSS IN HONEY

The majority of consumers prefer light coloured honeys, so darkening must be prevented if the full market value of the product is to be retained.

Unfortunately for beekeepers there are five different factors which contribute to darkening of the natural colour of honey. Any one of these considered singly may seem of little importance, but collectively, the additive effect of the five factors can be quite serious. Colour loss in honey can be controlled only when all the causative factors are recognised and remedied.

		Colour Loss (Pfund)
1	Time (age or storage)	1 to 6 points in a year.
	plus	
2	Temperature (heat damage)	0 to 15 points
	plus	
3	Mixing different colours	0 to 20 points
	plus	
4	Iron tannate reaction	0 to severe darkening
	plus	
5	Moisture content	0 to 4 points
	Additive effect	1 to 50 points

Under Auckland's conditions a 5 per cent colour loss can be written off honey in general after 12 months; the range varies however from 1 per cent in some samples to 15 per cent or more in others.

1 and 2. Time and Temperature are inseparable. It is not temperature in itself which causes darkening of honey but rather the length of time at which a given temperature is maintained. Various honeys will react differently under identical treatments because honey is unstable and variable in chemical composition. Amber honeys are more susceptible to darkening than are white honeys, but oddly enough, reliable experiments have shown that certain extralight-amber honeys will darken at a faster rate than certain light-amber honeys.

Nevertheless, general trends are evident and adherence to the following sets of time-temperature combinations, which are practical to apply in processing and storage, should prevent appreciable colour loss. Agitation of the honey at the higher temperatures is advisable.

Flash heating to 180° F for 5 minutes followed by rapid cooling to room temps.
Flash heating to 160° F for 10 minutes followed by rapid cooling to room temps.
Slow heating to 145° F for 20 minutes followed by rapid cooling to room temps.
Slow heating to 120° F for 2 or 3 hours followed by a reduction in temperature.
Slow heating to 110° F for 1 day.
Slow heating to 100° F for 2 days
Slow heating to 90° F for 5 days
Storage at 80° F for 1 week
Storage at 70° F for 1 month (this temperature favours fermentation)
Storage below 60° F for 1 year (this temperature favours fermentation)
(Storage below 51.8° F will also control fermentation).

3. Effect of Mixing Different Colours

Beekeepers will not find it economical to separate into different lines, similar types of honey having slight colour differences because colour loss due to blending **near** colours is negligible.

On the other hand, the blend loss resulting from mixing honeys extremely different in colour is serious. Beekeepers producing dark amber honeys like buttercup should exclude even small quantities from their main extractions.

4. Iron tannate is a black chemical formed in honey which has contact with exposed iron surfaces. Pipe threads which have been cut through the protective layer of galvanising and worn surfaces on drip trays, tanks and containers are the chief origins.

5. Moisture content

A slight colour loss is apparent when moisture is removed from honey during processing.

Hamilton Seminar

The Anatomy and Physiology of the Honey Bee

Explained by Vince Cook

To fully understand the habits of the honey bee and the economy of the bee colony it is necessary to have some knowledge of the anatomy and physiology of the bee. We need to know about the construction of the bee's body and the way in which the various parts work.

To say the anatomy of the bee is a big subject is an understatement. Volumes have been written about it. Expert entomologists have devoted years of study to it. And still there are many mysteries to be solved.

I intend, therefore, to deal with the adult worker bee only. And to deal, as far as possible, with the main organs and appendages to illustrate how they are used by the bee, directly and indirectly, in the production of honey and beeswax.

Let's have a general look at our subject—the worker bee, *Apis mellifera*, which means "the honey bearing bee."

Unlike ourselves, the bee, in common with other insects does not have an internal skeleton. In fact it has no bones at all. Its skeleton is its tough outer covering. An outside skeleton if you like. Technically an exoskeleton. It comprises a number of thin, hard plates which are composed mainly of a substance called sclerotin. The soft internal organs are attached to the plates. Soft, flexible joints between the plates of the abdomen allow them to be moved.

The bee's body is made up of three distinct parts. These are the head, the thorax and the abdomen.

The head is the main centre of the sense organs. Here are located the brain, the antennae and the eyes. The mouthparts form part of the head and it also contains important glands.

The thorax is concerned primarily with the locomotion or movement of the bee—both flying and walking. The legs and wings emanate from the thorax which is virtually a box of powerful wing and leg muscles.

The abdomen contains the bulk of the digestive system, or alimentary canal, the heart, which is much simpler than ours, the sting, part of the nerve chain (which extends along the whole length of the body) and much of the respiratory or breathing system.

That's the general picture. Now a little more detail. For a start we'll have a look at the obvious parts. Those we can see. The outside of the bee.

The wings. There are four of them. Two pairs. When the bee is flying the hind wings are joined to the fore-wings by that row of hamuli or hooks. They are clearly seen on the leading edge of the hind wing. When the wings are unfurled the hooks automatically engage with folds on the trailing edge of the fore-wings. When the wings are furled the hooks are disengaged. This arrangement allows the bee to crawl in and out of the cells of a comb without damaging her wings. It also provides a large wing area for flying.

The wings provide the modern scientific bee breeder with a convenient yardstick to measure the purity of a strain of bees. It concerns the veins or ribs of the wings and is called the cubital index or wing index.

The legs. There are three pairs of them and they all arise, like the wings, from the thorax. Whereas the legs have become adapted to enable the bee to perform certain functions, they all have those basic segments shown in the front leg. Starting from the thorax they are the coxa, the trochanter, the femur, the tibia and the tarsus which has five sub-divisions including the foot.

The foot has two claws and a soft pad called the arolium. When a bee comes to a smooth surface the arolium is pressed against it to cause more traction. It's not clear how a bee manages to keep mobile on a very smooth surface because the foot pad is not provided with any sticky substance, which was once thought to be the case.

The forelegs are pretty small. They have hairs which are used to brush pollen from the head. Each front leg also carries an ingenious device for cleaning an antenna. It's at the joint between the tibia and the tarsus. There's a circular notch on the tarsus lined with fine hairs. And a tiny jointed spur, the fibula, just above it on the tibia. When an antenna needs cleaning the foreleg is lifted and passed over the antenna, which slips into the notch. The fibula is closed down and the now encircled antenna is drawn through, being brushed as it passes. We've all seen bees preparing to take off from the hive entrance, apparently wiping their faces with their hands. Well, really they're cleaning their antennae in this way.

The middle legs bear no special tools but the hind legs are highly specialised. They carry the pollen baskets and the equipment for packing pollen into the baskets. The inside of the leg has pollen brushes. These are rows of very stiff, closely set hairs. They're used for brushing pollen from the abdomen after visits to flowers. The forelegs are used in the same way to clean pollen from the head. The pollen they collect is moistened with regurgitated honey and passed back to the pollen brushes on the hind legs.

The pollen press is technically the tibio-tarsal joint. There is a row of very solid spines—the rastellum or pollen rake, rather like the teeth of a comb.

When a bee wishes to pack pollen into her pollen baskets—those wonderful arrangements of long curved hairs —she rubs her hind legs together. Pollen on the brushes is raked off, by the pollen rakes and deposited on the auricle. Now when the pollen press is closed the pollen, held in position by the rake is squeezed through the joint into the pollen basket.

Pollen is vital to the economy of the bee colony. It provides the bees with protein. Without pollen a colony cannot breed.

Back in the hive the pollen pellets are taken off by the middle legs and dropped into cells for packing by other bees.

During a season a colony consumes vast quantities of pollen. From 60 to 100 lbs. in fact. If we take 80 lb. as the average figure it means that honey bees in South Canterbury consume about 350 tons of pollen every year.

The head. The mandibles or jaws are strong and spoon-shaped. They're used for shovelling pollen into the mouth, for handling, cutting and kneading wax, and for comb building; for feeding brood food and pollen to larvae, for dragging debris from the hive and for grooming and fighting. So the mandibles are pretty useful tools.

The proboscis is a sucking tube which the bee forms by folding the galea of the maxillae and the labial palps around the glossa. The mouthparts are the start of the alimentary canal which I'll describe in detail later.

The eyes. There are five of them. Three simple eyes or ocelli and two compound eyes. The three simple eyes are set between the compound eyes near the top of the head. They are very simple retinal cells connected to nerve fibres . It's assumed that the simple eyes can only detect relative light intensity.

The compound eyes are very compli-

cated structures. Wonderful, in fact. The outer surface is convex and it consists of the lenses of thousands of units called ommatidia. The area of a worker bee's eye is only 2.6 sq. mm. but it contains 6,900 lenses.

Each ommatidia detects the intensity of light immediately in front of its lens. The total impression received by the complete eye is a mosaic of small dots of varying degrees of brightness. Very much like the coarse half tone blocks in newspaper illustrations.

The compound eye is only capable of limited sharpness of definition (estimated at about 1/100th of the acuity of human sight). But the bee is able to easily recognise land marks as she approaches the hive. And she's able to recognise the shapes of objects as she flies rapidly over and between them.

The compound eye of the bee has one major potential that our eyes don't have. Let's explain it this way. As we all know, foraging bees use the sun as a guide when directing other bees to nectar and pollen sources by their now famous dance language. But what happens when the sun is obscured by cloud? Well, in short, the bees are able to recognise the pattern of polarised light. This briefly is a special sort of light. It's made distinctive by its pattern of vibration according to the portion of the sky from which it is reflected.

As the bee changes direction in flight she perceives changes in the light pattern. So you see the remarkable faculty of the compound eye enables the bee to navigate even when the sun is obscured by cloud.

Colour vision. Bees can recognise certain colours but in general they're blind to the red end of the spectrum. They can't distinguish between red and black . They're more sensitive at the blue end of the spectrum. They can even recognise ultra-violet light, which of course we can't. For practical purposes though, bees perceive the four main colours, blue, black, white and yellow . Painting nucs these colours helps to prevent young queens drifting.

The antennae. Each bee has two, of course. Each antenna is divided into two main parts. The scape and the flexible flagellum, which has 11 segments. The antenna is a sensory organ composed of sense cells with nerve fibres connected to the nervous system. It's covered with sense organs in the form of hairs, plates and pegs . There are some 6,000 of these so-called sensilla.

There's some doubt as to the exact sensory appreciation of the antennae. But there's no doubt they're the principal seat of the senses of taste and smell. And in the pedices part there's a group of cells called "the organ of Johnston" which are very sensitive to vibrations, and which acts as a built-in speed of flight indicator.

Now to consider the main organs and biological systems.

The alimentary canal or digestive system. It's really one long tube running the entire length of the bee's body. Parts of the tube are highly specialised for specific purposes.

There are several important glands associated with the alimentary canal. The brood-food or hypopharyngeal glands lie in the front of the head. In very young bees they produce the very rich food, "royal jelly", which is fed to queens throughout their larvae stages, to laying queens, to drones and to very young worker larvae. The young worker bee must eat a lot of pollen before the brood food glands can develop. That's why pollen is so important to our bees.

These same glands, in older foraging bees, secrete enzymes called invertase and diastase, which are added to nectar when it's taken from flowers. The enzymes act upon the sucrose (the main sugar in nectar) and break it down into two simpler sugars—laevulose and dextrose.

The post-cerebral glands, also of the head, and the thoracic salivary glands of the thorax produce a fatty substance which is used in the mastication and moulding of wax.

The oesophagus or gullet, which is a narrow tube, runs from the mouth through the thorax to the crop or honey sac. The crop is a transparent bag which holds nectar sucked up from the flowers. It is used for carrying nectar back to the hive. It is sealed off from

the stomach or ventriculus by a valve called the proventriculus. This valve regulates the flow of food from the crop into the ventriculus and holds back the nectar to be taken back to the hive. It is also used for filtering pollen from nectar in the crop and passing it into the ventriculus.

The ventriculus or stomach is a wide tube lying in a loop, and it is here that the food of the bee is mixed with various juices to aid digestion.

The small intestine. Where the ventriculus and the small intestine meet, about a hundred fine, white tubes spread out to ramify the abdominal area. These are the malpighian tubules. It's their job to absorb nitrogenous waste matter from the blood. Rather like our kidneys.

Final digestion takes place in the small intestine and it's from here that the useful food content is absorbed into the blood stream.

The small intestine opens into the rectum, in which waste matter collects prior to excretion.

The wax glands are associated with the digestive system because wax is produced from honey. When young bees hold a lot of nectar or honey in their bodies for a long time—say during a heavy honey flow—the glands secrete wax. There are four pairs of wax glands, all on the underside of the abdomen. They lie above plates called sterna. Below the glands are the wax mirrors. Wax is secreted as liquid which passes through the sterna and solidifies on the wax mirrors into the familiar wax scales. The scales are removed by the hind legs and passed on to the mouthparts where they're masticated and moulded into combs. This is our ultimate aim in beekeeping. Combs of honey. Honey and beeswax. And we can see how the alimentary canal is employed directly in their production. But the alimentary canal can't operate alone. The circulatory, respiratory and nervous systems are also vital to the functioning of the bee's body. Let's take them in that order.

Circulation. Our blood carries red corpuscles. A substance called haemoglobin in these corpuscles collects oxygen and liberates carbon dioxide in the lungs. But the bee's blood has no red corpuscles. And insects do not have lungs. The main function of the bees' circulatory system is to carry food materials, which is absorbed into the blood from the intestine, to tissues that need it. It also carries waste matter, in solution, to the organs of excretion. The almost colourless blood fills the entire body cavity. It's not confined to a system of veins and arteries like ours.

There's a very simple pulsating heart which is a long organ lying under the roof of the abdomen. It has muscular walls and five openings called ostia through which blood flows when the heart is expanded. When it contracts the openings close and the blood is pumped forwards.

A long blood vessel, the aorta, runs from the heart, through the thorax to the head.

The two diaphragms—dorsal (upper) and ventral (lower), are very thin sheets of membrane stretched across the abdomen and attached at intervals to its walls. The diaphragms are controlled by muscles which move them with a waving motion. These movements set up a circulatory movement.

Respiration or breathing. In the human breathing system air is taken into the lungs where oxygen is extracted by the blood which carries it to various parts of the body. Carbon dioxide gas is carried back to the lungs and we breathe it out into the atmosphere.

Bees do not have lungs and the bee's blood isn't used for carrying oxygen around its body. The bee's breathing system consists of a network of tubes of various sizes which ramify the entire body. The tubes are called trachea, tracheal sacs (or air sacs) and tracheoles which are very fine.

The spiracles are ten pairs of openings in the exoskeleton or outside of

the bee through which air enters the tracheal system.

The larger parts of the system are the tracheal or air sacs. In the abdomen they're large expanded bags. There are similar sacs in the head and thorax. Actually the air sacs aren't thought to have much direct respiratory funtion at all. They are probably there mainly to provide buoyancy in flight. They also act as bellows, expanding and contracting as the abdomen pulsates. The rhythmic movements of the abdomen are breathing movements.

The trachea and very fine tracheoles ramify the body and carry oxygen to the various parts. This tracheal system, this tubular network, is relatively simple and it's adequate for the bee. But it wouldn't work in a large animal, because the oxygen wouldn't reach the internal organs. It wouldn't be efficient. This is why insects are all pretty small.

The nervous system consists of a brain and seven knots of nerve tissue which are connected by twin nerve cords. These ganglia lie along the lower part of the body and from them nerve fibres extend to the various organs and appendages. The brain is relatively simple and is concerned mainly with receiving messages from the eyes and antennae and giving instructions to the appropriate ganglia to take suitable action. Each ganglion controls the actions of particular parts of the body. As an example, the second ganglia has nerves serving the wings, the middle and hind legs and the muscles of the thorax. So the brain of an insect is not an all important organ as our own brain is. For instance, a bee can walk even when deprived of its head. The severed abdomen of a moth may continue to lay eggs.

The relatively simple structure and function of the bee's brain has led scientists to the conclusion that bees don't have the faculties of consciousness and intelligence. In other words, bees aren't aware of a situation and they aren't able to think. The bees' actions are said to be, and here I quote H. A. Dade, ". . . purely automatic responses to external conditions and to internal chemical conditions."

If we accept this, as I think we must, it means the habits of the bees and the amazing organisation of the bee colony appear even more remarkable. It is one thing to have intelligent creatures organising their lives, but it is quite astounding to think that the very complex world of the bees is composed of creatures akin to robots.

The scent gland. All beekeepers are familiar with the musty scent given off by this gland and wafted backwards by the fanning bee. The scent comes from a secretion of the gland near the tip of the abdomen. The end of the abdomen is held high and the tip turned down to expose the whitish tissue above the gland. The wings are vibrated and the resulting current of air passes over the gland to disperse the scent.

Bees use the scent gland to attract other bees to a particular place. If worker bees are taken from their hive, and after a short time placed back at the hive entrance, they fan with exposed scent glands and enter. Young foraging bees returning with their first loads of nectar and pollen often fan. They seem to be so happy to be home again. But perhaps the best illustration of the use of the scent gland is seen when a swarm enters its new home. Thousands of bees fan around the entrance attracting and directing all the bees in the swarm .

The sting. We're all pretty familiar with this. Too much so sometimes. But let's look at it and see how it works.

The acid gland secretes poison which is held in the poison sac. The function of the alkaline gland is not known. A set of plates and muscles operate the part we know so well—the sting itself.

This is really called the shaft of the sting and it is made up of three parts. The stylet carries two very sharp barbed lancets. The lancets are mounted on guide rails—rather like railway lines. These rails are broken at intervals to reduce friction. You see when the shaft is plunged into your flesh, the lancets slide along the rails with stabbing movements. Because of

the barbs the sting digs deeper and deeper into the wound. While all this jabbing and stabbing is going on, poison is flowing down the canal between the lancets. No wonder it hurts!

The bee, having inflicted this mischief, doesn't seem keen to hang around. But she's anchored. So she pulls—hard. And the sting is torn from her body, complete with poison, muscles and nerve centre, which all enables it to penetrate deeper and deeper, pumping in poison as it goes. Of course, the wily beekeeper scrapes the sting out smartly to avoid getting the full treatment. It is possible to beat a bee to the draw, so to speak, but you've got to be quick.

We'd all like to have bees without stings, but it must be remembered that the sting of the bee is a very effective weapon of defence against all manner of intruders.

And that's my story. You know beekeeping has developed as our knowledge of the anatomy and physiology of the honey bee has increased. This knowledge has led to a greater understanding of the complex social organisation of the bee colony.

Whatever new-fangled ideas or gadgets we may use in beekeeping it is well to remember that in the final analysis our beekeeping successes are due mainly to the bee herself.

BEEKEEPERS' TOUR OF AUSTRALIA

Tentative plans are in hand to organise a "Beekeepers' Special" to Australia in May next year, to include attendance at two Conferences, Field Days, and visits to Australian honey producing plants.

At this early stage it is envisaged that the party would leave Wellington by air to Sydney, thence by chartered bus to Brisbane with visits en route. For a tour of three weeks duration it is estimated that the inclusive cost of air fares, coach transportation to Brisbane, accommodation en route including bed and breakfast, will be £130. The number of beekeepers supporting the tour will be a factor in deciding cost, and a large number could result in an even lower fee.

More detailed information will be available by the time the February issue of the New Zealand Beekeeper is published, but to help the organiser, please indicate **NOW** if you are interested in joining the **BEEKEEPERS' TOUR.** It must be emphasised that this business (and pleasure) trip will be specifically for beekeepers, organised by a member of the Executive for your enjoyment and to see how our fellow apiarists across the Tasman handle their beekeeping problems.

Please complete the coupon provided for your convenience and mail immediately. Despatch of the coupon does **NOT** commit you, but enables the organiser to gauge the extent of likely interest.

If demand is heavy it will be a case of "First in—First served."

To: Mr George Winslade,
1 H R.D., Oamaru.

I am interested in the BEEKEEPERS' TOUR to Australia scheduled for May, 1966, and would like further information as soon as it is available.

I could be interested in buying ..... tickets for my ..... and self.

Name.....

Address.....

Visitors to Hamilton discuss

THE TUTU PROBLEM

and explain their viewpoints

A representative meeting of beekeepers vitally interested in the Tutu problem met on the evening of September 9 at Hamilton, during the currency of the School For Beekeepers organised by the National Beekeepers' Association and the Department of Agriculture.

Members of the Honey Marketing Authority, N.B.A. executive, Auckland and North Auckland Branches and the Comb Honey Producers' Association, district apiary officers, and the Superintendent of Beekeeping, Department of Agriculture were all enabled to present their respective views on a difficult subject and to see the problem from the viewpoint of others.

Chairman for the meeting was Mr Harry Clarke, National President, who pointed out that the meeting had been convened to provide the opportunity for discussion in broader detail than had been possible at Conference, and invited resolutions to be tabled for consideration by the executive.

In the course of discussion, Mr Bates mentioned that he had £3000 worth of honey condemned at the time of the Court case, all of which had since been used without ill effect on the consumers.

Mr Lloyd Holt asked why it was that he had not been supplied with the minutes of the Special Meeting held previously, and was informed that the General Secretary of the Association had not received them until April 20, despite the fact that the meeting had taken place in October. No explanation or reply to this criticism was made by the Department of Agriculture representative.

The Chairman reminded the meeting that it was incontroversible that a known danger did exist, and further tests had confirmed the original findings. One tablespoon full from the affected area could result in a condition which would require medical attention, and it was foolish to permit or encourage people to be made ill unnecessarily.

On Mr Berry's query as to whether there was in fact a toxic substance, the answer was that Dr White and Dr Hodges had established that toxicity is an undoubted fact. Mr Lloyd Holt did not agree with the expression, and claimed that confirmation was necessary from tests made overseas. Mr Berry felt that the authority of one Department of Agriculture scientist was not sufficient, and that a panel of experts was required to prove what was right and what was wrong.

Although the Chairman commented that the scientific aspect of the case was beyond the average person and that it was presumptious to challenge the findings, the meeting did not readily accept the expression of opinion.

The Superintendent of Beekeeping, Mr Smaellie, said that the Health Department acted in the interests of human health, as would be the case with any other food. Asked why there was such a long time lag, Mr Smaellie answered that it was necessary to test very many samples to find toxic pockets. Should there be any future suspected toxicity, there would be three separate individual tests before any declaration was made.

Mr Barber questioned the procedure of eliminating all sugars and testing guinea pigs with a toxic residue. Surely, such a method was likely to give positive results, and could easily result in widespread condemnation with a very low toxic content, spelling disaster for apiarists over a large area. Mr Smaellie was emphatic that the best way for tests to be made was to eliminate all other substances.

Commenting on future policy, the Chairman pointed out that every beekeeper was now responsible for his own product, as was the case with producers of al lother foodstuffs, although efforts had been made to prevent this ruling.

Referring to the previous seizure, Mr Percy Berry said that since the

responsibility for toxicity rests with the producer, the producer should receive full compensation if honey is taken and is proved not to be toxic.

On the motion of Mr J. R. Barber, a committee was set up to keep a careful watch on conditions. It is a known factor that the danger is greater in a dry year, and that last year, due to the wet, the risk had been negligible. Various speakers dealt with the contentious question of opening closed areas, and a suggestion was made that it might be possible to give a selected producer a permit to test the safety or otherwise of using the area for feed production, and that a very close watch be kept on the result. On the personnel of the proposed committee, Mr J. R. Barber considered it should be small, so that quick notification could be made when observations indicated danger. Speed was unlikely to be manifest by the Department particularly as the Christmas holidays might be involved.

Moved by Mr Lloyd Holt that the committee consist of Mr Ward of Waihi, with a member from each interested Branch.—Carried.

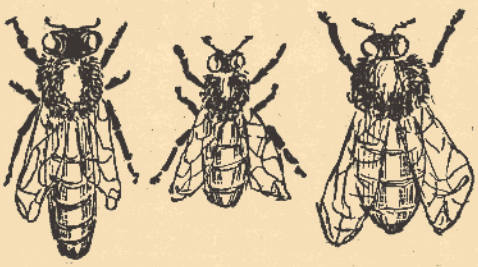
The usefulness of the meeting was generally agreed by those present.

EXECUTIVE MEETING AT WELLINGTON

(From page 5)

HAMILTON SEMINAR. Congratulations were extended to the organising committee for their work and the success of the venture. No date was set for the next School in either the South or North Islands, and it was decided to review the position again in three years' time. It would not be practical for the seminars to be held at too frequent intervals.

The Food and Economic Value of VARIOUS TYPES of SUGAR in BEE FEEDING



By R. S. WALSH, Apiculturist, Auckland.

Experiments have recently been carried out to determine the effect of feeding varying grades of sugars to bees. White 1A sugar has always been recommended as the only sugar suitable as a replacement for natural honey in bee feeding on the ssumption that other sugars were harmful to bees (see ABC and XYZ of Bee Culture, 1950 Edition, page 280), and British Ministry of Agriculture Advisory Publications. After obtaining various analyses from the N.Z. Sugar Company, I decided to carry out a trial to test the validity of this belief. Several apiaries of a local beekeeper totalling 150 colonies, were selected for feeding both dry raw sugar and a raw sugar syrup of two parts sugar to one of water.

The trial has covered a period of approximately two months. The hives were weak in bees but were mainly headed by young queens. The dry sugar, two to five pounds per colony, according to strength, was placed at the back of the bottom boards every fortnight. The sugar soon softened with hive and atmospheric moisture. Unlike white 1A sugar the grain of raw sugar seems to be much less brittle and the bees appeared to be able to convert it more readily. The hives have made steady progress and have stored several pounds of the converted sugar. Brood rearing has been under way from the outset and most hives have two well filled combs of brood. Hive strength also appears to have improved. This, I consider to be a very satisfactory achievement as, apart from being very week in bees the hives were entirely without stores at the beginning of the trial. White sugar is inclined to cake when in contact with moisture, but the raw sugar remained soft. The bees did seem inclined to drag more of the raw sugar towards the hive entrance than is normal with white, and this does entice wasps to enter the hives in this district. I think it would be better to place raw sugar above the mat rather than on the bottom board.

RAW SUGAR SYRUP

Sugar syrup was fed to the stronger hives. The mixture consisted of two parts of sugar to one of water. Both warm and cold water were used and the raw sugar dissolved so quickly in cold water that warm water is obviously unnecessary, unless it was desirable to feed the bees a warm syrup.

Each hive was provided with a division board feeder holding about 5 lbs. of syrup.

During the period of the trial the selected hives have been fed once weekly. As with raw sugar feeding there has been no loss of adult bees and a normal healthy brood has been reared. Colonies have made better progress on the syrup than those fed on dry raw sugar. It was, however, considered better to feed the weaker hives on raw sugar until bee strength had improved. In the past

it has been the practice to feed dry sugar merely as a means of keeping bees alive until natural stores became available, but from previous experience I believed the hives would make a population increase on dry raw sugar and this has proved to be the case.

The syrup fed bees have stored and capped some surplus syrup and the quantity of brood raised has, in accordance with the strength of the hives and the very severe winter experienced in this district, proved very satisfactory. In my opinion raw sugar syrup is every bit as good as white and raw dry sugar on the limited trial conducted this winter has given better results than white sugar fed dry to hives in this area. Duttson and Knight Ltd, an old-established British sugar company manufacture a raw cane sugar candy which they claim is superior to white sugar syrup, and has given every satisfaction to English beekeepers. As a check I visited several apiaries of bees subsisting on white dry sugar and the bees appear to be merely existing, whilst the bees fed on raw sugar are making headway and have an "aliveness" lacking in white dry sugar fed bees.

Information concerning the analysis and price of several grades of sugars has been obtained from the N.Z. Sugar Company. The purpose of this enquiry was to establish the economics of sugar feeding, and to obtain information regarding invert sugar which has been recommended by Dr Haydak in connection with the preparation of pollen supplement.

Pure cane sugar contains 1794 calories per pound. The following table shows the total sugars present in various grades of sugar and the wholesale prices (as at 1st October, 1965).

Type of Sugar	Total Sugar Content (per cent)	Wholesale Price* 1st Oct., 1965 (£ per ton)
1A	99.9	65 10 0
1XD	99.9	65 5 0
Caster	99.9	68 15 0
Soft Brown	94.6	64 0 0
Invert	76.9	64 5 0**
Raw	98.7	59 10 0

* Minimum order: 10 cwt.

** This price includes the cost of the drums, which can be resold.

The invert sugar is sold in solution in drums. As the solution contains 22 per cent water the cost of a dry ton of Invert sugar is approximately £82. As the other grades of sugar contain only small amounts of water, Invert sugar would appear to be uneconomic for the purpose of feeding bees. Unless a beekeeper had a disease problem, it would be preferable to use honey with pollen supplement or raw sugar.

As will be seen from the various analyses and costs, raw sugar is considerably cheaper to use.

TWO QUEEN BEEKEEPING

By C. Bird of Matamata

Each season sees some new technique to produce greater crops with the minimum of labour. Too often, hive holdings are increased, with a corresponding decrease per hive in production, so that if less hives were run intensively, more production would result. However, there must be a profit over the expense of obtaining higher production.

Two-queen beekeeping could be adapted to suit most districts, but in some the profit margin may be too low. Of the methods used there is no hard and fast rule and we are still trying to find the best, but the usual pattern is as follows.

In late September insert a queen excluder between brood boxes, and give a top entrance by skewing the top box. As soon as queens are available divide the hive in two, leaving the old queen in the bottom brood box, and introducing a young queen to the top half, placed on a split board with an entrance where the previous top entrance used to be. See that each unit has sufficient feed to carry over until the next visit.

The top unit should not be less than two combs of brood, and several shakes of young bees helps. On the next visit, all that is needed is to check for a laying queen in each unit, check the food supply and even up the units by swapping over, and exchange a comb or two of brood.

By the middle of November, some of the units will need a super of combs over an excluder to avoid overcrowding, or swarming.

On each hive we super one unit with an excluder and one with a half mat. When the honey flow is on and the bees are getting their supers well filled with honey, we shake the bees out of the box over the mat, put the two brood boxes together, the two honey supers over an excluder, add the 5th box, and hope that flow develops and the weather continues fine.

Approximately three combs of extra feed honey are required and production will vary according to area, but an average of ½ to 1 super of extra production, plus the three combs to feed next year's hive is anticipated. If this method is used regularly, the old queen is about 12 months old when you start, with plenty of vitality left in her.

Now there are some problems, such as hives not strong enough to divide and queens that supersede. Before dividing, some hives have a surplus of bees and brood, which is taken to a good build up site and set out as three frame nucs. with a cell or caged queen. All these nucs. are in standard supers with a split board under them and a mat over the frames and down over the comb to keep them snug. When these units are laying and have sealed brood, they are screened and taken to out apiaries and put on top of the weak hives which were not split.

On the next visit the nuc. goes on the site, the hive is left seven combs of brood and one or two combs of honey, and any extra brood goes into the nuc.

which gets the field bees and soon has a box of brood. The old hive goes on the split board. The procedure is the same from then on as before. Some nucs. taken out will be stronger than others, and if you mark them previously, you can put a strong nuc. on the weakest hive.

Now some queens go missing or supersede. Here, your nuc. is used as you put it in place of the defective stock which is then placed on top with its entrance at the back of the box. The queen thus raised may be needed later, or the brood used where needed. The method works well in very hard conditions, where there is no pollen until the early clover, as it is usually into November before you take them out.

An alternative method, where hives are wanted in peak condition for a certain time, is to make nucs. as above with two-three combs of brood, and a laying queen and feed. When these have built up to a full single, they are taken to an apiary, where the procedure is to put the hive down to a full box of brood in one box, then paper a full single on over a sheet of paper. The extra bees and brood gathered is carried along and is used on one hive instead of a nuc., preferably one with a young queen. When the flow stars the apiary has all hives with twelve or fourteen combs of brood, ready to handle the crop. Super when you join them up.

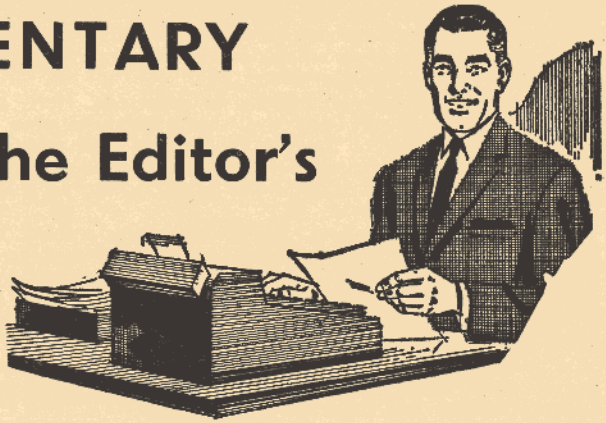
If combs of honey are to be fed, leave gaps and feed all hives at the end, and **don't** put honey by the entrances of the nuclei. Hives with division boards travel well once they are reasonably strong if shifted early in morning or in the evening. They don't need to be closed.

If there is an early flow of dark honey you have to judge accordingly, so super with four black combs in the centre, and two white on each side. When joining, put all black combs together in the third box, and all white combs up top. Any white combs with dark can be put away for feed at extracting time. 3/16" hardboard makes a good split board; a 10' sheet cutting 18 dividers.

You may think this involves a lot of work, but you will have no swarming to waste your time. Once the hives are split all you have to do is feed, and quickly check to see queens are laying. Your hive is ready if the flow comes early or late. There is nothing more rewarding than to see really strong hives at work on a good flow.

MR COLIN GOSSE, Manager of the Honey Marketing Authority, examines "Satona" economy packs of two brands now being marketed.

COMMENTARY from the Editor's Desk and Mail



ACCORDING TO Hungarian News Service, London, a special school has opened in Hungary to further the training and know how of beekeepers in that country, where a drive is to be made to increase the present bee population of half a million to three-quarters of a million by 1970. Agricultural and training colleges will also specialise in bee husbandry.

Hungary is listed as the second largest exporter of honey in Europe, sending some 4000 tons a year to 19 countries including Britain. Present annual production is in excess of 8000 tons. Home consumption is low in Hungary, however, and the major portion sold for domestic purposes is used in baking honey cakes, of which some 1000 tons are baked annually.

The report states that recent legislature compels inspections of hives to eliminate diseases "such as hatch-rot . . ." (which may or may not be another name for bacillus larvae).

It is surprising to read that queen bees are exported to a considerable extent and that France is the biggest customer. However, the question may well be "how big is big", because France is stated to purchase between 1000 and 1500 queens.

II II II

APICULTURE, the interesting journal published by the Western Australian Department of Agriculture points out to its readers that anyone owning an empty hive which at some time has in the past has contained bees, must register with the Department of Agriculture as a beekeeper, even though he or she has no bees at present. Reason for the ruling is that the hives may be carrying spores of Bacillus larvae and the Department insists on knowing the whereabouts of every potential trouble spot. Registration fee is 2/6. Two serious outbreaks of the disease have been reported, and it is pointed out that an especially close watch must be kept on brood chambers this spring due to the fact that a number of wild colonies died out or deserted their nests in hollow trees through lack of nectar last summer. Bees investigating or robbing wild sites could well become carriers of disease and take it back to their own colony.

II II II

IN THE UNITED KINGDOM, insecticides which are harmful to bees have to have on their labels the warning: **HARMFUL TO BEES. DO NOT APPLY AT FLOWERING STAGE. KEEP DOWN FLOWERING WEEDS.**

The Government has prohibited the use of dieldrin and some other pesticides because of their long persistence and the fact that chemicals in this group pass from plant to soil and thence to animals and humans. A large proportion of the population now carries traces of dieldrin and similar chemicals within the body structure.

THE VICTORIAN Apiarists' Association at its 66th annual conference, reported that negotiations had been proceeding with an insurance federation to cover apiarists against the risk of loss through destruction because of Bacillus larvae or other diseases. Premium quoted was 10/ per cent, which the Executive Council considered to be too high. Negotiations continue for a more favourable rate.

II II II

V.I.P.B's were passengers in a VC10 when they were flown out to Accra to start work as pollinators in a project sponsored by the Ghanaian State Farms Corporation.

The manager of the apiary who supplied the bees and equipment travelled with the consignment to Africa, and spent 10 days initiating local beekeepers in moveable hive practice.

Travel in a pressurised aircraft ensured that the bees arrived in good condition, and were able to "get to work" promptly after arrival. It will be interesting to hear how they fair in competition with local varieties.

II II II

IT IS GOOD TO SEE the number of editorial warnings which have been appearing in the popular press recently, enjoining back yard gardeners to have care in the application of poisonous sprays, to avoid killing bees pollinating the fruit trees. This is no doubt due to the work of the Department of Agriculture, where intensive efforts have been made to educate commercial and amateur gardeners of the importance of being selective and not haphazard in spraying work. It is a pity that the poisons do not differentiate twixt friend and foe.

II II II

A WARNING that nectar from flowers of the Karaka tree (**Corynocarpus lævigata**) is very attractive but highly toxic to bees is given in the "N.Z. Journal of Agricultural Research" in an article by T. Palmer Jones and L. J. S. Line, Apiary Instructor at Hawkes Bay. The only practical solution is to move the colonies out of range of the trees during the flowering period in the springtime.

II II II

ACCORDING TO A SURVEY conducted by the magazine "Health", the most popular fillings for sandwiches eaten away from home at lunch time are meat, cheese and yeast extracts, followed by peanut butter, jam and egg. Honey is used as a filler in 10 per cent of all lunches and, oddly enough, is more popular in the town than in the country. The survey was taken from 1400 households throughout the country and referred to children between the ages of 5-14 years of age. Some big divergences in habit were apparent between South Island and North Island homes. For example, 33 per cent of South Island homes included cordial in the mid-day lunch, whereas only 6 per cent did so in the North Island. The South Islander in his formative years has also a greater preference for jam than his northern cousins. There does not appear to be any obvious reason for the difference. Maybe advertising for some proprietry articles is more aggressive in certain districts.

II II II

DURING THE COMMITTEE stages of the Apiaries Amendment Bill, Mr B. P. MacDonell (Lab.—Dunedin Central) moved an amendment that any beekeepers whose hives had to be destroyed under the Act, be eligible for compensation not exceeding two-thirds of the value of the hive. The Chairman of the Committee, Mr Jack ruled that the sources of compensation had not been named, but presumably the consolidated account was intended. If this was so, an appropriation would be involved, and he would have to rule the amendment out of order. Mr A. D. Dick (Nat.—Waitaki) said that there could be a case for compensation, but that the time was quite inappropriate for the Opposition to introduce an amendment to this effect in the House.

ACCORDING TO A NEWS REPORT in an English paper, a doctor in Durham is employing two school girls during their holidays to demonstrate an anti-sting preparation he has perfected. The story says that the girls are allowing themselves to be stung by bees, but it is not clear whether the preparation stops bees from stinging, or alleviates pain from the venom from the bee's sting.

II II II

YET ANOTHER "Special Correspondent" reports that the Ritz Hotel in West Berlin is able to produce exotic or unusual dishes to tickle the palate of the most fastidious or ridiculous, from rattlesnake in loam, grasshopper salad, roasted porcupine in buttermilk, armadillo in banana leaves, or toasted bees served as an hors d'oeuvre. Some of these stories take some believing.

II II II

STORY GOING THE ROUNDS in U.K. and U.S.A. concerns John Guilfoyle, the Australian equipment manufacturer, who tells in his more relaxed moments of the Aussie beekeeper who cut down a gum tree 100 feet high to capture what was thought to be a prime swarm. Frustration was not the word when the cluster was found to be a prime swarm of flies around a dead oppossum!

II II II

BRITISH BEE JOURNAL contributor "Paddy" tells the tale of the two old women from Cheshire who started to keep bees and were worried and perplexed at the big yellow sores on the hind legs of some of their new found friends. As an act of mercy and to prevent spread of the "disease", one of the sisters sat beside the hive swatting all those "afflicted" as they came to the alighting board.

II II II

WRITING IN "GLEANINGS", Charles J. Koover declares that the greatest menace to bees is for them to be put into a white or aluminium painted hive, claiming that by so doing the beekeeper is depriving the bees of air circulation by insulating the woodwork. He claims that a lower temperature within the hive is attained by using a latex paint which gives a weatherproof coat which breathes and will not blister.

II II II

TWO WELCOME VISITORS to the Hamilton School representing the fairer sex were Mrs Kitty Prosser of Palmerston North who runs one hive for interest and family sweetness, and Mrs Emily Downer of Levin, who has 15 hives. Both stayed for the full course and profited from the instruction they received.

II II II

THE SENIOR LECTURER in Clinical Science at the University of Otago Medical School, Dr F. O. Simpson, who was responsible for the survey taken on beekeepers' blood pressure at the Conference held in Dunedin during July last, has now issued a report.

Commenting that the circumstances in which the survey was taken were rather unsatisfactory, with limited space and a good deal of noise, the report covered the systolic and diastolic blood pressure of 79 male and five female beekeepers.

No relationship between level of blood pressure and incidence of, or reaction to bee stings could be found; only three beekeepers had sufficiently high readings to justify referal to their own doctor for possible treatment.

Mention is made of the remarkable number of stings sustained by beekeepers —up to 50 or more daily—and the fact that no protective clothing is normally worn. Of interest, too was the common practice of beekeepers removing stings by pulling them out with the fingers; a procedure frowned upon in medical writings about bee stings.

The doctors taking part in the survey thought that subjection to so many stings was not desirable, but that to go into the matter fully would require a much more extensive investigation with tests of blood and urine, etc.

TELEVISION MUST have indirectly, unintentionally, helped honey recently. One advertising programme has been eulogising a cosmetic preparation of the same name in which "honey" is repeatedly mentioned. Unintentional or not, every little helps, and the more the precious word is spread the better. The N.Z. Listener went one further by publishing good half tone reproduction of worker bees on frame and giving prior notice to forthcoming programme in form of a documentary on Arataki Apiary in "Feminine Viewpoint". Radio commentator, Laurie Swindell, referred to N.Z. honey production services rendered by pollination, native flora attractive to bees, honey flavours and colours, etc.

II II II

AN EXPLOSION caused concern and excitement at the apiary of Mr L. A. Walton, Ohaupo. No serious damage was entailed, but windows of the shed were blown out by the force of the explosion, thought to be due to an electrical fault. No one was hurt.

II II II

MONSIEUR GEORGES ALPHANDERY, director of "Gazette Apicole", the French journal for beekeepers, has been granted the honour of the "Legion d'Honneur" by the President of France, General De Gaulle. The distinction is in recognition of the services rendered by Mr Alphandery to apiculture during his 46 years as director of the journal. French beekeepers are gratified that such recognition has been given to a prominent member of the craft.

II II II

IT JUST GOES to show how dangerous it can be to take your trousers off in a moving train and how difficult it could be to explain to an unsympathetic policeman or guard that your intentions were not other than perfectly decorous.

A man in East Germany taking some bees for laboratory examination had the misfortune for some of his charges to escape. Some of them climbed up his leg for an investigation of homo sapiens, and not unnaturally, the beekeeper objected to the intrusion. Although the report does not provide details as to whether the passenger was in a compartment alone or in mixed company, it appears that our beekeeping brother removed his pants to shake them out of the window to free them from bees. Unfortunately a train passed on the opposite track at precisely the same moment, and the pants were swept away, not on the horns of a dilemma, but on the front of the locomotive. The dilemma was left with the beekeeper, who had a hard time talking his way out of the barrier at the next station for his unusual appearance.

II II II

THE WESTERN AUSTRALIA Honey Week jingle competition resulted in over 2000 entries from all over the State. Winning entry from housewife Mrs S. Dowding, of Doubleview, ran as follows:

Honey is good for young and old
Honey is worth its weight in gold.
For health and energy, don't go far
It's always there in your honey jar.

II II II

THE OCTOBER ISSUE of "The Orchardist" contains an appeal and a warning to readers against indiscriminate spraying of fruit crops which endanger bees and points out the fruitgrowers obligations under the Apiaries Act. It also emphasises that bees are essential pollinators and are just as important to the fruit grower as to the apiarist. Welcome co-operation of this kind helps to eliminate misunderstandings and losses to both parties.

GRAND MARSHAL of the County Fair parade for 1965 in Umatilla County, Oregon, U.S.A., was New Zealand-born apiarist W. G. Rodda,, only 87 years young and active the day long. A good advertisement for his native country and for the food of the Gods.

II II II

DAMAGE TO APIARIES by indiscriminate or careless spraying cost a crop dusting firm in Denton County, Texas, the sum of $2,110.50 awarded by the 67th District Court. The charge was that 42 hives of bees owned by a J. O. Parr, sited in a clover field were sprayed with parathion, destroying 75 per cent of the bees and a complete loss of honey for the season. None of the honey was marketed on a doctor's recommendation which indicated that the insecticide could produce delayed harmful results. Damages were assessed at $420 for the loss of the 42 hives and $1,690.50 for the honey yield.

II II II

AN INTERESTING REPORT appears in "Gleanings" by Dr W. Schweisheimer on the medical benefits of honey and it was stated that a doctor wrote to the Journal of the American Medical Association to obtain more reliable information "on the striking effects of the administration of bees' honey by mouth in aiding the successful therapy of heart disease." The doctor pointed out that he had given his patients with heart disease 15 grams of honey a day, instead of injecting sugar (glucose) twice a day into their veins. He saw excellent effects and considered bee's honey the best nourishment of the heart muscle. The Journal replied through its experts that honey is indeed a good source of carbohydrates and could well be rational in the diet of patients with an ailing heart muscle (Myocarditis). Further observations should be made to determine whether honey is better for the heart than any other substance.

II II II

THE ARGENTINE Government are reported to be making a concerted effort to organise their marketing of honey in the United Kingdom, and if this is successful, it could mean a firmer market all round and prevent some of the chaotic selling that has been experienced. The London office of the Bank of New Zealand reports that brokers expect the market to liven up in the next few months with the opening of the U.K. buying season. Prices at mid-October were reported steady with white clover at £180-£185 a ton, and extra light amber £120-125. Argentine honey is around £90 c.i.f. and Australian at £105.

II II II

SAVE MONEY — HELP YOURSELF

Beekeepers are advised to obtain from their nearest Post Office or from the Department of Inland Revenue direct, "Public Information Bulletin, No. 10" so that they may see for themselves the taxation savings to which they are entitled.

For example, a special depreciation allowances of 20 per cent is permissible on buildings erected for employee's accommodation. A house erected for this purpose could represent a substantial sum, as would expenditure on new honey houses, extracting sheds, etc. Claims may be retrospective under certain circumstances to 1961 and it therefore behoves every beekeeper to read the Bulletin and act in his own interests either direct with the Department of Inland Revenue or through his own Accountant. It must be realised that, although your accountant has professional responsibilities to present your accounts fairly and in such manner that you receive your just entitlements to tax relief, it is not always possible to be au fait and up-to-date wtih reliefs for all industries. If attention is drawn to special circumstances giving entitlement to relief, your accountant will advise you as to procedure.

Expenditure must have been for a sum exceeding £30 to qualify for special relief.

NORTH SHORE BRANCH of the Amateur Beekeepers' Association of N.S.W. had an unwanted, unwelcome, but thoroughly practical, demonstration of the affects of Baccillus larvae disease when it was found that the five hives in their home apiary were all riddled with the scourge.

Coincidentally, discovery was made immediately prior to Field Day, but normal preparations and arrangements were carried on, although not quite as planned. Said President Don Callaghan, "It is the policy of the A.B.A. that branches should give practical demonstrations on all aspects of apiculture. We carry out that policy and now present a practical, live teaching course on brood disease . . ." Chief Government apiculture officer, A. A. Clemson, explained each symptom to members, and all material was destroyed by fire in accordance with the N.S.W. Apiaries Act.

Under the Act, the branch has made a claim on the Bee Diseases Compansation Fund, and compensation amounting to two-thirds of the value of material destroyed is normally paid. Unregistered hives do not qualify.

Two hives within 10 feet of the apiary site belonging to one of the members, did not appear to be affected, but a close watch will be kept.

II II II

DON'T COMPLAIN about the weather, last year's crop, scarcity of drones, prevalence of wax moth, ravages of wasps, or the cost of living. Think of the man with one leg who was sorry for himself until he saw his neighbour with no limbs. Or spare a thought instead for the stalwarts of Britain who have had their FIFTH SUCCESSIVE crop failure in many parts this year. There's always someone so very much worse off than yourself.

NO RACIAL DISCRIMINATION—from page 1

eradicate. Prone to swarming in out of the way places, the wild colonies attack everything and everybody on sight, including hives of other domestic bees, animals and birds.

One particular instance cites the case of a bar tender, minding his own business in a place of refreshment. Someone thought it would be a good idea to smoke out a wild colony of African bees from a nearby chimney, with the result that the unfortunate barman inside the building had so many stings on his bald head that it looked as though he was growing new hair!

It's easy to think about the possibilities of new hardworking and docile strains and of the additional income they might provide, but we tend to overlook the fact that the obverse might also be the case.

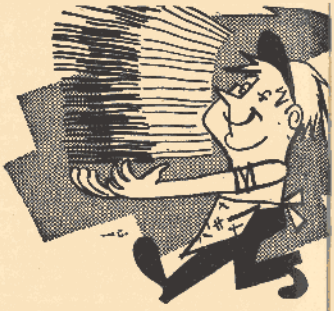
Perhaps it is just as well that the Department of Agfiriculture has a restraining hand on our understandable exhuberance. There seems to be no logical reason why a similar result should not obtain in New Zealand as has apparently happened in Brazil.

If any imports are eventually made of newcomers for testing purposes, we shall certainly have to be careful.

The organisers of the Beekeepers' Seminar at Hamilton did a wonderful job for commercial and backyard beekeepers. Amongst the 150-200 apiarists who attended the course were represented our largest commercial men with hives numbered in hundreds, to a lady from Palmerston North with a single hive. And everyone was able to learn something.

Beekeepers, large and small, are reminded of their obligations under the Apiaries Amendemnt Bill, wherein they must make an annual inspection of their hives, notifying the presence of any disease forthwith to an Apiary Inspector. A statement will also be required, if applicable, that all hives have been inspected and that no disease has been found. The provisions of the new Bill are extensive and for the common good. We all welcome them in the interests of better beekeeping, and hope that the Bill will become law this year.

BRANCH NOTES



WAIKATO

Following a record number of frosts, and associated cold weather, only the hardy donned veil and ventured out in August. However, when the School came to Hamilton we did have several fine days for a change.

Heather yielded well in places but was a complete failure elsewhere. Five finger in Rotorua-Taupo was the best for some years, and those hives close to large areas did very well. Elsewhere, enough was gathered to make them breed very heavily and all that was gathered was soon eaten. Willow yielded well, but the weather stopped the bees gathering from it—as usual.

Winter losses were heavier than normal, probably due to the wasps, which plagued the hives all winter and in areas without early sources, hives are very backward, and difficulty is being experienced making up losses.

Queen breeding has progressed slowly after a late start, and in many cases there is shortage of bees and drones. Lack of mating weather has delayed it further.

Barbary has a good budding, and is starting to yield a little, and all are hoping for some fine weather to help overcome the feed problem in November.

At a recent branch meeting we had a very interesting talk on nectar secretion, especially in relation to bush sources, by Miss Pat Bates. She showed us how the nectaries could be identified, and how pollination took place. Later much discussion followed as to whether the trees mentioned did or did not yield.

—Reported by C. Bird.

HAWKES BAY

Well-known commercial beekeeper, Mr W. J. C. (Bill) Ashcroft, a member of the Hawkes Bay Branch, was elected Mayor of Havelock North at the recent local body elections. Mr Ashcroft had been a member of the Borough Council for the past six years.

There were two candidataes for the Mayoralty, Mr Ashcroft and the sitting Mayor, Mr R. J. Nilsson, and the election was full of interest. On the preliminary counts the lead alternated between the two until the final count gave Mr Ashcroft a margin of three votes. This was confirmed by a magisterial recount, the official result being Ashcroft 814, Nilsson 811.

—Reported by J. McFadzien.

* * *

SOUTHLAND

Although not enjoying a winter that does not know when to stop, preparations are well under way for the Annual Combined Field Day (in association with the Gore Branch) to be held this year at the home apiary of Mr J. Davies, at Drummond. The Field Day promises to be notable for the number of well-known personalities who will be speaking, or demonstrating, or both, as well as for the wide range of mechanical equipment to be demonstrated, including the first demonstration in Southland of a mechanical uncapping machine, said to be capable of dealing even with the kind of crop we hope to get this year.

Any beekeeper planning a holiday in the sunny south is advised to note the date and the place: Drummond, Saturday, February 5th.

—Reported by Jack Fraser.

WEST COAST

October check and clean up, though hampered by much wet weather, revealed that our bees had made best possible use of a mild winter. In a number of hives the queen was almost honey-bound, mainly by the product of red rata vine.

August here was real good—"normal" and folk managed to rear and mate a number of likely-looking queens.

Not so fortunate were those who waited. September and October were wetter than usual. We did not see the usual quantity of konini or fuschia this spring; certainly no purple-tinted hive entrances. Native clematis bloomed early in great long pearly-white streamers.

Kowhai was poor and did not last long. Willow—hail storms wrote finish before bees got much.

The last week of October brought out first white bracelets of kamahi, so most colonies will soon require a box of foundation and we will have next winter's stores.

The Branch held their Field Day on the last Saturday in October at Punakaki—just in case some reader is new to New Zealand, the spot is approximately half-way between Westport-Greymouth and is world-famed for pancake-like rock formations. It is a fact that some local areas land supports from 50 to 150 cows per acre. Nikau—a tall, graceful palm-like fern! Truly, a picture spot at any time of year. It was an ideal picnic day, and the speakers: Rod Buchanan—Queen Cell Transplant; John Glassom—Baby Nuc.; Paul Marshall (apiary inspector) — Economies; Sandy Richardson—Honey Dew (Beech); had obviously put much time and thought into their subjects. They deserved a larger audience.

In conclusion, the Coast wishes all a Merry Christmas and a Fair Season.

—Reported by Tom Holland.

* * *

CANTERBURY

The month of October is always one of promise, and when asked what this season's prospects are, few would disagree when we say "the best yet." But the months that really count are December and January and sometimes February. Beekeepers do their best to get the colonies up to full strength and without swarming, sometimes under very trying conditions, but it is these two months that decide the fate of the other ten.

Bees opened up in the spring in the poorest condition for years and an early pollen shortage did not help any. Weak hives dwindled almost to nothing and had to be boosted up with brood and bees to start them on the build up. Chou Mollier has bloomed well and bees close enough to a source will benefit. Cold southerly conditions ruined the willow, and those relying on it have had to resort to sugar.

Our annual Field Day on October 2 was this year held at the Waimakgroins, a delightful picnic area near Belfast and sheltered by willows. Following a welcome by our President, Mr C. Hill, a demonstration of nailing frames with the Davidson nailing machine was given, a very worthwhile machine. This was followed by a demonstration of spring management by Jasper Bray. Ralph Bushby showed us how he moves hives single-handed with a barrow of his own design and David Penrose's mini loader attracted much attention. A miniature Kelly loader with a 10ft boom mounted in the middle of the deck could load and unload hives quickly and efficiently. David was awarded the Sargent Memorial Cup for his entry of the loader in the gadget section.

—Reported by J. K. Bray.

KEITH MOODY
Vice-President of N.Z. Jaycee

It has just been announced that the General Secretary of the National Beekeepers' Association has been elected Vice-President for New Zealand JAYCEE for 1966.

Congratulations to Keith Moody on his new appointment to office. Considerable travelling within New Zealand will be entailed in carrying out his duties, and it may well be that beekeepers and branch secretaries will receive visits from him en route.

Questions and Answers . . .

TO HELP BEGINNERS

By Bob Walsh of Auckland

Mr H. V. Williams asks—In "Beekeeping in New Zealand" three proportions of sugar and water are given for making syrup. Is it by volume or weight?

Answer: The sugar and water is measured by volume. In general a thin syrup is used to replace nectar and a heavy syrup to replace honey.

Question: What is the correct way to hold a queen while clipping its wings?

Answer: No doubt this can be done in a number of ways but I like the method of one prominent beekeeper of many years experience. He holds her at the thorax between the thumb and index finger with her legs over the index finger so that they may be seen and not cut. He cuts about half of both wings on the one side. The left wings in odd years and the right wings in even years.

Question: Is there any way of getting rid of old queens without actually find ing her? I have had no success with sieveing either.

Answer: It is surprising how many amateur beekeepers have this trouble. I suggest you remove the hive well down the section and shake all the bees on to the grass. Then set up the hive again on its original stand and introduce your new queen. The bees will return to the hive leaving the old queen behind in the grass. This is also a good way to get rid of laying workers.

Question: I have ten hives and raise my own queens and, although some of my bees are pure others are not. The drones from the hybrid hives always seem to mate with the young queens I raise. Is there anything I can do to ensure better matings?

Answer: You might be able to increase the percentage of pure matings if you place a queen excluder between the bottom board and bottom brood chamber for a period after the virgins hatch. This will keep the drones in the hybrid colonies confined.

Question: When do bees swarm? Is it before the queen cells are capped?

Answer: It is not at all unusual for Italian bees to swarm before the cells are capped. In years of bad swarming they will at times leave the hive soon after the cells are started and also some days before they are capped. Black and hybrid bees seldom swarm before the first cell is capped.

Question: Can you tell me how bees secrete wax?

Answer: Worker bees secrete beeswax which they produce from eight wax pockets on the underside of the abdomen. As the newly produced wax comes into contact with the air it hardens and forms wax scales which the bee removes and moulds into the freshly built honeycomb.

A Challenge for the Brave!

DESCRIBING GREECE as a land of beekeepers, a newspaper contributor recently pointed out that honey is not limited in that country to the breakfast roll or toast, but that it is basic to the rich, sweet desserts of Greece and Asia Minor. Perhaps some of our more venturesome lady readers would like to try out one or more of the recipes provided, and in expressing the very best of British luck, the hope is that a report will be provided on the success or otherwise of the experiments with the reactions obtained from other members of the family. It's a pity that most of us are so conservative in our feeding habits, and have insufficient pluck to try something different. Here are three recipes for the brave:

Loukoumades: Better known perhaps as honey puffs.

You'll need, for about 20 or more medium-sized puffs:

2/3 pound all-purpose flour, salad oil for deep frying, ½ teaspoon salt, lukewarm water and one tablet yeast.

Sift flour with the salt in a mixing bowl. Dissolve yeast in ½ cup lukewarm water. Add to the flour, stir well, adding enough more lukewarm water to make a thick batter.

Beat well, cover, and set aside in a warm place for the dough to rise.

Heat a pot of salad or cooking oil just to smoking temperature (very hot). Take pieces of dough and drop into the fat. They will puff and turn golden brown. Remove at once. Keep on till all dough is used. Keep warm.

Honey Syrup: You'll need: ¾ cup of honey, one cup water, 6 oz sugar and cinnamon.

Boil all these (except cinnamon) till you have a thick syrup to pour over the puffs. Sprinkle with cinnamon, serve.

The Greeks also go in for eggplant in a big way.

This recipe was extracted from an old gentleman of Athens who fancies himself as a bit of a chef.

He is! Here is his—

Egg Plant Salad: One medium or 2 smaller eggplants, one clove of garlic, finely chopped, half cup olive oil, 2 medium onions, finely chopped, salt and pepper and juice of one lemon.

Bake the eggplants (without skinning) till soft. (About 40 minutes in a 300-degree oven).

Cut a one-inch-square hole in the bottom and squeeze out as much water and as many pits as you can.

Then chop the pulp by hand or better, place chunks in your blender to puree.

At slow blender speed, add oil, lemon juice, garlic (optional), onion, salt and pepper.

Give the whole a good stir and scrape from blender (or mixing bowl, if you've done it all by hand).

Chill well; serve on lettuce as a salad. Or, at room temperature if you'd care to serve this delectable dish as a vegetable, with meat.

AFRICAN QUEENS THREATEN
BEEKEEPERS' LIVELIHOOD
IN SUNNY BRAZIL

Apiculturist Warwick Kerr figured he had some perfectly good reasons for bringing 20 African queen bees into his native Brazil nine years ago. Though it is known to be ferocious, the African bee produces 30 per cent more honey than either the Italian or German bee that long dominated Brazilian beekeeping; it will even work and make honey in weather that slows down other bees. Besides, Kerr planned to crossbreed his Africans to produce a more gentle bee. What he got instead was a bee with a disposition so nasty that it now threatens the lives and livelihood of almost every beekeeper in eight states of Brazil—to say nothing of countless other Brazilians.

From those 20 imported African queens have come as many as 450,000 new bees a year, almost none of which inherited the traits of the Italians and Germans that fathered them. Quick to anger, even quicker to swarm, the new Africans have turned on Italian and German bees for no apparent reason, killing off hive after hive. Moreover, the new males passed their bad blood on to new females, who went on propagating the angry strain. "We thought that when they got acclimated, they would become civilized," says Father Joao Oscar Nedel, S.J., a Brazilian bee expert, "but the exact opposite has happened."

Establishing colonies in abandoned walls, on the underside of rocks, on cave walls damp with waterfall spray, under tree roots, in abandoned cars, in telephone booths and even in traffic lights, the Africans have killed birds, chickens, dogs, pigs, horses and four people.

Four months ago, a resident of Caieiras, near Sao Paulo, tried to burn an African beehive stuck in a chimney of a local bar. In a "buzzing mass that darkened the sun," one man reported, the Africans swarmed into the bar, stung a travelling wine salesman senseless, left so many stingers in the bald dome of the bartender that he "thought he was growing hair again." In three hours the bees stung 500 people. Then they buzzed off across nearby farms, where they left behind flocks of dead chickens, a dozen writhing dogs, and two horses so badly stung that they could not eat for three days.

Father Nedel's African colony at the university in Sao Leopoldo suddenly went beserk, forced one of his assistants to take refuge in a truck, then turned on another man, two dogs and several children. Next day the Jesuit beekeeper ordered his eight African queens destroyed.

By last week the bees had invaded Rio's main business street, Rio Branco. A swarm like a great black watermelon was hanging in front of the Armed Forces Military Command building, and African bees were attacking civilians after driving sentries away from their machine-gun posts. Reported casualties: more than 60 "Cariocas" stung and a couple of bees that had been bold enough to dive bomb cars and buses.

Whatever the reason for their fierce tempers, the marauding Africans have Brazilians frantically searching for an antidote. But so far, the only suggested solution is genocide. "Destroy them all," says Father Nedel. "If they are not controlled, they will take over all the other bees and they will take over Brazil." Says Sao Paulo Beekeeper Luiz Zovaro, who keeps African bees, but has had to raise the price of honey from 39c to almost $2 a jar because it is so difficult to extract honeycombs from their hives: "If they are not stopped, Brazil will no longer be safe. I am very discouraged about the future."

—Reprinted from "Time", Sept. 24, '65.

EXPERIMENTS FAIL TO CONTROL MOTH

Research into problems affecting commercial and hobbyist beekeepers is a continual process at the Department of Agriculture's Wallaceville Animal Research Centre.

Mr. E. S. MILLAR, Scientific Officer, here describes work originated to overcome the problem of infestation and damage to stored combs by the lesser wax month; a research project which unfortunately did not produce a satisfactory and workable solution.

The two species of wax moth, the greater wax moth, Galleria mellonella, and the lesser wax moth, Meliphora grisella, are shown on the same scale in the illustrations below.

The experiments at Wallaceville have been carried out with the bacterial insecticide Thuricide Special Product, containing spores of the organism Bacillus thuringiensis. This organism is highly effective against larvae of some species of moth, and as it has a low toxicity to both adult bees and brood, it was thought that it might be useful for the control of wax moth.

Several trials were carried out with the lesser wax moth in which dose rates of 0.5 gramme to 5.0 grammes of Thuricide dust per comb were used.

Only Highest Dose Rate Had Effect

There was no immediate effect on the wax moth larvae or on their subsequent development to the pupal stage. Only at the highest dose rate was there any partial reduction in the number of normal adults emerging from the pupae. There were also reduced numbers in the next generation in comparison with the untreated series.

The use of Bacillus thuringiensis would therefore not be a suitable way of controlling the wax moth. The larvae are not killed, nor do they stop feeding, so they continue to damage the comb. The high dosage necessary to affect the next generation is impractical for economic reasons.

Greater wax moth

Lesser wax moth

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	minimum			360 colonies	3	0	0
90 colonies		15	0	390 colonies	3	5	0
120 colonies	1	0	0	420 colonies	3	10	0
150 colonies	1	5	0	450 colonies	3	15	0
180 colonies	1	10	0	480 colonies	4	0	0
210 colonies	1	15	0	510 colonies	4	5	0
240 colonies	2	0	0	540 colonies	4	10	0
270 colonies	2	5	0	570 colonies	4	15	0
300 colonies	2	10	0	6 colonies and over (maximum)	5	0	0

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THE N.Z. BEEKEEPER

This Journal is issued free to all beekeepers in New Zealand having 30 or more registered hives, and to others who are members of the National Beekeepers' Association.

Literary contributions and advertisements must be in the hands of the Editor, Mr. L. W. Goss, P.O. Box 3561, Auckland, not later than the 25th of the month preceeding publication.

Nom-de-plume letters must be signed by the writer and address given, not necessarily for publication, but as proof of good faith. Letters accepted for publication do not necessarily express the views of the Editor.

ADVERTISEMENT RATES

Quarter Page	£1	16	0	Per Inch		10	0
Half Page	£3	6	0	Minimum charge, 5/-			
Full Page	£6	0	0	for each insertion.			

Front Page Story

NEW STAMP COMMEMORATES BEEKEEPERS' CONGRESS

PICTURED on the front cover this month is the design used by the postal authorities in Roumania to commemorate the International Congress of Beekeepers in Bucharest.

The stamp will be of great interest to philatelists and in particular to those who specialise in designs featuring insect life.

Colourings are: honey coloured background depicting comb, a reddish pink flower and a dark blue bee with indications here and there of pollen dust on the wing segments.

Legend round the stamp reads "AL XX-LEA CONGRES INTERNATIONAL DE APICULTURA—JUBILIAR" and at the base "POSTA ROMANA 55 BANI" representing the value of the stamp.

A special pictorial envelope, with the commemorative stamps attached was forwarded with greetings from the Congress by Henning Christensen of Copenhagen from whom a report of proceedings will no doubt follow.

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