NO.6 MARCH 1987

NORTHLAND BEEKEEPING

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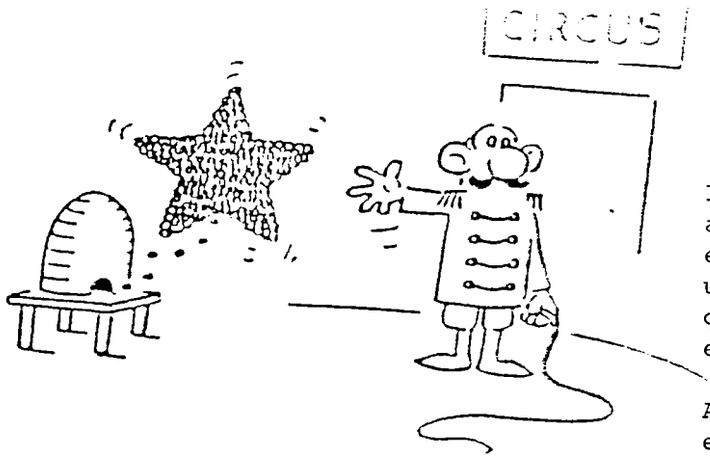

ROBBING MAGIC

In beekeeping nothing is quite so unpleasant as robbing. Once the nectar flow has stopped every precaution must be taken to cover supers, use robber screens, and in the case of some queen producers, even use robber cages to enclose themselves as well as the nucs.

And still, if one slip is made, if a comb is exposed or honey spilled, the frenzy begins. The ultimate frustration is having to abandon work in the apiary because robbing has become so bad.

With the robbing season upon us I was interested to read a small article in the American Bee Journal by the late Clarence Wenner, for years a highly respected queen producer in the United States. Clarence related a technique he used to avoid robbing when removing honey in the autumn, which seemed so preposterous it had to be worth a try. So last week I summoned up the courage and was I ever surprised!

The technique is simplicity itself. Upon first entering the yard you simply remove the lids from each and every colony. You then leave all the lids off until you finish work in the yard.

The effect can only be described as magic. I purposely exposed a comb of uncapped honey by leaning it up against a fence-post and I can report that during the hour and a half I worked in the yard, dismantling every colony to check for queens, no robbing occurred on that comb! The only bees that took to the air and followed me around the yard were from several hybrid colonies I recently requeened. Bees continued to behave normally in front of every hive with none of the weaving flight patterns characteristic of robber bees.

The question, of course, is why does the technique work? I have no real good answer, especially since so little is really known about robbing behaviour itself. My speculation is that defense behaviour, brought on by removing the lids, is stronger, perhaps because of pheromones, than robbing behaviour. But whatever the case, the difference in working bees during the autumn is like night and day.

A note of caution : this technique will work provided there are no other hives in the vicinity of your apiary. For that reason it wouldn't be appropriate for urban areas or queen mating yards.

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NEW POLLINATION SCIENTIST FOR MAF

D r Mark Goodwin, who spoke to beekeepers and fruit growers here in October, has been appointed to a position at MAF's Ruakura Research Station, HAMILTON. Mark replaces Pat Clinch, who retired last year.

Mark will continue his work on kiwifruit pollination begun during his studies at Auckland University. Beekeepers will recall that Mark's Masters and PhD work provide new information on bee behaviour and kiwfruit, including the observations that :

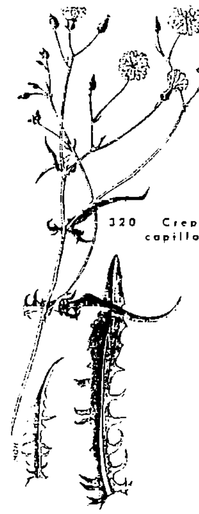
a) male kiwifruit flowers produce pollen from 8-11:00 a.m. Hence there is little reason to stimulate bees to forage earlier.

314 Hypochoeris radicata

Catsear or Flatweed (*Hypochoeris radicata*) is a much taller plant than the dandelion. The leaves are hairy and come from the base of the plant like dandelion. The flower is golden yellow and grows on long, sparingly-branched stalks. Blooms all year, but especially November - March.

315 Leontodon taraxacoides

Hawkbit (*Leontondon taraxacoides*) - hairy leaves from the base of the plant like Catsear, but the flower heads are single on unbranched stalks. Flower buds are distinctly nodding. Flowers December to March.



320 Crepis capillaris

Hawksbeard (*Crepis capillaris*) is very easily confused with Catsear and Hawkbit. It is also a tall plant with yellow flowers. The distinguishing features are 1) multi-branched stems,
2) leafy stems
3) a different shaped leaf which is hairless

Blooms October to March.

These last three plants are abundant species which can darken our light pasture honeys and stain cappings comb. Important sources, nevertheless, especially in times of dearth.

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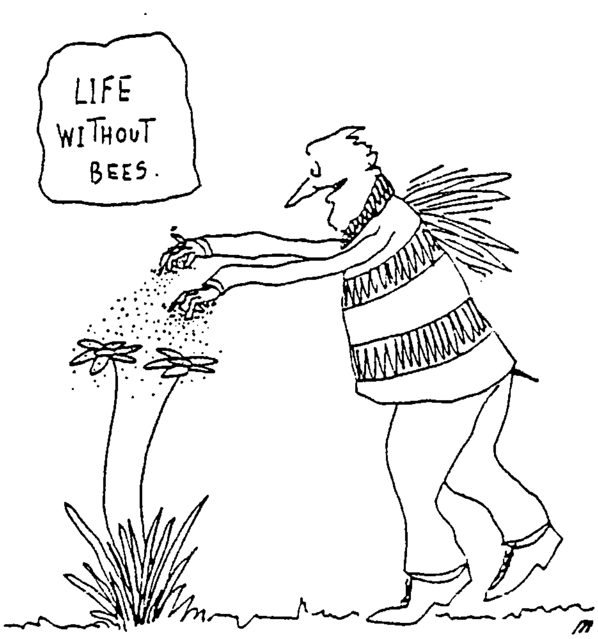
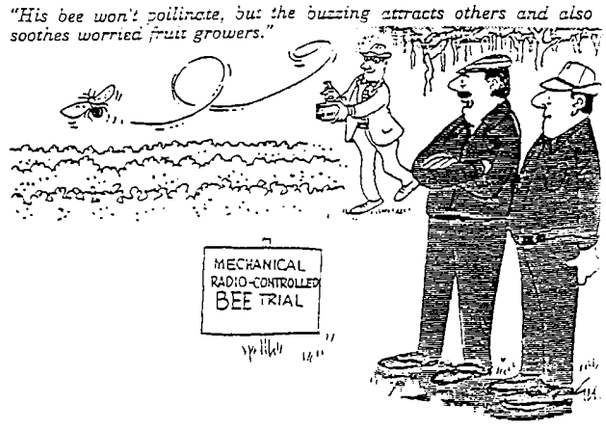


HALFMOON DISORDER UPDATE

Dr Denis Anderson, our bee pathologist at DSIR Mt Albert, is making good progress on his study of Halfmoon Disorder (HMD). As reported in issue 4 of this newsletter, the problem (no causative organism has been discovered so it can't be called a disease) closely resembles European Foulbrood, a bacterial disease now found in Australia but not (as yet) present in New Zealand.

Denis has been making a series of observations of HMD colonies and has determined that while the symptoms appear in the brood, HMD is actually a queen-related problem. He has also identified a series of symptoms which may follow a progression. Initially, queens reared from HMD breeders show higher rates of supersedure, especially around the time of mating. Those that mate and begin to lay start to lay multiple eggs per cell. But the eggs are fixed to the cell differently than in cases of normal multiple egg laying (i.e. laying workers, new queens, constricted brood nest). The eggs appear to be deposited together, not one at a time. Some eggs are stuck together, others are attached end to end. Eggs can also be found on the cell walls, as is the case in laying workers.

Once the brood is capped, Denis notices patchy brood patterns.



b) with good bee activity, bees will move to other crops in the afternoon because they have exhausted all available kiwifruit pollen. This does not mean, however, that they won't return next morning when the pollen is again available.

c) in orchards with high bee activity, competition results in increased (male/female) pollen loads. This disrupts the normal single sex flower preference bees display in kiwifruit.

d) in-hive sugar feeding at the time of pollen production (8-9:00 a.m.) can fix foragers on kiwifruit. This is only necessary, however, in problem orchards with inadequate bee activity.

Let's wish Mark the best of luck in his new position. And by the way, it's interesting to note that Mark is being funded jointly by the National Beekeepers Association and the Kiwifruit Authority.

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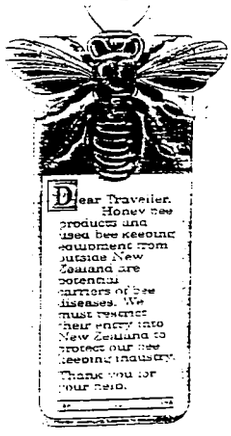
AG. QUARANTINE CAMPAIGN A SUCCESS

The MAF ag. quarantine advertising programme mentioned last issue appears to be working. The magazine and TV advertisements are alerting people to the dangers of honey importation.

The two international airports are reporting a large rise in the number of travellers declaring honey. Some people have even come back to the airport after taking in-flight magazines home and finding out later that honey must be declared.



Ag. Quarantine officers in Whangarei are also pleased with the explanatory cards MAF and the NBA have produced. Since they have begun using them they say arguments with overseas yachties have virtually ceased.

MAF will continue with this advertising, despite the budget cuts. But I wonder if beekeepers in Northland shouldn't also be taking a bigger part.

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+ + + + + + + + + + + + BEE FORAGE SPOT + + + + + + + + + + + + +

Yellow Weeds - most beekeepers refer to the yellow pasture weeds that bees work as dandelions. Actually, there are at least four separate species we should recognise, only one of which is the true dandelion.

Dandelion (*Taraxacum officinale*) is easily recognised but its thick, hollow stem which produces a milky substance when broken. The flowers are fairly large and often quite low to the ground. Dandelion is an excellent spring honey and pollen source but is not as prevalent here as in North America where dandelion honey is sold as a specialty item.

On removal of the cappings many of the pupa found in worker cells are drones. This is despite the fact that adequate sperm is available in most HMD queens' spermathecas.

The other observation is the one first noted by beekeepers. Larva are found dead, twisted in their cells, in a "half moon" shape. This is the characteristic that closely resembles EFB.

Because queens reared from HMD breeders also show HMD symptoms, Denis believes the problem is genetically-linked. His next step is to do artificial inseminations to see whether the problem is carried in the semen or the queen.

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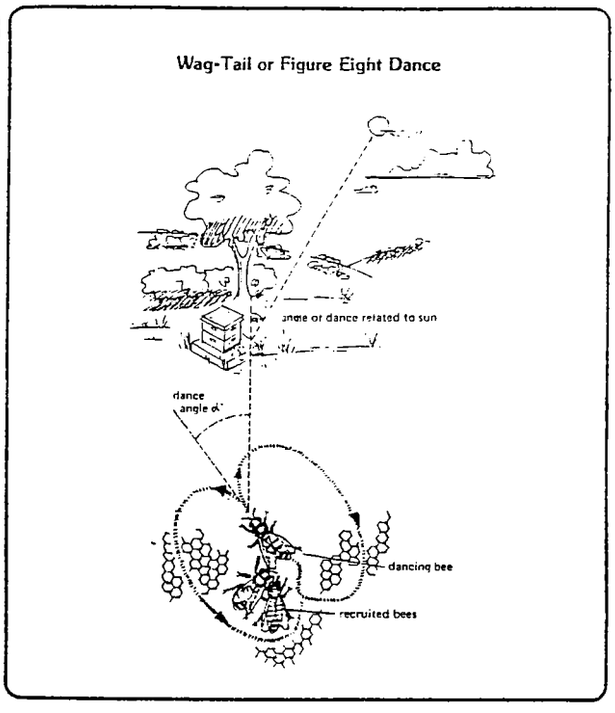

BEE'S COMPASS

We all know that von Frisch won a Nobel Prize for discovering that bees direct their way to a nectar source by using sun bearings transmitted to them by returning "scouts". The returning bees perform a waggle dance, the angle of which gives the degree of divergence from the sun's bearing.

What von Frisch never figured out though, was how the bees were able to fix these bearings on a cloudy day. He did find that the bees used patterns of polarized light but wasn't able to explain how the bees figured out from this the actual position of the sun. It seemed as if the bees were somehow able to perform celestial trigonometry or that their brains contained an almanac of all possible directions of polarization.

Now two Swiss scientists seem to have cleared up the mystery. And the explanation is much simpler. It seems the bees have special light receptor cells along the bottom facets of their compound eyes. These cells are most sensitive when polarization is parallel to the center of the cell.

To find out where the cloud-hidden sun is, a bee simply flies in a circle until these cells detect their brightest light. When that happens, the bee is always heading directly away from the sun. It then simply makes the required compass correction based on the "scout's" waggle dance and heads off to the nectar source.

The scientists conducted a series of experiments to prove their hypothesis, including using tiny polarized goggles on the bees. The results, according to Nature magazine, give us "a classically simple solution to one of the more impressive intellectual feats in the animal world".

Source : Rossel, S. and Rudiger, W. Polarization vision in bees. Nature - September, 1986.

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OVERSEAS AID BEEKEEPERS TRAINING

Recently I've been involved in two training programmes involving beekeepers from

สมาคมพัฒนาประชากรและชุมชน
POPULATION & COMMUNITY DEVELOPMENT ASSOCIATION

overseas.

In late February - early March I supervised a two-week training programme for four Thailanders from the Population and Community Development Association (PDA). PDA is a non-profit, private agency which has been highly successful in the areas of family planning and rural development. Currently their major area of activity is in Thailand's arid north-east, home of the infamous "golden triangle".

The four individuals, Wilas Lohitkul Prasong Lertpayub, Somchai Phukphuancharoen, and Somchai Paknam, received on-the-job training from local beekeepers Terry Gavin, Malcolm Haines and John Buhler. They also spent a day at Stephen Mahon's Ceracell Products in Auckland learning how to process wax and pack honey.

Before heading back to Thailand they presented participating beekeepers with some of the most extraordinary key chains seen in the district in recent memory!

Also receiving training this month is Mr Taui Alani, from the island's nation of Tuvalu. Taui has been keeping 40 hives of bees on his home island of Vitupm for the last three years and is now expanding his beekeeping skills in the area of queen rearing by working with both Whiteline Queens and Betterbee Queens.

Taui is returning at the end of the month with 30 select queens for his hives. When he flys back to the capital island of Funafuti, both he and the queens will be V.I.P.'s. The Tuvalu government will be holding the inter-island freighter in port until they arrive so he can get back to Vitupm within a day.

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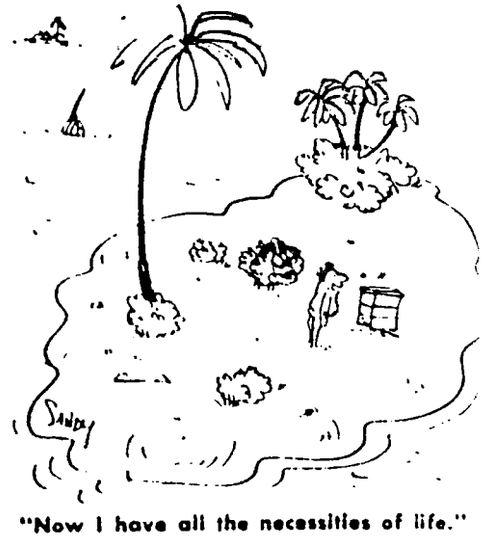
BIG FLOW AFTER THE BIG BLOW



"Now I have all the necessities of life."

Some of you may remember that I went to the Cook Islands in 1985 to do an assessment of their bee-keeping potential. I made several good friends among the beekeepers there and so was more than a bit concerned about the effects of their most recent hurricane.

At the beginning of March I received a letter from one of those friends, Dr Koekoe Mokotupu, better known as "the Doc". The Doc was former head of the Cook Islands Department of Health, but in his "retirement" contracted the "bee bug" and now keeps about 50 hives. According to the Doc, while the cyclone devastated the west side of Rarotonga, destroying much of the town of Avarua, the bees held up just fine. Just a few upturned hives and lids that had to be replaced.

What the Doc wasn't prepared for, though, was the intense honey flow which started two weeks after the storm had passed. It seems many of the trees in bush flowered, all at once, and the Doc has been struggling to keep up ever since. All the hives are well into their fourth stories and some are into their fifth. The Doc says he never knew the meaning of the word "flow" before; he just wishes he had a bit more gear.

Who knows, maybe we need a hurricane to bring on that really big year!

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A. ECROYD & SONS DIVIDES

Most beekeepers will have been aware of recent changes to Ecroyd & Sons, but it's probably worth reminding readers again since I included the old address last issue in the "Northland Apiary Services" section.

Ecroyd's has now been divided and its three divisions sold to different companies in the South Island. The beeswax and foundation division is now being run by Peter and Steve Lyttle of Geraldine. The Lyttle's are well known beekeepers in the south and should do an excellent job in this new business. You can contact them at :

New Zealand Beeswax Processors Ltd
R. D. 22
GERALDINE

Phone (056) 39-189

The woodenware manufacturing has been taken over by V.L. Smith and Sons, KAIKOURA. The finished products will be distributed through the third division, Stuart Ecroyd Bee Supplies. Stuart is Kevin Ecroyd's son and has managed the sales affairs for Alliance Bee Supplies for the past several years. Stuart will distribute the full range of beekeeping equipment Alliance carried and will continue to supply stockists such as the Honey Pot. Stuart has kept the old Alliance Bee Supplies address of Box 5056, Papanui, CHRISTCHURCH.

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RANGE WARS AND BEE DENSITIES

AAO's as a matter of policy don't enter into territorial disputes between beekeepers. But here's an interesting table on the areas of forage available that might be worth considering the next time you think there are too many hives nearby.

AREAS OF FORAGE AVAILABLE AT DIFFERENT DISTANCES FROM HIVES

Radius from Hive	Area included (hectares)	Density = 1 bee/m²	
		No. of bees	No. of hives
100 m	3.0	30,000	1+
250 m	17.6	176,000	7
500 m	78.5	785,000	31
1 km	314.0	3.0 million	126
1½ km	707.0	7.0 million	283
2 km	1,256.6	12.5 million	502

By the way, the hives are assumed to contain strong colonies each with a field force of 25,000 bees. This would be a typical full-strength three to four storey hive.

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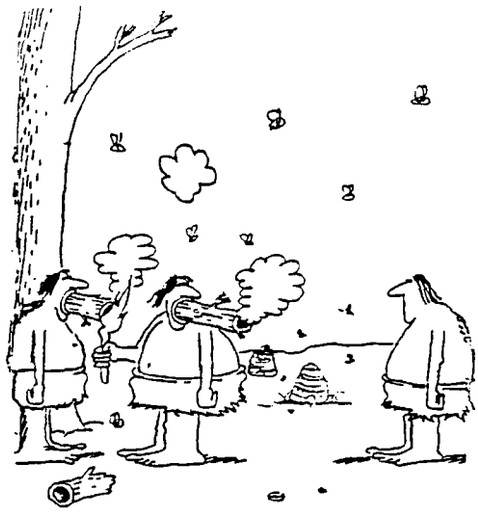


QUEEN EXCLUDERS

If you want to start a good discussion amongst beekeepers, just bring up the topic of queen excluders. Beekeepers are passionately either for or against these contraptions and can argue with great skill and conviction their particular position.

In this article I'll try to summarise a few of these arguments and end by offering an interesting compromise which has recently been tested in the States.

Arguments For :

* Excluders keep brood out of honey supers - this has several advantages. First, and most obviously, honey is easier to remove and extract. Some would even argue that because the brood nest cannot move up into the honey supers, less honey is likely to be "lost".

  This season's flow provided a classic example. We had a good early flow, with colonies not used for kiwifruit pollination producing two boxes by the beginning of December. But then the flow stopped. Those who didn't use excluders and decided to extract after Christmas found their two boxes of manuka and clover had become a lovely 6-8 frame brood nest.

* Excluders make for lighter coloured honey - because brood cannot be raised above the excluder, wax in honey frames remains white. Research has shown that honey is lighter in colour when extracted from light coloured combs. The effect on already darker grades of honey, though, might not be as great.

* Excluders are an efficient management tool - excluders can make many manipulations easier. Queen excluders are essential for the commercial production of good quality queens and excluders can be used for quickly and efficiently making splits. They're also the method of last resort when trying to find that nasty, runny, black-striped queen.

* Excluders are necessary for the one super management system - this system is used extensively in Australia and has its exponents here in the south. The system is based on the calculation of the number of available cells on a frame and the number of eggs a queen can lay in a day. Exponents of the system contend that a queen couldn't possibly use more than 2/3's of the available space in a one super brood box.

* Excluders can save winter stores - this isn't really the one brood super system; or at least it doesn't have to be. Some beekeepers contend that if the queen is excluded into the bottom brood box prior to the end of the honey flow, autumn brood production will be less, winter clusters will be smaller, and honey consumption (at least here in the north) will be lower. This definitely isn't the case in colder climates; however. Where bees go into hard cluster, excluder-separated brood nests often die out or become queenless once the cluster moves deeper into the honey stores.

Arguments Against :

* Queen excluders are honey excluders - beekeepers often find, especially in extended honey flows, that colonies with excluders put less honey into their

extraction supers. Examination of the brood nest shows lots of honey below. That may be excellent for wintering but doesn't put much honey in the tank.

In intense flows, with strong colonies, this difference isn't so apparent, but even in deep south clover country where the flow can last just two weeks, many beekeepers swear that excluders cost them honey.

And our work in measuring brood in pollination hives has revealed that most "good" brood frames are only 60% full of brood. The reality is that one super is too congesting for good queens. Some would even argue that two brood supers aren't enough if the excluder constantly forces the honey down into the brood nest.

* Excluders kill bees - researchers have found this is true, especially for the punched zinc or plastic variety. The welded wire excluders are better, but they still kill some bees.

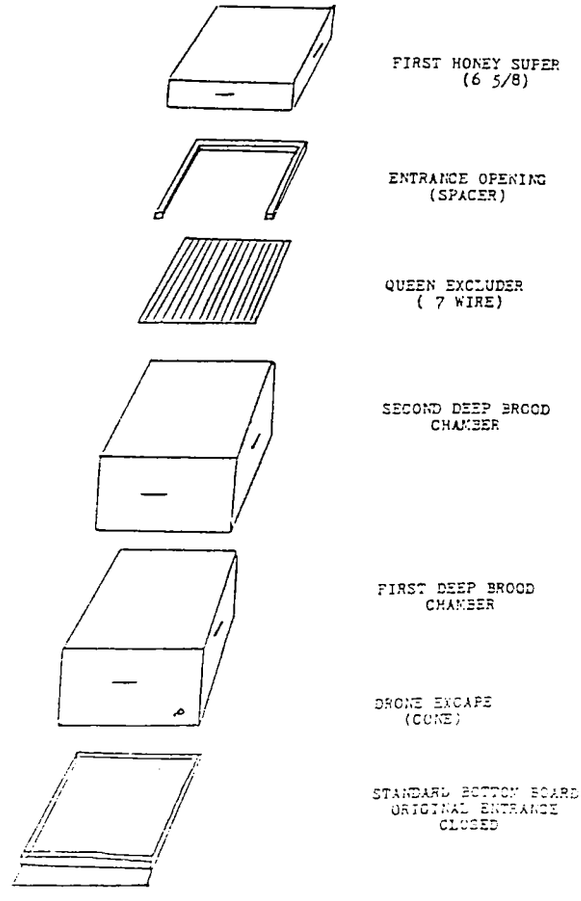
  Recent research from the U.S. tends to support their view. Six non-excluded colonies produced on average 10.6 kg more surplus honey than five two brood super excluded ones. That's not a very big sample, but the difference is still quite significant.

* Excluders produce swarms, especially in the one super brood nest system - the theoretical available space in a one super brood nest is fine. The problem is that much of that space isn't available to the queen. To begin with, the two outside frames are invariably filled with honey and/or pollen.

* Excluders cost too much - I've always felt that underlying many negative queen excluder arguments is the fact that the good, welded wire ones cost too much. Such excluders range between $7.50 and $9.00 depending on the supplier, and beekeepers can easily convince themselves not to spend that kind of money, especially when it's difficult to prove any increased return.

Those are the arguments, pro and con. Very convincing, some of them. But if you're like me, you'd still like to keep the queen out of the honey supers if you can be sure you wouldn't lose part of your honey surplus in the process.

For us the answer may come from that same U.S. trial. The researcher also compared five two brood super excluded colonies provided with a three-sided rim. This gave the colonies an entrance above the excluder, and in fact they closed off the bottom board entrance entirely. The result - the upper entrance excluded colonies actually stored more honey (under 1 kg) than the non-excluder controls.



Reference

Hayes, G.W. 1985. Queen excluder or honey excluder?

American Bee Journal, August, 1985.

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Queen excluders for under 5¢ each? I've had some success with a "pauper's queen excluder", which does the job fairly well and only costs a few cents. Cut a sheet of aluminium alloy (from the printing works) to about 410 x 325 mm. This can be used in place of a queen excluder, and relies on the principle that the queen rarely travels up the outside frames in a hive. Like all well-known "principles" in beekeeping, it works most, but not all, of the time.

CERTIFICATE IN BEEKEEPING

Many readers may not be aware that the beekeeping industry now has a recognised certificate course in beekeeping. The course, run through the Bay of Plenty Polytechnic, is tutored by Nick Wallingford, a frequent contributor to the New Zealand Beekeeper magazine.

The course is a self-study (correspondence) programme and as Nick points out, can't really teach you how to keep bees. It can, however, provide a structured reading programme to broaden both your knowledge and appreciation of bees and beekeeping.

The course has a definite New Zealand 'flavour', describing things for the most part in terms of what you can expect from beekeeping in our country, including New Zealand nectar and pollen sources. Currently there are 120 students enrolled, ranging from Stewart Island to Kaitaia.

The course consists of ten written modules and two short courses and is intended to provide a structure of study in beekeeping, primarily for those with commercial intentions.

For further information write to :

Certificate in Beekeeping
Bay of Plenty Polytechnic
Private Bag
TAURANGA

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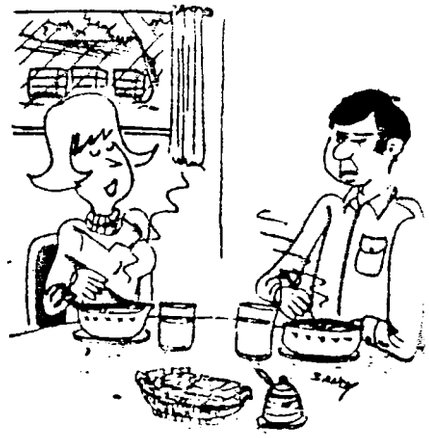
HONEY MOUNTAIN ERUPTS

If you've talked to honey exporters recently you'll know there's a slight "hiccup" on world honey markets. The "hiccup" is affecting sales of New Zealand bulk honey and the cash flows of Canadian beekeepers who want to buy our queens.

The problem is caused by the "buy back" provisions of the U.S. Commodity Credit Corporation honey loan programme. The loan programme was designed to even out the peaks and hollows created when yearly production enters the market all at



"What shall we gripe about today? The government, prices, or the weather?"

one time. The U.S. government would take the honey on loan and allow the beekeeper to buy it back once demand increased later in the year.

The idea was fine, but the pricing mechanism was based on a parity price set in the 70's just after the world price of honey went through the roof. Adjusted yearly for inflation that price became so high that U.S. packers could buy overseas honey at a much lower price. U.S. producers didn't buy back their honey and a honey mountain was created.

Well, something had to give, and in the infinite wisdom of the U.S. bureaucracy, it was decided to allow beekeepers to buy back their honey at a price lower than the one they originally loaned it for. The idea is that this will encourage packers to buy from the domestic producer (at the lower rate), while the producer still receives the full subsidy. This is supposed to reduce the stock pile of domestic honey now being held in U.S. government warehouses.

The loosers, of course, are the overseas producers, and especially the Canadians, who count on the U.S. as a major market and in most cases don't receive such subsidies. In 1984, 36% of total Canadian production went to packers in the U.S.

By the way, in case you're interested in specifics, for the 1986 crop the U.S. government loan rate ranges from NZ$2.53/kg (for white honey) to NZ$1.97/kg (for factory grade). The buy-back rates to beekeepers range from NZ$1.73/kg to NZ$1.26/kg. That represents a direct subsidy of 71 to 80 cents per kg.

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On a more positive vein, U.S. producers are now being levied four cents (NZ) per kg for a national honey promotion programme. The new head of that program, Mr Dan Hall, estimates that a per capita increase of 45 grams of honey per year in the U.S. would result in total consumption of all honey presently being produced and imported. I hope they "get crackin'".

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NO WONDER THE THAIS GAVE US THOSE KEY CHAINS!

Maybe it's true. Perhpas royal jelly can claim to promote youthfulness and virility after all. Two researchers from the New York Medical College report finding the male sex hormone testosterone in royal jelly - the first evidence of a vertebrate steroid hormone being found in the honey bee.

It's not all good news though, because you'd have to eat a fair quantity of royal jelly to get significant quantities of the hormone. It's present at a concentration of 12 nanograms per gram - that's 0.0000012%!

"All in all, you're in excellent health, although I think I'd lay off the bee pollen for a while."

Source : Matheson, A. The Beekeepers Bulletin, May 1986.

HONEY BEE EGGS - FACTS AND OTHERWISE

There are a lot of "facts" floating around in beekeeping that we all tend to believe - until someone investigates more closely and upsets the apple cart. Take the honey bee egg : we all know it hatches after three days and that it's very delicate. Right?

Steve Tabor of California has done some interesting tests which show these "facts" to actually be myths. For a start, eggs don't always hatch in three days (72 hours). Tabor once caged queens onto combs for a two-hour period and then excluded the queens. After 84 hours no eggs had hatched. By the next morning (94 hours) all eggs had hatched. Tabor came to the conclusion that egg hatch was more determined by humidity than time.

As for eggs being delicate, Tabor suggests you put a comb of eggs in the fridge for 24 hours, wrapped in a moist cloth. The eggs don't die, but hatch normally, even if you extend the period to 48 hours. What does kill eggs is the sun. Tabor has shown that as little as two minutes in direct sunlight is enough to do them in.

And just in case you thought all eggs were created equal, here's some interesting work on eggs and the age of queens. A Russian researcher has found that young queens lay heavier eggs than old queens. And the workers or queens that result are also bigger.

Queens from big eggs were shown to have more ovarioles and could be expected to produce bigger colonies as a result.

The final test was to compare honey production. Sure enough, colonies headed by queens raised from light eggs produced less honey, even in good years.

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