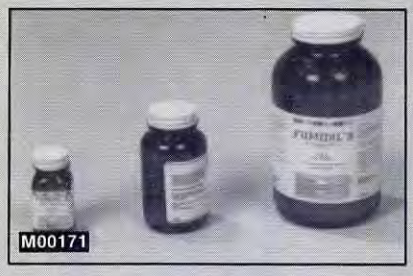
GLEANINGS IN SEPT. '86

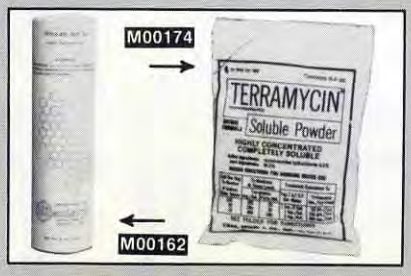
BEE CULTURE

Healthy Bees Help Produce a Maximum Honey Crop



Fumidil-B is the only known drug effective in the control of the disease, Nosema. Nosema disease causes more loss of honey crop than any other one bee disease. Recommended dosages are given on the package. This product is particularly useful for package bee colonies, but it is also recommended as a late fall and early spring feeding on over-wintered colonies of bees. Should be fed to all queen and package bee producing colonies.

½ gram, 5 to 6 feedings, each, wt. 4 oz.
M00171 ____ **$8.40**
2 grams, 20-24 feedings, each, wt. 1 lb.
M00173 ____ **$23.40**
9½ grams, 100-120 feedings each, wt. 2 lbs.
M00172 ____ **$63.50**
Lots of 12 or more 9½ grams-each, wt. 2 lbs.
M00172 ____ **$53.13**



Tetra-Bee Mix is a ready-to-feed mixture containing Terramycin. Recommended as an aid in the prevention of American and European foulbrood. May be used for fall treatment of colonies prior to winter packing, or for the spring treatment of over-wintered colonies. Avoid applying the product directly on the young brood. Spread over the top bars of the frames in each section of the brood nest. All use should stop at least four weeks prior to a surplus honeyflow.

2-lb. Shaker can, each, wt. 3 lbs.
M00162 ____ **$5.60**
10-lb. bag, each, wt. 11 lbs.
M00161 ____ **$17.92**
Lots of 5 or more 10 lb. each, wt 11 lbs.
M00161 ____ **$17.36**

Terramycin™ is fed in order to control European and American foulbrood. There are two recommended methods of feeding: powdered sugar mix and sugar syrup combination. May also be fed in combination with other drugs. Early spring feeding is recommended—3 applications at 4-5 day intervals. Never feed during or 30 days before a honeyflow.

6.4 oz., 50 feedings, wt. 1 lb.
M00174 ____ **$3.96**
Lots of 5 or more 6.4 oz.-each, wt. 8 oz.
M00174 ____ **$3.64**
Lots of 25 or more 6.4 oz.-each, wt. 8 oz.
M00174 ____ **$3.56**
Lots of 62 or more 6.4 oz.-each, wt. 8 oz.
M00174 ____ **$3.36**

Consult our catalog for a complete line of supplies. Free disease leaflet upon request.

Sting-Kill is quick relief from stings in most cases. Fights secondary infection. Apply Sting-Kill to area of the sting and massage vigorously. For most persons, relief occurs within 30 seconds to one minute. Excellent also for mosquito and chigger bites. Sting-Kill is supplied in boxes of 10 individual swabs.

1 box, wt. 4 oz. **M00138** ____ **$5.08**
10 or more, each, **M00138** ____ **$4.80**

All Prices f.o.b. Hamilton, IL, Subject to Change

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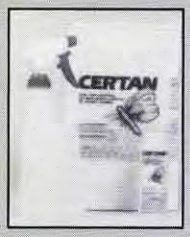
HAMILTON, IL 62341
Phone 217-847-3324

Many Convenient Branch and Dealer Locations to Serve You Better!

Control Wax Moth Larvae—Safely and Effectively



Certan™ The new biological insecticide developed specifically for the effective control of wax moth larvae in stored combs. Scientifically tested by USDA; provides economical, long-lasting control. Does not affect bees or colony activities; does not affect the taste of honey produced on treated combs; is non-toxic to humans, pets, wildlife and beneficial insects. Eliminates dangerous fumigant handling and storage.

Certan™ Hand Applicator, each, wt. 1 lb. **M00158** ____ **$2.00**
4 oz. Certan™, wt. 8 oz. each. **M00159** ____ **$5.28**
1 Gal. Certan™, wt. 10 lbs., each **M00160** ____ **$78.60**

New!

Commercial Certan™ Sprayer. One second is all the time it takes to safely protect a frame and comb from wax moth larvae. Unit features a ¼ h.p. electric motor, bronze gear pump, special spraying nozzles, stainless steel spraying chamber and recirculating tank. Overspray is caught and recirculated. Each, wt. 63 lbs.
M00157 ____ **$375.00**

Fumigator. 100% Para-dichlorobenzene active ingredient. A harmless crystal that does a real job of keeping wax moths and their larvae under control. May be used around carpets, trunks, and closets in the home. Like all Fumigators, it should be used only on **empty** stored combs. **It should never be used on combs containing honey.**

1-lb. Can, wt. 2 lbs. **M00140** ____ **$3.40**
25 lbs., wt. 27 lbs. **M00141** ____ **$36.50**
100 lbs., wt. 115 lbs. **M00142** ____ **$140.00**

Kim . . .

John . . .

Dick . . .

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GLEANINGS IN BEE CULTURE — SEPT. '86

Since 1873

(ISSN 0017-114X) Vol. 114, No. 9

Created to Help Beekeepers Succeed

113 Years Continuous Publication by the Same Organization

CONTENTS

COVER . . . If you enjoy collecting things relating to 'bees', the whole world of stamps awaits you. We offer a wealth of information on where and how to start your collection this month. See inside.

INSIDE IN SEPTEMBER

This month some seasonal and some more universal subjects are covered. This is the time of year many are busy harvesting. If the season has been kind and the work's been done, now is when the reward is brought home. But other aspects of this time of year need to be considered. One feature article this month takes a hard look at hive ventilation. The first of a 2 part series looks at problems associated with too much or too little ventilation and how to tell what's going on inside. The second in this series will look at methods to correct these problems.

Along with honey, wax is a commodity you can be looking at right now. So consider "Making Foundation -- At Home?". If you do, be sure you check out "Testing Your Beekeeping Knowledge" because wax is the topic there this month too.

A candid look at the Africanized honey bee is offered by Dr. Eric Erickson. Some down to earth practical information and sound advice in this article -- "must" reading.

This is also the time of year when we experience the highest populations of hornets, wasps, bumblebees and the rest of the honey bees' cousins. How to identify them and a little of their biology is offered in "What Kind of Bee?".

Another management technique looks at making divides in the fall -- for some it is cheaper, easier and faster -- something you may want to try.

Finally, our regulars offer some extra good columns this month - covering everything from harvesting, fall requeening, technological changes and the history of this fine art. Be sure not to miss even one - Inside in September.

BEE CULTURE NEXT MONTH. October is our marketing issue, which coincides well with National Honey Week. So look for some product uses and marketing ideas. Also, the final part of the ventilation series and the conclusions of the Africanized Bee story from Erickson. We'll also have another Koover's Korner and some surprises hidden here and there -- next month in BEE CULTURE.§

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If you are moving, please fill in the form below so we can process the change without undue delay. ***Also,*** if you have 2 addresses during the year (i.e., winters in Florida and summers in Connecticut) let us know which months you spend where and we can pre-program your address change so you will find ***us waiting*** when ***you move*** — No Delays, No Fuss!

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City State Zip

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City State Zip

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ADDRESS NO. 2: Street

City State Zip

Circle Appropriate Months: J F M A M J J A S O N D

Send Form To: Subscription Department, P.O. Box 706, Medina, Ohio 44258

THE INNER COVER

Into each life some rain must fall, but it seems this year some of us are getting more than our fair share -- probably from those of you who aren't getting nearly enough.

The reports coming in from the southeast part of the country indicate that the word drought is taking on a completely new dimension. I've heard stories of rain dances, prayer meetings, cloud seeding and other desperate measures in an attempt to gain some relief.

This type of weather will certainly test the mettle of beekeepers, (and for that matter anyone in agriculture) to eek out enough to sustain them through the winter. For most of the area, it sounds as if a surplus honey crop is going to be hard to find.

Of course, I'm writing this in July. By September this may have all changed, so bear with me if my weather reports aren't quite up to date. But even if the skies have opened between July and now, I think the damage has been done. Everybody in agriculture has a fairly small window of time to make things work. Northern windows are smaller than those in the south, but the effect is the same.

When I was raising vegetables for a living, a beautiful fall didn't compensate for a miserable summer. Actually, a beautiful autumn was more frustrating than if the misery had continued straight through. For beekeepers though, this isn't quite true. If the weather improves there is the chance of a late flow, so going into winter won't be quite so expensive.

On the other hand, there are those of us who would gladly share the wealth of water we've been getting. Here in Ohio the rainfall is a little above normal, but instead of getting those beautiful summer showers, it comes in bits and drops way too often. It seems to cool off and rain just enough to mess up the nectar flow, but not enough to drastically reduce foraging. Thus, we have bees out looking, but not finding much. It's frustrating, for both the bees and beekeepers.

I also hear that in parts of the northeast, cool rainy weather is being held responsible for significant increases in chalkbrood showing up. My contacts there aren't reporting a corresponding decrease in production, but it can't be doing them any favors either.

I guess we should hope for a (pick two: cool - warm - wet - dry) fall and go on being the eternal optimists beekeepers always are.

•

WHY DON'T MORE BEEKEEPERS BELONG TO BEEKEEPING GROUPS?

I've attended a lot of beekeepers meetings over the years - local, regional and larger. As I ask myself this question,

I see similar problems going on with all sizes of groups.

I've talked to a lot of people about this. I've also had some personal experience, so I feel fairly confident when I say that the single, largest obstacle to success in any organization (beekeeping or otherwise) is the degree of importance the group plays in the lives of the members.

Importance can be measured in many ways, but with beekeeping groups it is basically social, educational or political.

The social aspects of belonging to a beekeeping association are probably pretty strong. After all, routine contact with people having at least one common bond is necessary for everybody -- steelworkers, grocery clerks and beekeepers. But this alone isn't enough to sustain a group. There must be some meat available to get and keep members.

This is where educational opportunities become so important. This is also where a lot of groups start running into problems. Those responsible for setting up programs run into all sorts of problems on a regular basis; not enough money to bring in outside speakers; not able to find outside speakers on a regular basis; local talent has been tapped so often, the well has gone dry.

When a group's educational programming begins to falter, attracting new members and keeping regulars becomes difficult. This in itself is a problem, but it gets even more complicated. Aside from the social aspects, most members attend meetings to hone their beekeeping skills. Offering a program of interest to a spanking new beginner is fairly simple, but making that same program interesting to a beekeeper with 20 years experience is another matter entirely. The program director is stuck between a rock and a hard place. If you please the beginners, you are probably losing the experienced -- and vice versa.

Of course, not all programs are mutually exclusive. Updating pesticide laws, marketing techniques, new treatments for diseases and cooking with honey are examples. But at some point a demonstration on hiving a swarm, installing packages, making equipment or harvesting must come up. Conversly, programs on artificial insemination, queen rearing and comb honey production should be explored. I think you can see the bind.

The political side of a beekeeping association may or may not rear its head, depending on the group. The politics go from total apathy -- nobody wants the job -- to the other extreme -- the same people always have the job.

There's no question that running an association is a lot of work. And certainly, the more people a leader has working, the easier it is, but the ultimate responsibility for getting the job done lies on the president's shoulders. If he (and I use 'he' generically here, not to exclude 'she') has bodies to delegate work to, more

Continued on Page 481

Monthly Honey Report

September 1, 1986

The following figures represent current prices reported by our contributors. They are based on reports from many states averaged out for each region. Where insufficient information is received no price is shown. The retail prices represent the price of each size jar.

Wholesale Extracted	Reporting Regions									
Sales of extracted, unprocessed honey to Packers, F.O.B. Producer.										
Containers Exchanged	1	2	3	4	5	6	7	8	R	A
60 lbs. (per can) White	27.00	37.95	--	31.20	45.00	35.50	38.63	42.00	27.00-45.00	37.10
60 lbs. (per can) Amber	21.00	34.00	40.00	25.20	31.80	32.38	37.00	40.80	21.00-40.80	33.40
55 gal. drum/lb. White	.45	.50	--	.52	--	.60	.58	.72	.45-.85	.58
55 gal. drum/lb. Amber	.35	.45	.45	.42	--	.55	.53	.54	.35-.59	.48
Case lots -- Wholesale										
1 lb. jar (case of 24)	28.70	28.80	26.00	25.48	27.60	24.12	25.25	30.12	22.80-35.04	27.34
2 lb. jar (case of 12)	28.90	28.58	25.50	22.25	24.30	24.75	27.55	27.00	21.00-35.00	26.77
5 lb. jar (case of 6)	30.90	26.25	24.00	23.95	25.41	25.35	25.40	27.75	23.95-34.00	26.51
Retail Honey Prices										
1/2 lb.	1.10	.89	.79	.74	--	.83	.87	.93	.65-1.10	.86
12 oz. Squeeze Bottle	1.35	1.31	1.03	1.31	1.29	1.23	1.21	1.33	1.00-1.50	1.26
1 lb.	1.57	1.59	1.22	1.60	1.49	1.62	1.57	1.56	1.19-1.85	1.54
2 lb.	2.59	2.86	2.37	2.75	2.77	2.60	2.81	2.74	2.29-3.55	2.73
2-1/2 lb.	3.75	3.38	3.00	--	--	3.33	3.41	3.60	3.00-3.75	3.40
3 lb.	--	4.09	3.81	3.15	3.03	3.93	3.72	3.61	3.03-4.50	3.76
4 lb.	4.95	4.90	4.47	5.89	--	4.53	4.85	--	4.25-5.89	4.82
5 lb.	7.00	5.85	5.75	5.73	5.09	5.27	5.64	5.43	5.00-7.00	5.68
1 lb. Creamed	1.75	1.85	1.39	1.58	1.49	1.55	1.52	1.54	1.39-1.85	1.57
1 lb. Comb	1.95	1.79	2.00	2.39	--	1.92	1.85	2.14	1.60-2.52	1.99
Round Plastic Comb	--	1.61	2.00	1.68	--	1.63	2.49	2.33	1.49-3.35	1.64
Beeswax (Light)	1.00	1.26	.80	1.00	1.00	1.10	1.08	1.25	.80-2.00	1.11
Beeswax (Dark)	.85	1.02	.75	.90	.85	1.04	1.00	1.15	.75-1.25	.97

New Features on Honey Report Graph

We have rearranged the regional map used for our monthly report. There are now 8 regions instead of 9. We are trying to make these regions more uniform in nature, but as you are aware, conditions can vary across the street let alone over several states.

On the far right hand side you will see two different columns. The first, labeled "R", is the price range of prices reported from all contributors -- lowest to highest. This will give you an idea where you stand nationally. The second column, labeled "A", is the average price of a particular commodity across all regions. Example: the range in price of a 1 pound jar of honey sold retail is $1.19 - $1.85 and the average price across the country is $1.54.

In the comments section you will see a figure called the "Price Index". This figure is only a descriptive statistic that compares all regions to the highest region of the month.

Example: Region 5 has a price index of 1.00 this month and remaining regions are compared to that index.

Note: These figures are only as good as the data sent in by our reporters. If you believe the numbers here are not indicative of your area please contact us. We are actively seeking reporters in Regions 3 and 5. If you are interested, please contact the Editor. We provide token compensation for your efforts.

Region 1.

Price index .79. Sales steady but prices dropping. Poor weather has reduced crop surplus but bees appear healthy.

Region 2.

Price index .80. Sales steady to slowing. Prices average to somewhat declining. Weather has been absolutely miserable. Hot and dry, little nectar or pollen available.

Region 3.

Price index .47. Prices unchanged to increasing. Weather hot and dry. Fall flow threatened. Production good to terrible depending on local areas.

Region 4.

Price index .50. Sales steady. Weather has had significant affect on crops and surplus. Flooding and rains causing all sorts of problems.

Region 5.

Price index 1.00. Sales steady to increasing. Weather favorable for good production. Alfalfa crop good, but sunflower production down.

Region 6.

Price index .62. Sales steady to slow. Yields appear good and crops doing well. Colony conditions excellent in most areas.

Region 7.

Price index .70. Sales strong prices increasing. Pollen sales in Montana excellent. Weather and colonies in good shape. Early extraction shows good quality honey.

Region 8.

Price Index .65. Prices rising and sales very strong. Northern areas slowing, bears causing problems. Southern areas going strong with excellent flow in progress.

Alaska.

This is the first time we have included Alaska, but it will be a permanent part of the report starting next month. For now, we'll list prices here: 60# white - $91.80; 1# case lot - 70.22; 2# case lot - 67.03; Avg. Retail prices - 1/2# - 1.70; 12 oz. squeeze - 2.38; 1# - 3.18; 2# - 5.65; 2-1/2# - 7.75; 3# - 7.23; Rnd. plastic comb - 3.25; Lt. wax - 6.25#; Dk. wax - 3.50.§

Gleanings Mailbox

We supply the following for your information.

A NOTICE TO OUR READERS About Mail-Order Purchases

1. ***Never send cash.*** Always use a check, money order or credit card.
2. ***Keep a copy of all transactions*** especially cancelled checks, money order receipts and correspondence. For phone orders make a note of the order including merchandise ordered, price, seller's name, address and telephone number, salesperson's name, order date and expected delivery date.
3. ***Understand the seller's return and refund policy*** including the allowable return period and who pays the postage for returned merchandise.
4. ***If you should have a problem with your order or merchandise, write a letter to the seller*** with all of the pertinent information. Telephone complaints should be followed up with a letter of confirmation. Keep copies of all correspondence.
5. ***If you have thoroughly followed up in writing*** with the seller on your problem and still are not satisfied, contact the consumer protection agency in the seller's state or your local U.S. Postal Service.

Dear Editor:

Last night I felt priviledged to hear and see our new Secretary of Agriculture, Mr. Richard Lyng, being interviewed on the MacNeil Lehrer Report. He strikes me as a thoughtful, kind and intelligent man who understands the plight of those engaged in Agriculture. Those who try to make a living from keeping bees deserve a better deal than they are presently getting. What would become of those who depend on bees for pollination? (Like almond growers who are totally dependent on bees for pollinating their trees.) The bees in Mexico and China are of no help for pollinating our crops in the U.S.A. American beekeepers are fully capable of producing all the honey our country needs. And on top of that to supply large quantities of fine flavored honey for export to countries that can't produce sufficient honey for their own cnsumption.

Our sanitary standards are of the highest and we are blessed with many fine flavored honeys; like clover, orange, sage and sourwood, to name a few.

All honeys, whether produced abroad or in this country should state ***in large print*** the country of origin on their containers.

Americans are generous to a fault. Being of foreign birth, I never get over their generosity and kindness to foreigners. It fills me with pride to be a naturalized citizen of this wonderful country. Like all of you, I have observed the sharing of the blessings of this great land by farmers who had surplus hay with those in drought stricken states whose cattle were starving. Not only that, they went out and mowed it, baled it, loaded it on their own trucks and drove long distances to deliver it. All for free.

What we don't need is to be flooded with foreign food we are fully capable of producing ourselves. We need protection against this. Pray that our new Secretary of Agriculture will protect us.

Charles Koover

Dear Editor:

In "Gleanings in Bee Culture" (April, 1986) the Mississippi State Apiarist Harry R. Fulton quoted from the "Beeline Newspaper" of the B.C. Honey Procducers:

> ". . . the only mite free sources of queens are Hawaii and New Zealand."

Like him, our Association is concerned at the inaccuracy of this statement which, quoted out of context, is misleading and hurtful.

As your journal is authorative and widely read, we would point out that neither the Tracheal Mite *(Acarapis Woodi)*, the Varroa Mite *(Varroa Jacobsoni)* or any of the Asian Mites *(Tropilaelaps clareae)* have been found in Australia.

Australia's natural protection as an island continent is reinforced by strong quarantine laws supported by a quarantine facility to prevent inadvertent introduction of such mites, other exotic diseases and undesireable genotypes. To this is added a high degree of disease awareness among beekeepers and a constant regulatory supervision of State Apiary Officers.

Murray Charlton, Secretary
Australian Queen Breeders Association

Dear Editor:

When I was a teenager, my daddy bought me an old rowboat that leaked so bad we named it "Bail Out". You either had to bail out (abandon ship) or bail out (grab a bucket and go to work). The beekeeping industry today is like that old boat. Never in history have we faced the problems and challenges that confront us now. Everyone will have to take an active part in solving the problems and meeting the challenges to achieve success. We can no longer afford to sit idly by and "let George do it".

Beekeepers Get Involved! Join and take an active part in YOUR beekeeper's association, from local to national. Don't let someone in the association that you dislike keep you from helping the association deal with the problems of the industry you love. Encourage others to become involved. Support your Queens in promoting honey. Keep in touch with your lawmakers; support good laws and diligently work to defeat bad laws. Stay informed on the latest developments. Keep the public informed on the value of bees. Work with other groups such as grower associations, Farm Bureaus or environmental groups.

Realize that you are not perfect and are subject to make mistakes, but don't give up or fail to act because of this. Realize also that others make mistakes, and don't criticize or discourage them in their honest efforts to do something. Work for the election of good, well-informed people as officers of your association as well as elected government officials. Be willing to

Continued on Page 439

MAILBOX . . . Cont. from Page 437

make some sacrifices of time and money if you are elected as an officer.

Get to know and support your bee inspectors. They usually are the best informed person about your local area. You can help them do their job better and they can give you information about local and national levels that cannot be obtained anywhere else.

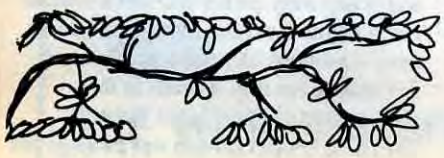
Researchers! Be sure the information you give is factual. Make a distinct difference between your opinion and what is a proven scientific fact. You can ask 10 researchers about the Africanized bee, tracheal mite, Nosema, American foulbrood, chalkbrood or most any other pest and get 10 different answers. The only thing I have seen everyone pretty well agree on is that Varroa mites are bad critters. In many cases, the opinions expressed as facts are directly opposed to each other. It is very apparent to the simplest mind that somebody is short on facts.

New knowledge through research comes extremely slow. We must have the dedicated efforts of everyone to gain the necessary knowledge to solve our problems.

Regulators! Don't kill the goose that laid the golden egg. Seek solutions to pest problems that will control the pest and not strangle the industry. Look for ways to help the industry become profitable. This industry was built on the orderly movement of queens and packages and hives between states and countries. The disruption of that movement can have a more adverse affect than the pest that might cause the disruption.

Somebody stole that leaky old boat when it was left over night unattended. Someone will steal the beekeeping industry if it is left unattended. It may be imports, bad publicity about honey or bees, unrealistic regulations, or no regulations at all. Everyone must get involved in improving our present conditions. Whether you want to get out of the bee business, or go to work in the efforts to save the industry, now is the time to BAIL OUT!

Laurence Cutts,
Chief Bureau of Apiary Inspection
P.O. Box 1269
Gainesville, FL 32602



Dear Editor:

I would be glad to sell some of my Viterx negundo-incisa plants at a very moderate price. I suggest spring or fall planting. Once established, they are prolific and more plants will be available. Vitex produces excellent honey, the smell is heavenly.

Wyvonne Robertson
Rt. 1
Allen, Texas 75002

Dear Editor:

What makes better beekeepers? This is a question with important ramifications for the extension apiculturist. Responses to a recent survey indicated that lack of time was a major impediment to many trying to be better bee managers. It is possible to simply establish a colony and never check on its condition; the bees do fine in many instances and the argument that bees can take care of themselves quite adequately without care is strongly borne out by much anecdotal evidence. Could this mean that beekeeping is too easy?

Perhaps now, but not in the future. Ironically, the almost insurmountable problems facing beekeepers today, including the potential future effects of Africanized honey bees and Asiatic bee mites, may result in something quite contrary to what conventional wisdom now dictates.

There were hints of this at a joint symposium sponsored by the American Beekeeping Federation and the Tri-Country Committee on Africanized Bees and Parasitic Mites in Phoenix, Arizona last February. Dr. Raymond Borneck, President of Apimondia, is quoted at the symposium as saying that bees make more honey when there is Varroa because European beekeepers see their bees more often and take better care of them.

Another convincing argument that confronting seemingly impossible problems might create better beekeepers can be found by looking at Brazil. Dr. Helmut Weise, Extension Apiculturist in that country, provided statistics to show how Africanized honey bees have actually strengthened the beekeeping industry there. He indicated that during the last twenty years, honey production in Brazil has increased from 4,000 tons to 28,000 tons and the industry is in the best shape it has ever been. This optimistic scenario is the reason Brazilians have suggested that the Africanized honey bee is not the unmanageable insect reported in other areas of South and Central America.

Dr. Moeses Katznelson, Extension Apiculturist from Argentina, expressed the same sentiment. Since the arrival of the Africanized honey bee, beekeepers in his country have improved, he said, and the bees were also more productive. He concluded with the eyebrow-raising thought that those in the U.S. should look forward to arrival of Africanized honey bees and parasitic mites, because this would be responsible for a stronger beekeeping industry based on a far superior bee.

Will problems posed by an over supply of honey now, and Africanized honey bees and Asiatic bee mites in future, quickly weed-out the marginal beekeeper, resulting in a more healthy beekeeping industry in the United States? Only time will tell, but evidence for this conclusion is accumulating at a rapid pace, and corroboration can be found in historical analysis of most cultural, as well as biological, events.

Malcolm Stanford
Extension Apiculturist
University of Florida

Dear Editor:

Recently the U.S. Government Honey Price Support Program has come under fire as being a waste of tax dollars. Beekeepers contend that a strong honey price is essential to adequate pollination of food crops in this country. The Government Accounting Office (GAO) maintains that this pollination could be obtained without supporting the honey industry.

To help point out the relationship between honey sales and pollination I would like to illustrate the way avocados are pollinated. Avocados are planted extensively throughout coastal southern California, and require insect pollination to set fruit. This job is done by beekeepers who bring their hives into these areas, free of charge, in late fall or winter. Avocado growers have not needed to pay for pollination because beekeepers are eager to get their bees into warm coastal areas where they can build up the populations of the hives to be ready for the main honey producing season, usually summer. Some honey may be produced in the avocado groves but it is very dark and is considered a nuisance since it brings a poor price and may darken honey produced later.

The avocado areas have little to offer the bees after the avocado bloom is over, so the bees must be moved to mountain areas where high-quality wild-flower honey is produced, or to locations where there is irrigated alfalfa. These are the regions where paying crops of honey are made.

If the price of honey were cut in half, as it might be without price supports, beekeepers would be faced with several cost-cutting or income-generating options. They

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MAILBOX . . . Cont. from Page 439

could choose to remain in the mountain or irrigated areas year-round to avoid the expense of traveling to the avocado groves. They could move their bees to areas where they receive three or more pollination contracts per year (in the San Joaquin Valley fees are paid for pollination of almonds, melons, onions, kiwis, alfalfa, etc.). Or they could try to charge the avocado grower. The first two options would result in no bees to polllinate avocados due to low honey prices. The last suggestion, charge the grower, is speculative, inasmuch as avocado growers have already been hit by staggering increases in water costs, property taxes, etc., which have driven many out of business. Not to mention the difficulty in trying to collect thousands of dollars for a service that has been provided free for decades!

The situation is the same for many crops raised in the U.S. Some others which receive free pollination are artichokes, dates, grapes, olives, oranges and clover. The role of honey bees in the pollination of wild plants is only recently coming to light. However, such plants provide essential food and shelter for migratory birds and other wildlife. In southern California wild plants prevent erosion on rocky hillsides, especially important when heavy rains follow months of summer drought. In order to maintain this level of adequate pollination, this country needs a **strong** beekeeping industry. This strength can only exist with a market where beekeepers receive a fair price for their honey. And this means either severely limiting honey imports- or support the domestic price; and since import protection seems politically out of the question, we must have price supports.

The ultimate alternative is to let beekeeping and all the rest of U.S. agriculture go down the drain and import all our food from foreign countries. Are we willing to let the ability to feed ourselves slip into oblivion? Do we want to be at the mercy of other countries, whose governments have helped their agriculture industries usurp the position we once held? I believe the American people would feel that this is too great a risk to undertake -- that is, if they realize that this is what is about to happen.

Peter Van Borst
President, San Diego
County Beekeepers Association
P.O. Box 3272, Rancho Santa Fe
California, 92067

Dear Editor:

Like many of you, I recently received a letter from a large beekeeper detailing how hard he had worked on my behalf in Washington, D.C. to see that the Honey Price Support Program was included in the 1985 Farm Bill. This letter went on to explain that most of the expenses of his efforts had been paid for out of his own pocket and that if enough of us would contribute to his expense funds we wouldn't have to worry about any Washington problems in the future because he would look out for us! I read this letter with great interest, but also with great concern, for several reasons. First, I'm always a little uneasy when anyone tells me how much they are doing for me. Knowing that this beekeeper was one of the major beneficiaries of the Honey Price Support program I couldn't help wonder if maybe some of his efforts and expenses weren't for his own self-interest and not all just for my benefit.

However, the main concern that this letter raised was the implication that if we could just supply the funds we could all sit back and let someone else take care of our problems. Coming at the same time that the industry was voting to implement a national Honey Research, Promotion and Consumer Information program, financed by assessments on honey producers and importers, I am concerned that some might feel that now that this program was approved, we can all sit back and let the Honey Board take care of all our Honey marketing problems!

Following this philosophy would certainly be a serious mistake and I want to urge all of you to continue supporting and taking advantage of all the promotional opportunities that are available to you. Remember it will take considerable time before the Honey Board can be named and is functioning. Even more time will be needed for sufficient funds to be collected and for programs to be implemented, and for the results of these programs to begin to show up in the market place. So don't sit back and wait for Dick, or Jack or Henry to promote your honey for you -- but make the effort to do it yourself.

Remember the American Beekeeping Federation is once again sponsoring a NATIONAL HONEY WEEK, October 19-25, 1986, and will again have a variety of promotional materials available which you will find helpful for your local promotional efforts.

The National Honey Week colorful poster which was printed for the American Beekeeping Federation by *Southern Living* magazine, should be in every store window in your local area. The informational brochures should be available to hand out to any one having a question about bees or their products. Also, as a honey producer or handler, you should never be without a supply of the 1986 American Honey Queen and American Honey Princess Recipe folders to hand out. Even if you don't have time, or don't know how to become involved in promotional work, you can at least see that there is a National Honey Week bumper sticker on the front and rear of all of your vehicles. These materials are available at very little cost, so contact the American Beekeeping Federation office today, 13637 N.W. 39th Avenue, Gainesville, FL, 32606, and ask for prices and get your supply on hand today. Better yet, phone for prices -- (904) 332-0012.

Frank Robinson
Secretary-Treasurer
American Beekeeping Federation
Gainesville, FL 32606

Dear Editor:

Canadian beekeepers have proven conclusively that bees can be wintered successfully from one end of Canada to the other. However, no beekeeper, or group of beekeepers, has developed a wintering system that guarantees a low winter loss, or a quality queen and hive in the spring. How, then, do we keep the number of quality hives required to meet one's financial obligations within an acceptable range? The only way is by having the option of purchasing package bees and queens in April, May and June from the United States.

When we consider the extra amount of gas, labor, honey, sugar and drugs used in September and October to prepare the hives for winter and the additional feed, pollen supplement and queens (to replace those which are failing in spring), wintering bees appears more costly than purchasing package bees and queens. Add an abnormal spring, with below zero temperatures and no pollen and nectar for hive expansion, such as beekeepers in Western Canada have just experienced, and wintering bees no longer appears so attractive, especially as a method of management with no alternative.

Most beekeepers agree that a young, well-mated queen is the most important ingredient to the production of a honey crop. This queen must be raised in a warm climate (70° F plus) for optimal mating and where early pollen and nectar sources are available for drone rearing. In Canada, these conditions do not exist in February and March, but they do exist in the southern parts of the United States. Therefore, queen breeders and package bee suppliers have been able to provide the

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? Questions & Answers ?

Q. Where can I get the book, *AT THE ENTRANCE OF THE HIVE,* referred to in "Bee Talk" July BEE CULTURE? Raymond Nelson, Friendship, ME.

A. Several readers have asked. Try Beekeeping Education Service, P.O. Box 817, Cheshire, CT 06410.
-- Richard Taylor

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Q. How do you provide water for bees? I have tried pans with small stones in them and the bees avoid them, whereas they cover the rim of the bucket I set out to water flowers, and drown in it. Guy Bolt, Chattanooga, TN.

A. When bees show a preference for one water source over another, it is often because of a difference in temperature. They will not sip cold water if warmer water is available. To get them to visit the water source provided, have it in full sun and place a burlap bag or something similar in it. The sun will warm the wet bag and the bees will sip from this without drowning.
-- Richard Taylor

Ed. Note: *Occasionally, burlap bags have been treated with a preservative or have previously contained other 'less than healthy' substances. However, the principle involved is the same, providing whatever flotation device used is clean and safe.*

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Q. I found a few cells of American Foul Brood in one of my hives around June 15, 1986. When I checked again at the end of the month, all traces of A.F.B. were gone, without any treatment by me. It is a strong colony. Will the bees be able to control it, or is it going to reappear? John Bacon, Auburn, MI.

A. A strong colony will often rid itself of a small infection of AFB by "house-cleaning", that is, by removing the diseased material before it spreads. Contrary to popular belief among beekeepers, the mere presence of AFB spores in a colony does not mean the disease will appear. Honey containing spores must be fed to the larvae for this to happen. It is, therefore, quite likely that your colony will not break out again with AFB.
-- Richard Taylor

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Q. If you overwinter in a hive only one and a half stories high and have kept supers off the hive in order to give the bees the entire fall flow for stores, as is sometimes recommended, will there be any room left for the bees? Rev. Joachim B. Schweitzer, O.S.B., Morristown, NJ.

A. Yes. The bees will not need space in the combs until brood rearing is resumed, beginning in February, and as they consume the honey for rearing the brood, they thereby make available comb space for their brood.
-- Richard Taylor

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Q. In the extreme north, where temperatures can fall to fifty below and the bees fly only three months of the year, is it necessary to use three hive bodies for wintering? Alan Cogswell, Sheridan, Ind.

A. It is not clear what latitude you have in mind, but two story hives are large enough for any part of your state, provided the second story is at least two-thirds full of honey for winter stores. A two-story hive, heavy in fall and protected from wind, should winter well any place in the continental U.S.
-- Richard Taylor

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Editorial Note:

How good are the answers that appear on this question and answer page? The reader can decide, but no claim of infallibility is made. If an answer is given which you can improve upon, or which even seems downright wrong, we shall be glad to hear from you, and publish your opinion if it seems to have merit.

In the issue of last June, in response to a question about fumigating comb honey against wax moths, I expressed doubt about the use of carbon dioxide. I have since learned better, thanks to Dr. Jaycox. Readers interested in pursuing this are referred to Roger Morse's *HONEY BEE PESTS, PREDATORS and DISEASES.*
-- Richard Taylor

OHIO ENOLOGIST MAKES MEAD

By PAMELA J. SPENCE, Director
American Mead Association
4236 Fry Road, Ostrander, Ohio 43061

When you think of Ohio, you may think of soybeans and corn but you probably don't think of wine. And yet, in the middle 1800's Ohio wineries were out-producing their California counterparts at a rate of two to one. Black rot disease and Prohibition ended Ohio's supremacy but in recent years, the industry has staged an inspired comeback. Nationally, the state now ranks third in number of wineries and sixth in production.

The Ohio wine industry is fortunate to have two eminent scientists working at the Ohio State University Agricultural Research and Development Center who contribute valuable research in vitaculture and enology. One of these men, Dr. James Gallander, has recently completed a project in making Mead.

"I have spent the past seventeen years in Ohio as a food scientist evaluating grape varieties for winemaking quality," says Gallander. "Two wineries in Ohio currently make Mead and I think there is sufficient interest to warrant further research.

"The same basic procedures used to make wine can be applied to making Mead. In making wine, the first prerequisite is the selection of the grape variety. Similarly, the quality of the honey used will directly relate to the quality of the Mead."

Working with Apiculturist Dr. James Tew, Gallander obtained honey from six nectar sources: gallberry, mint, mixed wildflower, clover, nettle and goldenrod.

"The major problem we had was with some sluggish fermentation," says Gallander. "Some of the honey sources fermented well naturally and others did not. You get the same problem with fruit (non-grape) wines. When we added a nitrogen source, we did not have a problem.

For a dry Mead, Gallander suggests a ratio of approximately three pounds of honey to a gallon of water. A ratio of four to one will produce a sweeter Mead. "We dilute the honey and ferment to dryness. We add honey back in to sweeten the wine if required.

"Basically, we follow eight steps in making Mead: selection of the honey, dilution, addition of sulfur dioxide to inhibit spoilage and oxidation, addition of the nitrogen source, addition of the yeast, fermentation, racking and bottling. For the American market, the Mead making process should take from three to six months total. The wine would probably not improve with age unless it were put into oak barrels. In Europe, Mead is often aged in wood, producing a more complex Mead, but I don't know that the American consumer would appreciate that complexity. American tastes tend to the light, delicate, fruity, flowery wines."

Of the six Meads produced during this project, three were rated pleasant while the other three were unacceptable. "My staff ranked gallberry the highest," he says, "followed by mint and mixed wildflower. The clover had an 'off' aroma and little flavor and the goldenrod was not pleasant at all."

The results of this first project Gallander terms inconclusive. "There is need for replication before we draw conclusions. We probably also need to look at some different yeast strains and consider some different nitrogen sources," he says.

Since concluding the Mead project, Gallander has been conducting workshops at many beekeeping functions in Ohio. He also contracted Dr. James Tew to speak at the Ohio Wine Producers Short Course this past spring about the availability of honey for Mead making.

Ohio may very well be the site of a profitable marriage between these two related industries. And there are many beekeepers with stories of surplus honey who will happily dance at the wedding.

To go along with this article, we offer the following recipe, supplied by *Canadian Beekeeping*.

MAGNIFICENT MEAD RECIPE

This recipe will make 5 gallons of Magnificent Mead. The Mead will be a dry wine with an alcohol content of 12-15% Vol/Vol.

Ingredients:

13.5 lbs. of Good Quality Flavorful Honey.
2 ozs. of Citric Acid.
25 gms of Yeast Nutrient.
One 5 gm packet of an all-purpose wine yeast.

Equipment:

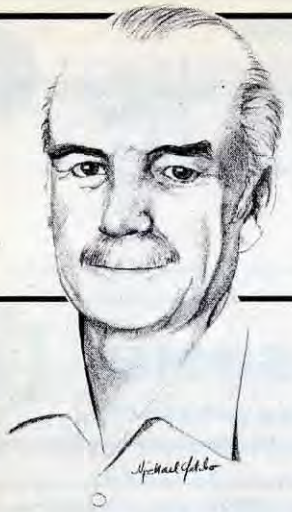
1. A 5 gallon glass or plastic container; a glass carboy fitted with an air-lock (fermentation valve) is recommended.
2. A plastic siphon tube about 1 cm diameter and 6 feet long.
3. Domestic utensils: funnel, large mixing bowl/jug, etc.

Technique:

1. Measure 5 gallons of hot water into the carboy and mark the water level on the glass with a crayon. Discard the water. This cleans the carboy and marks the correct liquid level.
2. Dissolve the honey in 1 to 2 gallons of hot water. Make sure that it is thoroughly dissolved before pouring it into the carboy.
3. Dissolve the citric acid and the yeast nutrient in 1 to 2 cups of hot water and when dissolved, pour into the carboy.
4. Add cool or hot water to the carboy in stages so as to fill it to the 5 gallon mark and have the final temperature of the mixture in the range 75-85°F. Swirl the carboy to ensure that the ingredients are thoroughly mixed.

The best method for achieving this is to measure the temperature at each stage to determine whether to add cold, or hot water or a mixture. If a thermometer is not available it may be judged by hand. It should feel tepid; i.e., roughly the same as a mixture of equal volumes of hot and cold water.

5. Place the carboy in a warm room (75-90°F) and sprinkle the dry yeast on the surface of the liquid. Do not shake the carboy after adding the yeast, because it starts the fermentation best if it is near the surface of the liquid.
6. The fermentation will take 2 to 4 weeks depending upon the temperature of the room. When bubbling has ceased and the yeast has settled to the bottom (a few weeks after the fermentation stops) the liquid should be siphoned into clean containers. If it is not completely clear the sediment should be rinsed out of the carboy and the mead replaced into the carboy. For further information on clarification methods see your local wine-makers store.
7. The mead will be ready within a few days after the clarified liquid is siphoned off; it does not need a long maturing time like grape wines. Its flavor will, however, tend to mellow with age.§



THE BEE SPECIALIST

By ELBERT R. JAYCOX
5775 Jornada Road North
Las Cruces, NM 88001

Harvesting and Fall Management

Lately, we have been having problems with our bees that I hate to mention: too much honey. What I am saying is that there are times you want plenty of honey; at other times it can "plug up" your colonies and make management more difficult. Last fall when we moved our bees to a desert site outisde the valley some were pretty light in weight. But when I went back to check them about two weeks later, they were filled solidly with honey along with all the others. I managed to inspect them, but the burr comb and weight made it a heavy job. At least, I thought, they'll be better in the spring.

We had a mild winter and the bees did not eat very much. Even a 3-frame nuc was still heavy this spring. Before I could remedy the situation, we had a big spring nectar flow from little-leaf sumac, *Rhus microphylla*. I put on all the supers we have and then watched the swarms hanging in the creosote bushes. It was not until mid-June that I got things under control.

From now on, if I have a choice, I will opt for taking off too much honey in the fall rather than too little. It seems better and easier to feed the colonies rather than to have to pull extra honey out of the brood nest. This is a less serious problem for people who use all deep boxes and keep bees in areas colder than Las Cruces. We use two deep boxes with 6-5/8" supers. This year I plan to leave the supers on until all chance of surplus honey is past, in hopes of keeping the bees from overfilling their brood nests. If necessary, I will pull several center combs and put in some empties or partly empty combs. It is always a good idea to have such empty space in the second hive body as the bees are going into winter.

When I talked with Russell Berry in Waiotapu, New Zealand, he told me that if he strips off every bit of honey from bees near the end of a flow or in anticipation of a move, the bees invariably fill up again and more. However, if he just supers the colonies there is NO such response. Extra comb just does not have the same effect. I have not seen this effect nor read about it, but it is worth following up. Maybe this response by the bees helps the beekeeper who operates with too little equipment and is always out pulling every filled comb of honey from his colonies. Whatever the stimulus, it seems to be stronger than just empty comb or we should be able to get the same response by adding extra supers. Not so, according to Russell Berry.

Fall Requeening

Each beekeeper must decide what time of year is best for requeening colonies based on the timing of local nectar flows,

pollination requirements, costs and qualities of queens and labor requirements. Spring work, preparing for orchard pollination, feeding and equalizing colonies in the spring may make fall the best time to put new queens into an outfit. Some of the advantages include lower-priced queens readily obtained, better matings and well-fed queens, better weather and improved spring buildup the next year.

There are disadvantages as well, especially the greater chance of problems with robbing. The hives are also heavy and old queens may be harder to find when they are laying less.

Ian Berry of Havelock North, New Zealand, has an unusual system of fall requeening that he presented in *The New Zealand Beekeeper* for December, 1983. He uses the technique on about 6,000 colonies while his brother, Russell, uses it on about half of his 17,000 colonies each year. The unique part of their requeening is the use of 2-day-old queen cells (two days after grafting) put into colonies when their queens are killed. Four or more days before this operation, each 2-story hive is given an excluder to limit the queen to one box. Strong colonies with adequate stores may be given a division board in place of the excluder at the time the queen is killed and a cell is placed in each split.This allows the production of extra queens to make up for those whose cells were not accepted.

The cells are carried on the truck in the strong, single-story colony into which they were placed after being grafted. These cell builders are made up with one frame of young brood, two frames of honey and pollen and about nine good frames of young bees shaken into the box. One side of a honey comb is uncapped when the grafted cells are put into place. The other side is uncapped a day later when the cells are checked and counted. This is an effective but simple way of feeding.

Timing of the fall requeening is very important according to Ian Berry. When he started too early one year he got some swarms from the colonies requeened first. However, doing the job too late can give you poorly mated and drone-laying queens. And the later you wait, the greater the chance of having problems with robbing bees. Berry says the results are a real pleasure to see the following spring: beautiful frames of brood and rapid buildup so important to provide strong hives for orchard pollination. He suggests you try fall requeening if you haven't done so before. "You could find it leads to more honey at less cost."

Feeding Sugar for Stores

Way back in 1950, C. R. Ribbands reported on a study of fall feeding whose results are always worth reviewing any time we need to give sugar to colonies to produce stored food. It is easy to be mislead into making as great a volume of syrup as we can from a given amount of granulated sugar rather than providing the optimum mix.

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JAYCOX . . . Cont. from Page 446

Ribbands found that bees produce about one-third more stores when fed concentrated syrup (67.7% sugar) than when given the same weight of sugar in a dilute syrup (38%). This is becaue the bees must eliminate the surplus water through the use of energy they derive from part of the sugar being fed. Bees also produce slightly more stores (10%), at least in Great Britain, when fed in mid-September rather than in August. The earlier feeding can stimulate brood rearing and consumption of the syrup in place of storing it. To avoid granulation of syrup in the feeder from the 67% mixture, it is better to feed a 64% solution produced by dissolving 20 pounds of sugar in 4-1/2 quarts of water.

Ribbands' results were reported in *Bee World*, October 1960. You may need to adjust the timing to fit your area, but the principle of feeding concentrated syrup any time bees need stores is valid anywhere. Concentrated syrup encourages more brood rearing than dilute syrup, according to Ribbands, contrary to our usual belief.

If you don't dislike dealing with metric measurements, I will be glad to send you three charts which provide some good estimates of the sugar used and the amount of sugar solution fed in relation to the amount of food stored by bee colonies. They were taken from an East German beekeeping text, with units of measure in liters and kilograms. Plese send a self-addressed business envelope if you wish to receive a copy.

Can Honey Outdo Dates?

When the new honey research, promotion and consumer information program gets underway, we need to be thinking about new ways to use and promote honey. Maybe we need to look at that versatile fruit, the date, to get some ideas. I have eaten plain and stuffed dates, but was not aware of their many uses, including feeding bees in the Yemen Arab Republic and other Middle Eastern countries.

Editor Montague Keen of *Arab World Agribusiness* discussed date usage in a recent issue. He found that there is date vinegar, an Arab dish of flour and fresh dates called aseeda, date paste for bakery products, date jam, date juice in a carbonated beverage, date chutney or sweet pickle and glace´ dates flavored with bananas, oranges, almonds, chocolate and even cloves.

And the list goes on: pickled dates, date sugar with orange juice, yoghurt whey with date sugar blended with milk and chocolate. They even make a coffee-like product from ground, roasted date seeds.

Of course, we are using honey for a few similar products. Beatrice Foods recently had an appealing ad in *Sunset* magazine for their line of "all-natural" yoghurt sweetened with honey. For Mexican-food lovers, I think we need a line of honeys blended with red and green chile. If you don't want it on your morning toast, baste in on your barbecued chicken or add it to the sopaipillas. Those are the puffed up Mexican pastry always served with honey.

One "way out" use for honeydew honey was reported by John Smith of Christchurch, New Zealand. It was an ingredient in a cough mixture used in the early days in that country. The honey was mixed with opium, alcohol and prune juice for a blend that was in great demand by backcountry sheep station cooks noted for their unusual drinking habits.

What are B.Keepers?

B.Keepers are of three kinds: 1) Aperists, or them that keeps bees in aperies; 2) Men B.Keepers,, or them that potters; 3) Women B.Keepers, mostly potty. All these categeries don't mind being stung, but not for money. The B.Keepers who ever made any money has not yet been invented. When he is he will probably be waxier than ever. The reason B.Keepers never make money is becos ten bad seasons always follow one good one. The only reason they keep on is becos it is a good way of getting out of household chores.

Sum B.Keepers keeps bees for years. These are the kind that don't swell.

Sum B.Keepers keeps bees one week. This is the kind that swells.

This is a shortened version of an article written by Doris Cleverley for the *Yorkshire Beekeeper* in 1951 and recently reprinted in *Beekeepers Quarterly*, Spring, 1986.

Miscellany

There is a statue of beekeeper Sir Edmund Hillary at Hillary Square in the resort town of Orewa, New Zealand, just north of Auckland.

Crab apples used as pollinizers for commercial apple trees must have white or nearly white blossom petals for best bee activity during the pollination period in the spring.

A palindrome on beekeeping by Texas Swanjord: He is wise and happy keeping bees about him. Asking and answering people. People answering and asking him about bees. Keeping happy and wise is he.

"Fifty percent of all published biological accounts are incorrect; only fools believe in those printed pages." E. S. Bodenheimer, biologist.§

Increase Honey Sales and Consumption in your Area! Have Queen DeAnn's and Princess Caroline's Honey Recipe Brochures available for consumers. They will convince new customers of the value of honey and show regular customers new ways to use honey -- so they will buy more. This tri-fold brochure features a colored photo, sixteen tested recipes and several "Honey Hints". These folders should be by EVERY Honey display as well as included in EVERY mailing. Every customer needs one!

BEE A PROMOTER! and especially during Honey Week, October 19th through 26th. Order a box today through the American Beekeeping Federation, 13637 N.W. 37th Ave., Gainesville, FL., 32606. Phone (904) 332-0012.

MAKING FOUNDATION -- AT HOME?

By J. IANNUZZI, The Nectar Collector
RD 4, Ellicott City, Md. 21043

A veteran beeman explores and assesses the technique for producing embossed wax sheets at home using the British-made, double-sheeted plastic press.

Introduction

Americans have it made! In many parts of the world where beekeeping is just catching on or is retarded (euphemistically called "developing countries"), ready-made beeswax foundation -- those starter sheets so necessary for comb- and extracted-honey production inside the modern beehive -- is not available and must be imported. This is so unlike the good old United States where one can choose from a large selection in the three national apian catalogs (W.T. Kelley, Clarkson, Ky, 42726; A.I. Root Co., Medina, Ohio 44256; and Dadant & Sons, Hamilton, Ill. 62341 -- all will gladly send their free catalogs on request) or even from lesser regional ones (in 1985, Brushy Moun-tain Bee Supplies, Rt. 1, Box 135, Moravian Falls, N.C. 28654 -- 1/800/BEESSWAX --- had the BEST BUY in foundation, according to the writer who inspected nine different nationwide offerings).

Devices Available

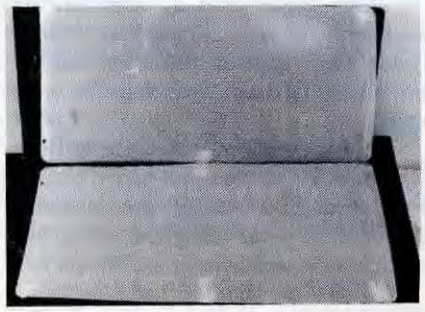
But you would like to make your own? From scratch? "The most widely read bee publication in the world," *Gleanings in Bee Culture,* and its friendly competitor, "the largest bee publication in the world," *The American Bee Journal,* used to carry an ad for a foundation mold press made in England (Leaf Products, 24 Acton Road, Long Eaton, Nottingham ENG101FR) but no longer do. It was simple and required NO other procedures or equipment to implement it. Opening and closing like the covers of a book, it actually worked (pour molten wax onto one surface/ close the cover; press on it; wait a full two minutes; extract sheet of foundation; and repeat process);[1] however, it may have priced itself out of the market -- it was selling for more than $200 several years ago.

But you can actually make your own. For the economy-minded do-it-yourselfer, Gordon Schweizer, the newly elected vice president of the Maryland State Beekeepers Association (founded 1908), writing in the Central Maryland Beekeepers' Association (CMBA) Newsletter some time ago (since cleverly renamed *The Hive Tool*), described an easy method for making a similar mold[2] and then using it.[3] Simply put, a plaster-of-paris, two-piece mold, shaped like a waffle iron, is fashioned using an actual sheet of beeswax foundation as a model, resulting in a look-alike leaf mold.

I never asked Gordon personally but I wonder if he picked up the idea from Ray Williamson's 40-slide set produced in 1978 and described as follows:

> The starting point is a commercially-made sheet of wax foundation. Using dental plaster, a frame and press are formed, one side at a time. Once completed, it may be used to make your own foundation. Popular with do-it-yourselfers, this set is extremely valuable in developmental programs like the Peace Corps.[4]

The ultimate in simplicity in self-operated home molds must be that offered by H.T. Herring & Son, 14 Severn Gdns, East Oakley, Basingstoke, Hampshire, England RG23 7AT. Called the SP78 Wax Press (see photo), it consists of two white, flexible, embossed plastic sheets which, after loaded with a plain thin sheet of beeswax and put through a wringer, produces one piece of deep foundation (8-1/2" x 16-3/4") easily cut to size for other applications (available from the manufacturer, including airfare, for £17.60 or $25 (exchange rate as of February 27, 1986).[5]



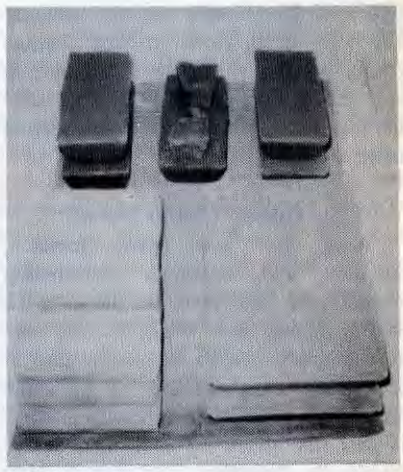
The $25 (postpaid) British-made Herring SP78 wax press for producing foundation at home.

Preparations for Using the SP78

There are four essentials for producing this foundation at home: the beeswax, a forming pan, the press itself, and a wringer. Simple? It sounds so, but let's explore.

1. *Beeswax.* Unless you have your own supply, Herring recommends begging from a fellow beekeeper and rewarding them with half the foundation made. (This is the best reason for belonging to a local or state bee association -- developing useful contacts -- as well as securing a 25% reduction in your subscription to the two publications mentioned previously as well as *The Speedy Bee* -- sample copy available on request from POB 998, Jesup, GA. 31545.) Despite my own precious supply, I chose to purchase ten-pound lots of bulk wax (see photo) from the three national bee equipment manufacturers listed in the opening paragraph which, when delivered in February 1986, cost per pound $1.75 (Kelley), $2.46 (Dadant) and $3.18 (Root) plus shipping (my total actual costs were respectively, $20.65, $28.26 and $34.57).* (Current prices may vary.)

**Ed. Note: prices will vary seasonally and regionally. Check before you buy.*



Wax sold by the three national bee manufacturers (ten-pound lots, from left: Dadant one-pound cakes; Root 3/4 oz., 1 lb. and 5 lb. slabs; and Kelly (in back) 2-1/2 pound blocks).

2. *The pan.* The Herring literature calls for purchasing a "forming pan"[6] to produce a sheet of plain wax or better yet, because of the shipping costs involved, making one at home: 17-1/4" long by 11" wide by 1" high, with a 1/4" exterior-grade plywood bottom and a three-inch opening in the edging at one of the narrow ends. The edging lumber is 3/4" material and is assembled with nails and waterproof glue.[7]

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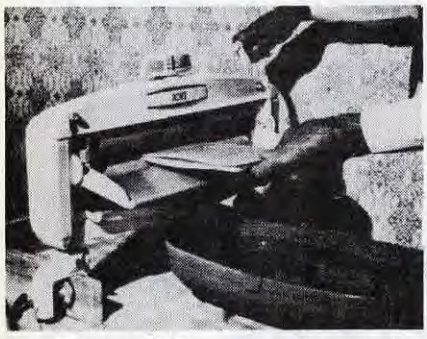
FOUNDATION . . . Cont. from Page 448

I did neither but used a Mirro aluminum pan, 9" x 15-1/2" x 1", already on hand. One can, however, dip the proper size piece of lumber into a molten mass (use a tub, filled with boiling water, only the surface of which carries the wax) and peel it off after cooling, to achieve the same effect, a method prevalent before the unique Weed process[8] produced one continuous sheet of wax on a roll.

3. *The Press.* It may be purchased from the manufacturer abroad (my airmail letter drew a response within two weeks); however, Herring noted that the SP78 could possibly be purchased stateside from "a Mr. Wayne Stafford, 2015 Lower Huntington Road, Fort Wayne, Indiana 46819, who incidentally may be able to supply you as he carries a small stock."

4. *The wringer* . Herein lies the BIG stumbling block for using this British-made product. The washing machine with rollers for wringers disappeared from the American scene many summers ago. Herring suggests picking one up at junkyards, flea sales, or from "an old washing machine." He adds this very important note in his missive: "Wayne Stafford informs me that hand-cranked wringers are available, as religious groups in his part of the world will not use electricity."[9] (God bless the Amish.)



Herring SP78 wax press in operation. A sheet of plain wax is presaed between two cell-embossed plastic sheets. Pan contains hot release agent into which the loaded press is dunked immediately before the roller operation. (H.T. Herring photo)

Using the Forming Tray

Now to put them all together. First the tray. With ordinary water, wet it thoroughly, including the inner edges, allowing the surplus to run off through the gap in the frame. Pour a sufficient quantity of molten wax onto the *level* tray, away from the gap end which is placed near a receptacle to collect the surplus. Wait a second before tipping the tray to allow the superfluous wax to run into the pot. To remove the congealed sheet, flood with water. If the sheet cracks, the wax was not hot enough. To vary thickness, delay tipping a little longer.

That's how it's done according to the manufacturer. I used the aluminum pan instead, coated with Pam, to make my sheets (it is impossible to remove the sheet in one piece unless a no-stick substance is used first). I did notice that the hotter the wax and the warmer the forming tray, the thinner the sheet. For example, sheet number seven weighed 3.5 oz. while the first one poured 10 ounces! *It cannot be overly stressed that plain water is not a release agent.*

Embossing with the Herring Press

Place a plain sheet of wax between the plastic dies totally immersed in the *hot* release agent to soften the wax. Pass through the rollers. Open dies to peel off new foundation. Trim and cut to size as required. So the manufacturer instructs.

Screw press in operation, as a substitute for wringers not available. The SP78 is hidden between two pieces of lumber -- actually kitchen-cabinet doors.

My method: Warm the dies and sheet of wax in the oven, *lowest* temperature but watch very very carefully. Using a grape-type press (see photo), I achieved the same effect as the wringer. (The British maker suggests using a heavy garden roller as an alternative, sandwiching the press between two flat pieces of lumber beforehand, while increasing the temperature of the release agent to compensate for the decrease in pressure applied.)

Release Agent

If the wax sheet sticks to the press or the forming pan upon removal, the release agent is too hot. If the definition of the pattern is poor, the agent needs to be hotter. (The SP78 will withstand boiling water to remove wax traces.)

To make this solution, into a gallon of distilled water, mix two tablespoons of dishwasher detergent, two ounces of rubbing alcohol, and a half pound of honey. It is used hot to make the wax sheet more pliable in the press.

My Experience

The finished sheet, as all homemade foundation, tends to be thicker (heavier) than the commercial variety (a deep Root sheet without wires weighs 2.25 oz.). Man's best insect friend could not care less about thickness, since my experience has shown that she works both equally as well. (States Herring: "Bees prefer it {the homemade foundation}; they find it easier to draw out -- put some of each on a hive and see for yourself.")[10] Naturally the finished comb is thicker; and alternately, when given a frame without foundation or just a starter strip, these lively lovely ladies will make a thinner comb. It is important to note that the best foundation with the SP78 comes from plain sheets of *uniform* thickness -- difficult to achieve without practice.

Sample of foundation made from the Herring SP78 wax press using the screw press, not wringer.

Some Q's and A's

There are a number of queries that come to mind about the whole process, several of which are obviously answerable only by the manufacturer. Here are Herring's notes: The SP78 is made of food-quality plastic embossed with the traditional pattern {hexagons} and sold as a matched pair for making double-sided foundation . . . Regular changing of foundation helps to prevent swarming and makes for healthy hives . . . Using the press and forming tray, one can make 30 sheets per hour . . . The thickness of the foundation can be varied from thin to medium to heavy, depending upon the weight of the starting sheet . . . The foundation maker has been on the market for eight years . . . Our demonstration model, after 4,000 sheets, shows no visible signs of wear; that is why we give a two-

Continued on Next Page

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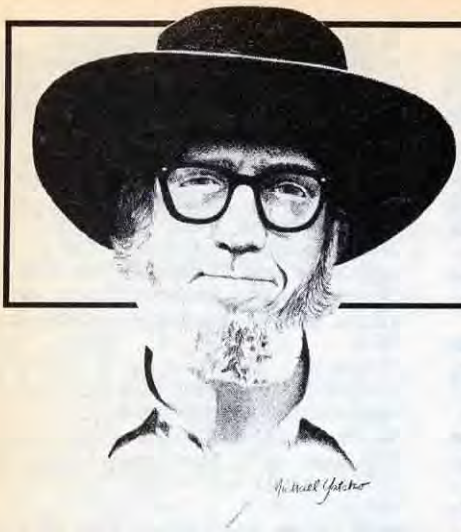
year guarantee on the SP78. Our customers include the Ministry of Agriculture, the International Bee Research Association and some 16 countries. And finally: making foundation is worthwhile. With the high cost of foundation, the SP78 and forming tray will pay for themselves in the first evening.[11]

Concluding Word

Wax foundation -- make it at home with the Herring plastic press? Try it -- and you just might like it; however, since the United States is NOT a developing country, the average American apiarist would find the whole process neither time- nor cost-effective even though the price of the press is remarkably reasonable (of course, without the wringer, the whole process is negatory). But then again, not all bee magazine readers live in the greatest nation around, as I have learned from more than 50 communications received from all over the world in response to my past articles.

References

1. For full details and photos, see author's article, "Wax foundation -- Make It at Home?", - *Gleanings in Bee Culture,* June 1981, pp. 330-332.
2. Gordon Schweizer, "Making the Mold," Part I, Central Maryland Beekeepers Association (CMBA) *Newsletter,* March 1983, p. 5 (5314 Gwynn Oak Avenue, Baltimore, Md. 21207).
3. _____"Homemade Beeswax Foundation," Part II, CMBA *Newsletter,* April 1984, p. 2.
4. Available for $39 plus $1 shipping from Lawrence J. Connor's Beekeeping Education Service (BES), P. O. Box 817, Chesire, CT 06410.
5. A requrest for information will bring an order sheet, a description sheet -- and maybe even a personal letter -- as well as a very welcome sample of wax and dies (an inch and a half square).
6. Langstroth brood size (equivalent of two shallows) available from Herring for £4.75 plus £1.80 shipping or $9.43 complete. A knocked-down one sells for a dollar less.
7. A powder plastic resin glue, Wellwood brand, sells for $1.59, eight ounces. It offers great strength and is highly water resistant. Kelley sells a liquid form of this, a pound for $1.75 plus shipping (not listed in the 1986 Root or Dadant catalogs).
8. Described in the Coggshall-Morse book. Incidentally, the most complete accounting of home production of foundation that I have seen in one place is on pp. 112-117 in William L. Coggshall & Roger A. Morse, *Beeswax: Production, Harvesting, Processing & Products* (Ithaca, N.Y. 14850: Wicwas Press, 1984), 192 pp., $9.95 postpaid (softcover). The British equivalent must be Ron Brown, *Beeswax* (Frome, England: Butler & Tanner, 1981), 72 pp., $#12.95 (hardback), available from BES -- see Ref. 4. "Making wax foundation" is covered in an eight-page Chapter 6. Admittedly, I have not had the opportunity to examine this book.
9. The Vermont Country Store catalog, P.O. Box 3000, Manchester Center, VT 45255 sells a solid metal hand clothes wringer (calls it "an endangered species") with 11-inch long rubber rollers for $100 plus $4.56 shipping (17 pounds to zone four)..
10. Manufacturer's description sheet, page 2.
11. *Ibid.* This whole paragraph is Herring's. (I have never read anywhere in the past 25 years that regular changing of foundation helps prevent swarming.)§



BEE TALK

By RICHARD TAYLOR
R.D. 3
Trumansburg, NY 14886

Not long ago I was asked to talk to some beekeepers on the past, present and future of beekeeping. The speech got off to a rather bad start. I arrived at the room where I was to speak to find that the chairman had already introduced me and the people were all sitting there waiting for something to happen. It got me off to a stumbling start and I don't think it was much of a speech, but it got me thinking, especially about the future of beekeeping. So I thought I would go into that rather broad and general subject here, perhaps continuing through the next issue or two. I'll begin, this month by talking about certain important aspects of the history of beekeeping in this country. That will not be too difficult, with a copy of Frank Pellett's *HISTORY OF AMERICAN BEEKEEPING* at my elbow. Then next month, if things go as planned, I'll offer my observations on some of the things that are going on now. That might have some importance, in view of the considerable discouragement that some beekeepers are feeling. Then finally, I'll get out my crystal ball and talk about the future. I have some rather definite ideas about that, some of which will be welcomed by readers and some of which, I suspect, will not.

So today, let's begin by digging into the past a bit. It is a past that is immensely fascinating.

With respect to the things that interest me, everything begins with Langstroth. Here was a man of such greatness, not just as an apiarist but as a human being, that words fail. He was manic-depressive, a mental disorder that quite commonly afflicts those of extraordinary genius and creative power. He was sustained through this dreadful disease, which often drives its victims to suicide, by his religious convictions, which also nourished in him a boundless modesty and love, and which were never expressed in any kind of dogmatism or intolerance. Towards the end of his life he had no difficulty at all forming a friendship and long collaboration with Charles Dadant, a free-thinking non-believer who took over the work of revising *THE HIVE AND THE HONEY BEE*. Langstroth discovered the principle of the bee space in 1851, and that fall he invented the moveable frame which is the basis of all modern apiculture. He never profited from this, and had only a meager income from his book. There followed, over the next few decades, all sorts of new hives and frames, most of them of little use, for their inventors did not really understand the basic principle Langstroth had discovered and utilized. But the real monument to Langstroth's greatness was his book, exhibiting as it did the depths of his understanding and powers of observation.

During the next few decades, the groundwork was laid for "The Golden Age" of beekeeping, roughly the last two decades of the last century and the first two decades of this one. The comb honey section box was invented by J. S. Harbison in 1857 and a few years later perfected and mass produced by A.I. Root, ushering in the great comb honey era. Sweet clover, which had long been regarded as a noxious weed, now came to be cultivated as a pasture plant and by the turn of the century great fields of it were beginning to be found through the Dakotas and the mid-west. Comb honey beekeepers often grossed several hundred dollars per colony from this source, selling their section boxes for fifty cents each, which was then a considerable sum, and stirring tremendous interest in beekeeping which had until then not been taken seriously as a source of income.

Meanwhile, commercial beekeeping had its beginnings, and the possibility was raised in people's minds that one could actually earn a comfortable livelihood from what had hitherto been regarded as an engrossing backyard pursuit. J. S. Harbison, inventor of the section box, had already created a sensation by shipping honey out of California by the carload. In 1874 Adam Grimm, in Wisconsisn, earned ten thousand dollars from the sale of that year's honey crop and used the money to establish a bank, raising in people's minds hitherto undreampt-of possibilities. The invention of the smoker, the extractor and, above all, comb foundation, all in quite rapid succession, completed the basis of modern beekeeping. The same period saw the development of methods of swarm control, queen rearing and the commercial trade in package bees. Beekeeping books and periodicals flourished, and things were moving so rapidly that GLEANINGS IN BEE CULTURE, for example, came out twice a month (for one dollar per year, or twenty-five cents for a trial subscription of six months, according to an issue of 1900 that I just checked). This "Golden Age", when few things offered as much joy and excitement as being a beekeeper, lasted, more or less, to the end of the first world war. After that, people got caught up in the making of money, especially in manufacuring and business.

When one looks back on this, three things stand out. One is that the development of modern beekeeping was almost entirely the work of Americans. The scientific basis had all been laid by Europeans such as Huber, all of whose works Langstroth knew at first hand, but the practical application of this vast knowledge was mostly left to Americans.

The second thing that impresses one is how very fast these developments took place, beginning soon after the publication of books by Langstroth and Moses Quuinby, both in 1853, by authors who apparently had never heard of each other. But the most important thing to note, I think, is how very little has changed, with respect to methods and equipment, during this entire century. The basic hive remains exactly the same, in spite of the many misguided efforts to invent a better one. The smoker we use was first advertised in 1877. The Porter bee escape, which most beekeepers, including me, still use, was offered for sale in 1891. The method of manufacturing foundation has remained virtually unchanged since the last century.

In fact, apart from such technical innovations as the honey pump and the flash warmer, the only genuinely new and

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Testing Your Beekeeping Knowledge

By CLARENCE H. COLLISON
Extension Entomologist
The Pennsylvania State University
University Park, PA 16802

Beeswax has many practical applications, both ancient and modern and demand for this product in the United States greatly exceeds the amount produced annually. The greatest quantity of beeswax comes from the cappings removed during the extraction process. Removing burr comb built within the hive and the rendering of old combs are also excellent sources of wax. It has been estimated that about one pound of beeswax is produced for every 54 pounds of extracted honey.

Please take a few minutes and answer the following questions to find out how well you understand the characteristics and uses of beeswax as well as the factors that affect wax production and comb building. The first eleven questions are true and false. Place a T in front of the statement if entirely true and an F if any part of the statement is incorrect. (Each question is worth 1 point).

1. _____ Beeswax is a complex mixture of many different compounds.

2. _____ If the whitish material that forms on the surface of beeswax (wax bloom) is not removed soon after it appears, the wax begins to deteriorate.

3. _____ Workers producing wax scales need the assistance of other bees to remove them from the external wax plates found on the ventral surface of the abdomen.

4. _____ Cakes of pure beeswax and comb foundation in storage should be protected against wax moth.

5. _____ Solar wax melters or extractors are efficient in removing additional wax from slumgum.

6. _____ PDB (paradichlorobenzene) crystals kill all stages of wax moth.

7. _____ Honey bees feeding on dark honey (amber and dark amber) produce wax scales that are canary yellow in color.

8. _____ In a festoon, or cluster of workers building comb, all workers have active wax glands.

9. _____ Beeswax produced by other species of honey bees (*Apis dorsata, Apis florea, Apis cerana*) differs in chemical and physical properties from wax produced by the European honey bee, *Apis mellifera.*

10. _____ Wax scales, as they are produced by the honey bee, are composed of several distinct layers.

11 _____ Bright light or queenlessness will inhibit a combless honey bee cluster from building comb.

MULTIPLE CHOICE QUESTIONS
(1 point each)

12. _____ Beeswax shrinks about ___ percent when it cools from a liquid to a solid. A)25, B)20, C)5, D)15, E)10.

13. _____ The largest use for beeswax in the United States is: A) manufacturing comb foundation, B)making cosmetics, C) production of candles, D) production of pharmaceuticals, E) metal casting.

14. _____ The ideal color for blocks of beeswax in a honey show is considered to be: A) white, B) canary yellow, C) dark brown, D) tan, E) golden yellow.

15. Name two factors that regulate the development of wax glands in the honey bee. (2 points)

_____
_____

16. Beeswax candles are usually made by one of three methods; name two of them. (2 points)

_____
_____

17. Name two solvents for beeswax. (2 points)

_____
_____

(Answers on Page 480)

OBITUARY

Howard A. Potter

Howard A. Potter, 75, of Ithaca, Michigan died Friday, May 2, 1986 at Gratiot Community Hospital in Alma.

Mr. Potter was born April 26, 1911, in Ithaca to Howard and Mary Jane (Foote) Potter. He married Sheila Patricia Huxley on June 15, 1934, in Croswell.

A member of the chemistry department faculty at Alma College for 27 years, Mr. Potter retired in 1973. He was for many years chairman of the chemistry department and he also served as dean of natural sciences.

After graduation from Alma College in 1932, he studied at Harvard University, earning master's and doctorate degrees. He was a research assistant and instructor in chemistry at Harvard from 1936 to 1939, then worked as a honey inspector for the Bureau of Foods and Standards of the Michigan Department of Agriculture for one year.

He was a life member and past president of the Michigan Beekeepers Association; past president of the society of Sigma Xi, Central Michigan University-Alma College Club; and past president of the Michigan College Chemistry Teachers Association. He also was a member of the American Chemical Society (Division of Organic Chemistry and Division of Chemical Education) and was director of its Midland Section.

Mr. Potter is survived by his wife, Sheila; a son, E.J. Potter of Ithaca; three daughters, Elsa Garcia of El Paso, Texas, Margaret Mary Moomey of Aurora, Colorado, Carolyn Fauna Beck of Ithaca; and six grandchildren.

TIP OF THE MONTH

Straining Honey

Straining honey through a fine mesh cloth has virtually no effect on the quality of honey IF care is taken to not overheat it prior to straining. As honey flows from the extractor it is always advisable to have the bulk of the wax pieces removed by a food approved wire screen about the courseness of ordinary window screen.

The most convenient method of straining is to simply place a straining cloth over the top of an open tank. It is advisable to use a metal support screen under the straining cloth as there is considerable weight placed on the straining cloth when honey is poured in. The strainer cloth support hooks over the edge of the tank. If no support is used, the strainer cloth must be tied or wired very securely around the rim of the tank so that it does not pull loose when loaded with honey. It should drape down into the honey level as the tank is filled. A single thickness of medium mesh (about 86 cross strands per lineal inch) cotton or nylon cloth will do an excellent job. If most of the coarse particles of wax have been removed, it should not be necessary to change or clean the strainer cloth often. Dampening the cloth prior to straining will cause the honey to flow through the cloth smoothly. As the cloth becomes clogged it should be removed and washed in lukewarm water. Fine particles of wax clinging to cloth must be shaken free, as washing does not always remove them all.

One of the problems encountered in straining honey at the tank top is that air bubbles are carried into the honey as it falls in the tank. If the stream of honey can be directed onto an inclined plane or caught in a funnel just under the strainer, the amount of air mixed with the honey is considerably reduced. The funnel should be directly under the holder that supports the cloth strainer. The funnel catches the honey, when it flows by gravity, into the spout, which is at a slant and extends down into the honey, near the bottom of the tank.§

From the 39th Edition of ABC and XYZ of Bee Culture.

★Past Perfect★ The Reader's Choice

Just about everybody has had that 'Best article I've ever read' feeling some time in their life. You remember, the one that opened up a whole new way of looking at things, or the one that improved the way you do something for the rest of your life.

Sometimes these articles aren't at all related to what you do, but gave you some insight into a way of life you didn't know existed. The one that changed me was an article by an English writer named Mary Percivel. It was about floral biology and pollination, undoubtedly two of my favorite passions in life since.

In the short time I've been here, I've become aware that many people have had that same experience with articles from Gleanings — some technique they learned that turned around their beekeeping skills, or even a story that caused them to look at things just a little differently.

These are the classics; the unrewarded Pulitzer Prize winners of beekeeping literature. I would like to know of these articles because if they helped you they would be worthy of repeating. Certainly not every article is a classic, and not every story is worthy of repeating. But there must be a few, those special few, that should go into Gleaning's Hall of Fame.

Send me a letter or a postcard, and let me know of that special article or story. Tell how it changed your life or why it is the 'Best you ever read'. Keep it brief, and please be specific about year and month if possible. There are a lot of years to look through if you don't remember and unfortunately my time is limited. But if it was good enough to remember, it's probably easy for you to find.

We will publish these 'Classics' over the next several months. This isn't a contest, but those with the most admirers will certainly receive priority.

So that I can keep them separate, send your suggestions to:

Kim Flottum, Editor
Best Article
P.O. Box 706
Medina, Ohio 44258

MANAGEMENT STRATEGIES FOR "AFRICANIZED" HONEY BEES:

CONCEPTS STRENGTHENED BY OUR EXPERIENCES IN COSTA RICA. PART I.

By ERIC H. ERICKSON, JR.[1], BARBARA J. ERICKSON[2], and ALLEN M. YOUNG[3]

"This paper is timely and is needed. It is refreshing to read a discourse on the Africanized bee that thoughtfully examines the bee as it is rather than observing superficially and parroting the usual dire predictions of calamity when the bee arrives in the United States.

"The paper is unusually well written. Conclusions are based on discriminating observations and thorough analyses, and recommendations are positive and practical.

"It is an excellent paper."

- Harry H. Laidlaw

From September 18 to October 2, 1985, it was our good fortune to participate in multifaceted studies of the pollination of cacao (cocoa and chocolate) in Costa Rica. One element of these studies involved the movement of honey bee colonies into a cacao plantation to determine the incidence of honey bee foraging among numerous cacao varieties (genotypes). The ten colonies we used were moved from a mid-elevation (approx. 900 m.) locality to a humid lowland locality (50 m.) within the Caribbean coastal floodplain of eastern Costa Rica. This and other activities gave us the opportunity to gain experience with "Africanized" bees. "Africanized" bees (AB) have been in Costa Rica for approximately two years and the country has been declared "Africanized". Nevertheless, numerous colonies of "European" bees (EB) there remain intact, particularly where they are well managed.

The following are our observations, impréssions and conclusions regarding the AB in Costa Rica. These are based on our experiences with the ten colonies used in our studies provided by Dr. William Ramirez, Department of Entomology, University of Costa Rica, observation of other colonies in Dr. Ramirez's apiary on the University of Costa Rica campus, observations of several colonies in each of three apiaries maintained by Marla Spivak, a student conducting research on AB and EB in Costa Rica, several colonies in the apiary of a Costa Rican beekeeper and observation of a single feral colony. All except the feral colony were in one, two or three (deep) storied Langstroth hives. Our ten test colonies, from an apiary with both AB and EB colonies, were initially headed by "Africanized" queens that were believed (by Dr. Ramirez) to have been twice superseded before we arrived: The supersedure queens probably mated with both "Africanized" and "European" drones in his campus apiary where EB colonies predominated. These colonies were as gentle as, or more gentle than, many of our coloines now at Madison. Their behavior in no way affected our pollination study.

"We think it more appropriate to say that "African" bees have become Europeanized. The accepted terminology ("Africanized") should be abandoned."

To be sure, our exposure to AB was brief. However, because of our collective experience, we believe that we are in a position to provide unique interpretation of our observations. Particularly noteworthy in this regard we point out that one of us (A.M.Y.) is a population biologist while another (B.J.E.) has extensive experience in the biochemistry of insect behavior. The third (E.H.E.) is a honey bee behaviorist, well acquainted with the behavior of many of the honey bee phenotypes first bred by Dr. C. L. Farrar and subsequently by Dr. F. E. Moeller and Mr. E. R. Harp at Madison.

We do not pretend to be experts on "Africanized" bees nor do we believe that all of our observations are unique. We do base our comments on our knowledge of bee behavior and on our practical and research experience. We believe that some of our observations will contribute to a better under-standing of the problem of "Africanized" bees. Finally, we reluctantly use the terms "Africanized" and "European" and do so only because they are so widely used that to do otherwise would lessen our ability to communicate herein (see Conclusions).

Lest we be misunderstood, we point out at the outset that bees clearly identifiable as "Africanized" can be irascible, difficult to work with and certainly undesirable from the standpoint of the commercial beekeeper as well as that of the average citizen. However, some desirable behavioral traits were noted even in the most irascible colonies and some AB colonies were quite gentle.The AB we observed had no behavioral traits that haven't been seen over the past 15 years in the honey bee breeding program at Madison (see below). Moreover, the behavior of AB is highly variable between colonies of "pure" AB as well as those of AB/EB crosses. It is obvious that AB interbreed with EB thus producing colonies with intermediate behavioral traits: Some colonies, identified as AB/EB crosses appeared more irascible than colonies identified as fully AB. (Note: The term "Africanized" implies crossing between AB/EB populations.) Finally, it occurs to us that most apiculturists have been preoccupied with demonstrating differences between AB and EB, but with limited success. Far more obvious and readily documentable are the similarities between AB and EB because, after all, they are all honey bees.

Behavior of Managed Colonies

Foraging Behavior

"Africanized" worker bees enter and leave the hive much more rapidly than do their European sisters; hence, we presume, their reputation for fast flight. AB appear to fly directly to and often into the hive entrance, entering without utilizing a landing board, while returning EB fly

Continued on Next Page

[1] U.S. Department of Agriculture, Agricultural Research Service, Bee Research Unit, Department of Entomology, University of Wisconsin, Madison, Wisconsin 53706.

[2] Department of Entomology, University of Wisconsin, Madison, Wisconsin 53706.

[3] Invertebrate Zoology Section, Milwaukee Public Museum, Milwaukee, Wisconsin 53233.

MANAGEMENT . . . Cont. from Page 456

somewhat lazily about the hive, then alight at the entrance and walk in. Bees in our test colonies flew to and from the hive entrance in a more direct fashion than EB but less so than AB thus indicating that these colonies were indeed the result of an AB/EB cross.

Pollen gathering behavior among our test colonies was assessed by: 1. rate of adaptation to foraging in an unfamiliar environment; 2. net quantities of pollen collected; 3. diversity of pollen types gathered; and 4. variability in gathered pollen diversity between colonies. All test colonies appeared comparable to EB colonies at Madison for each criterion. The results of these studies will be summarized elsewhere.

Nesting Behavior

Cell size in combs constructed by AB colonies is said to be smaller than that of EB. Costa Rican officials measure cell size to determine whether the colony is "Africanized" (4.7-4.9 mm for 10 linear cells = AB; 5.0 mm and above for 10 linear cells = EB). Cells from our test colonies (all drawn older comb) measured 5.1 mm for 10 cells. We note that traditionally, beekeepers have selected strains for increased size of their queens - a characteristic reflected also in their worker progeny.

It was pointed out to us by Dr. Ramirez and Marla Spivak that, unlike some (but not all) EB, AB tend to fill entire frames with brood more so than do EB. Honey is stored primarily above the brood nest. AB pollen stores in brood comb are minimal but AB's fill frames with pollen when it is available. One AB colony had 9 deep frames of brood and 10 frames of pollen. Unlike EB, communication spaces (about 2 cm between wax and frame) are evident in AB colonies at the sides and bottom of each brood frame. The extensive AB brood rearing results in rapid expansion of the population.

In this latter regard, it is important to note that over the last 40-50 years certain queen breeders in the United States have been successful in selecting strains of bees specifically adapted to the needs of the northern beekeeper who kills colonies in the fall. This beekeeper desires a strain of bees that builds up rapidly in the Spring and stores honey above the brood nest. This enables the beekeeper to extract 100% of the season's honey production easily and without contamination of the product with larval remains. the empty equipment is subsequently stored until the following spring. These specially bred strains mimic AB in this behavior.

We noted that the excessive use of smoke is undesirable with AB as it is with

Defensive Behavior

We were most impressed with the com-plexity of the defensive behavior of AB, not for the reasons one might suppose but because all except two of the discrete defensive behavior subtraits described below were collectively evident in the AB colonies observed. We have seen each of these subtraits at Madison on more than one occasion - usually independent of one another in a given colony or occasionally in various combinations within a colony. Other bee-keepers have undoubtedly made similar obser-vations. We and others at Madison have classsified these subtraits of defensive behavior as follows:

A. **"Defenseless".** It is possible to select honey bees that are almost entirely defenseless. At Madison we selected and maintained, for several years, a strain of bees which, when disturbed, would not defend the colony in any way. Upon opening the hive and even after extreme and repeated disturbance of the colony, these bees would retreat into the hive and remain motionless. All that would be visible were bees, lined up at the top edges of the frames, looking out. We often demonstrated this behavior to visitors to the amazement of most. (Note: we did not see this trait in Costa Rica.)

B. **"Biters".** Workers of certain genotypes use their mandibles to bite at and pull hairs on exposed areas such as the head, arms and hands. When seen as an independent trait these bees rarely sting unless overtly incited.

C. **"Looking for Just the Right Place".** This may be an extension of the biting syndrome; However, it is identifiably different and may or may not be accompanied by biting. Here, worker bees land and buzz fiercely for an extended period while crawling over the skin. If given enough time these bees will sting, but the experienced beekeeper knows that these bees are easily brushed away long before they sting.

D. **"Rear End First".** Defenders of select colonies may dart out to meet their victim and sting so quickly that one gets the incorrect impression that these bees approach rear end first and sting before their feet touch down. This behavior is clearly the opposite of that described in C above. These bees are generally deemed undesirable as such behavior reduces beekeeper working efficiency.

E. **"Jumpy".** Worker bees are described as jumpy when disturbed, as upon opening of the colony. These bees dart up and out, usually landing upon the beekeeper or a nearby object. Such bees rarely sting unless overtly incited.

F. **"Intimidation".** Here, we refer to those bees that dart out from the colony entrance or from an opened colony and repeatedly bump into subjects that they apparently perceive as threatening, such as a beekeeper. Bees exhibiting this behavior do not normally sting without further provocation. Anthropomorphically, one would describe their behavior as that of attempting to provoke a response. Certainly, if an unprotected person blinks or swats at these bees they will sting. Bees from some colonies may follow a retreating beekeeper for a considerable distance. This may be an extension of jumpiness.

G. **"Runny".** Runny bees are relatively well-known to experienced beekeepers. Colonies are described as runny when the bees run excitedly over the combs and hive interior after the colony is opened. Excess smoke aggravates this behavior. Queens are usually difficult to find in such colonies, hence this behavior has an undesirable economic impact. Sometimes this condition is so pronounced that the bees will run around inside the colony in waves with directional flow resembling a race. We have seen colonies of runny bees that seldom sting unless the colony's disturbed for prolonged periods of time. Other such colonies will sting readily, this latter behavior may reflect the presence of other elements such as D above.

We found it noteworthy that the most intractable AB colonies that we observed in Costa Rica possess all of the above defensive traits except A and C. While AB almost simultaneously jump, bite and intimidate extensively, the careful beekeeper can avoid AB stings. However, once stung, multiple stings can be expected shortly thereafter: Successive stinging at or near the site of an initial sting is characteristic of most bees but pronounced in AB. Here both environmental and genetic components to defensive behavior are suggested.

We were permitted to open one AB colony and search for the queen so that the colony could be requeened. The bees were "runny". Once the queen was caged (all but two frames were examined before she was found) the colony was closed. We noted that the majority of disturbed/airborne bees settled down and quickly reentered the colony (as do EB) even though that typical,

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ever present cadre of AB intimidators followed us several hundred yards back to our vehicle. We were forced to drive away in order to lose the last of these bees.

Feral Colony Observations

We made brief observations on a feral colony of AB within an abandoned section of the cacao plantation. This colony, in a fallen hollow tree, was no more than 100 yards from several homes that lacked screened windows and doors. Costa Ricans from these houses have harvested honey from this colony with minimal protection and reported that the bees had a nasty sting. Five of us walked about the clearing where this exposed colony was located: One of us moved to within 2-3 feet of it, photographed it and retrieved a piece of comb from beneath it without arousing the bees.

Conclusions

Since the beginning, when primative man first attempted to keep primitive honey bees, beekeepers have been selecting and breeding strains of bees with particular desirable attributes such as size, gentleness, manageability, productivity, nonswarming, wintering ability, disease resistance, etc. This process of selection and breeding over the ages, continues even today. The result is that existing domestic strains of honey bees, as kept by beekeepers, are the products of extensive artificial selection much as are dairy and beef cattle, poultry, horses and even domestic dogs and cats. On the other hand, feral (wild) populations in many parts of the world probably resemble their ancestral progenitors. Presumably, honey bees in many parts of Africa have undergone far less artificial selection and therefore are probably more akin to naturally selected (wild) bees. It is possible, as some have suggested, that the "tapping" of wild bees (a practice which destroys the colony) may have selected towards greater aggressiveness as the more docile colonies are most frequently robbed (destroyed). It seems obvious that there exists a continuum among honey bee populations wherein domesticated (artificially selected and largely European) bees are found at one extreme, while wild (primarly naturally selected African and other) bees are at the other.

It is clear to us, from our observations, the observations of others as well as our knowledge of honey bee behavior and genetics, that the so-called "Africanized" bee is simply a mixture of races and behavioral traits. The term "Africanized" is an unfortunate choice in that it represents typological thinking - it causes one to think that this "Killer Bee" (an even more ludicrous synonym) is a discrete genetic entity. Hence, we perceive a widespread misinterpretation of the "Africanized" bee problem and how to solve it. The "Africanized" bee appears to be a predominantly (but not entirely) wild, naturally selected, phenotype while the "European" bee is predominantly the domestic, artificially selected, phenotype to which we have become accustomed. Phenotype is, by definition, the result of the effects of environment and heritability. The combined effects of these two factors are still confounded in ongoing studies.

"European" bees, those kept by beekeepers in the Americas, are usually described as a mixture of races (and genes). It is further accepted by most experts that "African" bees in South America outcross with "European" bees there. Interestingly however, the progeny of this crossbreeding are then called "Africanized" - no longer a variable mixture of races (albiet somewhat expanded) even though only a single race (African) with some admittedly less desirable traits has been added to the genetic base. We think it equally or more appropriate to say that the African bees became Europeanized. The popular concept of what constitutes an "Africanized" bee appears to be way out of line with reality. Even the accepted terminology (e.g. "African" "Africanized") is misleading and should, if possible, be abandoned. Our observations lead us to conclude that the AB phenomenon is little more than an extended, over-popularized, case of gene introgression and selection - an evolutionary process well-documented in many other organisms under natural conditions. The introduction of African bees into South America represents the sudden breakdown of an isolating barrier (the Atlantic ocean), providing the impetus for a unique glimpse of how gene introgression works in honey bees.

The "migration" of "Africanized" bees northward through the Americas may be a somewhat unique event of biological interest. However, in our view, the process of "Africanization" is not the invasion of a single race of bees, rather it is the intrusion of a naturally selected, heterogeneous, highly adapted feral (wild) gene pool into homogenous populations of domestic honey bees that are the product of extensive artificial selection and therefore vulnerable to the pressures of natural selection leading to reversion to the wild type. Typological thinking (in terms of an "Africanized" type) has lead to a hasty acceptance of the universality of AB behavior and therefore discourages additional research directed at finding variability within and among populations of honey bees in South and Central America. An understanding of the process of "Africanization" may be eluding us because of this philosophical handicap.

In Part II we will present our ideas for the development of management strategies for "Africanized" bees.§

WHAT KIND OF BEE?

By KATHY & ROGER HULTGREN
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Holden, Mass. 01520

How many times have you heard, "I've just been stung by a bee outisde my house; There's a nest of bees hanging from my eaves; I've got bees in my shrubs". As beekeepers, we know that the culprits referred to are not honey bees. Most people, however, lump hornets, wasps, yellow jackets, etc. into one label - Bees. There is a reason for this, for bees are members of the 110,000 species which comprise the insect order, Hymenoptera. The evolution of the first stinging member of the order occurred over 26 million years ago, according to Soviet entomologist, S. I. Malyshev. Since that time, numerous stinging members have evolved from the initial leaf cutting bee.

There are some general features which are shared by the members of Hymenoptera which adds to the confusion in recognizing a specific insect. The insects are small in size ranging from .21mm (.008") to 5 cm (2"). All have four membraneous wings, with hind wings being slightly smaller. The abdomen area is differentiated from the thorax region by a narrow waist. The ovipositor in the female is long and modified, sometimes for piercing and stinging. Metamorphosis is complete, in that life begins with an egg, progresses through several larva stages and finally the pupa stage before entering adulthood. Sex is determined by fertilized or non-fertilized eggs, with females resulting from the former and males the latter. The majority of the time, the males' life is brief with their main function to fertilize virgin queens.

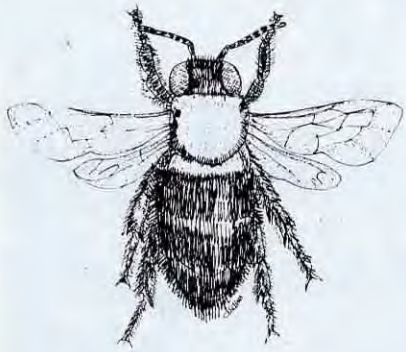
It's our intent to take a closer look at the differences between these related insects.

CARPENTER BEES

There are several kinds of carpenter bees in the United States, however, Xyocopa, "the wood cutter", is the most common. The black males and females can be identified by the white faces of the former and black faces of the latter. These particular bees make their nests in barns, sheds or dead trees. The female carpenter bee gnaws a tunnel in the wood about 12 inches deep. She deposits an egg at this point and begins working towards the entrance. Sawdust collects on her hairs and is mixed with tiny wood chips and saliva to build a thin wall across the tunnel.

The space that is created by the wall becomes a cell. She continues in this fashion until 12 cells with eggs have been created. The male carpenter bee acts as a guard to this nest and drives off intruders.

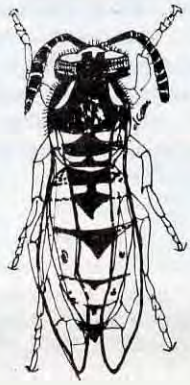
The life span of the carpenter bee is one season. They die at the end of the summer and not until next spring will



these newly laid bees emerge. Each emerging bee must gnaw his or her way through their cell wall before exiting the nest, mating and establishing their own colony.

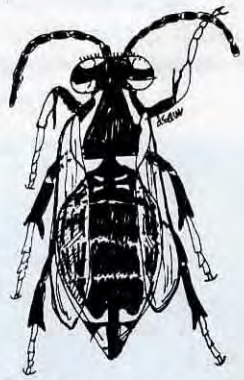
YELLOW JACKETS

Those yellow and black striped bees, often spotted around empty soda cans, garbage pails or dumpsters, are yellow



jackets. They build their nests close to or under the ground, *especially* in lawns. The queen digs her own cavity using her legs and jaws to loosen the earth. She carries the excess soil away from the nest, for the nest is comprised of brown paper comb. The queen lays her eggs in these cells and deposits chewed prey, which has a paste-like consistency. Once the first workers emerge they aid the queen in building below the original comb. The workers are constantly tearing out the inner layers of comb and adding it to the outside to enlarge the nest. These aggressive individuals can have several hundred members a colony.

HORNETS



There are two major types of hornets: White faced and European. The former is larger than a yellow jacket and creates an oval shaped nest which can measure two feet in diameter. These nests have some 40 layers of paper which act as insulation in cool weather. The colonies are usually located high in a tree with approximately 2,000 members. A white faced hornet queen is able to lay about 25,000 eggs in one season.

The European hornet is larger than the White faced, averaging about 3/4" in length. They nest in hollow trees or protected spaces such as walls of houses or under eaves. Their nest is initially round and becomes pear shaped as it is enlarged to 1-1/2 feet in length. The nest is started in the spring by the queen who chews wood into paper pulp using her jaws. A circle of rooms is created and is suspended from a slender stem. This silvery gray nest, when completed, will have 9-10 floors, 25,000 hexagon cells on horizontal comb and 9-10 outside envelopes protecting the nest from the weather elements. The queen lays an egg which is glued to the top of the cell.

This egg hatches in 2-3 days. When sufficient workers are raised, divisions of labor occur, with the older hornets hunting and taking on the task of nest enlargement.

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COLLECTING HONEY BEE STAMPS

By DIANA SAMMATARO

Beekeepers can be as crazy about collecting things "Bees" as any other collector. Antique equipment, honey jars, fabric and even pottery or wallpaper are objects that contain bees, hives or skep pictures. I cannot claim to be a true bee collector, but as curator of the Hewitt Honey Bee Museum and Research Center (Litchfield, CT), I get vicarious pleasure from what Mr. Phil Hewitt accumulated.

When it comes to bee stamps, however, I confess to this malady. Now let's get this straight, I did **not** start out collecting them, but acquired a "seed" collection as a gift from a thoughtful friend. Those first 10 or so stamps, however, seem to increase in number every time I take them out of storage. Maybe they need that dark privacy in the drawer to reproduce; I certainly don't remember purchasing them.

I recently had to recount and list my collection when I made up a frame of duplicates to hang on my husband's new office wall. There were almost 70 different bee stamps representing 36 countries. Though not all of them are honey bees, I was still staggered!

The collection makes a colorful and interesting framed picture and it always seems to attract attention from our friends, whether or not they keep bees. The comment I hear most often concerns the lack of US stamps (there are two). One is the Utah State Flag, which contains a very tiny skep and the other is the honey bee impression with the dogwood flower that came out in 1980. Regrettably, neither are outstanding.

As a service for those who might want to start this other form of bee collecting, I offer my list of stamps that show bees, hives, skeps and bees on flowers. If anyone knows of more, please let me know, as I will be willing to trade for those I don't have. Have fun and watch those stamps increase.§

el = Elholm's for Stamps
P.O.Box 1055
Racine, WI 53405

csc = County Stamp Center
P.O. Box 3373
Annapolis, MD 21403

COUNTRY	NUMBER	SUBJECT	DEALER/ PRICE
BARBADOS	638	bee single	el/.57
BOPHUTHATSWANA	8515	bee single	el/.40
BRAZIL	1644	(3.20 cr) bumblebee	
	694	(.60) bee on grape	csc/.20
	1668	(24,00) bee on comb	el/.12
BULGARIA	--	(3,13,20 CT) set of 3 bees + products	
CELON	--	FD cover, silver jubilee (3 cts)	.35
CHAD	276	bee	
CONGO	290-1	(30 & 40F) ,1973 bee/skep	
CUBA	--	set of 5, (1,3,9,13,30) bees (q,d,w) 1971	
CZECH.	1185	(1 Kcs) yellow bee/hexagons, 1963	el/.25@
EGYPT	1107	honeycomb (50m) 1979	
FRANCE	1644	wht/bee on flower, 1979	el/.38 csc/.50
GERMANY (DDR)	438	bee/flwr, June 26, 1959 (40)	
Grt. Brit. Isle of Man	126	(20p), fuchsia 1978	el/.70
GRENADA	1090	boyscout/beekeeper ($1.00)	el/.60
GUINEA	636-41	insects + bee	
REP. GUINEE	--	bee single (40F)	
HUNGARY (Magyar Pst)	2804	bee/comb (1Ft) 1958	el/.26
	--	bee/flwr 29th Apimondia Conf, 1983 (1 Ft)	
INDIA	858	1980 2nd internation conf, bee/comb (1.00)	csc/.20
INDONESIA	225	carpenter bee	
ISRAEL	833	bee/comb 1983 (30.00)	el/1.50
ITALY	623	bee on comb, (25 lr) (same as Trieste-A #167)	el/1.00 csc/.25
JAPAN	new	bee single	el/.43 csc/.40
JUGOSLAVIA	1374-7	set of 4 bees/color (1.50,3.40,4.90,10.00)	el/1.50 csc/1.75 @
KOREA	649	(30) yellow bee single, (10) green	el/.30 csc/.40
LUXEMBOURG	525	(4 F), bee on comb	csc/.25
	new	3 March, 1986 bee + skep	csc/.40
MALAYSIA	--	1978, bee + comb, ($1.00)	
MEXICO	1006	bee, 1969 (40 cts)	el/.20 csc/.25
	1126	bee single	el/.20 csc/.15
MONGOLIA	C129-35	set of 7, 1980 triangular	csc/3.10
MOZAMBIQUE	new	set of 4, bees/beekeeper	csc/2.03
NEW ZEALAND	--	(30c), 1979	
NICARAGUA	C966	flwr/small bee (80 cts)	el/.18
	1337-43	set of 7, bees on flowers	el/2.60
NIGER	new	October 1985, green	
NORWAY (Cover)	845	bees, 1984 (2.50)	el/.50
OMAN	247	bee pair (two stamps) *A. florea*	el/.50
PAP. NEW GUINEA	415-18	butterflies	el/3.00
POLAND	20718	(4.50 Zt), 1977 (set of 2, one is of ducks)	csc/.75 (2)
ROMANIA	2675	bees + flwrs (set of 5) 1976	
	--	XX Congress, 1965 bee + flwr (55)	
	--	1947, (12 lei), skep, red	
	1269-77	1959, set of 9 agriculture, bee/sunflwr 1270	csc/6.15 set
	1473	1962	
RUSSIA	3843	(6), bee + flwr, 1971 (FD Cover)	csc/.15
	--	bee skep, blue (15)	
RWANDA	1076	bee and hive	el/.05
SPAIN	1125-6	Europa/bee on comb (1 Pta, red; 5 Ptas, blue)	el/2.75
SWITZERLAND	--	(30+10) bee single, 1950	
TRIESTE 'A"	167	bee	
TRIESTE 'B'	26	1950	
URUGUAY	992	1977 bee and agriculture, (.45N$)	csc/.20
UNITED STATES	1671	Bicentennial Era, Utah State Flag, 1976 (13cts)	
	--	FDC Honeybee 1980 (15cts)	

KIND OF BEE . . . Cont. from Page 460

Hunting centers on capturing flies with their jaws and chewing their flesh into a paste. Enlargement is achieved by cutting away the inside paper skirts from the outside of the nest and replacing them with larger sheets, while still maintaining air space between the paper envelopes. The younger hornets take on the tasks of guarding, cleaning and feeding the flesh paste to the brood. It should be noted that the stinger of these "bees" is smooth and allows for repeated stinging.

As summer draws to a close, drones and several hundred queens are raised. After mating, the queens hibernate for the winter while the rest of the colony dies off.

BUMBLEBEE

The fat yellow and black bee which is often seen on red clover is the bumblebee. The queens are mated in the fall and hibernate over the winter. With the onset of Spring, the queen emerges and seeks out an abandoned mouse nest, burrowed hole of a chipmunk or a dried pile of grass clippings for her nest. She then begins manufacturing wax for her colony. The process is similar to that of the honey bee with the exception that the bumblebee queen mixes her wax with pollen. This creates a soft dark wax which is then shaped into a honey pot. The size is equivalent to your little finger. This honey pot is filled with honey and will be used as a source of food for brood as well as the queen. The honey lacks the conversion process of the sugars and results in a product less tasty than that produced by honey bees.

Near this honey pot the queen bumblebee builds a wax cell, lays 8 eggs within and deposits a lump of pollen and nectar. Once capped, the queen settles down on top of the cell, hugging it with her legs to provide warmth for her young. The eggs hatch in 4 to 5 days and begin feeding on the stored pollen and nectar. As the young grow, the queen will open the cell periodically to replenish their food. She will only leave the nest when the honey pot is empty, during this time.

The young bumblebee's are fed only honey and pollen, whereas the honey bee's diet consists of honey, pollen and other substances.

Within 3 weeks the young emerge and begin drinking from the honey pot. For the next 2-3 days they will continue to return to the queen for warmth after each feeding. After this period, the young bumblebees are able to fly and collect food for the colony. The queen continues to lay eggs and receives aid from her new workers in the building of more nursery cells.

By mid-summer the colony will have 500-1000 members, consisting of drones and workers. The drones live independent lives from the colony and forage for their own food. As summer ends, queen cells are started and the edges of the workers cells are smoothed off and used to store honey for the winter. The newly mated queens will use this honey during their winter hibernation.

Bees are abundant in most habitats with the exception of the polar regions. They are extremely important to man as pollinators in the wild and as pollinators of cultivated crops. Some bees are parasites of destructive insects while others make man's honey. Hopefully this delineation of the similar insects found within our cities and around our homes will aid beekeepers in their defense of honey bees, should a community or neighbor point an unjustified finger of guilt at our friendly "bee".§

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Drawings by D. Sammataro

BEE TALK . . . Cont. from Page 452

significant development that I can think of as having come about during this entire century is the invention of the round comb honey section. At the turn of the century comb honey was what the word "honey" meant to most people. By the middle of this century its production had almost ceased, except at the hands of backlot beekeepers here and there. Now every once in awhile I get reports of beekeepers in the west with production quotas of fifteen thousand and more round sections per year. Here, then, is a development that offers hope of reestablishing this unique product as a truly specialty food, which cannot be duplicated or imitated and, significantly, suffers from almost no direct competition from imports.§

{Comments and questions are very welcome. Please use Trumansburg address and enclose a stamped envelope.}

SIFTINGS

By CHARLES MRAZ
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Recently I received a letter from Prof. Bilash, Head of Beekeeping in the USSR. We first met at the Apimondia Meeting in Moscow, 1971 and again on several occasions at other International Beekeeping Congresses. In his letter he made some interesting comments on Acarine and Varroa disease, both of which have been in the USSR for some years. The Varroa mite first came to Europe thru the USSR from Eastern Siberia and other eastern parts of the country.

He dismisses Acarine disease as of no consequence, having been first found in various parts of the country 20 to 30 years ago. Recently nothing more is heard of it -- completely forgotten.

Varroa initially decreased colony numbers from 10 million to 8 million, but with proper medication the numbers are again on the way back to normal. He said production of the honey crop has not decreased. He feels that these problems are being over dramatized here in the US.

I believe more strongly than ever that selective breeding for resistance is the most important method of control. Recently, I have seen references that one way certain far eastern bees control varroa is that they attack and destroy the mites. Bees that have never had this problem, obviously, know nothing about it. Regardless of what some "scientists" may think, anyone that has kept bees very long knows only too well that bees can think, and will change their habits when necessary to assure survival.

A good example of this is the wax moth. If you read the literature of 100 years ago, the greatest enemy of bees was the wax moth. Even a small colony of Italian bees will keep a large number of combs free of wax moth today, even if they are not occupied. 100 years ago, with the old "German Black Bees" it was another story. They just could not control the wax moths. Years ago when I was inspecting bees, and there were still some old German Black Bees around, I saw hives half occupied by bees and the other half a solid mass of wax moth eating the combs. In weak hives, these black bees seemed to be helpless against them. Today, only a few hundred bees seem to keep a hive free from wax moth for a long time. A hive actually has to nearly die out before wax moth can take over.

It must be the same with the Varroa mite. In an uncontrolled situation, if bees are infested with Varroa, those that learn to control the mite by attacking it will survive and multiply. Those that do not learn are soon wiped out. This is similar to the situation where AFB wiped out all susceptable bees in Hawaii some years ago. Those resistant to AFB survived and soon repopulated the Islands with resistant strains of bees.

Prof. Bilash also mentions the possibility of beekeepers from the USSR and the USA exchanging visits to each others country and I think this would be a wonderful idea. I for one would love to visit the beekeepers in the USSR again. While many US beekeepers have been there, very few beekeepers from the USSR have visited with USA beekeepers. The big question, (as usual), Organization and Money.

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On page 392 of August 1986 Bee Culture, Elbert Jaycox brings up the question of beekeepers that have Arthritis. Yes, beekeepers are no different from anyone else and they too get Arthritis. But if they do not clear it up with their own "medicine", it is their own fault. Most beekeepers, like most other people, do not know much about Bee Venom Therapy. Over the past 50 years, I have treated several thousand Arthritics with all the 100 different forms of Arthritis that are supposed to exist. Personally, I believe there are as many different forms of Arthritis as there Arthritics. That means about 40 million of them. There are very few forms of Rheumatic diseases that I have seen that do not respond to BV Therapy. Unfortunately, Bee Venom Therapy is not just a case of taking a sting and think you will be cured. On occasion I have seen one sting produce dramatic relief, but for most cases it is more complicated than that. I have treated Arthritics from the age of 5 years to 93 years old. You are never too young nor too old to get Arthritis. While just one sting in the proper area will often produce dramatic results, in tough, old chronic cases, it is often necessary to treat for one, two or even three years with several thousand stings in the proper affected areas.

On rare occasions, I have seen some relationship between the use of drugs. Usually, drugs are anti-inflammatory and suppress the effect of Bee Venom. Even after 50 years I must admit I still have a lot to learn on this subject. We need more beekeepers to become interested in this subject to learn to control these painful, crippling diseases of the Rheumatic Family.

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I recently received a letter from a student in Venezuela planning to do her thesis on "Honey As An Anti-body". This is a great opportunity for US Beekeeping Organizations, such as EAS, etc., to sponsor a student for such a study. If it can be proven, honey is indeed an effective anti-body, perhaps even against botulism spores. We can then stop this nonsense that honey causes botulism poisoning in infants. This is what I believe to be false propaganda, and has done more to injure the honey business than even the wild stories about Africanized bees. I intend to help here all I can and I hope others will help restore honey to its rightful place as a Health Food for all ages of Mankind.§

RESEARCH REVIEW

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Chalkbrood More Serious in 1986

Many of the colonies in the Cornell University Apiaries, as well as the one yard that I keep for myself, suffered severely from chalkbrood this spring and summer. Chalkbrood is caused by a fungus, and it attacks honey bee larvae only. The larvae it kills first turn a bright, fuzzy white, thus the name. Later, when the sexual form appears, the mummies turn black.

The infection this year was the most serious I have seen since 1972 or 1973 when the disease first became common in the eastern United States. Chalkbrood was reported in the United States for the first time in 1968. It is European in origin, and has been a problem there for many years.

I have come to expect to see chalkbrood in the early spring, but it usually disappears about mid-May. This year I saw colonies with many mummies on the bottom board and in front of the colonies in July. Some of my own colonies had chalkbrood so severely that in mid-July they were still in only two supers.

There are several good papers on chalkbrood. The problems we have had caused me to reread the two that I have cited below.

What Causes Chalkbrood to Flourish?

Most researchers agree that chalkbrood may be called a stress disease, that is, it flourishes when the bees are living under adverse conditions. Cool, damp weather encourages the growth of the fungus. I checked our weather records for May and June, 1986. Whereas we had less rain than normal in May, it rained on nine different days, about average for the month. However, in June we had far more rain than normal and, more important, there were 19 cloudy, rainy days. Thus, our weather was far from normal, and this appears to be sufficient to explain much of the chalkbrood problem we found.

Protecting Against Chalkbrood

I found several colonies with many hundred chalkbrood mummies on the bottomboards. This was an obvious source of reinfection, and the fault was my own for the colonies did not tilt forward. All honey bee colonies should tilt forward slightly for the reason that a forward tilting bottomboard aids the bees in removing the dead whatever the cause of death. One finds a greater number of chalkbrood mummies and dead bees on the bottomboards of colonies that are level or that tilt backward slightly. Honey bees have an excellent, natural system of removing dead bodies, thus reducing a source of reinfection for any disease. However, a beekeeper can do much to help the situation by making certain the bottomboards are elevated in the rear.

A second problem in my apiary was that it was overgrown and surrounded by tall trees; as a result, it received too little sunlight, and it was damper than normal. I've now had a wood chopper cut a number of the trees to the east and south of the apiary and have opened it up so as to allow the sun to penetrate and dry the ground and thus the colonies. We know that fungi grow only under moist conditions. Honey bees keep the humidity in their colonies high, but not excessively so. As is mentioned above, the beekeeper can do much to alleviate the problem of chalkbrood.

Last we come to the question of disease resistant bees. Several queen producers advertise that their stock is disease resistant. I suggest we should use caution, but in general these claims are valid. Some bees are remarkably disease free because of their ability to rid the hive of their dead, infectious nestmates.

It is unfortunate that both queen breeders and our research people have not taken this whole question of disease resistance more seriously in the past. I believe we could do much to reduce the incidence of American and European foulbrood, nosema, sacbrood, and chalkbrood through a breeding program.§

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CHANGES - BEEKEEPING AND OTHERWISE

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Each spring, for just a few days, three of my friends and I make a pilgrimage to a small fishing village in Quebec. It's always an enjoyable event even though a considerable ride is required to reach our destination. The cottage is an even more adventuresome ride beyond the village requiring about 45 minutes to ultimately get settled.

Getting to the site and getting prepared to catch all the fish we always anticipate is a surprising amount of work. Of course, the smell of fresh white fish, small mouth bass, and lake trout frying in shallow oil make it all worthwhile. On the negative side, the fish probably cost us an average of $400/pound. Imagine that! Something less profitable than beekeeping.

As the years have passed, I have become somewhat of a "stick-in-the-mud" about our fishing. My mania for fishing has been replaced with writing and reading about beekeeping -- what else. I've done this for enough years now that I can reflect over past years in beekeeping and observe the way things have gone. From my position of solitude, beekeeping problems seem distant and not quite so near to me. There are very few honey bees or beekeepers in the area. Consequently, the noise of "beekeeping battles" fades into the sound of lapping water and the sweet smells of cedar and spruce forests.

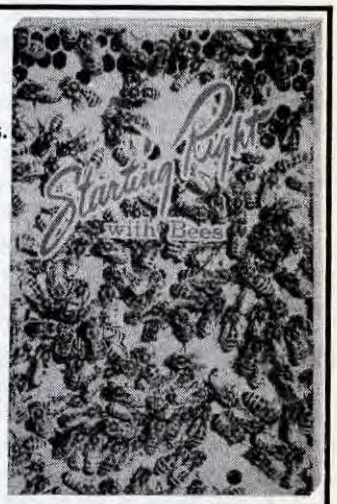
Tucked away in the cabin basement (probably forever), are approximately 40 deep supers -- the remains of a grand project that was a dismal failure some years ago. This pristine area, with its seemingly endless bee pasturage, overwhelmed one of my fishing friends and me. We hauled about 20 packages of bees here, installed them, and went back to Ohio to await the accumulation of vast amounts of honey. Instead, what we accumulated was a vast amount of junk -- thanks to a group of bears. We lost our shirts. I wish we hadn't done that, but the adventure was great. Those deeps, still bearing (no pun intended) the marks of our bad luck now sit quietly, representing beekeeping a few years back. That pilot project changed our attitude toward long distance beekeeping.

One of last year's delicate topics at trip time was tracheal mites. Some states were quarantined, others weren't. Our Canadian counterparts were (and are) anxious for some kind of control measures to be implemented. They weren't.

A year later, the tracheal mites have not been eradicated, but U.S. beekeepers seem more resigned and tolerant. The problem is no less critical, but the air of emergency has worn off. The work of determining where the mites are and the greater work of determining control techniques proceed -- albeit slowly.

For the past several years, concerned efforts have been rightfully directed toward the Honey Price Support Program -- beekeeping's annual battle that seems to occur every six months. Finally, it appears that, after a great deal of effort by a dedicated few, we may be entering a new and more secure era. However, as was indicated in Frank Robinson's letter to the American Beekeeping Federation Board of Directors, positive situations can change to negative ones very quickly. Robinson stated that "We will certainly need to stay alert and ready to make personal contact if it seems necessary". I agree. I hope a year from now the Honey Price Support Program is well on its way to being a "non-issue".

And now, even as we work to solve these and other problems, the Africanized bee situation appears nearer than ever. I can only wonder what I'll be writing about a year, or even two, from now. While on the horizon, most problems seem insurmountable. A few are, but thankfully most aren't. I can only hope that, once again, the work by a dedicated few will mitigate the Africanized bee problem as they arrive in the U.S. Either way though, I predict beekeeping can expect another change.§



BEEHIVE VENTILATION
PART I

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Abstract

Ventilation requirements of a beehive were examined during all seasons of the year. It was determined that draft through the hive, while undesirable during spring, summer and fall, is intolerable during the winter. Draft prevention equipment and procedures are described in detail. It was further determined that upper ventilation in summer increases honey production during nectar flows and such increase varies with the type of upper ventilation provided. The causes of bees clustering on the front wall of the hive are now better understood.

Introduction

I started keeping bees with 6 colonies in the spring of 1975. During my first summer I noticed the bees were clustered on the front walls of both brood chambers. It rained the following night and next morning, and while still raining, I went to see my bees again. They were soaked but remained in cluster. Somewhat panicky, the first thought that came to my mind was that they must be sick. I quickly consulted several books on this subject and the answer was the same: "it is too hot in the hive". The outside temperature was 72°F and when I poked a thermometer into the beehive entrance, it registered 77°F. This temperature was certainly not too hot, so I was left with a puzzle to mull over.

In the spring of 1977, after wintering 20 colonies, I found four dead. This loss occured in spite of my faithful adherence to preparations for wintering, feeding and the rest. At our Toronto District Beekeepers Association meeting that spring I joined two beekeepers who were energetically discussing their wintering experiences. One of them was meticulously explaining how he had prepared his beehives for winter. After a while I asked him how many hives he wintered and if he had any losses. This was his answer; "I wintered 10 beehives and only 3 died. However, a friend of mine, who wintered 11 hives, lost 6."

Realizing that the beehive ventilation is still wrapped in a mystery, I decided to study it as a part time project. During my professional engineering career I encountered occasions when defining a problem is more difficult than actually solving it. As it turned out, colony ventilation was one of them.

This article deals with a beehive consisting of 2 standard Langstroth full depth brood chambers. The information generated here will generally apply to single and triple brood chambers.

Draft

For the purpose of this article the draft is defined as: "Flow of air through the hive, caused by air movement external to the hive".

To study the draft phenomenon I used a simplified arrangement and equipment as shown in Fig. 1. The equipment consists of a 4'x8' sheet of plywood suitably supported at a working level. On the left end of the platform is located a 22" electric fan. At the other end are located two hive bodies on a bottom board with an inner cover. For simplicity the hive bodies do not contain frames or comb, but this does not invalidate the test observations. The upper surface of the bottom board was lined with sheet metal on top of which was located a screened basket containing smoke generating fuel. The bottom board had an opening simulating a full size entrance and the upper super had a 1" auger hole in the front wall. When the fuel was lighted and the fan was turned on, one could observe where smoke was escaping. In Fig. 1 the air current from the fan is directed perpendicular to the front wall of the hive. Smoke came out of the feeding hole in the inner cover, the sides and back. Smoke tests were performed for different configurations of inner covers, also raising the inner cover at both front corners only, and at all 4 corners, back and front. The hive was rotated to observe the wind effect for different angles of incidence. It was observed that smoke does exit through side walls, back wall, inner cover and bottom board if they contain some cracks or openings.

What is the mechanism that causes draft? When the wind strikes a flat surface, the kinetic energy of the moving air is converted to pressure. You have experienced such pressure on your hand by sticking it out of a moving car. For wind striking the front wall of the hive at 90° the calculated pressure is shown in Table 1.

Wind velocity, MPH striking the front at 90°	Air pressure at surface of impact plane ("H_2O)
10	0.049
20	0.198
30	0.445
40	0.790
50	1.235
60	1.778

The atmospheric pressure at sea level is 33.9'H_2O.

Table 1.

The conventional hive usually has 2 openings on the front wall, the entrance at the bottom board and either an auger hole in the upper brood chamber or a notch in the front rim of the inner cover. The wind pressure at the front forces air into the hive

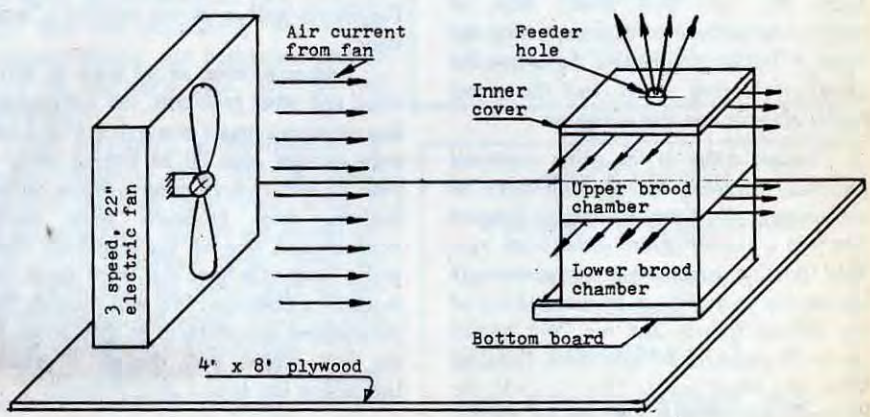

Fig. 1. Smoke Test. Smoke is generated inside the lower brood chamber. Fan provides air current similar to wind. Direction of smoke escape shown by arrows.

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through these openings. If the hive is air tight the pressure within will increase to the same value as at the front wall and there will be no draft. Remember, this pressure inside the hive will be higher than the external ambient pressure on the external surfaces of both side walls, back wall, inner cover and the bottom board. If cracks or openings do exist on any of these walls, this pressure differential will force air out, resulting in a draft through the hive.

What is the volume of air that the draft is forcing through the hive? This depends on wind velocity, direction and the total area of openings in 5 afore mentioned planes. Let's work through one typical example. Assume the wind velocity to be 20 miles/hour, wind direction perpendicular to the front wall and the combined area of cracks and openings is equal to an area of a 1" diameter hole. The calculated air flow is 9.6 cubic feet per minute. It should be noted that in the fall, air volume in both brood chambers with frames full of honey and bees, is only about 1 cubic foot. In the spring, after the colony has consumed most of the honey and fewer bees are present, the air volume is about 2 cubic feet. The 9.6 cu. ft./minute air flow indicates several air changes through the hive per minute. This is almost equivalent to having bees parked outside the hive.

The pressure on the front wall of the hive varies with wind velocity and direction. To show the pressure variations due to wind directions an analytical model was prepared and is shown in Fig. 2.

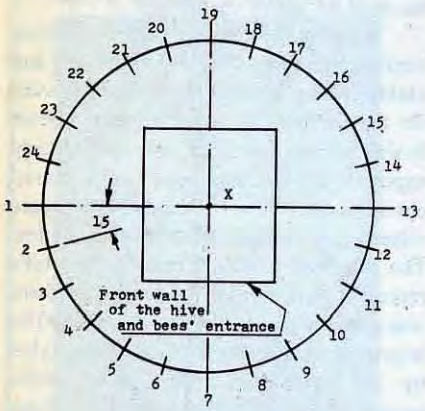

Fig. 2 Plan of top view of the beehive.

The beehive's plan is shown in the center of a circle, the center of the beehive, identified by letter X. On the circle the points are numbered from 1 to 24. Each number represents 15° increments on the circle. Wind pressure at the front wall was calculated as a fraction of the maximum value for wind direction from each point on the circle through point X. These calculated values are shown in Table 2.

Wind Direction (from Fig. 2)	Angle of Incidence Degrees	Relative pressure changes on the front wall of the hive, defining the maximum value as being equal to 1.
1 to 0	0	0
2 to 0	15	0.259
3 to 0	30	0.500
4 to 0	45	0.707
5 to 0	60	0.866
6 to 0	75	0.966
7 to 0	90	1.000
8 to 0	105	0.966
9 to 0	120	0.866
10 to 0	135	0.707
11 to 0	150	0.500
12 to 0	165	0.259
13 to 0	180	0
14 to 0	195	- 0.259
15 to 0	210	- 0.500
16 to 0	225	- 0.707
17 to 0	240	- 0.866
18 to 0	255	- 0.966
19 to 0	270	- 1.000
20 to 0	285	- 0.966
21 to 0	300	- 0.866
22 to 0	315	- 0.707
23 to 0	330	- 0.500
24 to 0	345	- 0.259
1 to 0	360	0.000

Table 2.

For better visual comprehension the values from Table 2 are illustrated in graph form, Figure 3. In this illustration the points 1 to 24 (from Fig. 2) are shown on the straight line A-B. Vertical distance from these points to point X on the sinusoidal curve represent pressure changes relative to the maximum. Examination of Table 2 and Figures 2 and 3 reveal that for wind direction 1 to X or 13 to X, (parallel to the front wall), there is zero change of pressure at the front wall. From these directions there will be no draft through the hive (assuming side walls are air tight). For wind directions from 2, 3, 4, 5, 6, 7 X the pressure increases, reaching the maximum value at point 7, then decreasing to zero for directions 13 to X. For points 14, 15, 16, 17, 18, 19 to X the pressure is decreasing or negative, reaching the lowest value for direction 19 to X, and then increases again through points 20, 21, 22, 23, 24, 1 to X to zero value. So depending on direction, wind can cause either positive or negative pressure on the front wall of the hive. Positive pressure will force air through the hive, while negative pressure acts in reverse, removing the air from the hive. In either case, both cause draft through the hive. Draft cannot be entirely eliminated because no beehive is absolutely air tight. However, the draft can be substantially reduced by deliberate elimination of cracks and openings on all external surfaces except the front wall. This process will be referred to as "draftproofing". The entrance and all other ventilation openings must be located only on the front wall. Some reduction of draft can also be achieved by orienting the hives such that prevailing winds blow at a side of the hive.

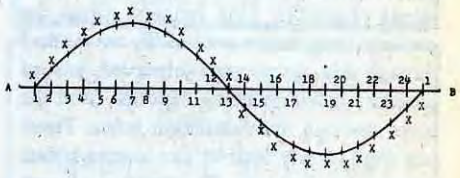

Fig. 3. Pressure on the front wall of the hive caused by wind.

Ventilation of a beehive in winter

A USDA study[1] has shown that bees do not attempt to maintain the temperature within the hive outside of the cluster. The outermost temperature of the winter cluster is 44°F. Bees will not survive for prolonged periods when exposed to temperatures below 44°F. In a drafty hive there will be several air changes per minute during windy periods. As a result, the outer cluster surface will be subjected to intolerably low temperature. To compensate the heat loss the bees accelerate heat production by increasing honey consumption. In many cases the hive would have had enough food till spring if properly draftproofed. Because of draft and

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accelerated honey consumption the bees may starve to death. It is not the cold that kills the bees. It is the rapid removal of heat from cluster's suface that kills them. Under these conditions a post mortem examination reveals no honey in the hive, so the beekeeper concludes that the colony was short of stores. A closer examination will show that the combs are dry, with few or no moldy patches, and of course no honey. On the other hand, a hive that has died from suffocation, due to an inadquate oxygen supply will have wet, moldy combs throughout, with some honey remaining. A drafty colony will consume more honey and may not survive the winter. For this reason, draft is intolerable and the hive must be draft-proofed in fall.

Occasionally it is reported that during the spring examination two clusters are found in the hive instead of the usual one. The most probable explanation for this is that a draft flowing through the hive was concentrated in the space between certain frames. When the cold air killed the bees in that space, the two parts of the cluster became thermally decoupled and each started moving in their own preferential way.

A friend of mine winterizes his beehives with fiberglass wool and black building paper insulation. He provides a ventilation opening in the insulation opposite the 1" diameter hole in the upper brood chamnber. One January, when the outdoor temperature was 10°F, we walked through his apiary and observed jets of moisture laden air being expelled from the hives through the ventilation holes. These jets were clearly visible, like human breath exhaled into cold air. The duration of each jet was about 2 minutes. After a period the jet came on again from the same hive. What was happening was that the hole in the front wall did not provide adequate convective ventilation and the bees were resorting to supplementary ventilation by active fanning. For such active fanning the cluster must be at or near the front wall. The front part of the cluster expands, warms up the hive's atmosphere and ventilates the hive by active fanning. This cyclic expansion/contraction of the cluster is energy intensive and requires additional honey consumption.

A more serious problem develops during the latter part of the winter. By this time the bees have consumed the honey in the front part of the brood chamber, which is close to the ventilation hole. Progressively, the cluster moves toward the back of the brood chamber for food. While the outdoor temperature remains well below 44°F, the bees will remain in the cluster at the back of the brood chamber, separated from the ventilation hole by a cold air space. From this location the bees are not able to exhaust foul air and depend exclusively on the meager convective ventilation for their oxygen supply. The bees may begin to die from suffocation. At this time the cluster moves forward again to re-establish the contact with the ventilation hole, but, they starve only inches away from food. As you can see, the bees had two choices, both fatal. Either they stay in the back where food is and suffocate, or move forward to the ventilation hole and starve. This is a prime cause of colony weakening or dying in later winter.

What is the purpose of winter ventilation and how much ventilation is required? The main by-products of honey assimilation by the bees are carbon dioxide and water vapor. (From now on carbon dioxide will be identified as CO_2). My analytical calculations[2] show that for each pound of honey consumed by the bees, 1.227 lbs of CO_2 and 0.662 lbs of water are produced as by products.

The most probable average honey consumption by a beehive in winter, excluding brood rearing requirements, is 0.2 lbs/24 hours. Assimilation of this honey will produce 0.245 lbs of CO_2 (2 cubic feet) and 0.132 lbs of water. Previous tests on CO_2 concentration in the hive[2] have shown that the atmosphere just below the inner cover contains about 2% CO_2 when the outdoor temperature was 25°F to 45°F. It appears that bees comfortably tolerate this concentration or else they could have ventilated the hive. So, the main objective of winter ventilation is to remove excess CO_2 and replenish the atmosphere with oxygen. To limit the CO_2 concentration to 2% or less will require a continuous ventilation of 100 cu. ft. of air per 24 hours, or 2 cubic inches per second. If such continuous ventilation was provided, bees no longer need to cyclically expand the cluster, purge the hive and contract the cluster again. In this way some reduction in winter honey consumption could be realized.

Now the first problem can be defined as follows: "Design a method to provide continuous ventilation in winter of 2 to 3 cubic inches per second". This problem was solved by designing a special ventilating inner cover, Fig. 4.

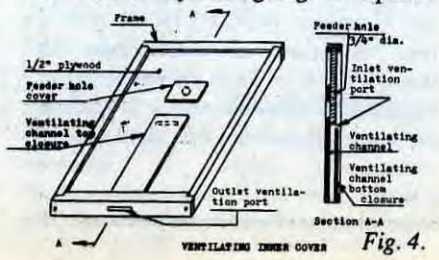

Fig. 4.

The design of this inner cover is based on the principle described in the following example. In the center of a fair size room pile wood on a suitable platform and ignite. By providing a metal hood over the fire and a pipe through a wall leading to the outside, all smoke generated will be drawn outside through the pipe. Now dismantle the hood and the pipe, but leave the hole from the pipe in the wall open. The entire room will be filled with smoke in a short while. The pipe hole in the wall does not provide ventilation. The same thing happens with an auger hole in the upper brood chamber or the notch in the front rim of the inner cover. The warmer air from the cluster rises to the inner cover, then moves along the innner cover toward sides, back and front. By the time some of this air reaches the auger hole it has cooled, mixed with cold air and is not much warmer than the air outside the hive.

Active convective ventilation is caused by temperature difference. The ventilating inner cover, Fig. 4, receives the warmer air rising from the cluster into it's inlet ventilation port. From here this air is confined, as in the pipe, within the ventilation channel until it is discharged through the outlet ventilation port. The size of the inlet ventilation port and the ventilating channel control the amount of warm air discharged. Present design allows only 1% to 2% of the warm air which rises to the inner cover to be continuously ventilated. With this arrangement the cluster could be anywhere in the hive, including the back, and still receive sufficient convective ventilation without the need for active ventilation.

When a colony dies from inadequate ventilation, most of the frames are wet and moldy. Many beekeepers blame moisture for the demise. It should be remembered however, that the bees are continuously exposed to and are used to a humid environment. They continuously release water vapor through assimilation of honey. The wet and moldy frames in the hive represent post mortem evidence that there was a deadly problem with ventilation. The improved continuous ventilation provided by the ventilating inner cover, while removing excess CO_2, also removes excess moisture from the hive.

Testing of ventilating inner covers

After my own tests, the first external test program was conducted during the winter of 1980/1981. Twenty seven beekeepers in U.S.A. and Canada participated,[3] The average winter mortality

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was reduced by factor of 3. One beekeeper reported reduction in honey consumption by the hives equipped with ventilating inner covers. Subsequently, individual beekeepers continued testing. Results of these tests are available from the author.

Spring Ventilation

In late winter and early spring the bees start rearing brood to increase their population. The amount of brood reared depends on the quantity of bees present and the amount of honey and pollen available. Some colonies may run short of honey, requiring spring feeding. With the ventilating inner covers, spring feeding can be done through the 3/4" diameter feeding hole. This hole should only be 1/2 open to limit draft. Opening the inner cover is not recommended until late in spring because you break the propolis seal. The ragged edges of broken propolis prevent air tight contact between the inner cover and brood chamber. Indeed this will create a gap on all 4 sides. During windy periods these gaps allow draft through the hive. As a result, the cluster will contract, leaving some brood exposed to cold air to die. It is very likely that such a draft is also the prime cause of spring dwindling. Opening the inner cover in early spring should only be considered on emergency basis. After re-installation of the inner cover the interface between the inner cover and upper brood chamber should be taped to prevent draft.

Cleaning of the bottom board, i.e., removing dead bees and other debriss, should be done in early spring. This could be accomplished by lifting both brood chambers with the inner cover in place, thus exposing the bottom board to cleaning. Breaking the propolis seal between the bottom board and lower brood chamber is not critical, as the draft is limited to the lowest part of the hive where there are few bees.

As in winter, the ventilation of beehives in spring is limited to removal of CO_2 and replenishment of oxygen. If sugar syrup is fed in the spring, the bees will need additional air to evaporate excess moisture from the syrup.

Summer Ventilation.

During summer, beehives require ventilation for bees to breathe and to dry nectar. The amount of fresh air required for breathing is not large, and in any case there is no problem with the present design of the beehive, which provides enough air for that purpose. However, to dry nectar a large volume of air is required, which depends on temperature and relative humidity of ambient (outside) air. Table 3 shows the volume of ambient air needed, at a given constant temperature and relative humidity, to evaporate one pound of water. But how does the drying air get inside the hive to absorb water vapor?

Temperature of ambient air, degrees F. \ Relative humidity of ambient air entering the hive	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	99%
50	1,703	1,892	2,129	2,433	2,838	3,406	4,256	5,677	8,515	17,030	34,060	170,300
60	1,207	1,341	1,509	1,724	2,012	2,414	3,018	4,023	6,035	12,070	24,140	120,700
70	868	964	1,085	1,240	1,447	1,736	2,170	2,893	4,340	8,680	17,360	86,800
80	633	703	791	904	1,055	1,266	1,583	2,110	3,165	6,330	12,660	63,300
90	468	520	585	669	780	936	1,170	1,560	2,340	4,680	9,360	46,800

Table 3.

Many books still maintain that bees will form two groups, one forcing air out of the hive and another forcing air into the hive. As proof they offer the following: when the bees are fanning at one side of the entrance, by holding a lighted match on one side and then on the other side one can observe a strong current of air going in at one side and an equally strong current out at the other side. No other evidence is offered. The observation of two directional air currents at the entrance is correct, however, the conclusion is in error.

What actually is happening is this. When bees are fanning they remove air from the hive, by doing so they create a partial vacuum within the hive. Because of this vacuum air enters the hive through unpropolized interfaces between honey supers, upper honey super, inner cover and other cracks and openings in the hive. Some air enters the hive at the opposite side of entrance where bees are not fanning, see Fig. 5.

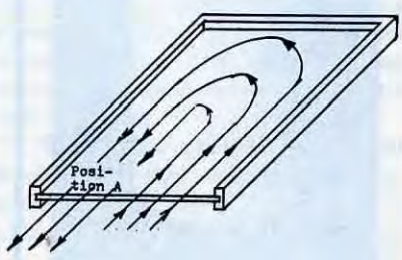

Fig. 5 Air current on the bottom board caused by fanning bees.

This illustration shows the bottom board, the left side, position A, is assumed to be occupied by fanning bees. Fanning bees in position A are driving air out. The vacuum created by this process pulls air in at the opposite side of the entrance, which makes only a U turn at the rear of the bottom board. Further proof of the two group fallacy is that during a heavy honey flow the entire entrance is covered with fanning bees and the air current is away from the hive along the entire length of the entrance, with no air current into the hive.

Now the second problem is defined: "Investigate if upper ventilation improves honey production and if so, develop a practical method to implement upper ventilation".

In response to the above problem, I have performed a series of experiments on upper ventilation. The simplest provision of upper ventilation is to raise the front of an inner cover by 1/4". A more complex but more rewarding method was providing summer ventilator in lieu of the inner cover. This ventilator has a slot in the front rim, with or without the provision of automatic thermostatic closure. As tests progressed it became apparent that colonies with temperature controlled ventilators produced the largest increase in honey production when compared to colonies with raised conventional inner covers or with ventilators without thermostatic control. Using this as a maximum reference value, colonies with raised inner covers had an increase in honey production of 1/4 to 1/3 of the maximum and colonies with ventilators, (but without the thermostatic control) had an increase of 1/2 to 2/3 of maximum. The reasons for these variations are explainable.

The raised inner cover provides a continuous convective ventilation during slack honey flow periods. In addition, the two triangular openings on both sides, caused by raising the front of the inner cover, promote draft during windy periods. Under drafty conditions during cooler periods the bees probably resorted to increased honey consumption for heat generation to keep the brood warm. The

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queen excluders were waxed/propolized heavily, leaving only about 20% of open area at the brood chamber walls. It can be concluded that such heavy wax ing/propolizing was triggered by draft.

In colonies with ventilators without thermostatic control the propolizing of queen excluders was less than in the colonies with raised inner covers. With the slot in the front rim there was no longer draft through the hive. However, since the slot is open at all times, air is continuously discharged through this open slot by convection during the weeks between honey flows. This convective ventilation, particularly during cool weather is useless, and indeed mildly harmful. It cools down the colony to external air temperature, thus impeding work on comb building and may also increase honey consumption to keep the brood warm.

The temperature controlled ventilator closes the ventilation slot at 67-68°F, thus shutting off convective ventilation. Because of it's numerous advantages, I concentrated on development and testing of Temperature Controlled Honey Drying Ventilators, abbreviated: H.D.V.'s.

This is the end of Part I. Part II, appearing next month, will conclude with further descriptions and test results of the H.D.V. An overall summary of the procedures discussed and how they affect honey bees is included.§

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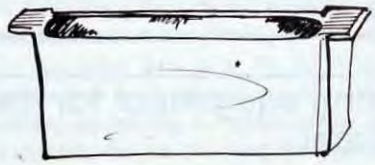


HONEY BEES AND COTTON

USDA-ARS RESEARCH

WASHINGTON -- Honey bees, usually busy pollinating about $19 billion worth of U.S. crops annually, goof off in cotton fields.

"I've seen bees spend 20 minutes meticulously combing or grooming cotton pollen off their bodies before returning to their hives," said U.S. Department of Agriculture plant physiologist Dr. Gerald M. Loper.

"There's apparently something about cotton pollen that honey bees don't like," said Loper, of USDA's Agricultural Research Service.

Loper is examining the behavior of bees because they will be called on to pollinate new cotton plants expected to come out of agency laboratories. It is from these plants that researchers will sort out the prime ones as sources of hybrid seed.

He said hybrids can yeild up to 25 percent more cotton than today's commercial plants. Unlike hybrids, commercial varieties are self-pollinating.

But bees' strange behavior could slow development of hybrid cotton. Loper said when busy bees take time for grooming "they aren't doing the job they're expected to do." Honey production would also suffer.

"Some people suggest that cotton pollen contains a chemical called gossypol that bees find either toxic or offensive. But I couldn't find any gossypol at all in the pollen tested," said Loper at the agency's Carl Hayden Bee Research Center in Tucson, Arizona.

His research also revealed that bees visit cotton plants that have gossypol in leaves and other plant parts just as often as plants that lack it.

However, cotton pollen does have a slightly different shape than pollen from most other crops. Cotton pollen grains are larger and spiny, and this could affect bee behavior," he said.

The different colors of cotton blossoms also affect bee efficiency as pollinators.

"Some of our new hybrid cottons may come from a cross between the yellow-flowered Pima and the white-flowered upland cottons. Pima cottons, noted for their finer fibers, are grown in Arizona, New Mexico and Texas. Upland cottons, which generally have a yield advantage, are grown in most southern states," said Loper.

"Honey bees which first visit the yellow-flowered Pima cotton tend to continue visiting only Pima flowers. Other bees tend to stick with only the white-flowered upland cottons. This doesn't spread the genetic material around very efficiently," he said.

Loper thinks bees' bizarre grooming behavior and single-color preference for either white or yellow flowers will call for up to four times as many bees in producing hybrids of Pima-upland cotton seed.

"I've reported to cotton experts that if we can succeed in developing a Pima cotton with white flowers, we could conceivably get by with far fewer bees for pollination," he said.

India and Mexico can easily grow hybrid seed because there is plenty of cheap labor to hand-pollinate plants. That would be the job of bees in this country.§

OVERWINTERING SINGLE BROOD CHAMBER COLONIES IN THE OTTAWA VALLEY

By ROSS McEWEN

Reprinted from The British Columbia Honey Producers Association Newsletter

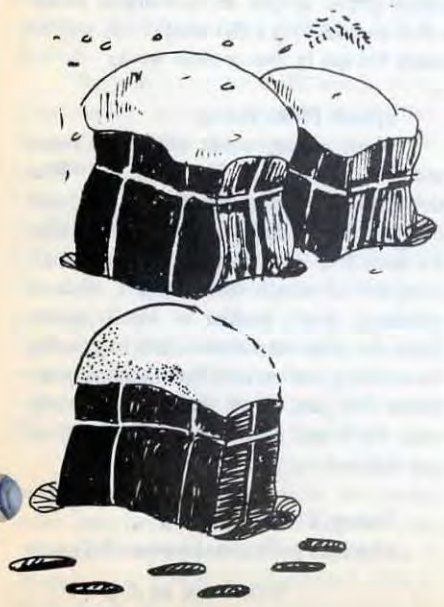
The success in over-wintering bees in single brood chambers was not apparent until I was approached by Margriet Wyborn and asked to write this article. Until I came to the Ottawa Valley I had not considered singles any more than other beekeepers who use doubles. It was the fellow I bought my hives from that convinced me, and now I'm sold. Here is why.

First, economy of winter feed and equipment. I feed less sugar syrup (about 20 lbs.) and obviously use one less hive body and accompanying frames. Second, any handling of hives for winter packing or moving is easier. Third, and most important, there is less tied up in brood chambers and more in the honey supers where it can be extracted which is the object of the exercise.

One disadvantage is that more time must be spent on swarm control, although this may be taken in a positive light as well. Swarm control is accomplished by making up nucs with four or five frames of brood and either introducing a queen or letting them raise their own queen. In this fashion we easily replace winter losses, expand our colony numbers, or sell nucs. Using only one brood chamber enables us to make up nucs quite early and with threatened border closings due to Africanized bees or Varroa mites, this may be another management tool for self-sufficiency.

Some may claim another disadvantage; that singles have insufficient bees to produce a crop. My average production over the past three years, including all overwintered colonies and nucs, has been 125-130 lbs. per colony. Whereas the average production for the area is 80-125 lbs. However, the single brood chambers contain ten standard frames and these must be brood frames of top quality, absolutely no junk frames and the use of a queen excluder is advisable.

"Hectic or not, I have found that singles have all the advantages needed to run single brood chambers in the Ottawa Valley"



Fall preparation consists of selecting colonies which have a good queen, an ample number of bees and feeding the bees as early as possible (which is usually October at the latest). The colonies are weighed and the total weight of the equipment, bees and feed, minus the outer lid, should total 90 pounds. As a matter of comparison between the Ottawa Valley to your area, a double brood chamber colony to be overwintered would weight 120 lbs.

An Ottawa Valley winter sees some snow on the ground in late November which is gone by mid-April with 15°F temperatures common but not constant in January and February. Snowfall is ample. We pack bees in either four colonies to a wooden packing case, insulated with pine shavings or four to a western style fibreglass and tarpaper or plastic wrap. An interesting phenomenon with single brood chambers is that they do not require an upper entrance during the winter. At least the hives packed in the pine shavings have not needed one and we are experimenting with the fibreglass and tarpaper or plastic wrap. However, they must have an unobstructed bottom entrance, expcept for an entrance reducer, to allow for CO_2 drainage. Condensation build up has never been a problem with this system.

The bees are unpacked in early May as the weather warms and prior feeding is rare. Winter losses are generally 5-8% of total colonies packed. Inevitably, there are one or two colonies that have 7-8 frames of brood at this point, which are ready to be split or used for boosting.

Hectic or not, I have found that singles have all the advantages needed to run an operation intensively in single brood chambers in the Ottawa Valley.§

PAST PERFECT
YOU CAN CAN WITH HONEY!

By MRS. BENJAMIN NIELSEN

The following article appeared in the August, 1943 edition of Gleanings in Bee Culture, but it is as timely today as it was then. Even more importantly, ALL Beekeepers should use honey when canning.

My mother learned canning during the second world war, when the only sweetener available was honey received in barter for ironing with a neighbor. When the war was over she never went completely back to sugar and that's where I developed my taste for nature's amber nectar.

This is also the time of year when nearly everything is being harvested -- grapes, plums, tomatoes, peaches and apples. You can use honey in preserving these and many other fruits -- enjoy!

"We are urged to can, can, can -- but can't get enough sugar" is a commonly heard plaint nowadays. This situation, however, will not in the least bother the beekeeping clan. Some of us will supplement the available ration of sugar with nature's finest sweet, using half sugar and half honey; others who are thoroughly "sold" on the honey flavor will use honey exclusively. From fruit juices to pickles, no sugar has been used in the Nielsen kitchen for many years. So we are not concerned in the least over a tiny canning sugar ration. In fact, when invited to the homes of friends who do not use honey in canning and preserving, we actually miss that inimitably fine flavor characteristic of all honey canned products.

Why don't you try canning the honey way this year? If you like honey at all, you are sure to be delighted with its use in canning, preserving and pickling. Long after the present necessity for substitution has passed you may still use honey. There are, I'll admit, some persons who just don't like honey "straight or in any combination" and, of course, these sales-resistant folks won't like it in canning (if they know it has been used!).

There is nothing complicated in using honey for canning. It may be substituted in any of your favorite recipes if in making the substitution you keep in mind that, cup for cup, honey is 25 percent sweeter than sugar and that the honey flavor intensifies with time. Whether preparing a syrup, preserving or pickling, do use a large kettle, for honey has a tendency to foam in the heating process and goes over the top in no time at all. It will be necessary to skim a bit now and then and here's a time and temper saving tip: use a clean vegetable brush as a skimming tool. The foam clings to the bristles and a large kettle can be skimmed in less time than it takes to tell. Then let hot water run through the bristles and the brush is cleaned in a jiffy.

Yes indeed, the only worry honey-minded canners will have is obtaining enough produce to put in their jars -- or enough jars to fill. So round up all of your glass jars and inspect them. Those with nicks or surface cracks should be discarded, unless usable for pickles, jams and jellies. Many coffee and mayonnaise jars will be pressed into use. Lids will be available for those odd width tops, we are told. Let's make this the biggest and best canning season ever!

Preparing Honey Syrups

Thin syrup -- use 3 cups water to 3/4 cup honey. Bring to boil in a large kettle and skim off foam.

Medium syrup -- use 2 cups water to 3/4 cup honey and proceed as above.

Heavy syrup -- use 1 cup water to 3/4 cup honey and proceed as above.

Thin syrup is used for small soft fruits; peaches, berries, sweet cherries, etc. Medium syrup is used on sour berries, acid fruits, such as cherries, gooseberries, rhubarb, etc.

After the honey strup has been prepared -- any method -- open kettle, cold pack, oven canning or pressure cooker may be followed, observing with care the basic principles of good canning procedure.

Here are some favorites from the Nielsen kitchen:

Honey Grape Juice

Wash fully ripened grapes. Drain well. Stem sound grapes being careful not to mash. Place 1 cup of grapes and 3/4 to 1 cup of warmed honey in a hot freshly sterilized quart jar. Fill jar to overflowing with boiling water. Seal at once. Invert then stand upright, repeating this process frequently to insure dissolving and mixing of the honey. When cool, wrap each jar in brown paper (paper bags are handy) or store in a dark place. Avoid sunlight which will cause grapes to turn an undesirable bluish color and develop a flat taste. Juice will be ready for use in two or three weeks.

Spiced Plum Butter

Wash plums, cover with cold water and cook over low fire until soft. Run through a sieve. Measure the pulp and add one-half cup of honey to each cup of pulp. To each four cups of pulp allow one-half teaspoon of whole cloves and 1 stick of cinnamon bark, broken in small pieces. Place the spices in a cheesecloth bag during the cooking and remove before pouring the butter into jars. Cook the mixture slowly until thick and clear. Pour into sterilized jars and seal.

Honey Tomato Catsup

One-half peck tomatoes (use fully ripe

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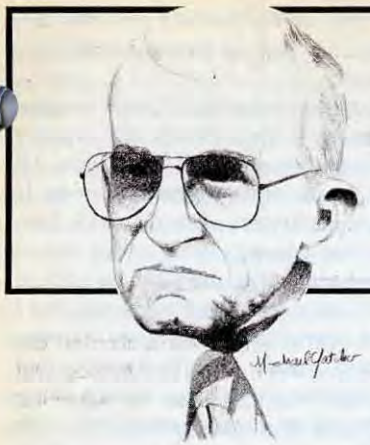

WASHINGTON SCENE :
END OF AN ERA

By GLENN GIBSON
Minco, Oklahoma 73059

Passage of the new farm bill marked the end to an important piece of legislation that assured the producer a reasonable price for honey from 1950 through 1985. Unlike the old program, the new one is dated and provides for reduction in target prices to a point that will bankkrupt many of our producers. Approval of a mandatory check-off and the lowering of support prices marks the beginning of a new period.

I would feel neglectful if I failed to reminisce a bit about the great value of our old program. A number of our old-timers can vividly recall their experiences with sales during the Depression years and until 1950 when honey support legislation became effective. In the thirties, good quality honey moved in carlots for under 3 cents. Producer-packers delivered honey in 5 pound pails at 25 cents. Small side-line and hobby producers consigned honey to local grocery stores and received pay in groceries. Some producers dickered with hard-nosed chain store buyers Full-time honey packers had difficulty showing profits. In simple terms: It was a buyers' market.

The war years gave the producer an opportunity to enjoy good prices, but immediately after this we returned to old cutthroat tactics and this meant a hard-nosed buyers' market. Thanks to some farsighted individuals like Walter Straub, Clarence Benson, Roy Grout, E.C. Bessonet, Alan Root and a host of others, price supports became a reality in 1950. None can claim that we enjoyed a sellers' market these last 35 years, but a number of our producers began making money under the stabilizing effects of the legislation.

In recent years several producers have written articles covering their successful sales program. Some have implied that other producers should follow their lead. I have no quarrel with this since it is good to show pride, but I have a problem with the suggestion that participation in the price support is bad and shouol be stopped as quickly as possible. *To all producers I ask: What would your price have been without the price stabilizing effect of the honey loan of the past 35 years?* I have an idea, but each producer must answer this for himself.

THE NEW HONEY LOAN PROGRAM

The new honey loan program is designed to get the government out of honey packing. This means that the wholesale price of honey will move at world prices. Will this mean a reduction in prices on the supermarket shelf? The answer to this will be forthcoming shortly when the price of domestic honey gradually becomes competitive. Please remember that the bill will expire in 1991, *or sooner.*

THE MANDATORY CHECK-OFF

The recent referendum certainly indicates that the producers want to try a government regulated promotional program. Now that they have spoken I am hopeful that there will be a sincere effort to make it work. I am fearful that many of our producers will feel that their contribution will be all that needs to be done. **WRONG!** Each producer, no matter how large or small can do their bit at the local level and should keep in touch with the Honey Board. BUT PLEASE DO NOT THINK THAT THIS PROGRAM WILL SOLVE ALL OF OUR PROBLEMS. Our old projects, such as Africanized bees, pesticides, mites and last but not least -- the honey loan program will certainly need attention.

THE NEW PERIOD

I am hopeful that our producers will learn all about our new programs and work with us to make them productive. Some of our members are guilty of volunteering to work, but seemingly in the final analysis very few actually respond. At a meeting in 1982, I asked 92 producers how many would be willing to write their Congressman and send us a copy. The response was unanimous, but in the ensuing three years, very few letters were written. Fortunately, other groups have done much better. Now then, if the promoters of the Check-Off do no more than say they are for the program, I have my doubts about success. The only answer here is for the leadership in the industry to commence a continuous nagging program similar to the one we have been waging in getting letters to Congress on the subject of honey loans.

If the new farm bill survives the full 5 years, our target prices will be reduced substantially. Some congressional leaders are talking about major amendments. If this idea prevails, it is possible that our honey program will be changed and this gives cause for concern, since the majority of Congress may be against us.

ACTION

As in earlier articles, I am hereby asking that each producer write their Senators and U.S. Representatives and tell them about your problems. We are especially anxious to establish contact with your Senator, but we need your help in making the contact. May we count on you?§

FALL BEES, FREE BEES?

By KEN KIFER
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Spring in North Alabama can be unpredictable. Temperatures can reach into the 70's for weeks and then plunge down to the 20's. Worse are long rainy spells with 50's temperatures leading to poor colony growth, starvation or swarming, often extending into the honey flow period. T. S. Elliot's comment that "April is the cruelest month" is too often true. By the end of May, the honey flow is finished in many areas, while in all areas it is through by July. There is seldom a fall flow. Many an Alabamian beekeeper must ruefully look at the swarms hanging from hives in July and wish they WERE worth a fly. Perhaps most of the honey crop went to produce such a mass of idlers. Perhaps the bees will eat the rest of the honey and starve before November. If only those bees were around when needed! Spring increase is a real gamble. Packages seldom build up quick enough to make a crop and can starve during cold spells. Queens often arrive late or D.O.A., and when they are on time, you may not have the bees for increase anyway. They recommend starting fruit trees in the South in the fall, why not bee hives?

Because of the problems mentioned above, I have been experimenting with fall increase for nine years. I have read extensively and found nearly nothing on this topic. I feel what I learned will be of value to beekeepers, not only in North Alabama, but in similar regions as well, although to try this under different conditions should require a mixture of caution and bravado. Also I am going to tell what I did, not what I should have done, even when it makes me look foolish.

My first attempt at fall increase was during my second year keeping bees. I took a weak hive that I had trapped out of a house, divided it into three parts, gave each a new queen, moved them three miles, and didn't look at them again until late September. Each hive was weaker and hungrier than when first split. I recombined and fed them, but they died that winter.

The next September I had a friend who couldn't wait to keep bees. So I gave him two frames of brood and bees, a queen and two damaged combs I had left on the ground from a laying worker hive. I warned him to feed them heavily because there would be no fall flow, and he did so. The bees didn't draw any new comb but repaired the old, and went into the winter on four combs. The next year they built up into a fine colony.

Three years later I tried the same thing on a larger scale. I planned to start on August 1, but was delayed three weeks by the state. From 15 hives of bees, I took 10 to 15 frames of brood and bees each week to make five new hives, for four weeks in a row. The bees were weak in brood, but there was a rare fall flow which helped out, and I got more bees towards the end than I had at the beginning.

I did make one bad mistake. I found a laying worker hive, and remembering how those combs had been repaired before, I distributed the combs among the hives. The bees from the laying worker colony killed several queens, and wax worms from those combs destroyed more combs than I had saved. A less important mistake was the use of mason jar feeders. They were always empty before I got back.

An early cold spell in September stopped all comb building. Soon afterward I combined the weakest with the strongest. A skunk decimated one colony, but 13 made it 'till the honey flow in good shape and were built up into 20 strong colonies. I even got 90 pounds of honey.

While it may be argued that I would have done as well with 20 packages in the spring, those packages with some syrup would have cost over $500, while I spent $140 for 70 gallons of syrup, $70 for 20 fall queens and $50 for 7 spring queens. Also, I believe nearly all the hives would have made it had I not messed with the laying workers.

I feel my next two experiments were even more successful, although not planned in advance. Both years I planned to use one of C. C. Miller's schemes for spring increase, and each year the rapidly changing conditions made that impossible. There are many complicating circumstances in this story, but I am not writing a book and will leave them out for the main part. Had they not been involved the increase would have been more.

I started by moving 10 hives to a new area, splitting them to 16, and supering them with brood depth foundation. Of course I made sure they were all strong. In late July I split them again to get 28. Each colony had a laying queen, several frames of brood and pollen, and half a hive full of honey. I have read about equalizing, but I did not attempt to give each one the same amount of brood, bees or honey; I just made sure that they all had enough, in my opinion. All the hives wintered well, with the differences in the spring due mainly to the laying power of the queens.

Unfortunately the bees had nothing but foundation to work on and a heavy vetch flow caused the eight strongest colonies to swarm. Otherwise it was a good year and some colonies made over 200 pounds. Since all the equipment I needed was bottoms and tops, I was ready to divide early. But that was the year of the mite scare, and I couldn't get the queens I wanted until well into October.

Up until that point, the orthodox beekeepers I knew had been pretty patient with me. They heard about my wild inventions and just smiled because they knew the inventions wouldn't work. They heard of my claims for honey production, but they knew I was just lying. But starting new hives in October had them jumping up and down!

Out in the beeyard it looked like they might be right. With no fall flow, there was little brood in the hives, and I had to move all of it to the splits. Since many of the hives had not done well, many of the others had to be split three ways. I had a lot more honey than brood in the new hives. One hive had only a double handful of bees.

It stayed unusually warm until December, then in January it dropped to lows that shattered records and plumbing alike. All of the hives survived the cold, but the handful of bees got robbed out and three hives were queenless. So I got 46 new hives out of the 50 I had increased to.

I feel I can safely make the following statements about beekeeping in Alabama:

1. A hive can be started at any time of the year, provided it has pollen, three pounds of bees and 30-45 pounds of honey.
2. A hive started in the fall is equal to or better than one started in the spring.
3. It is less risky and time consuming to begin hives in the fall.

But I haven't answered the question in

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FALL BEES . . . Continued from Page 476

my title. How much do fall bees cost? First there is the question of the 30 to 45 pounds of honey. How much does it cost? It's not worth $1.00 a pound, because it doesn't have to be transported, extracted, bottled or sold. Since that much honey represents half to a third of the output of a hive for one year, then the true cost is half to a third the maintenance cost of one hive for one year. Then there is a question of the bees, are they free? Most bee books recommend hives strong in bees, even if hives have to be combined. But E.P. Jeffree, in England, reports in HONEYBEE BIOLOGY, compiled by John P. Free, that by actual measure colonies with 11,000 to 14,000 bees (three to four pounds) in November suffered fewer losses than larger or small populations. My limited experience leads me to believe that honey, pollen, drawn comb, a good queen and freedom from disease are much more important than the number of bees for spring build-up in Alabama.

I really can't say if fall divides are more economical than other methods. But dividing my bees in the fall takes the least time, involves the least risk and the least cash. Plus it is the only method that increases the amount of honey in my broodnests for the winter. How does that work? When supering I simply include some full depth brood chambers. In the fall, instead of "hefting the hives," I check on the amount of honey in each hive. Putting the deep boxes on new stands, I swap honey for bees and brood until my new hives are more than strong enough for the winter. Usually the hives that have the most bees and brood are the ones shortest on honey anyway. Of course some bees will fly home in spite of the dearth, but I always check back when I release the cage.

At the risk of being repetitious, I must reiterate that this plan is only recommended for North Alabama or a similar climate. We have pollen through October and again in February. Our winter temperatues usually get no lower than the twenties and rarely below zero. Snowflakes cause pandemonium and a snowfall shuts down everything. The plan may work further north with indoor wintering. I would guess, but don't know, that it will work further south. If you try it, try only a few hives at first, and good luck.§

KOOVER'S KORNER

HOW ABOUT US?

By CHARLES KOOVER
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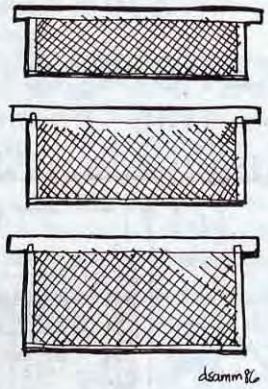
The 'US', are we the amateur beekeepers of America. As far as the bee publications are concerned we are of "little account" because we don't have a hundred hives or more. Or at least it seems that way. The joy of subscribing to British bee magazines is that they don't have commercial producers over there. The amateur is King.

What I would like to suggest is that we amateurs have a corner of our own. Clearly marked, FOR AMATEURS ONLY. During the 40 years I wrote for GLEANINGS IN BEE CULTURE, *most* of my mail came from amateurs. Yet all the big producers read my articles, and when we came face to face they went after me. For instance, they showed me how to let a frame drop in your hands to get the bees off. Try that in your neighborhood! It will anger your bees and when one of your neighbor's kids get stung you are in danger of losing your back-yard location.

"Cheaper by the dozen" applies to beekeeping too. Buy 5 hives and you'll probably get a discount. That's the worst possible advice to give a beginner. They need 2 hives - and no more. Two hives is pure joy. Me telling you. Of course in no time I had 5. Then 6. Thank God I came to my senses and stopped. But the temptation of a free swarm practically begging to be taken is overwhelming. I have been through it and so have you.

I have been out of beekeeping now for 8 years, but recently I went through the catalogs looking for what's new. Horrors, I found only one new item. Plastic cone bee escapes to be fitted in a board. It seems practical, but I don't have bees to test it out on. That was all. Yet, in our daily lives we have constant improvements. Americans are suckers for yearly models and we won't buy unless they offer improvements in our cars and all the other gadgets that make our lives more interesting.

One of the best improvements for a safe and warm broodnest I came across was a slatted rack Richard F. Bovard of Honolulu, Hawaii created. He showed it to me in 1966, and I wheedled him out of one and took it with me after my vacation in Hawaii. I tried it for a year and found it did everything it was cracked up to be. No chewing combs along the bottom bars, better egg-laying, etc, etc. So I wrote an article about it for GLEANINGS IN BEE CULTURE. The A.I. Root company asked me for more details including exact measurements. They made some up I imagine, and tried them out on their own bees. A year later they printed the article I had written previously and advertised it as a new item. That was in June of 1968. This is 1986, 18 years later and they still push the use of it.



In the questions and answers column of the June 1986 issue, Frederick Walliser, Philadelphia, PA asks: "Do you recommend the slatted rack on the bottom board" To which Richard Taylor answers: "It is one way of improving hive ventilation, but is also an additional piece of equipment and I know of no commercial honey producer who uses them." TRUE. That's the trouble with commercial beekeeping. Every penny counts. Never mind the bees. Let me give you what the British bee suppliers did after I wrote an article for one of their bee magazines.

In the October 12th, 1963 issue of the BRITISH BEE Journal, I described the Killion bottom board. It aroused the interest of the British beekeepers with the result that it was displayed at the "National", Britain's famous Honey Show. One manufacturer kept busy just taking orders to supply the demand. An Irish manufacturer of beehives, after testing it with his own bees, wrote an article about it in which he stated that he was supplying it as part of the hives he shipped to his customers. The "Waffa Hive", an experimental two-queen hive, was being equipped with it at an experimental station, and so on.

It proved there that there is truth in the old proverb "A prophet is not without honor, save in his own country."

Some years after that I came up with the idea of a simple slip-in board that fits in the 7/8th deep Eastern bottom-board. All Western beekeepers would have to do was to add a bee-space to their regular Western bottom board. I took pictures of it and wrote an article about it. It was published. No use. "You can lead a horse to water but you can't make him drink."

All correspondence will be gratefully received and acknowledged, but a SA would be appreciated.§

CANNING . . . Cont. from Page 474.

sound ones), 2 medium-sized onions (thinly sliced), 3 red peppers, 2 tablespoons salt, 2 teaspoons celery salt, 2 teaspoons ground mustard, 1 tablespoon whole allspice, 1 tablespoon cinnamon, 1 teaspoon paprika, 1/3 cup honey and 1 pint vinegar.

Quarter tomatoes. Combine with onions and pepper and cook together until soft. Press mixture through a sieve and measure the pulp. This should measure 4 quarts. Add salt and spices. Place whole spices in a bag during the cooking and remove before pouring the catsup into bottles. Cook rapidly for 1 hour. Rapid cooking preserves the bright red color. Add honey and vinegar and cook until thick. Pour into sterilized bottles or jars and seal at once.

Honey Peach Jelly

Three cups of peach juice, 2-1/2 cups honey, 1/2 cup water and 1 box of dry pectin. Crush about 3-1/2 pounds of peaches, after removing pits but not the skins. Add water and bring to boiling point. Cover and simmer 5 minutes. Squeeze through jelly bag or several thicknesses of cheesecloth. Place in large kettle (to prevent boiling over, as honey jelly has a tendency to foam quite a bit), add the dry pectin, stirring vigorously. Place over heat and bring to boiling point. Add the honey and continue boiling until the jelly sheets from spoon. Pour into freshly sterilized glasses. Paraffin.

Honey Crabapple Jelly

Four cups of juice, 4 cups of honey, juice of 1 lemon and 1 box of powdered pectin. Remove stem and blossom ends from 4 pounds of crabapples and cut in small pieces. Do not core or peel. Add 3 cups of water and simmer gently until tender enough to crush easily. Mash and simmer 5 minutes longer. Strain, add lemon juice and measure juice. Add dry pectin, stirring vigorously. Place over flame and bring to boiling point. Add honey and boil briskly to jelly stage, skim and pour into freshly sterilized glasses. Paraffin.

Honey Apple Marmalade

Four cups apple sauce, unsweetened, 2 tablespoons lemon juice, 1-1/2 cups honey and 1/2 bottle fruit pectin.

Pare and slice apples. Add just enough water to prevent sticking. Cover and cook until apples are soft. Add lemon juice and grated rind, then the honey. Heat carefully to boiling, stirring constantly. Boil hard 1 minute. Remove from fire. Add fruit pectin. Stir 1 minute. Skim.

Honey Pear Conserve

Five cups pared, chopped pears, 2 lemons, 3-1/2 cups honey, 1 orange and 2 cups raisins.

Prepare pears. Remove seeds from lemons and orange. Grind pulp and rind using coarse knife of food chopper. Combine fruits and honey. Cook slowly, stirring frequently, until thick.

Honey Chunk Pickles

Select fresh firm cucumbers, not over 1-1/2 inches in diameter. Wash and cut into 3/4 inch slices. Bring to boildng 4 quarts of water and 2 cups of coarse medium salt; cool. Pour over cucumbers. Weight down well so all slices are covered completely with brine. Let stand 3 days. Drain. Let stand in fresh water (weighted down) for 3 days. Drain. Then stew (a low simmer not a boil) for 2 hours in a weak vinegar to which has been added a lump of alum the size of a walnut. Drain. Cover with hot syrup. To 7 pounds of pickles use 6 cups of honey or cider vinegar, 4-1/2 cups of honey, 1 ounce whole allspice, 1 ounce broken cinnamon sticks and 1 ounce celery seed. Boil together 3 minutes.

It is not necessary to seal these in jars. They will keep perfectly in a crock which is covered with a plate to keep out dust. Upon standing, they become a rich, deep translucent green -- as nearly like commercial sweet pickles as possible -- only much better! Aurora, Nebraska.§

ANSWERS TO TESTING YOUR BEEKEEPING KNOWLEDGE

From page 452

1. ***True*** The composition of beeswax consists of more than 300 individual components. This mixture contains hydrocarbons, monohydric alcohols, straight chain fatty acids, hydroxy acids and diols. Since it is such a complex material, it is doubtful that synthetic beeswax will ever be produced.

2. ***False*** Bloom on beeswax, whether on foundation, candles or stored wax does no harm. Beeswax is a very stable material; samples thousands of years old have been found and have deteriorated very little, being nearly identical to that produced today.

3. ***False*** Wax scales are removed from the wax plates or pockets by the bees producing them and passed forward by the tarsi to the mandibles. This is accomplished by pressing the first tarsal segment of the hind leg against the wax scale and pushing backwards. Spines penetrate the scale, attaching it to the tarsus and the leg then passes it forward so that it may be grasped by the forelegs or mandibles.

4. ***False*** No insect or mite can live on pure beeswax alone, therefore, cakes of wax and comb foundation do not need to be protected from wax moth.

5. ***False*** When old combs are melted in a solar wax extractor, a good deal of wax remains in the refuse or slumgum because the cocoons act much like sponges. Tests have shown that between 1/2 to 2/3 of the wax remains entrapped in the slumgum when old comb is rendered in solar wax melters.

6. ***False*** Paradichlorobenzene crystals kill wax moth adults and immature stages, but not eggs.

7. ***False*** Pure beeswax, as it is secreted by the workers, is white irrespective of whether the bees have fed on sugar syrup or dark honey.

8. ***False*** During the building of new comb, many of the workers in the cluster are constantly reworking the wax already deposited and have inactive wax glands.

9. ***True*** Beeswax originating from southern Asia, produced by other species of honey bees (*Apis dorsata, Apis florea, Apis ceràna)* is called Ghedda wax and differs in chemical and physical properties from wax produced by the European honey bee, *Apis mellifera.*

10. ***True*** Scanning electron photomicrographs of wax scales taken from secreting bees show that each scale is made up of several successive secretions (layers).

11. ***True*** A combless cluster of honey bees, such as a swarm, will start to build comb provided they are accompanied by a queen and are hanging in a position where they are subject to low light intensity.

12. E) 10 percent

13. B) making cosmetics

14. B) canary yellow

15. Age of the honey bee
Amount of nectar or honey in the honey stomach
Need for comb

16. Dipping, pouring or molded

17. Ether, carbon tetrachloride, benzene, acetone, gasoline, trichlorethylene, chloroform, carbon disulfide, turpentine, xylene.

There were a possible 20 points in the test today. Check the table below to determine how well you did. If you scored less than 12 points, do not be discouraged. Keep reading and studying -- you will do better in the future.

Number of Points Correct

20-18 Excellent
17-15 Good
14-12 Fair

PROMOTION PROGRAM FORGES AHEAD

On August 15-17, the Nominating Committee of the National Research, Promotion and Consumer Information Program met in Denver, Colorado. Chaired by Mr. Binford Weaver, they chose a list of names for consideration by the Secretary of Agriculture to form the National Honey Board. Also submitted were names from Honey Cooperatives, Packers and Importers.

The Nominating Committee consists of representatives from each state plus the Co-ops, Packers and Importers. They will nominate 7 producer members and one public-at-large representative to sit on the Board.

Once the Board has been ok'd by the secretary, they will elect a permanent Chairman and other officers as required.

The committee hopes that this process will be rapid and there are no political hang-ups to slow down the selection. They also hope that this program can be implemented by the end of the year.

As progress continues, we will keep you informed of the Who, What, When and Why of the Research, Promotion and Consumer Information Program.

On other fronts, the Current Honey Adulteration tests performed by government inspectors is coming under increasing fire. Some honeys naturally contain different amounts of sugars and are coming under suspect by these tests.

"A product is guilty until proven innocent," said Frank Robinson when asked for an update. "These tests are not conclusive and some producers have their backs to the wall trying to prove themselves innocent," he continued.

"If the matter can't be resolved scientifically, a court injunction may be in order to try and get things cleaned up," he finished.

BEE CULTURE will follow this story as it develops.§

SUPPORT PROGRAM BUYBACK PRICES CHANGED

WASHINGTON. Effective August 1, the Commodity Credit Corporation has changed the loan repayment levels available to beekeepers for 1986 - crop honey. The first 1986 - crop prices were announced July 10 and have been changed already. Price changes can be changed weekly, but the increased paper work and resulting confusion dictate that a weekly schedule is difficult, if not impossible to administer.

To give you an idea of these changes, we will try to keep a running record of them, along with previous prices and the effective dates of each.

Category	July 10	Aug. 1	%Chg.
White	.52	.48	- 7.7
Extra lite amber	.46	.43	- 6.5
Lite amber	.40	.37	- 7.5
Amber	.375	.35	- 6.7

These changes reflect an average drop of 7.1% in prices overall. White category being the largest with a 7.7% drop. Obviously these changes will have a dramatic impact because many producers have not finished harvesting. It's also obvious that the federal government is backing out of the honey storage business. It will be interesting to see just how fast they want to go out of business.§

THE INNER COVER

Continued from Page 435

will get done. Program chairman, fund-raising chairman, membership chairman, fair (or bonanza, honey show, etc.) chairman and the rest are all jobs the president should *not* be doing. Along with this is the newsletter editor, refreshment coordinator and of course, treasurer and secretary.

When an association has a leadership group dedicated to their jobs and things keep getting done, the meetings and the association as a whole usually run pretty smooth. New members are recruited on a regular basis, regulars are educated and keep volunteering for those special projects. The result is a growing, dynamic association.

But when the opposite happens, when the leadership is carried by a very few, there can be trouble. When there aren't enough bodies to get the work done, the work doesn't get done.

What goes first? Is it regular educational programming, recruitment, fund-raising or the newsletter? Can an association afford to be without any of these, or the other activities required to make an organization run? And grow?

And why aren't there enough bodies? Don't the members want to help, don't they have the time, or haven't they been asked to help? And if they have been asked, why was the answer no?

I've visited associations where 80-90% of the membership attended nearly every meeting. With about 100 members, they had a board of directors with 10 members and a bank account that would rival Fort Knox.

So why is there so much diversity among and between beekeeping associations throughout the country. Does the group I just mentioned have a secret the rest of us don't know about?

It's no secret really, but consider again the original statement -- The success of an organization depends on the degree of importance the group plays in the lives of the members.

Just how does a 'group' become important? I've already mentioned several activities groups work at, but for now let's just consider the Newsletter.

Newsletters. Getting the word out. I don't think there's a more effective, efficient glue for an organization than a *regular* newsletter. Right off the bat a new member is getting something tangible for dues paid. Something in the mail on a regular basis that has to do with bees, beekeeping and 'their' organization. This is "up close and personal". A newsletter in hand means that the group is doing something -- making beekeeping a little better or easier. It's also a continuous reminder that the group is on-going -- alive.

But after awhile just getting it means less than when it gets there. *The most important* aspect of a newsletter is timing. The newsletter should be in hand about 2 weeks before the next meeting. Sooner than that and it gets forgotten, later and people may have already made plans.

FOR THE RECORD

Gleanings continually seeks accuracy in our publication. We recognize that errors do occur and use this space to correct them when discovered by staff or readers. Mistakes may occur in writing, editing or mechanical reproduction of the magazine. It is our policy to correct these mistakes. We encourage questions or comments from readers. Call (216) 725-6677 during business hours or write us at the address on the inside cover of this magazine.

Continued on Page 487

So be sure that it gets sent out *on schedule.* If it goes out first class (expensive but fast) allow 3 (three) days to get to every member. Second class - a week, and third class bulk rate - 1 to 3 weeks. Check with your post office, and then check with the members to see how fast it's getting in their hands. Do this on a regular basis. I've had too much experience with the post office to place blind faith in their promised delivery.

The next obstacle is "what to write"! This is THE hardest part of an editor's job. The next meeting notice is mandatory. Date, time, location and agenda -- *Every Month.* If there's a speaker --- Who, what topic and some background. If the meeting is a planning session for the county fair -- who is in charge, what will be discussed and what is needed by the participants. Are refreshments available? Is there an auction? Raffle?

Once these are taken care of consider a summary of the last meeting. Keep it short, but make sure it's all there. A treasurer's report is good, but not necessary. A letter from the President is always welcome. This doesn't have to be long, perfectly written or philosophical. Just a note to let everybody know what's going on.

An editorial should also be considered. Again, it doesn't have to be a pulitzer prize winner, but only an opinion. Something about current pesticide problems, member participation, dues, the state of the world -- it's your choice.

Finally, a schedule of coming meetings. Let everybody know what's coming up so plans can be made.

These are the guts of a good newsletter. But other things should also be considered. A membership form should be included; a list of officers and how to contact them; the names, addresses and phone numbers of local apiary inspectors and extension agents; contact people in the state organization if this is local, and local organizations if this is a state newsletter -- the list goes on. The idea here is to provide, *on a continuous basis* -- INFORMATION.

After this comes the articles -- if there is room. I could get in trouble here, but if there isn't a local author to write about topical events -- steal them. From other newsletters, the journals, magazines, newspapers, books -- you name it. Be sure to give credit where due, and certainly don't take the credit yourself. The object is to get this information into the hands of the people who can use it (but don't say you read it here). These articles don't have to be long or detailed or technical. Just plain down to earth how-to-stuff that anyone can use.

Finally, what format to use. This is largely determined by budget. If funds are tight a single sheet of 8-1/2 x 11 paper with a triple fold is good. Make the outside third a mailer and you're set. Offset printing is better than xeroxed which in turn is better than mimeographed. Again, check with the post office on how to mail these.

If I were to make an analogy on the importance of an associations' newsletter, I would liken it to the cohesive element of queen pheromone. There is no doubt it affects the social, educational and political glue that holds a group together.§

News & Events

☆ ALBERTA ☆

Beekeeper Technician Program Offered

Fairview College, Alberta, Canada, offers one of the world's most unique opportunities to study beekeeping.

The Beekeeper Technician Program starts in January and runs for eleven months. The couse is designed to train people to work with commercial beekeeping operations and prepare for careers as independent beekeepers.

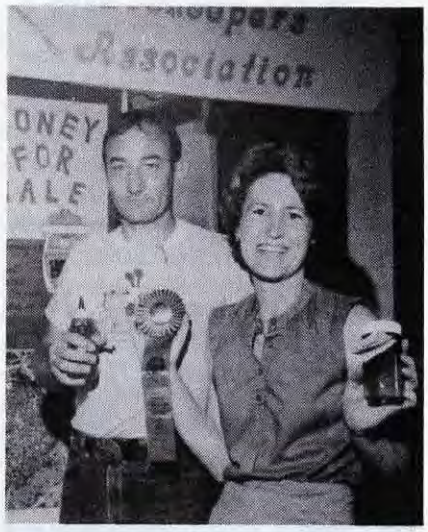
The course is offered in three sessions. Session 1: theory of apiculture and honey production, including a one-month field trip to California.

Session 2: work with the College's 300-hive apiary or established beekeepers. Session 3: learn business and management aspects of running a beekeeping operation.

For more information write to: Registrar, Box 3000, Fairview, Alberta, Canada TOH 1LO.

☆ CALIFORNIA ☆

Los Angeles County Honey Queen is Dorie Goit of Palmdale, Ca. She was crowned last January at the L.A. County Beekeepers Assn. annual banquet. This year she has put on demonstrations for over 2,600 school children, educating them on the importance of honey bees. Other promotions have been at the L. A. City Zoo and the L. A. County Museum of Science and Industry agriculture fair. Planned future appearances will be at the Antelope Valley Fair and the L.A. County Fair this fall.



WINNING DISPLAY -- Bill Hiatt (left) of Long Beach and Brenda Borron, of South Laguna, show off the blue ribbons for the Orange County Beekeepers Association. The Beekeepers won the non-commercial, agricultural division in the Orange County Building exhibit competition. The 94th edition of the Fair closed Sunday, July 20 in Costa Mesa.

☆ CONNECTICUT ☆

The Western Connecticut Beekeepers Association, (which meets from 8 p.m. to 10 p.m. at the Fairfield County Extension Center, Rt. 6, Bethel, CT.) has the following schedule of events:

Sept. 18 -- Open Forum, a panel of experts will be available to answer any and all of your questions.

Oct. 17 -- Harvesting -- from Super Removal to the Bottle.

Nov. 20 -- Richard Taylor, talking on "The Future of Beekeeping".

☆ FLORIDA ☆

The Tampa Bay Beekeepers Association of Hillsborough, Pinellas and Manatee Counties, Florida, is celebrating it's 40th year anniversary. Because of a special program planned in honor of the event to be held on Thursday, December 4, 1986, it is requested that ALL former members and former honey queens contact us. We want you with us for this memorable time!! Please write or call Diane Cornwell, Publicity Committee, P.O. Box 13535, Tampa, Florida 33681. (813) 634-2072.

☆ ILLINOIS ☆

Illinois State Beekeepers
96th Annual Convention
November 1, 1986

Place: Department of Agriculture Building
Illinois State Fair Grounds
Springfield, Illinois

9:00 - 9:30	Registration
9:30 - 10:30	ISBA Meeting Reports: President, Secretary, Treasurer, Historian and Ladies Auxiliary.
10:30 - 10:45	Break
10:45 - 11:30	Mr. Ross Clark, from The Morton Arboretum, Lisle, Il., "Queen Rearing"
11:30 - 11:45	Election of Officers
11:45 - 1:15	Lunch
1:15 - 1:30	Raffle Drawing
1:30 - 2:00	Dr. Basil Furgala, Apiculture Dept., U. of Minnesota. "Future of Beekeeping in N. America"
2:00 - 2:30	Mr. Kurt Gross, Editor of the Illinois State Beekeepers Bulletin. "Figurine Wax Molding"
2:30 - 2:45	Break
2:45 - 3:00	Installation of Officers
3:00 - 3:45	Local Chapter Reports
3:45	Adjournment

Complete dinner at the Agriculture building cafeteria $6.25 per person. Reservations must be received no later than October 22nd. Make check payable to: Illinois State Beekeepers and mail to: Mr. Udell Meyer, R.R. #3, Box 308, Edwardsville, Il. 62025.

YOUR NEXT MEETING NOTICE COULD HAVE BEEN HERE

LET YOUR MEMBERS KNOW!

Continued on Next Page

NEWS . . . Continued from Page 482

☆ MARYLAND ☆

The Fifth Annual Maryland Honey Festival will be held at the Oregon Ridge Nature Center in Cockeysville, MD on October 4 & 5, 1986 from 10 am to 5 pm. Admission is Free.

Included will be demonstrations of:

Extracting — Making Mead
Dipping Candles — Skep Making

Educational exhibits/talks on:

Capturing Swarms
Beginning Beekeeping
Stinging Insects
Apiotherapy
Beekeeping Equipment
Beginning Beekeeping
Pesticides and Honeybees
Products of the Beehive

And sales of:

Honey — Pollen
Bees Wax Candles

There will be free samples of:

Honey and Honey spiked food and drink.

Plus observations hives, 3 Bee Beard demonstrations and Meet the American Honey Princess, Caroline Comport, and Watch free movies and HAVE A GOOD TIME!

☆ MISSOURI ☆

Missouri State Beekeepers
Semi Annual Meeting
Poplar Bluff, Missouri
October 10, 1986 - 6 p.m.
Southern Missouri Savings and Loan
Highway 60 Downtown
October 11, 1986
Junior High School Gym
Highway 60 and 67 Junction
Suggested Motel:
Super 8 - Highway 67 North

7:00 - 8:00	Registration
8:00 - 8:30	Ray Nabors, Master of Ceremonies, Entomologist, U. of MO, Delta Center, "Our State Insect"
8:30 - 9:30	Harry Williams, U. of TN, Sate Api. Spec., TN, "Bee Disease: Lab. Diagnosis"
9:30 - 10:00	Neal Bergman, Missouri Beekeeper, Kennett, Missouri "Queen Rearing"
10:00 - 10:30	Break
10:30 - 11:30	Harry Williams, U. of TN., St. Api. Splst. "Bee Management for Disease Control"
11:30 - 12:00	Flernoy Jones, Entom. and State Api. Specl., U. of MOColumbia. "Pollination Contracts and Bee Mgmt."
12:00 - 1:00	Lunch
1:00 - 2:00	Marvin Parker, Voc. Ag. Teacher, U.S. Agy. for Int'l. Devmp., MO Beekeeper, Parma, Missouri "Beekeeping practices in Turkey and the Phillipines"
2:00 - 2:30	Larry Hanning, Ent., State of MO., Dept. of Ag. "Field Recognition of Bee Diseases and Legal Ramifications"
2:30 - 3:00	Joe Francka, State Entom. State of MO, Dept. of Ag. "Tracheal Mites in MO"
3:00 - 4:00	Panel Discussion, Missouri Beekeepers, Moderator, Flernoy Jones

☆ MISCELLANEOUS ☆

Federation Plans New Orleans Meeting

The American Beekeeping Federation is progressing on the plans for its 1987 convention in New Orleans. The meeting will be at the Hyatt Regency New Orleans, January 18-21.

The hotel is on the edge of downtown New Orleans adjacent to the Superdome and convenient to the Fench Quarter and other Crescent City attractions. Plans for the convention include a tour of the nearby Baton Rouge Bee Lab, an evening river boat cruise, and a Mardi Gras theme banquet. The program will allow time for taking in all the New Orleans sights.

Binford Weaver, former ABF president from Navasota, Texas, has been named program chairman for the convention. He is putting together a list of speakers to address topics of interest to the bee and honey industry. The convention theme is "Opportunities in Changing Times."

On the first day of the convention, the North American Committee on Parasitic Mites and the African Bee will co-sponsor a symposium with the Federation to update the situation relative to those pests.

Convention registration information will be sent to Federation members. Others can contact Frank Robinson, Secretary-Treasurer, American Beekeeping Federation, 13637 NW 39th Ave., Gainesville, FL 32606, (904) 332-0012.

☆ OHIO ☆

Lebanon, Ohio Honey Festival will be held on September 11, 12 and 13, 1986.

☆ WEST VIRGINIA ☆

The West Virginia Beekeepers Association Fall Meeting will be held September 12 and 13, 1986 at the Bishop Hodges Pastoral Center in Huttonsville, WV. This is located on Rt 2195, About 20 miles South of Elkins, WV.

Accomodations are available with either 2 beds and bath or single and bath. Swimming, fishing and tennis are available.

Speakers include: Dr. James W. Armine, Jr. who will speak on "African Bees in Central America and their impact on American Beekeeping", Dr. Jack R. Cahir on "Treatment of Anaphylactic Shock", Mrs. Fern Wilson on "The Beekeepers Wife", Mr. A. A. Blanks will discuss the formation and operation of a privately held Honey Co-Op, Mr. Ed Scales speaks on 50 years among his bees and Mr. Gary Janett will share information on queen rearing.

Workshops and displays will also be available.

For registration forms and other information, contact Mary C. Topp, Highland Park, Wheeling, WV 26003. (304) 242-5846.

☆ SOUTHERN STATES ☆

The Southern States Beekeepers Federation will hold their 58th Annual Convention on November 1-4, 1986, at the Executive Inn, Nashville, TN.

Events planned include Tours of The Grand Ole 'Opry', an Advanced Bee School, Gospel Singing and a 'Storytelling' Contest.

Speakers include Lawrence Cutts, Dr. John Ambrose, H. Shiminuki, Dr. James Tew, Dr. Erickson, Richard Adie, Brian Sheriff, Huck Babcock and Steve Forrest.

More information will appear on these pages next month, but for now, contact Dr. John Ambrose, Dept. of Entomology, NCSU, Box 7626, Raleigh, NC 27695-7626 (919) 737-2129.

☆ SPECIAL NOTICE ☆

For Your Information:

National Geographic will present a segment of its hour long Explorer Series on African Bees. This program, broadcast on WTBS (Cable Station), will air on September 14th at 8pm EST, and will be re-broadcast on September 15th at 11pm EST. Dr. Orley Taylor will be featured during this segment.

Continued on Page 487

MAILBOX . . . Cont. from Page 440

Canadian beekeeper with adequate amounts of quality queens and bees in April and May for over fifty years.

Streamline technology and assemblyline efficiency have characterized the U.S. package bee and queen industry. Development of modern procedures and techniques have enabled U.S. beekeepers to accomodate the rapid growth of the Canadian industry. Mass quantities of queens and bees have been supplied to us on demand, whatever our need. Technology which has taken the U.S. fifty years to develop will not be adapted or implemented anywhere else overnight.

The ability to communicate rapidly and at a low cost one's beekeeping problems to the U.S. supplier has been instrumental to our stability. Queen or bee problems in April can be erased with a phone call for extra bees and queens. Within two or three days potential spring disasters can be alleviated through prompt shipments from the U.S.

Excellent queen breeders exist in Canada at this time. Gallant endeavors to raise quality queens in April have been undertaken. Because of our location above the 49th parallel and our uncertain weather conditions, early queen production has not succeeded. The beekeeper's fiercest adversary, cold weather, has reigned supreme. We can produce excellent queens in June, July and early August, but, if we are to produce a honey crop, we must have queens and bees in April and early May! Queens produced in June and July must be raised for next year's honey crop. At current honey prices, it is not feasible to double one's amount of tops, bottoms and supers to house next year's queens and bees; and as mentioned above, there is no guarantee that these bees will survive the harsh winter.

New Zealand has indicated that her beekeepers will gear up to supply our package bees and queens. Because of their geographical location and opposite seasons, queens and bees received from New Zealand would be raised during their fall when nectar and pollen supplies are diminishing quickly and warm temperatures for good mating are also on the decline. Queens raised in the late summer would be stored in queen banks for extended periods.

Canadian beekeepers prefer the Carniolan, Caucasian, or their hybrid crosses, for wintering because of their early brood shutdown in fall, low food consumption in winter, higher resistance to nozema disease and overall better tolerance to cold weather. We have been able to winter Italian bees if we feed massive amounts of honey, sugar syrup and Fumidil B drug. At current honey prices, can any beekeeper afford that much feed and drug? The majority of New Zealand stock is of Italian base. There have been no new importations of genetic bee stock into New Zealand for over sixty years, nor is there likely to be in the near future, as New Zealand law prohibits bee stock importation.

Other areas, such as Hawaii, are hopeful of supplying more queens to Canada, but they do not have the capability or facilities to fulfill our requirements. (Furthermore, if the Canadian market is restricted to Hawaiian and New Zealand suppliers, with their limited production capability, you may rest assured we will face a substantial price increase).

For the past two years, beekeepers' emotions surfaced as dialogue expanded on the new pest, the mite (also known as acarine diseae). The main problem appeared to be the lack of reliable scientific data concerning the mite. Scientific studies were initiated in Mexico, the U.S. and Canada (the Saskatchewan Beekeepers' Lac La Ronge Mite Project). Although all the evidence is not recorded, enough is recorded to suggest that, although the mite may not be beneficial, it is certainly not the monster originally forecast.

It is generally accepted that no parasite is a benefit to its host. Diseases we now contend with, such as American Foulbrood, European Foulbrood, Chalkbrood and nozema disease, can spell economic ruin for the beekeeper, but the mite does not appear to have this capability. Honey bee colonies with acarine disease appear to operate quite normally. To date there is not one shred of evidence to indicate that the mite interferes with honey production. Interestingly, one study from Florida shows acarine infested colonies outproducing healthy colonies: while there is some question about the adequacy of the control in this experiment, it is rather convincing, given the total lack of evidence to support the opposing view. Low honey prices, the above-mentioned diseases, or a **lack of bees and queens** can spell financial collapse for the beekeeper, but the mite does not appear to be so catastrophic.

The Canadian government, upon recommendation from the Canadian Honey Council, has instituted stringent guidelines and sampling procedures to govern the importation of bees and queens from the U.S. In many areas of the U.S., beehives infested with acarine disease have been eradicated. Emotions south of the border are at a feverish level as beekeeper after beekeeper is put out of business through hive eradication. The few queen and package bee suppliers have been placed under tremendous anxiety and duress in order to accommodate their Canadian brothers. We have asked the impossible of these people and they have delivered. Are we willing, or do we have the resources (manpower and money) to carry out and enforce the same sampling procedures that we have asked our U.S. counterparts to undertake? Most provincial apiary departments don't have enough money or staff to keep American Foulbrood under control. How, then, will we ever sample and control the mite should we become infected? Would our money not be better spent on research to control or eliminate the mite? If we are not able to maintain adequate surveillance in Canada, it is irresponsible to ask this of our American colleagues. In effect, we would be telling our American friends, "Don't send us one bee with a mite, because we can't find it ourselves."

Our lifeline to survival has been the excellent queens and bees purchased each April and May from the U.S. Without these two essential ingredients, no beekeeper, however capable, can maintain the required number of honey producing colonies needed to meet his financial obligations. To sever the umbilical cord that has provided our industry with its most vital source of nourishment (package bees and queens), by closing the border to their importation without a reliable and economical alternative, is to commit financial suicide. We can produce honey with the mite. Without bees and queens we can produce nothing.

The current solution (border closure) could be a far greater economic disaster than the problem (the mite). To cut off one's head to cure the toothache does not appear a prudent or rational decision. An issue of this magnitude should be determined by commercial beekeepers, those who depend on beekeeping for their livelihood, not by government employees or those people with no vested interest. We must be careful not to make a decision we will later regret. Let us not sink the very lifeboat that will keep us from drowning!

Mike Thomas
P.O. Box 116
Clyde, Alberta
Canada TOG OPO

Dear Editor:

During routine inspections of imported honey bees, we have discovered the presence of the honey bee tracheal mite *(Acarapis woodi)* in Manitoba from a sample of bees analyzed on June 18, 1986. These bees were part of a load of 575 packages that were imported from the U.S. on April 28, 1986. The load of packages was distributed among seven beekeepers in

Continued on Page 487

☆ Classified Corner ☆

Classified rates: 49¢ per word, each insertion payable in cash in advance. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it) counts as one word. Not less than 10 words accepted. Copy or cancellation orders MUST be in by the 1st of the month preceding publication. Blind Ads $6.50 additional charge per month. Send classified ads to: The A.I. Root Co., Advertising Dept., ***Gleanings in Bee Culture***, Box 706, Medina, Ohio 44258-0706.

Seven Steps To More Sales From Your Classified Ads

"Classified advertising is a powerful sales tool, and it's probably the most cost-effective way to generate inquiries."

Whether you have never placed an ad before, or whether you have been using classified advertising for years, you can generate more sales by following these seven simple steps:

1) Follow the AIDA principle. Classified advertising must follow the rules of all good advertising. The AIDA principle is one way to sum it up: *A*ttention, draw *I*nterest, create *D*esire and cause *A*ction.

2) Put "U" Before "I". It doesn't work that way in the alphabet, of course, but in advertising "you" comes before "i". It's another way of saying that when you are selling put the emphasis on the reader. Your ad should tell the reader what your service or product will do for the reader!

3) Be aware of the classified ad's limitations. You can sell directly from a classified ad only if you ask for a small sum for a catalog, sample or modest product. Leave your full sales message for display ads and direct mail; the classified's job is to entice prospects to write or call for more information.

4) Use power-packed sales words. There are certain words and phrases that are generally successful in all advertisements. The favorite six are FREE, NEW, AMAZING, HOW TO, NOW and EASY.

5) Do not worry about the word count. Your first job is to get all the benefits and selling words about your product or service on paper. Then comes the rougher job of editing and polishing!

6) Say more in fewer words. The average classified is 20 to 25 words. Generally, if you can't state your proposition in 35 words or less, go back and analyze your offer.

Find brief ways to say the same thing: use "10¢" rather than "10 cents"; write "Satisfaction guaranteed" instead of "Money back if not satisfied"; say "Details free" or "Free Information" rather than "Write for free details".

7) Key your ad. A "key" is a device to code an ad so that you can tell where an inquiry or purchase came from. It should always be used when you advertise in more than one publication.

MAGAZINES

THE AMERICAN BEEKEEPING FEDERATION needs your support! Join in supporting efforts to stop adulteration, to improve marketing conditions and to encourage the continued research on African Bees and Varroa and Acarine Mites. Send for information, membership application and sample copy of bi-monthly News Letter! Write To: THE AMERICAN BEEKEEPING FEDERATION, INC., 13637 N.W. 39th Avenue, Gainesville, FL 32606. TF

THE SCOTTISH BEEKEEPER Magazine of The Scottish Beekeepers' Association, International in appeal. Scottish in character. Membership terms from A. J. Davidson, 19 Drumblair Crescent, Inverness, Scotland. Sample copy sent, price 20 pence or equivalent. TF

What do you know about the INTERNATIONAL BEE RESEARCH ASSOCIATION? The many books and other publications available from IBRA will deepen your understanding of bees and beekeeping: and IBRA membership subscription — inclusive of ***Bee World,*** a truly international magazine published quarterly in the English language — will broaden your beekeeping horizons. Details from IBRA voluntary representative H. Kolb, P.O. Box 183, 737 West Main, Edmond, OK 73034 (phone 405-341-0984); or from IBRA, Hill House, Gerrards Cross, Bucks SL9 ONR, UK. TF

DAIRY GOATS — for milk, pleasure and profit. Excellent for children, women and family! Monthly magazine $11.00 per year ($13.50 outside U.S.A.). DAIRY GOAT JOURNAL, Box 1808 T-3, Scottsdale, Arizona 85252. TF

SCOTTISH BEE JOURNAL. Packed with practical beekeeping. Sample copy from Robert NH Skilling, FRSA, 34 Rennie St., Kilmarnock, Scotland. Published Monthly, $4.00 per annum. TF

BEEKEEPING. A West Country Journal — written by beekeepers — for beekeepers. 1.50p inland or 1.80p ($4.00 Overseas). 10 issues yearly. Editor, R. H. Brown, 20 Parkhurst Rd., Torquay, Devon, U.K. Advertising Secretary, C. J. T. Willoughby, Henderbarrow House, Halwill, Beaworthy, Devon, U.K. TF

BEE CRAFT — Official (monthly) magazine of the British Beekeepers Association. Contains interesting and informative articles. Annual Subscription $5.10 (Surface mail) and $7.10 (Airmail). The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex, RH10 3DS TF

INDIAN BEE JOURNAL Official organ of the All India Beekeepers' Association, 817, Sadashiv Peth, Poona 411030. The only bee journal of India Published in English, issued quarterly. Furnishes information on Indian bees and articles of interest to beekeepers and bee scientists.

Annual subscription postpaid in foreign countries: For individuals US $7.00 for institutions, companies and corporate bodies US $10.00 or it's equivilent, to be received in advance by IMO or bank draft, payable in Poona (India). TF

WANTED

Western Commerce needs honey under the buyback program -- any type, any flavor, any quantity -- anywhere. Also have new, used or reconditioned drums for sale. Call (818) 333-5225, indicate honey for sale or drums to buy. 9/86

HELP WANTED

Beekeepers & Helpers wanted for migratory Texas operation. Resume to 17307 Windypoint Dr., Spring, TX 77379. TF

Man interested in working bees. Willing to learn our system. Paul Ballard Roxbury, N.Y. 12474. 10/86

FOR SALE

Have 1 to 2 thousand colonies of bees for sale, warehouse with living quarters, three trucks, wax shop, locations. Owner old, retiring. Have pollination for 1,000 colonies. Call (801) 798-3921. TF

21 two story and 35 single story colonies all for $2500. 1 (214) 835-5221 in Naples, TX. 11/86

120 strong 10-frame, 3-story colonies, $70 each plus extracting equipment in excellent condition. 1979 GMC 1-ton Flatbed truck with bee boom also available. Ed Guthrey, 2209 Fillmore Court, Antioch, California (415) 754-8432. 9/86

Bee supers ready to assemble. 2000 deep supers, 4000 3/4 deep supers and 6000 shallows. Francis L. Jones, 7558 Martin Bay Dr., Sandpoint, Idaho 83864. 9/86

Honey pots, send one dollar for a large price list to J. Steed, P.O. Box 115, Richmond, KY. 40475. 1/87

50 colonies, 200 supers, lots of extras. $3,500. Phone: (303) 440-3884. 9/8

SELLING OUT COMPLETE OPERATION. Large extractors, tanks, wax equipment, several hundred supers, hive bodies, all miscellaneous equipment. Also 20 strong colonies in central Michigan. (517) 875-2496 or (517) 875-4726. 9/86

All or part of fifty hive operation. Must Sell. Tom Cullinan. (712) 792-4020 Carroll, Iowa. 9/86

Over 100 hives bees complete with business and equipment. Established 15 years. (412) 654-6521. 9/86

BEES AND EQUIPMENT. Includes Cowan uncapper, 70 frame extractor, capping melter. (509) 926-5881. 9/86

700 colonies, palletized, winterized, $55. Equipment less than seven years old. Western New York locations. New Queens. 2000 Deeps $12. Write To:

Gleanings in Bee Culture
P. O. Box 706, No. S237
Medina, Ohio 44258

TF

Ten colonies bees consisting of hive body and four shallow supers each. Good equipment. No disease. $850.00. Bellaire, Ohio (614) 686-2645. 9/86

1 ton truck $1000. 320 deeps. 9 drawn comb $9.00. Call (219) 856-4688 or (219) 856-4601. Indiana. 10/86

BEES & QUEENS FOR SALE

WE USE ALL POSSIBLE CARE in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

3-Frame Italian Nucs, $35.00 each or 3 for $100.00 POSTPAID. Queens 1-10 $6.00, 11-25 $5.25, 26-up $4.75. Box's Better Bees, 410 N. Lide, Mt. Pleasant, TX 75455. Phone: (214) 572-0428. TF

BEE SUPPLIES FOR SALE

FOR TOP QUALITY BEE SUPPLIES and advice on beekeeping problems, visit your nearest Root dealer and send for your FREE Root catalog. Satisfaction Guaranteed. The A. I. Root Co., P.O. Box 706, Medina, OH 44258. TF

QUALITY CYPRESS BEEKEEPING SUPPLIES -- dovetailed hives and hive parts, beginner's kits, complete supplies. Write: BEE-JAY FARM, Dacula, GA. 30211. TF

RADIAL HONEY EXTRACTORS, stainless, 5 and 10 frames, patented. Also complete line of equipment. Write or call: GAMBLE'S Bee Supply & Candle Co., (919) 299-3973 after 5 PM weekdays, anytime Sat., P.O. Box 7997, Greensboro, NC 27417. TF

HONEYSTRAINER -- Approx. 18" X 20" 100 mesh nylon bag. Use with bucket. Easy. Practical. Convenient. Ppd. $3.50 each, 2-up $3.00 each. Instructions. Beckman G. Box 633, Stuart, Fla. 33495. TF

MISCELLANEOUS

MEADMAKERS, WINEMAKERS, BEERMAKERS
Fresh stocks, Fast Service. Free Catalog. O'Brien's, Box 284M, Wayne, IL 60103. 10/86

NO HEAT OR ELECTRICITY USED. Uncapping fork (not just a scratcher). No flavor loss and better flavor retention. No burnt fingers or shocks. Honey from dark comb not discolored as with hot knife. $11.00 ea. ppd., Blossomtime, P.O. Box 1015, Tempe, Arizona 85281. TF

Dealership Territories available in some areas. Please contact The A.I. Root Co., P.O. Box 706, Medina, Ohio 44258. TF

BEESWAX

BEESWAX WANTED -- Highest prices paid in cash or trade for bee supplies. The A. I. Root Co., Medina, Ohio 44258. TF

POLLEN

Pure Fresh Bee Pollen in 1 lb. jars $3.60. In 50 lb. bulk $5.00 per lb. Prairie View Honey Co., 12303 12th St., Detroit, Michigan 48206. TF

CLEAN FRESH FROZEN AMERICAN BEE POLLEN, give us your needs and we will quote prices. Howard Weaver & Sons, Rt. 1, Box 24, Navasota, Texas, 77868, or phone: (409) 825-7714. TF

SPANISH POLLEN -- NEW PRICES. Excellent taste and quality. 6 lbs $25, 10 lbs $35, 20 lbs $65. Free UPS Shipping. Blossomtime, P.O. Box 1015, Tempe, Arizona 85281. TF

BEE HEALTHY & ENJOY Canada's Best Bee Pollen. Air dried at 110°F from the pure north of British Columbia. Excellent flavor, superior quality and guaranteed pesticide free. 3 lbs. $20.00; 6 lbs. $39.00; 10 lbs. $54.00; 20 lbs. $100.00. Free UPS shipping. BLOSSOMTIME, P.O. Box 1015, Tempe, Arizona 85281. TF

ROYAL JELLY

PURE FRESH Royal Jelly, 2 oz. bottle, $13.50 pp.; 1 lb $90. Prairie View Honey, 12303 12th St., Detroit, MI 48206. TF

BEEKEEPERS TAKE NOTICE -- We cannot guarantee honey buyer's financial responsibility, and advise all beekeepers to sell for CASH only or on C.O.D. terms except where the buyer has thoroughly established credit with the seller.

BEST FRESH PURE ROYAL JELLY 2 oz. --***$12.00,*** 1 lb. -- ***$85.00,*** prepaid. ***FREE UPS SHIPPING.*** Stakich Bros., Inc., 4128 W. Orchard Hill, Bloomfield Hills, MI 48013. (313) 642-7023. 11/86

Pure, fresh Royal Jelly. 2 oz. - $14.00. 1 kilo - $185.00. Free Shipping. Absolute top quality. Why Pay More? (712) 366-1430 evenings. 1/87

BOOKS

"Bee Pollen The Miracle Food, Source of Youth, Vitality and Longevity." "Propolis The Eternal Natural Healer". For free literature and details send SASE, Murat Publishers, 2132 N. W. Eleventh Ave., Miami, Florida 33127. TF

COLLECTORS ITEM; Few books available "BETTER QUEENS" by the late Jay Smith, $25.00 postpaid. Write Mrs. Manly Smith, 600 NW Washington, Madison, Florida, 32340. 11/86

OLD BEEKEEPING BOOKS FOR SALE. Over 400 old books. Also thousands of magazines, old supply catalogs, honey recipe books, USDA's and numerous other publications. This collection must be liquidated as soon as possible. Offering 40% discount on all orders over $100.00. Send $3.00 for list, refundable on first order. James H. Johnson, 107 State St., Terra Alta, WV 26764 (304) 789-6486. 2/87

American Bee Journal 1951-1984 unbound. Gleanings in Bee Culture 1949-1983 unbound. Also 400 issues 1888-1922 some complete years. Many antiquarian and modern beekeeping books. Send $1 bill with your wants for quotes and catalogue. Honeyfields Books, Ashbourne, England DE61HX. S/N

FEEDING

SUGAR AVAILABLE for feeding. Granulated, in bags, bins or bulk. We cover the entire U.S. St. Charles Trading Inc. 1 (800) 336-1333. Bill Heerdegen. 10/86

HONEY FOR SALE

CLOVER, ALFALFA, Buckwheat, Tulip Poplar, Wildflower or Orange in 60's. Dutch Gold Honey Inc., 2220 Dutch Gold Dr., Lancaster, PA 17604 TF

☆ OBITUARY ☆

HELEN MAXANT

Helen Maxant, 71, passed away in early July. She was born and raised in Oakland, California. She came East in 1933 after marrying Bill Maxant and worked with her husband through 3 businesses. Married 53 1/2 years, she will be sadly missed by family and friends.

☆ OBITUARY ☆

ARTHUR 'JACK' LANCASTER

Arthur Lancaster passed away on July 3, 1986 at the age of 61. He owned and operated "Jack's Honey Farm" in Asbury, N.J. Before building the well known "Bee Skep" structure in 1957, he operated the business from his home and garage, beginning his operation in the spring of 1952 -- this was truly the "House that Jack Built"! He and his establishment were well known in beekeeping circles throughout the United States and had been featured on national television both in commercials and nature shows.

He was responsible for starting many beekeepers and was always available to his customers for advice.

He started as a 'Root' dealer in 1952, then added the 'Dadant' line and finally 'Maxant' equipment. He headed the 4-H group of Warren County Beekeepers for several years, many of his "students" still are keeping bees.

He was a founder of the North West Jersey Beekeepers Ass'n. and belonged to the Morris County Branch of the State Organization for almost 40 years. He was a former Sec'y - Treas. and Vice Pres. of the N.J. Beekeepers Ass'n and also belonged to the Eastern Apicultural Society.

He is survived by his wife Marie, his son Jack, and daughters Karen Longley, Terry Ann Coleman and Kathy Collins.

☆ OBITUARY ☆

Mr. Larry Gunter, President of The American Beekeeping Federation recently passed away as a result of an automobile accident. We will have more information next month.

MAILBOX . . . Cont. from Page 484

western Manitoba.

Since the initial discovery of 21 infected bees from a sample of 3,000 bees we have resampled the apiaries that received those packages and have confirmed that at least some of these apiaries are infested with the honey bee tracheal mite. We are continuing to sample in an effort to determine the level and distribution of the infestation within the apiaries.

Immediately following the discovery of the tracheal mite, all beekeepers who had received packages from the infected load were notified of the discovery and advised that all apiaries that had received these bees were under quarantine. After consultation with the Manitoba Beekeepers' Association through its Parasitic Mite Committee, the quarantine on all the suspect apiaries was continued. Under this quarantine, the beekeeper cannot remove honey bee colonies from the quarantined apiary location. It was the recommendation of the MBA that until more information on the distribution and level of the infestation is available, the colonies be allowed to operate, under quarantine, until the end of the honey flow and then be depopulated.

The quarantined apiaries are located in the general areas of Brandon, Holland, Gilbert Plains, Gladstone, Minnedosa and Rossburn.

D. Dixon
Entomology Section, Technical
Services & Training Branch
911 - 401 York Avenue
Winnipeg, Manitoba R3C OP8

Editors Note:

Although these packages did originate in the United States, there has been some confusion as to the point of origin. Rumors abound so for now we cannot, in all honesty, say where they came from. We are investigating leads and if we can determine, positively, the point of origin, we will announce it at a future date.

FOR THE RECORD, Cont.

The price listed for the HANDS ON CLASSROOM UNIT by Ms. Kathy Hultgren in the August Gleanings in Bee Culture article "Teaching Teachers" was incorrect. They require $3.00 to cover printing and postage costs.

Ms. Kathy Hultgren
155 Lovell Road
Holden, MA 01520

We regret the error.

Index to Display Advertisers

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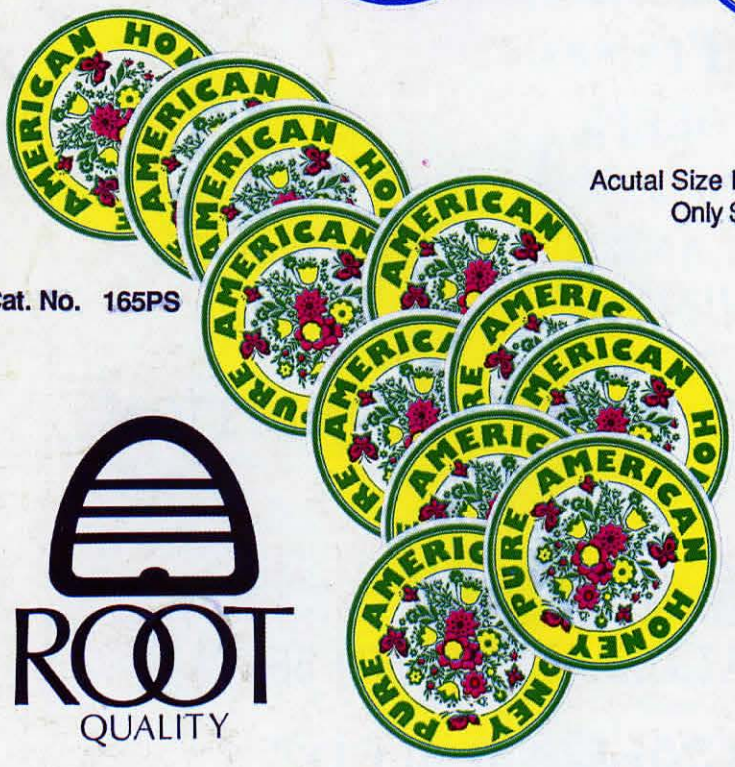

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Medina, Ohio 44258-0706
Phone: 216/725-6677
Telex: 753856 Root UD

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