GLEANINGS IN JAN '89

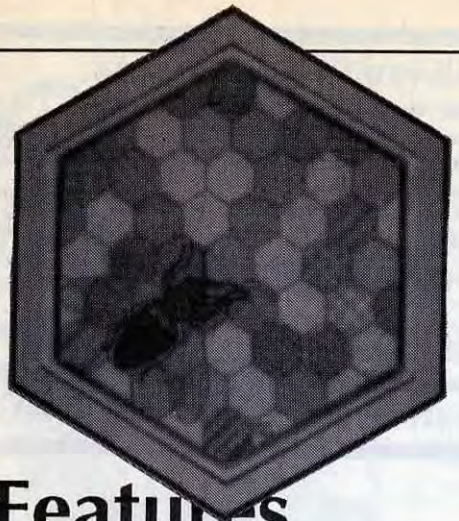
BEE CULTURE

INSIDE:

- Tropical Forests Losing the Battle
- Florida Honey Plants
- Chalkbrood Cure?

▲ Wax Flower How-To

◀ Pulled Thread Technique



JANUARY '89

CONTENTS

(ISSN 0017-114X) Vol. 117, No. 1

116 Years Continuous Publication by the Same Organization

Features

Articles

Columns

Departments

NEXT MONTH

We'll share our spotlight on both coasts next month, since those folks seem to capture much of what we all do, but do some things unique to their respective locales.

First, we have a mini-series entitled 'California Dreaming'. Included are three pieces, ranging from observations on CA beekeeping made by Larry Goltz, former *Bee Culture* editor, and still a midwesterner at heart. Next, a chapter from a book recently released by Clay Tontz. Clay, though transplanted, is definitely a Californian at heart, and his story is entertaining and informative, and a joy to read. Finally, we'll take a close look at the California Buckeye, the ne'er-do-well cousin of Ohio's mascot, and a bane to beekeepers wherever it grows.

Next we do a transcontinental hop, and take a look at some East Coast experiences. We start with a look at the excellent Extension program in FL run by Tom Sanford. Next, there is an all-to-familiar story about what happens to a beginner who has, well, a bit of difficulty with her first package. Certainly humorous now, many will recall similar episodes — with, we hope, some humility, and a willingness to lend a hand to another starter.

Moving north, there is an excellent piece on New England woodlots, and how to manage them — best for bees and people — honey, firewood and wildlife habitat work hand-in-hand with a little care and planning.

All this — the East Coast, West Coast, and our regulars inbetween. Plus, more on the varroa mite quarantine and other news and events — next month.

ADDRESS CHANGE

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!

FOR PERMANENT CHANGE:
Name _____
Old Address: Street _____
City: _____ State _____ Zip _____

New Address: Street _____
City: _____ State _____ Zip _____

FOR TEMPORARY CHANGE:
Name _____
Address No. 1: Street _____
City: _____ State _____ Zip _____
Circle Appropriate Months: J F M A M J J A S O N D

Address No. 2: Street _____
City: _____ State _____ Zip _____
Circle Appropriate Months: J F M A M J J A S O N D
Send to: The A. I. Root Co., Subscription Department, P. O. Box 706, Mediina, OH 44258

THE A.I. ROOT CO., Publishers
623 W. LIBERTY STREET
MEDINA, OHIO 44256

Subscription Rates: United States, one year, $12.95; two years, $25.00. **Newsstand Price: $1.95.** Other countries including Canada, Pan American countries and Spain (U.S. Currency only), $7.50 per year additional for postage. Remittance should be sent by post office money order, bank draft, express money order or check. Published monthly. Discontinuance: Subscription stopped on expiration. Change of Address: Fill out and return form contained inside issue. Articles are solicited. Stamps should be enclosed to insure return of manuscript to author if not printed. *Opinions expressed by the writers in these columns are not necessarily those of the editors.* Advertising rates and conditions will be sent on request. Advertisers' Reliability: While the publishers do not guarantee advertisements in this journal, over the years very few complaints have been received. Microfilm copies available at: University Microfilms, Inc., 300 North Zeeb Road, Ann Arbor, Michigan 48103. Second Class Postage Paid at Medina, Ohio and additional offices.

POSTMASTER: Send Form 3579 to:
623 West Liberty Street • P.O. Box 706
Medina, Ohio 44258-0706
Phone: (216) 725-6677

THE INNER COVER

Hawk's Memory

It was a one in a million chance.

I was headed for the coffee pot and only stopped for a moment to chat with my daughter. It was early Thanksgiving morning and we had already been talking 'turkey' and as usual, when I grabbed the pot I glanced out the window.

This is my favorite window because it looks over the backyard, past the woodpile and grape arbor, eases over the garden, and settles on the six colonies at the far end of the Estate. With all this I wasn't focusing on any one spot because I had one eye on my cup.

Suddenly, there was a movement outside that caught my full attention. It was larger than the sparrows and chickadees at the feeder near the arbor, faster than the squirrels waiting for a dropped morsel, and the cats who, with incredible patience, wait their turn, too.

Large and brown, the Hawk dropped like a stone from above my line of sight to a pinpoint landing on top of the woodpile. There, feathers settling, it quickly dispatched a little furry something, checked out the area for I'm not sure what, and almost immediately with a slow motion lunge took leave of the pile — breakfast in hand.

It was over in less time than it takes to fill a coffee cup.

Death came to that furry something because of an instant of inattention. It was probably concentrating on the nearby cats, certainly the most immediate danger. But it appeared their attentions were on the bird feeder. Given that forty or fifty birds were in the vicinity this would be a logical assumption, if small furry creatures think things through like that.

And too, it was warm on top of the pile. Only 35° outside, the sun had just rounded the corner of the garage and was already melting the frost on the wood stack.

Apparently safe from the cats, and toasty in the early sun, it was the almost perfect perch for this soon to be breakfast.

The Hawk, however, did not simply stumble onto this breakfast-to-go. Patience, trial and lots of errors have fine-tuned it's air strike skills. I doubt it was sitting high in the nearby walnut tree waiting for that particular furry meal, but maybe it was. The Hawk may have tried and missed on previous mornings, without my knowledge, and was simply trying again — both being creatures of habit.

Rather, though, I think the Hawk was waiting for any creature qualifying as breakfast to make a mistake — a bird at the feeder, a creature on the pile, or anything that fits and starts.

Like I said, catching the hawk in the act was a one in a million chance, because nature seldom shares her darker side. But death is an everyday occurrence in the likes of wood piles, gardens and beehives. These are the just-out-of-sight places in the real world of the hunter and hunted.

But this is not the whole story.

The Hawk was simply doing it's job when breakfast appeared, but little furry had limited his attention to just the cats. The potential for an air strike either didn't occur to him, or wasn't important. Or maybe, because the cats were new to the area (the feeder had been up only a week), little furry was overly concerned with this new problem, and let the others slide.

Whatever the reason, by noon little furry was only a Hawk's memory. The birds still fluttered and the cats still waited. Little furry's overconcern in one direction had diverted it's limited attention skills away from real, everyday dangers — and it died because of it.

I tell you this because I see much the same thing happening in the beekeeping industry. Much — in research money, bureaucratic energy and individual time — is being spent on our new and exotic visitors.

Continued on Page 50

COVER . . . We salute the creative in us all this month, looking at many forms of personal expression using the honey bee as an object d'arts.

Liz Duffin, Master Flower Builder; and Doris Payne, Needle Craftsperson Extraordinaire are only two of many we celebrate, but these are certainly the most visual of all we offer.

JANUARY
Honey Report

January 1, 1989

These figures represent current prices from our contributors. They are based on reports from many states and averaged for each region. Where insufficient information is received, no price is shown.

Wholesale Extracted	Reporting Regions								Summary		
Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	R	A	L
60 lbs. (per can) White	48.00	39.85	35.17	31.20	44.00	36.00	38.63	42.10	31.20-52.00	39.67	39.34
60 lbs. (per can) Amber	43.00	37.70	35.00	25.20	48.50	32.63	35.75	38.00	25.20-50.00	36.83	35.82
55 gal. drum//b. White	.60	.40	.51	.52	.49	.60	.60	.62	.40-.67	.55	.52
55 gal. drum/lb. Amber	.55	.35	.45	.42	.50	.55	.53	.55	.35-.60	.50	.47
Case lots — Wholesale											
1 lb. jar (case of 24)	29.50	27.96	25.00	22.18	22.34	23.90	26.95	29.33	20.00-35.04	25.97	26.10
2 lb. jar (case of 12)	28.50	26.11	25.65	21.58	21.57	23.75	28.70	29.40	20.00-33.00	25.05	25.58
5 lb. jar (case of 6)	30.00	28.33	25.00	24.73	24.70	24.55	26.60	26.20	21.90-34.50	26.36	26.61
Retail Honey Prices											
1/2 lb.	.90	1.11	.90	1.18	.87	.85	.90	.91	.83-1.50	.97	.95
12 oz. Squeeze Bottle	1.60	1.58	1.39	1.30	1.38	1.23	1.20	1.40	1.00-2.00	1.37	1.34
1 lb.	1.60	1.99	1.45	1.74	1.74	1.48	1.58	1.56	1.29-3.50	1.64	1.51
2 lb.	2.85	2.83	2.75	3.35	2.51	2.78	2.87	1.94	1.94-3.89	2.76	2.73
2-1/2 lb.	3.90	4.01	3.25	—	2.93	3.28	3.71	3.16	2.85-4.85	3.54	3.59
3 lb.	4.00	4.05	3.69	3.20	3.65	3.92	3.83	3.73	3.20-4.30	3.80	3.78
4 lb.	5.00	4.78	4.59	—	4.69	4.57	4.70	—	4.50-5.00	4.71	4.79
5 lb.	6.00	5.65	5.90	6.13	6.00	5.20	5.77	5.97	5.00-6.25	5.81	5.93
1 lb. Creamed	2.00	1.50	1.70	1.55	1.66	1.42	1.76	1.40	1.40-2.00	1.64	1.65
1 lb. Comb	2.25	2.15	2.20	3.25	2.50	1.97	2.70	2.25	1.75-3.25	2.32	2.14
Round Plastic Comb	1.75	2.63	1.50	1.90	1.55	1.90	1.85	1.75	1.50-3.00	1.90	1.80
Beeswax (Light)	1.10	1.03	.95	1.10	1.25	.85	.95	1.12	.85-1.25	1.04	.99
Beeswax (Dark)	1.00	.93	.90	1.00	1.00	.79	.83	1.00	.75-1.10	.92	.88
Pollination (Avg/Col)	32.50	—	—	26.25	15.00	19.50	23.00	26.00	15.00-32.50	24.07	25.80

Honey Report *Features*

Summary Column: There are 3 parts. R — Range of *all* prices reported for the month, lowest and highest. A — Average price for each commodity across all regions. L — Average price of each commodity listed *last* month.

Comments Section. Price Index — A descriptive statistic that takes into consideration *all* commodity prices, and compares each region to the others. The region with 1.00 has the highest overall prices for the month. A region with Price Index .90 has prices, overall, at 90% those of the region with 1.00.

Region 1.

Price Index 1.00. Prices steady to increasing but demand only steady. Colonies generally in good condition, but some light. Spring feeding will be needed in some areas so be aware.

Region 2.

Price Index .91. Sales decreasing along with prices as specialty crop inventories decline. Mixed bag of fall weather conditions result in similar fall crop. Generally, good flows have provided excellent stores, and even surplus. But, as usual, some places short on stores, so check for feeding ASAP.

Region 3.

Price Index .83. Prices steady, demand steady. Region on hold, gearing up for early spring rush. Varroa treatments underway in some operations along with tracheal treatments.

Region 4.

Price Index .78. Sales slow to steady but prices decreasing. Crop average to above average with bees in good condition for the winter.

Region 5.

Price Index .90. Prices increasing at a steady pace and demand excellent. Best crop for the region in years and sales are keeping up. Late rain will help soil moisture for next year. Bees in good shape.

Region 6.

Price Index .80. Sales steady to slow, prices decreasing. Colony conditions fair to poor with winter stores only adequate in many areas. Be sure to check colonies.

Region 7.

Price Index .89. Sales strong, prices steady to increasing a bit and demand steady to strong — a good trend. Colony condition mostly good, except in heavy drought area. Check for feeding in these areas.

Region 8.

Price Index .95. Sales steady, prices steady to decreasing a bit. Northern areas getting some rain, but colonies will need checking in spring. Southern areas beginning to look at spring pollination already. Some concern about mite problems.

Anyone interested in becoming a "Honey Reporter" should contact the Editor.

MAILBOX

Domestic Paper

In your Nov. '88 issue there was a letter entitled *A Plastic Pox.* You responded that your magazine came in a paper envelope. I have never received my copy in an envelope, and, like the author of *A Plastic Pox* my copy occasionally arrives torn. What's up?

I believe you have a very practical magazine for me as a hobbyist. I need practical day-to-day tips and suggestions, as well as interesting stories and anecdotes.

Kevin L. Bevill
681 Middlefield Rd.
Salinas, CA 93906

Editor's Note: We only deliver foreign subscriptions in paper envelopes, not domestic copies. Believe it or not, foreign postage gets beat-up even more than domestic, as any of our subscribers who have had their magazine arrive without the envelope can attest. But we'll stick with paper, even though many magazines are beginning to use the plastic pox.

'Exclusive' Wisdom

After reading Richard Taylor's "Questions & Answers" in November's *Gleanings*, I suggest Mrs. McCracken of VA deserves a medal for allowing her husband to use her electric iron to clean his queen excluder.

I have been married for 37 years to a wonderful wife but I may not have lasted this long if I had done the same.

However, there is a very easy way to clean excluders and still keep peace and harmony on the home front. The answer is simple — use your solar wax melter.

I always advise people to make their melters **BIG**. Mine has an old storm window, 36" x 36", and works beautifully; easily capable of holding wax, frames and excluders.

Even in the North, after you've extracted honey and removed excluders from the hives, the Fall sun is still powerful enough to melt wax and will remove virtually all of it from the excluder wires. Take them out of the wax melter while still warm and wipe with old newspapers or a paper towel and they'll come back like new.

I hesitate to use a hive tool on queen excluder wires as they are easily sprung and become useless. It is well known that virgin queens are small enough to get through the wires even when properly spaced and mated queens can get through sprung wires as they seek to expand the brood nest.

I have used queen excluders for years and never found one that the worker bees could not get through — no matter how much wax and propolis is on them they always keep some opening for passage to the supers.

D. W. Gouldthorp
Lot 72, Riverview M.H.P.
8600 U.S. 1
Micco, FL 32958

Imports Not Important

Regarding Dr. Jaycox's comments "Our inordinate fear of bee importations from the stand point of genetics is not justified."

I believe it is justified. After all, what led to this problem 30 years ago in Brazil? Also, there are some bees imported into the U.S. (the Orchard Bee — *Osmia cornifrons*) from Japan. But I applaud the USDA for its stand on not importing honey bees in any form (semen, eggs, embryos), and I hope they continue.

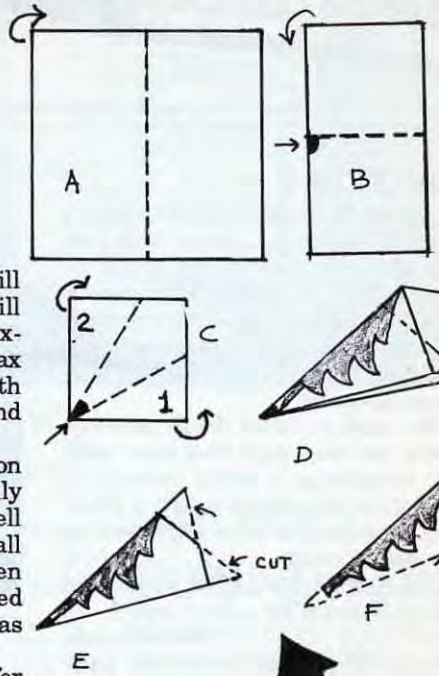
Mel Disselkoen
IMN Inc.
P. O. Box 9552
Wyoming, MI 49509

Free Collection

I am a retiring beekeeper, and am in possession of a 20 year collection of *Gleanings in Bee Culture*.

I would like to donate these magazines to any interested party, who can contact me by mail or phone (818) 332-1965.

Alex J. Catania
504 N. Dover Rd.
Covina, CA 91722



SNOWFLAKE MAGIC

MAILBOX

Salty Water?

I have been reading a (translated) book from the Soviet Union, *Bees and People* by Naum Ioyrish, 1977.

This book is filled with health claims of bee products, recipes and interesting historical references to beekeeping and also has comments on bee management.

One section, called the importance of water for bees, says that bees need water containing a small amount of salt. A scientific study is cited (from 1958!) in which the bees were seen to prefer *salted water*.

Can any reader confirm benefits of or bee preference for *salted water*?

Bob Edwards
1559 Solitude Lane
El Sobrante, CA 94803

Spelling Bees

A group of young beekeepers in East Germany have been constructing this form of 'hive-super'. They cut away the material for letters and the honey bees completed the empty room with delightful comb honey.

The letters stand for (in English) Association of Small Gardeners, Settlers and Small Animal Breeders. The beekeepers of East Germany are members of that association.

Klaus Nowottnick
Hauptstrasse 1
P.O. Box 15
DDR-6086 Pappenheim/Thuer. Wald
German Democratic Republic
(East Germany)

RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"More on Varroa . . ."

Apidologie, the international, but largely European bee journal, devoted the entire second issue for 1988 to varroa disease; there are nine articles, mostly by Europeans but with some input from the U.S. Since varroa has been present in Europe for many years we have the benefit of their experience, research and perspectives.

Chemicals Available

It is difficult to know how many substances have been tested for varroa control in Europe but I am sure the number is in the hundreds. At present seven chemicals have been approved and registered for use in one or more Western European countries. The favorites are (1) Folbex-VA (bromopropylate), which is registered in ten countries, (2) formic acid, which is currently registered only in West Germany but for which many countries do not require registration, (3) Perizin (cumaphos), which is registered in seven countries, (4) Apitol (cymiazol-hydrochlorid), which is registered in two countries but has registrations pending in four more, and (5) Apistan (fluvalinate), which is currently registered only in Belgium but has registrations pending in four more countries. (Apistan is made by Zoecon Corporation and is the only one of these now in use in the U.S.) Two other materials reported to have anti-varroa effects are registered but are little used today.

Two new materials, both made by the Bayer Company, have been submitted for registration in West Germany. It is obvious that we will benefit greatly from the development and testing of all these miticides in Europe. It is important that more than one material is available for combatting varroa. One of our great concerns is that mites may become resistant to fluvalinate, especially if we are forced to make more than one treatment per year. By alternating materials, using one chemical one year and another the next, we can delay the development of resistant strains of the mites.

Probably the most important paper in this series is that by Drs. Koeniger and Fuchs from Germany. This paper is the underlying basis for the fluvalinate treatment we are using today in the U.S. Of particular interest are the data that support the use of fluvalinate, especially in colonies with capped brood.

In their conclusion the authors state that complete eradication of varroa mites is not "a realistic goal" In Europe, chemical treatment is part of routine colony management to keep mite populations down, and those who do not treat lose their bees; however, the labor involved is considerable. The danger of contamination of beeswax is noted and I am aware that this is under investigation in both Europe and the U.S. today.

Infestation Rates

A paper by Drs. Moosbeckhofer, Fabsicz and Kohlich, also from Germany, points out that there are "great differences in infestation rate and varroa population dynamics" among the colonies they followed in their studies. This is good news too. While it is not clear why infestation rates vary from one colony to another this suggests very strongly that some bees may be naturally more resistant to the disease than others. We are already aware that Africanized bees in Brazil show a considerable degree of resistance to varroa. Also, recent studies on tracheal mites by Drs. Norman Gary of California and Robert Page of Ohio show that there is variation among U.S. honey bees in susceptibility to that mite. All of this confirms that the long range solution to the three diseases (chalkbrood, tracheal mites and varroa mites) that have been introduced into North America in the past 16 years lies in breeding resistant stock.

Rearing Varroa

Efforts are being made in Europe and the U.S. to raise varroa on an artificial diet so as to better study its biology. In a cooperative effort among researchers in England, Italy and a USDA laboratory in Georgia, it has been found that all stages of the mites (adults and nymphs) can feed on an artificial diet through a thin plastic film. Mite nymphs fed in this manner produced eggs that hatched but it was not possible to carry these through their full life cycle.

There is a stepped-up program in the USDA's Beltsville laboratory to rear mites outside the beehive. Dr. W. A. Bruce, who is senior author on one of the articles in this series in *Apidologie*, recently moved to Beltsville from Georgia. A special laboratory has been prepared for him. I am pleased to see this new initiative underway; it could prove to be most worthwhile in our effort to learn more about these mites.Δ

May The Forest Be With You

DIANA SAMMATARO

orests all over the world are disappearing, leaving behind barren ground, weed-filled gaps and eroding hillsides. As caretakers of spaceship earth, we must be concerned about this destruction and should be helping to stop it.

Some symptoms have been recorded already, including disappearing songbirds, increasing global temperatures from elevated carbon dioxide levels in the atmosphere (the greenhouse effect), eroding slopes that create dangerous mud slides and floods, and the potential extinction of many animal and plant species.

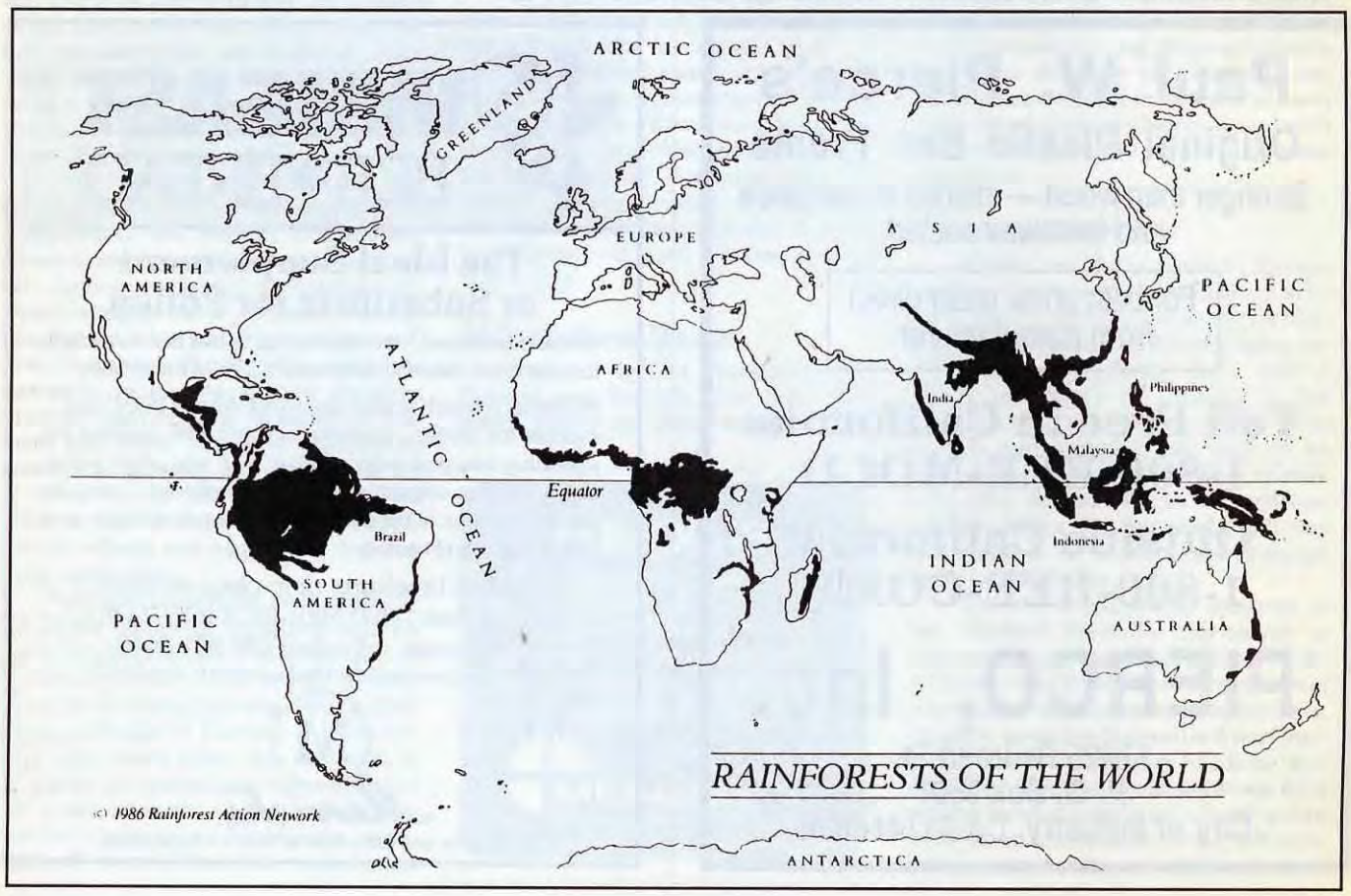
Below is a map that shows areas in the world where problems are occuring. I know what you are going to say — "I don't even live in one of the affected areas. I don't cut down forests, it's not MY problem."

If you DO live in one of the problem areas, you already know what situations exist, and perhaps are doing something about it. If you don't live nearby, but eat fast-food hamburgers, you may be contributing to the deforestation of this planet[4].

The Wellspring Of Life

Before we get into this too far, let's examine what lives in a tropical rainforest. "A typical 4-square mile patch of rainforest, according to . . . the U.S. Academy of Sciences, contains up to 1500 **species** of flowering plants, as many as 750 tree, 125 mammal, 400 bird, 100 reptile, 60 amphibian, and 150 butterfly. . .[1]" In fact, each TREE could support over 400 unique insect species!

"The complexity of a tropical rainforest sometimes strains the crude framework of modern biology, derived from the much simpler ecosystems of the temperate zones[1]." Rain-



forests contain up to 50% of all living things. In any one acre of a tropical rainforest, you can find up to 90 different tree species; in a *mature* temperate forest there are about 4! In just ten square feet, tropical leaf litter can hold up to 50 species of ants.

With such variety, you would think these trees are far too abundant to worry about, but there are relatively few individuals of any ONE species in that acre. There is just too much competition with others, dramatically increasing their vulnerability to extinction. When a forest is cut, hundreds of species could be wiped out in a very short time. And since rainforests are some of the oldest plant and animal communities on earth, we may be destroying important food, forage, lumber, or medicinal plants and not even know it[8].

The Forest Shopping Mall

Why worry about a bunch of trees? Well, what did you eat for breakfast this morning? Did it include orange juice, tea or coffee, sugar, peanut butter, hot chocolate, corn flakes or rice crispies, or maybe hash browns? Where do you think their *wild ancestors* originally came from? You guessed it. It is estimated that 98% of commercially produced crops originated in such areas.

The following list (by no means complete) gives you an idea of what forests contain — both temperate and rain:

- rattans, resins, latex
- flavorings, perfumes, shellac, essential oils
- gums, disinfectants, insecticides, herbicides
- glue, fibers, dyes, tannins
- fats, waxes, artificial sweeteners, oil
- food, including fruits, vegetables and HONEY
- medicines, including some cancer drugs

But food and other products aside, most important are the medicines. When malaria was rampant, people killed for the secret of its miracle cure: quinine, the bark of a South American tree (*Cinchona ledgeriana*). From the same forests come, to mention a few of the famous, **curare** (muscle relaxant), **ipecac, cortisone,** and **vincristine** (for leukemia).

In all, approximately 120 drugs are extracted from plants and used as medicines throughout the world. According to the US National Cancer Institute, a full 70% of the 3000 species identified as having anti-cancer properties are from tropical rainforests.

And despite the importance of plants in medicine (25% of all drug prescriptions come from plants), NO pharmaceutical firm has an active research program to search for new drugs from these sources.

The Root of It All

Tropical rainforests are often found on steep hillsides with poor soils, yet they are able to support the "most productive ecosystems on earth[1]." Tropical soils are as varied as temperate soils and have been poorly understood. Newest research indicates that only 7% of all tropical soils are classed as laterite (more correctly called plinthinte). This refers to soils with high concentrations of *Aluminum* and *Iron,* which tie up necessary soluble plant nutrients. When such soils are deforested, they tend to turn into a hard, red clay. Some of these soils, if carefully managed, can be productive[5]. But to maintain an adequate level of productivity means using fertilizers, which are too expensive for most peasant farmers.

Let's take a closer look at this tropical rainforest — a ground-level view. Resting on the subsoil is a mat of roots, decaying organic matter or humus, fungi, bacteria and other micro-organisms up to 16 inches thick. "This mat is incredibly complex and enables the forest to decompose and nourish itself, sort of a slow-release fertilizer[1]."

First, plant roots draw minerals from the subsoil which eventually end up in leaf tissues. When the leaves fall, which they do gradually and year-round in evergreen tropical jungles, they come to rest on the mat. Almost immediately special plant roots, called *feeder roots* in conjunction with a special fungus (mycorrhizae) start to absorb available water and nutrients from these fallen leaves. This fungus, which is specific to the different tree species, assists the roots in extracting nutrients. " such as phosphorous when they are present in concentrations too low for (uninfected) roots to exploit[1]." Recently it was discovered that if the mycorrhizae are destroyed by fire (eg. by slash and burn agriculture) or otherwise removed, reforestation efforts can be futile unless the proper fungus is re-introduced.

Another function of the mat is to act as a giant sponge or water reservoir. This is critically important during a rainstorm. In an average tropical cloudburst as much as 8 inches of rain can fall in an hour. The leaves of the forest canopy normally buffer that terrible pounding, so that much of the water slowly drips to the ground. There it is absorbed and stored for future use. The mat also regulates the later release of this stored water into streams and rivers, discharging cleaned and purified water to thirsty animals, crops and people downstream.

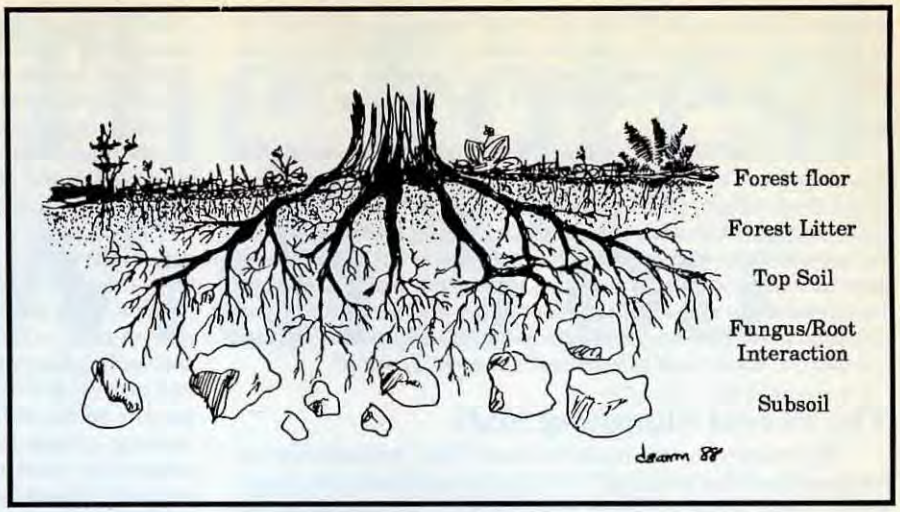
Scientists have placed radioactively-tagged plant nutrients in the rainforest mat to observe the leaching process during a rainstorm. They found that only 1% of the tagged elements were released in the streams below!! Imagine where all those nutrients (and for that matter water) would go without this mat and forest holding it in check — remember the floods in Bangladesh during September of 1988?

In a larger role, the tropical forest also regulates the weather to some degree. Over half of the rain from those tropical downpours is intercepted by the leaves and evaporates back into the air. "Research in Brazil has shown that at least half of the rain in the Amazon Basin comes from water evaporated from the forest itself. . and records show that annual rainfall has dropped by 17 inches over the past 50 years[1]." There are now some areas where the land has been stripped of it's once rich jungle growth, that today supports only desert plants.

Here Today, Gone Tomorrow

When a tropical forest is cut down without being replanted, not only is the wildlife that lived there displaced, but without the nutrient-rich organic matter in the living root mat, the soil quickly degrades. Soon it is leached of all nutrients and can become so compacted and bricklike that few plants are able to live, even after many years; sometimes it NEVER can be saved.

Continued on Next Page



When the forest is destroyed, not only is the sponge gone, but the cushioning effect of the canopy no longer exists. The water vapor, once released back into the atmosphere, is reduced or eliminated entirely. Remember, this results in less rainfall in surrounding areas, already blamed as a cause of **desertification.**

The ancient 'slash and burn' method of agriculture has produced many harmful effects not previously recognized. **First,** there is the obvious loss of vegetation, which imperils the soil structure and removes the umbrella-like canopy. **Second,** the special mycorrhizae fungus, essential for continued and future nutrient exchange is destroyed. Crops planted there will then deplete all remaining nutrients in just a year or two. Farmers using this scheme will have to move to a new area to slash/burn, repeating this cycle of destruction.

Rainforests are reservoirs of the basic element Carbon, stored simply as living trees. When the land is cleared and the wood burned, there's an increase in the **carbon dioxide** released into the atmosphere. This contributes to the controvesial global **greenhouse effect,** already causing problems. Finally, when the organic matter in the mat is burned, the nitrogen is turned to **nitric oxide** (N-O) and **nitrous oxide** (N-O-O). "These gases are formed when the ammonium from the burned vegetation is broken down in the soil by naturally occuring bacteria[2]." They further contribute to the greenhouse effect but they also are changed to nitric acids and nitrates in the atmosphere by the sun's energy and contribute to **acid rain**. Denuded acid soils further bind the remaining essential plant nutrients so roots of any new plants are unable to extract the small amounts left. As the soil becomes more acid the only available elements are toxic aluminum and other metals.

First Rich, Then Poor

It is ironic that those who cut down the trees can initially make a good income selling the wood. But without replanting those trees, a terrible cycle starts that may never be repaired. When the wood is gone, people (mostly women) must range further and further from home to scavenge wood to cook with. When wood becomes too expensive in time or money to obtain, animal dung is the only remaining fuel source left. This practice further robs soil nutrients.

After the trees are gone and the wet season sets in, rain leaches any remaining nutrients out of the soil and into the streams. Raindrops, once cushioned by the leaves, now fall on bare earth, eroding precious topsoil at a rate of up to 70 TONS per acre. This precious commodity then fills in rivers and lakes. Erosion and the pounding action of raindrops on bare earth contributes to soil instability creating mud slides and disastrous floods.

As the cycle progresses, crop yields decline, as does the quality of the pastureland for livestock and wildlife. Cash income is lowered further as topsoil depletion "leaves farmers vulnerable to total crop failure, even during regular dry seasons[3]." The result: famine, and people deserting their increasingly barren fields.

Hydroelectric dams located downstream soon silt up and can no longer produce the power needed to drive local mills and factories. At its worst, industry declines, foreign debt increases, poverty and malnutrition set in and political instability can result.

This "decline in biological and economic productivity was triggered by the loss of tree cover. The relationship between wasted and abused resources and economic stresses has become (more recently) apparent, ignoring

Continued on Page 14

Killing An Ecosystem in Four Easy Steps

Healthy forest and lake ecosystem. Trees and forest mat help filter and moderate rainfall, controlling its velocity as water drains down to the lake.

After trees are removed, the filtering and absorption affect are lost and collection area begins to fill.

Heavy rainfall creates soil instability causing it to erode down hillsides. Lake is eventually silted up (below), killing fish and resulting in water displacement (floods) and more mudslides.

FORESTS . . . Continued From Page 12

national boundaries[3]." Floods, droughts, famines and a huge exodus of starving people is a clear danger signal that can be ignored no longer.

New Dangers

As forests dry out from exposed soil and loss of cover, they suddenly become vulnerable to something unheard of in tropical forests — **FIRE.** Such fires waste the lumber people originally went in to cut and the burning certainly contributes to the greenhouse effect.

Logging roads are really breaks in the forest canopy. This results in the surface being exposed to the hot tropical sun. So between logging operations (which leave logs too small to be economical to harvest) littering the land with drying leaves and twigs, and farmers burning to clear the land, tropical forests are in extreme danger of going up in smoke.

Weather and other satellites continuously photograph the ongoing destruction: 31,000 square *miles* of Amazon jungle burned last year, an area twice the size of Switzerland. (This by comparison makes our forest fires out west this summer seem small). An additional 44,000 square miles of pasture and scrub were also burned.

An extreme example occurred recently in Indonesia. For SIX MONTHS a forest fire blazed out of control on East Kalimantan Island, wasting 14,500 square miles of tropical jungle. This was a direct result of lumbering operations.

The Hamburger Connection

"One reason that Central American rainforests seem doomed to disappear is that their destruction takes five cents off the price of an American hamburger[1]." Countries such as Costa Rica, El Salvador, Guatemala, Nicaragua and even Brazil have been converted to beef production for U.S. consumers. By doing so, they have cut down their forests and turned the land into pasture. But the results are far from satisfactory. People in these countries are now eating, on the average, 40% *less* beef than previously since more and more beef cattle are exported. Frozen beef goes to fast food chains or for hot dogs and pet foods. In the short run, this helps countries pay back a small part of their impossibly large foreign debts; in the long term though, they are destroying the very resource that could save them. This, while many of the local people eat less meat than do our cats and dogs.

Peasant farmers, too poor to own land, can claim parcels by clearing unclaimed tracts; this deforestation is legal "improvement". Once cleared and fired, no small feat in itself, these farmers raise a vegetable or other cash crop for a year or two, until the land is depleted. Since he cannot afford keep it productive with lime and fertilizers, his crop yields decline further. Then weed species gradually creep in and the land becomes a liability to the farmer, who then looks for some cattle rancher to buy it, usually for a pittance.

The land will be worth keeping cattle on for the next 3-5 years. However, poisonous weeds must be continuously burned to encourage new grass growth, which uses nearly a quarter of the rancher's operating expenses. Eventually, it is again abandoned. When this occurs, the pasture is permanently degraded and produces little but scrub. (Such areas, once the winter jungle homes for protected songbirds such as scarlet tanagers, warblers, vireos, kingbirds and orioles are turned into uninhabitable scrub. Where do these birds go now?[6])

When taken all together, *"each rain forest hamburger* might represent (destruction of) 6-1/4 square meters of forest. This is roughly the size of a small kitchen[7]." Now go back and read the "Wellspring of Life" section of this article to see how much forest life was destroyed for that one hamburger.

Temperate Forests Threatened As Well

For those of us who live in northern climates, scientists are discovering some alarming facts about our temperate forests. Even if we do **not** lay bare our forests, as is happening elsewhere, we have more subtle and sinister threats; **acid rain** and **air pollution** are the chainsaws killing *our* trees.

As air pollutant concentrations rise, sensitive tree species, such as sugar maple (maple syrup), white pine and oaks are weakened. While not killed outright or immediately, they become increasingly susceptible to frost damage, disease and insect attacks that when combined, ultimately contribute to their demise. (Germany's Black Forest has taken on a whole new meaning in the last decade).

The whole ecological structure of the forest begins to change. The larger species die first, then the shrubs and finally the herbaceous plants. If the stress is not relieved, the system's ability to repair itself diminishes so the same deadly cycle that occurs in the tropics is repeated: nutrients are lost, erosion increases and the land dies. In some places, where manufactured toxic metals were released into the environment in too high concentrations, plants may never return.

Some logging operations in the Northwestern U.S. still practice clear-cutting which leaves "lumpy ground devoid of most everything but a few weeds[9]" What is especially alarming is that older, mature tree stands are especially sought after, since they can be worth more in lumber. What these operations seem to forget is many forms of life depend on mature stands of trees for their livelihood and these larger trees are a valuable source of seeds for future trees.

Some Solutions

A recent article discussing vanishing songbirds[6], suggested THINK GLOBALLY; ACT LOCALLY. If you feel you need to *do something* there are many things you can do. Take your pick. First, write your state senators or other political leaders, urging their support of stricter legislative controls for acid rain and air pollution.

Then, still thinking about how to help tropical forests, don't buy products made from **rosewood, mahogany, teak, liana** or other tropical woods. Ask before you buy such things as tropical pets (parrots, macaws) and orchid or bromeliad house plants. They should be grown here in the U.S. — NOT collected from the wild.

Support conservation organizations, especially those which are working on population control or preserving or reforesting tropical rainforests. Some of these groups are listed below:

Celtic Tree Of Life

National Audubon Society
International Dept.
801 Pennsylvania Ave. SE, Suite 301
Washington, DC 20003

The Nature Conservancy International Program
(or if you want to be more specific, address to **NC Guanacaste Fund** which is developing a national park in Costa Rica)
1815 N. Lynn Street
Arlington, VA 22209

Rainforest Action Network
300 Broadway, Suite 28
San Francisco, CA 94133

Rainforest Alliance
295 Madison Ave., Suite 1804
NYC 10017

World Wildlife Fund
1250 Twenty-Fourth St. NW
Washington, DC 20037

Sierra Club Legal Defense Fund
2044 Fillmore St.
San Francisco, CA 9415

Tropical Forest Project World Resources Institution
1735 NY Ave. NW
Washington, DC 20006

New Forests Project
731 Eighth St. S.E.
Washington, DC 20003

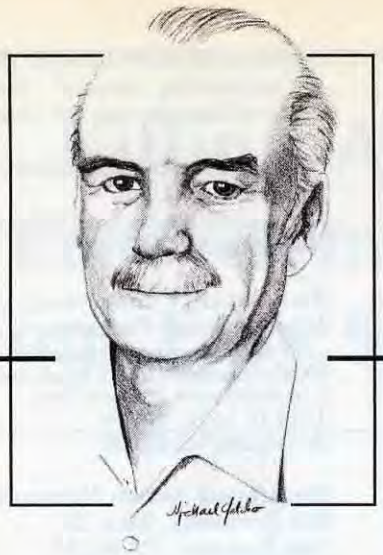
Friends of the Trees
PO Box 1466
Chelan, WA 98816

Trees for Life
1103 Jefferson
Wichita, KS 67203

Choose what kind of re-forestation project to support: one that re-establishes the natural forest destroyed or one that introduces multi-purpose trees for various uses. Both have advantages and disadvantages. Regardless of which one you support, give them your support in dollars or labor or both. The rate of forest destruction is alarming and critical both for our future generations and our world.

For those of you who live on the edge of an advancing desert which receives rainfall at least once per year, try to *trap* some of that rainfall by constructing low rock dams along ground contour lines. This allows water to percolate into the soil rather than just run off into streams. More permanent

Continued on Page 54



THE BEE SPECIALIST

ELBERT R. JAYCOX

5775 Jornada Road North • Las Cruces, NM 88001

"Foraging problems, laying workers and pollen analysis — a mixed bag."

The great drought of 1988 seemed to affect beekeepers less than other parts of agriculture, at least those who commented on it in their letters and newsletters. Also, when I was in Iowa in June, the bees were hauling in great quantities of nectar in spite of the problems with other crops. The flows were best in areas of diverted acreage. It was the largest crop since 1955, another dry year. Yields even approached those crops harvested annually in the late 1930's and 1940's. Averages reached the 230 to 240 pounds/colony range. Glen Stanley, writing about the crop in *The Bee Line* of the Central Iowa Beekeepers, attributed the good yields to the low humidity. With nectar of low moisture, the bees don't have so much work to do in converting it into the finished product. Honey harvested early in Iowa contained as little as 16 percent moisture, which made it more difficult to extract than honey with the usual water content.

In northern Michigan, friend Steve Parise said his honey crop was down about 27 percent from last year, but not bad overall. Rains in August saved some of the alfalfa flow and contributed to a good goldenrod flow.

Ron Fischer didn't elaborate, but said that in his area in northern Illinois most beekeepers had an excellent honey crop.

Foraging Problems

Dr. Denis L. Anderson, entomologist and bee pathologist, has been studying bee diseases in New Zealand for the past three years. His goals during that time have been to determine what bee diseases are present in New Zealand and to learn the cause of halfmoon disorder, which produces brood symptoms that resemble those of European foulbrood disease. Along the way he has undertaken several short-term research projects including one designed to learn whether sacbrood and nosema diseases affect the ability of honey bee colonies to collect pollen. The results were reported in *The New Zealand Beekeeper* for Spring, 1988. The experiments were supported by the New Zealand Kiwifruit Authority and the pollen collection was measured in two kiwifruit orchards.

Anderson used 28 colonies of bees carefully screened for known bee diseases and requeened with open-mated sister queens. After dividing the colonies into three groups, he fed two groups with Fumidil-B (fumagillin) in 60 percent sucrose solution. The third group received only the sucrose. Prior to moving the colonies into the orchards, their populations were equalized and they were again tested for disease. One group previously fed Fumidil-B was given one liter per colony of sucrose solution containing a known concentration of sacbrood virus particles. The other Fumidil-fed group was given only plain sucrose solution. Colonies that initially received only sucrose were given a liter of sugar solution containing a known concentration of spores of *Nosema apis*.

In the kiwifruit locations, each colony was given a pollen trap with 70 to 75 percent efficiency at removing pellets. The pollen pellets were collected, counted, and the number from kiwifruit determined.

When the results of 10 24-hour collections, from November 26 to December 10, are graphed and statistically analyzed, colonies fed sacbrood virus and spores of *Nosema* collected significantly less pollen than colonies fed only sugar solution. The differences appeared to be greater as the study progressed, with less than half as much pollen collected by the intentionally-infected colonies.

The work has implication for pollination of kiwifruit and other crops in New Zealand and elsewhere. Anderson found that approximately 80% of 25 bee samples taken from around the country were infected with Nosema disease during spring and summer. Infection dropped sharply in late summer.

Laying Workers, Again

It is difficult to convince beekeepers that "shaking out" a colony with laying workers is not of any value. Most of the beekeeping texts and much of what is written in journals still advise that, since laying workers are unable to fly, you can prepare a colony with laying workers for requeening by shaking all of the bees onto the ground 100 yards or so from its location.

Dr. Vern Milum at the University of Illinois demonstrated many years ago that laying workers fly and are not affected by moving a colony or shaking it out. In 1983, Bernard Mobus of Scotland reported an experiment with laying workers. He moved several nucs, small colonies, with laying workers to new sites in the apiary. At each former location, he put another nuc box without bees but containing drawn comb and a caged virgin queen. The foragers returned to those boxes, bringing quantities of both nectar and pollen. By the next morning, many eggs were present in "enlarged cells," but the queens were still caged. Drones developed from the

eggs in those cells. Mobus concluded that, "The ovaries of laying workers are therefore no weighty burden preventing flight and foraging."

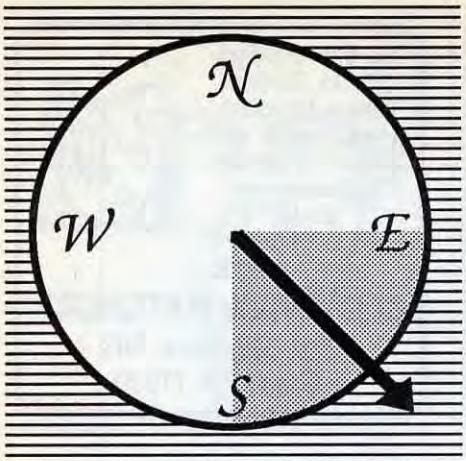
Mobus' cure for laying workers is correct, but his reasoning on the cure does not agree with our present knowledge. He believes that you must "starve the ovaries of all laying workers," and not until this happens can you requeen. By giving the laying-worker colony unsealed brood, you can accomplish the cure. However, I believe this comes about because the ovaries of laying workers are inhibited by the brood pheromones, not by preventing laying workers from receiving surplus "bee-milk" as suggested by Mobus. You can requeen a laying-worker colony when you give it the unsealed brood or shortly thereafter. No need to wait any longer.

Pollen Analysis

There are many cases when an analysis of the pollen content of honey can be valuable to beekeepers and to regulatory personnel. The beekeeper may want to know the predominant source of his honey for sales purposes, or the mixture of sources from which his bees are collecting nectar in a given area. Honey analyses are commonly used in Europe to determine whether honey sold as locally-produced is really that or an import from another country. There are a number of laboratories in Europe with sufficient experience and knowledge to make such determinations. Not so in North America. Until now, we have not been able to obtain pollen analyses of American honeys unless we sent them to Rex Sawyer in England or to some lab on the continent.

Now you can get the job done in the United States. Mrs. Linda Scott Cummings says she can make pollen analyses of honey from the Americas and tropical areas for which she has good reference material. Those from Europe or Russia would be more difficult. Because the work is difficult and time-consuming, Mrs. Cummings estimates a per-sample fee of $50.00 at this time. She has been working with pollens since 1971, and feels that honey samples would be a real pleasure in comparison with other types of analysis she does that require separation of pollens from soils and from petrified fecal matter of animals.

If you are interested in obtaining pollen analyses of honey, or may be in the future, you may reach Mrs. Cummings at the Paleoresearch Laboratories, 1990 South Garrison, Suite 5, Lakewood, Colorado 80227. The phone number is (303) 989-2400.Δ



Southeast Exposure

"Florida's Favorites"

DR. TOM SANFORD

One of the fascinating things about apiculture is the variety of nectar sources found worldwide. A glance at specialty shops' shelves provides just a hint of what might be out there. Leatherwood honey from Tasmania and heather from England are two premium honeys that many persons have heard about. You don't have to go to the wilds of Australia or European Moors to find these kinds of nectar sources, however. Some intriguing Florida plants are also major nectar sources. At least one is different because it's pollen and/or nectar can damage colonies of bees instead of helping them.

Florida's best known premium nectar source is citrus. Different from all the rest of the nectar sources in the state, this is a cultivated crop. Although not necessarily unique to Florida (citrus honey is also produced in the southwestern states) it may be so in composition. Florida citrus honey is often very high in sucrose. So much so that it has been rejected by some foreign buyers who see a high sucrose content as evidence of adulteration. It also falls in the gray area when tested by isotope ratio analysis for possible adulteration with high fructose corn syrup (HFCS). This has led to rejection by the Commodity Credit Corporation which administers the honey loan program.

A dilemma exists for some beekeepers in citrus groves. In shallow, wet soils, the systemic pesticide, aldicarb (Temik®), used by many citrus producers, can make its way into the blossoms with subsequent bee loss. If the beekeeper vocally objects to aldicarb application, this can result in loss of the location altogether.

The panhandle of Florida and parts of adjacent Georgia and Alabama are famous for another nectar source. This is the white tupelo tree, *Nyssa ogeche*, sometimes called Ogeeche lime. The tree goes profusely in the Apalachicola river basin. The nectar is light in color and is in heavy demand because of its high fructose content. This causes it to resist granulation, prolonging shelf life. Tupelo honey is often purchased strictly to mix with other honeys to reduce crystallization to a minimum. This is the only honey to the author's knowledge for which a program exists certifying the product as to source. Lots of tupelo honey are examined each year by the laboratories of the Florida Department of Agriculture and Consumer Services at the request of the beekeeper. They can only be certified as to source if the pollen count and other attributes are within allowable ranges.

The same region of Florida harbors the white or summer titi, *Cyrilla racemiflora*. It blooms from May to July and usually gives little nectar. But in some areas and in good years, summer titi can produce a condition called "purple brood." The brood in affected colonies dies and turns blue to purple in color. Beekeepers in areas where this plant grows in abundance must move their bees or feed them syrup to dilute the effects of the nectar/pollen. The white titi may be confused with spring (black) titi or buckwheat tree *Cliftonia monophylla*. This is a major nectar source also confined to the same area and blooming from February to April.

Unique nectar sources abound in southern subtropical Florida. A major one is black mangrove, *Avicennia germinans*, found fringing much of the coastline. Blooming in June and July, this plant produces almost every year. It is under attack by developers, however, for it often occupies prime coastal real estate. Extensive freezes in its northern ranges have done major damage to this nectar source over the last few decades. Red and white mangrove have also been judged as quality nectar sources by some. However, they are not nearly as important as the black. Observations by beekeepers that bees stop foraging on mangrove when the salt concentration in the nectar gets too high appears to make good sense.

Two "exotic" species have made the major nectar producer list only in the last three decades or so. These plants bloom August to October, providing forage for bees when much of native flora is dormant. They are a major reason that Florida is a prime wintering ground by many migratory beekeepers.

White Tupelo

Brazilian pepper, *Shinus terebinthifolius*, or Florida holly is considered a pest shrub by most persons in the southern portion of the state. It quickly invades disturbed areas, crowding out existing flora. It generally grows in thick mats, up to eight feet high along water courses. Both the Bahama islands and Hawaii have declared this plant a noxious weed. In addition, it acts as a supplementary host for red-banded thrips (*Selenothrip rubrocinctus*), a pest of avocado and mango, major cultivated crops in southern Florida.

Florida holly is one of the state's best nectar sources. The resultant honey has a distinct "peppery" taste. The Commodity Credit Corporation which administers the honey loan program does not consider it table grade. In spite of its "objectionable" taste, however, there is a local market for the product.

Even more controversial than Brazilian pepper is the punk or cajeput tree, *Melaleuca quinquenervia*. This is a relative of eucalyptus and native to Australia. Originally brought to Florida as an ornamental, it escaped cultivation and grows profusely in the southern part of the state. It may bloom several times a year and is considered extremely valuable for bee food. Like Brazilian pepper, punk honey is distasteful to some, but enjoys a local market.

Punk is cited by environmentalists and others for causing a litany of problems. It has been criticized for crowding out native plants and "drying up" wet areas. In addition, when full grown stands of the tree surround human habitation, it becomes a significant fire risk.

Cajeput has also been blamed for adverse human health conditions, particularly respiratory ailments. However, a symposium held by the Florida Division of Forestry on the University of Florida campus disputed these allegations. Nevertheless, the tree continues to create a great deal of controversy in the southern part of the state.

Conflict is a given in Florida when plans to control either Brazilian pepper or Melaleuca growth are announced. Beekeepers see this as an attack on a prime nectar source. On the other hand, those advocating these programs say that there is no possibility of eradication. They only favor reducing further spread of either species in localized areas. This may be so, but any control of these plants inevitably means one thing to the beekeeper decreased numbers of locations. The Florida beekeeping industry can ill afford this in a state where locations are already at a premium.Δ

Some Selected Florida Bee Plants

CONNIE and ARNOLD KROCHMAL

The accompanying list of Florida bee plants is by no means intended to be complete. Many familiar plants, such as oaks and others have been omitted, and many of the less familiar plants to non-Floridians are included.

Florida's sub-tropical and tropical areas are the reason for such diversity and for so many tropical plants being found there. Many introduced plants are common in the state, coming from all the tropical world, although perhaps a larger percentage are imports from the Caribbean and Latin America.

PERENNIALS

Aloe	*Aloe spp.*
Century plant	*Agave americana*
Coral bean	*Erythrina herbacea*
Night blooming cereus	*Cereus peruviana*
Orchid cactus	*Epiphyllum spp.*
Oyster plant	*Rhoeo discolor*
Pedilanthus	*Pedilanthus tithymaloides*
Prickly pear	*Opuntia spp.*
Shrimp plant	*Beloperone guttata*
Wedelia	*Wedelia trilobata*
Yucca, Spanish bayonet	*Yucca spp.*
Zebrina	*Zebrina sp.*

SHRUBS

Barbados cherry	*Malphigia glabra*
Bottle brush	*Callistemon rigidus*
Butterfly bush	*Buddlea officinalis*
Cassia	*Cassia spp.* (some trees)
Coffee	*Coffea arabica*
Euphorbia	*Euphorbia spp.*
Golden dewdrop	*Duranta repens*
Grape holly	*Mahonia spp.*
Hibiscus	*Hibiscus spp.*
Holly	*Ilex spp.*
Jaboticaba	*Myrciaria cauliflora* (to trees)
Lantana	*Lantana spp.*
Lime berry	*Triphasia trifolia*
Oleander	*Nerium oleander*
Orange cestrum	*Cestrum aurantiacum*
Orange jasmine	*Murrya paniculata*
Pepper tree	*Schinus terebinthus* (to trees)
Pink ball	*Dombeya wallachii* (to trees)
Powder puff	*Calliandra spp.*
Privet	*Ligustrum spp.* (and trees)
Pyracantha	*Pyracantha coccinea*
Scarlet bush	*Hamelia patens*
Surinam cherry	*Eugenia uniflora*
Ti	*Cordyline spp.*
Vitex	*Vitex spp.* (and trees)
Yellow elder	*Stenolobium stans*

VINES

Allamanda	*Allamanda spp.*
Bougainvillea	*Bougainvillea spp.*
Cape honeysuckle	*Tecomaria capensis*
Cat claw	*Doxantha unguis-cati*
Combretum	*Combretum grandiflorum*
Coral vine	*Antignon leptopus*
Fig	*Ficus spp.*
Jasmine	*Jasminum spp.*
Mexican flame vine	*Senecio confusus*
Pandorea	*Pandorea ricasoliana*
Queen's wreath	*Petrea volubilis*
Rubber vine	*Cryptostegia grandiflora*

TREES

Acacia, sweet	*Acacia farnesiana* (including shrubs)
Acrocomia	*Acrocomia spp.*
African tuliptree	*Spathodea campanulata*
Avocado	*Persea americana*
Banana	*Musa spp.*
Black olive	*Bucida buceras*
Bombax	*Bombax malabaricum*
Bursera	*Bursera simaruba*
Cajeput	*Melaleuca leucodendron*
Ceiba	*Ceiba pentandra*
Chinaberry	*Melia azederach*
Coconut	*Cocus nucifera*
Crape myrtle	*Lagerstromia indica*
Date palm	*Phoenix*
Ear Tree	*Enterolobium cyclocarpum*
Egg Fruit	*Pouteria ampechiana*
Geiger tree	*Cordia sebestena*
Guava	*Psidium guajava*
Jacaranda	*Jacaranda acutifolia*
Jerusalem thorn	*Parkinsonia acutleata*
Loquat	*Eribotrya japonica*
Lucky nut	*Thevetia peruviana*
Lychee	*Litchi chinensis*
Madagascar palm	*Chrysalidocarpus lutescens*
Mango	*Mangifera indica*
Mahogony	*Swietania mahogony*
Manila tamarind	*Pithecellobium dulce*
Orchid tree	*Bauhinia spp.*
Physic nut	*Jatropha curcas*
Royal palm	*Roysonea spp.*
Royal poinciana	*Delonix regia*
Sabal cabbage	*Sabal spp.*
Sapodilla	*Achras zapote*
Satin leaf	*Chrysophyllum oliviforme*
Shaving brush tree	*Pachira spp.*
Tabebuia	*Tabebuia spp.*
Tamarind	*Tamarindus indica*
Tropical almond	*Terminalia catappa*
Women's tongue tree	*Albizzia lebbeck*
Yellow poinciana	*Peltophorum inerme*

Tamarind: leaflet and fruit

Wax Flowers

DIANA SAMMATARO

Beeswax Flowers

At Southern States this year I had the pleasure to meet Liz and Mike Duffin, a delightful couple from England. Liz gave a wonderful demonstration in the forgotten art of making wax flowers. She has generously given her permission to share this technique with us. You can make a *rose* with the following directions:

Materials for the flowers —
Clean Beeswax
Florist wire for Stem and Leaves
(Florist & Craft Shops)
Florists Binding Tape
(Florist & Craft Shops)
Candle Dyes
(Craft or Candle Supplies)
Cotton
Cotton Thread for Stamens

You will also need —
A piece of plywood
(preferably exterior grade)
A small plastic or metal ladle
(eg. measuring spoon)
Spoons of various sizes
A bowl for melting the wax
A large bowl of cold water
A bowl of water with some liquid detergent added to it
Scissors and/or X-acto® knife
(or matt knife)
A sheet of glass
(approximately 9" square)
A blunt knife

To make flowers you need thin sheets of wax which can be cut into petal or leaf shapes.

The wax must be very clean and free of propolis and dirt but not necessarily very pale. I find wax recovered from old combs in a solar wax extractor and then filtered through a fine cloth in the oven is perfectly good, (keep your very pale cappings for show wax!).

For safety, wax should always be melted in a water bath, never on direct heat. I use a shallow bowl standing in an old frying pan of water. (Remember to keep the water in the pan topped up if you have it on the heat for long.)

Step 1: Melt your wax in the water bath and add dye to get the color you require. Remember the wax is yellow so you will need some blue dye as well as green to get a good green color. You will also need a red dye for the flower color.

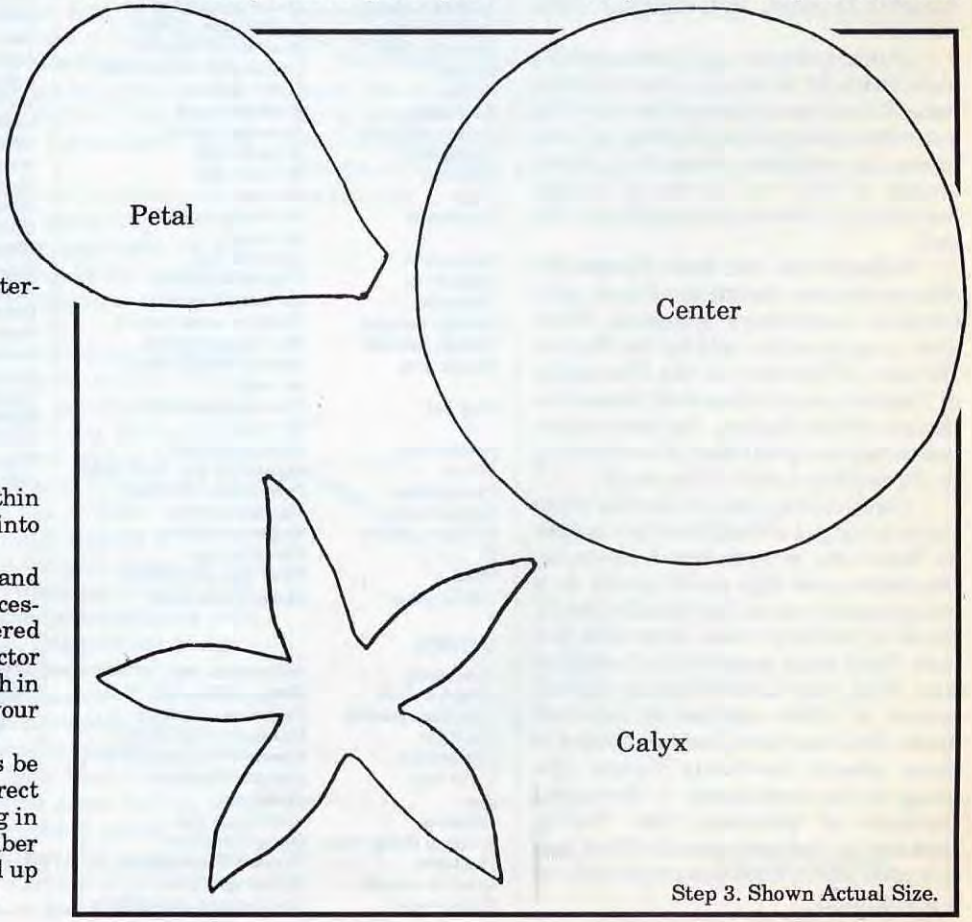
Step 2: Soak the plywood board in water. (The plywood should be no wider than the bowl containing the wax.) Shake excess water off the plywood, then hold it at an angle above the bowl of wax. With the ladle pour the wax onto the top of the plywood letting the excess run back into the wax bowl. Dunk the plywood with the sheet of wax into the bowl of cold water and the sheet of wax will float off (yes it really will!). To make a thicker sheet pour another layer of wax before dunking. Make as many sheets in as many colors as you require. (You will need to test pour sheets to check the colors.) Do ahead and store the flat sheets of wax in plastic bags.

Step 3: Using the templates below, trace the shapes on thin cardboard (like a manila folder). First decide on the flower you want to make and use a real one to make your patterns and to see how the flower is constructed. I find this is the only way to work. I will give patterns for a rose to get you going.

For a small rose you will need 8-10 petals, one 3" diameter circle for center and a calyx.

Step 4: Cut out the shapes in wax either with a pair of scissors or X-acto® knife onto a sheet of glass (plastic or wood would scratch too easily). All stemmed flowers are started like this.

Step 5: Take a wisp of cotton and



Step 3. Shown Actual Size.

twist it round the end of a piece of florist's wire for about an inch then fold the top half inch of wire over to anchor the cotton in place.

Step 6: Cover the rest of the wire with green florists' binding tape, starting at the cotton end and covering part of the cotton. Dip the cotton into melted beeswax. This knob on the end of the wire will keep the flower head from falling off.

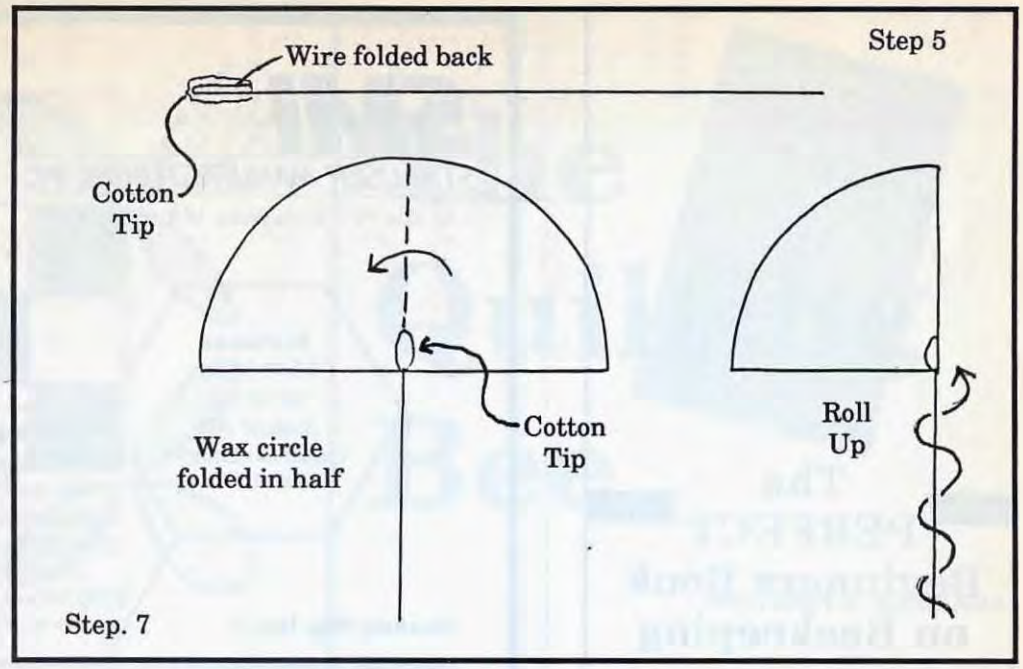
Step 7: For the center of the rose push the wire through the center of the wax circle, right up to the cotton. Fold the circle in half and then into half again pressing the folds firmly.

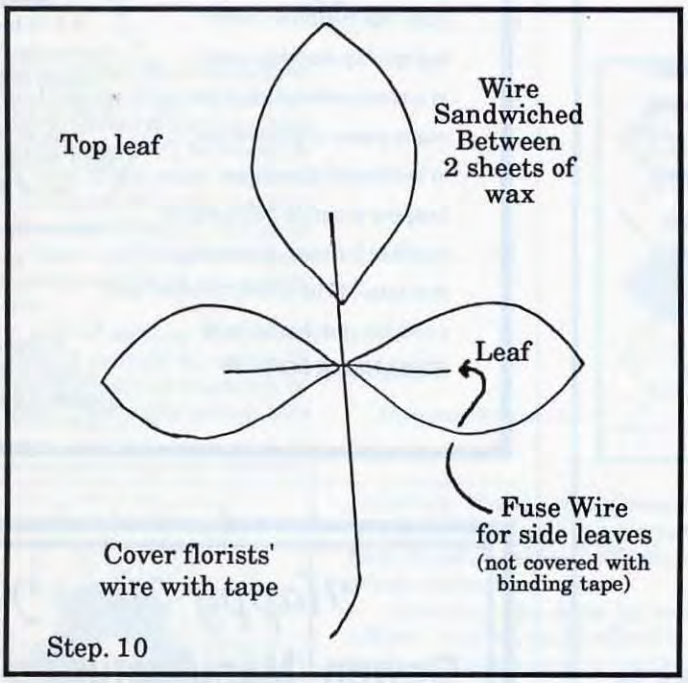
Step 8: Roll up the center, so the curved edges give the effect of petals unfurling. Squeeze the wax onto the wire just below the cotton wool. In a warm room the warmth of your fingers will be sufficient to soften the wax. (Use a real rose or a photograph as a guide.) Shape the petal by pressing its center with the ball of your thumb and then curving back the edges of the petals. This cups the petal at the center.

Step 9: Attach the petals one at a time to the center, squeezing the wax at the base down onto the wire each time so that the petals adhere firmly. When the rose is the size you want, slide the calyx up to the base of the rose, pushing it up close to the petals and squeezing it into place. Press scraps of wax below the calyx to form a 'hip'

Step 10: Leaves are cut from a double sheet of green wax. Bind a piece of florists' wire with tape and sandwich this between the two layers of the top leaf. Twist a piece of thin wire (fuse wire) round the stem three-quarters of an inch below the top leaf and sandwich the side leaves onto this. The rose stem can then be bound with tape again and the leaves attached at the same time.

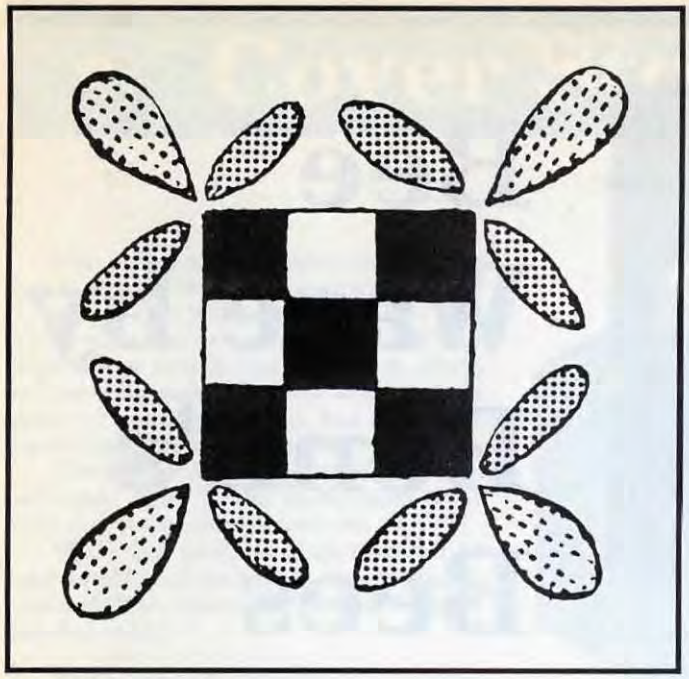
These are just a couple of ideas to get you going. Do have a go. Who knows what you can produce if you try.Δ





The finished product.

E. A. Duffin
The Farthings
Kingshill
Chewton Mendip
BA3 4PD
United Kingdom



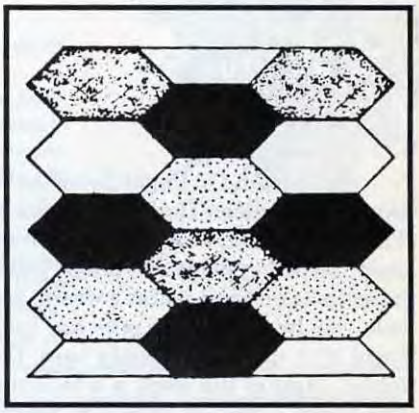
Honey Bee Design.

The Quilting Bee

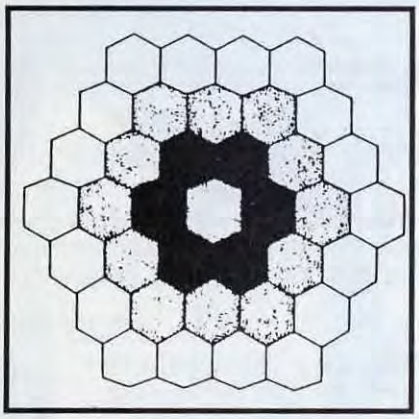
STEPHEN B. BAMBARA

The act of sewing two pieces of material back-to-back, or quilting, is not new. It is known that the old English Knights wore quilted garments and that Mary, Queen of Scots quilted during her stay in the Tower. The quilting "bee", however, is strictly American. We're not quite sure of the exact origin of the word "bee" in this usage, but we know it has its roots in Colonial America. One old reference comes from a 1769 issue of the *Boston Gazette,* announcing that a quilting bee was to be held. It characterized the expression as being more common in the country than in the city.

The term "bee", as taken in any of several European forms, meant something which ringed around an object. It was frequently used relating to jewelry such as bracelets or rings, and had certain nautical uses. One might accept this definition as a probable origin for the word describing a group of women who sat in a circle around a quilting frame, stitching.



Honeycomb (Var. 2)



Honeycomb (Var. 1)

Colonial times were difficult and long projects such as church or barn building were accomplished by many neighbors cooperating together to finish a task quickly and efficiently. But there were few social events, and quilting bees were often referred to as quilting parties. The announcement of an upcoming birth, wedding, or perhaps just the needs of a lonely bachelor might have been a perfect excuse to hold a gathering. Women would come together, sit in a circle, needle and thread in hand, and create a communal masterpiece. And, of course, while the fingers were busy, so surely were the minds and conversation.

Quilting was done by women at all economic levels. Affluent women could afford to buy manufactured cloth and might produce a quilt in just two colors. Other women might have to dye their own cloth, while still others might salvage scraps from anywhere they could find them.

Whatever the source of materials, quilts were (and are) works of art and family treasures. In the South during the Civil War, quilts were often buried or hidden from raiding Yankees and many were lost. Those which have survived are of fine applique and were sewn for special occasions, so they were protected and received little use.

Following the war, times were especially hard in the South and applique quilts generally disappeared for a while. They were replaced by quilts made of material from old flour or sugar sacks, flannel flags and even tobacco pouches. Worn-out quilts were often recycled as batting (filling) for new ones.

Whether there is a connection between the social activity at a sewing party and that in a beehive, or whether the old form of the word "bee" is in some way connected with the insect's circular flight pattern, is just conjecture. Whatever the case, the quilting bee remains a tradition that is still alive across the United States.Δ

The beautiful, award-winning "Swarm Bowl" is twenty inches wide, egg shell white and trimmed with blue bees.

Bee Ware by Benn's Bees

JOHN BENN

Fresh pots full of huckleberry honey are harvested from a deep super in the bee yard. Customers always marvel at how the Benn's have trained their bees to store honey in porcelain pottery.

On an island in Puget Sound in Washington State, John Benn and Colleen Gallagher make pottery and keep bees. The husband and wife team work in a converted boatbuilding shop, throwing porcelain mugs, bowls, plates, pitchers and honey pots on their potter's wheel, and making earrings and bolo ties by hand. The pots are individually decorated by hand with designs of honey bees, flowers, fruits and vegetables. Most of the work is a traditional handpainted blue-and-white, although they also make a line of ware with a pastel green glaze and cameo-like three dimensional honey bees.

The couple also keep a small apiary. The main honeyflow on the island is from the evergreen huckleberry bushes. They bloom early, in May and June, and produce a very rich and mild-flavored honey. There is very little that blooms in the summer and fall on the island, so the colonies are moved up into the Olympic Mountains for the fireweed flow.

An unexpected dividend of being beekeeping potters is having a built-in warm room for honey extracting.

"When I'm firing both of our kilns, the air temperature in our studio loft often gets up over 100°," notes John. "We can warm our honey supers up there for extracting, and let the extracted honey settle out there the next day."

Many of their original colonies were acquired by bartering their "bee ware" and bee jewelry. A local beekeeper friend and his wife now have a small collection of Benn Pottery, and John and Colleen built their bee yard up quickly and received an extractor. The beekeeper's wife considers this a nice "perk" to make up for the time her husband spends with his bees.Δ

• Cover Story •

DORIS PAYNE

The pulled thread embroidered piece that appears on the front cover was done by Doris Payne, of Wilmington DE. This particular piece won first place at the 1988 EAS Show in the Arts & Crafts Division. Doris and her husband have been keeping bees about 10 years, but Doris has only been practicing the more artistic side since 1985.

She designed the majority of the piece, with only parts of the background basic stitching. It was done on canvas.

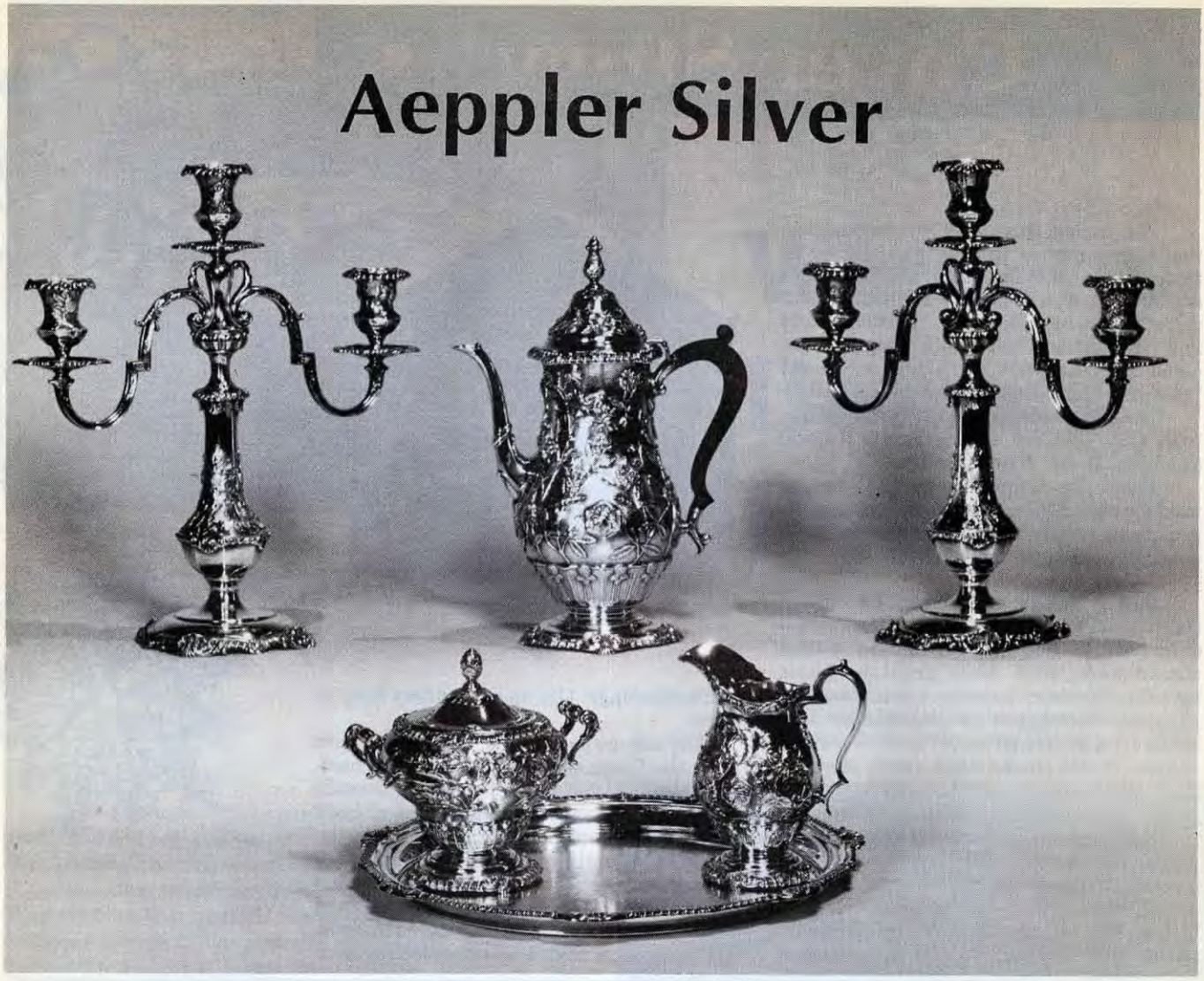
There are many stitches that can be used for pulled thread work, and we suggest you consult an embroidery manual for more detailed work.

Pulled thread embroidery (or drawn fabric work) is a type of openwork often employed to decorate linens. In pulled thread work, each stitch pulls the fabric threads together, creating open, lace-like patterns.The many stitch patterns are used as borders, as geometrics, or to fill free-form shapes. Pulled thread work pieces often include simple embroidery stitches as well, to outline motifs or to add textural interest.

Being a form of counted-thread embroidery, pulled thread work is usually stitched on even-weave fabrics. Select a yarn similar in weight to a single fabric thread. Use the largest tapestry needle that will slip easily between fabric threads. This will exaggerate the openings. Use an embroidery hoop or frame.

For any pulled thread work piece, first locate the fabric center and mark with basting. Then position motifs, counting threads from center point out. If outer edges of motif will be covered with an embroidery stitch, you can *draw* the outline on right side of fabric. If outline will not be covered, use basting stitches. Work motifs one at a time, from center one out; work stitch patterns in rows. Do all patterns, then add embellishments.Δ

Aeppler Silver



The cover photo shows the round tray, 15" diameter weighing 39 troy ounces. The two candelabras are each 16" tall and each weighs 53 troy ounces, or a total of 106 troy ounces. The entire presentation is 258 troy ounches. The candelabras have Alsike Clover, honey comb and bee designs. ALL pieces have the Watson Company "Lamerie" pattrn at the edging noted as :"gadroon and shell edge, repousse pattern" which of course makes them a set.

The Aeppler Silver display, presently at the Milwaukee Wisconsin Art Museum, was donated by Dr. and Mrs. John D. Koehler, daughter and son-in-law of the famous Wisconsin Aepplers.

Carl Aeppler, from Oconomowoc and owner of Land O' Lakes Honey, worked his way through the University of Wisconsin by peeling potatoes. Shortly after marrying, he began raising bees and planting apple orchards but in 1931 he went into the honey packing business full time. His world famous packing and label business brought him fame and fortune during his lifetime, and to help return some of his good luck to the beekeeping industry he was always a part of, he commissioned this exquisite silver set to be made.

Carl conceived the idea, and made the preliminary sketches of honey plants and bees, then submitted them to the Watson Silver Co., Attleboro MA. From 1945-1952, William T. Brown and Edward Strake designed and made the set.Δ

Carl Aeppler.

(2 views) The side which shows the hexagon, honey comb and bee (trade-mark design) features the Alfalfa flora and near the base Alsike Clover. The reverse view of the coffee pot shows the gold initial 'A' and features White Sweet Clover and the same Alsike clover. The coffee pot is 13" high and weighs 58 troy ounces.

This view shows the hexagon comb and bee design featuring Orange Blossom flora and Alsike Clover near the base. It is the same on the revese side, except it has the gold initial 'A' (as you see on the creamer). Height is 7-1/2" and weight 35 troy ounces.

This view shows the gold letter 'A' and features Basswood (Linden) flora and Alsike Clover near the base. The reverse side of the creamer is the same, except instead of the initial it has the honey comb hexagon and bee design (as seen on the sugar bowl). The creamer is 6-1/2" tall and weighs 20 troy ounces.

To Control Chalkbrood Disease

STEVE TABER of Honey Bee Genetics

P. O. Box 1672 • Vacaville, CA 95688

"Chalkbrood — finally a control?"

Tired of reading about mites? Read on, I've got some good news about something else. Chalkbrood disease, caused by the fungus *Ascosphaera apis*, causes damage to colonies primarily by reducing populations, but it actually kills some colonies. Dr. Martha Gilliam, Tucson, AZ USDA bee laboratory and I have worked for years trying to find some things about this disease. Yes, we have made some significant findings, which have been reported in various journals. But perhaps the most significant finding has recently been published in a scientific journal, so this article is the first report of this work in the popular bee literature.

Our work originally began about 1975, when I was still with the USDA at the Tucson Laboratory. Dr. Gilliam and I were discussing this disease — how it was spread, could be controlled, and if so was a genetic or chemical control possible. We tried many things, and we had all kinds of trouble. We could not control the disease, and we could not really cause it to break out in our colonies either. It is difficult to study a problem unless you have the problem.

David De Jong reported that changing the ratio of bees to brood resulted in a high chalkbrood incidence in colonies. This means that if there is too much brood for the bees to care for, the brood becomes stressed and chalkbrood will appear. No problem shake 3 pounds of bees out of experimental hives and presto — chalkbrood, right? Wrong, it didn't work. Others reported that wet weather caused chalkbrood, but then why did we get it in Arizona during the driest time of the year? We tried inoculating sugar syrup with fungal spores and sprayed the colonies. Nothing happened. We sprayed them twice a week, every day, then several times every day.

In every case we would get some heavily infected colonies, and some that never developed the disease. We then wondered about the hygienic behavior that Walter Rothenbuhler worked on with AFB resistance; "do you think that might have something to do with it?" I asked. She said, "Let's give it a try", and we did.

I inseminated many queens, inserted killed dead brood in the brood nest and checked to see how long it took for the test units to clean out the dead brood.

Sure enough, we found some bees that had this hygienic behavior trait and others that did not. So we tried inoculating them again. But we still could not get good, clear-cut results. There was definitely a puzzle. Chalkbrood would not breakout exactly where and when it was supposed to in our experimental colonies.

Over time we developed a better method of administering chalkbrood spores to the bees; we mixed them into pollen cake. If you want your bees to come down with chalkbrood, mix up some pollen cake and add chalkbrood mummies to the mixture, and you will get the disease spread around, *right now*!

After we developed this method we found that there were both susceptible and resistant colonies. And, for the most part it was repeatable, which means that when we repeated the same treatments, the bees gave us the same results. In any type of research it is necessary to get the same results every time the experiment is performed. Otherwise, there is something wrong with the hypothesis that the experiment is based on.

One interesting difference in the bees' behavior cropped up that defied logic. All bees that tested positive for hygienic behavior (which means they were resistant to AFB) also tested positive for resistance to chalkbrood. But some bees that were not hygienic, (did not rapidly clean out dead brood) were also resistant to chalkbrood. Another puzzle.

Martha thought long and hard about why bees with poor hygienic behavior would be resistant to chalkbrood. She knew they would be susceptible to AFB, so there had to be a different mechanism involved than just having the bees keep their house clean. She began looking at all sorts of things, including the microorganisms normally present in colonies that might inhibit the growth of chalkbrood fungus.

To look at this idea an experiment was run during the summer of 1986. I was instructed to test my bees for hygienic behavior, and after separating the two groups, I was to mix up pollen cake with chalkbrood spores and feed it to all the test units. Then I examined the center comb at 5, 10 and 15 day intervals after putting on the contaminated pollen cake, and counted the chalkbrood mummies in the center

Continued on Page 30

TABER . . . Cont. from Page 28

comb of the three comb hives. Two weeks later the test was repeated.

Pollen cake was made of equal weights of pollen pellets and sucrose sugar. A small amount of water was added to make the mixture stick together, and the chalkbrood mummies were added at the same time. The mummies were ground up in a mortar and pestle, and I added only one mummy per hive tested. The mixture should be thick enough not to run, similar to bread dough. If it runs, add small amounts of brewer's yeast to thicken it. I usually add equal numbers of black and white mummies, though I'm not sure if this is important.

Then Martha asked me to take samples of young larvae, old larvae, nurse bees, foragers, honey, the pollen cake, and the stored pollen called bee bread. I packed these in dry ice and mailed them to Tucson. There, Dr. Gilliam examined them for the micro-flora and any inhibitory substances present.

After months of examination RESULTS! She found several yeasts in bee bread of resistant colonies that *were not* present in susceptible colonies. However, the yeasts did not inhibit the growth of the chalkbrood fungus in the laboratory. However, other fungi were present that did inhibit chalkbrood growth. The most promising of these are two molds in the group *Mucorales*.

You know what's next. Martha will supply me with cultures of those two molds, and I will apply them to highly susceptible chalkbrood test units. Hopefully we will be able to tell long suffering beekeepers that there is finally a control for chalkbrood disease — or rather two controls: 1) breeding for hygienic behavior, and 2) apply one of these new found fungi that inhibits or destroys chalkbrood.Δ

Gilliam, M., Taber, S., Lorenz, B.J., and D. B. Prest. 1988. *Factors affecting development of chalkbrood disease in colonies of honey bees fed pollen contaminated with* Ascosphaera apis. Journal of Invertebrate Pathology. 52:314-325.

Building A Better Beekeeper

DR. JAMES TEW

PART 3: Evaluations

Evaluations:

I haven't met many people who enjoy being evaluated — no matter what the reason. Even so, evaluations are a necessary part of an efficiently organized bee meeting. If all has gone according to schedule, the dust is still settling from the activities of the meeting. Signs are everywhere of the session that has just ended. There is the requisite trash (coffee cups, abandoned meeting programs), chairs are in disarray, and the last exhibitors, with vehicles backed up to the exit doors, are disassembling their displays.

Inevitably, usually near the front of the room, there is probably a dishevelled pile of paper that could easily be assumed to be litter. In fact, this is the pile of evaluations. In the routine scheme of program events, the meeting evaluation comes at the end of the meeting. Even if participants were happy with the sessions, they were probably ready to head for home. Rushing the evaluation session is a common occurrence.

It always seems that those who were responsible for the organization of the meeting are the last to leave. Doors must be locked, lights turned off, equipment secured, and general clean-up conducted. Being responsible for the organization of the meeting is hectic, but rewarding. There is a pleasant let-down after the whole thing is over. The tired relief of a job well done. Within the setting just described, the meeting organizer probably can't resist a quick look at the evaluations. This is always a difficult time. If all went well, everyone did their best and few people are in a mood to be told there were problems. Unfortunately no matter how good the meeting, there are always problems and shortages and they need to be mentioned. On the brighter side, evaluations should show positive attributes, too. I don't think it would be possible to have a meeting that is completely bad.

The Form:

A good evaluation is a hard thing to develop. Criticism can be given in a positive light if the questions are posed in such a way that allows some flexibility. There is no standard evaluation format of which I am aware. In general however, some variation of the following questions are asked.

1. Topics
   a. Was the time allotted appropriate?
   b. Were they relevant?
   c. Were they adequately covered?
   d. Was there enough time for questions and discussion?
   e. What topics would you suggest for the next meeting?

   (If outdoor sessions or demonstrations were presented, they should be included in this section.)
2. Speakers
   a. Were they qualified for their respective topics?
   b. Were they adequately prepared?
   c. Were the handouts suitable?
   d. Were the visual aids appropriate?
   e. Do you have specific suggestions/comments for one (or more) of the speakers?
   f. Do you have suggestions for speakers for another workshop?
3. Meeting Facilities
   a. Was the meeting room comfortable?
   b. Was the lighting/sound amplification acceptable?
   c. Was the audio visual equipment convenient and functional?
   d. Was the exhibit area appropriate?
   e. Were directions to the meeting facility adequate?
   f. Were parking facilities adequate?
   g. Were break areas and rest room facilities convenient?
   h. Do you have suggestions?

Building A Better Beekeeper

DR. JAMES TEW

PART 3: Evaluations

Evaluations:

I haven't met many people who enjoy being evaluated — no matter what the reason. Even so, evaluations are a necessary part of an efficiently organized bee meeting. If all has gone according to schedule, the dust is still settling from the activities of the meeting. Signs are everywhere of the session that has just ended. There is the requisite trash (coffee cups, abandoned meeting programs), chairs are in disarray, and the last exhibitors, with vehicles backed up to the exit doors, are disassembling their displays.

Inevitably, usually near the front of the room, there is probably a dishevelled pile of paper that could easily be assumed to be litter. In fact, this is the pile of evaluations. In the routine scheme of program events, the meeting evaluation comes at the end of the meeting. Even if participants were happy with the sessions, they were probably ready to head for home. Rushing the evaluation session is a common occurrence.

It always seems that those who were responsible for the organization of the meeting are the last to leave. Doors must be locked, lights turned off, equipment secured, and general clean-up conducted. Being responsible for the organization of the meeting is hectic, but rewarding. There is a pleasant let-down after the whole thing is over. The tired relief of a job well done. Within the setting just described, the meeting organizer probably can't resist a quick look at the evaluations. This is always a difficult time. If all went well, everyone did their best and few people are in a mood to be told there were problems. Unfortunately no matter how good the meeting, there are always problems and shortages and they need to be mentioned. On the brighter side, evaluations should show positive attributes, too. I don't think it would be possible to have a meeting that is completely bad.

The Form:

A good evaluation is a hard thing to develop. Criticism can be given in a positive light if the questions are posed in such a way that allows some flexibility. There is no standard evaluation format of which I am aware. In general however, some variation of the following questions are asked.

1. Topics
   a. Was the time allotted appropriate?
   b. Were they relevant?
   c. Were they adequately covered?
   d. Was there enough time for questions and discussion?
   e. What topics would you suggest for the next meeting?

   (If outdoor sessions or demonstrations were presented, they should be included in this section.)
2. Speakers
   a. Were they qualified for their respective topics?
   b. Were they adequately prepared?
   c. Were the handouts suitable?
   d. Were the visual aids appropriate?
   e. Do you have specific suggestions/comments for one (or more) of the speakers?
   f. Do you have suggestions for speakers for another workshop?
3. Meeting Facilities
   a. Was the meeting room comfortable?
   b. Was the lighting/sound amplification acceptable?
   c. Was the audio visual equipment convenient and functional?
   d. Was the exhibit area appropriate?
   e. Were directions to the meeting facility adequate?
   f. Were parking facilities adequate?
   g. Were break areas and rest room facilities convenient?
   h. Do you have suggestions?

4. Food
   a. Was the method of providing meals alright?
   b. Was the dining area comfortable?
   c. Was the price reasonable?
   d. Do you have suggestions?

5. Overall Evaluations
   a. Did the meeting satisfy your expectations?
   b. Did you enjoy the sessions?
   c. What was the best portion of the program?
   d. What was the worst portion of the program?
   e. Was your beekeeping expertise improved for having attended this meeting?
   f. Would you come to this meeting next year?
   g. Would you feel comfortable recommending this meeting to others?
   h. With one (1) being poor and five (5) excellent, would you please rate the overall meeting?

Speakers . . .

The abilities and requirements of speakers vary greatly. If financial agreements were made with speakers, take care of them as soon as possible to clear any financial obligations that were incurred. In most cases, clearing the obligations at the meeting would be desirable. Following up with a letter of appreciation within a few days is a nice formality and is a courteous gesture that makes the speaker's effort seem more worthwhile.

. . . and Others

It takes the efforts of many people to make the overall session successful. If the meeting is to be held at the same site on future dates, it is always a good idea to have the facility employees happy to have the beekeeping group return. Maybe just a simple note or a jar of honey will be sufficient, but some acknowledgement of the efforts of others should be considered. If door prizes were donated, acknowledgements should be sent to the contributors thanking them for their donations.

Beekeepers in North America are fortunate to have such an educational network of county, state, national and international meeting possibilities. At each level, educational and social opportunities exist that should help keep the beekeeper stay informed, updated and motivated. Few people can live in a vacuum and still be routinely productive. Certainly beekeeping is in that category.

Good meetings don't just happen. It is the combination of planning, speaking, working, and good luck. It is always a lot of work and problems are guaranteed.Too often, others criticize the efforts of those in charge. To be truly productive will require the total effort of the group. The organization must work as a team. Everyone can't be chiefs every time — indeed, everyone shouldn't be chiefs every time. Variation and change are inevitable within the group. Staying current and innovative is, at once, rewarding and challenging, but frightening. The group should be open to new leadership and ideas. Be assured that what is working well now, will not always work well.

Workshops will always be an incredible amount of work — no doubt about it. But one cannot measure the satisfaction of watching a new beekeeper accomplish a task for the first time nor the feeling of completing a well-planned, and nearly perfect, project.

If your group hasn't run a workshop in the past, there is no better time than now to start planning. Be ready for the work, the fun, and the experience — Good Luck!Δ

A Checklist for Developing a Beekeeping Workshop

8-12 Months Prior To Meeting
   a. Develop concept and present to local group
   b. Select meeting dates
   c. Establish budget
   d. Make committee assignments

6-12
   a. Reserve facilities
   b. Select topics
   c. Begin to contact speakers
   d. Coordinate with local extension office
   e. Continue to communicate with speakers
   f. Confirm facility reservations
   g. Hold coordinators committee meeting
   h. Develop registration material including forms and contact person in group (should include registration, meals, etc.)

4-6
   a. Begin coordination with bee journals for promotion
   b. Write industry organizations for door prizes
   c. Confirm speakers (in writing)
   d. Make motel reservations for speakers
   e. Begin to respond to pre-registration requests
   f. Finalize program
   g. Hold coordinator's meeting

1-2
   a. Get handouts printed and collated
   b. Review facilities (light switches, phones, etc.)
   c. Coordinate with catering service (if used)
   d. Get local promotion out
   e. Continue to respond to pre-registration requests

7 days prior
   a. Prepare demonstration colonies for transport (if used)
   b. Make final food preparations (if used)
   c. Continue local promotion
   d. Review facilities (light switches, phones, etc.)
   e. Get door prizes and handouts together
   f. Get pre-registrations organized and prepare for registration at meeting
   g. Coordinate speaker and participant arrivals
   h. Finalize audio-visual equipment procurement

News Release

Beekeeping Workshop To Be Held

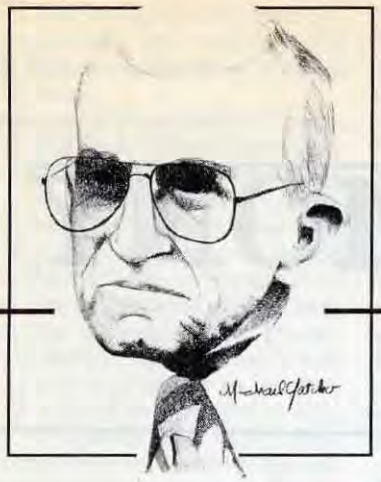
The Brown County Beekeepers' Association will hold their annual Beekeping Workshop on Saturday, March 10, 1989, from 9:00 a.m. to 4:00 p.m. at the local high school in Fairview City, 123 Maple Street.

It will cover topics for people who are thinking about keeping bees, beginning and intermediate beekeepers and even some advance skills.

Instructors include Dr. Tom Jones, author, noted speaker and researcher on honey bes and beekeeping. Dr. Jones is also a full time professor at Brown College. Our own president, Mike Kelly, will handle several sessions, along with John Thomas, biology teacher here at Brown High School and an active member.

Registration is $25.00 for the session, including a hot lunch, notebook, pamphlets and handouts, a hive tool and a Certificate of Completion.

For more information contact Peter Davis at 555-1212 and he will send you a pre-registration packet.



POLITICALLY SPEAKING

GLENN GIBSON

Minco, Oklahoma 73059

"We desperately need to outline 'How-To' carry out our political policies, and what will happen if we don't! That's what conventions are for."

I am hopeful that a goodly number will attend the national conventions and give unstinted support to our leaders who have given freely their time in our behalf. This is the time that industry folk should pause and silently review this past year's work. Looking over the convention programs, one readily concludes that the convention theme will be positive not unlike past conventions. I would certainly urge the leadership to continue this vein of optimism where deserving committee members are recognized and praised.

Most of us feel that the optimistic approach is best, but the danger here is that we seem to be more willing to risk being ruined by praise than saved by criticism. This attitude will invariably lull us into a rosy outlook. Complacency creeps in when our conversations, speeches, and reports are limited to successes. This would be acceptable in Utopia, but in the practical everyday world we cannot afford to turn a deaf ear when critics gives full attention to our failures and mistakes. Reference to critics here includes Congress, the Administration, and industry folk (Biased and prejudiced newsmen may on occasions be friendly, but generally their message is negative. I hesitate to call them carping critics since they are delivering a message.). Criticism from these groups would not be so bad except they sometime use a bit of journalistic imagination. More often than not their comment reveals a convenient loss of memory relative to their own shortcomings.

How well do each of us respond to criticism? Personally, I can recall a few goofs where my response was a miserable failure. I would guess that other leaders have had that feeling from time to time. So—I will answer the question: Not very well.

Our best opportunity to answer critics and thoroughly scrutinize ongoing projects is at the several meetings held each year over the country. Much to their credit our leadership does a nice job of explaining the pros and cons of our program, but somehow the critics are never satisfied since the same criticism rears its head each year. Failure to satisfy the perennial critics has little to do with the merits or demerits of any given project. We sorely need a thorough examination of our time-honored policies that are considered gospel. This examination, among other things, should include a hard look at the convention agendas. (Some critics have labelled them shortcourses.) Most convention agendas devote little time to explaining how to carry out our projects. Penalties for failure to act need to be spelled out in detail and some provision made for an aggressive follow-up. It is my feeling that this study would result in a much-improved procedure.

Will the 1989 conventions of the American Honey Producers and the American Beekeeping Federation be any different from the previous ones? In a few cases the answer would be: yes. However, in most instances they will be carbon copies of the past. Acceptable procedures like the election of officers, adoption of resolutions, updating reports from government and industry, and customary thank-you's will be repeated (My tenure of office followed this routine.). Criticism, if any, will be directed to outsiders, but in-organization criticism will be discreetly handled in the halls. In the final analysis a silent majority will return home and do very little until the next convention.

Conventions would certainly be more fruitful if the silent majority could be aroused! Each convention labels expanded membership as a top priority item; but, so far, over 200,000 beekeepers continue to be silent. Their attitude might change if beekeepers in each congressional district understood the importance of telling their congressmen (Senators and Representative) about the honey and pollination value of the honey bee. It naturally follows that congressional understanding is vital. Thanks to the likes of Representative Silvio Conte our image in Congress is fuzzy. Telling beekeepers about the importance of local congressional contact is the responsibility of the leadership, but it should be the responsibility of local beekeeper groups to follow through.

A series of meetings over the country with congressmen would do wonders for most of our projects. Opponents of government involvement would learn that in today's world there is no way to operate any kind of business without dealing with the government especially the Federal. Also, please remember that these meetings will permit a thorough airing of pro/con positions. For those who feel that their input would be useless, please bear in mind that all ideas, good or bad, originated with one person.

Mr. Beekeeper, while you are enjoying the convention please sandwich some heavy thought about how we can expand our support. Among other things visit with an opponent about his views that you feel are flawed. I enjoy such visits, but in a number of cases I learn a lot that I thought I already knew. And this is good!

HAPPY NEW YEAR. I hope you have a profitable year.Δ

HOME HARMONY

By ANN HARMAN
6511 Griffith Road
Laytonsville, MD 20879

"Today is the day to bake bread — and honey is better than sugar in the recipe."

Bread, like bees, dogs and horses, should be handled with a kind, but firm, touch. Breads are easy and extremely satisfying to make. It is certainly difficult to say which aspect of bread making is the best: kneading the soft dough to a satiny ball, or the aroma of the baking loaves, or the taste of a chunk of still-hot bread dripping with butter. Fortunately honey can be an important part of bread making.

Sugar, in some form, is the necessary food for the yeast. Combining the two results in the formation of tiny bubbles that give bread its texture. Since yeast is not particular about the source of sugar, honey can be substituted for sugar in yeast bread recipes. Since the quantity of honey is small compared to the volume of flour, a simple measure-for-measure substitution works out just fine.

Honey has great advantages over sugar in bread recipes. The moisture-absorbing property of honey will keep loaves of bread moist, therefore fresher, longer than those made with plain sugar. The crust of the bread will be a deeper golden brown — very handsome, actually.

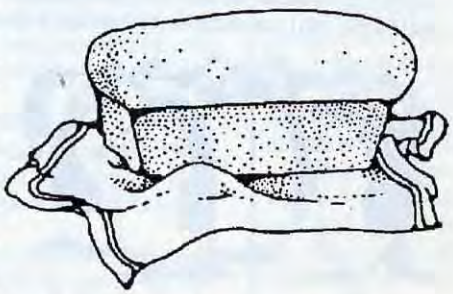
Strangely enough, salt is an important ingredient of bread dough. We are accustomed to thinking of salt as enhancing the flavor of foods, to keep them from tasting "flat". But salt slows down the action of the yeast to produce the correct texture. Without salt, yeast simply is out of control and the texture of a loaf is coarse, uneven and the flavor is disappointing.

Your choice of liquid affects the loaf of bread more than most people realize. That wonderful crisp crust and chewy texture of French bread is the result of using water as the liquid. The tender, velvety grain of white or whole wheat bread is produced by using milk as the liquid. Milk also improves the keeping qualities of breads. If you enjoy a piece of nicely toasted bread, with honey of course, use milk for the liquid.

One more important ingredient is the fat. Feel free to choose any fat: oil, butter, margarine or lard all give the same result. Fats make the dough elastic so it can expand easily. Fats also help develop a nice crust with an attractive sheen.

Now comes the most important ingredient of bread — the flour. Beginning bread bakers should probably start with the most reliable and successful, the all-purpose white flour. As soon as your kneading and raising techniques are established, use whole wheat flour, then experiment with the other interesting flours that you can find. It is lots of fun to discover tasty combinations of flours.

However, one must understand the gluten properties of various flours to insure success. What is gluten? Gluten is formed from the action of a liquid on two basic proteins in wheat flour.



Gluten is elastic and will stretch and hold the bubbles of gas formed by the yeast, much like a balloon. When the dough is baked, the little "balloons" of gas are set and the finished loaf has a tender texture.

Be careful! Some flours have little or no gluten-forming properties. Although you may be able to mix a dough, it cannot be kneaded. If you attempted to bake such a mixture, you will probably end up with something resembling concrete.

However, there is a simple way to use these low- or no-gluten flours. Just mix them with the basic white flour. The finished loaf will be a bit more crumbly than a white loaf, but the flavor will be superb.

To save you from a catastrophe and to help you select flours, here is some information about gluten content.

Whole wheat flour: Although a little lower in gluten than white flour, whole wheat can be used successfully as 100% of the flour in a yeast bread recipe. For better slicing quality, substitute 1 cup of white flour for 1 cup of the whole wheat.

Cake flour: This has a low gluten content and should not be used in yeast breads. Whole wheat pastry flour is in the same category.

Rye flour: Rye does produce gluten, but less than wheat flour. Therefore, combine it with white and whole wheat flours.

Rice, buckwheat, corn meal, oat, potato and soy flour: These marvelous flours contain very little or no gluten and must be combined with white flour for use in a yeast bread. In general, use about 1/4 to 1/3 the total flour quantity to preserve bread tex-

ture. Feel free to experiment with different proportions and combinations since the flavors and textures of these are so different.

The second most important "ingredient" (behind flour) of bread baking is a ***bread knife.*** More homemade loaves have been mangled by dinner knives, paring knives, and carving knives than I care to think about. Some people just won't bake bread "because you can't cut it". Before you get out your mixing bowl and assemble the ingredients, go and buy a *real* bread knife. A real bread knife is proud of it and is so labeled. Beware of a knife that claims it cuts tomatoes or shaves ham paper-thin. That is what those knives are supposed to do. A bread knife cuts bread. That's all. And it does a beautiful job of it. The blade is long and it is serrated in a wavy pattern. Protect the blade, use it only for bread and it will give you many years of satisfactory service.

Some bread-baking beginners are terrified of the instruction "knead". Some sort of magic has built up around this term, when actually, kneading the dough is quite simple and lots of fun. If you are just starting to bake breads, remember that it is practically impossible to over-knead. So if you are not sure you have reached that smooth, satiny ball with tiny bubbles under the surface, then just knead some more. I find a floured board the most satisfactory surface for kneading, but many people have success with other surfaces. Always have flour handy to keep a light coating on your kneading surface.

Books have been written about baking bread. However, the best way is just decide that today is the day to bake bread. Here is your recipe.

Basic White Bread

1/4 cup warm water
1 package yeast
2 cups milk
2 Tbls. shortening
2 tsp. salt
2 Tbls. honey
6 to 6-1/2 cups all-purpose flour

Scald milk. Remove from heat and add salt and honey. Stir to dissolve. Cool to warm. In large bowl, dissolve yeast in the warm water. Add the milk mixture and stir to blend. Sprinkle in 3 cups of the flour, one cup at a time, stirring until the flour is evenly moistened. Gradually add remaining flour to make a stiff dough. Turn dough out on heavily floured board and knead until smooth and elastic, generally a minimum of 10 minutes. Put dough in greased bowl and lightly grease top of dough. Cover and let rise in a warm place until doubled in bulk, about 1-1/2 hours. Punch down dough. Turn out on board and shape into two loaves. Put shaped loaves in greased 9" x 5" bread pans and let rise until almost doubled in bulk, about 45 minutes. Bake in 375°F oven for about 45 minutes. The loaf will be nicely browned and will sound hollow when tapped. Remove from pans immediately to cool on racks.

At this point, remember that bread, hot from the oven, will not slice well. Use your bread knife to cut a thick chunk of bread. Butter it well and enjoy. Save the second loaf for more civilized eating.

Now that your bread-making skills are established, try this combination of flours. One hint: do not let loaves rise too long on baking sheets. They do not have the support of pan sides and if left too long, may collapse or take on funny shapes.

Rye-Wheat Bread

2 cups warm milk
1 Tbls. salt
1/3 cup shortening
1/3 cup honey
1 package dry yeast
3-1/2 cups whole wheat flour
2 cups rye flour

In large mixing bowl, mix salt, shortening, honey and warm milk. Stir in yeast until dissolved. Add whole wheat flour and beat thoroughly. Add rye flour, mixing by hand. Turn dough onto lightly floured board. Knead dough for at least 8 minutes. Place dough in greased bowl. Lightly grease top surface. Cover and let rise in warm place until doubled in bulk, about 1-1/2 to 2 hours. Punch dough down and let rise again, 30 to 45 minutes. Punch down. Divide dough in half. Shape into round loaves. Let stand 15 minutes. Place on greased baking sheet, cover and let rise until doubled, 1-1/2 hours. Bake at 375°F for 45-50 minutes. Cool on rack.

The Honey Kitchen
ed. by Dadant & Sons

Bread making adds pleasure to your life. Be sure to share your loaf with a friend.Δ

MAIL ORDER MADNESS

WALTER L. PETERSON

There are few jobs connected with beekeeping as hard as moving bees. Of course, if your operation is large enough you can use flatbed trucks, booms, or better yet, fork lifts. But for the sideliner with only fifty colonies, the task is both difficult and heavy. It wasn't too bad when I had a son at home who found it difficult to turn down a request to spend half the night with my moving project, but when he married, it was more than I could do to ask him to spend the night moving bees. And it is a lesson in humility to find how few friends you have not afraid of bees and willing to spend the night moving them. Here in Eastern Washington we winter in ten-frame deeps. It's possible for one man to lift a light colony and get it into a pickup, but it's heavy and awkward to do the job by yourself.

Some new arrangements had to be made and I recalled seeing an ad about a one-man, hand-operated hive-lifter capable of lifting over 400 pounds. So, I went through a few dozen old bee journals before I found the ad for a hive lifter made by Astra Lift of Revelstoke, British Columbia, Canada. It sounded perfect and if the ad had contained a price I would have ordered immediately. Rather, the ad asked that you write for more information, which I did. This was in the middle of December, 1986.

In a week or so I received a fine brochure with a description of the hive-lifter, which is a one-half fork lift powered by a hand winch and grafted onto a heavy duty hand truck. There were pictures of it being used, testimonials from successful users and, of course, an order blank.

The price of $395 with freight C.O.D. and duty at 7% certainly seemed a bargain if it could do what they claimed. One of the pictures showed a four story colony split in half, with the upper two stories attached to the lifter and cranked up higher than the others. The brochure said "ask about extra attachments for lifting and holding part of a colony" That didn't seem like such a bad idea, so, off goes my inquiry for information and prices on the attachments. Ten days later I received another brochure, but without reference to the attachments.

It seemed that if I was making an international purchase with freight and duty, there should be some economy in doing it all at one time. Another letter, pointing out that I had received the brochure, had requested information concerning attachments but had received no information. No response to this letter at all.

Finally, on April 7th, I decided to phone, so I dialed 091, the access code, the area code, and number as shown on the brochure. After a couple of short rings the phone was answered by a gentleman with a very broken accent. He didn't know anything about a hive-lifter, and in fact he didn't know what a hive was or why anybody would want to lift one. After some explanation I found out I was talking to somebody in, I believe, North Africa. I apologized and said I had made a mistake. I looked the number up again, dialed and got the same gentleman. I found that calls from the United States to Canada don't need the international access code, only an area code. I am sure that my friends north of the border will be surprised to learn that the international conspirators who want to unite our two countries have already succeeded in integrating our phone systems.

First, I received a fine brochure . . . complete with photos and testimonials.

Another phone call, and this time somebody answers "Hello, Astra Lift, how can I help you?" I explained my quest for information on attachments and received apologies, saying that they hadn't received my request. Yes, they made the attachment, it cost $75 and if I would send a cashier's check or money order, they could ship to me in two or three days.

The next day I went to the local branch of my bank and purchased a cashier's check for $470 and mailed it with the order. This occurred on April 8, 1987, four months after my first letter.

I knew it would take a few days to get my order, and I would have my lifter in as little as a week. But five weeks later I called the manufacturer. They were sorry but had not received my order or cashier's check. The next day I went to my bank to find out what to do. After a short wait one of the charming young women at the front desk showed up. I explained that I wanted to stop payment on a previously issued cashier's check and get another.

You would think nobody had ever stopped payment on a cashier's check. First, they needed to confirm that the check hadn't been cashed. Then, they needed to find the right forms, and finally they needed me to sign an affidavit that it was lost and not stolen. I told the girl that I certainly did not know of my own knowledge that it hadn't been received, but that very day I had talked to the people to whom it had been sent and they told me that it hadn't been

Continued on Page 38

MADNESS . . . Cont. from Page 36

Like the IRS, bankers can make liars out of nearly anyone.

received, and I had every reason to believe them. She assured me that the only way I would get a refund was to fill out the affidavit. This was not the first time I have lied, but like the I.R.S., they seem to be able to make a liar out of almost anybody.

It would be ten days to two weeks before I could get my refund, so I agreed to purchase a new money order. All of this took a lot longer to accomplish than to tell it —forty five minutes.

A new letter explaining that the first cashier's check had been canceled, a new order blank and a new cashier's check for $470 was sent. It is now May 13, 1987, but this time I am not going to wait five weeks before calling, so on June 8th, after only three weeks, I call again to find out how my order is doing. But they had not received this cashier's check either. This time they suggested I send my credit card number to get this thing rolling. I did. On June 18th I phoned again, to find they were waiting for a part. They said my order was complete except for this part and as soon as it arrived they would get it off to me.

Two weeks later I received a call asking if I was the Walter Peterson who had ordered equipment from Canada and that same was in customs and did I want the order and would I pay the duty on it? I assured them I did, and I would.

Finally, on July 8, 1987 I received a call from a local freight company saying they had a shipment with a COD charge of $85.50 and where did I want it delivered? I told them to hold it right there, I would be down and pick it up. It has now been seven months since this started. After seven months my unit arrived, but the story is only half over. Yes, more can go wrong!

I could not wait to assemble it and started that very afternoon. A slight problem, however. One of the axles was not threaded so the nut would fit. The next day I made a trip to two machine shops to find somebody with a 3/4 inch machine die for cutting threads on this axle. Neither had a die that big but the last one recommended a retired machinist who operated in a shop in back of his house. I went to that machinist, and no, he did not have a die that large but he knew how to fix it anyway. He put the shaft in his metal lathe and ran a three cornered file through the threads several times until the nut fit. No, I could not pay him for helping me, he was on social security and glad to help. I am on social security too, but you can bet that when extracting came around this man who was "glad to help" received a gallon of honey.

Finally, my lift was put together. I checked it out on a couple of hives in my home yard and was convinced that it would do everything it claimed, and would be the answer to my problems.

That weekend I went out to move fifteen heavy colonies. After getting five of them loaded, I had the sixth eighteen inches off the ground when the machine malfunctioned. Without tools I had to abort the project and come home. The

After seven months my unit arrived, but more can go wrong.

next day I was able to repair the unit.

Next, in August of 1987, I received a call from a Commercial Collectors, Inc., wondering why I hadn't paid the $40.18 due Norman G. Jensen, Inc. I explained that I probably had not paid it because I had not bought anything from Norman G. Jensen, Inc., nor received any billing from them, and, as far as I knew, did not owe anybody $40.18. Then they asked if this wasn't Walter L. Peterson of General Delivery, Greenacres, Washington and I explained, no, that this was Walter Peterson of Route 1, Greenacres, Washington, and that I had lived at my present address over thirty years and that I had never used a general delivery address.

They said bills addressed to the general delivery address had been returned "not at this address" and hadn't I bought something from somebody in Canada? I said yes, I had purchased a lifter from an outfit in Revelstoke, Canada but I had paid for it in full and as far as I knew there was no balance.

It appears that the $40.18 was the 7% duty, plus a small fee for the broker who had advanced that amount to get my equipment out of customs. I said if they would send me a bill I would get a check to them. I thought the duty had been included in the COD charges of $85.50 and I am sure the broker was unhappy to lay cash on the line and then have to turn it over to a collection agency. I still didn't know where the general delivery address came from so I went back to check my shipping invoice and found it *was* made out to me at "general delivery" This is the reason the local freight company had phoned to find out where to deliver the lifter.

Oh yes, I forgot to mention that when the loader came by auto freight, the invoice had typed in at the bottom, "attachments to follow shortly" and, as you can guess, the attachments were not included with the loader.

Late in August I wrote to Astra Lift and pointed out that their shipping invoice said that the attachments would follow shortly and that it was now over six weeks from that time. I wondered if that did not come within the definition of "shortly". I also pointed out that I did not expect to pay duty on the attachments since that was included with the price of the lifter. A couple of days later Astra Lift called. They were again waiting for parts and it would be about six weeks before they could ship my attachments and, in the meantime, they wondered if I wanted a refund.

I didn't phone back. First, my letter was clear — I had paid for the attachments, was waiting for them, and did not expect to pay duty a second time. I could not imagine what help a second letter would be saying the same things over again and I had already made five prime time phone calls in connection with this order and did not feel another call should be necessary.

As of March, 1988 I have had no word about my attachments.

I recall my parents' home spun philosophy that the only mistake a person ever makes is not to learn from previous mistakes and experiences. From this experience I have learned

The only mistake a person ever makes is to **NOT** *learn from previous mistakes.*

several lessons which may, or may not, be helpful in the future.

1. A year's lead time may not be sufficient to acquire a piece of equipment that you would like to have.

2. "Ship in two or three days" really means two or three days after receiving the order, after getting all of the necessary component parts, after final assembly, and plus possibly a few more days.

3. Between the United States postal service and the Canadian postal service it is possible to lose three out of five pieces of first class pre-paid correspondence addressed to the same addressee and mailed at three different times. Further, it is possible that these same three pieces of mail will not be returned to the sender even if you have your full name and return address on the envelope.

4. Instructions in the front of the phone book may not be correct and a phone call from the United States to Canada is made differently than other international calls.

5. If you are not already a liar and want to preserve your purity, try to avoid your local banker.

6. The word "shortly" may mean something in excess of eight months and I am still waiting to find out how long six weeks might be.

Would I do it again? Certainly! The machine is a joy to work with. It does not do the job by itself but it will do what it is represented to do and will enable one man to do things that he could not do by himself. The machine is cleverly designed and sturdily built.

If you should decide to buy one I would suggest that you first look carefully in the mirror. If you see any crow's foot lines around the corners of your mouth or eyes, then check carefully with your doctor to see what the chances are of living long enough to complete the transaction.

Alternatively, I would try to find some local beekeeper who has one of the lifters, borrow it from him in his off season and have the local welding shop copy it. It can't take any longer.Δ

YOU REALLY CAN

Keep It SIMPLE

FRANCIS L. W. RATNIEKS

Movable frame hives are typical of beekeeping in most developed countries, and have made possible large scale operations found in the United States. It is possible for one beekeeper to manage a thousand or more colonies. However, in many less developed countries the relationship between man and bee is still at the level of hunting wild colonies of bees for their honey, or "bee-having" in which bees are kept in boxes without frames and the only management is periodic cutting of combs. Many beekeeping development projects want to encourage the use of appropriate higher-level beekeeping technology.

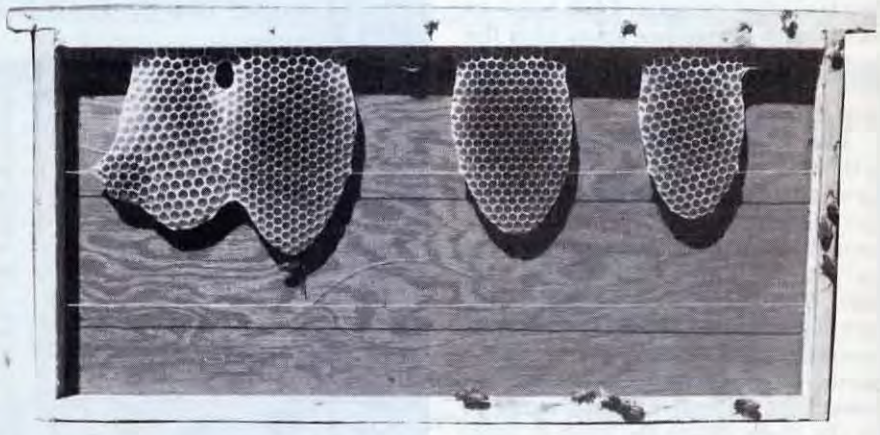
To give an obvious example: large scale migratory beekeeping using trucks, fork lifts and other sophisticated equipment is highly successful in the United States but would be totally inappropriate for most developing African countries. Any development project emphasising this would be doomed to failure from the start. One important consideration is the type of hive to introduce. The movable frame Langstroth hive is probably the most productive hive to use, but requires extractors and queen excluders, and construction requires exact woodworking, dependent on a supply of good lumber. When any of these are lacking, a lower level technology hive, such as the Kenya topbar hive, is often promoted. An interesting comparison of the pros and cons of both types of hives is provided in the Peace Corps Manual "Small Scale Beekeeping" (Gentry 1982).

When comparing hive types the Langstroth may well suffer from appearing too complex in construction than necessary, because the accepted model of the Langstroth hive is constructed in the woodworking factories of developed countries, rather than an equivalent hive made simply, but to the same measurements. This was clearly brought to my attention on a recent visit to Jamaica, where a number of businesses and development agencies are involved in selling equipment and promoting beekeeping. The frames produced were all of the Hoffman self spacing type, with their complicated joints, rabbets, and exact tolerances across the end bars. One person involved bemoaned the labor and difficulty involved in their construction. However, the local beekeepers would have been as well served by free hanging frames of much simpler construction, as few of them move their hives, where the self spacing frame is advantageous because it prevents the frames from moving during transportation. Similarly, dovetailed construction of corner joints in the hivebody is typical of factory-produced equipment, but a simpler joint can be just as effective.

With this in mind it seemed like a good idea to build a Langstroth hive as simply as possible, using a minimum of tools, starting from planks of wood. The following is an account of what happened. The accompanying figures and photographs show the measurements and method in greater detail.

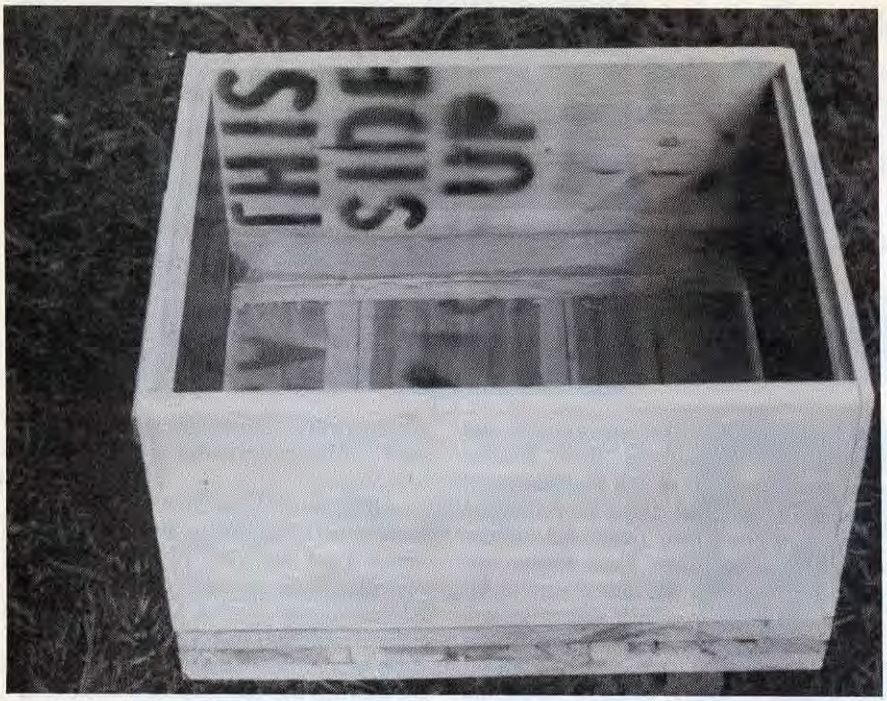
The tools I used were a hammer, hand saw, chisel, ruler, and square. The wood used was 3/4" planks of planed softwood lumber, salvaged from a crate. Also used were paint, an assortment of nails, beeswax, and foundation embedding wire. The frames were constructed by sawing the plank into 3/4" and 3/8" wide strips of wood. Before sawing, the wood was first marked out. An empty super formed a convenient saw-horse. The 3/4" strips formed the top bar and the 3/8" strips the bottom and end bars. A piece was cut out of the ends of the top bars to form the frame ear and to hold the end bar. The frames were then nailed together and checked for true on a flat surface using the square.

Strips of wax were fixed to the undersides of the top bars so the bees would start building comb in the correct place. Starter strips were made by roll-



A frame a few days after putting into the hive. Note the starter strip, from which the bees have started building comb, and the construction over the wire which is embedded by the bees in the midrib of the cells. One of the patches of comb is largely composed of drone cells.

Continued on Next Page



Showing the rabbet and corner joints.

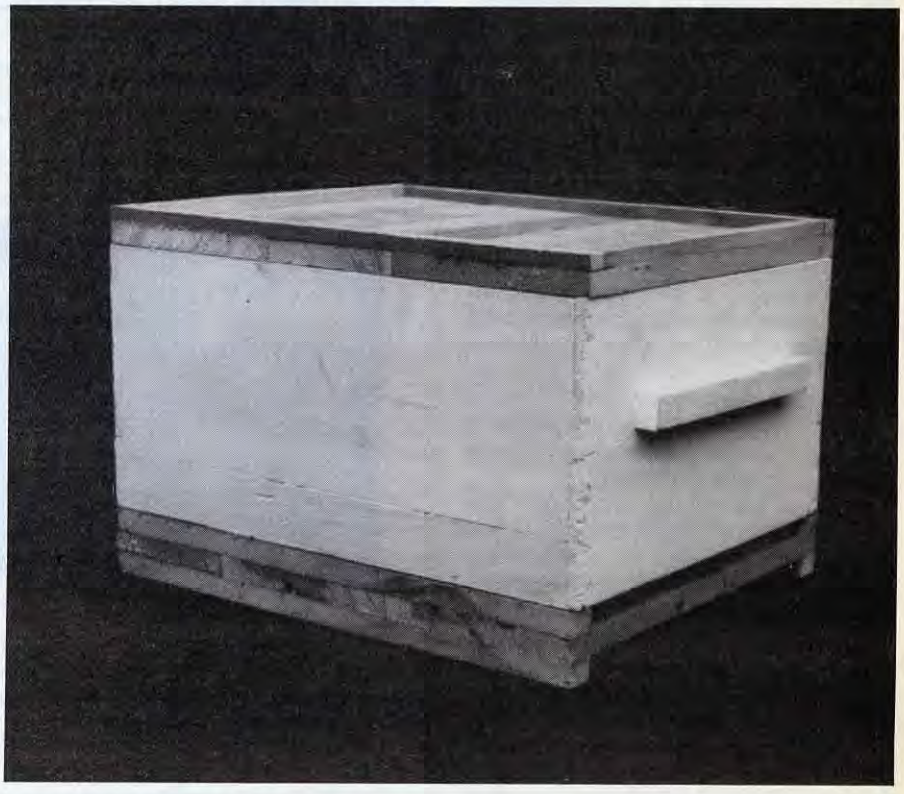
ing scraps (from burr comb and scrapings) between fingers to produce a sausage of wax. These were slightly flattened and firmly pushed into place. Finally, two strands of frame wire were fitted to the frame. A hammer and nail were used to punch holes in the end bars to take the wire.

The main problem in constructing the hive body was in forming the rabbet to hold the frame ears. The joints were also fairly difficult. The rabbet was made by carefully sawing along the length of the edge of the hivebody side pieces to the desired depth, and then using the saw and chisel to cut out the notches. The rabbet to hold the frame ears is critical because it has to be an exact depth of one bee space plus the depth of the frame ears. It is one of the most important dimensions in the Langstroth hive.

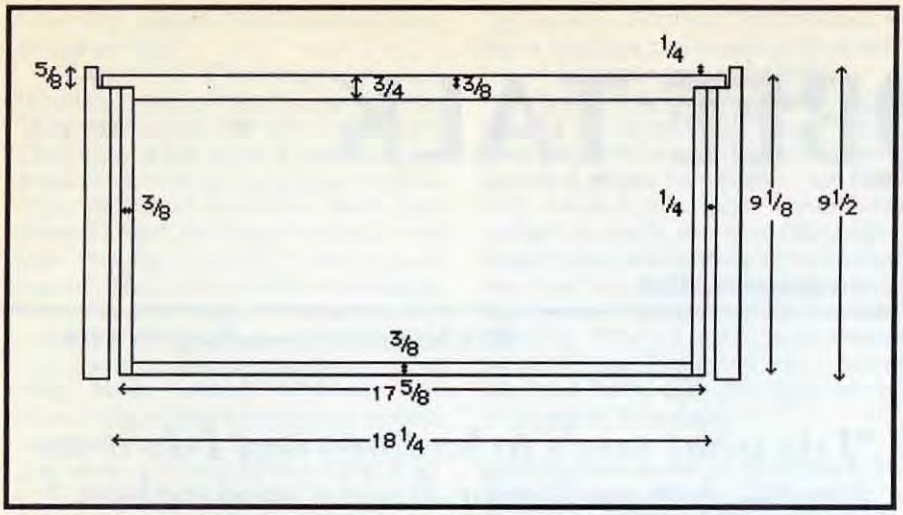
The joint dimensions will depend on the thickness of the planking used in the construction. In all these measurements it is important to remember that the critical measurements are those of the *internal* dimensions of the hive body. The external dimensions will vary somewhat according to the thickness of the wood used. Similarly, for the frames the important dimensions are those of the perimeter of the frame and not the space where the comb is built. The measurements given in the figure can easily be varied to different types of plank, yet still produce interchangeable hive parts.

Compared to the frames and hivebody, the top covers and bottom board were simple to construct, and could have been made various ways. Working with the same planks the inner cover was simply a flat piece of wood made by nailing together several planks using a 3/8" rim. The bottom board was similar but with a 3/8" rim on three sides, and two more wooden strips on the bottom, the main consideration being durability. A piece of tin served as a top cover.

The hive is now basically complete, but still lacks bees and wax combs. The use of starter strips enabled me to do without foundation (as this is an often unobtainable commodity requiring either importation or an expensive mill to produce) by letting the bees build their own combs. To do this I removed alternate frames from a one story colony and replaced them with my empty frames. After a week, when the bees had started building combs, the other five frames



Showing bottom board and inner cover.



Measurements (in inches) for constructing the Langstroth hive. The 3/4" and 3/8" thicknesses of the frame pieces are not critical. However the overall outer dimensions of the frame, 9-1/8" x 17-5/8", are critical to about + or - 1/8" The frame can also be of any width up to about 1" The 1/4" gaps above the top bar and between the end bars and the hive body form the bee space.

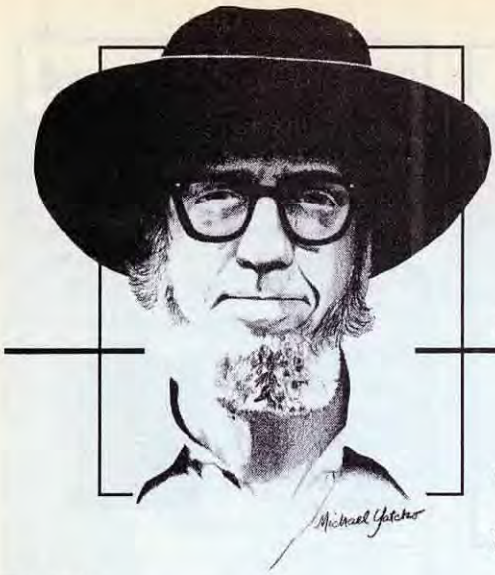
were also replaced. Alternatively, it would have been possible to start out with a swarm.

Combs constructed without foundation will have more drone comb than when foundation is used. In addition, they will not be as strong as those using wired foundation, and would not be suitable to use in an extractor. However, wired combs can be produced by wiring an empty frame, then allowing the bees to build comb over it. To ensure this the hive must not be tilted, otherwise the new comb will miss the wire. The photograph shows bees building *over* the wire.

In all, construction of a simplified Langstroth hive appears practical, taking me about eight hours. The parts, are standard dimensions, and are interchangeable with those in any apiary using regular equipment.Δ

Reference

Gentry, C. (1982) Small Scale Beekeeping. Peace Corps Manual M-17, Washington D.C.



BEE TALK

RICHARD TAYLOR

9374 Route 89, Trumansburg, NY 14886

"I do what needs to be done, and I do it on time — but perfection lies in moderation."

My bee work for the year was pretty well done before Thanksgiving, and my interest in the bees went into a steep decline, as it does every year about that time. I get them all put to bed for the winter, which isn't much of a job the way I do it. I find that uninspiring, and tend to put it off. One of the hives didn't seem to have much life, so I peered in, and found it filled with wax moth cocoons. That happens once in awhile. Not much I can do about it until spring, so I just put the cover back on and put it out of my mind until then. The bees are all in great shape for the winter, except for that one, and I probably won't even go around to look at them until April, unless I hear that one of the hives is lying on its side or something like that. The honey crop has long since been sold out, except for a little I kept aside for any last-minute urgent demand. My honey house is a clutter, and the clutter will doubtless get worse until spring returns. Then I'll shift into high gear once again, and bees will be on my mind all the time, and I shall be a regular hurricane of energy, rushing about and getting things done. Ah! In the back of my mind I do have images of a staggering crop of comb honey, and another summer of fulfillment, but this is not the time of year to nourish those thoughts. I bide my time, as do the bees, those images keeping hope alive through the bleak months to come.

Actually, I don't find beekeeping an awful lot of work, even during the busiest part of the season. Getting the comb honey supers ready in the spring takes some time, to be sure, and that can't be put off, because you have to keep ahead of the bees there. And then, later on, getting the honey packed and labeled takes time, too. But those are things I can do when I feel like it, a few hours here and a few hours there, out in my honey house, where I can listen to music and news as I putter along. The actual apiary work doesn't take very much time, because I've got it all down to a system. I love every minute of that, and I think few joys compare with being in the apiary, but you can overdo things there if you are not careful. The apiary should not be a place of tiresome labor. Once you've taken precautions against disease about all you need to be concerned about is swarm control, and I've got that down to a simple system.

Which brings me to the subject of what is sometimes derisively called "let-alone" beekeeping. I suppose I am a let-alone beekeeper. That means that I have a simple and straightforward system of management which does not involve much meddling around with the bees. I get them going in the right direction, with the minimum of work, and then I pretty much leave them alone and let them make lots of honey for me. Maybe if I spent twice as much time in the apiary, with some complex system of management, I might get a little more honey per colony, but I don't think my total crop would be nearly as good, because I wouldn't have time to keep many hives. It seems to me to make more sense to average maybe three supers of comb honey per colony than to average four or five supers but have time for only half as many colonies. Besides that, I don't think those fancy and complicated management systems really do increase your per-colony crop all that much.

Years ago I used to produce comb honey by the shook swarm method. That sometimes gave me good results, but it had its drawbacks too. For one thing, I got pollen in the supers, which is no good. But mostly it was just a lot of work. I decided it was better to have more bees and do less work. This past summer I got the biggest crop of comb honey I've ever had, and I think I spent less time in the apiaries than I ever have. But, I must add, the time I did spend there was well spent, with the very minimum of time wasted.

Often when writers refer contemptuously to let-alone beekeepers, what they mean is *neglectful* beekeepers, and I share their disdain for these. I am not a neglectful beekeeper. I do what needs

to be done, and I do it on time, but I keep things simple.

I know lots of beekeepers who are let-alone beekeepers in the worst sense. They really shouldn't have bees at all. They have a few hives of bees out back some place which they simply neglect. They wait until the honey flows have started before putting on a super — too late. They know nothing about swarm control. They read no books about bees, subscribe to no bee journal, and attend no bee meetings. These are the people who begin to think about harvesting some honey around November. Too late. In the spring they are apt to have last year's crop still on the hives. They just never got around to getting it off. This is no way to keep bees, but because it is so common, I long ago ceased encouraging people to get into beekeeping, unless, of course, I have reason to think they are really serious and willing to do what needs to be done.

Of all the people who ever lived, my abiding hero is Aristotle, a man of such towering intellect and abundant wisdom that, when I read him, I am filled with wonder that such a man ever walked the earth. And one of Aristotle's homelier but wonderfully wise precepts was that perfection lies in moderation. You do what needs to be done, but don't overdo it. That's a pretty good precept for apiculture. Don't overdo it — but at the same time, take care that you do what needs to be done. Δ

Questions and comments are welcomed. Use Trumansburg address and enclose a stamped envelope for reply.

QUESTIONS?

-Q- *My neighbor has a hive about 300 feet from mine. My honey was much darker than his. Neither of us extracted from brood combs, and we harvested the honey the same week. The only difference was that he used a cold knife and I used an electrically heated knife. Would that account for the difference?*

G. Hartke
Middletown, CT

-A- I am virtually certain that the electrical knife had nothing to do with it. I have sometimes been surprised to find very different types of honey coming from the same apiary at the same time. Apparently the entire honey bee colony tends to orient itself to a single source at a given time, especially when such a source if plentiful. When two such sources bloom at about the same time, then one colony might concentrate on one and another nearby colony on the other.

-Q- *As the summer progressed I added, one at a time as needed, three supers to my hive, with a queen excluder underneath. By the end of August two supers were filled and the bees were starting to fill the third. But when I went to take the honey off in mid-October, all three supers were empty. Why did the bees take all that honey down? Is it because they did not want to be going through that queen excluder in the coming winter?*

Joe Norgard
Fairfield, NJ

-A- The effect of the queen excluder was merely to confine the brood nest to the hive below. The bees probably got little or no nectar in August and September and, as their stores below the excluder got used up, they began to invade the stores above for normal brood rearing. It would have been wise to harvest the honey sooner.

-Q- *What size super is used to produce round comb honey sections?*

Roy Fleming, Virgie, KY

-A- The round section super must not be more than 4-1/2 (four and a half) inches deep. It is important to note this, because some manufacturers of beekeeping equipment, including some of the best-known, have been supplying the regular comb honey super, which is a quarter-inch deeper than this, as suitable for round sections. This is a serious error, because the bees build burr comb in the excess space, creating much drizzle when the frames are split apart in harvesting. Anyone receiving such a super should return it to the manufacturer for correction, or else rip it down a quarter inch on a table saw before nailing it together.

-Q- *I padgened a swarm, limiting the queen to a super that contained only foundation, no brood, and noticed adult workers emerging in less than 21 days. Have you ever seen this?*

Larry Meherg
Lakeville, OH

-A- While the development of a bee is slightly influenced by temperature, it is the opinion of Dr. Morse, at Cornell, that 19-1/2 (nineteen and a half) days are the lower limit.

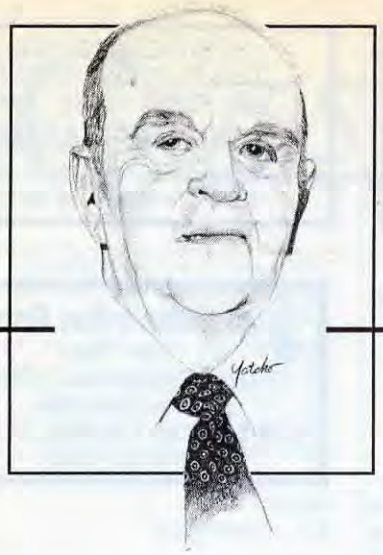
-Q- *Last spring my most productive colony of the previous season was found to be without any bees or stores. How come?*

J. E. Carter
Honeoye Falls, NY

-A- There are several possible explanations. Perhaps when you harvested all that honey the previous fall you accidently made them queenless. Or perhaps you took off too much honey and they just starved.

ANSWERS!

Richard Taylor



KOOVER'S KORNER

CHARLES KOOVER

1434 Punahou St. #709• Honolulu, Hawaii 96822

"Oh, to do it all again!"

If I could only start all over again what fun I would have with my bees with all that forty-five years of knowledge. Everything is streamlined now. And everything is frightfully expensive. But there are bargains to be had if you know how. I can call the editor in the early morning before 8:00 a.m. here in Hawaii. I put a question to him, got his answer, heard him laugh, all for about fifty cents. You can't beat it. Same with beekeeping.

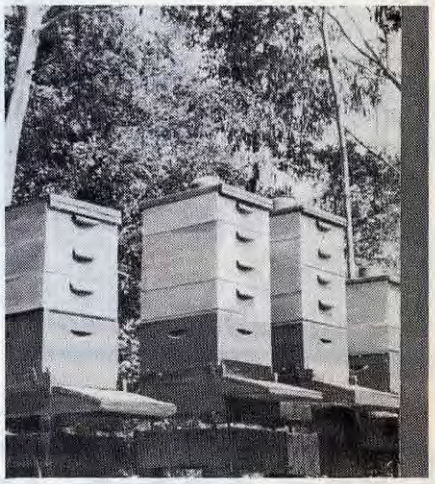
The Root Company has cleaned out it's bee supply department and gotten rid of all the dead wood objects we thought we needed. They worked fine but the cost of mailing them was prohibitive. Even a letter costs 25 cents to mail.

So then, what do you need to keep bees my way?

One deep super for a brood chamber — no more. Ten deep frames with wax coated plastic foundation. Ten of them, closely spaced, and I mean close, so no room for drone cells. A bottomboard with a shove-in 4" deep recessed entrance, no slatted rack. An entrance cleat no more than bee space high, a floorboard deep side up, a removable flight board, for easy landing, a standard inner cover with a 3/4" insulating paper board on top of it and a metal-clad telescope cover. (I used migratory covers, like the picture, for years — they're O.K. too).

I would coat my hive with a dark green wood stain to camouflage my hive. Use the army color called fern green. The public generally misunderstands bees. So don't arouse them, hide your bees. There you have it, my idea of a perfect hive.

For surplus combs use the 6-5/8" shallow super with 9 closed end bar frames called Manley frames. They were named after the famous English beekeeper who popularized them world-wide, except in America. And I would produce cut comb honey over an accurate queen excluder.



With their backs toward the trees and facing east, these hives get the morning sun. The canyon in which they are located gently slopes down and the cool air from the woods behind the hives brings relief from the broiling summer sun . consequently air drainage is perfect.

These single Langstroth brood chamber hives averaged 200 pounds of honey. There is nothing heavier to lift than shallow supers, which weigh 45 lbs. with 9 well-filled combs.

I would have my bees swarm when I was ready, *not* when they were ready. Retrieving swarms is no fun and it is time consuming. I would let "my" bees raise their own queens. They know so much more about it than I do. If they became queenless I would give them a comb of eggs from another of my hives, saves time all around. That way I would keep my bees healthy.

Where would I get my bees to start with? A nice big swarm. Bees as a rule don't swarm unless they are healthy. I never, in all my 45 years with the bees,

Continued on Next Page

picked up a swarm that wasn't healthy. That's what I would do. For more details I would order Root's book *The New Starting Right With Bees*, and of course for fun I would subscribe to *Bee Craft* to be able to get the other guy's point of view.

And here comes the bonus. If you subscribe to *Bee Craft*, I will send you a xerox copy on any subject you want to know more about *if* you send a dollar bill. I can get clear sharp copies of any article I wrote in *Bee Craft* right here in paradise. I won't make any money on the deal for it takes lots of time to research for what you should get, plus the cost of mailing, etc., etc. I have lots of time and it will keep me busy. But best of all I feel I make a contribution to beekeeping and that, my friends, makes me happy. Cheerio!Δ

INNER . . . Cont. from Page 3

The lesson of the Hawk is simple. If you focus *all* your attention on one area, the everyday basics tend to be overlooked. Neglect these and you, like little furry, will be only a Hawk's memory.

•

I seldom use this space to promote a commercial product. In fact I don't think I've ever done it. I usually use a somewhat more objective avenue like book reviews or new product items. But this time I don't want to use these because this time it's difficult to be objective.

Diana and I just spent an enchanting 90 minutes watching a new video tape about Brother Adam. Released by a company with the unconventional title of Bullfrog Films, it is a product of the British Broadcasting Company. Simply put, it is outstanding.

Even if you are not a fan of Brother Adam and his work this film is exceptional. But it is unquestionably and unabashedly a tribute to, and a history of this man and his work

England, Europe and Africa provide the setting for this multiple part story. The photography, the script and the cast are perfect for the film. The beekeeping jargon and how-to's are kept to a minimum though, but not to the point of divorcing the craft from the man. You will enjoy this film and, I think, so will your neighbor, who doesn't know a bee brush from a golf club.

It has a cost, but that's unimportant. It's worth the price.

•

Producing a video as exceptional as the one mentioned above is truly an art, and we have much ado about art this month. But bees, and beekeeping have charged the creative juices of artists for millenia.

The first recorded beekeeping event is a cave painting, and artists and writers have been busy ever since, extolling the beauty, the industry and poetry of the humble honey bee.

I'm not an artist, at least the painting, pottery, poetry type. I don't even attempt it because people think I'm trying to be funny when I do. That doesn't do much for my creativity, so I actively avoid the embarrassment. Fortunately those with talent and vision keep providing for the world that which we call beautiful.

Beauty is an individual thing, but we feel you'll enjoy what's here. The only drawback is that what you see is only the reproduction of the original. Keep that in mind as you look at the silver, the flowers and the pottery. Keep in mind also the debt we owe to those with vision. The world would be a bit less enjoyable without the beauty they leave.

Beekeeping's Newest Pastime: LET'S MAKE A DEAL . . .

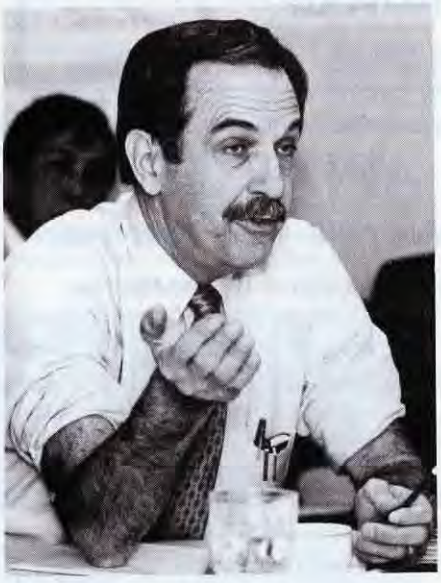
The U. S. Department of Agriculture established a special advisory committee to help draft regulations for preventing further spread of the Varroa mite. The committee's first meeting was held Nov. 30 - Dec. 2 in Washington, D.C.

Dr. James W. Glosser, administrator of USDA's Animal and Plant Health Inspection Service, said, "The formation of the Varroa Mite Negotiated Rulemaking Committee marks the first time that APHIS has employed negotiated rulemaking to draft regulations for its programs."

Negotiated rulemaking is a process whereby federal officials form an official advisory committee to draft regulations on a specific subject. Such a committee usually consists of private industry and government representatives who will be affected by the regulations. The Varroa mite committee includes 15 representatives from state departments of agriculture, beekeeping organizations and other agricultural groups.

"Negotiated rulemaking allows federal agencies to gather input from all affected parties as regulations are being written," Glosser said. "The meeting of the advisory committee on Varroa mite regulations allows us to proceed with negotiated rulemaking so that we can draft workable rules acceptable to all concerned."

Glosser said committee sessions are conducted by a neutral, third-party facilitator to ensure negotiations proceed smoothly.



Eisele photo.

***Bill Helms,** APHIS representative at the meeting, stresses a point to the group. Only negotiating participants were allowed to contribute to the meeting, but 30 or so interested industry members sat around the periphery of the table. Some of the outsiders were asked opinions or advice on specific questions: H. Shimanuki, Beltsville, contributed expert information on varroa biology; and Dr. Shahetta from Zoecon added much needed information on registration and use of Apistan®.*

Members Present

Varroa mite negotiated rulemaking advisory committee members were Peter Yamamoto, Almond Board of California; Binford Weaver, American Bee Breeders Association; Reg Wilbanks, American Beekeeping Federation; Kenneth Nye, American Farm Bureau Federation; Richard Adee, American Honey Producers; William Helms, Animal and Plant Health Inspection Service; James Bach, Apiary Inspectors of America; Darrell Wenner, California Bee Breeders; Jere Downing, Cranberry Institute; Robert Cole, Eastern Apicultural Society; Andrew Mack, International Apple Institute; David Mendes, Migratory Beekeepers; Ivan Shields, National Association of State Departments of Agriculture; William Metterhouse, National Plant Board; John Ambrose, Southern States Beekeeping Federation.Δ

. . . But What of the Children

Know this — the result of the negotiated rulemaking session held in Washington D.C. in early December was only the first draft of a proposed regulation APHIS will submit for approval. There will be fine tuning by the parties involved and counsel for APHIS and others so that the final proposal will not be identical to this draft. But unless there are substantial changes, the proposed regulation that the 15 or so industry representatives hammered out could have been far worse.

Since the regulation will not be released until late February at the earliest and only two meetings have been held so far, (early Dec. and early Jan.) what I have listed below are the highlights of the first meeting, and the basic outline of the concensus reached.

There were four 'assumptions' laid out at the very beginning, and the entire three day discussion hinged on these.

- National *eradication* of varroa is not feasible.
- The goal of a federal quarantine is to *retard* the spread of varroa. The only way to *prevent* spread is to prohibit movement.
- No current treatment provides 100% efficacy.
- Current distribution of varroa in this country is not known.

With these assumptions in mind the group arrived at the following guidelines. I have not listed them in any particular order of importance, but more in the order they were discussed.

The most visible problems were addressed first — varroa distribution — how to find it and what to do about it. The outcome of this was that *states* will conduct an initial survey (if not already complete), and an ongoing survey to continuously monitor for infestation.

If a state does not survey it will be considered 'regulated', and colonies, packages and queens cannot move interstate until the survey is complete. This is important, as it puts responsibility on the state to conduct the survey, and allows receiving states to refuse bees entry from regulated areas.

Also, a regulated zone within a state was defined, and is similar to regulated zones for other commodities. Means to remove it were also decided. Once this overall control was decided, special interest groups received attention.

Migratory beekeepers, including pollinators and honey producers had provisions made so they could continue to be mobile. The pollinators especially are needed for the commercial fruit, nut and vegetable growers depending on them. Big dollars were represented here. Honey producers, though less in demand by others, were given the same means to be cleared for interstate movement.

Package and queen producers will be able to ship this spring with a couple of new provisions. First, their states must be surveyed; second, they can ship with a treatment *in place*. For instance, an Apistan queen tab must be in place (I believe) three days to be effective. Last season queen shippers had to complete this treatment before shipping. This year they can treat 'in transit', such that the ultimate users must remove the tab. Similar 'in transit' provisions were made for packages, and even migratory colonies. Compliance agreements and limited permits will again be used, but the guidelines and enforcement used this year will reduce the possibility of negligence or deceit.

Other aspects discussed and resolved included regulated items; funding to support this regulation; statistical methods and techniques; threshold levels of infestation (a study to determine); grandfather clauses; and economics of survey and control.

These will be refined and released as a proposal by APHIS, subject to public comment. At the end of that period the comments will be considered and the regulation made effective (or discarded if disapproved).

The above is a brief overview of three long, intense days of negotiation. I specifically did not go into great detail because it will be the details that are changed to comply with federal law, or to meet other obligations.

I don't think anybody left the meeting entirely satisfied, but everybody will be able to stay in business — apple growers, honey producers, queen shippers and pollinators. But two other stories came out at this meeting, only marginally influenced by this topic.

The first, and in my opinion the most important piece of news to come out of APHIS in recent times is that they have recognized the need for an apicultural specialist on staff, and will have one in place by early spring. This is truly a noteworthy event!

But another benchmark was reached here that bears mentioning. A far wiser person than I once said, "We do not own the earth, but rather borrow it from our children — to whom it must return."

The world of beekeeping we are leaving our children is not that which we received from our parents. Nor should it be. But it almost seems that we are trying to use it all up, so that we don't have to worry about what we leave. This, I am sorry to say, is the story with most of agriculture.

The mark that agrichemicals will leave is not going to be easy to remove — from corn fields, apple orchards or beehives. At the very best they are only short term answers to a far greater problem. Man's abuse of the natural world continues to expand — urban development of farm land, toxic land fills, increased acceptance of pesticide residues in our food, air and water pollution — the list, it seems is endless.

As individuals we have little control over these global problems. But each journey starts with a single step — do not abuse the microworld of even one of your hives. Leave their world as you found it, and make it better for *your* children.Δ

Kim Flottum

Jamaica: Beaches *and* Bees

CLIFFORD P. FREY

Carlton Moss of Strawberry, Westmoreland, is in the process of upgrading from fixed comb, "turn down box" hives to Langstroth equipment.

Jamaica is well known for white sand beaches and reggae music. Less known is that it is the home of a diverse beekeeping industry, deeply rooted in the history of the country.

The first honey bees were probably introduced to Jamaica by English settlers. These dark bees were later crossed with Italian stock from the United States. The current hybrid, formed from these and possibly other stocks displays a wide variation in color. Color does not appear to be related to other characteristics such as gentleness or productivity. Jamaican bees are generally docile although at higher elevations aggressiveness increases notably.

Currently there is no evidence of bee diseases in Jamaica. In the past, outbreaks of American foulbrood, probably introduced by contaminated foreign honey have been successfully controlled through an intensive inspection program. If disease is found, an entire apiary is burned.

Certain tropical pests flourish in Jamaica, and can cause heavy losses. Wax moths enjoy a continuous year-round breeding season, and will attack unattended comb, and can kill weakened colonies. Large toads (*Bufo marinus*) position themselves in front of a colony just after dark and before dawn, feasting on clustered bees. Dissection indicates they can consume over 200 bees in an evening. Red ants (*Componotus {Myrmothrix} abdominalis*) can completely kill a colony in a single nighttime attack. Birds, lizards and dragon flies are also know to prey on bees.

Jamaican beekeeping covers a wide spectrum — from the bee hunter who chops honey out of bee trees to modern operations using standard equipment. Between these are beekeepers using fixed comb hives (known locally as a turn down box) or handmade non-standard movable frame hives. Continued use of primitive equipment is primarily due to the high cost of modern equipment. At standard labor rates it takes at least ten days pay for a single colony. Therefore, many beekeepers make their own equipment from scrap materials — saw mill slabs, zinc roofing, tractor inner tubes or electrical wiring.

Beekeeping with movable frame hives has been documented in Jamaica as early as 1896, but factors contributing to slow development are high equipment costs, a depressed economy and poor information transfer. And, although most beekeeping equipment is produced in Jamaica, availability is unreliable.

Carlton Moss, Strawberry District, Parish of Westmoreland is a typical Jamaican beekeeper. Living in an area of heavy sugar cane cultivation, he has discovered that using inner tubes from cane tractor tires to cover his hives keeps them dry and insulated from the intense tropical sun. His hives are hand made and except for the most recent, are of mixed sizes. With no books or other resources available, his hives represent years of experimentation and learning through observation. Several

hives have movable combs, with both top bars and frames. But without understanding bee space, these were doomed. However, with recent help from local extension services, and the U.S. Peace Corps, he is now upgrading to Langstroth equipment. Most colonies are kept small one full depth brood chamber and one full depth honey super. It is felt that small colonies reduce equipment costs. Up to three harvests per year compensate for this limited honey storage space. Queen excluders are widely used and generally kept in place year round.

The diversity in nectar producing plants (mostly trees) in Jamaica results in a great variety of honeys. The most celebrated nectar is from the Logwood tree (*Haematoxylum campechianum*) which grows mostly in the drier, low lying areas. Pure logwood honey is water white and has a delicious, delicate flavor.

In areas of sugar cane cultivation a distinctive molasses flavored honey is produced from the secretions of freshly cut cane. In most coastal areas black mangrove trees give a summer flow, producing a dark reddish honey with a strong flavor. Inland, and up in the mountains, which reach a maximum height of 7400 feet, the floral diversity increases. Coffee, avocado, tamarind and mango are some of the major nectar producers. The bitterwood tree produces a dark, bitter honey that is renowned for medicinal properties.

Much of the honey produced is sold directly from the beekeeper's home. Larger producers sell to grocery stores, supermarkets and hotels and resorts to supply the islands' large tourist industry. Honey is packaged almost exclusively in used 750 ml. rum bottles.

The price of honey in Jamaica is a bit high compared to world prices. In early 1987 honey typically sold for $.76 per pound in bulk, and $1.64 per pound retail. This price is possible because of a law prohibiting honey importation. This is to restrict the importation of bee diseases from foreign sources.

Honey is also highly regarded as a natural remedy for colds and other ailments. And it is a favorite of the Rastafarians, a religious sect who prefer a diet of natural, unprocessed foods.

Jamaica is frequently called an island paradise. To its beekeepers it is an island that offers some unique advantages as well as challenging problems. By working around these problems and taking full advantage of their resources, the Jamaican bee farmer survives in a style that typifies and unites beekeepers around the world.Δ

Oliver Smith, one of Jamaica's more progressive beekeepers, inspects a colony in his modern, Little London apiary.

The Food Chamber . . .

Some flours, notably whole wheat flour, and wheat germ, will turn rancid during prolonged storage. In order to have a supply of different flours on hand for baking, store them in the freezer. Flour should be allowed to come to room temperature before adding to a dough mixture, but that is a tiny problem since it takes only a few minutes to warm up. Raisins and nuts store well in the freezer, also. It is definitely worth devoting some freezer space to baking supplies. You are more apt to try a spur-of-the moment recipe.Δ

FORESTS . . . Cont. from Page 15

dirt/rock dams can be also constructed.

Then **begin to plant**, grasses and vines that will hold the soil. These could include legumes (for your livestock), or other cover crops. Such crops will take advantage of the newly stored ground water, drop their leaves and be the source of humus, which in turn helps the soil store more water. Once these strips of green are established, they serve to catch more rain and soil, enough to plant quick cash crops.

Then native trees can be planted, possibly the same kind that were cut down. They should be grown from seeds, in pots if possible. The precious fungus from unspoiled forest soil should be introduced into the pots. These seedlings then can be transplanted during the rainy season, once they are large enough to withstand the rigors of nature.

Tropical Forest Gardening can be tried, including growing cash lumber crops, intercropping trees and vegetables, and reclaiming eroding slopes with cover crops, especially legumes.

Obviously, it cannot be done by any single person. It will take a concerted effort by a village, co-op, youth or other organization. But it must be a serious and well-coordinated effort and it **will not** happen overnight. But it is so *EXTREMELY IMPORTANT*, DO NOT IGNORE IT as it will not go away.

The Honey Bee Connection

Many cover crops and trees which can be replanted in threatened areas could be important sources of nectar and pollen for honey bees. Not only will they help pollinate these plants, they also give local beekeepers an additional source of income from selling the honey, beeswax and other hive products.

If you need some ideas of what trees to plant that also give honey (as well as lumber, fruit, fodder and other things), the list below will get you started. The Firewood Crops books[10], list other tree species too.

-Acacia spp.
-Acer spp. (Maple)
-Azadirachta spp. (Neem)
-Calliandra spp.
-Citrus spp.
-Dalbergia spp. (Sissoo)
-Dombeya spp.
-Eucalyptus spp.
-Gleditsia spp. (Honey Locust)
-Gmelina spp.
-Grevillea spp. (Silk oak)
-Prosopis ssp. (Mesquite)
-Robinia (Locust)
-Schinus spp. (Pepper tree)
-Zizyphus spp.

In The Beginning

Bees have long been part of agricultural systems, their pollinating skills important to us and our food crops. When speaking of bees in agroforestry programs, however, we tend to forget about their pollinating activities for fruit and other useful trees.

Agroforestry (food-bearing or other useful trees) does not compete with other agricultural practices since trees can be grown on ground not suitable for conventional farming. Yet the importance of trees has been overlooked by many aid agencies.

When examined more closely, bees fit into such programs, especially where trees are used for food, soil improvement or soil stability. Not only do the trees benefit man and his animals (fodder, fuel, lumber, pulp, windbreaks, sand barriers, dyes, tannins, shade, wildlife shelter, firebreaks, coastal stability, pest control, green manure, shade and esthetics), but the bees pollinate these trees so people can sell the seeds, nuts or fruits. They also provide economic items such as the bees, honey, wax and other hive products. Once the land is stable and productive, people can become more self sufficient and well fed, and can begin to break the cycle of human poverty and plant peril.Δ

References

1. Caufield, C. *In The Rainforest.* Un. of Chicago Press: Chicago; 1984. 304 pp.
2. *National Gardening Magazine*. Nat. Gard. Assoc. Burlington, VT 05401. 8/88:22.
3. Brown, L. R. et al. *State Of The World.* Worldwatch Institute. W. W. Norton: NY. 1986. 263 pp.
4. *Harrowsmith.* No 17. Sept/Oct 1988. Letter to the editor by T. Giduz, M.D.
5. Sanchez, P. A. & S. W. Buol. *Soils of the Tropics and the World Food Crisis.* Science. Vol. 188:598-603. 1975.
6. Conner, J. *Empty Skies.* Harrowsmith. Vol. III(16):35-45. 1988.
7. Uhl, C. & G. Parker. *Is a one-quarter pound hamburger worth a half-ton of rain forest?* Interciencia. Vol. 11(5):213. 1986.
8. Wilson, E. O. ed. *Biodiversity.* Nat. Academy Press: Washington, DC. 1988. 521 pp.
9. Turner, T. *Razing the forest primeval.* Mother Earth News. No. 112:110-112. 1988.
10. *Firewood Crops.* National Academy of Sciences; Nat. Academy Press: Washington D,C.

Diana Sammataro is the editor of Cornucopia, *the newsletter of the International Agency of Apiculture Development (IAAD). Currently a sideline beekeeper and sales manager for The A. I. Root Co., she is an eclectic writer and contributes frequently to* Bee Culture. *She borrowed the title of this article from the Pennsylvania Foresty Association.*

NEWS . . .

World Honey Production

Honey production in selected major producing countries for 1988 is forecast at 709,500 tons, down 3% from the revised 730,500 tons harvested in 1987. Canadian production for 1988 is forecast to decrease 11% because of a ban by Canada on imports of U.S. bees due to the varroa mite. The ban caused a decline in number of colonies from 700,000 in 1987 to 620,000 in 1988: Western Canada was affected most by the ban. The decline in the number of colonies in Western Canada is expected to be partially offset by an increase in average yield per colony. Mexican production is expected to fall 8% because of dry conditions in the main producing state of Yucatan and low rainfall in Michoacan, Jalisco and Veracruz. The decline also can be partially attributed to the Africanization of some colonies in southern Mexico. Yucatan had another severe drought which caused poor flowering and reduced honey flow during the peak months of February, March and April. Controlling Africanization through government programs will attempt to slow the movement northward in the states of Veracruz and Oxaxaca. But production of honey in 1989 is expected to decline even further.

U.S. honey output is forecast at about 85,000 tons, down 17% from 1987 due to poor flowering caused by the drought. In Argentina, another good honey crop is forecast for 1988 with about the same outturn as last year. Argentina experienced good weather during the season — a mild winter and timely rains in southern Santa Fe and northern Buenos Aires provinces aided the growth of wild flowers during the spring production period. Brazilian honey output is forecast to continue its steady expansion to a record level of 38,000 tons in 1988 mainly due to excellent weather.

The Soviet Union is expected to harvest 192,000 tons, up slightly from 1987 as more private hives were established. A poor winter, disease and poor management lowered 1987 production. There has been support for the implementation of intensive production methods, especially in pollination.

Chinese honey production is forecast at 200,000 tons with average yields of 24.5 kilograms (54 lbs.) per colony. Increases in honey production are expected to result from expanding the number of colonies rather than improving yields. Honey production prospects for Australia for the current season are good in all regions as the season began with soaking rains. In 1987, 41% of Australian honey was produced in New South Wales, 16% in Queensland and Victoria and 13% in South Australia and western Australia. The majority of honey produced in Australia comes from Eucalyptus trees.

Honey production in selected countries was as follows in 1,000 tons.

	1985[1]	1986[1]	1987[1]	Forecast 1988[1]
Canada	36.1	34.0	40.6	36.0
Mexico	56.0	54.0	47.9	44.0
United States	68.1	90.7	103.0	81.6[2]
Argentina	45.0	36.0	40.0	40.0
Brazil	28.0	31.0	30.5	36.0
France	24.6	24.1	24.5	24.0
West Germany	11.0	16.0	16.0	18.0
USSR	204.0	210.0	190.0	192.0
China	150.0	160.0	204.0	200.0
Japan	7.2	5.6	6.0	5.5
Australia	26.9	25.1	28.0	29.0
Total	**656.8**	**686.7**	**730.5**	**709.5**

[1] estimates refer to a calendar year, except Australia where crop year is July/June.

[2] the first USDA/National Agricultural Statistics Service estimate of 1988 U.S. honey production is scheduled for release in February 1989.

Apple Export Change

The USDA recently changed the minimum sized apple that can be exported to Canada. The proposed size increased from 2-1/4" minimum to 2-3/8" minimum. This is to be effective Aug. 1, 1989. Growers exporting apples to Canada must meet these requirements, and state minimum size on boxes used for shipping.

Proper pollination will become even more important for growers, since fruit size is greatly affected by this critical aspect of production.

The National Honey Board is Moving

The National Honey Board is steadily expanding its scope and its advertising and promotion services. To make room for growth, the Honey Board is moving to a new office January 1, 1989. The new addess is:

421 21st Street #203
Longmont, CO 80501-1421

Phone and Fax numbers will remain the same:

(303) 776-2337
FAX (303) 776-1177

Florida Beekeepers Support Research

Gainesvile — Florida beekeepers have contributed $7800 to support research on the African honey bee. Mr. Frank Randall, president of the Florida State Beekeepers Association is shown in the accompanying photo (right) handing the check to Dr. H. Glenn Hall (left), honey bee geneticist at the University of Florida.

According to Bill Shearman, a Wimauma, Florida beekeeper who helped solicit the funds, about 290,000 hives and their honey production valued at $11.5 million will be at risk when the bees arrive. "The beekeepers gave this money during pretty tough economic times," said Dr. Hall as he thanked the beekeepers. He is analyzing genetic material found in African bees and comparing it with their European cousins. So far there are consistent differences. These clues will be important in determining the strategy to be used by beekeepers when the African bees arrive. Of special importance to the industry is that genetic markers isolated from both African and European bees could be used as a fingerprint to allow stocks to be certified and/or patented.

This funding is significant. It shows the commitment of

Florida beekeepers to African bee research and sets an example of leadership in the industry that other groups are likely to follow.

— Association News of Note —

Looking for a good way to do some fundraising, educate the less informed public, great promotion for both beekeeping and your association, and help American Bee Research? Contact Don Jackson, R.R. 3, Box 81, Pequot Lakes, MN 56472 for information on the new beekeeping game **Swarm** as a fundraiser, moneymaker and educational tool for everybody!

Fort St. John Beekeeper Fined

A Fort St. John beekeeper has been accused of illegally importing honey bees into Canada from the United States, and was fined $1,750 in Fort St. John Provincial Court recently.

The beekeeper pleaded guilty to the charge, laid under Agriculture Canada's Honey Bee Prohibition Order, Animal Disease and Protection Act. Maximum fine for a summary conviction is $2,000.

The charge resulted from a check of the beekeeper's vehicle at the Douglas Border Crossing June 4, 1988.

The importation of honey bees from the USA has been prohibited by Agriculture Canada because of recent infestation and spread of the mite, *Varroa jacobsoni*, in the States. This mite is recognized by experts as a very serious infestation of honey bees.

"The rapid propogation of Varroa disease is threatening to ruin the world's beekeeping industry," said Agriculture Canada's Dr. Mike Martin. "Because Canada remains free of the disease, it is important that measures such as the Prohibition Order be enforced to prevent entry of the mite into this country."

CA Quarantine Testing Uncovers Varroa Mite

Varroa mites have been found in bees that returned to CA from ND, it was reported in early Nov. by the CDFA.

Three apiaries entering CA were issued the usual warning/hold notices required by the state's Varroa mite quarantine. Upon arrival at destination, in this case Shafter and Buttonwillow in Kern County and Somis in Ventura County, they were tested for Varroa mite, as is required by the CA quarantine.

Under a compliance agreement signed as a condition to enter CA, these beekeepers agreed to have their apiaries tested at their own expense upon arrival at destination. They also agreed to three options if testing showed that their bees had been exposed to Varroa mite during their out-of-state travels: 1) treatment with Apistan at beekeepers' expense to kill Varroa mite, 2) return out-of-state to a state willing to receive them, or 3) destruction of their infested colonies.

To prevent contamination, the infested apiaries are kept isolated from other bees during the testing and option-taking process.

The 537 colonies in Shafter, the 768 colonies in Somis and the 480 Buttonwillow colonies were treated shortly after infestation was discovered.

Iowa's Apiarist Retires

After serving more than 38 years with the inspection service, the past 27 years as State Apiarist, Glen L. Stanley has retired from active duty. Glen recently received a "Distinguished Service Award" from the Apiary Inspectors of America Organization for his contributions to that group. He is the senior member of the Apiary Inspectors, a member of 30

Glen L. Stanley

years. As President of that group, in 1963 he was privileged with the opportunity to speak at a convention of the Twenty-Second Apicultural Congress held in Beltsville, Maryland. This was the first and only time the Congress of Apiculturists has been held in the United States.

Glen Stanley has been a beekeeper all his life and along with his brother Lloyd, a partner of 50 years. Glen resides at 3835 Merced in Des Moines.

Stanley says some of his achievements include having a part in reducing the incidence of AFB from 35% to less than 2% statewide. He has also developed a technique of processing honey so it retains its natural color and flavor. He also developed a successful method of wintering bees in colder climates. He was Secretary of the Iowa Beekeeper's Association from 1955 until 1988 and also superintendent of the apiary exhibit at the Iowa State Fair for many years.

Note: We at *Bee Culture* wish Mr. Stanley the best during his retirement, and commend him on both his years of service to the industry as Inspector, and as a model businessman in both the honey industry and his community.

Roundtable Meeting: Honey Industry Representatives Discuss Challenges

Representatives from various industry organizations met Nov. 1 in Kansas City, MO., to discuss challenges facing the honey industry and to determine the appropriate role for organizations regarding these issues.

"The honey industry faces many obstacles which may influence consumers' perceptions toward honey as well as the future of beekeeping," said Harry Rodenberg, chairperson of the National Honey Board. "The Honey Board sponsored this industry meeting to identify and to determine the severity of these issues and most importantly, to develop a plan to manage them"

Issues discussed at the industry roundtable included infant botulism, africanized bees, mites, and other issues potentially affecting the wholesomeness of honey.

The group agreed that the Honey Board should review research and informational materials and develop a program to handle media questions regarding infant botulism. In addition, the group asked the Honey Board to handle inquir-

ies and direct an industry study group regarding the wholesomeness of honey.

Further, the industry representatives endorsed Dr. James Tew as the contact person for media questions regarding africanized bees and mite control.

Attending the meeting were Bob Brandi and Troy Fore, American Beekeeping Federation; Ken Nye, American Farm Bureau; Richard Adee, Jerry Cole, and Jack Meyer, American Honey Producers Association; James Tew, American Association of Professional Apiculturists; Bruce Beekman, Dan Hall, Mary Humann, Harry Rodenberg, Dwight Stoller, National Honey Board; Bob Appel, Bill Gamber, Richard Sullivan, National Honey Packers and Dealers Association; Gary Evans, Sioux Honey Association; David Marriott, Evans/Kraft Bean Public Relations; Veronique Lagrange, Thomas J. Payne and Associates; and Fred Westbrook, USDA Interagency Working Group.

The Honey Industry Roundtable will meet again in February, 1989.

Consumer and media questions regarding infant botulism or the wholesomeness of honey should be referred to the National Honey Board, (303) 776-2337.

Consumer and media questions regarding africanized bees and mites should be referred to James Tew, Federal Apicultural Extension Agent, (216) 264-3911, ext. 316.

Africanized Bee Sightings: Concern, But No Hysteria

"Killer" bees have been getting off boats in the South without causing the mass hysteria predicted by the media and general public.

"These incidental introductions of Africanized bees are nothing more than a nuisance. Dangerous, yes, but we merely kill off the colony and go on with life," says Dr. James E. Tew.

Tew says the several swarms that have come by boats to Florida and Alabama ports didn't harm anyone. Only one of the suspected swarms escaped before it could be eliminated and tested, he says. The chances of that swarm being Africanized are minimal, Tew says, but there's no way to know.

But just because these invaders were caught doesn't mean the United States should quit worrying about Africanized bees, Tew says. They are slowly, but surely, moving northward through Mexico. Tew and other researchers predict that Africanized bees will be a fact of life in the southern United States by 1990.

Africanized bees have killed people and animals in South and Central America but are more feared for what they could do to the $150 million U.S. beekeeping industry.

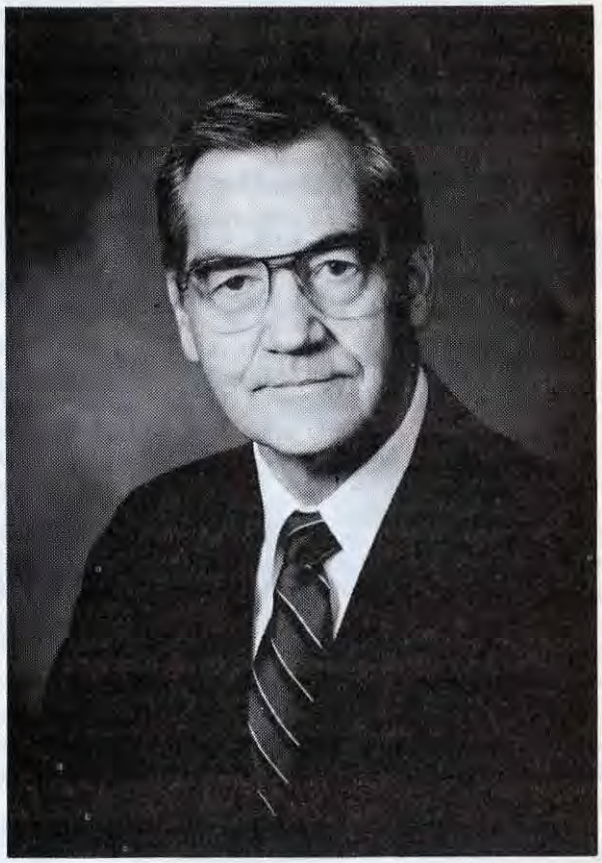
"Africanized bees aren't something the general population should panic about, but they are something we need to be concerned with in the bee industry. These incidental introductions were by boat, but the bee's northward migration is continuing. It's going to make life as a beekeeper less fun and could cause some serious problems in honey production and crop pollination."

The defensive behavior of Africanized bees makes them harder to work with and potentially less profitable, Tew says. Some researchers say that the Africanized bee doesn't store as much honey as the European bee, choosing instead to use it as an energy source to produce more worker bees. The Africanized bee is also more likely to swarm and abandon a colony when disturbed. This increases the financial risk to beekeepers who produce honey or offer pollination services, he says.

Of course, there are others who claim that both honey collection and pollination will both benefit from the presence of the AHB, so we don't know for sure. And, Tew adds, we won't know until they get here.

ARS Administrator To Be Keynote Speaker AT Federation Convention

Dr. R.D. Plowman, administrator of the U.S. Department of Agriculture's Agricultural Research Service (ARS), will bring the keynote address at the 45th annual convention of the American Beekeeping Federation, set for Jan. 20-25 in Indianapolis, Ind.



Dr. Plowman was named administrator of ARS in April, capping a 27-year career with USDA. After growing up on a dairy farm in Utah, he took degrees in animal science at Utah State and University of Minnesota. He has done extensive work in genetics and dairyherd improvement. Immediately prior to assuming duties as ARS administrator, Dr. Plowman spent four years as head of the Department of Animal, Dairy, and Veterinary Sciences at Utah State.

The Federation convention will convene on Saturday, Jan. 21, for the opening session and keynote address, following a day of officers and directors meetings on Jan. 20. The site will be the Westin Hotel, which will open two weeks before the Federation convention.

Convention presentations have been arranged to appeal to all facets of the beekeeping industry — from queen breeder to honey producer to honey packer from the backyard hobbyist to the migratory beekeeper. Subjects cover beekeeping topics from A (acarosis, caused by tracheal mites) to at least W (worldwide sales of U.S. honey) and most in between.

Federation conventiongoers like to mix fun in with their business. Social activities planned for Indianapolis include those connected with the American Honey Queen program: a reception and Queens' Bee Bowl on Saturday evening and the coronation ball on Tuesday evening following the annual banquet. On Sunday, there will be a bus tour to Conner Prairie Pioneer Village on the outskirts of Indianapolis. After hearing from a "circuit-riding preacher," the group will tour the circa-1836 village and dine in Governor Noble's Eating

Place. On the trip back to the hotel, the beekeepers will have the option of stopping by the Indianapolis Motor Speedway, where they can visit the "Gasoline Alley" museum and take a spin around the track. Sunday evening, tall tales will be spun at the "Bullshooter's Championship."

The Federation convention will feature, as usual, a trade show with exhibits of the latest the suppliers have to offer, the American Honey Show with the finest examples of honey from around the country, and a luncheon meeting of the Ladies Auxiliary.

A preconvention mailing has been sent to all Federation members. Others wishing hotel and pre-registration information should contact the American Beekeeping Federation, P.O. Box 1038, Jesup, GA 31545, ph. 912-427-8447.

Bee Movements Tracked

Scientists have glued miniature bar-code labels like those used in supermarkets to the backs of honey bees to find out exactly how diligently the insects work.

The labels, according to researcher Stephen L. Buchmann, are read by a laser scanner.

"It's kind of like having the bees clock in and out every time they enter and leave the hive," he explained.

A research entomologist at the Carl Hayden Bee Research Center in Tucson, Arizona, Buchmann said scientists have been looking for a long time for a reliable, inexpensive way to track individual bees.

Entomologists want to know how often and at what times bees leave on pollen-gathering trips, how old the workers are when they make their first foraging trip and how many days they toil before dying, Buchmann said. (Moseley)

1989 North Carolina Beekeeping Calendar Available

The N.C. Beekeepers Association beekeeping calendar tradition continues for 1989. Distribution has been made to NCSBA members and a limited number are available for sale to non-members.

Our calendar serves two purposes. First, it is an attractive and professional wall calendar, 11" by 17" Pages have ample room for notes, and other day to day activities. Each page of the calendar also contains a wealth of information of special interest to beekeepers throughout the U.S. with special emphasis on the mid-eastern states around North Carolina, including blooming dates of nectar and pollen sources; recipes, and information on other topics. In addition, it contains the meeting dates for many of the national and regional beekeeping organizations.

Non-members of the NCSBA who are interested in obtaining one of the 1989 Beekeeping Calendars may purchase a calendar through one of the following methods:

1. **Direct Calendar Purchase** — Individual copies of the calendar sell for $4.00/copy with the price dropping to $3.00/copy for purchases of 10 or more.

2. **Calendar Purchase through NCSBA Membership** — Individuals who submit 1989 dues of $8.00 will receive a free 1989 calendar plus a free 1990 calendar when they are published. NCSBA dues also include additional benefits such as quarterly newsletters and other NCSBA publications. Checks should be made out to the NCSBA and marked 1989 dues. Mail checks to the N.C. State Beekeepers Association, 1403 Varsity Drive, Raleigh, NC 27606.

Dr. Elton Herbert, Jr. 1943-1988

Dr. Elton Herbert, Jr., Beneficial Insects Laboratory, USDA ARS, Beltsville, Maryland, died suddenly of an apparent heart attack on Nov. 16, 1988. He is survived by his wife, Claire, his father, and sister. Sympathies can be expressed by writing to his wife at 12204 Amblewood Drive, Laurel, MD 20708. (A complete Obituary will be published in February *Bee Culture*.)

In lieu of flowers the family asks that contributions be made to the:

Elton W. Herbert, Jr. Memorial Fund
Entomological Society of America
9301 Annapolis Road
Lanham, MD 20706
Phone (301) 731-4535

E. A. S. in 1989

PLAN NOW! July 10th - 15th, University of New Hampshire, Durham — BE THERE!

. . . & Events

☆ INTERNATIONAL ☆

The Saskatchewan Beekeepers Association will hold their annual convention Feb. 2 - 4, 1989, at the Sheraton Cavalier, 612 Spadina Crescent, in Saskatchewan. For more information contact Renee Beever, Box 2950, Nipawin 50E 1EO, Sask. Canada.

☆ AMERICAN HONEY PRODUCERS ☆

The **1989 AMERICAN HONEY PRODUCRS CONVENTION** will be held at the Camelot Hotel in downtown Little Rock, AR on January 10-14. Free shuttle service is provided by the hotel to and from the airport. Rates are $40.00 per night for 1 to 4 people per room. For more information and reservations call 1-800-643-6938.

The official airline for the 1989 American Honey Producers Association Meeting is United Airlines. We are guaranteed 40% off the regular coach rates or 5% off on any other special rates, including weekend rates. For tickets or information call 1-800-521-4041 and give them the account number 412KP.

Tuesday, January 10

9:00 Registration; Executive Committee; Set up exhibits
1:30 Board of Directors meeting
4:00 Convention Committee meeting resolutions; Nominations; Audit & finance
7:30 New and renew friendship reception hosted by Arkansas Beekeepers; Question & Answer session with Steve Taber, Honey Bee Genetics, CA

Wednesday, January 11

8:00 Registration and exhibits open
9:00 Call to order — Richard Adee, President; Invocation, George Williams, Pastor, Little Rock, AR; Presentation of flag; Welcome,

SMOKE IN UP

"Well, throw that on the shelf with the rest of your great inventions, Mr. Gibson," said one of my students as he watched me extinguish the fire which was beginning to engulf the supers of honey on the bench before us.

Being an instructor in the agricultural department at a local vocational center has its good days and bad, and today was igniting into a hot smokey scene. There is nothing more exciting to students than to see their teacher in a hot spot. What lead to this was my endeavor to conquer the problem of extracting cold honey, say 60 - 70°F. If you have tried this you know that about half the honey extracts, while the rest remains on or in the cells, crushing them. Also, it does not filter easily or allow cappings removed without difficulty.

Why would one be extracting honey at this temperature? Simple — anyone who has a few hives (2-5 colonies) and lives up north with a short growing season only removes honey once a year. And usually waiting for that fall honey flow puts you into cooler weather.

My predicament is heightened by having instructional colonies at school. In order to get students to help we have to wait until school starts in September.

In any event, placing honey supers in the garage or kitchen usually does not provide temperatures of 80-90°F One year I tried putting supers in the kitchen, thinking that over a couple of days they would warm up. That's when I discovered that a stack of supers works like a giant thermos bottle. The dense, cold honey is surrounded by a structure of rather good insulating materials — wax, wood and air space. At best, after several days it would reach room temperature, There was no way I was going to turn up the heat and sweat it out at 90°F for a couple of days for six shallow supers of honey.

After eight years of thick, sticky despair I decided enough is enough; it's invention time, and I proclaimed that I had a great idea. "Let's take a hot plate (I know you are already thinking, dumb, really dumb), place it under the supers and control it with a thermostat resting inside the top super." Since I also teach electricity, this worked into my program nicely, but probably causes you great concern about the basic competency of me as a teacher. — a fire shortly followed after plugging this device in.

The hot plate's intense heat, even on low, melted the lower super's cappings, which caught fire (despite the suspension of a pan over the hot plate to catch anything that fell onto the burner), and began burning its way up. I quickly unplugged the hotplate and began praying to the great beekeeper in the sky to please save our honey crop or I would be forced to ruin it all with a fire extinguisher. I think teachers are allowed one answered prayer a month because it ceased burning.

My only avenue to redemption was redesign. Yes, that's it — and Lo! — forced hot air!

The new design worked beautifully. It was fully automatic, safe and temperature accurate. Even better, it was inexpensive to operate. I intend to improve the method but its basic operating principle is simple.

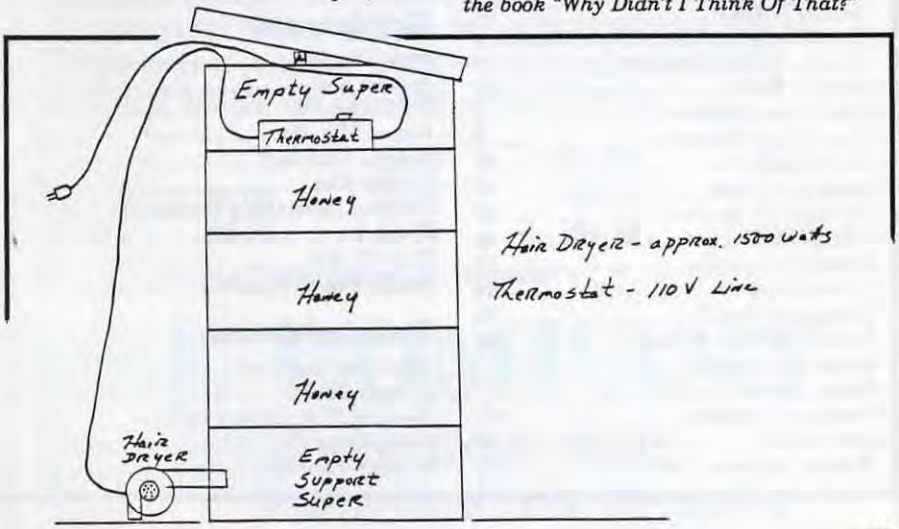
A small hair-styling blowdryer is placed outside the base of a stack of elevated honey supers. The air is directed under the bottom super, and rises and exits through the top. The base, which elevates the supers, can be a shallow super or easily built from scrap lumber. One side must be open to receive the hot air. A vent is required at the top to assure that the forced hot air circulates up through the frames without restriction from back pressure. The hair dryer is plugged into an adjustable thermostat placed in a top, frameless super. See the diagram which is worth a thousand words.

I cannot believe how well this worked. I was able to raise the temperature of seven supers 35 degrees in approximately four hours. The hair dryer ran about twenty minutes out of every hour, drawing around 800 watts. Operation costs, based on 7 cents per kilowatt hour, would be a little over 1.5 cents per hour. Plenty cheap.

There are certainly many variations which I want to try, such as using a hair dryer which utilizes a flexible hose and drilling a hole in the bottom for acceptance. I think this would improve the efficiency and make the unit more portable.

One last comment. I hope this will be of use to other small time beekeepers. My students and I would like to hear your comments, suggestions, or criticisms. Getting a letter from you to read in class would be the best shot I could ever take at proving how far reaching any person can be with just a pencil, some paper and a good idea.

Hugh Gibson is an Agricultural Instructor at Essex Vocational Center, Essex Junction, VT 05452. He can be reached at this address if he's not busy writing another chapter for the book "Why Didn't I Think Of That?"



Display Index