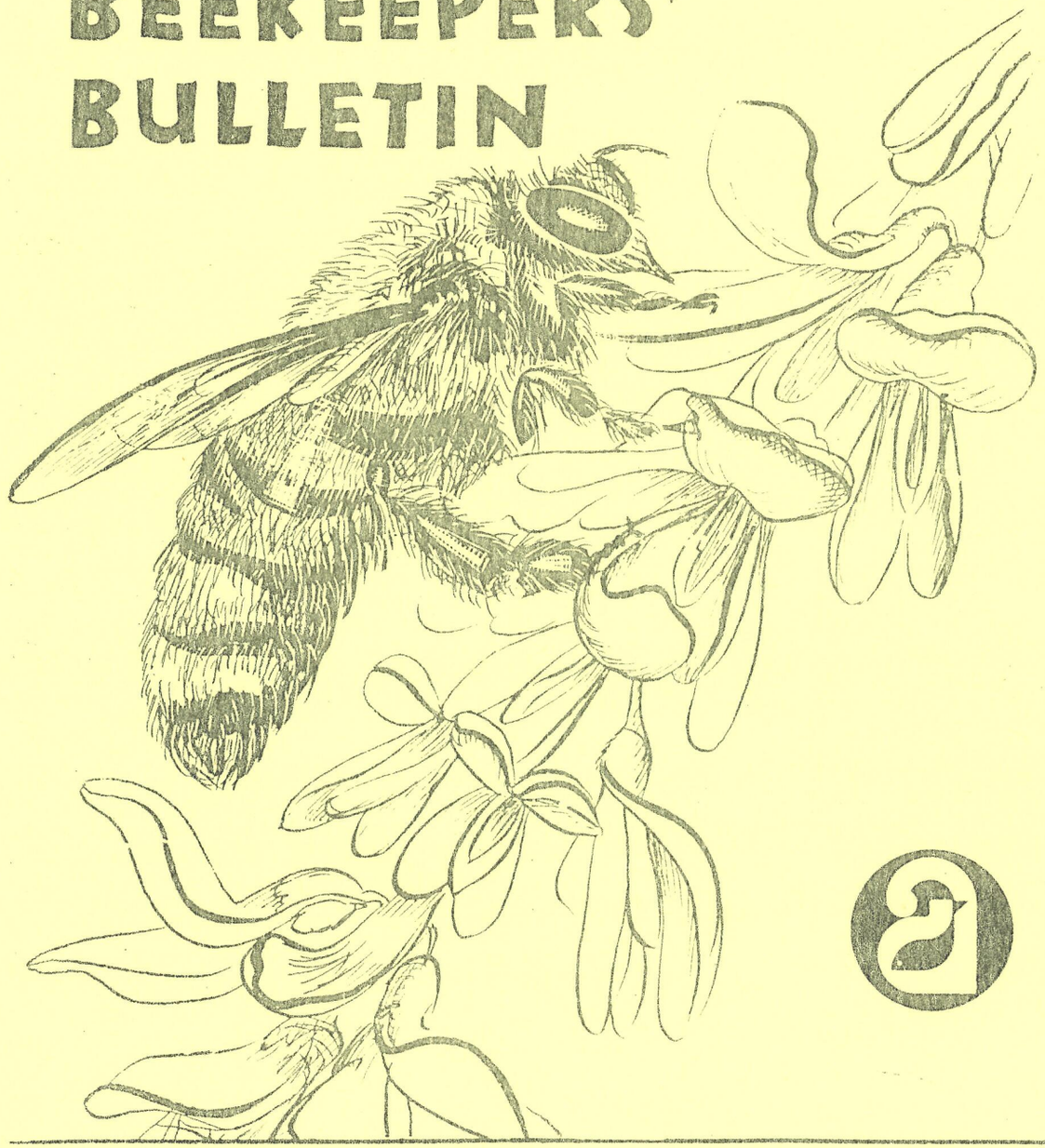
THE BEEKEEPERS' BULLETIN



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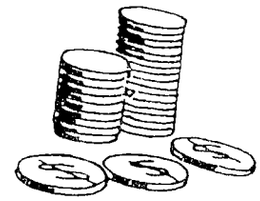
This season has been a bit like the proverbial curate's egg - good in places. Spring was definitely nothing to write home about, and bees were generally in poor shape prior to the flow. However, later weather was kind to us and the season looks like it will average out at, well, average.

Nelson and Marlborough are both very dry, with only an inch of rain during the last three months. The Coast's problem is not so much lack of water, but unequal distribution. They were so greedy in winter and spring that there's been very little left for the summer!

In many areas the crop has been quite uneven between yards, and also within yards. The hives with young queens and a good population of bees gathered several boxes, while hives in the same yard without these struggled to fill even one. It's basic beekeeping, but we all need a reminder occasionally. Murray Reid had a good article on this theme in the September "New Zealand Beekeeper". It's worth re-reading in full, but here's a sample:

"Any queen is better than an old selected queen and this year (1979-1980), in the Waikato and Bay of Plenty at least, the value of young queens was so obvious. They were the only hives you took any honey off".

ARE YOU ADEQUATELY INSURED?



The hot weather in Nelson reached a flashpoint on the 5th February, when a fire broke out on the hills just behind Nelson. Fanned by very strong winds it burned out of control for several days, during which time 1100 ha of pine plantation, bush, scrub and grassland were destroyed.

The Conservator of Forests estimates that damage caused and fire-fighting costs might add up to around $5 million. It is thought that arcing power lines were the cause, but I got to thinking how easy it would be to start a fire by careless use of a bee smoker. The first line of defence is to be very careful with smokers:

- ensure that they are kept in an airtight tin when not in use (e.g. a large biscuit tin).
- exercise extreme caution with any embers or ash removed from a smoker.
- don't pump sparks out of the nozzle. It may be worth installing an anti-spark gauze in the nozzle, to let the smoke out but not pieces of glowing fuel. The screen would have to be removable for cleaning.

Public liability insurance is also worth considering. If you keep hives in a state forest area, the N.Z.F.S. requires that you have this insurance with a fire extension, to a minimum of $10,000. Ten thousand dollars doesn't fight much of a fire - in the Hira fire they had nine helicopters working ten hours per day for several days. At $500 per machine per hour, that's not cheap.

No matter where your hives are situated, it's worth considering whether you have a satisfactory public liability policy. This will protect you in case your bees cause damage to people or livestock, and in case you (or your employees) cause damage in some other way.

Public liability insurance is quite cheap, cover for $250 000 might cost around $25, with an extension for fire-fighting costs about $1 per $1 000 cover.

While on the subject of insurance, the NBA is negotiating with the South British Insurance Company for an insurance package for beekeepers, along the lines of their "Farmers' Package". Details will be announced shortly.

There is also a very useful 38 page booklet available free from the Insurance Information Service, P.O. Box 474, Wellington. Called "Insurance for Management - a guide for the business community", it outlines all the different types of policy available, and places where insurance may be necessary.

$RCF = \frac{r N^2}{9 \times 10^5}$ r = radius in mm

N = speed - RPM

SPINNER SPEEDS

NZBIK Sept 81 p17, March 82 p10

With all the interest these days in building cappings spinners, it is worth mentioning some of the factors involved. At the outer surface of the rotating drum of a spinner, or at the baskets of an extractor for that matter, we are creating a centrifugal force many times that of gravity, to speed up the draining process.

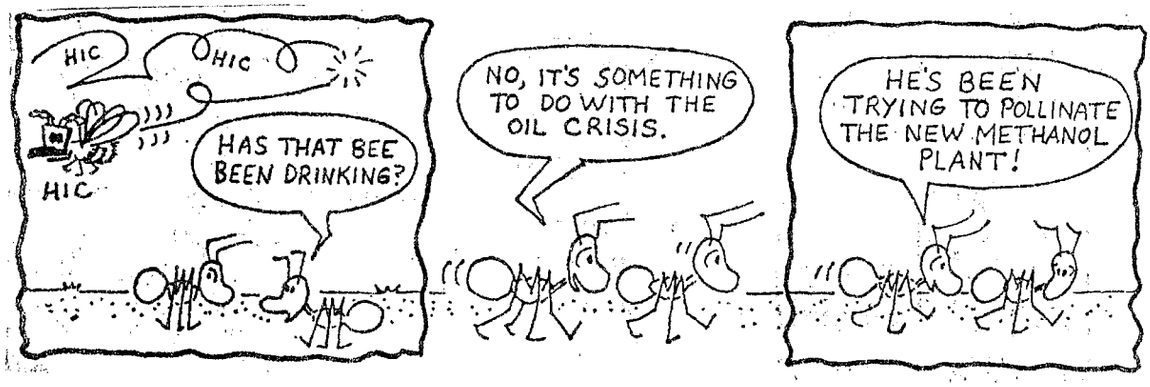
To compare different spinners, it is not sufficient simply to work out the radial speed in metres or feet per second. The force acting at the drum, or Relative Centrifugal Force as it is called, is proportional to

- the radius of the drum (millimetres)
- the rotational speed (r.p.m.) squared

To save you all running to your calculators, I've worked up a table, which should encompass the range of values encountered. To calculate the R.C.F., read off the radius (i.e. half the diameter) of the rotating drum at the left hand side and the r.p.m. along the top. The R.C.F. is expressed in "g", where 1 g is the force of gravity.

For example, a spinner with a radius of 600 mm radius rotating at 200 r.p.m. will exert a force of 27 g or 27 times the force of gravity.

Small discrepancies in the chart are due to rounding-off errors.



Rotational speed (r.p.m.)

radius (millimeters)	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400
200												14	15	16	18	19	20	22	23	24	26	27	29	31	32	34	36
250										15	16	18	19	20	22	24	25	27	29	31	32	34	36	38	40	43	45
300								15	16	18	19	21	23	25	26	28	30	32	34	37	39	41	44	46	49	51	54
350							16	17	19	21	23	25	27	29	31	33	35	38	40	43	45	48	51	54	57	60	63
400						16	18	20	22	24	26	28	30	33	35	38	40	43	46	49	52	55	58	61			
450					16	18	20	22	24	27	29	32	34	37	40	42	45	48	52	55	58	62					
500				16	18	20	22	25	27	30	32	35	38	40	44	47	50	54	57	60							
550			16	18	20	22	25	27	30	33	36	39	42	45	48	52	55	59									
600		15	17	19	22	24	27	30	33	35	39	42	45	49	53	57	61										
650		16	19	21	24	26	29	32	35	39	42	46	49	53	57	61											
700	15	18	20	23	25	28	31	35	38	42	45	49	53	57													
750	17	19	22	24	27	30	34	37	40	44	48	53	57														
800	18	20	23	26	29	32	36	40	43	47	52	56															
850	19	21	24	28	31	34	38	42	46	50	55	60															
900	20	23	26	29	33	36	40	45	49	53	58																

THINK METRIC

To convert °F to °C, look at the centre figure (in bold type) and read off the equivalent Celsius value on the left. For example, 63°F is 17.2°C.

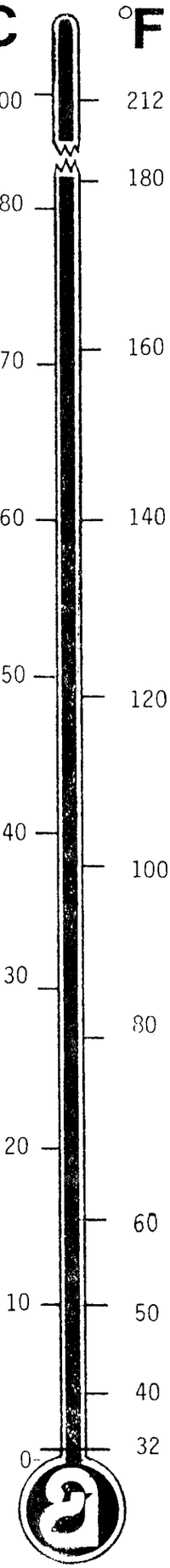
To convert °C to °F, look at the centre figure and read off the equivalent Fahrenheit value on the right. For example, 63°C is 145.4°F.

°C	← °F	°C →	°F	°C	← °F	°C →	°F	°C	← °F	°C →	°F	°C	← °F	°C →	°F
−17·8		**0**	32·0	−3·9		**25**	77·0	10·0		**50**	122·0	23·9		**75**	167·0
−17·2		**1**	33·8	−3·3		**26**	78·8	10·6		**51**	123·8	24·4		**76**	168·8
−16·7		**2**	35·6	−2·8		**27**	80·6	11·1		**52**	125·6	25·0		**77**	170·6
−16·1		**3**	37·4	−2·2		**28**	82·4	11·7		**53**	127·4	25·6		**78**	172·4
−15·6		**4**	39·2	−1·7		**29**	84·2	12·2		**54**	129·2	26·1		**79**	174·2
−15·0		**5**	41·0	−1·1		**30**	86·0	12·8		**55**	131·0	26·7		**80**	176·0
−14·4		**6**	42·8	−0·6		**31**	87·8	13·3		**56**	132·8	27·2		**81**	177·8
−13·9		**7**	44·6	0·0		**32**	89·6	13·9		**57**	134·6	27·8		**82**	179·6
−13·3		**8**	46·4	0·6		**33**	91·4	14·4		**58**	136·4	28·3		**83**	181·4
−12·8		**9**	48·2	1·1		**34**	93·2	15·0		**59**	138·2	28·9		**84**	183·2
−12·2		**10**	50·0	1·7		**35**	95·0	15·6		**60**	140·0	29·4		**85**	185·0
−11·7		**11**	51·8	2·2		**36**	96·8	16·1		**61**	141·8	30·0		**86**	186·8
−11·1		**12**	53·6	2·8		**37**	98·6	16·7		**62**	143·6	30·6		**87**	188·6
−10·6		**13**	55·4	3·3		**38**	100·4	17·2		**63**	145·4	31·1		**88**	190·4
−10·0		**14**	57·2	3·9		**39**	102·2	17·8		**64**	147·2	31·7		**89**	192·2
−9·4		**15**	59·0	4·4		**40**	104·0	18·3		**65**	149·0	32·2		**90**	194·0
−8·9		**16**	60·8	5·0		**41**	105·8	18·9		**66**	150·8	32·8		**91**	195·8
−8·3		**17**	62·6	5·6		**42**	107·6	19·4		**67**	152·6	33·3		**92**	197·6
−7·8		**18**	64·4	6·1		**43**	109·4	20·0		**68**	154·4	33·9		**93**	199·4
−7·2		**19**	66·2	6·7		**44**	111·2	20·6		**69**	156·2	34·4		**94**	201·2
−6·7		**20**	68·0	7·2		**45**	113·0	21·1		**70**	158·0	35·0		**95**	203·0
−6·1		**21**	69·8	7·8		**46**	114·8	21·7		**71**	159·8	35·6		**96**	204·8
−5·6		**22**	71·6	8·3		**47**	116·6	22·2		**72**	161·6	36·1		**97**	206·6
−5·0		**23**	73·4	8·9		**48**	118·4	22·8		**73**	163·4	36·7		**98**	208·4
−4·4		**24**	75·2	9·4		**49**	120·2	23·3		**74**	165·2	37·2		**99**	210·2

°C	← °F	°C →	°F	°C	← °F	°C →	°F	°C	← °F	°C →	°F	°C	← °F	°C →	°F
37·8		**100**	212·0	51·7		**125**	257·0	65·6		**150**	302·0	79·4		**175**	347·0
38·3		**101**	213·8	52·2		**126**	258·8	66·1		**151**	303·8	80·0		**176**	348·8
38·9		**102**	215·6	52·8		**127**	260·6	66·7		**152**	305·6	80·6		**177**	350·6
39·4		**103**	217·4	53·3		**128**	262·4	67·2		**153**	307·4	81·1		**178**	352·4
40·0		**104**	219·2	53·9		**129**	264·2	67·8		**154**	309·2	81·7		**179**	354·2
40·6		**105**	221·0	54·4		**130**	266·0	68·3		**155**	311·0	82·2		**180**	356·0
41·1		**106**	222·8	55·0		**131**	267·8	68·9		**156**	312·8	82·8		**181**	357·8
41·7		**107**	224·6	55·6		**132**	269·6	69·4		**157**	314·6	83·3		**182**	359·6
42·2		**108**	226·4	56·1		**133**	271·4	70·0		**158**	316·4	83·9		**183**	361·4
42·8		**109**	228·2	56·7		**134**	273·2	70·6		**159**	318·2	84·4		**184**	363·2
43·3		**110**	230·0	57·2		**135**	275·0	71·1		**160**	320·0	85·0		**185**	365·0
43·9		**111**	231·8	57·8		**136**	276·8	71·7		**161**	321·8	85·6		**186**	366·8
44·4		**112**	233·6	58·3		**137**	278·6	72·2		**162**	323·6	86·1		**187**	368·6
45·0		**113**	235·4	58·9		**138**	280·4	72·8		**163**	325·4	86·7		**188**	370·4
45·6		**114**	237·2	59·4		**139**	282·2	73·3		**164**	327·2	87·2		**189**	372·2
46·1		**115**	239·0	60·0		**140**	284·0	73·9		**165**	329·0	87·8		**190**	374·0
46·7		**116**	240·8	60·6		**141**	285·8	74·4		**166**	330·8	88·3		**191**	375·8
47·2		**117**	242·6	61·1		**142**	287·6	75·0		**167**	332·6	88·9		**192**	377·6
47·8		**118**	244·4	61·7		**143**	289·4	75·6		**168**	334·4	89·4		**193**	379·4
48·3		**119**	246·2	62·2		**144**	291·2	76·1		**169**	336·2	90·0		**194**	381·2
48·9		**120**	248·0	62·8		**145**	293·0	76·7		**170**	338·0	90·6		**195**	383·0
49·4		**121**	249·8	63·3		**146**	294·8	77·2		**171**	339·8	91·1		**196**	384·8
50·0		**122**	251·6	63·9		**147**	296·6	77·8		**172**	341·6	91·7		**197**	386·6
50·6		**123**	253·4	64·4		**148**	298·4	78·3		**173**	343·4	92·2		**198**	388·4
51·1		**124**	255·2	65·0		**149**	300·2	78·9		**174**	345·2	92·8		**199**	390·2

Cut this out and hang it on the wall of your honey house.

Temperature



100°C Boiling point of water

71°C Honey flash heat for yeast control

62-64°C Melting point of pure beeswax
62°C Honey yeast control, held for 30 minutes
60°C Melting granulated honey (rapid draining and cooling)

40-45°C Optimum honey straining

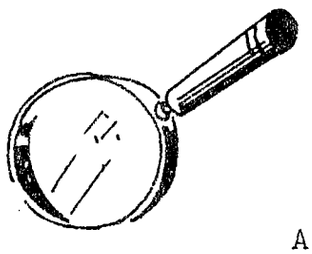
34-35°C Brood nest
32-25°C Honey hot room

28°C Honey crystals start to dissolve

18-26°C Effective range for benzaldehyde
20°C Honey refractometer readings

13-21°C Optimum for honey fermentation
14°C Optimum for honey granulation
14°C Formation of colony cluster

0°C Freezing point of water



A GOOD IDEA

Seen recently in Len Hunt's new extracting room at Ashburton; a mobile sink unit. Len took an ordinary stainless steel handbasin and mounted it in a three-legged frame, with castor wheels.

It sits against the wall under the taps for filling, but can be wheeled anywhere in the room for use. This does the same job as a bucket sitting on a honey box, but looks a lot tidier.

There is a piece of PVC downpipe attached, and the unit can be wheeled over to the drain hole for emptying. A further refinement would be putting a cabinet underneath, for storing rags and cleaning aids.

-ooOoo-

GOOD PUBLIC RELATIONS

A very good editorial in the May 1980 Apiarist reminded us that "Beekeepers could brush up their image". It's worth getting out and reading again. A note in a recent American Bee Journal stressed the fact that beekeeping associations should be service-orientated as well as promoting good public relations.

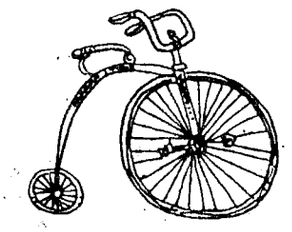
A beekeeping association in Washington State:

- has a beekeeping stall at the local A & P type fair
- owns and maintains 12 colonies in the university arboretum (botanical garden) to highlight the place of bees in natural systems
- holds a midsummer field day for all beekeepers and members of the public, not just association members
- circulates a "swarm collectors list" each year to local councils, police stations, etc.

-ooOoo-

GETTING ABOUT

Always a shock to read are the Ministry of Transport's bulletins on truck and car operating costs.* Their 1980 edition (as at 31st March, already a year and x% out of date) produces the following running costs, which include direct running and capital costs. Wages are also costed in the case of trucks, but if you don't think that time spent driving costs you money, then perhaps you should re-think your attitude to your business.



	cost per kilometre, on the basis of 10 000 km/yr	20 000 km/yr
petrol-driven utility, 1600 - 2000 cc	30c	25c
petrol-driven truck, gross weight 2 - 3.2 tonne	$1.15	68c
petrol-driven truck, gross weight 4.5 - 6.5 tonne	$1.24	75c

The January 1981 edition of the "Journal of Agriculture" has a whole feature on farm vehicles, including a five-page article on utilities. It also includes a table setting out the features of all such vehicles currently on the market. With considerable interest in the beekeeping industry in cutting vehicle costs by using a "ute", this may be worthwhile reading for some.

There's also a section on farm bikes, with tips on selecting a bike, accessories and useful riding techniques. Motorbikes may become quite useful in beekeeping, especially for routine, frequent work such as emptying pollen traps or standing up hives after storms.

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* "Car operating costs" and "Truck operating costs", 1980 edition. Published by Ministry of Transport Economics Division. Available from the Government Printer, Wellington.

WHO GOES THERE - FRIEND OR FOE?

The letters HFCS may not mean very much to beekeepers in New Zealand, but it is likely that we'll hear more of them in the future. They stand for "high fructose corn syrup". Normal corn syrup is largely sucrose or cane sugar, but this can be treated by either acid or enzymatic processes to yield a mixture of sugars in which fructose predominates.

Sound familiar? Well, these processes closely parallel the enzymatic conversion of plant nectar (mainly sucrose) by bees to yield honey, which is a mixture of sugars in which fructose predominates. Because the two end products are similar, HFCS can be used in many industrial applications instead of honey and can also be used to adulterate or "dilute" honey, or even to make a completely artificial honey.

HFCS is a clear, sweet, low-viscosity fluid which is hygroscopic and does not crystallize. Much like honey, it imparts a chewy or creamy texture when used in some baked or frozen goods, and it browns when heated. HFCS enhances fruit flavours, especially citrus, has excellent physical properties, and costs less than sucrose.

A large capital investment ($50-70 million) is needed to build an economical HFCS plant, so that in North America there are only about 13 in operation at the moment. However, the low price and over-production of corn by-products ensures that HFCS prices are below those of either beet or cane sugar.

Production in North America has approximately doubled every two years since its commercial introduction in 1967, with over a million tonnes shipped in 1978. In New Zealand HFCS is not yet in use, although soft drink manufacturers are giving it consideration.

What does this mean to the beekeeping industry? As I indicated in the heading, HFCS may be either a friend or a foe. On the one hand, HFCS may be a cheap source of bee feed, no small thing in these days of rapidly escalating sugar prices. This, of course, can be only if HFCS is easily digestible by bees with no toxic residues (not yet determined), and if it becomes readily available in New Zealand.

The other side of the coin is the fact that HFCS may find many applications in the food industry for which honey is used now. Beekeepers must charge a certain price for honey, in order to stay in business, and if other suitable sweetners are available more cheaply then manufacturers may switch to those.

-ooOoo-

COURSES FOR BEEKEEPERS

Two courses for beekeepers are being held this year at Telford Farm Training Institute near Balclutha in the Deep South. Consider now whether you should be involved in them.

1. Business management for bee farmers

   Tuesday 2 June 1 p.m. - Friday 5 June 12 noon.

   This course is designed for beekeepers who wish to develop their interest in and knowledge of the financial management of their business. Topics include record-keeping, employing labour, accounting, budgeting, taxation, sources of finance, and others. If you want to leave the financial aspects of your business to the accountant, then this course is NOT for you.

   If you want to make your money work for you, then it is. Wives/husbands are welcome if they are the firm's book-keeper.

2. Expanding into commercial beekeeping

   Monday 10 August 1 p.m. - Thursday 13 August 12 noon.

   This course is for people with a serious interest in full-time beekeeping. At last year's course at Flock House, participants ranged from those with only a handful of hives but with a genuine ambition, to the person who described himself as "a hobbyist with 400 hives, who wanted to become a commercial beekeeper".

   The programme is very wide-ranging, from a little business management to pollen trapping, and from "deciding on your goals" to disease control. It's as near as you'll get to a general beekeeping course in capsule form.

   Like all of these courses, no doubt one of the greatest benefits to participants is the informal discussion and mixing with people in similar situations to yourself.

   If you're relatively new in the industry, or intending to take on beekeeping, then consider this course.

   These courses cost $14 for tuition and class materials (who said there's no bargains left these days?), bed and breakfast in Balclutha (about $11 if you share a room), plus other meals at Telford at $3.20 per day.

Applications close three weeks before the course begins. Forms from:

The Registrar
Telford Farm Training Institute
Otanomomo
Private Bag
BALCLUTHA

-ooOoo-

A ROTTEN TRICK ...

There's been considerable interest on the Coast recently about the rapid appearance of a rot in bee gear. It has been around for many years in small quantities, but has really become a nuisance in the past couple of years or so.

It appears that this increase in incidence is due to the couple of wet seasons the Coast has had. Newspaper placed under the lid for sugar feeding acts as a wick, drawing moisture into the hive, and surplus paper should be torn off at the edge of the boxes.

For your interest, the fungus is a species of the genus Hymenochaete, which is a group of mainly tropical or tropical species most of which are associated with a white rot condition in timber.

- using infected gear in conjunction with "clean" gear will result in a rapid transferral of the rot into the uninfected gear.
- hot-dipping in paraffin wax will not arrest the decay.
- treatment of boxes in steam pressure chambers may be effective.
- chemical preservatives to inhibit the fungus will probably also "inhibit" the bees
- one means of combating this problem is using a naturally durable timber - kauri is not attacked by the rot (a point of interest only), and the Forest Research Institute suggest heart red beech.
- initial treatment with metalex is a very effective timber preservative. FRI advise that if the timber is thoroughly dry (15-20% moisture content) before treatment, then cold-soaking the timber in metalex should guarantee a long service life. The length of time the timber should remain immersed depends on a number of factors (species, thickness, etc) but with a permeable species such as pine, a good rule of thumb would be to aim for an 8-10% increase in weight after immersion.

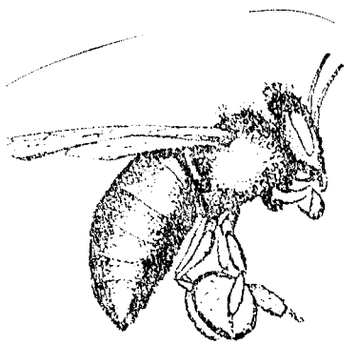
There are quite a few recent advances in timber preservation which may be good news to beekeepers, but we're still at the wait-and-see stage. One product is called "tricunol" which is like metalex but quite a bit cheaper. Pat Clinch is doing some mortality tests with caged bees, and is finding considerable mortality. It does

seem, however, that it depends very much on what diluent is used and for how long the timber is aired. Murray Reid has some nuc boxes treated with tricunol, and there appears to be no effect on the bees so far.

-ooOoo-

POLLEN FEEDING

Since the article on this subject in the last "Bulletin", some more information has come to light on soya bean products which are suitable for pollen supplements and substitutes. Expeller-processed soya bean flour is usually specified. To produce this, beans are pressed hydraulically to extract the oil, and this process leaves about 4-6% fat in the meal.



A new soy flour production process involves washing the beans with an organic solvent to extract the oil, and toasting the meal to destroy trypsin inhibitors which may interfere with digestion by higher animals. This process is now used exclusively for production of soya bean flour in the United States, and the old expeller-processed flour is no longer available. Two scientists of the USDA have studied the effectiveness of these new products for pollen supplements and substitutes.

Their conclusions are:

- the three new products tested (Staley F-200 and Bland 50 defatted soyflour, and Toasted Nutrisoy T-6 from Archer Daniels Midland Co.) are acceptable substitutes for expeller-processed soyflour in a pollen supplement. F-200 and Nutrisoy T-6 are probably preferable to Bland 50.

- other and newer soyflour products would also be suitable as pollen supplements, if the following criteria are met:

  (a) soyflours should be fully toasted to remove trypsin inhibitors

  (b) soyflours should have a fat content of about 7% if used as a pollen substitute, but a fat content of about 0.5 - 1% if fed as a supplement with 10-20% pollen.

  (c) soyflours should have a high protein content, about 45-60%.

-ooOoo-

DISCLAIMER

I don't see the point of mentioning products but not being able to name them. It just means that I have to tell you all individually, which defeats the purpose of a newsletter.

The Ministry must not, of course, be seen to promote any particular product, so from time to time you might see this in the "Bulletin":

"Mention of any proprietary brand or product does not constitute endorsement by the Ministry of Agriculture and Fisheries, nor recommendation over other products not mentioned".

-ooOoo-

SOLAR WAX MELTERS

The rising cost of most forms of energy has meant that more consideration is being given to solar power. Solar wax melters are reasonably common, but really deserve more attention.

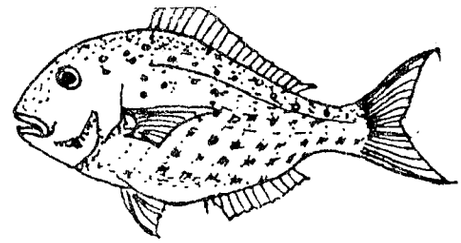
Stephen Bozi, a commercial beekeeper at Rangiora, processes his cappings in a home-made spinner. After that, the nearly-dry cappings are placed in a very big solar melter, which has one unusual feature. There's heating cable in it for use on cloudy days. The honey recovered from the solar melter is used for manufacturing purposes.

Work done at the Pennsylvania State University ("Penn State" of T-shirt fame) shows that solar wax melters are better if they incorporate the following features:

- thermal insulation under the metal pan
- two panes of glass with an air space in between
- sloping side walls
- black paint outside
- white paint inside (thereby winning me a few arguments)
- a fairly shallow space between the pan and the glass (125 mm is better than 175 mm)
- the glass should be as big as the box (i.e. the frame has to overhang the sides of the box)

The University built wax melters of various designs, and found that one which incorporated all these features was the most efficient. The temperature inside this melter was up to 72°C higher than that outside. The highest temperature recorded inside the melter was a staggering 102°C.

-ooOoo-



FISH FOR BEES?

The search for an adequate pollen supplement/substitute continues, and has led one scientist at the University of British Columbia to looking at fish meals.

Being a food scientist, he compared fish meal with other supplements/substitutes currently in use, namely brewer's yeast, Torula yeast, Wheast[R], expeller processed soya flour, powdered skim milk and of course, natural pollen. The comparison looks like this:

	moisture	protein	fat	ash	price per kg (Canadian $)
pollen	11.2	21.6	5.0	2.7	$7.70-$14.30
pacific herring meal	7.7	71.6	7.9	11.0	$0.55
brewer's yeast	7.0	45.0	0.4	6.5	$0.73-$1.87
Torula yeast	6.8	48.5	2.0	8.0	$2.31
Wheast [R]	7	58.5	1.0	10.0	$4.18
Soyflour	11.0	42.0	3.5	6.5	$0.97-$1.25
Skim milk powder	8.4	33.0	0.5	8.0	

Analysis of amino acid levels (these are the "building blocks" of proteins) show that all the essential amino acids are present in suitable quantities. Mineral levels are comparable with those of other pollen substitute/supplements.

Only preliminary feeding trials with bees have been carried out in British Columbia. These indicate that fish-meal based substitutes, with no natural pollen, are very readily accepted by bees. No doubt we will be hearing more about this food in the future.

I have made enquiries with local manufacturers of fish meal, and it appears that this is of similar composition to the pacific herring meal used in the B.C. trials. Price is about $500/tonne.

That's enough from me for now. Happy extracting!

(A.G. Matheson)
APICULTURAL ADVISORY OFFICER

"You know it's a bad drought when you raise dust by exhaling."