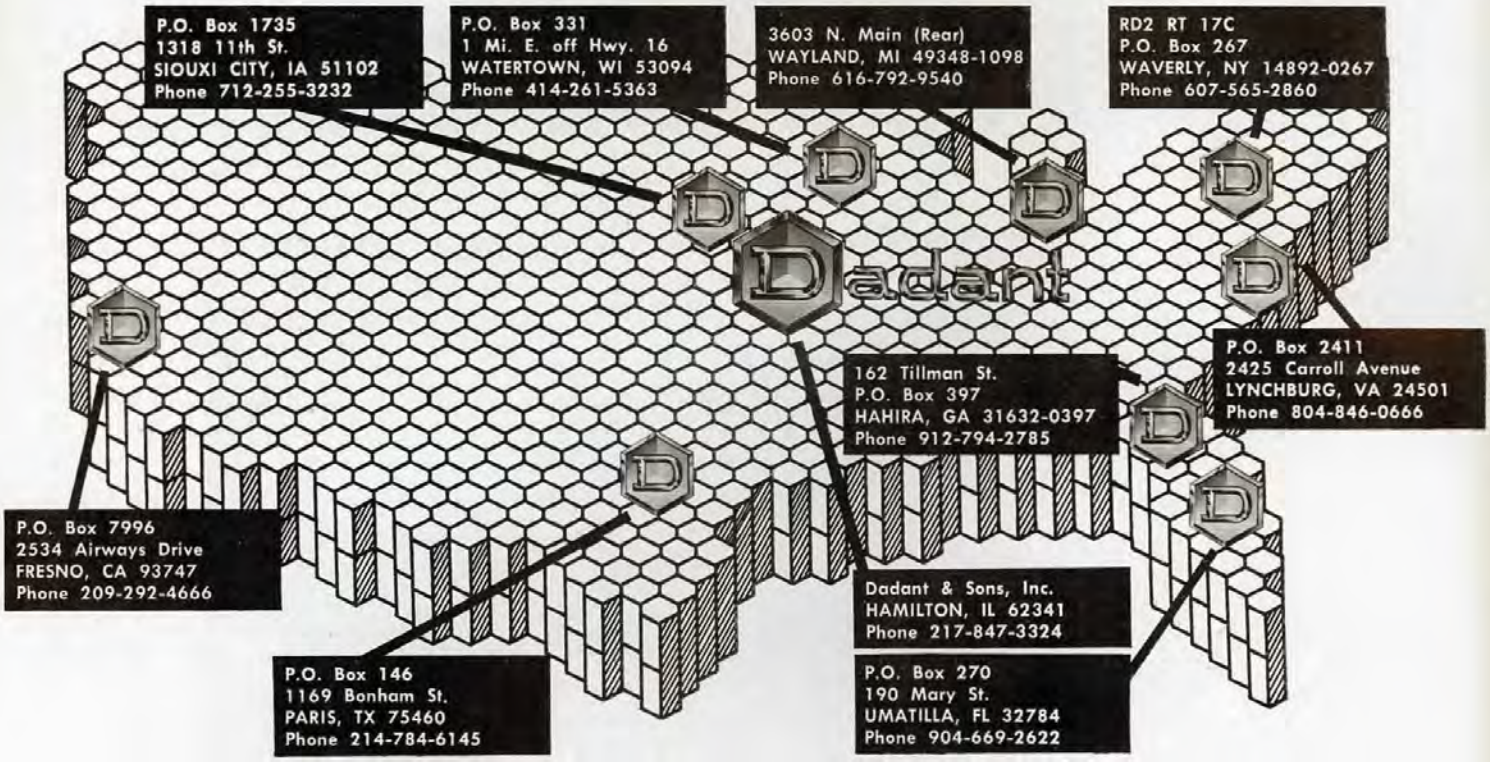
GLEANINGS IN BEE CULTURE

MARCH 1984

BUILD YOUR BEEKEEPING ON A SOLID FOUNDATION



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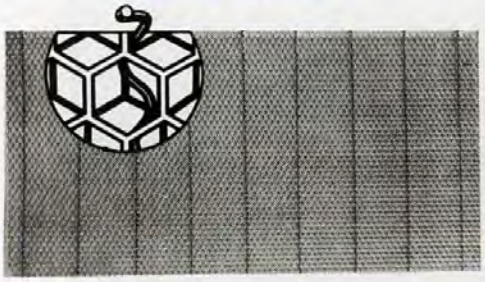

Introduced in 1921, Crimp-wired Foundation was the first reinforced foundation to ever be offered to beekeepers. The steel wire is crimped to make shoulders that radiate strength in all directions throughout the foundation. Sturdy steel hooks at the top of each crimped wire anchor foundation securely into the wedge top bar frame.

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Duragilt is the latest addition to the Dadant line of reinforced foundations. It has the same tough inner core of plastic as Duracomb, but is further reinforced with metal edges that extend up into the top bar of the frame as well as down into the slot of the bottom bar. Communication holes are provided along the lower edge of the foundation.

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GLEANINGS IN BEE CULTURE

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THE WORLD'S
MOST POPULAR ENGLISH LANGUAGE BEE JOURNAL!

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COVER STORY

The first of our award winning photographs from last year's contest. Photographer: Marvin W. Klein of Linwood, Michigan. Watch for other winning photos in the upcoming months!

NOTES FROM THE BEEYARD

by Mark Bruner

THOUGHTS ON THE DILEMMA OF TAKING RISKS

What's the most difficult thing about being a good beekeeper?

Being willing to take a risk.

Why? Because all of us learn, very early in life, that to take a risk sometimes means failure, getting hurt or being laughed at. So, sometimes, we stop taking risks as beekeepers and as humans. It's only a short distance from there to apathy, and the person who just doesn't care anymore, is the saddest of human examples.

Many beekeepers seem inclined toward curiousity. That's probably what got them started in beekeeping. That same curiousity often causes them to be interested in gadgets, inventions, doo-dads and any new technique or product that comes down the pike. And that's great. Part of the pleasure of beekeeping is the opportunity to fiddle around with new things and to be able to share the results with others. GLEANINGS IN BEE CULTURE and THE SPEEDY BEE both run gadget columns, and it's interesting to follow discussions between folks writing to say: "Yeah, that's a good idea and here's why..." or "you're crazy, it's one of the dumbest ideas I've ever seen, and here's why...".

One of my favorite invention stories, mentioned in GLEANINGS some time back, involved a Mr. Thompkins from New York City, who in 1885, introduced legislation to the New York Assembly, advocating that a muzzle be required for all stinging insects. Mr. Thompkins proposed that bees and the like be induced to sting a small cork that had been smeared with a dab of glue. Presumably, the cork wou!d surround the stinger, preventing the bee or wasp from stinging, but would be light enough in weight to permit flight.

How many of you muzzle your bees these days?

The important thing here is not that Mr. Thompkin's idea was more than slightly crackpot, but that it was an idea. Period. An idea. The line between a silly, impractical idea and a creative, practical idea, is often very, very fine. The beekeeper who takes the risk of finding answers will end up, at various times, on both sides of that line; but the person who has given up the risk, never stands the chance of benefiting from an idea that might start out hairbrained and end up marvelous.

Several days ago a beekeeper called me and asked: "Do you have a mathematical formula that proves why bees cannot fly?"

I thought about that.

I could have sworn that bees did fly. A nestful of bumblebees chased me across 40 acres of thistles last year. They seemed to be flying. I know I was.

Well, the more we talked, the more I began to understand. The gentleman's daughter needed information for a school class. I don't recall what all led up to his phone call, but he remembered having read, once, that bees shouldn't physically be able to make flight. Upon checking a few books, I discovered that he was correct -- at least in part. An article on the flight of bumblebees from Bernd Heinrich's BUMBLEBEE ECONOMICS, states that: "...according to folklore, bumblebees violate aerodynamic theory when they fly. This notion is wrong. It used to be thought that insect flight could be understood only on the basis of fixed-wing aerodynamics, when in fact the wings of many insects, including bumblebees, operate more on the principle of helicopter aerodynamics - the action of the wings of bees is essentially like that of reverse-pitch semirotary helicopter blades."

In other words, there may never have been a mathematical formula proving why bees can't fly, but at one time, not all that long ago, there was no way of proving, through known physical principles, how they could. I wish I knew the extent to which our understanding of aerodynamics was expanded through our observations of insect flight. I suspect there were some significant contributions and it brings us back to the point about ideas. It seems ridiculous to have to prove that an insect can fly when it so obviously does fly. And yet, therein lies other secrets. The more we take a risk of learning, the more we unexpectedly learn and the more we learn how much more we have yet to learn. That is the magic of curiousity and the treasures that are yielded to the searching mind.

I made some of these points to a fine crowd of good folks at the New Jersey State Beekeepers' Conference a few weeks back. At the conclusion, someone pointed out to me that taking risks with bees is fine as a learning experience, but that one can and should experiment with one or two hives as opposed to an entire apiary. That was a point well taken, but though true, leads us in thornier directions. Where and when does educational risk-taking become reckless?

Obviously, a hobbyist or sideline beekeeper can learn much from risks that, should they prove to be a mistake, are unlikely to be devastating. Let's put things on a bigger scale, though. Recently, the Environmental Protection Agency announced a ban on EDB, as a fumigant for combatting insect infestations in grain already harvested. EDB is also used, in beekeeping, as a wax moth control. Here is an instance

in which the fruits of human learning present no clear cut course. On one hand, the substance EDB can cause cancer. That is an unacceptable occurance. On the other hand, without adequate chemical controls many believe that modern agriculture would be incapable of supporting the vast demand for food; or, at the very least, food prices would soar.

This dilemma can be extended yet another step to a consideraton of the growing biotechnical industry. The idea of radically altering, or even creating life, was, just a few years ago, the stuff of Science Fiction novels and cheap B grade horror movies. Now, both science and industry are poised on the threshhold of genetic revolution. Gene manipulation offers the potential for curing many diseases, including forms of cancer, that have long haunted human existence. Moreover, genetic engineering has already proven its usefulness in the development of agricultural crop strains that promise to greatly increase yield and disease resistance. The application of that to beekeeping, be it as a way of improving forage potential or providing higher quality breeding stock, is a prospect no longer far removed from reality. The dilemma is in the fact that risk taking has, perhaps, resulted in a power so awesome that its very application could manifest itself in both wonderful or terrible ways. It has been pointed out that, in some instances, genetic scientists know how to achieve specific results through gene splicing and other manipulations, but still do not understand why these processes take place. A possible outcome of that incomplete knowledge could be the creation of something -- a manmade virus, for example -- that, once created, could not be controlled.

I offer no possible answers. It does, however, seem unlikely that the human mind will ever cease its intellectual reaching. The consequences of our continuing quest to risk and learn is, of course, another matter. As I have said, it is not easy to risk; be that a risk of beekeeping or genetic engineering. Even though the results may be different in magnitude, the principles are the same; as is the undeniability that he or she who choses ignorance as an escape from the responsibilities of risk, also choses to become slightly less than human.

UNIFORM PRODUCT CODE INFORMATION

We've begun to receive letters from honey producers interested in knowing whether or not the Uniform Product Code would be useful to them in marketing honey to supermarkets.

The Uniform Product Code (UPC), is a machine-readable symbol that makes it possible for supermarkets to use scanner-equiped checkstands which speed that operation, plus reduces item pricing requirements and enables the retailer to gather extensive information on the various aspects of sales.

The UPC is a labeled 11 digit, all numeric code that identifies the manufacturer and the item. As it passes over the checkout stand's optical scanner it registers the price, description, tax and other pertinent information. Such information is relayed not only to the cash register, but to the store computer where data is used in sales analysis and inventory control. Because of the efficiency of this process, supermarkets are turning to the UPC indentification system in increasing numbers. Consequently, some stores are reluctant to handle any product, including honey, that is not packaged with a useable UPC label.

Is the UPC for everyone? No. Membership in the UPC Council, Inc., involves a minimum fee of $300. Additionally, there is the cost of preparing the UPC label for use on containers. This is a precise printing process because the label, read by an optical scanner, requires a very specific sequence of bars with contrasting light and dark areas demanding exact tolerance levels. The cost of having this prepared will vary greatly depending on whether or not a local printer, with the necessary facilities, is available. Moreover, labels must vary within a commodity. A different identification number would have to be provided for honeys according to predominant nectar source, style (creamed, chunk, etc.), weight and size.

Obviously, the answer to whether or not the UPC could help your honey marketing depends on the volume of honey you sell to stores and the extent to which stores, in your area, insist on the use of the UPC labeling system.

The above summary of UPC use has been very general. For those requiring additional information, a brochure can be received, and questions answered, by contacting:

THE UNIFORM PRODUCT CODE COUNCIL, INC.
7051 Corporate Way, Suite 201
Dayton, Ohio 45459-4294
(513) 435-3870

OLD PHOTOGRAPHS

NUMBER FOUR

E.L. Kinkade holds a large swarm of bees from his Cherry Hills Apiary and they look, for all the world, like a stringer of fish. He will tell you stories about the ones that got away. I like E.L. There is sense and nonsense about him. He built his hives on hills where the water drained and the air moved freely. I don't mind so much that he is now dead – I make him what I want him to be. I clutch my stack of ragged photos like a stringer of fish or a swarm of bees, and I tell you stories about E.L. Kinkade – one who didn't quite get away.

The Monthly Honey Report

February 10, 1984

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

Wholesale Extracted — **Reporting Regions**

Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs. (per can) White	38.00	48.50	48.50		36.12	37.50	33.00	36.00	37.80
60 lbs. (per can) Amber	36.00	41.00	52.00		31.62	38.25	27.60	35.00	34.50
55 gal. drum (per lb.) White		.56	.58	.58	.57		.55	.56	.58
55 gal. drum (per lb.) Amber		.45	.52		.51	.50	.46	.55	.54
Case lots — Wholesale									
1 lb. jar (case of 24)	28.50	24.90	27.42	25.92	30.38	26.50	25.00	26.25	27.59
2 lb. jar (case of 12)	27.50	23.30	24.20	23.76	30.26	26.50	25.00	24.25	26.10
5 lb. jar (case of 6)	30.00	27.80	26.25	23.04	27.50	24.50	26.50	25.75	28.10
Retail Honey Prices									
½ lb.	.90	.89	.90	.83	.89	.90	.89	.93	.94
12 oz. Squeeze Bottle	1.50	1.19	1.62	1.18	1.50	1.43	1.35	1.36	1.25
1 lb.	1.50	1.39	1.60	1.43	1.60	1.61	1.39	1.60	1.59
2 lb.	2.70	2.59	1.55	2.59	2.72	2.25	2.59	2.65	2.81
2½ lb.			2.85		3.19	3.25		3.55	
3 lb.					3.69	4.15	3.89	3.60	3.89
4 lb.		4.95		4.99	4.79	4.90	4.75	4.80	
5 lb.	6.00		6.25		5.99	6.20	5.50	5.60	6.14
1 lb. Creamed			1.55		1.55		1.43	1.54	1.63
1 lb. Comb	2.25		2.25		2.04	1.89		1.79	2.25
Round Plastic Comb	1.75	1.95	1.85		1.75	2.00	1.75	1.76	1.65
Beeswax (Light)	1.25	1.00	1.50	1.35	1.30	1.33	1.25	1.25	1.20
Beeswax (Dark)	1.15	.90	1.35		1.20	1.30	1.15	1.15	1.07
Pollination Fee (Ave. Per Colony)	24.00		22.75		19.00	20.00	18.00	18.00	21.50

MISCELLANEOUS

REGION ONE

Bees seem to be doing well so far. Stores seem O.K. Most beekeepers left more honey on than usual. More and more beekeepers see pollination contracts as the way left for them to make ends meet. Many pollinators are reducing prices just to keep their contracts.

REGION TWO

Honey sales fair to good but off from a year ago. Temperatures in the high 40's after severe cold. Bees with sufficient stores, though. Even so, West Virginia beekeepers expect a higher than normal winterkill. Displays of honey in stores are good with prices changing little.

REGION THREE

Bees have had one cleansing flight in January. Winter has been severe for them. Sales trending upward - wholesale and retail. Cold weather caused increased feeding and high winter losses. One report says 30 percent already.

REGION FOUR

Honey sales fair to good depending on the vigor of the economy in various communities. Some lower grade honey packs (perhaps foreign honey) are showing up at discount prices, but don't seem to be having much of an impact with discriminating customers loyal to quality. Weather has moderated which gives hope that losses will not be extreme.

REGION FIVE

Cold record lows almost daily for the past month. Winter loss may be heavy. No early signs of maple bloom in the N.C. area. Spring feeding will be necessary. Frost damage on the Florida citrus crop is yet to be determined, but very much was killed. Colonies are experiencing setbacks in their normal buildup; stores have gone very fast. Pollen is available, but can't do much without extensive feeding. Honey market locally very slow and little is being bought by packers. Very little equipment sales and expansion except by hobbyists. No sign of containers marked with "Country of Origin" label. Many packers blending foreign with local and selling as local honey.

CONTINUED NEXT PAGE

REGION SIX

Extended cold has damaged alder and other early pollen plants. Effect on brood production yet to be determined. Demand for package bees and queens good, though several breeders have open dates in early May. Bees with reasonable stores. Honey sales have declined sharply in Kentucky since mid-December, with much honey remaining in beekeepers' hands.

REGION SEVEN

Bees in good shape -- little loss -- flight times in January. Ground frost in east central OK down to 18 inches. Plenty of ground moisture at this time. Bees have come through cold Texas weather very well although normal brood rearing has been delayed. Many evergreen shrubs and trees have been killed. Citrus, in the valley, has taken heavy damage. Early estimates suggest 4-5 years before another surplus will be made from citrus. Many 70 year old palm trees in the valley and gulf have been lost. Consumer use and demand of honey is good. Still no "Country of Origin" labels being used. Texas Health Department is enforcing a recently enacted $25 registration fee from all honey producers and processors. This may discourage some smaller beekeepers.

REGION EIGHT

Extremely cold in Utah and foggy for several months. Winter losses expected to be high. Honey sales steady. Arizona: slightly above normal weather. Colonies in good condition. Montana: after record severe cold, January was very mild and gave bees time for repeated cleansing flights. Brood rearing in progress and feeding has started in isolated areas. Spring feeding seems imminent. Snow is adequate but warm weather is making moisture run off rather than go into the soil. Good movement of local honey during the holidays. Very little honey remains in producers' hands, having either been sold or put under CCC loan.

REGION NINE

A few warm days in early January, but otherwise cold. Losses will be higher this year in Washington. Brood rearing beginning. Honey sales fair to good. Pollen carrying beginning in Oregon.

Installing Package Bees in the North

By ROGER A MORSE Dept. of Entomology Cornell University Ithaca, NY 14853

Mid-April is the best time to install package bees in the North. In Pennsylvania, Maryland, and states of similar latitude the bees should be installed a little earlier. Several harsh snowstorms in 1983, including one on April 25, stopped many people in my area who had received packages from installing them immediately; this was a serious error. When packages are received, they should be put into colonies as soon as possible, preferably within hours, regardless of the weather. In the northern parts of the Canadian prairie provinces, it is routine to push snowbanks aside with bulldozers to clear an apiary site for package installation. In some cases, packages are put into their hives in buildings and then carried outdoors.

Photo 1. Removing the cork from a queen cage.

Most textbooks say that packages of bees should be installed between April 15th and May 15th. Packages may be installed later and endure the winter, but they will probably require heavy feeding in the fall to ensure survival. Swarms that are captured in May and June usually require the same fall treatment. Those found in July rarely live through the winter unaided, because they do not have time to gather enough food for successful wintering.

Installing a package of bees under snowy conditions poses no special problems for the bees, provided they have plenty of food. Honeybees can live on their body reserves for many days, but are much more likely to prosper if they have an abundant supply of pollen. Of course, in areas where packages sometimes have to be installed during a snowstorm, good weather and a fresh pollen supply are usually not too many days away.

Photo 2. Placement on queen cage between frames

I like to install a package of bees on drawn comb. Queens prefer to lay in old comb, which starts the brood nest more rapidly. Many beekeepers are forced to use foundation for package bees, although this causes the colony greater stress. Some publications state that a package of bees should always be installed on foundation because the bees may be carrying American foulbrood spores on their honeysacs, or because the package producer may have put old honey possibly contaminated with spores into the feeder cans. In my opinion, this is no longer a real danger. The package bee producers I know use only sugar syrup in their feeder cans. Since producing good packages of bees is their sole income or an important part of it, they are careful to ensure their bees are free of foulbrood. For the same reason, many package producers take the further precaution of adding drugs to their sugar syrup; they do want orders again the next year.

In working with package bees it must be remembered that the bees are one day to six weeks old. It is normal to find a few dead bees on the floor of the package when it arrives, since a package cannot be made without some older bees. Package bee producers try to shake packages on sunny days when the old forager bees are flying, but this is not always possible. A worker bee will grow from egg to to adult in 21 days; thus, even if the queen is released immediately when the package is received, it will still be about 22 days before young bees will emerge. It takes some time for bees to clear and polish the cells in which the queen will lay. This means that when the first young emerge, the remaining bees will be three to six weeks old. Even after a bee emerges, it will be at least two days before the glands in her head develop enough to produce the royal jelly that is fed to the young larvae. The older bees cannot be expected to have effective royal jelly-secreting glands when they are more than three weeks old.

I like to add a frame about half full of brood to a package of bees. (A standard full-depth frame contains 3400 cells on each side; a pound of bees contains about 4000 workers). This may be done when the package is installed, but if one is installing more than one package or putting it in area with another colony, the installation should be done in light rain or late evening when the bees will not drift. Package bees do not know which hive is their own. They will not get lost if only one hive is nearby, but I have seen considerable drifting when several packages are put into colonies at a time when bees can fly readily.

When bees in a package are installed in bad weather the job must be done quickly. First, the queen cage is removed to make certain the queen is alive. Next, the bees are shaken rapidly and firmly from the package into the hive body that will be their new home. The bottomboard must already be in place, and an entrance cleat is also recommended. In most years it is useful to leave the entrance cleat in place until the first brood emerges. I usually remove four or five frames from the super to create a place to dump the bees.

The next step is either to release the queen directly or to remove most of the sugar candy from the queen cage so that the bees will eat the rest away within 12 to 24 hours, releasing her. I have used both methods and do not have a preference. The queen cage may be put on the bot-

CONTINUED NEXT PAGE

Photo 3. Removal of feeder can from package

tomboard about three quarters of the way back from the entrance, or the cage may be suspended between two frames. If the queen cage is put between two frames, the candy end should be put up and the screen face of the cage fully exposed so that the bees can have exchange with the queen.

A package of bees will consume 30 pounds of sugar in the form of syrup during the first month after installation. Sugar syrup may be fed in a variety of ways, but initially a colony should be fed at least two gallons at once. In the first month the bees should not be without food. Division board feeders, or cans or jars inverted over the topbars of the frames may be used. Entrance type or Boardman feeders should never be used in the North. They were designed to be used in the southern states, although I wouldn't use them at all. I never feed dry sugar to bees because they must have water available to dissolve it. In inclement or dry weather I've seen bees carry sugar granules out of the hive and dump them on the ground.

I like to keep a frame or two of honey from the previous year to feed to a package. I have learned that commercial beekeepers in the northern states, who use many packages, prefer this feeding method, since it is faster and neater than the others. In planning to save honey for such feeding, it is best to prepare supers by placing ten frames in the super or by using nine frames that are spaced fairly close together by forcing them away from the sides of the supers. If one uses the fatter combs from an extracting super, which are more widely spaced and easier to uncan, excess burr comb will collect in the brood nest.

The chief problem in using frames of honey is that if the honey has coarse hard crystal as a result of granulation, the bees may face the same problem as with dry sugar. Usually enough uncrystallized honey is available for the bees to use, although I have seen bees discard hard crystals of comb from a comb of honey. These can be seen on the bottomboard or in front of the hive. Hard crystals are sometimes found in the debris on the bottomboards of weak or dead colonies one discovers in the spring.

Many years ago when feeding bees cans or jars of sugar syrup, we covered them with a burlap bag. Such bags were cheap and we used them later for smoker fuel. Recently, we have not bothered to cover the feeder jars that are inside an empty super, and it does not seem to have made a difference.

A package of bees should be given a one-minute inspection four or five days, after installation. Some beekeepers inspect after two or three days which is also fine. One should look for single eggs, well centered in their cells. The presence of eggs means the queen is alive and well; this is all one can hope for at this stage.

The queens in packages are young and are not the mothers of the bees in the packages. These queens are reared separately. Honey bees can recognize their own queen, even after many days without her. At this early stage, bees in a package often ball a young queen. If one sees a ball of 50 to 100 bees fall down off a frame onto the bottomboard, the queen is probably inside. The queen cannot be helped. Balling is not a killing process, as many believe, though queens are sometimes killed accidentally. When bees ball a queen, no matter what the circumstances, the only effective action is to close the hive immediately and inspect another day.

Even beekeepers with much experience expect many of their package colonies to fail, since many things can go wrong. One beekeeper, who used 2000 packages a year for many years, told me he was pleased if he harvested honey from 80 percent of them. If eggs are not found at the first inspection, little can be done. Often it is impossible to force the bees to accept the new queen if the old one is dead. This is because the ovaries of some workers will have begun to develop, and once this process starts the bees regard these laying workers (or potential laying workers) as queens and will not accept another queen. The best thing to do with a queenless package is to combine it with a queenright colony. This is done by putting the queenless unit on the bottomboard, covering the top bars of the frames in the super with a single piece of newspaper, with two or three six-inch-long slits in it, and placing the queenright unit above. The newspaper forces the bees in the two units to mingle slowly; with luck little fighting will take place and the queen will live.

Photo 4. Use of feeder cans to sustain newly installed package colony of bees.

When people first buy package bees, I suggest they purchase three or more packages. This may be too expensive and thus impractical, but with only one package it is difficult for an inexperienced beekeeper to know what normal package colony growth should be. Several packages could be compared. One solution would be to compare one's package with that of a friend; bee clubs are helpful in bringing people together in this way.

Buying a package of bees is a good way to start in beekeeping. It is usually cheaper to buy an established colony. One rarely harvests a crop of honey the first year from a package colony. Exceptions to this are the best honey-producing areas, including the Peace River District in northern Alberta, certain other western Canadian provinces, and a few other locations in Canada and the U.S. Still, watching a package colony grow from a unit of 8000 to 12,000 bees to one containing 40 to 50 thousand by fall can be a rewarding experience.

THE ARCHEOLOGY OF BEEKEEPING

Eva Crane, Cornell University Press, Ithiça, NY. 360 pages. 1983.

My dictionary says archeology is the study of the life and cultures of ancient peoples. From that point of view one might very well call this book a history of beekeeping from the time man first became interested in agriculture about 10,000 years ago and settled in villages and cities.

For more than 30 years, Dr. Eva Crane has headed and guided the International Bee Research Association from its headquarters in England. She has traveled widely among the world's beekeeping research centers, libraries, museums, tombs and other places where there is beekeeping lore. This has included observing modern and primitive beekeepers in action.

The book begins with a short chapter on honey bee biology and an excellent map showing the distribution of the four species of honey bees as well as that of the stingless bees of the world's tropics. Chapter two starts with a review of the many rock paintings from ancient times that show beekeeping scenes. Spain is especially rich in these; they are estimated to be 4000 to 10,000 years old. Agriculture was just developing then, and honey gathering was an important aspect of primitive man's culture. Ancient rock paintings are also shown from South Africa and other countries, and there are even five from Central India. The text next shifts, showing the methods now used in Nepal and other Asian countries to harvest honey from bees nesting on cliffs and in high trees. There is little difference between some of these methods used by primitive honey hunters today and those of thousands of years ago.

Chapter three begins, "We do not know when or where man first became a beekeeper," but much of the evidence comes from Egyptian tombs, many of which Dr. Crane visited herself. She records that one was reopened just so she might look at the beekeeping scene cut into stone. The oldest of these scenes was made about 4400 years ago and shows honey being harvested from stacked, round, mud hives much like those that one can still find in parts of rural Egypt and surrounding countries.

The chapters that follow review beekeeping in ancient Greece and progressively trace the development of forest beekeeping in Poland and northern Eurpoe. Some of the ingenious illustrations of how to deal with marauding bears are of particular interst. Bee boles, which are indentations or shelters in the sides of castles, houses and stone walls, are illustrated in great detail. A 78 page appendix lists the recorded bee boles, bee houses and other old structures known in Great Britain.

This new book is richly illustrated with 271 figures and maps. The text is carefully documented with 324 references. It will be a valuable source of information but it is also the kind of book one familiar with bees can sit with and enjoy.

It is available for $39.50 plus $1.25 postage by writing Cornell University Press, 124 Roberts Place, Ithica, NY 14850.

Roger Morse

Beekeeping Technology

By DR. JAMES TEW
The Agricultural Technical Institute
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Polariscopes, Slatted Racks, Wintering, and Bee Research

In the November, '83 issue of *Gleanings*, I discussed the design and use of a polariscope. After receiving quite a bit of mail, I'd like to offer more comments on the topic.

The polariscope is not a precision piece of equipment. All the dimensions are flexible within reason. Be careful not to put a large light bulb in the scope since overheating can easily result. A second major point is the polarizing filter. Polaroid "J" film when incorporated in a glass filter can be quite expensive (approximately $50), bear in mind the scope is not a demanding device. Even if no polarizing film is used, the light box is an aid in looking for honey contaminants. Most polarizing plastic films are acceptable (in my opinion the cheaper, the better). After acquiring the plastic film hold the pieces together, one super position on the other. In one portion, the two filters will transmit fairly clear. Rotate the top filter ¼ turn and the field of view through the plastic lenses will become totally dark. This is the correct position for installing into the polariscope. Clear glass is used on either side of the filters to hold them unwrinkled and erect. Most people who have corresponded with me are having to buy the polarizing plastic in a sheet that will make enough pieces for two or three scopes. This sheet costs $14-20.

Slatted Racks —

Even though I didn't specifically ask for written opinions, many beekeepers took time to write. To all those people, thank you. Of the 14 or so letters I received, **all** were supportive of the slatted reack. The major concerns were that the bottom brood chamber would often slip on the rack during hive manipulations. A second obvious concern was the time and cost factors. Some writers stated that bees used the brood chambers much better, front to back and side to side. Consequently, a brood chamber was more efficiently used. A beekeeper in one of the Southern States left the rack on all year, but reversed the rack end to end during the warm season. He felt this gave hives with large populations more clustering space while improving ventilation. Several bee people in Northern climates indicated they left the racks on all year and simply reduced the entrance during the winter. The informal evidence to date is that people who like slatted racks also write letters. Are there beekeepers with negative opinions of the racks? Let me know.

Wintering

I grew up in a warm climate. An average winter here in Ohio is still a surprise to me. Years ago while going to school in Maryland, I made an honest effort to understand (better) the wintering biology of bees. Several issues ago I did a comprehensive article on wintering. The basic wintering process is reasonably well understood but sometimes I wonder. I recently talked with a beekeeper from North Dakota who had his colonies survive something like -30°—-40° F. for a week with no real packing or other protection — and the bees survived. Yet we've had a few colonies die in our yards here in Ohio before the temperature got to 0°F. The colony in question was a good sized cluster and had 30 pounds of honey stores. There was no sign of disease. I have also seen published papers indicating high levels of CO_2 in a wintering hive were not harmful. Yet most researchers agree that ventilation is required to keep "bad air" from accumulating. There are so many variables in the wintering process that I suppose erratic results can sometimes be expected. The wintering business is one event that makes beekeeping a challenge — Right?

I recently attended a national meeting where reports from all types of research were presented. As I listened to the reports, I wondered if what a researcher views as a good research project is the same as an "average" beekeeper. I also noted that a good researcher may not necessarily be a good speaker. This is unfortunate since practical results gleaned from the study may be lost on a bored audience. If you readers had the opportunity to develop apicultural research projects, what areas of emphasis would you choose? Do you think that government and university personnel are headed in the right directions? I realize that taking time to put thoughts on paper can be time consuming, but I do hope many of you will. I will forward your opinions to appropriate personnel. Please understand that there is no guarantee that someone will be able to pursue your recommendations, but at least we will understand what your concerns are. Thank you.

Research Review

By DR. ROGER A. MORSE
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The Mating Behavior of African Queens

Mating in honeybees is poorly understood. A recent paper on the subject from South Africa raises several questions, especially regarding how the so-called Africanized bees spread in South America. Most of the queens that were the stock from which the Africanized bees arose, were imported into Brazil from within a few miles of where these studies were made near Pretoria, South Africa.

Dr. Cyprian Zmarlicki of Poland discovered over 20 years ago that queens and drones mate in specific areas that he called drone congregation areas. He wrote about this in 1963. Earlier, Dr. Norman Gary, now with the University of California, had indentified the sex attractant in honeybees. Subsequent studies by several people in Europe and North America have shown that drone congregation areas, at least for European honeybees, have well defined boundaries. The limits (size and shape) of an area can be determined by tethering a queen, or a lure doused with synthetic sex attractant, under a helium-filled balloon and then walking around with the balloon. The activity of the drones flying at heights of above about 15 or 20 feet is easily seen within the congregation area, and strikingly absent outside it.

What is apparently different about drones in South Africa is that congregation areas are much less well defined. The author cited below found that South African drones, "once attracted to the lure . . . would follow the balloon back to the apiary, sometimes for a distance of 2km." Drones would also follow a lure down to ground level, something that has been recorded only rarely with European honeybees. "Depending on the time of the year, the congregation area pattern changes from being small, distinct areas (220 x 260 m) in winter enlarging in late spring to form larger areas consisting of several congregation sites". I can add, from limted observations of honeybee mating behavior in Brazil, not too far from where the African bees were first introduced, that the congregation areas there are also much less well defined, than in North America.

This information suggests to me that African drones may have a distinct advantage in mating over their European counterparts in areas where they both occur. Apparently, European drones meet and mate with fewer queens given otherwise equal circumstances. This could explain, at least in part, the rapid spread of the African bees in South America.

Another aspect of the behavior of African drones that is apparently different is the amount of time drones spend in the hive between mating flights. The paper from South Africa states, "when (African) drones return to the hive, they rush in to imbibe unsealed honey (especially in drone cells) and within about 4 minutes leave on another mating flight". This statement caused me to reread the paper Dr. Peter C. Witherell wrote in 1971 on the "Duration of Flight and of Interflight Time of Drone Honeybees." Witherell says that for drones the "mean length of time spent in the hive between flight was 17.14 minutes"; his observations were made in California. If, indeed, African drones spend more time out of the hive searching for queens then again this could give them an advantage and we can see how their spread could be speeded up.

The author cited below says he found congregation areas above trees. This, to the best of my knowledge, has not been reported elsewhere and again appears to make the African drones different.

By capturing, marking and recapturing drones in congregation areas it was shown that some individual drones visit at least six different sites. Apparently, however, they prefer some over others. It would be interesting to know if European and African drones behave the same in this regard. I am aware, as a result of some unpublished observations we made a number of years ago, that European drones will visit several sites in an afternoon; I think others have similar data.

The honeybees we use today are not much different from their ancestors thousands of years ago. This is true primarily because of our inability to control their mating behavior, preventing breeding programs comparable to those using other livestock. Increasing our limited knowledge of honeybee mating is an open, fascinating research area for those interested in natural history. Advances could have a great impact on our industry.

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Drone mating assemblies. *South African Bee Journal* 54:99-100, 103-112. 1982.

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Capping The News

THE EDITORS

"Beekeeping Small Talk"

Scientist Discovers Boon For Beekeepers

A chemistry professor at Humboldt State University has discovered an inexpensive way to subdue aggressive bees while harvesting their honey.

Dr. William F. Wood found that smoke from burning hair or chicken feathers produces anesthesia in the so-called "African killer bee." This could be a boon to beekeepers in Africa and America who harvest honey from the bee.

Beekeepers commonly use smoke to calm European honeybees. Smoke from burning wood, pine needles or cow dung might be used, according to Robert Hitte, beekeeper and part-time instructor at Humboldt State. The bees are tricked into thinking their hive is on fire and they gorge on honey. The stuffed bees are too fat to bend over and sting the beekeepers.

African bees are a different matter. They aren't calmed by ordinary smoke and will sting unless they are anesthetized.

Wood got the idea to use burning hair while he was in Kenya several years ago. Beekeepers there use smoke from a burning puffball (a mushroom-like fungus) to anesthetize African bees.

"The puffball smelled like burning hair to me," Wood said. His experiments at Humboldt showed burning hair and chicken feathers produce a chemical, hydrogen sulfide, that "completely knocked out" a group of honeybees for up to 20 minutes. The bees recovered with no ill effects.

Since puffballs are scarce and not readily available in some parts of the world, Wood thinks his research will help commercial beekeepers in the U.S. and developing countries.

"The ferocious African bee was imported to Brazil in the late 1950's for breeding experiments to improve honey production," Wood explained. A number of the bees escaped into the wild and subsequently spread throughout much of South and Central America.

"The 'Africanized' bees are more productive than European honeybees, but they still retain the aggressive behavior of their African ancestors," Wood said. The bees have now reached Costa Rica on their migration north from South America and are expected to enter the southern U.S. in five to seven years.

"When swarms reach the U.S. beekeepers will have to adjust to the aggresive nature of the African killer bee."

Wood's experiment was the subject of a paper recently published in the "Journal of Apiculture Research, 22," 107-110, 1983.

Nebraska Nosema Survey Results

By M. ELLIS[1], R. WITT[2], R. NELSON[2], and C. SIMONDS[2]

The Nebraska Department of Agriculture has completed a three-year survey of apiaries in Nebraska for infection by *Nosema apis,* Zander, a protozoan parasite found in the ventriculus (midgut) of honey bees. Nosema infection limits digestion of food in the ventriculus and inhibits the production of royal jelly in the hypopharyngeal glands of afflicted worker bees. Colonies with infected queens supersede their queens or become queenless. Colonies with infected individuals fail to attain adequate strength by the honey flow, a condition which significantly reduces honey yields.

It is necessary to make a microscopic examination of the ventriculus to determine whether nosema is present, as there are no reliable symptoms on which field diagnosis of nosema can be made. For this reason, many beekeepers question the value of implementation of a program of prophylactic chemotherapy using the antibiotic fumagillin. Proper use of fumagillin chemotherapy has been shown to increase honey yields as much as 30 to 50 percent in apiaries where nosema is a problem.

Samples were collected from mid-April to mid-May by Nebraska Department of Agriculture apiary inspectors. Nosema (25 bees) was used in an indication of the severity of infection. The percentage of samples with detectable levels of infection (10,000 nosema spores per bee) was used as an indication of the incidence of the disease.[1] Standard methods described by Cantwell are used in counting spores.[2]

This survey was undertaken to help make beekeepers aware of the extent of the problem in apairies in Nebraska and to help them in evaluating the economics of implementing a program of prophylactic chemotherapy. To provide adequate protection with fumagillin chemotherapy, it is essential that a sufficient quantity of properly medicated sugar syrup be manipulated by the bees, distributed and stored with the food reserves. Fumagillin should be syrup when installing packages. A minimum of two gallons of medicated syrup should contain one teaspoon (100 mg fumagillin activity) of Fumidil-B per gallon.[1]

[1]State Apiarist, Nebraska Dept. of Agriculture, Lincoln, NE 68509.

[2]Apiary Inspector, Nebraska Dept. of Agriculture, Lincoln, NE 68509.

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Bee Talk

by DR. RICHARD TAYLOR

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The whole continent is half paralyzed by record cold this weekend. It is too cold to go putter in my shop, almost too cold to go outdoors, and I haven't much to do except sit around and read, woolgather and dream. But these aren't bad activities, and anyone who does not spend a pretty good part of his life just quietly thinking and dreaming misses a lot that is distinctively human. Our lives should be devoted to work, no doubt, but also, to contemplation.

One needs a sanctum, a quiet retreat, a place safe from intrusions, to work out his thoughts, dwell in feeling on the moment, on the sweetness of the hour, the arising and passing of things. This may have been easier when people lived in cabins and got around by foot or by horse, so that a greater part of life was lived at a quiet pace. Perhaps then the solitary hours, at least for country people, were not so hard to find. Now, with engines everywhere and the general race against time that seems to be the lot of most people, the hours of seclusion are not so easily found.

The bee yard, for its master or mistress, is a natural sancturary whose visitors are welcome ones. People almost never intrude into my bee yard. Few know where it is, and the fear of stings forms an invisible fence for any who do. It is a place where I can feel, not alone, but rather an integral part of the great scheme of things. Solitude is not really the word for it. Communion is. One is not separated from company, but only from distraction. One's thoughts and feelings are not imposed from without but elicited from within, rising in absorption with the vast surrounding nature.

In spring, and during a honey flow, the hum of bees overhead is to me what the sound of the surf is to the beachcomber. It is no menace or warning, but a reassurance, almost a voice speaking. It would instantly carry the thoughts of others, the uninitiated, to the association with stings. The sight of the bee master, placidly standing in the midst of this roar, would give an outsider no reassurance at all. The rare intruder who comes upon me in my bee yard therefore retreats, and the yard and its master are again as secure as if surrounded by a high wall.

Smaller visitors, feathered and furred, come and go at will, of course, as oblivious to the bees as the bees are to them. The chatter of the birds is unabashed, and my appearance produces a squeak from an occasional chipmunk. Off in the meadow a pheasant gives warning to her chicks. But in general all these living things share the peace with me, and I shall always keep it with them. The bees themselves have very few enemies, and I am glad to move about my bee yard with the understanding that, from the standpoint of nature, this domain is primarily theirs .

If is is about midday and I have come to work with my bes, I can first rest in the shade with a bit of fruit, my jug of water and a sandwich, my good dog joining me there for the hundredth time. There I get in mind the best way to proceed with whatever needs to be done. I do not know how one could be richer than I am at such moments. Certainly one's world is not really enlarged with possessions, except by first reducing the world in one's own conception. The setting I am immersed in — the infinite sky overhead, the warm earth, the living woodland, the fields and the many creatures nature never endowed with a sense of property— all this is enough, and the price of it is simply acceptance.

Nothing is despoiled, nothing destroyed or reduced to ugliness or ruin by the presence of a bee yard. The bees themselves forage over literally thousands of the surrouned acres, inconspicuously flying for miles and then returning unerringly to their own hives and no others, but the treasure they bring back is no fruit of plunder. On the contrary, nature has been enriched by their work, for the millions of flowers that have yielded this treasure have in turn received a great gift from the bees, the very gift of life for their seeds. Without the visitations of bees most of these flowers would exist to no purpose, dry up and die without leaving seedlings behind to carry their species into another season.

The beehives themselves involve no assualt upon nature or upon the senses. They blend with everything as nicely as a bee tree would. They are, in fact, not substantially different from bee trees. Things have been arranged for the greater convenience of the beekeeper, but the bees take no notice of this. There is nothing unsightly about an apiary, nothing to suggest disharmony. Nothing conveys the impression that, for example, a hydroelectric plant set next to beautiful stream does, or a factory rising in what was recently farmland. On the contrary, an apiary is a lovely thing to see, and bee hives are even considered ornamental in gardens.

Few things are so satisfying to a beekeper as the sight of a well-tended apiary. Finding himself in unfamiliar territory, he has his eye open for the sight of an apiary. It is not clear why. Nothing is learned just be seeing an apiary from the car as one drives along, but it is always rewarding somehow. Perhaps it is a reminder that there is still another person who shares some of one's own feelings and joys.

It is a tradition among beekeeprs that they need not own, or even in any formal sense rent, the land where their apiaries are set up. I know of no other branch of husbandry of which this is true. My own apiary is on land that belongs to a huge utility company. They probably don't even know it is there. Perhaps someday one of their agents will appear at my door and ask me to move the bees, but until they do, my bees have thousands of acres to forage over, the bounty they offer being theirs for the trouble of gathering it. They do no care who owns those acres, nor do the flowers that bloom on them, nor do I.

[This bee talk was exerpted from the author's *Joys of Beekeeping*, (Linden Books, Interlaken, NY 14847), and is used with permission]

Testing Your Beekeeping Knowledge

Clarence H. Collison Extension Entomologist The Pennsylvania State University University Park, PA 16802

An effective colony management program, requires the beekeeper to have thorough understanding of basic honey bee biology, to be able to recognize a few key signs that describe the condition of the colony and often times a bit of good luck. Needless to say, management is a real challenge to most individuals. Possibly that is why so many people find beekeeping to be such a fascinating endeavor.

Well how did you do last month in your first opportunity to test your beekeeping knowledge? Hopefully you did well enough so that you are willing to try it a second time.

Please answer the following questions and turn to page *161* to check your answers.

The first five questions are true and false. Place a T in front of the statement if entirely true and a F if any part of the statement is incorrect. (Each question is worth 1 point).

1. _____ Digestion and absorption of food takes place in the worker's honey stomach.
2. _____ The queen honey bee normally goes on her mating flight in the afternoon.
3. _____ High water content, presence of sugar-tolerant yeasts and crystallization increase the chances of honey fermentation.
4. _____ Sucrose is the common sugar of honey.
5. _____ Congestion in the brood nest is the primary cause of swarming.

Multiple Choice Questions (1 point each)

6. _____ Honey bees begin to form their winter cluster at:
A) 45°F B) 48°F C)61°F D) 57°F E) 52°F
7. _____ Sacbrood, a disease of honey bee larvae, is caused by a:
A) fungus, B) mite, C) bacterium, D) virus, E) protozoan

8. Division of labor within the worker caste of the colony is dependent upon the age of the worker and the needs of the colony. Listed below are six possible duties of a worker, arrange them in order they would be performed by an individual bee. Use numbers 1-6, 1 = first activity and 6 = last activity. (Question is worth 6 points).

a. _____ Producing wax and building comb.
b. _____ Serving as nurse bees (feeding brood).
c. _____ Handling incoming nectar from foragers.
d. _____ Field bees collecting nectar and pollen.
e. _____ Cleaning brood cells, preparing them for the queen to lay in
f. _____ Serve as a guard bee at the hive entrance.

9. Name three impulses or colony conditions that result in the rearing of new queens. (This question is worth 3 points, 1 point for each correct answer).

10. Listed below are four chemicals that are used by the beekeeping industry. Please indicate their recommended uses. (This question is worth 4 points, 1 point for each correct response).

Benzaldehyde (oil of almond) —

Terramycin® —

Certan™ —

Fumagillin —

IT PAYS TO KNOW

How to . . .

By P.F. THURBER
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Kirkland, WA 98033

Part II
Variations On Piggy-Back Spring Requeening

"Queen Introduction Surefire" has been reproduced over and over again since it was first published in *Gleanings*. Puget Sound Beekeepers Association put out over three hundred copies, and I put out several hundred copies while an inspector. Our King County Cooperative Extension Service has distributed I would guess 500 and other counties have reproduced it and so has the State. Still people have trouble. It is not that the technique is difficult but because they will not check and cut queen cells when they should or the weather is bad when their queens come. An alternative requeening in August when you have to find a queen in a colony of perhaps 55,000 bees can be hot, time consuming and aggravating. Then you may have another problem in that if you are not successful in an August requeening, you have to try again. You may find it difficult to buy queens in September and you may also run into bad weather since it is not uncommon to have miserable weather in September. On the other hand if you have to requeen a hive in August, do it. You can use the same technique as in the spring requeening. However, you would not run a fall requeened hive as a two queen hive for very long. You do not want a lot of extra eaters using up the winter honey. Obviously what the beekeeper needs is a spring requeening technique that will not be thrown off by bad weather, and if you will hang on I will develop the topic.

First of all, you should know that when a queen lays an egg it remains an egg for three days. (Remember 3 days!) Then it turns into a worm or larva. The first day larva is so tiny you can hardly see it but at the end of 5 days or 5½ days it has achieved its full growth and is capped. (Remember capped at 8 to 8½ days). From now on you have a capped over something which emerges 21 days from the day the egg was laid. If you substract the eight days of egg and open larva stage, you see you have a thirteen day period during which it is capped. (Remember 13 days). OK. Now during the period it is capped changes take place. From the worm it changes and forms into the bee that will emerge. All these changes do not take place at once and therein lies the basis for the requeening variation technique.

You remember that healthy larva are a pearlescent glistening white? Well, until the 13th day if you will uncap a cell and dig out the pupa say with a fine crochet hook, you would find it that same color.
On the 14th day the eyes show a pale red.
On the 15th day the eyes show red
On the 17th day the eyes show purple and the thorax has turned yellow.
On the 18th day the abdomen turns yellow
On the 19th day the antennae darken
On the 21st day wings extend and emergence is due.

In the brood rearing period you can easily verify this, but if you are studying this subject in the winter, you can see some of these stages on one of the 12″ x 18″ color picture cards in the set of 12 that Dadant sells . . . You should have one of these sets if you ever plan to give talks on beekeeping, plan to have a booth at a Fair, or wish to discuss bees with someone who is afraid to go near a hive.

Now I do not intend to stand up and lie to you that I remember all these dates of color change. I have had in my work box which holds my smoker, hive tool, marking kit and other junk a little card. If I had been smart, I would have taken an ideliible pen and written it out on the side of the work box . . . So let us say you have a firm shipping date from your queen breeder and in the past he has been reliable. Let us say just to make it easy he says he will ship on April 19th and you know the queens will come in on the 21st. Now suppose that on April 1st the weather was nice and sunny and warm (and you know you should not pull frames from a hive till it is 55 degrees F. and then remove them only for a few seconds). It surely would be easty to set a thumb tack in a frame with new eggs in it and two thumb tacks in a frame with larva just forming (the 4th day remember?) Let us say the weather was marginal and you had time only to do that. You see you have an emergence on April 21st and another frame that will largely emerge on April 17th. OK — Now that was too easy so let's say that on the 8th of April the weather was good. For sure you could find a frame that was being capped and one just capped or say the weather did not cooperate on the 1st or the 8th. Let's say on the 14th or 15th the weather was good. You could take your crochet hook and starting in the middle of the frame uncap a larva then another three inches higher and another three inches lower. If you find eye color only, you are set. If you do not find it on that frame, keep at it. You will find 14-15 day larva on one frame — that is for sure — so set your thumb tacks representing emergence on the 21st.

Up till now I have assumed you have been working fast in good but just barely warm enough weather and I have further assumed you have a breeder of the utmost reliability. OK, So you do not. You could go set tacks based on age, egg, 1st day larva, 8th day capped, 15th day red eyes several times. By marking the day of the month on the tacks with a "Sharpie" indeli ble marking pen like they use to mark groceries, you are set for any date. For example, if you had good weather on the 1st all you could mark would be Emergence April 21st, but if you had a good day say on the 15th, you could mark Emergence on the 21st or from eggs May 6th or from just capped larva April 28th. See how it works?

Well if you have really good weather you can do step 1 — the marking of emergence and step 2 — the setting up of what will be the piggy back nucs all at once. How do you do this? Easy. You take two frames which will emerge the day you get your queens or a day or two later and put them in a third hive body along with a pollen frame and a couple of frames of honey then move the frames remaining downstairs toward the center of the hive and fill in the spaces with empties. You of course make sure the queen is down in the two lower hive bodies and then put on an excluder and then the third hive body. The bees will, providing it was warm, change the shape of the brood nest to keep the brood in the third hive body warm and tended. Remember it must be warm — say 60 degrees or more.

If you do not have good weather when you mark the two frames with the appropriate emergence date, you can do step two, the setting up of what will be the nuc, the next nice day.

Should you be unlucky with the weather but have been able to at least mark the emergence date, it is no great trick to grab the two marked frames and after checking them to ensure the hive queen is not on them set up the nuc and procees as in Spring Requeening Surefire.

CONTINUED NEXT PAGE

Personally I like to have a pair of frames marked for the arrival date and another set of frames for a week later arrival date. Even the best queen breeder can be held back by the weather, but I will say that Howard Weaver of Navasota, Texas, has only missed his promised shipping date once in over 10 years. In 1978 he shipped two days late. On the other hand I have been buying queens from him for 15 years and he knows my hundred odd queens are a pool order for up to 10 hobbyists so I suspect he makes an extra effort in my case.

You might well consider as a matter of additional variation planning to use homemade "Worth" cages or "Chantry" type cages, or my own designed long cage, in your queen introduction. Both will give vastly better acceptance than trying to use the regular three hole Benton shipping cage. Also with a slim cage you requeen with all 10 frames in the upper nuc. My own design cages can be made in about 15 minutes and can be used for banking spare queens as well as introduction. Homemade Chantry type cages can be made in under a half hour. Since both types have a long life a little winter work in the shop is thus worthwhile. When working towards requeening in any method, you have to know where the queen is so remember DO NOT USE ANY SMOKE. If you have bad tempered bees, OK, you have bad tempered bees. You can isolate your queen at least to the extent of confining her to one super to see which has eggs. Carry that super say ten feet from the hive and set it on the bottom board with a little jolt. The old field bees will largely fly back to the original hive location and with relative peace you should be able to locate the queen and the frames you want to use for the nucs-to-be.

I will admit you cannot always count on being able to premake your nucs above an excluder. Sometimes, at least in Puget Sound, we have a solid month of cool and wet weather in April, but it does not happen often. We ususally have a few nice days. On the other hand if you have your nucs made up except for the smell barrier, upper double screened bottom board and queen, you can literally remove the excluder, put in the smell barrier and upper double screened bottom board and put in your queen in no more than 2 minutes per hive. You can do this with an umbrella in the rain (but use your wife's transparent one not that old black one you have had since school days). Again let me for emphasis go back to the basic spring requeening. If your downstairs or parent hive is pretty full, realize it can and probably will swarm if you do not super below the piggyback.

Now before I close there is one subject I would like to touch on. In a *Gleanings* article entitled "Save Your Breeder Raised Queens" I told how that when I received queens from a breeder I watered them with a water and Fumidil mix, and I felt sure that this explained the fact that I had about stopped experiencing supercedure of those queens. I based this on the fact that I ordered marked queens from the breeder. If I found them a couple of weeks after the piggyback was combined into the parent hive, my introduction was successful; and if I found them in the fall, there had been no nosema induced supercedure and no failure in my swarm control method.

Well, I took a lot of flak about the article so I would like to mention that Thor Lehnert of Beltsville checked out the measurements, etc., and wrote it up. The Lehnert article was in the Journal of Apicultural Research, page 164-4 (1977).

Now I realize too few of you have the October 1976 *Gleanings* so let me say all I do is get a No. 4 box nail. I shove the end of it into an old ball point pen then I go to the Fumidil bottle and dip the nail head down into the Fumidil. The little cone of Fumidil which surrounds the shank of the nail just makes one ounce of Fumidil water at the rate prescribed on the formula sheet for one gallon. I put this tiny amount of Fumidil in a one ounce bottle, add about a third of an ounce of warm (100-120 degree F., and not over 120 degrees for sure) water and shake hard. Then fill to one ounce and using an eye dropper water the queens and attendants twice a day making sure that the candy end of their cage is slanted upwards and also being sure only to give what the bees will drink. You must remember to shake the bottle thoroughly each time you use it as the mixture has a tendency to separate. I bring this matter up because it is probably better to hold queens for three or four days till you have purged them of Nosema than to rush out and introduce them. Under no circumstances should you feed sugar syrup to caged queens and attendants!

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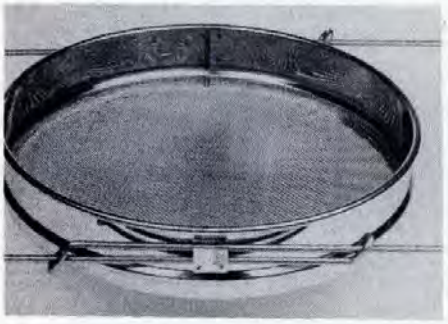

12 inch diameter with 18½ arm spread to fit over a clarifier. A single medium coarse, 100 percent stainless steel sieve to catch those pieces of wax, wood and dead bees.

An Alternative For Beekeepers: Alcohol Production

By G.W. HAYES, JR.
Agricultural Technical Institute
Wooster, Ohio

Every month there are articles on how American beekeepers are being hurt financially by imported honey. Because of the importation of large quantities of cheap foreign honey, our own government has had to resort to buying a considerable surplus of American honey. Unfortunately, in some cases, this same honey is then given away to what has to be considered potential buyers, thus hurting theoretical sales. Then there are the familiar articles on how the beekeeping industry should make a concentrated effort to market and merchandise their product more professionally. I would be the first to agree that the marketing and merchandising of a very special product, honey, is in most instances less than adequate. Everything possible should be done to somehow increase domestic consumption of domestic honey. But is the eating of honey the only thing it can be used for with a monetary gain in mind? Honey of course can be eaten, it is an ingredient in many baked goods and other food products, Mead or honey wine is produced commercialy and honey has medicinal uses. There are probably other uses of honey but these are the major commercial uses to date.

As was mentioned, Mead (Honey Wine) is made and sold commercially here in the United States and in Europe. The making of Mead employs one of the oldest chemical processes known to man; fermentation. In fermentation, yeast acts on sugars through enzymes to produce **alcohol** and carbon dioxide (CO_2). This theme of alcohol production to supplement the energy needs of everyone in the United States had its greatest support several years ago as we all sat in gasoline lines while watching the price increase daily, because foreign powers wanted to flex their economic muscles. It was shortly after this that it was decided that the United States should become energy-independent. Remember shale oil, bio-gas, coal gasification and the production of ethyl alcohol or alcohol or ethanol from surplus agricultural crops? The only one that has remained is the production of ethanol from surplus agricultural crops. Ethanol is used in the petroleum, medical, chemical and pharmaceutical industries in vast quantities (millions of gallons)[1]. Ethanol is the same alcohol that is created in the fermentation of honey whether it is in a jar of high moisture honey at home, or in the commercial production of Mead. Let's take a look at why the millions of pounds of surplus honey here in this country might be made into ethanol. 1. There is an existing market for ethanol now and it can do nothing but grow because of our dependence on foreign oil. Everyone who uses unleaded gasoline in their car or truck uses ethanol. Ethanol is the only substance that can be added to unleaded gasoline to increase its octane rating, and thus its combustion efficiency, without further polluting our environment. When ethanol burns, it releases carbon dioxide (CO_2) and water vapor just as we all do while breathing. No poison gases, no lead, and no harmful acids are released when ethanol is burned. 2. Ethanol is easy to make. Moonshiners have been making ethanol illegally for decades. 3. Ethanol can be burned in **any** internal combusion engine either mixed with the engine's standard fuel or used in its pure form with minor engine modifications. As an example Germany fought the last two years of World War II using alcohol as its primary fuel, and Brazil, with no oil of its own, is using alcohol for approximately 30 percent of its energy needs.[2].

Other than making an alcoholic beverage, honey has not been used as a major alcohol (ethanol) source. Grains, cull potatoes and molasses are now being used as the primary ingredients in the making of high grade ethanol. It is excellent to use the surplus agricultural crops to produce a vital energy source for the United States. Much better, in fact, than letting the crops rot or giving them away at taxpayers expense. Perhaps our great surplus of honey could be put to a similar use. Honey is a much better source of fermentable sugars than any of the grain products now used. One of the disadvantages to using a grain in the manufacture of ethanol is the high starch content. This must be converted to a more fermentable substance before alcohol can be produced. In Table 1. it can readily be seen how high these grain products are in unfermentable starch, quite unlike honey.

Grain	% Sugar	% Starch
Barley	2.5	64.6
Corn	1.8	72.0
Grain Sorghum	1.4	70.2
Oats	1.6	44.5
Rye	4.5	64.0
Wheat	2.8	63.8

The high starch content of these grains must be changed by a special enzymatic process beofre enough sugar is present to economically ferment this material.[4]. Honey is predominantly sugar (80-85%) and requires no processing prior to fermentation.

Another eye-opening piece of information is the amount of energy it takes to produce grains used in ethanol production. Corn will be used as an example for the amount of energy expended to produce the primary starting product of ethanol distillation. The figures in Table II represent the energy used to produce the crop and do not take it into consideration land or machinery purchases.

TABLE II
Agricultural Energy Expenditures of Corn Production
Conventional 75 bushesl/acre
Dry Land

Input	BTU's
Machinery Btu/acre	373,556
Fuel	644,920
Transport	226,661
Fertilizers	
Nitrogen	4,158,000
Phosphorous	30,400
Insecticides	14,300
Herbicides	27,500
Drying	1,208,096
Irrigation	———
	Total 6,683,433 Btu's
	or: 89,112 Btu's per bushel

As can readily be seen, the energy expenditure needed to produce only one bushel of corn is extremely high. For every bushel of corn used to produce ethanol the yield is only 2.5 gallons of the alcohol, which yields approximately 76,000 Btu's per gallon[6]. The inefficiency of using corn to produce ethanol is easily seen by the fact that it takes nearly half of the potential energy in Btu's resulting from the ethanol distilled to merely grow and harvest a bushel of corn. However, because of the demand for ethanol this process has become economically feasible.

Table III illustrates graphically the amounts of alcohol (ethanol) obtained when various materials are fermented and distilled

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TABLE III
Alcohol Yields of Various Crops

Crop	Yield of 200 Proof Alcohol in Gallons
Corn	2.5/bushel
Milo	4.4/cwt
Spring Wheat	2.65/bushel
Winter Wheat	2.65/bushel
Cane Molasses	75/ton
Beet Molasses	75/ton
Barley	2.1/bushel
Cull Potatoes	1.5/cwt
Sweet Sorghum	10.5/ton

With the assistance of the ATI Chemistry Department Personnel, some impressive results were obtained in producing small quantities of ethanol from honey. In fermenting and then distilling small quantities of honey it was discovered that a significant amount of alcohol can be produced with little sophisticated equipment. Compare the amount of ethanol produced from Honey in Table IV to a like amount of material in Table III.

TABLE IV
Alcohol Yield of Honey

Crop	Yield of 200 Proof Alcohol in Gallons
Honey	103/ton

This amount of clean, burnable ethanol far outdistances any of the agricultural product now in use to produce ethanol commercially.

I am not trying to suggest that all beekeepers immediately run out and start building fermentation and distillation equipment to be used for honey/ethanol production in their backyards and garages. What I am saying is that there are large quantities of surplus honey that should be used for other purposes than sitting in government warehouses or being given away to potential customers. Ethanol is a product which has many energy and industrial uses and is in current demand. Unfortunately or fortunately, depending on your perspective, ethanol has historically been produced from low yield surplus grain and agricultural crops. As has been graphically shown, honey has the potential to significantly out-produce these grain crops in alcohol production. On these cold winter evenings it may be interesting to sit quietly and think about this great untapped reservoir of possibilities that beekeepers have at hand. The grain farmers have taken advantage of a demand for a product. What about beekeepers?

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3. "Composition of Cereal Grains and Forages", National Academy of Sciences.
4. "Ethanol Fuels Use, Production and Economics" page VIII-5
5. Journal of Soil and Water Conservation, March-April 1975.
6. Ethanol Fuels Use, Production and Economics page IV-7 Table 4-1 "Comparison of Fuel Performance characterisitics of Ethanol and Conventional Fuels".
7. Compiled by Grain Processing Corporation.

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Soviet & Scandanavian Beekeeping Tour

Participants will gather in Sweden on August 1st. Three days in Sweden including visits to traditional and modern apiaries and the bee department of the Agricultural University at Uppsala, sight seeing in Sala and Stockholm, will be ended with one day off in Stockholm.

After a boat trip over the Baltic sea, two days will be spent in and around Tallinn, Estonia. We travel on with train to Leningrad for beekeeping visits and sightseeing during two more days. One day on train through Finland and then boat back to Sweden will end the study-tour.

The price for the trip starting and ending in Stockholm will be 565 US $ full pension. Maximum number of participants: 30. If possible reduced air fares for the Atlantic flight can also be provided. For more information write: Borje Svensson, Box 5034 Oja, S-733.00 Sala, Sweden, Telefon 0224-182 81.

DR. LARRY CONNOR TO ADDRESS ROCHESTER, NY BEEKEEPERS and PRESENT BEE SCHOOL FOR WESTERN NY STATE

"Honey Bee Queen" will be Dr. Larry Connor's topic of discussion for a meeting of Rochester Area beekeepers to be held March 16 from 7 to 9:30 pm at the Monroe Cooperative Extension Service Offices at 249 Highland Ave., Rochester, NY. For preregistration details call Mr. Pease. Niagra County Extension Service Officer 716-433-8839

Dr. Connor, Director of Beekeeping Education Service, will also conduct a day-long beekeeping school on Saturday, March 17, at the Erie County Cooperative Extension Service at 21 S. Grove St., in East Aurora, NY. The program will include discussion of colony management, dealing with queens, bee botany and bee diseases. The program begins at 9 am. For further information, contact Mr. Richard Pease at the number given above.

OREGON BEEKEEPERS' SPRING MEETING

The Oregon State Beekeepers' Association will hold their Annual Spring Meeting March 31, in Corvalis, OR at Cordley Hall on the Oregon State University campus. Registration will start at 8:30 am. $7 per person or $10 per family. Topics such as Spring Management, Making Increases, Establishing Package Bees, etc., will be presented. An auction will also be held.

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BEEKEEPING FOLK ARTS

Honey & Hive Products For Cooking & Other Home Uses

by Amos Arbee

In this particular column, I will take a brief respite from the usual cliche routine and in turn touch upon something which always comes to my mind each holiday season,. This year for some unknown reason it really stood out like a shining star.

I am referring to the mysterious change which seems to take place within people with the arrival of the Advent Season. Some examples are the responses to crisis which may arise during this season of the year by those who might otherwise ignore them at other times. Another example would be going of the "Extra Mile" so to speak to take a special gift or invite someone to a Christmas party or just plain holiday dinner. Then too, the "Forgiving" attitude expressed by many throughout holiday seasons also seems extraordinary. Now all the foregoing "Mystic Type Behavior", meets fully and most appreciably with yours truly, with only one real question. It stands out like a sore thumb if you will. " Why does it have to necessarily be a holiday, such as the Christmas season in order for us to display our GOD given qualities that we really possess all the year long? Of course one need not fear for one moment honey's changing any time of the year. As it always remains a constant, dependable source of assitance throughout its use in our cooking and baking recipes.

"Honey Froth" (a light Hungarian dessert)

2 egg whites

2 cups chilled apple puree (or applesauce)

2 to 4 tbsp. mild honey

1 tsp. grated lemon rind

1 tbsp. apricot brandy (optional)

Grated sweet chocolate

Whip eggs whites until stiff. Combine with apple puree, honey, lemon rind and brandy, folding carefully. Spoon into serving dishes and garnish with grated chocolate. Serve cold. Yum!

Recently, only joking of course, someone made the remark that being a member of the Procrastinators Club, he had just received an '83 calendar in the mail. To me however, being a procrastinator is probably one of the most devastating of habits known to man. Therefore it is anything but a joking matter in my opinion. There's no doubt that being a procrastinator is sometimes an "Easy Out" so to speak. But how many times have each of us given up something very valuable? Such as a good deal on a piece of real estate, a saving during sales at the department store and, last but not least, a friend for-real, all for the sake of procrastination.

As we enter into the year 1984 what better resolution could most of us consider than to dissolve ourselves on being a member of the Procrastinators Club and instead become of member of the "Doer's Club", and thereby make 1984 a year in which to be very proud reflecting back.

Honey has never been a procrastinator as it's always available and ready to prove its worth time and time again throughout our cooking and baking recipes.

"Orange Honey Raisin Cake"

½ cup butter

¾ cup Orange

2 eggs (room temperature)

1 tsp. grated orange rind

juice of one orange (room temperature)

milk (room temperature)

2 cups flour

2 tbsp. baking powder

pinch salt

1 cup seedless raisins

In a large bowl cream butter with honey. Add eggs. Beat. Place orange juice in a cup. Fill with milk until it measures one cup. Add milke, orange juice and rind to mixture. Beat until smooth.

In a medium size bowl, blend flour, baking powder, salt and raisins. Add gradually to butter mixture. Beat until smooth. Pour in a greased 9" x 9" x 2" baking pan. Bake at 375 degrees for 30 minutes or until golden brown. Cool. If you like, sprinkle with confectioner's sugar.

Value of Bee Pollination to U.S. Agriculture

by M.D. LEVIN

Reported from the BULLETIN OF THE ENTOMOLIGICAL SOCIETY OF AMERICA 29(4):50-51. Winter 1983

The role of bee pollinators in the production of many economically important crops in the United States has been the primary justification for much of the support provided by government agencies to the beekeeping industry. The concept has been accepted that an adequate population of honey bee pollinators can only be maintained in the framework of a thriving beekeeping industry which obtains most of its income from the production and sale of honey and beeswax. In this context, the honey price support program, the bee indemnification program, and the bee research program of the Agricultural Research Service have been carried out by the U.S. Department of Agriculture (USDA) with the support and encouragement of Congress.

From time to time, attempts are made to quantify the importance of bees in the pollination of agricultural crops. In 1957, crops dependent upon or requiring bee pollination for seed or fruit were valued at $4.5 billion (Metcalf et al. 1962). By 1971, this value had increased to $7.6 billion (Ware 1973). With increasing prices for most crops, and some new crops representing an increasing proportion of the total acreage, this value has since increased dramatically, and a current re-evaluation appears appropriate.

Table 1. Value of crops pollinated by bees, 1980[a]

Commodities:	Fruits and nuts	Value	Seeds and fiber	Value
Requiring or directly benefiting from bee pollination	Apples	757,027[a]	Alfalfa	114,652
	Apricots	33,705	Red clover	16,176
	Avocados	121,293	Ladino clover	3,941
	Bush berries	62,263	Crimson clover	1,433
	Cherries (Tart)	43,648	Lespedeza	2,628
	Cherries (Sweet)	91,812	Soybeans (1/10)[b]	1,382,494
	Citrus		Sunflower	410,377
	Lemons	61,319	Cotton seed (1/10)[b]	57,693
	Tangerines	37,559	Cotton lint (1/10)[b]	407,831
	Tangelos	26,816	Lima beans	25,137
	Temples	25,020	Flax	59,054
	Cranberries	88,674	Vegetable Seeds	60,000
	Eggplant	10,411	Total	2,541,416
	Nectarines	44,468		
	Peaches	368,004		
	Pears	174,876		
	Pomegranates	3,516		
	Prunes and Plums	13,777		
	Strawberries	288,776		
	Cantelopes	161,133		
	Cucumbers—fresh	116,260		
	Cucur..bers—processed	100,933		
	Honeydew	42,864		
	Watermelons	149,757		
	Almonds	473,340		
	Macadamia	24,174		
	Total	3,321,425		
Resulting from seed requiring bee pollination	Artichokes	27,473		
	Asparagus	82,118		
	Broccoli	55,286		
	Brussel sprouts	15,706		
	Cabbage	175,211		
	Carrots	161,432		
	Cauliflower	95,762		
	Garlic	33,816		
	Onions	346,539		
	Alfalfa hay	4,981,394		
	Total	5,974,737		
Indirectly dependent on bee pollination	Cattle and calves (1/10)[c]	5,435,974		
	Liquid milk production (1/10)[c]	1,688,340		
		7,124,314		
Total sum		18,961,892,000		

[a] Values represent thousands of dollars.
[b] Not all varieties benefit. Ten percent is a conservative estimate of pollination value.
[c] Sixty percent of all hay fed to cattle and dairy herds is alfalfa. A conservative 10% of total value is credited to pollinating activities that initiate the following chain of production: pollination → alfalfa seed → hay → cattle, meat, and dairy.

An update is presented in Table 1 of the dollar values of crops and commodities that were included among some 129 crops listed by McGregor (1980) as dependent upon or benefiting from insect pollination and that, moreover, were also included in the USDA's *Agriculture Statistics* (1981). No attempt was made to separate the crops according to dependency on insect pollination. In many cases the precise dependency is unknown, so no exact calculation can be made (McGregor 1976). In addition, the value of crops and commodities derived from seed produced by pollination is credited to pollinators on the principle that, without the seed, the crop could not be grown, or that, without alfalfa hay, beef or milk could not be produced as efficiently as they are now.

Although the total value of crops and commodities affected by the pollinating activities of bees has reached an impressive figure on a national basis, the beekeepers who supply most of this service receive very little monetary compensation for it. A study made by the U.S. International Trade Commission (1976) revealed that, of the total beekeeping incomes earned by 118 commercial beekeepers in various states during 1971-1975, the proportion derived from pollination fees averaged only 9.7%. In Washington, Oregon, and California, where use of pollination service is greatest, some large commercial beekeepers earned about ⅓ of their income from pollination. In a few other areas (New England, the Mid-Atlantic States, Texas, and Florida), pollination fees contributed less to the income of beekeepers; elsewhere, income from pollination fees was insignificant for most beekeepers.

The total value of crops listed in Table 1 would have been greater if the farm value of squash, pumpkin, safflower, buckwheat, persimmon, mustard, rutabaga, turnips, and many other minor crops had been included. Some crops included in other lists were not included in Table 1 because the evidence for pollinator contribution was obtained on cultivars and under conditions not available in the United States.

As can be seen, the total value of crops resulting from pollinator activity in 1980 approaches $20 billion, which compares with ca. $140 million worth of honey and beeswax produced. These figures indicate

CONTINUED NEXT PAGE

that the activity of bee pollinators is worth 143 times as much to the American economy as is the value of honey and beeswax, on which most beekeepers must make their living.

Much could also be said of the undocumented contributions made by the pollinating activities of native species of bees and honey bees, both feral and domesticated, to crop plants and to thousands of wild plants (as forage, seed and fruit sources, shelter, erosion control, etc.) for many forms of wild life that are integral parts of natural ecosystems.

Honey bees, or course, are not the only insect pollinators contributing to the production referred to. A multimillion-dollar industry has been developed in the Pacific Northwest, where two other species of bees (*megachile rotundata* and *Nomia melanderi*) are managed successfully for the pollination of alfalfa. With the advent of monoculture, large-scale farming, and other modern agricultural practices, many species of non-honey pollinators play a diminishing role, whereas dependence upon honey bees managed by humans has increased. Also, beekeepers increasingly face problems in maintaining the required pool of honey bee pollinators to supply the needs. It is because of the impact of bee pollinators to supply the needs. It is because of the impact of bee pollinators on nearly $20 billion worth of agricultural crops and commodities and not for the value of honey and beeswax that federal assistance has been provided to help the industry cope with pesticide, marketing, management, and other problems that could impede its ability to supply pollinators.

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Address: Agricultural Research Service, U.S. Department of Agriculture, Carl Hayden Bee Research Center, 2000 East Allen Road, Tucson, AZ 85719.

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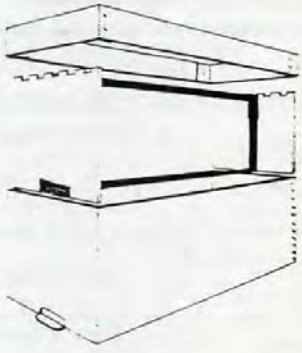

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A GLEANINGS INTERVIEW

STEVE FORREST, President of the Southern States Beekeeping Federation

Steve Forrest and Connie Krochmal

Steve Forrest is one of the honey and beekeeping industry's most vocal and articulate spokespersons. All who know Steve know of his great energy and dedication to promoting the value of our bees and hive products. Since 1977, Steve has been selling beekeeping supplies from his Brushy Mountain Bee Farm in Moravian Falls, N.C. He serves as an executive board member for the North Carolina State Beekeeping Association and The American Honey Producers. He is also a board member of the American Beekeeping Federation. Additionally, he is the President of the Southern States Beekeeping Federation. Under Steve's direction, in 1983, the SSBF began a media campaign called SAVE THE BEES, which was focused on the need to protect bees from the careless use of pesticides.

STEVE, WHAT DO WE NEED TO DO TO MAKE A BETTER FUTURE FOR AMERICAN BEEKEEPERS?

What we've got to stop doing in our industry is we've got to stop complaining and we've got to roll up our sleeves and we've got to get to work. We've got to get up off our apathy. We've got to start working together. This is not an industry that has become disunified -- it is an industry that has never truly ever been unified. We're a kind of hand-to-mouth industry. We don't have a lot of money. I've told people that our industry can't even pay attention.

We've got our problems. Imported honey is a real problem. Chinese peasants are now producing honey at three cents a pound. Their government buys it, then sells it to us at 32 cents a pound. That means we're subsidizing the Chinese government 29 cents a pound. That really doesn't make much sense. 29 cents a pound. That's a quart for $.96. We sell sourwood honey for $7 a quart if it's good. You're the only people that can tell the government that we've got a terrible problem with imported honey, and if we don't do something about it, we're going to lose half of our producers. Chinese honey production is estimated at 220,500,000 lbs in 1983, and if you compare this with 110,000,000 in 1974, you can clearly see they are gearing up for international trade. Honey production is labor intensive so, with cheap labor, they can handle this and use honey as a means of entering international markets and get dollars to offset the many technological imports they need.

We've got other problems. I think beekeeping is declining. It's a dying art. We've just got to get more beekeepers.

The Africanized bees -- the mites: those are both problems that we've got to work around together.

Basically, I see our problems as two-fold:

-- People don't know what honey is. Pure and simple, they don't know.
-- People just don't know how important bees are. $14 billion dollars worth of food -- every third mouthful of food -- that's a whole lot.

People don't understand these things and there's only one thing we can do, and that's teach them. Some of you might be sitting out there wondering why you should do anything, especially if you sell every drop of your own honey. Why? Because you are the only people who can do anythiong about our problems. You are the only ones who understand. Teach people. That's called PROMOTION.

HOW CAN SOMEONE BEGIN TO PROMOTE OUR PRODUCTS AND CONCERNS TO THE PUBLIC?

The easiest way is through the media. The T.V. stations, radio stations and newspapers. They have a relationship with their communities and want to help them. If something is going wrong in the community, they'll jump right behind it, because that's what sells newspapers, ads and time.

Now, beekeeping is the number one non-profit industry. It is. We've got 200,000 beekeepers, all hobbyists. There's a very small commercial industry. We hobbyists do it because we love beekeeping and, because of that, we're the strength of the industry. We've got to go out and use the media to make ourselves even stronger. I you don't ask for it, you won't get it. I've got a saying I'm fond of using. It was said by a fellow named Dave Gardner and it goes: "Let them that don't want none have memories of not getting any." If you don't want something, fine. But when you're sitting there in the rocking chair saying "well, I could have..." it's too late. Now's the time to do something about it.

CONTINUED NEXT PAGE

The media has something called Public Service Advertising. That's the way they're tied to the community, and that's a way for us to use them at no cost but the work we have to put into it. There are only 650 TV stations in our nation. That's all! There's not more than about 15 in a state like North Carolina. That means it only takes 15 beekeepers to develop positive relations with those stations. We need to keep going to the stations and telling them that we've got a problem we need their help with, and they'll work with us. Now, you're sitting out there saying: "well, I can't go out there and get on TV," but you can, and it's easier than you think. The trick, of course, is getting in there. The way to do that is to ask for help. Just to show you what can be done -- a while back I went to a Greensboro, N.C. TV station to see if I could get something about bees on their PM MAGAZINE show. I talked to the lady who was the producer and gave her a little pitch. She said: "I'm going to come do it myself." Then she went on to say: "There's a story here i want to tell you about." Her story was about a local Greensboro beekeeper, and he kept coming in to the TV station and giving them honey. Every day at coffee break he'd be standing there. He even moved the bees over to the TV station and got the news director keeping bees. That's what we've got to do.

YOU'RE INVOLVED WITH A NUMBER OF BEEKEEPING ORGANIZATIONS. CAN YOU TELL US WHAT'S THE CURRENT POLITICAL NEWS AFFECTING BEEKEEPING?

For three years now the American Honey Producers Association has sponsored legislation to give honey producers protection from cheap foreign honey. We have also been working with the Department of Agriculture. Unfortunately, Secretary of Agriculture, John Block, is no friend of beekeeping. In a meeting with the Secretary back in July, 1983, he actually told our delegation that in his opinion honey could be better produced in China! He further stated that the problem with the current honey loan program was due to our overproduction and that we could offset that by charging more for pollination. The Secretary is a bureaucrat. He reacts to pressure and unfortunately thinks our small industry can't put much pressure on him, unlike the dairy producers who just got a subsidy program NOT to produce milk.

At our 1984 American Honey Producers convention we mapped out our attack and need to ask for everyone's help. We are taking our message directly to the American people. During March we are undertaking a mass media promotion to tell the people what they are getting ready to lose. We are hoping to impress upon them the value of bees and the need our country has for protection from imports. In April we hope to follow this up by the activation of Political Action Committees in almost every state for the purpose of convincing elected representatives and the public that our important industry must be saved.

Please sit down and write letters to your two senators and your congressman. Now is the time. Don't put it off any longer. Get your local beekeeping associations involved. Get your state associations involved. This is a tremendous undertaking. Each year, 15-20,000 bills are introduced to Congress, and less than 500 are passed. That points out how hard we have to work to convince people that if we don't get import protection, this industry will turn from sweet to sour.

Some folks say we can't, but I say: CAN'T NEVER COULD. With your help we can and we will.

MAKING FRAMES FOR A BARREL HIVE

Don Park
PARK APIARY
243 High Street
TAUNTON, MA 02780

A couple of issues back, I was very interested in the article by G.W. Hayes about a hive made from the half of a fifty-five gallon drum. I am eager to give this a try. Not that I need to have this type of hive, but just for the fun and enjoyment of it. I would like to add some ideas of my own which I intend to experiment with next season.

To make frames for the barrel hive, take ¾ inch pine and cut into one and 3/8ths inch wide by proper length to accomodate barrel. Provide cut-out to give bee space for movement over and between frame tops.

Use stiff wire coated with beeswax, either brushed on after assembly or dipped in melted wax before or after assembly. Design outside wire to conform close to the shape of the barrel, leaving room for bees to move around edges.

This past summer I tried beeswax coated wire on frames of one shallow super and it worked very well. I used three horizontal wires -- one in each hole in the frame ends and one very close to the bottom of the top bar (drill holes in end bars for this top wire). I did not damage any of the comb when extracting, although I was very careful to run at slow speed and not increase the RPMs as usual.

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Tree To Hive In Six "Easy" Steps

BY W.B. ("Bill") Chappell 11424 Coachmans Way Raleigh, NC 27614

Introduction

Late last winter the writer first heard of what is probably a well-known method of removing bees from a tree or building without damage to property, meanwhile saving both the bees and their stores.

Briefly, the procedure consists of closing the entrance, except for a small escape hole in a cone-shaped cover, while at the same time providing an alternate home. The bees can readily leave but generally cannot find their way back inside. The alternate home consists of a standard hive containing a nucleus of brood, preferably with a queen. It should be placed on a platform, level with and very near the exit.

The worker bees go foraging. They return laden with nectar/pollen; cannot find their way back inside; and finally deposit their "goodies" in the adjacent hive. Here they will be accepted because the nucleus bees need honey and pollen for the brood.

Eventually (so I was told) the tree (or house) brood will have matured, become workers, and departed. The few remaining inside then more or less cease to function as the queen quits laying, or dies. The entrance is then re-opened, with workers from the newly-formed colony stealing what was once their own honey.

Finally, the hive is moved to a suitable permanent location, the old entrance is completely sealed to prevent future colonization by swarming bees, and the platform is removed.

****

In early May of this year I visited a friend and learned that bees were living in a large oak tree about 10 feet above ground and some 25 feet from his back door. Unhappily, from time to time the guards seemed to take pleasure in stinging his wife as she hung out the family wash or performed other outdoor chores.

This provided an ideal opportunity for a field test of the procedure. Following is a report on the experiement.

Acquiring the Nucleus

This part was, or should have been easy. I already had some spare equipment and a number of vigorous colonies from which to select the brood and their caretakers.

A view of the project

Unfortunately, the bees became so angered by my intrusion that several managed to get inside my veil. This precluded a systematic search for a queen, a queen cell, or even eggs or young larvae. However, two frames of brood were obtained and taken to the site, along with a hive and a screen-wire cone to cover the entrance slit in the oak tree.

Due to complications to be described later, buildup was slow and uncertain. Additional brood was later added and several weeks passed before it was clear that the new colony had indeed raised a laying queen. (Actually, Jim Knox verified this for me by spotting the queen and some eggs.)

II. The Platform

No problem here. My friend, Truett Ray, had a homemade wooden ladder, some 2 x 4s and other materials. So after trimming a few small branches that were in the way, we soon had a satisfactory platform.

Actually, there was one small problem at this time. Truett's job was to hand the nucleus up to me. He had not protective clothing, was attacked by a couple of tree guards, and almost dropped everything.

III. The Exit Cone

The seemingly simple matter of plugging the tree entrance is the point at which things became more difficult. The persistence and ingenuity of the field bees in finding their way back into the tree was incredible. The main problem was the roughness of the bark.

Since the tree was to be unharmed, the bark around the opening was left intact. The cone and its plywood base were attached to a rectangular pice of screen wire considerably larger than the tree opening, which was about 14 inches long and up to 3 or 4 inches in width. The plywood was nailed over the opening and, wherever possible, the screen wire was crimped into the bark depressions by means of roofing nails.

Thus, the bees could enter or leave their home only through a dime-sized hole at the tip of the cone. (Alas, nobody informed the bees of this fact!)

Having fixed the cone and the hive into place, and having fed syrup to the nucleus bees, I departed, fully confident that all was well.

The escape device in place

IV. Awaiting the Demise of the Old and The Buildup of the New

A day or two later, a visit to the scene revealed a great many bees inside the cone, only a few escaping, and much turmoil around the outside. The latter probably was from foraging field bees left outside when the cone was attached. Also, it became evident that some were actually getting inside by crawling under portions

CONTINUED NEXT PAGE

of the screen wire. (Not much activity was observed in the nucleus colony.)

I attempted to stop the leaks by stuffing rags in the bark valleys and by using more nails. Except for less outside turmoil, the same pattern was noted a few days later. This time more rags, more nails, and also a generous amount of caulking were put in the suspect entrance areas.

Meanwhile, our family departed on vacation. Upon returning, I found that there still were two independent colonies functioning side by side. The hive colony appeared to be growing, but some bees still could be seen laboriously bringing pollen and nectar via winding pathways into the tree. Another tube of caulking finally put an end to this, with more and more tree bees now entering the hive.

Within a few weeks about all activity had ceased in the tree, while greatly increasing in the hive. The time had come to remove the cone and permit the planned robbery.

V. Tree Honey to Hive Honey

Here, too, an unexpected problem arose. Quite some time had passed since I last checked the tree. Much to my surprise, literally hundreds of wax moth cocoons were discovered all around the outer edge of the cone. They were attached to the screen, the caulking, the bark, the rags, and each other. I scraped and scraped, finally, destroying the last of them with a propane torch. (None were observed inside the tree or the new hive—though that many larvae as mature moths would certainly have been a future threat.)

It was surprising to me that wax moths would lay eggs as these had done. It is surmised that the thousands of bees tracking on and around the screen wire had left sufficient material to make its periphery attractive to the layers—since they couldn't get inside the tree itself.

Upon removal of the cone, a good many bees (and other insects) began flying in and out of the tree. Evidently, there was little honey accumulation, however, since this activity was neither very frantic nor prolonged.

VI. Sealing the Tree and Re-Locating the Hive

At long last, around the end of July, time had come for the final phase. The cavity in the oak tree was stuffed with paper, etc., and the opening sealed with mortar.

Removing the captured bees

Sealing the hole

The remaining chore was that of moving the new colony and dismantling the platform. With the aid of my grandson, Scott Carver, the latter was readily accomplished. the re-locating was a bit more complicated. Since the work was done in mid-afternoon when many bees were away, it was thought best to place the hive nearby, thereby enabling them to find their home.

This spot was too close to the house to suit Cindy Ray! So a few days later, Truett and I moved it about 500 feet to a site in a cow pasture under a shade tree. (My brother-in-law, Skip Jones, took snapshots at this permanent site. He was also very supportive otherwise, so long as his duties did not include handling any bees!)

Epilogue

Some two weeks later, the colony was internally inspected and it appeared to be doing well.

Bees in new location

Much later, on a mild and sunny mid-October afternoon, I observed numerous workers coming and going in fine style. Some of the entrants were bearing loads of pollen, while a distinctive and pungent odor emanating from the hive confirmed that many others were bringing in nectar of the aster.□

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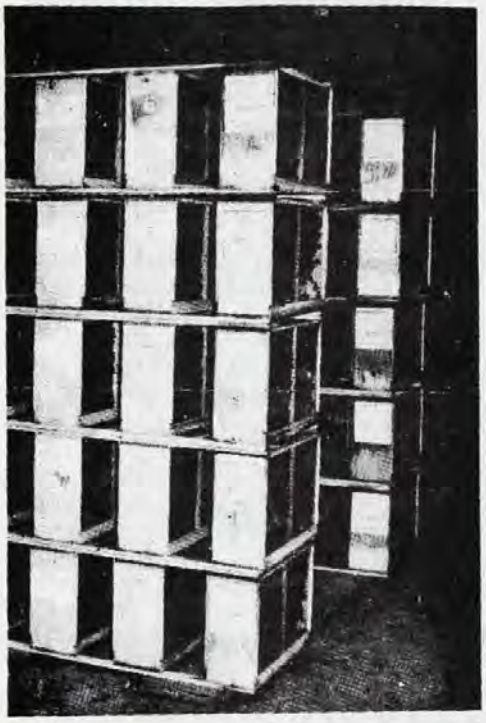

April 1984

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May 1984

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June 1984

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24	25	26	27	28	29	30

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North Dakota Sojourn — Part I

By CHARLES LESHER Route 2, Box 350 North Umberland, PA 17857

Every beekeeper would like to keep bees where every colony produces a large crop of superb honey, but I know that land is mythical.

My beekeeping started at age twelve when I was given four hives of bees to manage by my father. After high school, I worked for commercial beekeepers, A.L. Coggshall of New York, Stover Apiaries of Mississippi, and A.J. Shultz of Wisconsin. Then I spent a number of summers inspecting bees in New York State.

One topic sooner or later discussed and argued about by the veteran bee men I worked with was, where is the ideal place to keep bees. The stories told by the persons advocating the northern plains proved most convincing to me.

In the fall of 1951, I signed to take some beekeeping and entomology courses at North Dakota State Agriculture College, Fargo.[1] My instructions were Dr. J. Alex Munroe and Dr. Richard L. Post.

When I arrived in North Dakota in September, farmers were busy with their fall plowing. In some areas flax combining was still in progress. Sugar beets in great piles lay by railroad sidings. Huge stacks of flax straw, for industrial use, were stock piled on the outskirts of some towns. Those skyscrapers of the plains, grain elevators, dotted the low and far away sky line. The fall weather was mild and pleasant, with an abundance of sunshine.

The college entomology department was small. Therefore, the personnel of the department were happy to have new students help them with their research work. These students gained practical experience they would not have gotten until much later at a more affluent institution.

That fall I helped with the taking care of the college apiary, and making 70 mile trips to Northwood potato country where insect studies on potatoes were made. A chore there was to pick up and weigh the dug potatoes. Another assignment when time permitted was to cut up cornstalks to find out the extent of European corn borer infestation.

One fine fall afternoon, Dr. Munroe kindly invited me to go with him to visit some North Dakota beekeepers. This was a thrill I had been anticipating. We visited Mr. Hausmann at Mayville and Mr. Brown at Hillsboro. I listened entranced as these old timers reminisced. At one time that area of the state was the center of sweet clover seed production. They told me that in 1922 there were 40,000 acres of sweet clover in one county, Grand Forks, truly a beekeepers paradise. Then conditions changed; sweet clover, gave way to the grain crops that were more profitable. The drought of the thirties with its dust bowl conditions made the situation so bad bees could not survive, much less produce a honey crop. In a few years there was a change for the better. On other occasions I heard variations of that story from Mr. J.D. Beals and Mr. Iryan Gunter.

In his course, Dr. Post stressed insect identification. Each student was required to make an insect collection. The college collection of many hundreds of specimens was used to help us learn the orders and species of insects. I spent a great deal of time looking for camel crickets for my collection and was finally successful. Dr. Post's ability to identify and classify insects was phenomenal.

In Dr. Munroe's advanced beekeeping course, one of our assignments was to disect honey bees and make slides of their specialized appendages, and then examine them under magnification. I cannot say that this knowledge later helped me in commercial beekeeping, but I never regretted acquiring it.

One person who impressed me at North Dakota State was naturalist, Dr. O.A. Stevens, who attended our entomology seminars. Dr. Stevens had a number of bird trapping stations about the campus, and every morning except in the winter months, would walk around checking them for capture birds. Birds were then released. This seemed like an arduous task for an old man, so one morning I asked Dr. Stevens as he was on his rounds, how long he had been engaged in this daily ritual; he told me twenty years.

Stevens was professor of botany for 47 years and wrote *Handbook of North Dakota Plants* listing and describing 1,140 species. He completed a collection of more than 12,000 bees and wasps including species never before recorded. Dr. Stevens exemplified the devotion of a dedicated scientist.

In November, the mild weather of fall suddenly ended with the arrival of a blizzard, that brought snow and ice. The frigid winds swept away the curtain of the summer vegetation leaving a harsh and somber world.

For the next few months, winter held us in her grip. Sub-zero temperatures were frequent and thaws rare. The fallen snow did not melt or accumulate as it was continually shifted and dirtied by the winter gales. Catching a city bus at 20 below zero could be an adventure. Fur caps were much in evidence. One learned to keep the ears covered. Our schoolwork went on a pace, probably keeping us from being depressed by our bleak surroundings.

Finally in late March the weather moderated. The mild temperatures released the bees from their winter imprisonment and they came crowding out on their spring cleansing flights. It was a time of joy for the bees and the beekeeper.

Farm operations burst into activity. Big tractors and their machines tilled the ground at breakneck speed. Clouds of dust followed the moving impliments as the spring wheat was seeded.

Bees can be wintered in this severe climate if they are given an abundance of good quality honey, wrapped in a tar paper pack with some insulation, given a top entrance and sheltered from the prevailing winds. Dr. Farar of Wisconsin claimed that bees did not need to be packed if they were given sufficient honey. He never quite converted me to his point of view.

The beekeeper can use several methods to replace winter loss and get the number of summer colonies he wants. One method is to divide the strong overwintered colonies and give the queenless portion a queen. The surplus honey flow does not commence until July so the bees have plenty of time to build up. Some operators kill all of their bees in the fall and replace them with package bees in the spring.

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Often the two pound packages do as well as over-wintered colonies. One man I know uses one and a half pound packages successfully, installing them early. A third method is to take the colonies of bees South in the fall and in the spring, divide them into nuclei and haul them back north. Each method has its proponents.

Trees and shrubs provide the early spring sources of pollen and nectar in Dakota so it is advantageous to have apiaries near streams and shelter belts where trees abound. Some of the plants supplying early pollen or pollen and nectar are willows, wild plum, box elder, cottonwood, buffalo berry, dandelions and later, choke cherry, june berry, and mustard. The bees gather very little nectar before the 15th of May.

In the prairie country there is often a dearth of nectar after the initial spring bloom. During this period of maximum brood rearing, the bees are in danger of running out of stores. North Dakota is the only place where I have kept bees that I have seen strong colonies starve to death in June. A dead colony at this time can be an awful mess.

I remember one instance when in an emergency we fed some shimmering starving bees that last week of June. One week later, after the start of the honey flow, the same bees were rushing and crowding the lighting board occupying the supers and exhibiting a condition of prosperity and well being. But, to return to my story; Dr. Munroe was the State Entomologist. By virtue of that title, he was also chief apiary and nursery inspector. He invited me to serve as deputy bee inspector which gave me an excellent opportunity to see the beekeeping industry of the state. So, in early June, I assumed the diverse duties of a North Dakota bee inspector. A state car was assigned to me and the whole state was my territory. Apiary inspection here was different than it had been in New York. There we worked in crews and our only object was to find American Foulbrood. Here aside from bee inspection, Doctors' Post and Munroe gave me an insect net and a killing jar to aid them monitor the destructive insect situtation in the state. When I came to a potato or alfalfa field, I was urged to take sweepings to find the concentration of flea beetles, leaf hoppers, grasshoppers, etc. The European corn borer had not yet appeared in western North Dakota, and I was to look for it. This work gave me an insight into the economic impact of insects.

The same phenomena, the exploding population growth of insects under favorable conditions, which in the case of the honey bee makes possible the production of a crop of honey, can in the case of harmful insects plague the farmers.

At this time, the bees in North Dakota were far flung, from Pembina to Bowman. Beekeepers had from one colony to a commercial enterprise of a thousand colonies. Most of the apiaries were located in the Red River Valley. The Red River of the north forms the boundary between Minnesota and North Dakota. Extending 10 to 30 miles on either side of the river is a plain, table flat and garden rich, the bottom of a prehistoric lake. This is the fabulous Red River Valley.

It was here that large scale beekeeping first appearedc in the state attracted by the sweet clover bonanza. Some of the valley beekeepers of that era were Dewey Beals, Charles Engle, Wallace Manikowske, Ben Gilbertson, Irvon Gunter, Chester Elmquist Art, and Rudy Osmenson, Frank and Max Cook and Mr. Hausman.

In 1952 when I arrived on the scene, the sweet clover boom was over, although the clover was still used in the crop rotation to lighten the heavy clay soil in some areas. Most of the roadsides were profuse with it. Alfalfa fields were an important source of nectar. It was better for the beekeeper if farmers were behind with their work; that way the bees got a chance at the alfalfa while it was in bloom and before it was cut for hay. The overwhelming fragrance fo the blue alfalfa bloom is a pleasant recollection.

My first few weeks of bee inspection were spent in the valley. It was impossible for one man to inspect all of the colonies of these large outfits, but one could ascertain if there was a disease problem. I met for the first time such genial and successful beekeepers as Lavern Lenzmier, Henry Haring, Art Osmenson, Ben Gilbertson, Jake Hebrank, Alf Erickson, Charles De Messy, and Howard Cree.

West of the Red River Valley is an undulating plain dotted with pot holes, sloughs and saline lakes. These make an ideal home for ducks. North Dakota leads the nation in the number of water fowl. Here far from the ocean, seagulls are quite common. At Lake Tewaukon, there are pelicans. They look clumsy on the ground, but in flight are a magnificent sight. Salamanders from the lakes and sloughs are sometimes seen migrating at the highways in the spring.

The Missouri River flows through the western third of the state. Colorful bluffs hem in the river valley. Garrison Dam at Riverdale harnesses the river for electric power and forms Lake Sakakawea, 300 miles in length. In this arid country are the bad lands of the Little Missouri, picturesque mesas, and towering buttes.

Bee inspecting in this vast state was full of exciting surprises. Christian Olson is a person I remember. He lived with his mother on their small farm on the banks of the Wild Rice River. People were attracted to their place by a half acre of colorful, brilliantly blooming peonies, unexpected garden of beauty on the prairie. Christian had an apple orchard. His neighbors had long before given up on trying to grow fruit in this severe climate. Many farmers regarded the ground squirrel or gopher as a pest that should be eliminated; not Chris, he fed his regularly, and made pets of them. A swarm of bees had established itself in the walls of his house and lived there a number of years. Although Christian was not a beekeeper, he was happy to have them there and told me how he enjoyed watching the activity. He, also, described the noises he heard through the wall at swarming time. He was describing the zeep or piping of young queens. I was amazed that someone who did not know of this behavior was able to discern it.

At Larimore, there was a character called Doc who had a few hives of bees. Doc was the local animal doctor who (I believe) got his title by aptitude rather than degree. Doc insisted on showing me the animal freaks he had collected and stuffed over a life time. I was appalled by their ugliness, not pleasant but memorable.

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6. USDA Crop Reports, Honey and beeswax production 1943-1982.

7. USDA Statistical Reporting Service. North Dakota sunflower growing North Dakota Crop and Livestock Reporting Service 1982.

North Dakota Sojourn continues next month in Gleanings.

NEWS AND EVENTS

Tri-County Beekeepers Association

The Tri-County Beekeeper's Association will hold its sixth annual Beekeeping Workshop Saturday, March 10th from 9:00 a.m. to 4:00 p.m. at Fisher Auditorium, Wooster, Ohio.

Registration for the workshop will begin at 9:00 a.m. with the introduction at 9:30 a.m. Several topics are planned to be of interest to everyone. This years workshop could be called "Choices" as in the afternoon there will be five different subject areas scheduled to be running concurrently. The topics to be covered are: Basic Beginning Beekeeping, Maniupulation and Package Bees, The Bee Calendar, Honey Judging, Varroa Mite and Diseases, Making Bee Equipment, Hives Around the World, Marketing Honey, Beeswax and its Uses, A Tour of the Agricultural Technical Institutes' Beekeeping Facility, and Bee Anatomy.

The cost of the workshop is $4.00 without lunch. Arrangements are being made to have lunch available.

For registration and further information please contact James Kinney, 1560 Woodcrest Drive, Wooster, Ohio 44691. Phone: (216) 264-8369.

E.A.S.

One of the true highlights of the 30th Annual Eastern Apicultural Society's Conference will be a visit to Newport, "The City by the Sea". The Conference to be held at the University of Rhode Island August 8-11, 1984, will hold its annual Banquet and Award Presentation at the Sheraton Islander, located on Goat Island in the City of Newport.

A fleet of buses will transport the expected 700 guests across two bridges which "bridge" Narragansett Bay, linking Newport and Middletown on the East, with North and South Kingstown on the West.

The initial stop will be at the most magnificant of all Newport summer residences "The Breakers". The EAS-84 Committee has made special arrangements for a series of small, informal later afternoon guided tours of the Cornelius Vanderbilts summer home complete with children's cottage.

The Breakers, a palace in renaissance style, is one of the most ornate houses on the continent. It sits on 11 acres overlooking the Atlantic Ocean and historic Cliff Walk.

The mansion is overpowering: a majestic conglomeration of lime stone and marble from around the world is blended with wrough iron, massive chandeliers, alabaster, silver, crystal, tapestries, stained glass, gilt, ornate fireplaces and tooled and gilded wallpaper.

Guests who do not wish to walk the waterfront, or shop at the Brick Market Place, will be able to take buses directly to the Sheraton Islander. A cash bar will precede the banquet itself which is scheduled to commence at 7:30 p.m. To accomodate those who may wish to linger on following the evening's festivities a "late" bus will operate between the Sheraton and the University until midnight.

The Breakers and the evening festivities at the Sheraton Island represent highlights of the Conference. Though magnificant, they represent but a small part of what is available to the serious tourister who may wish to linger for an extra day. In addition to the Breakers six other mansions are also maintained for the enjoyment of the public by the Newport Historical Society. In addition, others such as Hammersmith Farm, the home of Jacquelyn Kennedy and the summer White House (1961-63), the White Horse Tavern, the oldest tavern in America, Toura Synagogue built in 1763 and the oldest Synagogue in America, the National Tennis Hall of Fame, along with the topsail schooner "Bill of Rights", a windjammer which provides sailing cruises from Newport, are available to the public.

Those wishing to be placed on the mailing list for information pertaining to the 1984 Conference should send their name and address to:

EAS-84 Committee
107 Chatworth Rd.
North Kingstown, RI 02852

Oklahoma's Beekeeper of the Year

The Oklahoma Beekeepers Association met for the annual Fall meeting on October 1, 1983 at Oklahoma city, Oklahoma. Many interesting topics were discussed and there was a very nice covered dish Luncheon. One of the major activities at the Fall meeting is the awarding of the Albert Lincoln-Beekeeper of the Year award.

Oklahoma has many outstanding beekeepers so the choice was not easy. However, after much deliberation there was one beekeeper who has worked not only for the beekeeping and honey industry, but also for the good of beekeepers. It could only be Glen Gibson.

Glen was born in Harmon County Oklahoma in 1917 and grew up at Bethel, in southwest Harmon County. After high school he went to business school in Oklahoma City. To help with expenses he took a part-time job with the Cloverbloom Honey Co.

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Glen was married in 1937 to Miss Kay Manley, and in 1939 he bought into the company. In 1941 the company bought bees for their own honey production. In 1945 he and Kay bought the business and moved to Minco, Oklahoma the same year.

Glen served three terms as President of the American Beekeepers Federation and three years as Secretary. He organized the Honey Industry Council in 1953. At the Portland, Oregon meeting of beekeepers in 1969 a division arose among the beekeepers present. From this division the American Honey Producers was formed. Glen was elected Secretary-Treasurer of the Honey Producers and is the only Secretary-Treasurer this organization has ever had.

His main work for the American Honey Producers is in Washington D.C., working for beekeepers. His company is now known as the Glen Gibson Honey Co. but still technically carries the Cloverbloom name.

Glen and Kay had one daughter who is married to Mr. Jim Ross. Jim is the very able manager of the company. He and Glenda and their family live at Minco, Oklahoma.

The beekeepers of the Oklahoma Beekeepers Association are very proud of their Beekeeper of the Year and grateful for his hard work in their behalf.

Sacramento Area Beekeepers Association

Workshop In Practical Beekeeping
April 7 and 8, 1984
American River College
Sacramento, California

The Sacramento Area Beekeepers Association will sponsor a two day workshop April 7 and 8, with an emphasis on practical aspects of beekeeping featuring Dr. Norman Gary. The workshop will be held from 9:00 a.m. to 5:00 p.m. at American River College, Sacremento, California.

Dr. Gary is a Professor of Entomology at the University of California, at Davis, and a nationally known bee expert. A noted bee researcher, he is also known as a lecturer, as a technical consultant for the movies and television as well as being an award winning film producer in his own right.

Cost for the two day workshop is $50.00 and Certificates of Beekeeping Instruction will be awarded to participants.

Topics to be discussed Saturday, April 7, will be: role of the honeybee in agriculture, biology of queens, drones and workers, body structure and functions, hive activities of the worker; behaviors, honey processing and storage; basic bee behavior and factors that control it; and field demonstrations.

Sunday topics (April 8) will include seasonal hive management, hive manipulation techniques — especially sting prevention, and special problems like swarm control, disease and pest control, qaueen rearing, requeening, beginning new colonies, harvesting honey, and prevention of robbing.

Generous question and answer periods will allow Dr. Gary to accomodate a wide range of beekeeper experiences. Workshop aids will include 16 mm films, color slides, selected diseased and/or pest ridden combs and field demonstrations (participants must bring their own protective clothing for the field demos.)

Pre-registration is required since the class is limited in size. For information or registration forms contact Chuck Ahlstrom 6809 Blue Duck, Sacramento, CA 95842 (916) 334 1473

Maine

The annual spring meeting of the Maine State Beekeepers Association, on March 31 at New Meadows Inn in Bath, features a varied bill of fare—beauty, truth, and wisdom. A slide show on bee botany and some words from the Maine Honey Queen, Bonnie Lefebvre, cover the lighter side. A talk on bee disease by Anthony Jadczak, Maine's new state apiculturist, brings home an important message. And by way of inspiring its members, invited guest speaker Larry Connor has some sage advice on the advantages of home queen-rearing and bee stocks. All in all, everyone should be the wiser for it.

Dr. Kauffeld, Retires

Dr. Norbert M. Kauffelt Retires from USDA-ARS, Carl Hayden Bee Research Center, Honey Bee Crop Pollination Research Unit.

After 17 years of service with the USDA, Agricultural Research Service as Research Entomologist-Apiculturist, Dr. N. M. Kauffeld retired December 31, 1983.

Dr. Kauffeld, the son of Lutheran Missionaries, was born and raised in India and became involved in beekeeping with *Apis cerana* and *A. mellifera* at an early age. Dr. Kauffeld received his undergraduate and graduate education at Kansas State University, majoring in Entomology and Apiculture. Before working toward his Ph.D, he was involved with farming in Kansas and was a high school biology teacher there. While working as the State Apiarist (3 years) for Kansas, Dr. Kauffeld earned his Ph.D. degree from Kansas State University and went on to do research on bee culture and honey bee pollination behavior, principally on alfalfa and cucumbers. He is the author (or co-author) of 29 scientific publications based on his research at Kansas State University, the USDA Bee Culture Lab at Madison, Wisconsin (1966-67), Bee Breeding Lab and Stock Center at Baton Rouge, Louisianna (1967-74) and as a member of the Crop Pollination Research Center of the Tucson Lab (1973-83).

Dr. Kauffeld has made a good recovery from a heart attack suffered on December 1, 1983 and plans to retire in the Tucson, Arizona area.

California

Naval Weapons Station, Fallbrook Annex, Seal Beach, California
Department of the Navy

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Advertisement for Bids to Lease Government Land For Apiary (Beekeeping) Purposes

The Department of the Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California, proposes to issue an Invitation to Bid for lease of Government-owned land at the Naval Weapons Station, Fallbrook Annex, Seal Beach, California, for a five-year term for Apiary (beekeeping) purposes. The area contains approximately one acre (four one-quarter acre sites).

A bid package containg Information to Bidders, maps and a bid document may be obtained by writing to the Director, Real Estate Division, (Code 24), Building 201, Western Division, Naval Facilities Engineering Command, P.O. Box 727, San Bruno, California 94006 or by calling Sunny Drennan at (415) 877-7633.

Sealed bids will be received in the office of the Director, Real Estate Division, not later than 11:00 a.m., Local Time, on March 15, 1984.

Kansas

Kansas Honey Producers To Meet In Wichita March 30-31, 1984

The Wichita Zoo Meeting Room located in northwest Wichita just west of the Interstate 235 and Zoo Boulevard Interchange will be the site of the Spring Meeting of the Kansas Honey Producers Association March 30-31, 1984. Registration will begin at 8:30 a.m. each day. An informative program for both the hobby and commercial beekeeper is being planned. Further information may be obtained from First Vice-President and Program Chairman Verl Stevens, RFD 2, Pratt, Kansas 67124, Telephone 1-316-672-5266.

Delaware

Honey Bee Disease Talk To Be Featured

Mr. Jim Steinhauer, the Pennsylvania Department of Agriculture's Supervisor of Bee Culture, will be the featured speaker at the Thursday, March 29, 1984 bee meeting. The meeting will begin at 8:00 p.m. and it is being sponsored by the Bucks County Pennsylvania Beekeepers Association, the Delaware Valley College Apiary Society, and Delaware Valley College. The meeting will be held in the Mandell Hall Auditorium on the Delaware Valley College's main campus located on Route 202, one mile west of Doylestown, Pennsylvania.

Mr. Steinhauer, who is in charge of the Pennsylvania Department of Agriculture's honey bee diseases that can pose a threat to honey bees in Pennsylvania. The meeting is open to the public; anyone interested is cordially invited to attend. There is no admission fee.

Starting on the following Saturday, March 31, 1984 and continuing on Saturday, April 7, and Saturday, April 14, 1984, Delaware Valley College will be presenting its annual Spring Beekeeping Short Course. The three day short course is designed to benefit not only the established beekeeper but also those who think that they might be interested in keeping bees. Additional information about the course may be obtained by writing Dr. Berthold, Delaware Valley College, Doylestown, PA 18901.

Massachusetts Governor Presents "Best In Show Award"

Governor Michael Dukakis presents "Best in Show" to Roland Jerry for his comb honey section entry while Donna Liamis assists. The presentation was made at the Massachusetts Honey Show held yearly at the Eastern States Exposition sponsored by the Hampden County Beekeepers' Association.

Roland is a hobbyists beekeeper living in Springfield, Massachusetts and has been keeping bees for the past two years. He maintains his hives right at home and has become very involved in preparing honey for show. He took some first and second places at the Franklin County Fiar held in Greenfield Massachusetts as well as awards from the Mass. Federation of Beekeepers' Association honey show.

Southern Minnesota Beekeepers Schedule

The Southern Minnesota Beekeepers schedule for 1984 is as follows:

Spring meeting, March 25 at Winnebago, Verl McCalls and Harry Stewards hosts.

Summer meeting, June 24 at LaSale, Richard Tatmans hosts.

Fall meeting, November 4 at Kasota, Dale Swensons and Rose Swenson hosts.

Officer for 1984 are: Vera Tatman, President; Dale Swenson, Vice President; and Gary Honl, Secretary/Treasurer.

Indiana

The Indiana State Beekeepers Association has planned a Beginners Beekeeping Workshop on March 17, 1984. It will be held at the State Museum from 9 a.m. until 4 p.m. The Museum has provided room for exhibits. These can be set up just for the workshop or they can be left up for display for one week.

If you are interested in having an exhibit at this workshop please contact Rm. 613 State Office Bldg. Indianapolis.

Florida Strawberry Festival

The forthcoming Hillsborough County Fair and Strawberry Festival will have its usual fling in Plant City, Florida, from March 1, 1984 through March 10. The Tampa Bay Beekeeper's Association will be vying for an award for their booth in using the theme "Climb Aboard the Strawberry Express."

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The Tampa Bay Beekeeper's are currently in throngs of preparation for the festival, bottling honey, getting cookbooks ready and, most of all, preparing their display. This year the Beekeepers have added helium-filled balloons as an added give-away to attract people to the booth so that the knowledge of beekeeping and honey can be expressed.

The cold and rainy weather of this past winter has not detered the beekeepers from what must be done and a special invitation goes out from all of us here in this part of Florida to all of you to climb aboard the Honey Express and have a wonderful time at this year's festival and a super-sticky day at the Beekeeper's booth where the knowledge of the honey bee gains full momentum with the appearance of reigning honey queens visiting the area, especially Beth Cullen, of Tampa Bay Beekeeper's Association; Crystal Jones, of the Florida State Beekeeper's Association, and Carol Tschida of the American Beekeeper's Association, all Florida girls. Also, there will be the Busy Buzzer's 4-Club telling the story of beekeeping through the eyes of children.

Delaware

The annual meeting of the Delaware Beekeepers Association will be held on Saturday, March 24, 1984 at the Delaware State College Auditorium, *Economics & Business Administration Building (first building on left). The State College is located just north of Dover on U.S. Highway 13. *A change in location from 1983.

The program includes:

Report by Mike Brown, State Apiarist

Jacob "Jack" Matthenius, Bees, Beekeeping & Apiary Inspection.

Dr. Dewey Caron, Pollination & The Beekeepers

Dr. Jerry Groll, Allergic Reactions to Bee Stings.

New York
Miner Institute

On Saturday, April 28th, 1984 from 9:00 a.m. until 3:30 p.m. The William H. Miner Agricultural Research Institute in cooperation with the Pennsylvania State University will be presenting a Beekeeping Seminar. Guest speaker will be Dr. Clarence Collison from Pennsylvania State University. Topics will appear at a later date.

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Kansas

Kansas Honey Producers To meet in Wichita March 30th and 31st

The meeting room of the Wichita Zoon located two miles north of the Mid-Continent Airport and west of I-235 at Zoo Boulevard, will be the scene of the 1984 Spring Meeting of the Kansas Honey Producers Association. Registration will begin at 9 a.m. on Friday, March 30, with the business meeting convening at 10 a.m. Cameron Roatch will discuss, "The Packer's Side Of Import Honey", and Glenn Gibson of The American Honey Producers Association will discuss, "The Washington Scene And The Honey Producer". Congresional delegates or their representatives have been invited to join in on the discussions of current issues. In the evening the Kansas Honey Queen Contest will be held.

Saturday's activities begin with Registration at 8:30 a.m. March 31 and include presentations on, "The Trials of Getting Started In Beekeeping", by Ken Embers and, "Spring Bee Management", by State Apiarist Gary Ross. The traditional auction for the Honey Queeen Fund will be followed by a field trip to the State Apiary under the leadership of Gary Ross. Bring your veil for the field trip!

The Kansas Honey Producers Association invites everyone fron Kansas and the surrounding states to attend their Spring Meeting.

Further information may be obtained by contacting First Vice-President and Program Chairman Verl Stevens, RFD 2, Country Club Road, Pratt, Kansas 67124, Telephone 1-316-672-5266.

West Virginia

Spring Meeting

The Spring Meeting of the West Virginia Beekeepers Association will be held March 17, 1984 at the Augusta Fire Hall in Augusta, West Virginia in Hampshire County. The program which will cover a range of subjects interesting to beekeepers, will run from 9:30 a.m. to 3:30 p.m. Luncheon will be available.

For further information contact Ruth Cahn, Secy.-Treas., Hampshire County Beekeepers Association, High View, West Virginia 26808. Telephone (304) 856-2747.

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Answers to Testing Your Beekeeping Knowledge

1. False The worker's honey stomach is a temporary storage organ that is used for transporting water, nectar, and honey. Digestion and absorption of food occurs in the true stomach (ventriculus) and intestine.

2. True Virgin queens normally leave the hive in the afternoon and mate with 7 to 15 drones.

3. True Sugar-tolerant yeasts occur naturally in honey and if they are not killed by heat, they can cause fermentation when moisture levels exceed 17.0%. As honey crystallizes, dextrose (glucose) separates from the liquid phase and crystals while the remaining sugars remain in solution. As crystallization proceeds, there is an increase in the moisture content of the liquid phase, thus producing a favorable medium for fermentation.

4. False Levulose (fructose) and dextrose (glucose) are the two predominant sugars in honey. In most honey, levulose predominates. Most of the sucrose found in nectar is converted into levulose and dextrose by the enzyme invertase during the ripening process.

5. True Swarming is a very complex behavior that is not fully understood. Many recognizable factors contribute to the impulse, however, congestion in the brood area is believed to be the primary cause.

6. D

7. D

8. a. 3

b. 2

c. 4

d. 6

e. 1

f. 5

10. Benzaldehyde or oil of almond is a chemical repellent that is used to drive bees from honey supers as they are being removed from the colony.

Terramycin® [oxytetracycline HCL] is the only drug approved for use as a preventative treatment against American foulbrood and European foulbrood.

Certan™ is a biological insecticide specifically developed for controlling wax moth. Its action is based on a naturally occurring organism, the bacterium *Bacillus thuringiensis*. When Certan is eaten by the wax moth larva, the bacterium damages the digestive tract, causes feeding to stop, and results in death.

Fumagillin is an antibiotic that is effective in suppressing nosema disease in overwintered colonies and newly established packages. It is sold under the trade names of Fumidil-B® and Nosem-X™

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

Number of points correct	
20-18	excellent
17-15	good
14-15	fair

GEORGIA BEEKEEPERS' WORKSHOP

The Georgia Beekeepers' Association winter workshop is set for March 10 at the Days Inn, Atlanta Airport, Riverdale Road exit off Interstate 85 South. Meeting begins at 8 am and concludes midafternoon. Featured speaker: Dr. Larry Connor of Beekeepin Education Service. Dr. Connor and other speakers will address the situation of the beekeeper who wants to outgrow the hobbyist level and realize some income from beekeeping. More information: Cecil Sheppard, (404) 491-3734.

EMPLOYMENT NEEDED

Recently lost job in employment cut-back. 4 years in US Marine Corp; 6 years ILL. Central Gulf Railroad"; Assoc. degree Liberal Arts; 3 yrs. experience with bees (14 colonies). Job information will be appreciated! Michael Burk, 1019 W. Hill, Champaign, ILL 61821. Ph. 217-359-0085.

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Classified rates: 49 cents per word, each insertion, payable in cash in advance. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it) count as one word. Not less than 10 words accepted. Copy or cancellation orders MUST be in by the 1st of the month preceding publication. Send classified ads to the A.I. Root Company, Advertising Dept., GLEANINGS IN BEE CULTURE, Box 706, Medina, Ohio 44258-0706 **Note: BLIND ADS: Any ad sent in that does not contain the seller's Name and Address within the ad, will be charged an additional $6.50 per month.**

MAGAZINES

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

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

The INTERNATIONAL BEE RESEARCH ASSOCIATION urgently needs your membership and support to continue its work of publishing informatin on bees, beekeeping and hive products. Write for details about publications and the benefits of membership to USA Representative, H. Kolb, P.O. Box 183, 737 West Main, Edmond, OK 73034 (phone (405) 341-0984); or to IBRA, Hill House, Gerrards Cross, Bucks SL9 ONR, UK, regularly publishes new information on bees, beekeeping, and hive products, for beekeepers and scientists all over the world. Mail inquiries from USA: H. Kolb, P.O. Box 183,, 737 West Main, Edmond, OK 73034, Phone: (405) 314-0984. IBRA PUBLISHES: **Bee World,** a quarterly journal for the progressive beekeeper. **Apicultural Abstracts,** a survey of scientific literature from all languages. **Journal of Apiculture Research,** for original bee research papers. Books and pamphlets on all beekeeping topics. Catalogues of publications and details of journals and membership $1. Specimen copies of **Bee World**; **Journal of Apicultural Research** or **Apicultural Abstracts** from INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks. SL9 ONR. England. TF

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

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

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

BEE CRAFT — Official (monthly) magazine of the British Beekeepers Association. Contains interesting and informative articles. Annual Subscription (Sterling cheque 2.22 p or U.S. $6.) Post paid. The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex, RH10 3DS TF

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

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

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WANTED—All varieties bee gathered pollen. Must be clean and dry. Pollen traps available. Hubbard Apiaries, Onsted, Mich. 49265. Phone: 517-467-2151. TF

WANTED — Old Beekeeping Books and Bee Journals. James Johnson, 107 State Ave., Terra Alta, W.V. 26764. TF

Wanted: Hardworking Full-time professional queen breeder. Must have many years experience in all phases of queen production as well as other general apiary work. South Atlantic state location. Salary negotiable. Contact: Huck Babcock, P.O. Box 2685, West Columbia, SC 29171. Phone: 803-256-2046.TF

Wanted: Young beekeeper would like employment in apiculture, willing to relocate and has desire to succeed. Send brief letter of inquiry to: T. McAlicher, P.O. Box 1287, Frederick, Md. 21701. All reponse will be answered promptly with references. 3/84

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Nucs 4-frame Golden Italian stock $25.00 each or 3 for $100. Queens $5.00 each. All postpaid. Small orders only. 194 Cooper-Hurst Rd., Pearl, MS 39208. Phone: 601-939-5994. 5/84

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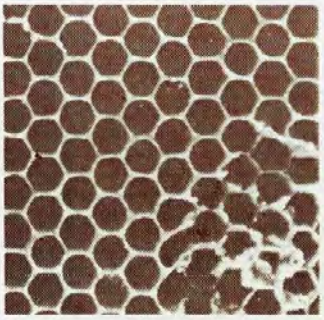

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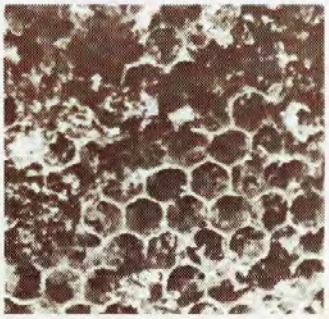

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