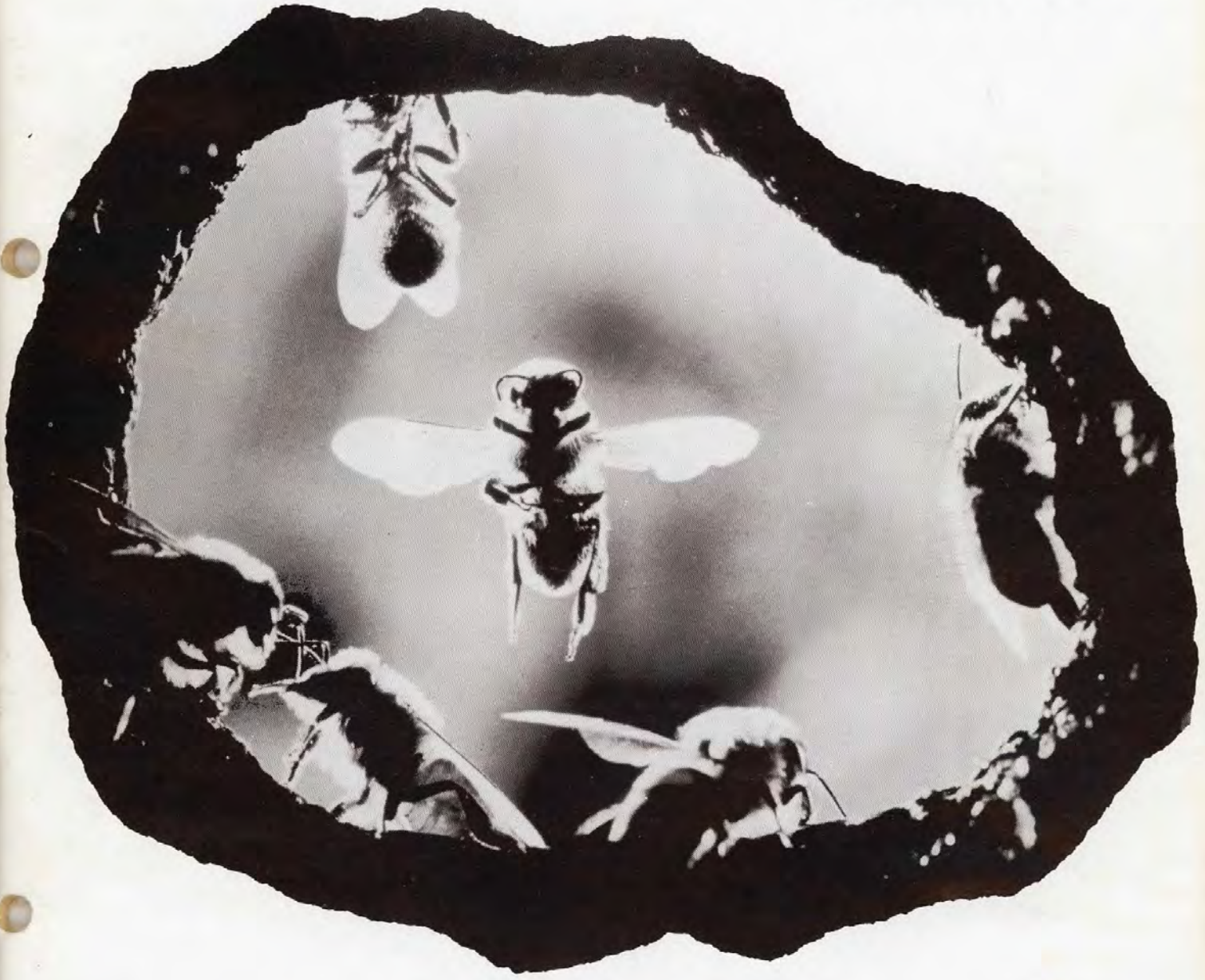
GLEANINGS IN BEE CULTURE

JUNE 1985



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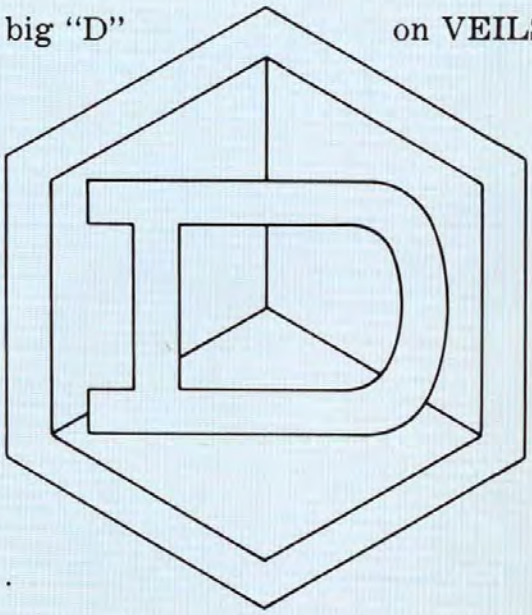

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GLEANINGS IN BEE CULTURE

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THE WORLD'S
MOST POPULAR ENGLISH LANGUAGE BEE JOURNAL!

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Cover Story

A unique perspective of bees working the inside of a natural cavity. Many of you have asked about our full color cover on the May issue. We forgot to credit that very attractive design to our own Pat Krueger.

Options in Beekeeping

by JIM THOMPSON 8227 Eby Road Smithville, OH 44677

Over the past fourteen years that I have been keeping bees I have learned that a beekeeper should develop a system in keeping bees that is simple and efficient. I like to experiment with new equipment and thus the "system" doesn't work in my situation because of my collection of odd, different, and antique equipment in use.

In the eighteen hundred's, lumber was rough cut and planed so the finished lumber was $^{7}/_{8}$" of an inch in thickness and was much wider in width than we have today. A person making beehives could take four boards and cut them to length and cut a dado for the frame rest, nail them together, using a butt joint, and have a hive. The great question came as to the best size of the hive and thus the multitude of different shapes and sizes. Lumber was then reduced in thickness and became less than ¾ of an inch. due to the spacing of the comb and the original lumber size the top bar of the frame remained at $^{7}/_{8}$ of an inch. The bee space had to be observed and so the "standard 10-frame" hive remained the same width but became shorter.

We also had an eight frame hive that was standard for some time. It was developed to reduce the weight of the hive, as the original Langstroth hive is very heavy.

During the twenties, a popular size hive was the "Jumbo or Dadant Improved" which was very deep. Only one brood chamber needed for the bees to overwinter and the honey surplus was collected in $6^{5}/_{8}$" inch supers. Because the $6^{5}/_{8}$" inch supers were deep enough to allow the queen to lay eggs, queen excluders were used. Also there was a tendency for the queen to rise into the honey super during the spring and summer. If you have a jumbo hive, you will find that the frames will fit pefectly in two shallow hive bodies when they are stacked together. Thereby option 1: Purchase only shallow hive bodies and use two for the brood chamber and then others for surplus honey. The disadvantage of this sytem is that jumbo frames and foundation are difficult to purchase.

A beekeeper should purchase only one or two sizes of equipment. A common problem of purchasing many different sizes is that you must be careful not to install the wrong size frame in the super as you will end up with burr comb under the frame. On the market today there are four common sizes of hive bodies: Full Dept — $9^{5}/_{8}$", Illinois Depth $6^{5}/_{8}$", Shallow Depth $5^{11}/_{16}$", and the Comb Honey Super or Half Depth $4^{9}/_{16}$" to $4^{7}/_{8}$" (depending upon the manufacturer). It makes it very difficult for one to buy the correct frames and foundations as the companies advertise so many sizes and styles. Add to this the confusion of a beginner has because of inexperience. The beginner needs to be told what to purchase.

If the individual looks like Goliath, the salesman might try to sell him on the idea of using only full depth supers for brood and honey and thereby having only one size frame. This option has merits, but as soon as one tries to harvest a full super of honey and ends up at the chiropractor, he decides that there must be a better way.

Along the same line, is option No. 3, the use of Illinois depth supers. This makes the harvesting of honey better by reducing the weight of the supers but it requires three supers for the brood chamber and sometimes the queen gets mixed up and keeps on going up and up. I feel that these supers are still too heavy when they are full of honey. However, there is another good point to this type of system and that is the extra space provided for the bees to move (over the top bars) during winter to allow more warmth in the cluster.

It seems that the suppiers of bee equipment push the sale of the Illinois depth and shallow honey supers under the idea that this is the way to obtain more honey and you need prewired or plastic foundation so you may have years of service when extracting your honey.

We didn't always have the radial extractors, power uncappers, settling tanks, sumps, honey pumps, etc. There was a time when the beekeepers harvested and sold section honey. What happened? Beekeepers went into the extracted honey business and took all of their comb honey supers and added a small strip of wood to the bottom so they could use the shallow supers frames.

Option four, this option makes the most sense but is not often used. You use two full depth supers for the brood. You can reverse the supers when needed, or remove one in the spring and clean it up and place it back on the hive and by using the comb honey super or half depth super for surplus. The queen dislikes to lay eggs in this size of super so excluders are rarely used, also, if one reverses the brood supers to keep the queen in the lower chamber, there is no need for the excluder. The honey super is manageable when it is full of honey. The bees fill up the supers faster due to less capacity thus these supers are excellent for short or weak honey flows. If there is a major honey flow, more supers may be added. The honey supers may be rearranged easily for curing. If one needs a full depth super, two comb honey supers may be put together and the full depth frame used. If you have a basket extractor, two half depth frames fit into one basket. Finally, you have the option of producing square section honey, round section honey, extracting frames or frames of comb honey.

A beekeeper has many options as to how to keep the bees but quite often the half depth super is overlooked.□

Interview with Steve Taber

by JAMES E. TEW
The Agricultural Technical Institute Ohio State University, Wooster, OH
and
TOM ROSS Ross Rounds Massillon, OH

Stever Taber started beekeeping in 1941. He worked for 30 years with USDA and retired in 1979. He enjoyed the work with USDA but wanted the freedom to work on his own. He now owns a queen production operation in Vacaville, California.

Tew: Steve, I've heard you say that frames containing larvae to be grafted can be held in a refrigerator until the grafting procedure is at hand (24 hrs.)

Taber: You both have refrigerators don't you? Try it. Some of the sealed brood will die while in the refrigerator. The thought has occured to me that this stuff we call chilled brood is not chilled at all, but rather dehydrated brood — neglected brood. In the literature, M.V. Smith was working on a technique to import larvae to the U.S. from England. He worked on a portable incubator. Before that he was working on growing 12 hour old larvae in incubators and then producing queens from them for his Ph.D. I think it was called "biological testing of royal jelly" (about 1950). He found that royal jelly had to be a specific moisture content. About that time I started working on eggs — moving them and so forth. I was putting them in saline solution, holding them in the refrigerator for four or five days. When I plated these back out, they would hatch nicely. I could raise them into queens. Smith and I started working on sending eggs and larvae back and forth from Guelph to Baton Rouge. I was interested in keeping them cold. Smith wanted to keep them warm. The transportation time was 24 hours sometimes more. I was shipping eggs and 12 hour old larvae on ice. Smith took larvae and placed them in the incubator for 24 hours before giving them to the bees. He called this an adjustment period. I don't think it would have hurt to have given the brood straight to the bees. I became more and more convinced that cold was no enemy to developing bees. Dehydration was.

Tew: Cold is no enemy to eggs and larvae but it is to some pupae — right?

Taber: I think so. No one has really done any work in this area. I wish they would. Exactly what is "neglected brood"? I don't think we really know. Cameron Jay determined that after larvae had finished growing that pupae stage needed about 60% humidity. The humidity in the hive goes through different stages. I don't know for sure but I think the reason these pupae die is because the humidity is too high. The older a bee gets in its development, the less humidity it wants. Jay raised a lot of questions about this process.

Tew: So if I wanted to graft from a distant yard, I can do the regrigerator and then graft those cold larvae into cups the next morning?

Taber: Try it and see.

Tew: This whole business in interesting. I've gone to extremes to keep my grafting larvae warm.

Taber: If larvae and eggs are exposed to sun for very long — even for a short time — they will die. They can't take the ultraviolet light (2-3 minutes).

Ross: If an embryo of an animal can be frozen, why can't a larvae or egg?

Taber: Well, I've messed around with this for years and years. At the same time I was trying to preserve bee semen. I've just had more luck with bee semen.

Getting back to the grafting procedure. I insist that people who graft for me see that the grafting house stays as cool as possible. When the frames to be grafted are moved from the breeder queens, they are wrapped in a wet towel regardless of whether it's raining or not. They are kept that way until they are finished. As soon as a bar is grafted, it's covered with a wet towel. If they have to sit around for a while, the grafted cells are placed in the refrigerator with the towel on top. We don't prime or double graft. If the larvae are kept warm, they'll run out of food.

Tew: Cool to 45 degrees or so?

Taber: Sure, 35 degrees is better. You can hold them for 48 hours or so.

Tew: A local beekeeper asked me to ask you what instrumental insemination can do for him with 10 colonies of bees.

Taber: I don't think he can use it directly.

Tew: How can he use it indirectly? By purchasing queens from someone who does instrumental insemination? Can you see any immediate advantage to a beekeeper with a small number of hives? Will it be at advanced levels where he buys the daughters of A-1 queens?

Taber: All of those are correct. He should buy the queens unless he just wants to do the instrumental insemination work. It would greatly help if beekeepers had some training in genetics.

Tew: You've been quoted as saying that the African bees wouldn't be a problem for you. Can you comment on that?

Taber: That's right. The daughters that are not contaminated with Africanized drones are the ones that I will select drones from.

Tew: What do you think the Africanized bee will do to the industry in the U.S.?

Taber: There are several problems here. Politics is one of them. I've got a lot of bee experience. Not too many people can go back as far as I can. I had some of the first Africanized bees in Louisiana.

Continued on next page

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Tew: How many queens did you bring in, I forget?

Taber: We only introduced semen. We did the insemination work over a number of years. We wrote an article about this after a while. Those bees had nothing special about them. I don't think there's anything special about them today.

Ross: Weren't they more aggressive?

Taber: To begin with, you've got to go back to the German Black Bee I used to work with in South Carolina. You can read about the way they behave in the *"ABC and XYZ of Bee Culture"*. They run. They don't stay on the combs. You can't find the queen. After you've been experimenting with them for a bit, they're all underneath the bottom board. The behavioral characteristics of the Africanized bee in Africa and the bee that I worked in Columbia, South Carolina, are just like this. They're nasty little bees. The man I visited in South Africa is Mr. Anderson. He's the only queen breeder in all of South Africa. He's reported to me that he's already been able to change the temperment of this bee in just a few generations by selecting a more gentle bee. All I'm trying to say is that the Africanized bee has had no selection pressure on it from breeders. What most people don't realize is that beekeeping in the U.S and Canada is different from beekeeping anywhere else in the world. No other country requeens their colonies as often as we do here. Most people in other countries let the bees requeen their own hives most of the time. They don't manage their hives the same way as we do here. The New Zealanders and the Australians come close. There is no queen rearing industry in Western Europe as there is in Georgia or Texas. Sure, there's a few guys producing queens in Europe — 50 or so. You probably produce more queens in Ohio than they do in all of Germany. The point is by requeening our colonies frequently, we get genetic stock from all over the U.S. No one else does this. This is one reason we're not going to have problems with the Africanized bee.

Tew: So when the Africanized bee gets here, you say that we can manipulate them genetically and change their temperment.

Taber: Yes.

Tew: How did the bees in Louisiana compare with the bees you had in Columbus, South Carolina?

Taber: I only had them for a few years and I just thought they were nasty little bees, like the German black bees in South Carolina. They were so similar I could barely tell them apart. Nasty little bees.

Tew: Aggressive, skittish or both?

Taber: Just nasty! Just not nice bees. Who wants bees that as soon as you open the hive they start running everywhere. Running out of the entrance like a bunch of dumb sheep.

Tew: What do you think is the biggest problem facing beekeepers today?

Taber: The biggest problem today is the slow down or lack of basic information about bees. Up until about 1915 or 1920 more information was known about bees than all the rest of the insects in the world put together. Now there are a host of other insects of which a great deal more is known than we know about bees. Some of these insects are the bollweevil, the screw worm, fruit fly and house fly. The reason for this is that in the last 40 years a tremendous research effort has gone into getting information about these insects and many others. There is also a decline in research about bees in comparison. As an example, problems facing beekeepers for which very little research has been done are honey production, honey production methods, queen introduction and queen rearing.

Tew: In your line of work, I'm surprised that you have queen rearing on that list.

Taber: Well, you see we know that if we follow a certain series of manipulations we can raise some good queens, mediocre queens and poor queens, but research on queen rearing shows there has been very little work done on the best queen production method. Dr. Christine Peng at the University of California, Davis, has done some of her Ph.D work under Dr. Cam Jay and years ago Roger Hoopingarner had a queen rearing method comparison for his Ph.D. which was never published.

Tew: How about the other weak areas you referred to, can you comment on those?

Taber: On this honey production thing, there has been some research done at Ohio State University, under Dr. Walter Rothenbuhler on hoarding behavior. But to my mind there has not been a real good correlation shown between hoarding behavior in caged bees and honey production. Dr. Tom Rinderer in Baton Rouge is trying to correlate the odor of empty comb with honey production. For beekeepers who are primarily interested in honey production, you would think there would be a great deal more research done on the subject. On queen introduction, Dr. Szabo in Alberta is the only one I know who has done any research at all.

The Monthly Honey Report

May 10, 1985

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	45.00	42.00	52.00	34.50	42.00	40.00	36.00	41.00	42.50
60 lbs. (per can) Amber	40.00	40.00	42.00	32.40	33.00	35.00	30.00	35.50	37.80
55 gal. drum (per lb.) White	.52	.55	.52	.59	.64	.60	.60	.68	.58
55 gal. drum (per lb.) Amber		.52	.42	.54	.53	.52	.50	.59	.54
Case lots — Wholesale									
1 lb. jar (case of 24)	30.50	24.00	23.75	20.40	25.00	24.00	24.00	20.40	25.20
2 lb. jar (case of 12)	32.50	23.40	22.75	20.16	26.20	22.50	26.00	19.20	
5 lb. jar (case of 6)	31.00	27.00	23.95	24.90	28.50	24.00	30.00	22.50	24.60
Retail Honey Prices									
½ lb.	1.00	.90	.75	.99	.90	.90	1.00	.95	.89
12 oz. Squeeze Bottle	1.50	1.25	1.29	1.09	1.25	1.35	1.50	1.29	1.19
1 lb.	1.50	1.40	1.35	1.19	1.50	1.55	2.00	1.69	1.40
2 lb.	2.70	2.60	2.45	2.50	2.50	2.60	3.00	3.59	
2½ lb.	3.75				3.55	3.25	3.50	3.29	
3 lb.	4.00	3.75	3.15	3.44	4.60	3.85	4.00	3.59	3.40
4 lb.	5.00	4.95		4.40	4.98	4.90	5.00	4.79	
5 lb.	6.00	6.00	5.25	5.50	5.75	5.80	5.50	4.99	5.25
1 lb. Creamed		1.75	1.45	1.40		1.39	2.00	1.99	1.40
1 lb. Comb	2.25	2.25	2.25		2.00	1.85	2.50	1.75	
Round Plastic Comb	1.75	1.75	1.85			2.00	1.75	1.65	1.75
Beeswax (Light)	1.35	1.35	1.10	1.40	1.25	1.40	1.25	1.15	1.50
Beeswax (Dark)	1.30	.1.15	1.05	1.25	1.12	1.30	1.00	1.10	1.25
Pollination Fee (Ave. Per Colony)	28.00	20.00	27.50	15.00	20.00	21.00	25.00	18.00	25.00

MISCELLANEOUS COMMENTS

REGION ONE

Connecticut honey is moving slower than ever. Mite discovery in Georgia has caused many cancellations of bees and queens. Some pollinators can't fill contracts. Heavy feeding this spring. Dry weather now a problem. Recent hearings on insecticide use resulted in no actions. Vermont remains on the cold side, and dry, though plants seem to be doing O.K. Heavy snows April 18th.

REGION TWO

Hot, dry weather in Maryland but bees are building up well. Some swarming

reported. New York winter easy on bees. Excellent pollen and nectar flow from pussy willows and bees building fast. Many colonies already have small drone populations. Swarming expected to be severe. Honey sales still falling in this region. West Virginia warm with good build-up. Health food stores selling $1.29 pound imported honey.

REGION THREE

Wisconsin weather warm. Losses slightly higher than normal but bees otherwise strong. Indiana honey sales fair. Pollination competition might lower fees. Little or no beeswax demand.

REGION FOUR

Missouri sales still slow. Mild early April -- building fast. Dandelion in full bloom. Some nectar being stored. Minnesota colonies strong, too -- 2 weeks ahead of normal. Honey sales slowing agin, though. Considerable feeding required this spring.

REGION FIVE

North Carolina colonies exceptionally strong. Temps unseasonably hot. Rainfall only a quarter of last year. Cold snap has done undetermined damage

Continued on next page

to tulip poplar. Florida reports 60-70 pound crops off orange locations. Gallberry fields very dry.

REGION SIX

Tennesse reports some heavy winter loss and weakness in surviving colonies. Honey sales still slow. Very little fruit bloom. Heavy feeding. Kentucky April mild with rainfall much below normal. Few swarming signs yet. Tulip poplar budding down. Honey market steady.

REGION SEVEN

Oklahoma bees busy within last week. Plenty of moisture. Three bad years in a row. Honey sales slow. South Texas reports good flow from brush. Horsemint seems best in years. Bees in excellent shape. Moisture good. Queen, package and nuc business slightly below average. Supply sales good. Swarming a problem.

REGION EIGHT

Pussywillows and dandelions in bloom in Montana but rain needed to revive major plants. Irrigation water O.K. but soil moisture below average. Several commercial operators in bankrupcy.

REGION NINE

Two weeks of 80 degree wetaher first of April in Washington. Pussywillows bloomed exceptionally well. Much pollen and brood. Apple blossom in full swing toward April's end with fees $22 - $28 per hive. Many cherries and pears lost to earlier cold. Honey sales good and steady. Oregon costal colonies in good shape with supering begun. Weather very pleasant with bees hoarding maple. Northern California temps above normal and low winds made for excellent queen rearing. Bees active and strong. Some bear activity in Sierras. Almond crop received good set. Manzanita spotty. California apple pollination fees approx $17 per hive. Avacado pollination began March 25th. Broccoli seed pollination over with some insecticide problems. Orange blossom heavy on coast. Sage looks good, too. Blue Gum Eucalyptus flow non-existent. Heavy swarm season. Some near Santa Barbara reported at 15-16 pounds. Large institutional honey purchaser reported buying large amber lot at .65 per pound with container exchange. Cash.

Siftings

by Charles Mraz
Box 127
Middlebury, VT 05753

For some years, since honey has been sold as a "Natural Food" and a "Natural Sweet", the question always has been, "What is Natural Honey?" Sealed honey comb would be the most natural honey, but on a commercial scale, little honey is used in the comb. Most honey is the extracted honey and that is where the trouble starts.

As interest in Natural Foods increased, more people became interested in the natural forms of natural foods. That is, food that is not processed, heated, filtered, chemically treated, preserved, modified and many other methods used to alter food to prevent spoilage and to enhance appearance. To make it prettier to look at, even if it ruins its food value. Honey is a good example of this food processing mainly to prevent crystalization of liquified honey and to filter it to make it sparkling clear. Yet all these processed honeys are almost all called "Natural Honey", which they are not. We do know that heating and filtering will remove or destroy much of the metabolic properties of honey, of its enzymes and diastates, etc. Yet they are still called "Natural Honey". Adulterating honey has been another problem

For years, we have built up a market for a "Natural Crystalized Honey", that is not heated, filtered or processed in any way. The flavor of such honey is superior to any processed honey, but it is difficult to pack on a commercial scale. Such unheated honey must have a low moisture, below 17% moisture to prevent natural honey from fermenting after it is packed in jars. Honey with moisture over 17.2% moisture must be heated to at least 180°F. to kill the yeast germs and prevent fermentation after it is packed. After sterilizing by heat such honey can be seeded again and crystalized to make a crystalized honey, but it is not natural honey even if it is crystalized.

Needless to say, this leads to a lot of confusion, but most important, the consumer has no way of knowing what they are getting, real natural honey or processed honey called natural honey. And of course there are those who support the fact that processed is the same as any natural honey and challenge you to tell the difference. In Germany, to be called honey, it must not be heated and heating of honey can be tested with a furfural test, which is rather complicated and has some range of error. A simple test for natural honey is needed, a test that anyone can do in a few minutes with no special equipment or reagents and that is accurate. I believe there is such a test.

All natural foods contain "Protective Factors", agents of one kind or another that protect the organism that produces such food against fungus, viral, bacterial and other destructive agents. Natural milk for instance has various antibodies and other agents to protect the young that is nursed by the mother. Artificial formulas do not contain these protective factors.

One protector factor in honey is an enzyme called glucose Oxydase. This enzyme produces a superoxide (H_2O_2) from the energy in the honey to protect the honey against fungus, virus bacteria and other pathogens. That is why honey can keep in a hive for years without spoilage.

This Glucose Oxydase becomes active when the honey is diluted, for example when one eats the honey and it is diluted by water and fluids in the diet and digestive tract. This activity can be demonstrated quickly and easily by simply dissolving a tablespoon of honey in about a half cup of warm water. Stir it with a spoon to help it dissolve. Almost immediately you will see a white foam develop on top of the solution. This foam will keep increasing for quite a few minutes until it forms a white ring around the inside of the glass.

This foam, I would assume is the oxygen being released by the hydrogen peroxide (H_2O_2) into the water and honey solution. We can also assume that the more active the glucose oxidase and the greater the amount of this oxydase in the honey, the more oxygen it will release and the more foam it will make. If all these assumptions are correct, then we have a simple, accurate test for natural honey that can actually measure its activity to destructive pathogens.

Suppose we make this test with the commercial packs of honey that are heated and pressure filtered through filter plates to produce a sparkling crystal clear honey that will not crystalize readily. The test I made recently with such a honey, nothing happened, there was not the slightest foam activity whatever. It is biologically dead. This I assume would be the same with corn syrup and other artificial sweeteners. Far as I can tell now, only pure, natural honey that is not processed will produce this foam we can assume is oxygen. This glucose oxydase enzyme is heat sensitive, and I believe as with all such enzymes, is broken down above 120°F. and will even break down with time in normal temperatures.

More work should be done with this test to prove without question that this foam is released oxygen from the enzyme. If not oxygen, then what it is. Why it forms with unheated honey and does not form with processed honey. If this simple test can be proved to be positive, then when "experts" make feeding tests with honey such as the botulism accusation, we can always ask, "What kind of honey are you talking about?" "Is it the natural honey, processed honey or is it corn or some

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National Plant Pest Survey Program[1]

by DEWEY M. CARON and LISA GALLIVAN
University of Delaware

Recent discovery of the honey bee tracheal mite in the U.S. demonstrates the importance of regular on-going survey programs. Plant Protection and Quarantine (PPQ) of USDA, APHIS (Animal Plant Health Inspection Service) has funded state survey programs for years. The current program is different from those in the past and beekeepers stand to benefit.

The present program is identified by the acronym CNPPSDP or Cooperative National Plant Pest Survey and Detection Program. Unlike the former Cooperative Pest Survey, this program involves all 50 states and the survey data is tied into a national computer network to insure timely, accurate records. States are divided into regions administered by APHIS. Gary Clement of Roanoke, VA coordinates the Northeast region VA, WV, MD, DE, PA, and NJ. Each states applies to USDA for APHIS funding to supplement other funds from state and federal sources for survey activities. Each state has a coordinating committee of extension, university, state and federal individuals who are involved in survey programs looking for insects, nematodes plant diseases and weeds. Since historically honey bees are included in the plant pest sector in the U.S. (many other countries include honey bees in the Veterinary sector) the CNPPSDP program includes surveys for pests of honey bees like the tracheal mite and bee diseases.

The Beltsville Bioenvironmental Bee Lab conducted a national survey for bee mites (both tracheal and *Varroa)* in 1982 with negative findings. After the discovery of tracheal mites in South Texas, APHIS surveyed 48 states again in 1984 with at least two states yielding positive results. This doesn't mean that mites are not present elsewhere, however as tracheal mites have been discovered by more extensive APHIS and state sampling in a total of 10 states. Many states, including Delaware, have added tracheal mite surveys to their CNPPSDP planned activities for the 84-85 year.

Survey programs must rely on biologically sound survey techniques. some survey are designed only to report whether an insect is present or absent. We conduct pheromone trapping programs for exotic insects (those not known to occur in the U.S.) in this fashion. Tracheal mite survey activity, although considerably more complex than periodically looking in a pheromone trap, will be reported in the same way. The computer will instantly make this information available, which for a "new" pest like tracheal mites, will be entered as new state and county records.

Effective survey procedures are extremely important in detecting very low levels of a "new" pest like the tracheal mite. Regional survey manuals which standardize methods of scouting and reporting data will have a section on procedures to use to survey for tracheal mites. The Northeast region is currently updating our manual, as are many of the other regions involved in the CNPPSDP program. Our survey procedures for the Tracheal mite duplicate those adopted by AIA (Apiary Inspectors of America) at their annual meeting in January.

Survey for tracheal mites by CNPPSDP may be the only national survey effort since APHIS intends to withdraw from their present approach of treating the mites as an exotic introduced pest of limited distribution. Apiary inspectors will continue to look for mites. Since state apiary inspectors are part of regulatory agencies like Departments of Agriculture, their data should be included on the national computer system as state survey committees attempt to coordinate survey activities and report results from any unit that surveys for pests. In some states (PA, NJ and WV) the lead agency on the CNPPSDP is the state Department of Agriculture where the apiary inspectors are employed.

A computer is needed to store the vast amounts of data generated by various states in plant pest surveys. States already use a similar national computer system, NPIRS, that stores information on pesticides (rates, target pests, toxicity, etc.) in its memory. Timely survey data can be very useful. The Fall Armyworm, a pest of corn, grasses, soybeans and other crops is a good example. Adults moths overwinter in the extreme southern U.S. moving northward each year on weather fronts. Up-to-date knowledge of when adults are first found each season in North Carolina and Virginia (using blacklight or pheromone traps) aids us in Delaware in scouting for this pest.

Since all 50 states are involved in the CNPPSDP program and data is entered by counties, the eventual uses will continue to expand as the data base becomes larger. For "new" situations like tracheal mites it will be possible to retrieve needed information virtually as soon as it is entered into the system. Hopefully the reports from surveys for tracheal mites will reveal more negative than positive finds.□

The Authors

Wintering The Honeybee Colony

PART ONE:FACTORS AND STRATEGIES FOR SURVIVAL

by T.S.K. Johansson and M.P. Johansson
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Winter Cluster

How do bees survive winter without any protection other than the ¾" thickness of wood in the hive wall? That the bees in Farrar's experimental hives with walls of wire screening survived is surprising enough, but they also produced more surplus than the average Wisconsin colony that year[1].

Sleeping in an unheated bedroom is analogous to a beehive in winter. The temperature in the room may be 40°F, but we can be comfortably warm in bed. The heat produced by our body is conducted to the bed clothes, and the air spaces in the wool blankets retard the rate at which the heat travels to the air above the blankets. This is the principle of any insulative material. One-half of the heat conducted from the body to the bed clothes is radiated back to the body. This can be increased to $^{5}/_{6}$ with a goose down quilt or an arctic sleeping bag. Heat conducted from the surface of the outer blanket warms the air creating convection currents that move to the ceiling and walls. When the air cools it falls again. Some of the heat also radiates to the walls of the room. Such warmth from a body or two in an unheated room isn't much noticed upon rising in the morning, even if the room is insulated. But an auditorium filled with several hundred persons can become uncomfortably warm. Buildings are now designed to store the heat that people give off. When 20,000 persons visit an enclosed shopping mall they produce five million British Thermal Units per day at 250 BTU's per person per hour (half as much heat as a 100-watt bulb).

Bees hang onto each other with hooks on their feet forming small groups as air temperatures fall to 50°F in autumn. These groups later join into one large cluster. A 1-3" layer of bees on the outside of the cluster functions as a blanket of insulation, for which their hairy bodies are admirably suited. When temperatures drop precipitously, the cluster becomes tighter thus reducing the surface area from which heat is transferred to air. Narrower spaces between bees increase friction and slow down air flow. The bees in the interior of the cluster are warmer (+76°F), and not so tightly packed. Wamrer, lighter water vapor rises through the cluster to the top of the hive where it cools and condenses. When the carbon dioxide level approximates 10%, bees fan to create a current of fresh air. Even when kept in total darkness, the cluster loosens somewhat during daylight hours.

Humans have a thermostat in the brain (hypothalamus) that maintains a constant body temperature of 98.6°F. When this is adjusted upward as in a fever, the person experiences muscular shivering contractions that increase the production of heat until the higher temperature is reached. Bees have a similar mechanism. If contracting the diameter of the cluster is not sufficient to maintain the minimum temperature, they produce heat by isometric (without movement) contractions of thoracic muscles. Several colonies of bees shaken into screened packages and placed in a freezer to kill them, produced so much heat that the frost on the freezer walls began to melt. Hives with clustered colonies that Farrar placed in a freezer at -50°F stayed alive for five to six weeks, although not in as good condition as when they went in.

Farrar used 188 thermocouples to record the temperatures in single and double-walled hives, as well as insulated hives, during a period of cold weather. The air surrounding the cluster approximated the outside temperature in all the hives. The heat transferred from the cluster to the walls of the hive made no appreciable difference even with a greatly reduced hive entrance. The temperature on the surface of the cluster was maintained at approximately 44°F (43-46°F) regardless of how cold it was outside the hive. Temperatures are variable and higher (48-52°F) under humid conditions[2].

N.W. McLain reported to Cheshire that the shape of the cluster remained unchanged for days at temperatures of 41-44°F, but at intervals the bees became active and the shape of the cluster changed. After 3-4 hours the bees ceased humming and settled down again. Milum also found outer cluster temperatures of 41°F which kill individual, isolated bees if prolonged[3]. Although bees usually do not fly at air temperatures below 46°F, the authors observed colonies taking cleansing flights on a sunny day when the air temperature was 34°F.

Natural Combs

Just as it has taken until now to discover that the nearly extinct one-room schoolhouse provided the ideal environment for teaching children, so there are second thoughts about having done in the old-fashioned box hive and log gum. Doubts were expressed by the late S.E. McGregor on the occasion of his receiving the James. I Hambleton award in 1977. He was a bee inspector in the late 1920's when legislation mandated that colonies in fexed comb hives were to be either transferred to movable frames or destroyed[4]. At this point, E.F. Phillips estimated that ⅓ of all the colonies in the United States were in such receptacles; none in a few places, and 90% in others. Counties in the state of Washington reported 5-31% were in various "make-shift receptacles". In Yuba County, California 85% of colonies kept for pollination only were in "overturned lug boxes, dry goods boxes and what not"[5].

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State and Federal bulletins continued to include instructions for transferring bees from box hives until the 1950's[6]. After half a century in the field of apiculture as a specialist in pollination, Mr. McGregor came to regret their demise. When he started there were bee hives on almost every farm, but many of these were destroyed rather than being shifted to expensive, complicated movable frames. He questioned whether the hives' value for pollination may not have outweighed their threat as a source of disease. Since "the combs are not interchangeable and the hives seldom sold, AFB does not attack the bees in them as one suppose"[7].

H.L. Rushing pointed out that 344,265 beekeepers (49% of all beekeepers in the United States) in 38 states and D.C. in 1900 were reduced to 107,314 by 1940 (40% of all the beekeepers in the United States) There were more beekeepers per square mile in the 10 southeastern states than anywhere else in the country, but their numbers fell from 362,950 (51%) in 190 to 158,394 (60%) by 1940. Mr. Rushing was an engineer who promoted an improved frame for movable frame hives, and intended to suggest improvements in box hives and log gums that would double their production of comb honey. He was of the opinion there had been too much finger-pointing against the users of some types of equipment, such as log gums. A century earlier, Affleck had developed the subtended multiple box hive[8].

The possibility that wintering became a problem with the advent of movable frames may have some merit if only because it enabled beekeepers to remove honey more easily, and to leave too little for the bees. The rate of winter losses increased ten fold with smaller movable frame hives. Natural combs are built irregularly with spaces through which bees can move freely. Deeper cells at the top and ends provide storage for honey and pollen where it is needed. The combs are not attached at the lower sides so the cluster can surround the ends of the comb completely; the heat they produce is trapped by the combs. Movable frame hives produce shallower parallel combs without the possibility of the cluster moving sideways, and the uncovered frame ends and ears conduct heat to the walls of the hive.

Hives designed with frames the shape of natural combs have been promoted as ideal for winter: (a) The British "thermo-static" Catenary hive was introduced by W.B. Bielby in 1968; (b) A similar hive was sold by Alessandro Tonelli in 1924 as the "L'Arnia Cuoriforma""; (c) The French "La Ruche Automatic" used a trapezoid frame advertised in 1925 as a design based on rational and scientific principles[9].

The recent barrel hive and Kenya hive use top bars only, permitting the bees to build their own combs. The prototype for these hives is the ancient Greek hives using wicker baskets to support the bars. Geo. W. Christians designed a hive with top bars that could be tiered up with combs supers[10].

Frame Spacing

Although there have been extensive discussions about the size of cells in natural comb, the center to center (midrib to midrib) spacing of combs has not received equal attention. Work published in the Soviet Union in 1951 suggested that a narrower spacing of 30-31 mm (1.181-1.220″) resulted in 25% more brood space and a faster spring build-up. The Bee Research Association undertook a co-operative research project in 1952 to study the advantages of the $1^3/_8$″ or 1½″ (38.100 mm). This was also adopted for the Quinby-Dadant, German Zander, and some British (1.45″) hives. The standard spacing of $1^3/_8$″ (34.925 mm) used in German American hives was based on natural combs built by German Black bees.

Alber measured the spacing of combs built by swarms established in boxes. Italian bees (Piana stock) had a distance of 30-31 mm which is what the Soviets obtained with their smaller bees in the south. The large indigenous Sklenar bees from Austria produced combs between 34-35 mm which equals the original measurements made in Bavaria before importations of foreign bees into Central Europe. Carniolans had an intermediate spacing of 33 mm (1.299″). Mongrel crosses built combs with spacings spanning a range from 25-45 mm (0.984-1.771″).

The combs in the periphery of the brood combs in natural nests may range from 1½-2″ apart. Beekeepers also space frames more widely apart in honey supers with 9, 8, or 7 frames in a 10 frame super. Cheshire considered a $1^5/_8$″ (41.275 mm) spacing advantageous for successful wintering, along with sufficient empty cells for the bees to cluster on.

Albert suggests that bees housed in hives with inappropriate comb spacing for their requirements will result in stress, higher consumption of stores to maintain their microclimate, rapid dwindling, and a slow build-up in the spring. Excessive spacing was considered to be the cause of outbreaks of Nosema disease in mid-summer in Sicily. A preliminary study had established that bees do respond to the stress of environmental changes with effects that are fatal.

Hives with frames spaced 29-30 mm are being tested in Connecticut. G.L. Stanley described the problems of using 9 frames in brood chambers, and includes in his article information on spacing frames from A.I. Root's 1891 *ABC of Bee Culture* as a useful source for the historical background[11].

Climate

Honey bees adapt to a wide range of climates arid to tropical rain forests and temperatures of 120° to -50°F, but they do have limits. Honey bees were brought to the northern tip of land in Canada (Ellesmere Island) where there are two species of bumblebees. Although there were 24 hours of sunlight, the bees are programmed to forage between 8-15 hours. That the bumblebees fly with equal frequency during the entire 24 hours enables them to live successfully at this extreme latitude. In addition, they had the advantage that weather conditions were often better at "night"[12].

Climate has a greater effect upon beekeeping practices and commercial success than any other factor, and

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may explain the sharp differences of opinion about how to winter bees. The best honey regions occupy 10% of the land, but contain 95% of the commercial beekeepers. The remaining secondary and marginal areas are suitable for hobbyist and sideline beekeepers. Jim Powers, one of North America's most prominent beekeepers, quotes an old adage: "Good locations make good beekeepers". An 1857 encyclopedia used 31 additional words to clinch the point: "The honey produced by any hive or apiary depends much more on the season, and the quantity and kind of flowers with which the neighborhood abounds, than on the form of the hive or artificial management"[13].

The daily records necessary to produce a phenology of flowering and bee activity are not readily available. Dates from some national beekeeping associations and individuals were compiled for an analysis of climate and honeyflow in north and central Europe[14]. Each beekeeper can keep a "bee's calendar" in his locality by recording temperature, precipitation, and onset of blooms. Plotting the data on graph paper makes for easy comparisons.

It is instructive to study a map of the earth's climates. The first impression is how much of the earth is covered with dry desert and humid tropical climates. The northwest and southwest coasts of the Americas and western Europe are favored with prevailing westerly winds off the ocean, as are New Zealand and southeast Australia. In these mild climates the cluster is not fixed in one position, and the populations can be much smaller. There are longer favorable periods for building up before the productive season, and colonies are usually confined for only a few days at a time. The greater activity does require considerable honey, and colonies can starve during flowerless periods or during long periods of cool, rainy weather. In some parts of the United States bees may suffer from heat more severely than in the tropics. Bees will stop flying when temperatures are above 94°F and relative humidity is less than 50%.

Wintering is the problem which distinguishes temperate zone beekeeping from that in the tropics and sub-tropics. The areas where bees must be wintered under difficult cold conditions are found between 40-64° north latitude, and designated as humid continental and middle latitude steppe climates. The Canadian plains east of the Rockies (Alberta, Saskatchewan, and Manitoba) have some of the finest beekeeping territory in all the world with yields which seem unbelievable to those of us keeping in average or marginal locations. Alberta alone produces ⅓ or more of the total Canadian production of honey with per colony yields of 350 pounds in exceptional years, and 100 pounds in poor years. On the other hand, the climate in these provinces is surpassed in severity only by Siberia. The adverse conditions are more than compensated for by the long hours of daylight in summer for plant growth.

Short term variations from averages recorded over decades are labeled weather, and there can be some shocking extremes. The "Alberta Clipper" that broke all records drove President Reagan indoors for his second Inauguration. Such sudden cold waves are unique to Eastern United States, but Argentina has the pampero, Europe the mistral, and New Zealand the burster.

The combination in 1978-79 of a pleasant, warm autumn, a very cold winter, and a cool, wet spring had not occurred in England during at least the last 500 years and possibly for as long as 1,000 years. This worst of all scenarios for overwintering bees may occur several times in a beekeeper's lifetime in North America. In December, 1981, England had several inches of snow and the -13°F was the coldest in 93 years: "Oh! Calcutta" actors refused to perform nude scenes until space heaters were installed, Big Ben stopped briefly, and Queen Elizabeth had to take shelter in a small hotel when the road became impassable!

The opportunity to see the record of temperatures at B. Mobus' apiary in Craibstone, Scotland was very instructive. The lowest temperature at 2°C (35°F), which occurred once in 1975 and four times in 1976, is a welcome warm spell at our apiary after periods of 0°F (-18°C) and less. The highs of 14-15°C (58-59°F) at Craibstone were attained in our location in February, 1985 for the first time in a century of recording by the Weather Bureau. It is important that we realize the semantic differences when using the word "winter"? Conditions in Scotland are so different that Mr. Mobus postulates an alternate model on which to hang the results of his investigation on the initiation of brood-rearing in the winter cluster[15].

If there is a single external factor than can improve chances of colonies surviving winters in very cold climates, it is the opportunity for at least two strategically spaced cleansing flights. Along the eastern slope of the Rocky Mountains from New Mexico to Alberta there are occasional warm winds known as chinooks. The rapid rise of temperatures from -30°F to as high as 70-80°F melts snow, and provides bees an opportunity to fly and recluster on new combs of honey. That the ground is bare often saves the life of cattle on the range who need the grass for feed. In the East there is a much appreciated "Indian summer" in the autumn. But this warm air from the southwest also produces the "green Christmas", January thaw, and spring thaw when bees can fly.

In 1893 Mrs. Jennie Atchley of Texas suggested solving the wintering problem by offering, for a small sum, to accept shipments of bees from the north; returning them in time for the white clover harvest[16]. In the summer of 1985 when *Acarapis woodi* was discovered in Texas, we also learned how extensive the practice of moving bees from the northern states has become. Some beekeepers leave their largest colonies to overwinter in the north, and take the smaller colonies south to build up for division into nuclei for the return trip in the spring. When the fall nectar flow is a failure in the north, they may move all their colonies south to feed. The talks given by commercial beekeepers at the 1977 Apimondia symposium on management (San Antonio, Texas) dwelt mainly with strategies for operation of migratory beekeeping. Beekeepers are truckers!

Corkins suggested moving colonies from warm locations such as southern California to altitudes of 7-10,000 feet

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to take advantage of the uniform temperatures and wind proteciton of the coniferous forests; bringing them down 6-8 weeks before the flow. He suggested cellars or buildings with refrigeration as an alternative[17].

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Part II of Wintering the Honey Bee Colony will be continued next month. The subjects will be: Losses, Coincidence Factors, and Winter Inspection.

A Scout Bee Flying Around The Globe Part I — Royal Jelly

by JACOB VAN DER PLAS Apartado Postal 500, Nau Calpan, Mexico

In front of our house, on a balcony, we have 12 always queenless hives. These hives are placed high so they can be seen from the road, painted colorful, to attract honeybees. I always try to get a double use out of everything. I call this working in parallel. This is the only way to make money in honey. The same with our queen-rearing, we produce a lot of Royal Jelly in one and the same operation.

The always queenless hives receive each fortnight three frames of capped brood or open larvaes over four days old. This is to avoid the making of queen cells in the frame. Each is given with the young bees sitting on each frame, plus some extra young bees shaken into our brood transport are. These boxes are one half size, for five frames, bottom closed with ½" plywood, and a telescoping lid. At each side two carrying handles, and two three-inch ventilation holes, screening at the inside. During inspection of our apiary we always have several brood transport boxes in the truck, and when we find good capped brood we fill the box with four frames. They hang loose, but four is easier to handle than five frames pressed in the box. Putting in, and taking out four frames is fast, no tool needed, and there is no queen that can be squeezed between swinging frames.

Only the best working bees have the honor to feed larvae into queen pups, and these become queenless, to be taken to our apiary. We know from our written records which of the 12 hives are working fine, and in parallel we inspect how many cells have hatched. Each third day we inspect, and there is a good chance that passing cars see us working, stop to watch, and we make honey sales. Also each third day we transport larvae from open brood into wax cups for queen rearing. The frames with 3x12 wax cups are horizontal laths, and are placed in the always queenless hives, and we take out the frame that was fed royal jelly for three days. With a dental tool, called bone scraper, with a curved spoon of $^1/_8$"x$^3/_8$", sharpened at the inside, we open the almost five day old queen cell (= 2 day old larva transplanted + 3 days feeding), cut in the middle and push the wax wall to left and right. With the larvae transfer tool we fish the five-day-old larvae. Sometimes when I have a good amount these larger larvae are going into the frying pan with some butter, a delicious delicatessen to keep company a glass of Old-fashioned.

With a bone scraper, with its nice curved miniature spoon, we take out the large drops of royal jelly, and put into a glass jar with an airtight screwing lid. the lid should have a rubber or plastic liner, and be painted inside, because metal oxidizes with royal jelly. The jar is kept in the freezing compartment of the refrigerator. When we have 20 ounces (you can do with less) we prepare for filling capsules number ZERO (No. 0). We mix one part royal jelly to 15 parts honey, by weight. Our capsule formula is 60 mg. jelly and 900 mg. honey. We use our very strong tasting Eucaliptus honey, which is heated till 95°F (35°C). Use a thermometer: overheating will spoil the jelly. In a two pint jar (4" round x 6" high) we mix with an electric kitchen mixer, with double opposite turning blades, as used for egg beating. At maximum speed, keeping the turning mixer blades at the bottom to avoid air trapping. We mix 10 minutes and the honey becomes opaque.

The accompanying photos show my hand filler. A spring loaded plunger ½" round is moved by a 12" long aluminum handle. The filling pump is made of stainless steel. Years ago we worked with a large size injection spout, as used in hospitals. In front of the pump we placed a capsule stop, a piece of bended metal screwed in the wooden base, to stop each capsule under the spout. The spout is tubular and welded with silver in the body. Nothing special is in the body, only the moving piston, and drilled holes.

Capsules placed in wooden laths (lately we made a new set of plastic), are sunken half way into the strip. A thinner hole is drilled through to expel capped and full capsules. Placing empty capsules into the laths is done with the left-hand-right-hand technique, both hands work in parallel. Taking off the cap of an empty capsule, this is placed back immediately on a filled capsule. The open empty capsule is placed in a empty lath. With a lath with pins (nails without points, cut flat and slightly rounded with a file) the filled capsules are expelled. However, with our new plastic strips, and slightly larger holes for the capusles, these fall out by themselves.

The full No: 0 capsule is double packed into a No: 00 (double zero) capsule. Capsules are made of gelatine, in many colors, by two large manufacturers world-wide; Ely-Lilly (brand name Elanco) and Parke-Davis. We use clear transparent for the inner product containing capsule, and a gold yellow body (like honey) with a black cap for the other No: 00 capsule. Full capsules should be kept in a refrigerators. We need the double capsule packing because honey is leaky, and makes a sticky mess of our 20 or 40 capsules sales presentation. A competitor skipped the capsules and sells Royal-jelly with honey in very small jar. Take a teaspoon a day. We pack our capsules in a very fancy attractive glass jar because beauty products are packed that way. The jar goes in a very fancy attractive carton box, printed six sides, showing a queen fed by five bees and surrounded by more bees. A label, with hardly any text, but the same queen and bee photo is glued around the jar, leaving only ½" open to show the bright colored capsules.

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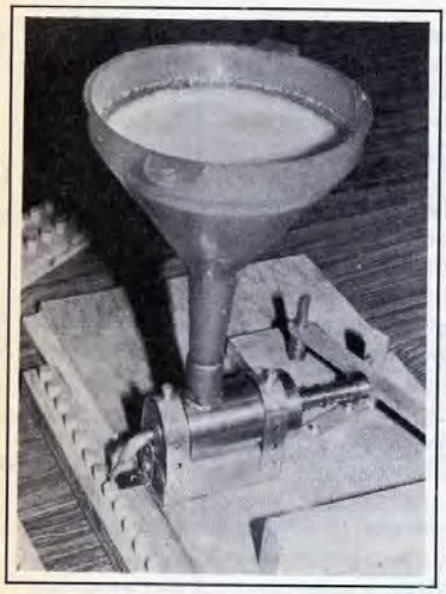
With each carton of capsules we give away a two page folded promotional brochure. The front page is again printed with same color photo of the queen and bees. Here again a job



Royal Jelly capsule filling machine

in parallel to save on printing cost. Label, carton box flat folded, and brochure are all printed with the same printing plates, six in total. Only the size of the label is smaller than the carton, and the carton smaller than the brochure, but the label is printed brochure size, and later cut smaller. The carton is printed full size, and than cut-out. This way our carton has an all around color picture of bees on the comb with their queen. This color printing and fancy presentation is costing us 34% of our sales price, but that is normal for expensive beauty products.

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Talking about stealing. I forget to tell you, the larvae used in transferring into wax cups, for queen rearing, or Royal jelly are coming from 20 selected hives we have behind our bee farm. These are the most "MEAN" bees we have, excellent honey producers, but selected for their stinging behavior. We have to do this to protect our apiary against our biggest pest, poor human beings and youngsters from the slums of Mexico City, who help us with the harvest, or move hives to unknown places. From turned-over hives they take some frames with honey, and an empty super becomes a nice painted stool for their shed.

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Testing Your Beekeeping Knowledge

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

Beekeeping, like any other agricultural endeavor, is not without its problems, diseases and pests. While these specific problems may vary from one location to another, the beekeeper must realize that such maladies do exist, practice effective preventative management, and be able to recognize key characteristic symptoms associated with each one.

In the urban/suburban setting, people are probably the beekeeper's worst enemy due to man's inate fear of stinging insects. As you move into more rural and wilderness locations, vandalism and hive rustling may be encountered. Besides human conflicts, there are other animals that can cause problems such as skunks, mice, and bears. Honey bees also have to compete with other arthropods, namely ants, wax moths, bee lice and various types of mites. Pesticide kills, bee diseases, and poor honey crops even further complicate the situation.

Please answer the following questions to find out how well you understand pesticide, disease and pest problems that ultimately may effect your beekeeping operation.

The first 7 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. _____ Skunks may seriously deplete colony populations since they may feed for hours in front of colonies and return nightly to feast at an apiary.
2. _____ American foulbrood is a serious brood disease found only in North America.
3. _____ American foulbrood spores remain visible for at least 35 years.
4. _____ The principal cause of dysentary in honey bees is excess of water in their food supply.
5. _____ Dust formulations of pesticides are usually less hazardous to bees than sprays.
6. _____ Package bees are capable of transmitting both American foulbrood and European foulbrood.
7. _____ Queens infected with Nosema disease cease egg-laying and die within a few weeks.

Multiple Choice Questions (1 point each).

8. _____ Most widespread of all bee disease found in the United States.

   A) American foulbrood B) Nosema C) Sacbrood E) European foulbrood

9. _____ Chalkbrood was first found in the United States in:

   A) 1922 B) 1983 C) 1968 D) 1954

Please match the following mite species with the correct response (6 points).

A. Honey Bee Tracheal Mite **Varroa Mite**

10. _____ Established in the United States.
11. _____ Internal parasite of adult bees.
12. _____ Feed on the blood of developing honey bee brood.
13. _____ Largest of the two mite species.
14. _____ Infested colonies have adults with malformed wings, legs, abdomens and thoraxes.
15. _____ Believed to be associated with the Isle of Wight Disease.

Please match the following pathogens and mites with correct bee disease (5 points).

16. _____ *Bacillus larvae*
17. _____ *Acarapis woodi*
18. _____ *Ascosphaera apis*
19. _____ *Streptococcus pluton*
20. _____ *Aspergillus flavus*

A. Sacbrood
B. Acarine Disease
C. Paralysis
D. Stonebrood
E. American Foulbrood
F. Powdery Scale Disease
G. Chalkbrood
H. Nosema Disease
I. European Foulbrood

ANSWERS TO TESTING YOUR BEEKEEPING KNOWLEDGE

1. True Skunks acquire a strong appetite for honey bees and return nightly to feed at an apiary. The typical feeding pattern for the skunk is to scratch at the entrance of the bee colony and to eat adult bees that respond to the disturbance. Hives being visited by skunks become extremely aggressive, weak, and are difficult for the beekeeper to manipulate without incurring numerous stings.

2. False American foulbrood disease is found almost worldwide. Beekeepers on every continent have reported the disease, though not every country has it. The disease is widely distributed in North America, Europe, Asia and Australia with limited distribution in South America and Africa.

3. True American foulbrood spores are very resistant to heat, chemical disinfectants and desiccation. It is probable that the spores could survive hundreds of years as scale (dried remains of larva dead from Amercian foulbrood). The longest survival test conducted to date showed that the spores were viable after 35 years in the scale stage.

4. True Many different factors associated with the bee's food supply may cause dysentary. Foods which contain large amounts of honey-dew, dextrins, toxins and fruit juices may contribute to the problem but the principal cause is excess water in the food supply.

5. False Pesticide formulations vary signifcantly in their toxicity to bees. With few exceptions, pesticides applied as dusts are more hazardous to honey bees than those applied as sprays.

6. True Studies have shown that package bees can survive as temporary disease reservoirs for both American and European foulbrood when shaken from diseased colonies.

7. When a queen honey bee becomes infected with Nosema disease, damage to the mid-gut by the protozoan results in serious damage to the ovaries. At first, a high proportion of the eggs fail to hatch, followed by complete cessation of oviposition and eventually death.

8. B
9. D
10. A
11. A
12. B
13. B
14. B
15. A
16. E
17. B
18. G
19. I
20. D

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

Number of Points Correct

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

Bee Talk

By RICHARD TAYLOR
Route 3
Trumansburg, N.Y. 14886

There is probably no topic in apiculture more time-worn than swarming, but it is what is mostly on beekeepers' minds right now, so I'm going to offer a few odds and ends on that subject once again. It is a problem that is especially acute for comb honey beekeepers like me, because the conditions needed for getting good crops of comb honey are also the the conditions that encourage swarming. But I'm not going to discuss my method of swarm control. I have already done that, more than once. What I'm going to do instead is offer some notes and tips about swarms, a few of which may be unfamiliar to a fair number of readers.

To begin with, I don't think that it is very useful to speculate on what **causes** swarming. It is like asking what causes flowers to bloom or birds to nest. Swarming is the colony's method of reproduction. There are several factors that encourage it, and several that inhibit it, and no one factor that is "the cause" of it. It is natural to suppose that bees swarm when the hive becomes too crowded or congested, but that is an over simplification. Very congested hives sometimes do not swarm, whereas less congested ones often do. Other factors involved are the age of the queen, the condition of the brood nest and, above all, the time of year. What is important here is that you cannot prevent swarming **merely** by giving the bees more room. Adding supers, early in the season, helps a little in relieving the pressure to swarm, but adding comb honey supers makes no difference at all. The only thing you can do to prevent a colony from swarming, once it is in that direction, is to split it somehow — but I'm not going to go into that again.

Suppose one of your colonies does swarm. Then what? Well, if the swarm is very high up, and it would require a ladder and acrobatics to recover it, I think you should pretend you never saw it. That is hard for a dedicated beekeeper to do, but no swarm is worth risking a broken back. But suppose it is nice and low, and you can gather it. Then set the hive it came out of off to one side, and hive the swarm there, where the parent hive was. That's the neatest single trick of beekeeping. You'll get a good crop from that new colony, and neither it nor the parent colony is likely to swarm again that year. If you find a swarm in your apiary and don't know which hive it came from, then, when you gather the swarm, preferably by removing the branch or whatever it was clustered on, you can tell which hive it came from by noting which one has bees at the entrance fanning their wings. Some of the swarming bees, deprived of their cluster point, return to their hive and signal to others to follow, by raising their tails and fanning. It is a giveaway. So then you move that hive off to one side and hive the swarm there.

Often a swarm can be recovered from a high place by raising comb of brood to it. Most beekeepers know this, but is is surprising how often I find someone who does not. What you can do is toss a small weight, tied to the end of a string, up over the swarm, lower the weight, then pull a heavier cord on over it, raising the comb of brood with that, so that you can get it right up in contact with the swarm. After a half hour or so most of the bees will have clustered on the comb of brood, and the swarm can be lowered and put in a hive, comb and all, without any shaking.

Sometimes a beekeeper is surprised to see several queens scurrying about in a swarm. That means you've got an after swarm, that is, a swarm that has emerged a day or two after the primary swarm came out and took off with another queen. Those several queens in one swarm are virgins that have just hatched. You can hive an after swarm, same as you would as

Swarm gathering box, containing a swarm.

you would any other, and one of the virgins will survive and mate and head the new colony. After swarms are usually small and hardly worth fooling around with, except for the fine honey crop they'll gather next year.

A swarm is just great getting foundation drawn out. But don't feed a swarm sugar sryup in an effort to build it up faster— unless, of course, you get several days of wet weather. In that case you'd better feed them, because they have no honey excpet what they brought with them, and if that gets used up they can be in trouble. But if it is warm, just leave them alone, and they'll build up fine. In fact, a newly hived swarm will be the hardest-working colony in your apiary. They'll be best off if you don't fool around with them.

I always gather swarms in screened boxes. You can make up such a box from an old hive body. Staple screen to one side, and have a hinged screen on the other. Shake the swarm into that, and then you can cart the swarm off in your car, and deal with it when you get around to it, instead of having to drop everything and deal with it then and there, when found. My swarm-gathering boxes have a large hole on one side. I sometimes find it easiest to set the swarm box on its side and shake the bees into it through a big funnel set in that hole. That's a pretty neat trick, too. The bees that I miss are soon clinging to the outside of the box, on the screened-sides— though a few of them fly back to their hive where, as noted, they can be found fanning their wings at the entrance.

Continued on page 325

Beekeeping Technology

By DR. JAMES TEW
The Agricultural Technical Institute
Wooster, Ohio 44691

Bee Sting Reactions — The Real World

It just happened again. On a nice, sunny spring afternoon a friend of mine did all the wrong things after taking a few stings. The beekeeping afternoon abruptly turned into the sterile atmosphere of a hospital examination room.

As beekeepers we as a matter of course take a significant number of stings during a season. I don't know of anyone that enjoys stings — no matter how many they've had during their beekeeping career. But after one has been stung so many times in so many different places on so many occasions, stings do seem to take on an air of annoyance and not much more. It is not the case with a new beekeeper or a friend that, for some unknown reason, has agreed to lend a hand. Such was the case here. My friend was not particularly afraid of bees even though he had limited experience working them. The stings were painful but not intolerable in his view. On three separate nights, he agreed (I'm not sure if he was given any other option) to help move bees or unload bees that had been brought back to their permanent yards.

The first night a fair number of stings were administered by the bees in an effort to change the minds of the people unloading the bees from the trucks. On the second night only one hive was to be moved but you know how it usually goes. As we picked it up, the rotted bottom board fell away and released great numbers of disconcerted bees. They promptly transferred their concern to us. We naturally did the appropriate thing and made a hasty retreat. From that point, we regrouped, lit a smoker, and put on heavier protective equipment. The second effort went much more smoothly and we, the beekeepers were totally successful. On the third occasion (the third day) we were reviewing the situation in a yard that was being prepared for a move to a pollination site. Once again my friend was administered a dose of common sense — don't bother hives. About four to five messengers carried the notice. I was actually running low on conciliatory remarks.

Shorty after the last stings were received, I noticed that my friend (Bob) was becoming quite red in the face with a distinct puffy appearance. Bad news. I really didn't want to say too much. The power of suggestion is always great. After a few minutes Bob wondered if it was normal to have itchy ears and itching around the sting site. I just hate these situations. We were a great distance from medical assistance. I wasn't sure we really even needed medical assistance even though I was glad I had a sting kit in my truck. Bob was obviously aware that the previous stings he had taken never reacted in this way.

We proceeded back to the school whereupon I officially announced that in my non-medical opinion he looked no worse than he had 40 minutes ago. Our good fortune was not to last. Even as some of the symptoms disappeared, new ones replaced them. One of the new onces concerned me — his tongue began to swell. The school medical personnel had administered Benedril (25 mg doses), I was concerned that it would not take affect quickly enough. Upon consultation with my physician, we agreed to come in for an examination.

The physician felt that we were correct, in our assessment of the seriousness of the situation. Bob had taken a large number of stings for a non-beekeeper and had "overloaded" his system to such an extent that he was having a systemic reaction to the most recent stings. He was in no immediate danger, but was definitely uncomfortable. A cortisone injection along with cortisone tablets were prescribed to control the allergic reactions.

Even as I write now, I have lost some of the "sense of the moment". It was an abrupt change to be made from the pastoral setting of a beeyard in the spring to the sterile setting of the hospital. The point was made more clear as I realized we smelled of smoke while everything else around us smelled of disinfectant. Bob was anxious. I was anxious. I've had the same feeling before with other accidents. We absolutely had no plans to be visiting the hospital as we left to go to that particular yard.

Even though one is more likely to be killed by lightening than by a bee sting, we need to keep in mind that occasionally people are hit by lightening. Sometimes people have reactions to stings. Most are like Bob's, un-nerving but not serious. It's the ones theorums that are serious that we need to watch for. Those are the hard ones. A fatal reaction often occurs within 8-15 minutes if it's going to. That's not much time to wonder what's to be done. So far Bob has been lucky. I hope he and I both stay that way.□

Procrustean Beekeeping

Any quantity of spilled honey is always enough to cover any given floor.

A number of years ago, I was asked to present a "hands on" presentation at a Metropolitan Junior High School. I though it would be a nice idea to pass around a honey bear for the kids to sample. It didn't work that way at all. The bee exhibit was successful beyond my wildest dreams. I recall handing out the bear and seeing it disappear in the crowd. Quite a while later, as the program was ending, I glimpsed the bear making the rounds with the top off and students trying to force the last minuscule of honey from the container. Not bad — right? Someone had spilled (or poured) the honey on the hardwood gym floor. I think most of you can imagine what the floor looked like after 300 kids had walked in the spilled honey for an hour or so. I quickly packed my things and departed. (Thanks to the "House Wife from Michigan" for the Theorm).

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Research Review

By DR. ROGER A. MORSE
Department of Entomology
Comstock Hall
Cornell University
Ithaca, NY 14853

Reducing Drifting

It is well known among beekeepers that when colonies are crowded close together, or placed in long rows, that foraging bees will often enter the wrong colony; that is called drifting. Honeybees returning from the field with nectar and/or pollen are readily accepted in another hive, especially during a nectar flow when hive odors are similar. Many beekeepers pay scant attention to drifting feeling that it doesn't really matter which colony receives the foraging bees so long as the nectar is stored in the supers. However, drifting probably can have an adverse effect on the honey production on the part of some colonies. Also, we are well aware of the fact it is a way of spreading disease from one colony to another. Drifting of queens on mating flights can be disasterous and result in the loss of colonies.

Dr. S.C. Jay in a series of papers dating back to the 1960's, has been studying the factors that affect drifting. Studies have now been undertaken by Jay in the Province of Manitoba, in Jamaica in the Carribean and in New Zealand. Recently he has collaborated with others to determine the effects of the sun on drifting. His most recent paper is a result of studies conducted in New Zealand. It was found that the sun's position is a factor in the disorientation of bees. A statistically significant number of marked honey bees drifted westward in rows where the colonies faced either north or south.

While we still do not know why honey bees drift as they do, we do understand how to reduce drifting. Colonies that have hive entrances facing in different directions will have fewer drifting bees. Also, providing orientation cues, such as small trees or bushes will likewise aid the bees. An increasingly favorite method of reducing drifting is to paint the hive parts different colors.

Reference

Jay, S.C. and D. Warr
Sun position as a possible factor in the disorientation of honeybees in the southern hemisphere. Journal of Apicultural Research 23:143-7. 1984.

The Timing of Colony Growth and Reproduction

Successful beekeeping requires making the right manipulations on time. A recent paper emphasizes this fact. Not only must beekeepers coordinate their movements with the season but so must colonies in the wild, in hollow trees and buildings.

Bees normally rear brood during the winter, though it is expensive to do so in terms of honey to warm the hive. To find out the importance of this winter brood to colonies, queens were prevented from laying eggs from mid-October to mid-April. In mid-April colonies can once again get pollen and nectar in the area where the study was conducted, and an alternative might be to delay brood rearing unitl that time. On May 1, when the populations of colonies with and without winter brood rearing were checked, those with winter brood rearing had four times as many bees. Those with winter brood swarmed much earlier. As is reported below this has a significant effect on swarm survival in the winter.

A second experiment was conducted to determine the effect of the timing of swarming on winter survival. Swarms were hived on May 20 and June 30, in each of four years. These were selected as being dates early and late in the natural swarming season in the north. The goal was to determine the effect of the timing of swarming on winter survival. Each swarm contained about 12,000 bees. The bees were engorged, installed and kept in a single super with frames. A sheet of foundation was placed in every other frame. This was done so that each colony would be forced to build comb as they would in nature and also so as to have straight combs and make it possible to inspect the colonies.

In three of the four years of this study there were no differences; either nearly all of both the early and late swarms survived or nearly all died. However, in the fourth year, when there was an early honey flow, the early swarms stored enough honey to live through the winter. The late swarms did not have the time and bees needed to store a large surplus of honey and they died.

The purpose of the research discussed here was to gain a better understanding of the honey bee cycle of the year. The data show that the time the bees have to gather the food they need for winter is brief; 50% of the colonies' surplus is collected in just three weeks. A colony in a single Langstroth super, which is the size of the average nest in the wild, needs about 50 pounds of honey to live through the winter. In order to survive in a northern climate honey bees have elected to start brood rearing early in the year. Rearing brood in January and February is normal even though it is expensive insofar as energy is concerned. Early brood rearing allows colonies to swarm early in the year and this is sometimes critical to winter survival.

It is a curious fact that all the ways in which insects have found to survive the winter that only honeybees store such vast quantities of food, regulate their winter temperature and are thus able to rear young in cold weather. It is unique, costly, but fascinating system of survival in a cold climate.

Reference

Survival of honeybees in cold climates: The critical timing of colony growth and reproduction. Ecological Entomology 10: 81-88. 1985.

QUESTIONS & ANSWERS

Q. I have had some red-headed honey bees in my neighborhood. I have never seen any before in my life until the past spring, 1984. Could you tell me what kind of bees they are? I have had bees since a boy on the farm, so you can see I am interested to know. Age 61. **W.M. Staley, 1319 Rolling Rd., Asheboro, NC 27203.**

A. Mr. Staley, you may have seen some bees that are genetically marked. Considerable amounts of research work have been done to determine what variations are possible on honey bee eye color. Red has been found to be one of the colors that occasionally is seen in nature.

Since you indicate you have been keeping bees many years, I rank this possibility as number 2: you may have seen bees that are working nectar or pollen sources that produce red pollen. I would think you would have seen that before now however. "Henbit Mint" is a plant here in Ohio that produces red pollen and gives the forager a red-looking head.

—James Tew

Q. When placing supers on colonies this spring, what is the best way to go about it? I have some frames with drawn foundation and some with new foundation. How can I mix them in the super. **Fred Gilliam, 113 Williams St., Springdale, PA 15144.**

A. Mr. Gilliam, there are two recommendations in this area (1) some authorities suggest you should place all the supers on strong hives at one time. So you may place two to four supers on a hive during one visit. (2) the older technique has been to super as the hive requires the space (progressive supering). In this procedure, a beekeeper will always consolidate filled frames toward the sides of the super while placing empty frames in the center of the super. Supers that are partially filled are placed above empty supers and the empty supers are placed immediately above the brood nest. The logic is to always have the honey storage space conveniently positioned for incoming foragers. This second technique is more labor intensive and disrupts the hive more often.

Frames should probably be alternated (drawn comb vs. foundation) in the supers to encourage bees to work all frames. It should be noted that bees will only produce wax during a nectar flow. No amount of supering or frame positioning will make bees produce wax without the stimulus of a nectar flow.

—James Tew

Q. I find it deeply disturbing to visit my hives on a warmish winter day and find the snow covered with not just dead, but dying bees. Often I can pick up a still (slowly) moving bee and warm it up. Which leads me to believe that the cold of the snow is doing them in. Are they attracted to the snow because of a desire for water and then simply getting frozen while perched there or are they dazed and accidentally ending up in the dnow and then getting chilled? Are those particular bees "goners" snow or no snow? **Lynn H. Allen, Union, Maine 04862.**

A. Ms. Allen, I too, find it disturbing to find bees dying in the snow. However, you may rest assured that if a hive has no dead bees near the entrance, the cluster inside the hive is probably frozen already. A common response is that the bees in question are old and diseased and that the colony is better off without them. If you find considerable numbers (I would say several thousand) bees near the entrance, you should have your dead bees checked for nosema. The next year, feeding "Fumidil-B" may help to keep the winter mortality lower and help the hive winter stronger. It is unlikely that the bees are trying to collect water from the snow. However, the reflected light from snow has been reported to confuse bees as they make cleansing flights resulting in more dying that should. If you are keeping your hive strong and disease free, that's all you can do.

—James Tew

Q. We have 500 bee feeders made with wood frames and pressed wood sides. They were made with waterproof glue. They leak. Do you have any suggestions that we might use to seal them? We would appreciate any suggestions. **J. Leslie Wright, 744 E. 5th St., Provo, Utah 84601.**

A. Mr. Wright, You indicated in other parts of your correspondence that you operate 1500 hives. With that large a number, I assume that you have tried the routine procedures such as coating the feeder inside with paraffin. This must be a done at least once a year to maintain the feeder in leak-proof condition. We have had a similar problem with top feeders. We found an expensive, but satisfactory solution. We coated the feeders with fiberglass resin — inside and out. Initially we tried just to coat the inside, but found that as the wood expanded and contracted, the seams cracked and leaking occurred again. The same problem occured if we coated just the inside with beeswax, paraffin, epoxy or fiberglass resin. Another technique we briefly attempted was to stuff a small, plastic garbage bag into the feeders to give a leak-proof plastic liner. That, too, worked, but it needs more development.

—James Tew

Q. Can I "padgen" a colony using package bees or a stray swarm? **Marshall T. Slotterbach, Sellersville, PA**

A. Not really. Padgening consists of removing to another place in the same apiary a colony that has thrown a *prime* swarm and then hiving that prime swarm in a hive fitted with drawn combs or foundation set on the very stand from which the parent hive was moved, thus augmenting the swarm with all the foraging bees from the parent hive. You can, however, move to a new spot in your apiary

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any colony you think might swarm and then, the same day, hive a stray swarm on the original stand of the first colony. This is a very effective manipulation, but check in a few days to make sure the returning foragers have not murdered the strange queen from the swarm. There is no similar manipulation with package bees that is useful.
—Richard Taylor

Q. What is your opinion on plastic foundation? **Dennis Fay, Levering, MI**

A. I don't like either plastic foundation or plastic combs, but that may be a prejudice. A good beekeeper I know swears by plastic combs. They are of course more durable, and bees, to my astonishment, more or less accept plastics. They seem to find round plastic comb honey sections more acceptable than square wooden ones, and I think this is not just because of the shape. They readily attach combs to plastic, or build them on a plastic base. The main problem, to my mind, are that they are a severe departure from nature and, at a more practical level, the bees sometimes chew the wax away down to bare plastic and do not rebuild it.
—Richard Taylor

Q. My hives used to all be one and a half stories, but now I have combined them to make them all two and half stories, in order to avoid having to feed them every spring. Where should I add the supers for producing extracted honey? On top, or somewhere between stories? **Robert Buford, Greenwood, SC**

A. Those hives seem too big to me, especially for southern climate. You might find that the bees store all the honey down below, without much left for your extracting supers. In any case, supers should always be put on top, and not between brood chambers, otherwise you'll get brood in the extracting supers and honey in the brood combs. With hives that tall you will not need excluders. I suggest you get them down to not more than two stories and, if your extracting combs are nice and white, use excluders to keep them that way.
—Richard Taylor

Q. Does the brood chamber of a hive remain contaminated after a colony has been killed by the pesticide Sevin? **Robert E. Derry, Muskego, WI**

A. No. Colony loss from Sevin is caused by the bees bringing contaminated pollen back to the hive. The pollen remains poisonous to them for about three weeks, but the hive is not otherwise contaminated. Even when Sevin is sprayed directly over an apiary there is no significant loss of bee population.
—Roger A. Morse

Q. What is the best way to requeen a colony that has an older queen, to insure the highest probability of success? **Marshall T. Slotterbach, Sellersville, PA**

A. Remove three combs of mostly sealed brood together with adhering bees, but without the queen, from the colony to be requeened, replacing these with empty combs or frames with foundation. Place the three combs of brood in another hive or nucleus box, introduce a new laying queen to this nucleus by laying mailing cage over the top bars, screen down, so bees can get acquainted with her while chewing out the candy plug. There is no need to remove attendant bees from cage. Plug entrance of nucleus colony with fresh grass, which will dry up and fall out in a few days. This prevents too many bees from flying back to the parent colony. After four or five days, when eggs appear in the nucleus remove and destroy the old queen in the parent colony and reunite those with three combs to that colony by swapping them with the three combs of frames or foundation. This method is virtually surefire.
—Richard Taylor

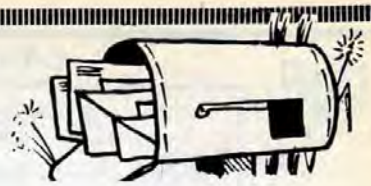
Q. I want to increase my number of colonies by splitting nucs out of those I have. Are three combs of brood and bees enough to make a nuc if a good share of the bees fly back to the parent hive? Will the stronger colonies rob out the nucs if this is done at fruit bloom time? And how many frames of brood can be taken from a colony that has, for example, only six combs of brood to start with? **Mark Young, Dudington, MI.**

A. To keep your nucs from becoming depleted of flying bees, stuff grass in the entrances, not too tight. The grass will dry up and fall away by the next morning. Nucs are not likely to be robbed when there is nectar in the field, but as a precaution, any comb containing honey in the nuc should not be right next to the entrance. From a hive with six combs of brood you could take as many as three, but one or two would be better. Brood combs and bees from different colonies can be put together to make nucs, without the risk of fighting.
—Richard Taylor

Q. I plan to build a 16-frame radial with a two-foot diameter reel, to extract shallow frames. Is that large enough? And what should be the r.p.m.? **Mike Vittitow, Bardstown, KY**

A. That is large enough for shallow frames, and if you use eight combs in your supers, as you should, you can do exactly two supers at a time. According to Bill Maxant, an expert on these things, 300 r.p.m. would be good, perhaps 350 r.p.m. even better. You should design it to be able to control tension on the V-belt.
—Richard Taylor

Gleanings Mail Box



Dear Editor:

In the Questions and Answers section of the January issue of *Gleanings*, a Mr. Williams of Moreland, Georgia, asked about grasshopper control. There is a product on the market for gardeners. It is similar to the product Certan some beekeepers use for wax moth control in that the material is biologic and aimed at grasshoppers. It is not a poison. He may cringe when he reads that it is Nosema. That is what the label says. The label claims that Nosema spores contained in the product are not the variety that affects bees. The label is specific on this point. Whether or not the label is correct, I have no opinion.

I can say that I have tried the product for my garden to control grasshoppers. It worked for me. I have no knowledge of bee contact or results.

I don't know if it is economically practical to use this material on an area of 50 acres. If Mr. Williams is interested in pursuing this idea, I should think his nearest extension agency could provide answers to him. I'm sorry I can't recall the product name or manufacturer. Perhaps a gardening store offers the product in his area. Or maybe knowing that it is a form of Nosema is sufficient for his extension agent.

Daniel L. Rodkey
RR7 Box 148
Frankfort, IN 46041

Honey Pots

Dear Editor:

This is a letter to Mr. James Steed that I would like to share with you dated April 12, 1985.

We have reread your article in the A.B.J. January 1984, and the articles by Ivor and Darl Stoller in *Gleanings* entitled 'Collectors' Corner,' and felt prompted to write you.

You may recall our names from the A.B.J. articles we wrote on the N. American outfits which we worked in 1977 through 1979. The first article entitled 'A Candadian Beekeeping Summer' appeared in Volume 118 No. 10 follwed by two articles in JZ's and B.Z;s Volume 119 Nos. 6/7 East Texas and South Dakota.

This year, finally after several years attempt at getting away, I (John) managed to get to the A.B.F. Convention in Tampa. To assist with the expenses of the trip I took about fifteen beautiful fine bone china and lead crystal honey pots — I never dreamed there would be so much interest, no doubt because we have only been mildly interested ourselves, no more.

We are writing to you obviously with some deep knowledge on the subject to see how we might explore the possible sale of some of these very fine pieces. Some are available through the stores in the U.S. but the prices we can offer them at, will be about half including postage and packing, but not any possible duty payable. We have considered an article or two in the journals, mail shots and advertising.

It has come to our knowledge of a very fine piece, of which there is a limited edition of only one-hundred for the world and we can only lay our hands on one — that is a CAITHNESS GLASS PAPERWEIGHT, with a beautiful agricultural design. The work is done by Caithness who are a world leading manufacturer of modern paperweights, produced by the Lampwork technique and fashioned by William Manson. The price is $200 U.S. funds.

We have the following selected honey jars available for almost immediate despatch and are awaiting photographs that we can send of these.

They are as follows:

Caverswell Bee Preserve Box
Royal Worcester
Waterford Lead Crystal
Tutbury Lead Crystal-churn & standard
Aynsley
Royal Crown — posy
Minton — Haddon Hall
Stewart Fleur
Fitz & Floyed
Childrens Pots

Cookbook

Dear Editor:

The Kansas Honey Producers Ladies' Auxillary is putting together a cookbook. In addition to the Kansas Recipes we would like to have recipes from other areas. Perhaps you would send us your favorite and true recipe or send a queen folder from your state or regional honey queen. Be sure to include your name and address, legible please so we may credit the source of the recipes. We would appreciate your help. Send recipes or folders to:

Anita Mead
RR 1 Box 90
Belle Plaine, KS 67013

Memo To All State Apiarists

From: Marion Ellis, NE State Apiarist
Subject: Stolen Equipment

During the past year, 441 colonies of bees have been stolen from beekeepers in Nebraska. There have been many similarities in how the thief (or thieves) operated, and most of the hives taken were readily visible from a road. I have listed brands that were on the stolen equipment, and would appreciate your notifying me if you find these brands on beekeeping equipment in your state. I would appreciate your assistance in locating this stolen equipment.

Brands of the stolen equipment include:

J.D. Stahlman
M. Shuler
DeKlavs
D & L
M & E Feller
Long's Honey Farm
Adee

A SPECIAL OFFER FROM *GLEANINGS*

By May 15th, 1985, school is winding down in most places. We'd like to offer a little something to encourage folks to get out into school rooms before then. Here's how it goes:

1. You must be a member of a national, state or local beekeeping association. If you're not, please join one or start one in your area. The cost of belonging to an association is trivial compared with what is to be gained by joining together to learn, grow and help each other.

2. After May 15th, but by June 1, 1985, send us a list including your name/the association you belong to/the schools you visited between now and then (elementary, junior, or high school), identified by name, location plus the number of groups you worked with and their grade levels. This is all on the honor system, folks -- nobody's going to confirm these sessions, but we know if you say it's so, it is! REMEMBER: COUNT BY CLASSROOM OR GROUP, NOT JUST BY ENTIRE SCHOOL. Send to:

GLEANINGS IN BEE CULTURE SCHOOLROOM PROGRAM
Box 706
Medina, Ohio 44258

To the beekeeper who has visited the most number of classrooms, we will donate one observation hive plus package of bees, suitable for installation at your favorite school. For the beekeeper with the second highest number of visits to schools, we'll forward 25 copies of our book *STARTING RIGHT WITH BEES* which can be given to school libraries or special young beekeepers. To the third most frequent school visitor, five wall charts depicting the life cycles of the honey bee. Additionally, all three top beekeeping teachers will receive a write up in *Gleanings*. We hope many of you, as individuals and associations, will join in to help the beekeeping educational process. We'll be talking about this in the future issues and look forward to seeing what comes of everyone's efforts.

An Old Pest — The Ant

by Kathy & Roger Hultgren 155 Lovell Rd. Holden, Mass. 01520

Ants, descendants of an ancient kind of wasp, have been on this earth for more than 100 million years. Inhabiting every corner of our plane with the exceptions of the oceans, the North and South Poles, there are some 8,000 ant varieties which have been identified. Living in an organized society, one finds these insects very industrious and possessing physiological features similar to *apis millifera,* the honeybee. Their bodies, like the honeybee, are divided into three segments: head, thorax and abdomen. The ant's compound eyes are located in the upper portion of the head. Some varieties, in addition to these compound eyes, possess simple eyes. As far as the ant's ability to distinguish color is concerned research is continuing but has to date identified their blindness to red. It has also been noted that the south American army ant and African diver ant, winged males excluded, are totally blind. The antennae, which are the locus of the ant's sense organs, are extremely flexible. This flexibility is the result of a ball and socket joint on the lower portion of the head. The thorax region is where three pairs of jointed legs are attached with the forelegs containing stiff featherlike combs. These combs are structured in said fashion to facilitate in the cleaning of the antennae. The ant's skeleton consists of three layers: it's innermost is known as chiton which is tough, elastic and flexible, the middle section provides the stiffness while the outer stratum is thin and waxy. This outer segment protects the ant from weather elements and inhibits the loss of water from their bodies.

An ant's colony is dependent upon its' queen. Some varieties have several queens coexisting within their society. Initially, virgin queen ants have wings, swarm and mate with winged males in the air. After mating occurs the males drift off and die while the queen returns to her colony. Her first task is to dismantle her wings for mating only occurs once. Her life expectancy is ten years plus during which time she is surrouned by faithful female workers who groom, protect and warm her. These queens depending upon the species have been known to lay 100 eggs per hour. Life for these creatures begins as an egg and progresses through the stages of larva to the final phase of pupal. This process averages about 8-10 weeks. The workers and queens evolved from fertilized eggs and the males develop from unfertilized eggs just as our honeybee. Both the male and queen are given extra food during their development and their pupal state is much shorter which allows them to grow larger or king size.

Argentine Ants

Originally these ants came from Brazil and entered the United States in 1891. They were transported to New Orleans on a ship which was carrying a cargo of fruit. Since that time they have spread throughout the South and into California. Argentine Ants can adapt to tropical as well as cold climates. Their colonies possess numerous co-existing queens which insures a large worker force. It has been noted that a colony which was started with 100 Argentine Ants swelled to 10,000 in just five months. These insects average 1/8 to 1/4 of an inch in size, are dark in color, possess small jaws, and no stinger or waxy armor to protect themselves. These seemingly defenseless creatures are however the most dreaded invader to any home. Aside from their attraction to sweets these ants are also carnivorous. They are extremely coordinate in all their invasions and will enter a hive of bees, tear at their opponents legs and wings and eat the larvae, pupas, adult bees and the honey. A beekeeper can control these ants with a few simple procedures. One should maintain a clean apiary site and dispose of burr comb pieces and queen cells which may have been cut and pieces of comb which contain honey. The hive may also be elevated off the ground by means of cement blocks or planks. Strips three inches wide of tree tanglefoot can be secured to these supports or stands. The tanglefoot should be checked frequently and renewed when necessary for when it dries out it is no longer a deterrent. A few ant traps may also be located around the apiary site and even one between the inner and outer cover of the hive.

Carpenter Ants

These large black or dull red creatures will destroy every type of wood with the exception of teak. Hives which are locaed directly on the ground are inviting to carpenter ants. They enter through the bottom floor boards chewing their way along. Here again, prevention measures are your best means of control. Apiary sites should have all rotting wood, tree stumps, piles of grass, brush and leaves removed. For these are potential nest sites for carpenter ants. The remaining ground cover should be kept low and hives should be elevated from the ground by means of bricks. This type of hive support discourages the ants from crawling up to the bottom board.

Fire Ants

South America is the place of origin for these ants. They first entered this country via Mobile, Alabama in 1900 by means of a cargo ship. The ship was transporting coffee beans and unknowingly used infested mats as flooring for the bags of coffee. Since the ants arrived they have spread to nine states which now consider them dangerous. Fire ants are average in size with large heads and vary in color from light brown to brownish black with orange bands. The most vigorous variety has a yellowish head with reddish brown legs and antennae. The males are uniformally black while the queens resemble the workers. These ants are carnivorous, have powerful jaws and their sting feels like one has been touched with fire. After being stung, a red lump with a white spot in the center appears. This white core is where the poison from the ant has killed a bit of flesh tissue. Fire ants create pyramid mounds which can extend to

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three feet in height as well as in diameter. The entrance to these mounds are sometimes 130 feet away from the colony. A single acre can contain as many as 100 fire ant colonies.

Although these ants have not posed a problem to the honeybee, they have become a nuisance to fellow beekeepers. When fire ant mounds are located near apiaries, hive inspections have been known to become a "painful" experience. The best control method known to date is to blend the rinds of oranges, lemons and grapefruits with a small amount of water. This past mixture is then spread over the mound. It seems that the citric acid in these fruits are poisonous to the ants.

The writer has chosen to include a synopsis on the honey ant in this article. These ants are not an impendance to the beekeeper or the honeybee, instead, they have ingeniously devised a method of storing a sweet nourishment for the winter months. It was felt that attention should be drawn to this variety to acquaint the beekeeper' with this unique creature.

Honey ants

Myrmecocystus is the scientific name for the honey ant which can be found in the deserts of Mexico to as far north as lower Idaho. These ants live in a colony which creates a cavern about six inches long with domed ceiling about two inches in height. In inspecting the ceiling one notes grossly disfigured ants whose stomachs are swollen with honeydew. These replete ants weigh eight times their normal weight and are the colony's source of food from fall until the spring when a small wasp lays her eggs in the tissues of the oak tree twigs. A chemical reaction results which leads to a rounded growth known as a gall. These galls are filled with honeydew which oozes each night. The honey ants are nocturnal by nature and are attracted to the sweet substance. The ants collect the honeydew in their social stomachs and transfer their cargo by pumping the honeydew into an awaiting worker. these selected young workers attach themselves to the cavern's ceiling and then are filled to their maximum capacity. The process of filling takes about one month. When full, it is impossible for these ants to move. One can note between 200 to 300 of these repletes per colony. Occassionally during the feeding season one of these honeypot ants will become dislodged and fall to the cavern floor. Some pop due to the impact while others survive. The survivors will lock jaws with a worker who attempts to drag the replete back to it's position.

In the past these honey ants were sought after by the Indians. In trying to expand their bland diet, the Indians discovered the honeypots of myrmecocystus. The ants honey is not as succulent as the bees honey but it did provide a crunchy sweet substance.

Conclusion

This article has addressed the Carpenter and Argentina ants which are a direct threat to the honeybee, the fire ant which is becoming a perilous to some beekeepers and the honey ant which attempts to model the honeybee in storing its winter food supply. As one can see, only a few varieties out of some 8,000 in existance pose a direct impendence on American beekeeping.

The first line of defense against any pest or disease is a strong, healthy colony and a clean apiary site. It is paramount for a beekeeper to identify a definite menace and be able to deter it through implementing appropriate control measures. Ants are an old pest and learning to regulate these insects is a must for every beekeeper.□

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Bailey's Observations and Experiments On Acarine in England

by STEVE TABER of TABER APIARIES 3639 Oak Canyon Lane Vacaville, CA 95688

Reading and studying the work of Bailey has made me realize that most of it is unavailable to beekeepers, so it would be good to present summaries of his papers and a discussion of his findings. These papers are all in scientific journals and difficult to obtain; therefore, I am offering readers copies of these reprints for costs of copying plus postage to those interested ($5.00).

Other writers had already shown that only young bees can become infested and older bees cannot. Susceptability actually diminishes quickly after their first few days of life. Sampling of two colonies at regular intervals over two years (1958) showed a marked difference in rate of infestation which was attributed to the difference in forage available to the two colonies that were separated a half mile. Apparently the most important influence controlling infestation is the frequency with which old bees come into contact with young bees. If the older bees are foraging during a good nectar flow, they contact the younger bees less and infestation diminishes rapidly. Conversely infestation rises during periods of poor nectar flows. Laboratory experiments of day-old bees introduced to cages of older bees that came from heavily infested colonies held at two different temperatures showed little difference in rate of infestation due to the temperature.

Infested bees live almost as long as uninfested ones and samples taken of crawling bees outside the hive were no more likely to be infested than uninfested. Bailey concluded that the bees had been flying when weather was cool and had become chilled preventing their return to the hive.

Work reported (1959) concerning the effect of an infestation with acarapis on caged bees showed that morality increased with infested bees by only a small amount. The only exception was in experiments done in January with caged bees. The uninfested bees and those infested in only one trachea lived a mean length of life of 15 plus days while those bees infested with both tracheae lived 10 days. A similar cage experiment using June bees showed no difference at all. A comparison for infestation of flying and household bees during May and July from four different colonies showed little or no difference in infestation rate. Our APHIS and state sampling method samples flying bees only, which is not substantiated by Bailey's data.

Another observation made was on queenless colonies during the summer brood-rearing period. Two colonies were de-queened twice and three were de-queened three times. Queenless periods were over three weeks in each case. There followed a dramatic increase in acarapis in those colonies subjected to periods of queenlessness. Bailey points out, "The possibility that infestation with *A. woodi* can become severe enough eventually to cause widespread heavy losses cannot be excluded but present evidence shows this to be unlikely . . . more likely (heavy losses from the mite may occur) after a series of seasons of poor honey yields particularly in colonies suffering unduly from beekeeping practices that limit their normal development, such as those in queen-rearing or experimental apiaries."

For six years approximately 265 untreated bee colonies were surveyed each year for the occurrence of the mite each fall (1961). Samples of 30 were taken from each hive to detect the infestation. Most colones were either uninfested or lightly so. The winter of 1958-59 was perhaps the most interesting. Ninety-eight colonies were clean with no infestation, 18 died over winter, and out of 108 colonies with very light infestation, 21 died. Of the 23 colonies with 50% or more infestation, only seven survived. This indicated that heavily infested bee colonies are more likely to die during winter (18 to 30%).

Some Russian and Buckfast bees were included because they were thought to be resistant to the mite. There was no resistance shown to *A. woodi* by any stock. In conclusion Bailey says that less than 2% of colonies in England and Wales suffer measurably from the mite and most of this small proportion will survive the infestation.

A lecture presented to the Central Association of Beekeepers in London and reprinted in *Bee World* (1964) presents the myth of the Isle of Wight (IOW) disease and how the myth developed and grew. There is no question that many colonies of bees were lost in the British Isles between 1905-1919, particularly on three occasions. All of these severe losses were blamed on IOW disease. In addition severe losses were reported in other countries including the USA and Canada. One incident in Utah was the loss of 20,000 colonies with the typical symptoms of crawling bees all around the bee yards. If the Utah case, which was actually caused by a toxic plant visited by the bees, had occurred in England, it would have been called IOW disease.

Mite infestation increases in colonies of bees as a result of poor conditions that already exist in the hive and the infestation dramatically improves when colony conditions improve. Not only are bees relatively resistant to mites but they are also relatively resistant to all their other pests and diseases they evolved with. Rothenbuhler's and Woodrow's works are cited to show how resistant even ordinary bees are to AFB.

And then I quote from Bailey because I have also frequently encountered the same: "Over- enthusiastic beekeepers were, and still are, a major hazard for bees . . . . The sign of significance of the myth (of IOW

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disease) is that lack of sufficient knowledge allowed it to develop and dominate thought, and so to cause much misdirected apprehension and wasted effort."

An investigation in 1965 to determine whether infested bees were more susceptible to other pathogens, particularly septicemia and viruses responsible for acute and chronic paralysis, showed no difference in rate of infection to that of healthy bees.

A comparison was made (1967) in commercial apiaries of the difference in infestation level or resistance between strains of bees in Britain and the USA. Two USA strains were used, termed "Midnight" and "Caucasian". The 175 colonies were in 11 separate apiaries. They were divided into four groups: A. all British bees; B. Midnight strains; C. Caucasian strain. D and E colonies included American and British strains present together in the same hive. Little difference was shown in infestation levels. However Bailey noted that the American bees were not as active in cold weather as the British bees and in the cases when British and American bees were together, both had equal infestation levels. The number of colonies in these two groups (D and E) was six, which is too small to detect a level of resistance or susceptability.

Perhaps the best news Bailey has for us here in America (1982) is a statistical look at the incidence of acarine infestation from 1925 to 1980. Samples of bees were sent to the Ministry of Agriculture, Fisheries and Food, by beekeepers each year and samples ranged in number from 1000 to 6000 per year. Of course different persons examined the bees during the 55-year period but the examination technique is routine and standard. The highest incidence of infestation was between 1925 and 1929 showing over 50% infestation by acarine. Infestation levels declined so that from 1940 to 1945 the percentage of infested samples was between 20 and 35%, and after 1955 there was only one year where the percentage of samples infested was over 10%.

In attempting to explain this decline, Bailey suggestes that it is linked to the number of bee colonies in England and Wales during the period, making more forage available to the remaining bee colonies. He showed that as the number of bee colonies increases in an apiary, so does the proportion of infested bees. That is bad news for some of our large commercial bee yards of from 40 to 80 colonies, but for amateur beekeepers with small numbers of colonies in good locations you can expect little or no acarine disease.□

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GRANT D. MORSE DIES AT AGE 87

We were saddened to learn of the February 20th death of Grant D. Morse, a frequent and respected contributor to *GLEANINGS IN BEE CULTURE*. Dr. Morse, in addition to being a beekeeper and prolific writer, served as a public school administrator for 43 years; mostly in the Saugerties, NY area. In addition to his wife, Margery, Dr. Morse is survived by two sons, a daughter and six grandchildren. His son, Roger A. Morse, is a regular columnist in this magazine. Grant D. Morse's articles were varied and accessible. Over the years, many beekeepers benefited from his knowledge and style. For that we are extremely appreciative and will remember him for those very positive contributions.

The Editors

FEDERAL QUARANTINE ON ACARINE LIFTED

On April 16th, the Federal government lifted all restrictions on interstate movement of bees and equipment from areas of the country affected by acarine infestation (Honeybee Tracheal Mite). It was the opinion of the Animal, Plant Health Inspection Service (APHIS) that the infestation had become too widespread to contain through quarantines. Many beekeepers agreed. APHIS has, however, made available to states, model quarantines which may be used at the discretion of individual states. The state most recently found to have an isolated outbreak of acarine was Georgia. Georgia producers can once again ship health inspected bees out of their state, but a certain amount of economic damage was done during the time when all shipments were restricted. The USDA continues to devote a measure of time and funding to acarine research, in the hope that adequate control and management methodology can be identified.

The Honey Research, Promotion and Consumer Information Act

by Malcolm T. Sanford
Extension Apiculturist
University of Florida Institute of Food And Agricultural Sciences
Gainesville, Florida 32611

Editor's Note: For the past few months we have been reprinting articles, by Malcolm T. Sanford, from APIS (Apicultural Information and Issues). The item below appeared in the February issue. This is one of the best publications of its kind but we felt that most of our readers, especially those not residing in Florida, might not otherwise have the opportunity to share in its value.

Events in January have pushed toward implementing the Honey Research, Promotion and Consumer Information Act. More than likely hearings on the Act will take place soon, although specific dates are not available as this issue of APIS goes to press. There appears to be little formalized opposition to the Act, but a lot of work has yet to be done. The eventual success of the legislation will lie in the hands of beekeeper-voters first, and finally those responsible for implementing the Act.

The tenor of statements coming out of Agriculture Secretary Block's office indicates that all agricultural commodities must be "market oriented." Translated, this appears to mean that those who help themselves by marketing products stand a better chance of being helped. With this in mind, those in favor of the Act should contact their friends and get them to the hearings and to the polling places, which probably will be local Agriculture Stabilization and Conservation Service (ASCS) offices.

Who Eats Honey and Why

Dr. Sabry Shehata, Associate Professor, Agricultural Economics, California State University, Fresno reported the results of his study into honey consumer characteristics and attitudes at the January meeting of the American Beekeeping Federation in Tampa, Florida. The results should be of interest to both large- and small-scale honey marketers.

The purpose of the study was to (1) determine consumer's awareness and preferences for honey products, and (2) determine characteristics of the consumers' demand for honey in U.S. markets. Results show several interrelated factors influence demand for honey: (1) disposable income, (2) price of honey compared to competing sweeteners, (3) customs and habits of the buyer, (4) size and racial composition of the buying public, and (5) availability of substitutes. Demand can realistically be expected to increase because over the last ten years, U.S. per capita honey consumption averaged about 21 ounces, lower than Canadian (32 ounces) Austrian (50 ounces), Japanese (96 ounces) and West German (140 ounces) consumption.

Methodology used was querying a random sample of households in four major U.S. representative cities (Dallas, TX; Washington, DC; Sacramento, CA; and Kansas City, MO-KS). The sample size was 964; questionnaires were used as the principle research tool. The survey was completed in October, 1984. Specifically, frequency of use, per capita consumption, seasonal use, honey characteristics, and purchase location were examined.

Continued on next page

Frequency of Use

Most persons surveyed used honey in 1983: Dallas (60%), Washington (71%), Sacramento (66%) and Kansas City (77%). Although this appears high, according to Dr. Shehata, in all places only 30% of consumers used honey once a week or more frequently:

CITY	HIGH USER	MEDIUM USER	INFREQUENT USER	NON USER
	Once a week or more	Once every two weeks to once a month	Once every two months or rarely	more than a year ago
Dallas	27%	18%	15%	40%
Washington	27%	22%	21%	29%
Sacramento	27%	34%	37%	34%
Kansas City	33%	23%	21%	24%
U.S. Average	30%	21%	16%	33%

Other findings are: (1) honey use increases with household income and with education level, (2) Mexican-Americans use less honey than other ethnic groups; and (3) singles consume more honey than marrieds, because they eat out more often. Main reasons for not using honey appear to be: (1) consumers have no use for it and/or haven't thought about it, (2) consumers don't like the taste, and (3) consumers avoid honey because of medical advice.

Per Capita Consumption

Estimated per capita consumption of honey in sampled households was 23.8 ounces per year, with a standard error of plus or minus two ounces (expected range is from 19.8 to 28 ounces). Per capita consumption for each city is shown below:

CITY	NUMBER SAMPLED	PER CAPITA	STANDARD ERROR	FOR 95% CONFIDENCE INTERVAL LOW	HIGH
Dallas	317	30.0 oz.	4.6	20.8	38.9
Washington	199	18.6 oz.	3.0	12.7	24.6
Sacramento	229	21.5 oz.	3.8	13.9	28.8
Kans. City	212	22.5 oz.	3.8	14.9	30.0
Total	961	23.8 oz.	2.0	19.8	27.9

Seasonal Use

Eighty-three percent of those consumers using honey in 1983 indicated no particular seasonal preference. Those reporting a seasonal use, however, indicated honey to be used mostly in winter.

Honey Characteristics

Dr. Shehata's data show the most popular type of honey for the U.S consumer is liquid honey. A small percentage (6%) of persons purchased cream honey in 1983. When the product was promoted, as in Kansas City, consumption of creamed honey appeared to increase.

Consumers also prefer gold colored honey over amber or yellow colored honey, which are considered too strong

Continued on next page

or not strong enough, respectively. Clover and orange were the most recognized varietal honey types, followed by sage and alfalfa.

Location of Purchase

Most honey is purchased in the supermarket (74%), according to the study. About 10% of consumers buy honey directly from beekeepers.

Rating Honey Attributes

Attitudes between buyers and non-buyers of honey are significant. Buyers responded more positively to the following attributes:

1. Honey is easy to use.
2. Honey is healthy.
3. Honey is priced reasonably.
4. Honey is a good source of energy.
5. Honey improves food flavor.
6. Honey is good for children.
7. Honey is good for adults.
8. Honey tastes better than jelly/jam.
9. Honey tastes better than syrups.

Summary and Conclusions

Dr. Shehata concludes that there are two key factors which will contribute to increasing demand for honey and honey products: (1) expose consumers to as many uses of honey and honey products as possible, and (2) cater to preferences regarding honey container size and different varieties present in the marketplace.

He also suggests that older consumers (60 years of age and over) may be singled out as lower honey consumers, that single unit families are also lower consumers than married couples or families with two or more members using honey, and finally, higher income groups eat more honey than those with lower incomes. Therefore, the present honey consumer, according to the study, is an averaged sized family with medium to high income, whose members' ages lie between 24-60 years. This appears to be consistent throughout the U.S.

More specific recommendations by Dr. Shehata are: (1) demand can be increased by better merchandising and advertising, including improving packaging and store displays, and varying container sizes, (2) demand can be increased by emphasizing different varieties of honey and selling them in stores in more affluent neighborhoods, and (3) demand can be increased by promoting honey in the cooler months of the year.

Two findings in Dr. Shehata's study might bear more examination. The overwhelming preference of gold colored honey and liquid honey by the consumer should come as no surprise. They are by far the most offered products available to the consumer. The question invariably arises, however, whether the marketplace determines this preference by offering higher proportions of these products, rather than this being a well researched consumer preference. There may be far more room for different honey products and varieties than supposed, if only they were out there for the consumer to purchase. The fact remains that often they are not.

It also is not surprising that most honey is purchased in supermarkets. Because there is so much traffic in supermarkets, it is difficult to convince many that more shelf space for honey and honey products is required. In some areas, marketers may actually have to purchase space in stores. Perhaps the easier markets to crack, therefore, are local stores that aren't part of national chains. They are smaller, cater to a more limited clientele and competition for shelf space is not as intense.

Book Review

Microscopy on a Shoestring, by Owen Meyer. Beekeeping Education Service, Box 817, Cheshire, CT 06410, 1984. 109 pp.

Owen Meyer is a well known British beekeeper and author of *The Beekeepers Handbook.* He has a long-standing passion for microscopes, and has succeeded in making several of his own from old binoculars, odd and ends found in junk shops, and so on. He clearly knows what he is talking about in these pages, and a reader cannot help picking up some of his enthusiasm. Besides describing how to make microscopes, microtomes, embedding ovens and the like, he also describes what to look for in buying such instruments, and gives thorough instructions on their use. The latter part of the book tells in detail how to dissect and examine bees under microscopes.

Many people find the world and society of the honey bee to be the most engrossing corner of creation. To enter that world with a microscope, to be able to see the details of the bee's anatomy, examine pollen grains, and so on, is to vastly enlarge one's own appreciation of it. I doubt that many could duplicate Mr. Meyer's knack for home-made instruments, but second-hand ones can be purchased cheaply, and this book will be invaluable to any beekeeper tempted by that hobby.

This book was printed in England and published jointly with Northern Bee Books.

—Richard Taylor

How to "Track" the Wild Honey Bee and How to Capture and Care for the Wild Honey Bee, by Cliff Sawyer. Summer Place Publishing Co., Box 109, Sanford, Maine, 04073. $3.50 ea., both for $6.00 plus .75 postage.

The first of these two self-published booklets (47 ppo.) describes the author's method of finding bee trees. Essentially, he finds a "wild" honey bee on a flower, captures it in a jar, offers it sugar syrup on a little platform, then notes the direction of its flight. As more bees start coming for the syrup he marks them different colors with brush and water colors and times their flight from feeding stand to bee tree and back, thus getting an idea of distance. The feeding platform is moved closer and closer, and sometimes another set up, in order to get intersecting lines of flight, until the bee tree is located. It sounds like good fun, something like sleuthing out a hidden treasure. The second booklet (70 pp.) tells how to get the bees out of the tree and into a hive. This sounds like a lot of work, and less fun. Both booklets are illustrated with hand drawings which, though crude, have a certain charm. Finding and removing "wild" nests of bees from trees is sport, but not a very practical way of installing bees in hives.

— Richard Taylor

Insect Poisons, Allergens, and other Invertebrate Venoms. Edited by Anthony T. Tu. Marcel Dekker Inc., New York. 732 pages. 1984. $135

This may be one of those books that contains more information than one wants or needs to know. However, anyone interested in pursuing the subject of honeybee and other insect venoms will find a great wealth of information in this volume. The first eight of the 20 chapters are of special interest to those who work with honeybees. Chapter one is entitled *Biology and Distribution of Social Hymentoptera.* This group includes all of the stinging insects. Individual chapter parts contain discussions of the distribution of the honeybee species, solitary bees, bumble bees, stingless bees, wasps and ants.

The 36 page second Chapter is devoted to the *Biochemistry of Bee Venom.* It is pointed out that the development of the electric shocking device has allowed the collection of large quantities of high quality honeybee venom that may be used for analysis and experimentation. The bibliography for this chapter is lengthy and will be most useful. Chapter three reviews the effects of the principle component of bee venom has on biological membranes.

Chapters four through eight discuss the biochemistry and pharmacology of wast and ant venoms, and allergies to insects. The use of bee venom to treat arthritis and other inflammatory disease is discussed in various chapters. Interestingly, however, there is a lengthy discussion in chapter eight about the use of an ant venom to treat arthritis. In a trial conducted at the University of Miami School of Medicine there was "a statistically significant improvement in the number of painful and inflamed joints in the venom-treated group compared with the control group." It is reported the studies are continuing. One wonders if bee venom will be included in future studies.

The remainder of the text is devoted to discussions of venoms and toxins from a variety of insects, spiders and scorpians. It is unfortunate that the price of this book is so high; copies will probably be found in libraries only. However, it is satisfying to know that so many people are concerned with these venoms and that the modern method of collecting honeybee venom has stimulated so much interest. Our knowledge of many other venoms is primitive by comparison.

— Roger Morse

Nurse Your Own Brood

By STEPHEN B. BAMBARA
Box 7676 N.C. State University Raleigh, NC 27695-7626

Like a good church sermon, important words need to be repeated from time to time. The topic of this sermon is not new, but does bear repeating.

With the economics of beekeeping in a precarious state it becomes a less attractive business and hobby for newcomers. This makes it more important than ever for us to educate, encourage and support our youth in the area of beekeeping. It is the youngsters of today who will be choosing to engage in this craft tomorrow.

Many of us did not actually keep bees when we were young, but we could probably trace back our initial curiosity or interest in the area to some event that occurred at an early age.

It is vital to educate our youth about honeybees and beekeeping. If children learn not to fear bees when they are young, they will not fear them when they are older. Those kids who have had a seed of interest planted may become the next generation of beekeepers. Those who do not become beekeepers may be, at least, sympathetic to the needs of beekeepers as consumers or voters.

(To those of you who usually fall asleep halfway through the sermon please keep reading.)

There are several small things that a local beekeeping organization or even a solitary beekeeper could do to build a future for beekeeping.

One activity is to make sure that the local and school libraries have a selection of the essential books about bees. If the library can't purchase them, the club could raise money and donate the books. Some beekeeping supply companies offer special prices for such causes. Last month a twelve year old boy very interested in beekeeping asked me for some information on the subject. A suggested reading list would have done him no good because his local libraries had no books on beekeeping. Beekeepers can't afford to lose such opportunities.

Another possible activity would be to install an observation hive in a school or public library. They are fascinating to most people and generate many questions at a location with a learning environment. You could also ask that school teacher friend of yours if he or she would like one set up in the classroom.

A beekeeper or club could sponsor a beginner. The youth could be set up with a hive, made an honorary or junior club member for a year and given a certificate when he reaches a specified level of expertise. Reduced membership fees for youth helps encourage them to be members by themselves.

Of course, beekeepers can still visit schools, 4-H club and Boy Scout troops. The Boy Scouts still offer a beekeeping merit badge, but if often takes a little promoting and assistance for a boy to pursue a badge in that area.

A copy of an elementary grade teaching curriculum like the one available from the Southern States Beekeepers Federation could be supplied to the schools, or areas with heavy 4-H, Future Farmers, Boy Scouts or other youth group activities.

Beekeeping clubs can set up booths at local fairs, festivals or in shopping malls. It is time for beekeepers to nurse their own brood. Now pass the plate and buy those books for those kids.□

BEE TALK

Continued from Page 306

Sometimes you can end up with two or three swarms, each in its own swarm box. These can all be thrown together in one hive, to get a monster swarm. They don't fight when you do that, but sometimes, if you don't get control of the queens, they will take right off again. What you should do, if you're combining two or more swarms, is remove all the queens but one. Watch them as they go into the new hive, and, with skill, capture the extra queens. Or strain them through a queen excluder, to make it easier to get the extra queens.

Swarm funnel. (From *The How To Do It Book Of Beekeeping,* **used by permission).**

Never try adding a swarm to an established colony. They'll just kill each other off. But of course you can hive a swarm in a super, and then combine the super with an established colony, as soon as there is brood in that super.

And finally, to make sure your swarm, once hived, will stay put, either wait until late in the day to hive it or, better, have a comb with brood in it in the hive. That works almost every time.□

[Questions are welcomed. Please make them brief and to the point and enclose a stamped addressed envelope.]

The Washington Scene

By GLENN GIBSON
P.O. Box 368
Minco, Oklahoma 73059

Washington, D.C., May 1. This is written in the nation's Capital following a busy three days trekking up and down the halls of Congress with Jack Meyer, Jr. and Bob Cook. The big crowds, the big deals on the congressional floors, the heavier traffic (meaning heavier cab expense), and the unusual big number of lobbyists rushing from office to office all hampered our efforts to fill appointments (If one could be made). However, most contacts gave us ample time to tell our story.

National Publicity

Since the Department of Agriculture has sent negative signals to Congress based on erroneous information, I have found that it is extremely difficult to tell an understandable story. The pollination story is not understood by officials in the Department of Agriculture who have prepared information for circulation among the congresmen. They seem unwilling to correct their mistakes. To make matters worse the Media Elite uses the Department's data to publish negative stories about beekeepers enjoying a fat subsidy at the taxpayer's expense.

Our first decent publicity in years appeared recently in the USA—TODAY April 24, 1985. It was pleasing to see Larry Gunter's picture on the front page of a national daily and quoted accurately in the accompanying article. Our sincere thanks to Larry Gunter and Richard Adee for taking time to talk with a reporter. It is not an easy thing to do. (If readers haven't seen a copy of this article, please contact us and we will oblige.)

The article contained the usual nebulous statement from the Secretary of Agriculture, John Block — "honey bee pollination is a minuscule portion of the farm industry—". (Hopefully this cute remark will prompt more beekeepers to write their congressman.)

More Letters To Congress Needed

I was shocked to learn that some of the industry's leaders have publicized a "no letters now" policy. Our policy of many letters to Congress is well known and feedback from congressmen tells us that letter-writing cannot be overdone. All reports, letters and other information out of my office stresses the need of continuous letter writing. It is not difficult to relate our small accomplishments to the letter writing.

So— our big problem is to figure ways and means of getting more letters. Thus we talked with Senators on the Agricultural Committee who had received no mail from constituent beekeepers. Ditto — the House. We view letters as the primary link between our office and members of Congress. They have opened many congressional doors for us in the past and I am looking forward to more helpful letters in the future.

At bee meetings our appeal for letters to Congress gets an enthusiastic response, but this seldom results in many letters. Veteran lobbyists say that one must become a complete nagger before results will be realized.

Beekeeper Preservation Act Of 1985

Senator Larry Pressler, South Dakota, introduced S. 1025 (An AHPA sponsored bill.) on April 26, 1985. His statement and a copy of the bill appears on page S. 4897 of the Congressional Record. An indentical bill will be introduced in the House by Congressman Gene Chappie, California, May 8. Copies of the bill and Mr. Pressler's statement can be gotten by writing your congressman.

S. 1025 requires the U.S. International Trade Commission to investigate and report on the effects of honey imports and to require the President under certain conditions to take action based on such report. Fifteen Senators signed as original cosponsors. Mr. Chappie will have 20 or more cosponsors. The Senate bill was referred to the Committee on Finance. The House bill will be referred to the Committee on Ways and Means.

Please Do This

Again we ask you to write your congressional delegation and ask them to support legislation that would leave the honey loan program intact. Also, ask them to cosponsor the Beekeeper Preservation Act of 1985. After you do this, contact your neighboring beekeeper and urge him to become a part of the action. Remember the loss of one segment will adversely affect the entire industry. And, last but not least, work from some favorable publicity with the news media in your state. If we can assist you in anyway, please contact us. Please give us some help.□

Beekeeping Tips

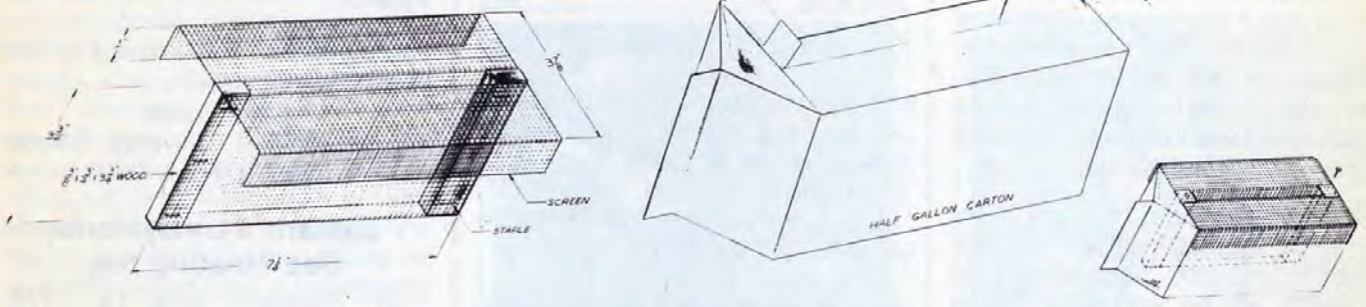
Cleaning Bee Escapes

Beekeepers don't throw away that dirty glued-up Bee escape and don't cut up your fingers and lose your religion trying to take one apart — just drop that Bee escape in a pint jar or something similar — now pour in rubbing alcohol to cover as many escapes as the jar will hold — now cap the jar and let stand overnight. Next morning remove the escapes and with the aid of an old toothbrush and warm soapy water you can have very clean escapes and no hassle.

Save the jar and alcohol for another batch. When the alcohol gets too dirty pour it through a paper coffee filter — save the alcohol and start all over again and add only additional alcohol to cover escapes.

Submitted by: Eugene Gran
341 Lawnview Ave.
Springfield, Ohio 45505

FEEDER IDEA



Place one or more of this type feeder on the inner cover and cover with any size Honey Super and top cover and you have a seep proof and rob proof feeder that is ideal for starting new colonies, from package bees, swarms, or four or more frames of bees, from another colony.

Weather permitting, place a caged queen screen side up on the inner cover. Be sure to remove the cork from the candy end and make a small opening in the candy to help the bees release the Queen. Use one or more feeders depending on the amount of bees you are feeding and close the entrance down accordingly. Keep your nose out of this colony for a week to ten days, and I'm sure you will be happy with the results.

Use an eight inch hardware cloth, seven and one quarter by approximately twelve inches. Shape according to the drawing. Glue and staple the opened end of the used carton.

At the end of a feeding period, discard the cartons and wash the screens for future use.

Robert A. Alten
239 Tallmadge Ave.
Lancaster, Ohio 43130

NEWS and EVENTS

Ohio

The Agricultural Technical Institute will offer a five day course on queen production July 12, 1985. The course will cover all aspects of queen production.

A second course on Instrumental Insemination will be offered July 12-13 at the Institute. The course will cover all aspects of Instrumental Insemination including new procedures developed by the USDA. Space for both courses is limited.

For more information contact:

Dr. James E. Tew
Coordinator, Apiculture
ATI/Ohio State University
Wooster, OH 44691
216-264-3911

The Apiculture Lecture and Study Fund

I am pleased to report that as of March 4th the Apiculture Lecture and Study Fund reached the $5,000 mark and is now a permanently established fund at Cornell. This means that starting this June 30th and each June 30th hereafter, we will be receiving earned income for the purposes for which the fund was established.

Dr. Margaret Adey, the new Director of the International Bee Research Association, with headquarters in England, will be visiting the United States this summer. She will be a guest of the Eastern Apicultural Society, the Western Apicultural Society and the North Carolina Beekeepers Association. We tentatively plan to invite her to be the first lecturer in the series.

The Apiculture Lecture and Study Fund is an open-ended fund. Additional moneys may be added at any time. One person wrote and aksed if a sum might be included in their will and this can be easily done. Anyone who is contemplating such a gift should contact Mr. Glenn MacMillan, College of Agriculture and Life Sciences, Development and Alumni Affairs, 242 Roberts Hall, Cornell University, Ithaca, NY 14853, for the specific wording that should be used.

USDA Announces 1985 Crop Honey And Purchase Rates

WASHINGTON, April 1 — Honey producers will receive average loan and purchase rates of 65.3 cents per pound on their 1985 production, 0.5 cent below the 1984 level, according to Secretary of Agriculture John R. Block.

Block said the price support rates represent 60% of the April 1985 adjusted parity price of 1.087 cents per pound, the minimum required under legislation. Extracted honey loan and purchase rates will range from 68.5 cents to 53.5 cents per pound, depending on color and class.

The rates, which apply to extracted honey in 60-pound or larger containers are:

Color and/or Class	¢ per Lb.
White or lighter	68.5
Extra light amber	64.5
Light amber	59.5
Other table and nontable honey	53.5

Loans and purchases will be offered on 1985-crop honey in eligible containers, on or off farms, Block said. Producers have until January 31, 1986, to request loans that will mature April 30, 1986.

Bee Breeding & Insemination Conference July 7-11

The Apiculture Program at the University of Maryland and Beekeeping Education Service will co-sponsor a program on bee breeding and instrumental insemination from July 7 to July 11, 1985 at the University of Maryland Apiary, College Park, Maryland. Dr. Larry Connor will instruct the program, with the assistance of Melanie Odlum, University of Maryland Apiarist.

The program will concentrate on bee breeding possibilities, methods of selection, developing a bee breeding program, methods of isolating, instrumental insemination training, and related areas.

University dormatory facilities will be available to participants who register by June 28.

For complete details for the program, and for fees, contact Dr. Larry Connor, P.O. Box 817, Cheshire, Connecticut 07410. Phone 203-271-0155.

Short Course in Beekeeping

A short course in beekeeping will be offered by the University of Maine in Augusta. There will be three Saturday sessions on June 8, 15, 22, from 9:00 A.M. TO 3:00 P.M.

The course will be geared to the novice and intermediate beekeeper. Sessions will include biology, seasonal management, queen rearing, Tracheal mite identification and field demonstrations.

Dr. Larry Connor of the Beekeeping Education Service, Cheshire, CT, will be the instructor of the June 15th session. The other two sessions will be taught by Tony Jadczak, State Apiarist.

The cost of the course is $45. For information contact:

Carol Young
Univ. of Maine University Heights
Augusta, ME 04330

Eastern Pennsylvania Bee Meeting Set

On Saturday, June 15, 1985, Delaware Valley College in conjunction with the Bucks County and the Montgomery County Beekeepers Association will be hosting their Annual Summer Meeting.

The featured speaker for the meeting will be Dr. Clarence Collison, Penn State Extension Apiculturist. His talk will be on a timely topic.

Preceeding the formal part of the meeting, Saturday, and starting at 12 noon beekeepers and their families are invited to bring along a picnic lunch and to meet in front of Mandll Hall on Delaware Valley College campus to enjoy the beautiful campus and to enjoy the fellowship of other beekeepers.

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Following Dr. Collison's talk, there will be an open house at the College's apiary and honey house with opening of hives and refreshments scheduled.

Delaware Valley College is located in Doylestown, PA on Route 202 which is easily reached from most parts of Eastern Pennsylvania, New Jersey, Northern Delaware and Northern Maryland.

Starting on the following Friday, June 21, 1985, through Sunday, June 23, 1985, Delaware Valley College will be presenting its popular Summer Beekeeping Short Course.

Additional information about either or both of the above events may be obtained by writing Dr. Berthold, Delaware Valley College, Doylestown, PA 18901 or by calling him at 215-345-1500.

Sweden-Norway Beekeeping Trip Scheduled for August

Borje Svensson, who has had years of experience arranging international beekeeping tours, is now taking reservations for a beekeeping study tour of Sweden and Norway. The cost of this two week tour is $550 which includes local transportation, lodging, and most meals. Space is available for only 30 people. The group will assemble at Sala, Sweden, a beautiful small Swedish town with beekeepers and seeing sights of local interest. Then the group will visit the University of Uppsala and Stockholm. On August 12th the group will travel by train to Olso for an additional five days of beekeeping and tourist activities.

The price quoted above does not include transatlantic travel. For charter flight information to Scandinavia and further information about the tour please contact:

Harold M. Liberman
2701 Marlboro Circle
Upper Marlboro, MD 20772
301-627-4777

Delaware Valley College Spring Beekeeping Short Course

DOYLESTOWN — Delaware Valley College, Doylestown, PA hosted its annual three day beekeeping short courses. The age of those taking the course ranged from seven years to a number of septuagenarians. They came from all walks of life, and the majority of those in this year's course were either just getting started in beekeeping or contemplating getting started in beekeeping.

The instructional staff included Dr. Bob Berthold, Delaware Valley College's beekeeping specialist; Mr. Jack Matthenius, NJ Supervisor of Bee Culture; Mr. Paul Cummings, the grand "old" man of Pennsylvania Beekeeping; Mr. Chuck Whitebeck, former of Pennsylvania Apiary Inspector and Mr. Frank Mikowski, commerical beekeeper. Mrs. Marnie Berthold also presented an illustrated talk on home uses of honey followed by the sampling of some of her homemade honey baked goods.

Delaware Valley College will be offering its Summer Beekeeping Short Course on Friday, Saturday and Sunday, June 21, 22, and 23, 1985. Additional information can be obtained by writing Dr. Berthold c/o Delaware Valley College, Doylestown, PA 18901 or by calling him at 215-345-1500.

Ohio

Ohio State University President Edward Jennings (right) presents the honorary Doctor of Science degree to Eva Crane, a world-renowned authority on beekeeping at the university's winter quarter commencement March 22. Madison Scott (left), secretary to the university's Board of Trustees, places the ceremonial hood signifying a doctorate over Crane's academic gown.

COLUMBUS, Ohio — Eva Crane of England, one of the world's most distinguished apiculturists, received an honorary Doctor of Science degree from Ohio State University during winter quarter commencement ceremonies March 22.

Crane became interested in apiculture — commonly known as beekeeping — when World War II caused a severe sugar shortage in England. In 1949, she used her home to house the Bee Research Association in England, which would become the International Bee Research Association.

Under Crane's leadership for 35 years, the association has developed into an international organization which is accepted in all continents as the center of the world's knowledge about developments in beekeeping, research on bees and their products. It has members in 103 countries.

Crane retired as director of the association in 1983.

Ohio State's Agricultural Technical Institute offers the only degree granted program in commercial beekeeping in the United States. The two year program leads to an associate of applied science degree.

Michigan

EAST LANSING, Mich. — The 1984 Michigan Honey Queen, Julianne Whan, of Edmore, crowns Pennie Reece (right), of Sterling Heights, the 1985 Michigan Honey Queen; and Michelle Hubbard (left), of Ypsilanti, the 1985 Honey Princess.

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Texans Take Advantage Of One Honey Of A Deal

Texans were given a doubly sweet deal and hundreds, 800 to be exact, swarmed to local ski shops to take advantage of the offer. Four after-ski drink recipes and a ski trip were promoted by the Texas Department of Agriculture and Texas Beekeepers Association to encourage increased use of Texas Honey.

"Hit the slopes with your honey!" was the theme for the promotion which included artwork of a honey bear on skis. A recipe card including the four after-ski drinks using Texas honey and an entry form for a ski trip for two to Purgatory, Colorado were distributed through ski shops in Austin, Dallas and statewide. Also, an Austin ski shop featured a tasting of the recipes one Saturday afternoon with the assistance of an Austin beekeeper.

Jan Bilberry of Cedar Park, Texas, was selected as the winner at a drawing held last week. She and her husband will take off for the slopes March 29 for their 4-day ski trip. The ski trip was donated by Bill Milburn Travel, an Austin travel agency, and includes round trip airfare from Dallas, Texas, to Durango, Colorado, 3 nights at the Tamarron Resort, transportation to the hotel from the airport and transportation to the slopes from the hotel.

Mexico

Honey Bee Management & Honey Production For Developing Countries July 7—August 17, 1985

COST

Training Fee.....$2,400

Sponsors will provide participants with regular per diem for non-academic participants, health insurance, and airplane tickets round-trip to El Paso, Texas. The University will provide ground transportation between El Paso and Las Cruces.

REGISTRATION

Contact: Dr. Paul E. Huntsberger
Coordinator of International
Educational Programs
Center for International Programs
NEW MEXICO STATE UNIVERSITY
Box 3567 Las Cruces, NM 88003
Phone: (505) 646-4735
TWX: 910-983-0549
DEADLINE: June 1, 1985

FACILITIES

The program will be conducted on the campus of New Mexico State University. Housing and Meal Service will be available either on campus or in the community.

DATES AND DURATION

6 Weeks: July 7-Aug. 17, 1985 (Enrollment is limited to 12)

TARGET AUDIENCE

Agricultural and livestock information and extension specialists, technicians, entomologists, horitculturists, and teachers in agricultural schools, farmer training centers, and training institutes. Some background in biology may be helpful but is not required.

OBJECTIVES

(1) To give participants the knowledge, skills, and confidence to handle and manage honey bees and to teach others about them.

(2) To give participants information and experience with different levels of beekeeping technology so they may select the proper one for use in their home countries.

(3) To help participants develop innovative skills in making and adapting beekeeping equipment using materials available in their home countries.

CONTENT

Participants will work in an apiary with honey bees and bee equipment each day during the workshop. They will become familiar with the management of bees in Kenya Top Bar hives and U.S. Langstroth hives. Participants will rear and introduce queen bees, produce new colonies of bees, remove and process honey by several methods, feed bees protein and sugar feeds, trap pollen, and move bees to different locations. In addition, participants will take part in lecture discussions on the biology and behavior of bees, nectar and pollen sources, pollination of crop plants, diseases and pests, and the effecs of pesticides on bees.

Spanish speakers with limited English proficiency can be accomodated.

Three-Day Course in Beekeeping June 26, 27, 28, 1985 Holly House Horticulture Farm -6 Cook College Campus New Brunswick, New Jersey

Course Description

Cook College offers this three day course on beekeeping in cooperation with the New Jersey Department of Agriculture. The program is designed for beekeepers and is appropriate for high school science teachers as a means of enriching their classroom instruction. High school students are invited to participate.

Program

All sessions will meet in the Holly House Hort Farm #1 on the Cook College campus. Classes will be conducted from 9:00 a.m. until 4:00 p.m. with one hour for lunch. A catering truck will be available for lunch.

Bee veils will be available and everyone will have the opportunity to participate in demonstrations. Lectures will be followed by a field demonstration.

Teaching Staff

Dr. Radclyffe Roberts, Department of Entomology, Cook College, Rutgers University, Jack C. Matthenius, Jr., Supervisor of Bee Culture, N.J., Department of Agriculture; Dr. Robert Berthold, Jr., Delaware Valley College of Agriculture and Science; Mr. Ingro Desvousges, Apiculturist, Cook College, Rutgers University.

Certificates

A certificate will be presented on Friday afternoon to those who attend all sessions of the course.

Expenses

College registration, instruction and miscellaneous fees: **$50.00.** Fees include costs of publication and use of veils. Make check or money order payable to **Rutgers University.** For the application to be considered, the fee must be paid in full. Checks will be returned in the course is cancelled or filled. A receipt will be available at the first meeting. Applicants under 16 years of age must secure parental permission and approval of the college.

Application

Print all entries on the registration bill form. To apply, send registration form and check or money order for the full amount. Mail your application by June 21, 1985. Registration received with later postmarks will be considered only if space permits. Mail registration to: **Mrs. Norma Wanson, Law's House, 101 Ryders Lane, Cook College, P.O. Box 231, New Brunswick, NJ 08903, Ph. 201/932-9271**

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Illinois

The Illinois State Mid Summer meeting will be hosted by the Wabash Valley Beekeepers Association and will be held on June 22nd at the Fair Grounds Floral Hall, Newton, Illinois starting at 9:00 A.M.

Western Apiculture Society 1985 Meeting Program

TUESDAY, AUGUST 13

7:00 — **Wine & Cheese Reception. At the residence of WAS President. 1021 NW 30th, Corvallis.**

WEDNESDAY, AUGUST 14

9:15 - 10:00 — **Beekeeping in Western Oregon. Mr. Lucien Alexander, Consultant forester and past president WAS.**

10:30 - 11:15 — **Bees & Plants. Mr. Lawrence Goltz, editor emeritus, Gleanings In Bee Culture.**

11:15 - noon — **A History of Plastics in Bee Equipment. Dr. Herbert Drapkin, Perma-Comb Systems.**

1:30 - 2:15 — **One Hundred and Twelve Years of Gleanings In Bee Culture. Mr. Mark Bruner, Editor.**

2:15 - 3:00 — **Trends in Canadian Beekeeping. Dr. Mark Winston, Assoc. Professor, Simon Fraser University.**

3:30 - 4:15 — **Africanized Bees in Panama. Dr. Dewey Caron, Professor, University of Delaware.**

6:30 — **OREGON SALMON BAKE—Avery Park**

THURSDAY, AUGUST 16

8:30 - 9:15 — **The Role of the International Bee Research Association in International Apiculture. Dr. Margaret Adey, Director, IBRA.**

9:15 - 10:00 — **The Honey Bee Tracheal Mite in North America. Dr. William T. Wilson, USDA, Laramie, WY.**

10:30 - 11:15 — **The Roles of Drones. Ms. Sue Cobey, Vacaville Apiaries.**

11:15 - noon — **The North Carolina Master Beekeeper Program. Dr. John T. Ambrose, Assoc. Professor, North Carolina State University.**

12 - 5:30 — **SUPER TOUR to Pacific Wax Works, Newburg, and the Ellendale Vineyards, Dallas. (Box lunch provided).**

7:30 - 8:30 — **The Preparation of Honey and Beeswax for Competition. Mr. William Ruhl, Ruhl Bee Supply, Portland.**

FRIDAY, AUGUST 16

9:00 - 9:45 — **A Review of the Honey Show. Mr. Doug McCutcheon, British Columbia Ministry of Agriculture.**

9:45 - 10:30 — **Systems Management of Honey Bees. Mr. Wayne Robinson, Systems Engineer, Puallyup, WA.**

1:30 - 2:15 — **Bees & Trees. Dr. Daniel Mayer, Assoc. Professor, Washington State University.**

2:15 - 3:00 — **Queen Rearing — My Way. Mr. Steven Taber, Taber Apiaries, Vacaville, CA.**

3:30 - 4:15 — **The Fascinating World of Bee Research: 33 Years. Dr. Carl Johanssen, Professor, Washington State University and 1984 recipient of the WAS Outstanding Apiculturist Award.**

SATURDAY, AUGUST 17

BREAKFAST AND FAREWELLS!

For pre-registration materials please contact: Mr. Ruth Madsen, LaSells Stewart Center, Oregon State University, Corvallis, OR 97331.

June Connecticut Meeting Set For Eastern Part of State; Workshops To Be Featured

The Connecticut Beekeepers Association will hold a field meeting at the Cooperative Extension Service Center in Brooklyn Connecticut on June 22, 1985. The program will start at 10:00 a.m. and continue into the afternoon.

Following a very short business meeting, a series of workshops will be held. Currently scheduled to appear are:

— Diana Sammataro on Honey Plants You Should Know

— Bill Gerdsen on How, When and Why You Should Collect Pollen

— Bob Stevens on How To Harvest The Crop And What to Do With It

Other speakers will be announced later.

In addition the Second Annual SMOKER LIGHTING CONTEST will be conducted. All beekeepers are asked to bring their smoker, matches, and favorite fuel.

At noon, a pot-luck picnic will be held. In addition, an auction for the pesticide fund will be held.

A special invitation is extended to non-members, including beekeepers from nearby Massachusetts and Rhode Island.

1985 Eastern Apiculture Society Meeting Scheduled For Pennsylvania

August 8, 9, and 10 are the dates for an enjoyable Conference in the midst of the Pennsylvania Dutch Country. Registration for the Conference will be August 7th after 1:00 p.m. Franklin and Marshal College in Lancaster, Pennsylvania is a very beautiful campus. It is an easy stroll to all of our activities scheduled on campus.

Dr. Larry Connor is directing the 2½ day EAS Short Course, scheduled August 5, 6, and 7. Registration will be early Monday morning. Greater emphasis will be placed on bee diseases and queen breeding than last year.

Continued on next page

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The delegates and directors will have their meetings Wednesday evening. There should be other social happenings that evening.

Dr. Clarence Collison, from Penn State, has a very interesting program planned. Dr. Robert Berthold is directing the workshops. There are many renowned speakers both in the short course and the Conference, Dr. Margaret Adey, Directors of International Bee Research, Mr. Taber of California just to name a few.

There are meetings, lectures, workshops, contests, exhibits, short courses, bee beards and everything to make a fine Conference. YOU must attend to get a worthwhile experience.

TEXAS

Sponsored by the Houston Beekeepers Association June 30th.

1 DAY ONLY!

Principal Speaker: Dr. John Thomas

Special Speaker: John Lindsey

Topics: Beginners, equipment, marketing and the Africanized bee.

This meeting will be held at Boys County, just 25 miles outside of Houston. Cost is $10 per person.

For more information call:
713-661-2919

School Food Service

The American School Food Service Conference will be held in July. Because of the American Beekeeping Federation Memberships interest, the ABF will sponsor an "Educational Booth" in Philadelphia. The varied locations of the conference, in the past years, realizes new interest each year. Quanity recipes have been tested and will soon be printed. These recipes will be distributed, and with honey still being available as a bonus, commodity product, our industry has the opportunity to implement a delicious, nutrious sweetner into the School Lunch Program! The opportunity to acquaint various industries in using honey will be available. Members of the ABF and non-members, who believe in promoting their product to the largest food service in the world, send contributions, ear-marked ASFSC, to the American Beekeeping Federation, Inc., 13637 NW 39th Avenue, Gainesville, Florida 32606.

The American Honey Queen Committee has the resposibility of the American School Food Service Conference plus the American Honey Queen Program. The success of these programs depend totally on the financial backing of persons involved in the industry!

BEE A PROMOTER and support the only generic promotion available. These programs are making an impact on the increased consumption of HONEY!

JoAnne Weber
Route 2
Clayton, WI 54004

Western Connecticut Beekeepers Association Second Annual Bee Bonanza Set for June 16

BETHEL, Conn., March 8, 1985 — The second annual Bee Bonanza will be held Sunday, June 16 from 10:00 a.m. to 6 p.m. at the Fairfield County Extension Center on Route 6 in Bethel, Connecticut.

The day will be filled with interesting and entertaining events. There will be an observation hive and demonstrations in bee handling, movies about bee culture, slide shows, a drawing for door prizes and other demonstrations and contests.

Suppliers to beekeepers will be displaying a wide variety of wares. There will also be displays explaining bee culture, the honey harvest and other aspects of beekeeping that will be of interest to everyone, whether or not they keep bees.

Ample free parking will be available. Food and refreshments will be sold, and there will be space for picnics.

The Bee Bonanza will be held in a large building on the grounds, so it will take place rain or shine.

SIFTINGS

Continued from page 290

other syrup?" We must be careful that we do not get fooled by "experts" making tests with Corn Syrup Fructose and getting certain results, and then immediately assume that these same results will be had with natural honey. Nothing could be further from the truth. In fact, the results could actually be opposite with natural honey and high fructose corn syrup. We must be sure in any experiment or research that the distinction should be made, if the product used is natural honey, processed honey or high fructose corn syrup. We just cannot assume that all three will give the same results when biologically all three are different.

Now, I believe, all of us beekeepers who believe in honey, that it is a superior food and sweetener, you can now prove that your natural honey is superior to processed honey and all forms of corn syrup. We must now all work towards putting honey back in its rightful place as the most healthful food for all men, women and children of every age. Natural honey will not only make us well, but to keep us well, if you will eat it yourself and not sell it all to the government to be stored away in a warehouse. There it will do no one any good whatsoever.□

BUY & SELL

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 $5.10 (Surface mail) and $7.10 (Airmail). The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex, RH10 3DS TF

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

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

WANTED

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

Help Wanted: 2 Professional bee men for year-round work. Must have large scale queen rearing and package bee experience. Also can use 2 part-time bee men for package season February through May. Absolutely NO DRUG USERS. **Huck Babcock, P.O. Box 2685, West Columbia, SC 29171. Phone: 803-256-2046.** TF

FOR SALE

"BEEKEEPERS LEARN"
35 years of successful
WINTERING & SUMMER MANAGEMENT
Explained "Step by Step"
Write Box 6696-G — Saginaw, Mich. 48608
TF

INSEMINATION DEVICES. For prices write Otto Mackenson, Box 1557, Buena Vista, CO 81211 TF

For Sale: clean, fresh, dry, Bee Pollen. $6.50/pound. You pay shipping. Honeycomb Apiaries, R.R. 3, Box 74, Wrightstown (Kaukauna), Wi. 54130. Ph: (414) 532-4314. TF

FOR SALE: Bee Operation on 15 acres. 14' x 60; wood frame building on cement. Also 20' x 30' storage shed. Excellent line of equipment plus 500 hives. 25 yard sites available mostly on Sweet Clover. Call 873-5900, Renaud Realty, Box 416, Tisdale, Sask. SOE ITO TF

150 STANDS BEES WITH RELATED EQUIPMENT SALE. FOR DETAILS WRITE STEARNS, 4605 REDSTART, HOUSTON, TX 77035 6/85

For Sale — 100+ colonies in Northwestern Ohio, available in the spring. 419-478-3829 after 7 p.m. WD TF

FOR SALE

Complete 700 hive operation in south western Manitoba including buildings, house, trucks and all related equipment. Write to:
Gleanings In Bee Culture
P.O. Box 97
Medina, OH 44256

Granulated Sugar for your bees. 25¢ per pound. Limited quantity. L. Dixon (315) 592-9581. TF

1-40 single hives with bees — each $50.
WES ARCHER, Box 839, Windsor, California
Phone: 707-433-3261 7/85

FOR SALE: 30— 1½-STORY 10-FRAME COLONIES. GREGORY SHARANVEVYCH, 2433 ALLENDER AVENUE, PITTSBURGH, PA. 15220. Phone: 412-279-3304. 6/85

Complete fully integrated honey business. Well established location. Property, equipment and all phases of business for sale. Major mid-western location. Write, P.O. Box 706, Medina, OH 44258. 6/85

For Sale by Owner: Famous Supply and Honey Business, Retail — Wholesale, Gift Shop, Bottling Plant, over 30 years same location, extremely well known. Business, Stock Buildings, Accounts. Store 24' x 54' (only known building built like straw skep), Warehouse — 2-story 35' x 50' on well traveled highway. Owners retiring. Jack's Honey Farm, R.R. 2, Box 953, Asbury, N.J. 08802. Phone 201-537-2088. 6/85

FOR SALE: $10. used brood and honey standard boxes, 3 semi loads, shallow honey supers $8.50, 1200 new 10-frame deep supers with foundation, painted, 4 and 6 way pallets, good selection of other equipment. Call for delivery or financing. BOB BENNETT, Greenville, Wis. 414-757-5115. 7/85

For Sale: 22 new bee hives painted frame are complete with wax, tops and bottoms. 45 new Illinois deep supers complete with frames and wax, some queen excluders and top trays, all for $1,100. Days 618-395-3351 nights 618-395-4255. 6/85

For Sale — Several single stack hand super carts; 1 hand hydraulic pallet truck; 100 drip pallets; two 3000 gallon stainless steel tanks, outside, cork insulated, steel jacketed, 4" outlet & honey gate $2000. ea.; 1 shop super left; one 3-speed brownline aux gear box; 1 Cook & Beals uncapper; 100 4-place super storage pallets; 1 radial arm saw; 1 Bob Cat trailer; 1 Barrel holder attachment (Bob Cat). Gerry Kunkel, Rt. 2, Baraboo, Wis. 53913. Phone (608) 356-7038 8/85

For Sale: Twenty years accumulation of Gleanings and Gleanings. Nintey percent complete. M.O. Riley, Aliceville, Alabama 35442. 7/85

For Sale: Up to 200 hives; strong colonies and good equipment, some extracting equipment, located in Central Texas. (512) 476-8677, evenings. MD 6/85

For Sale: 300 8-Frame deep $10. 200 10-frame deep $12. All drawn comb tops & bottoms $1. Terry Heithoff, Elgoin, NE 402-843-5447 or 402-485-2467 6/85

For Sale: All Stainless 9-18-28 & 36 Frame Radial Extractors 275 Gal. SS holding tank water jacketed with 220 vold heather and 1" bottline outlet. 412-654-6521 AB 7/85

For Sale: Kelley bee hoist $500.00 or will trade for bees. Call Larry Howell 517-862-4640 7/85

For Sale: 300 two story colonies, Queen rearing outfit, 69 two ton truck, Kelly loader, good honey outlets. Best offer. Andrew Hutchison, P.O. Box 6993, Boise, ID 87707 TF

BEES & QUEENS FOR SALE

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

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

FOR SALE — Top quality Italian bees and queens since 1940; also 3-frame nuclei and single story colonies. Bring your own cages and save. WALKER APIARIES, Rt. 1, Box 34-B, Rogers, TX 76569. 817-983-2891 or 773-9086 6/85

20 Colonies of bees three supers deep $50.00 each. (216) 467-5507. Sagamore Hills, Ohio. AK TF

BEE SUPPLIES FOR SALE

HONEYSTRAINER — Really Works! Guaranteed. Ppd. $3.50 each. 2-up $3.00 each. Try Your Dealer. Beckman, Box 633-G, Stuart, Florida 33495. TF

WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Mich. TF

5 Frame Nucs — Package bees, Italian or Starline — High fructose syrup, Meyer Stingless Goat skin Gloves — Complete line of supplies at commercial prices. WOLF BEE SUPPLY, Box 707, Baldwin, WI 54002. Phone 715-684-2095. 1/86

5 Frame Nucs, Italian or Starline. Will have limited number of nucs from bees wintered in Wisconsin, also 1 story hives. WOLF BEE SUPPLY, P.O. Box 707, Baldwin, WI 54002. Ph: 715-684-2095. 6/85

FOR SALE— 150 candy boards, 1.50 ea., 200 9⅝ bodies with comb, $10.ee ea., 1500 6⅝ supers with comb in good condition, $9.50 ea., covers with inners, bottom and 4 way pallets. WOLF BEE SUPPLY, Baldwin, WI. Ph: 715-684-2095. 6/85

MEYER STINGLESS GLOVES* are back on the market! The BEST in bee gloves. Goatskin — $13.60, Cow-hide $11.95 Plus 1.00 postage. WOLF BEE SUPPLY, Box 707, Baldwin, Wisc. 54002. Phone: 715-684-2095. 1/86

FOR TOP QUALITY BEE SUPPLIES and advice on beekeeping problems, visit your nearest Root dealer and send for your FREE Root catalog. Satisfaction guaranteed. The A.I. Root Co., P.O. Box 706, Medina, OH 44256. TF

ALL WESTERN BEEKEEPERS: Lock-corner supers — tops — bottoms — frames. Complete stock — supplies & equipment. Phone or write for quantity prices. UNITED BEE CRAFT COMPANY, 600 Harbor Blvd., West Sacramento, CA 95691. (916) 371-9340. TF

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

RADIAL HONEY EXTRACTORS-5 and 10 frames, Patented, factory made of stainless steel. GAMBLE'S HONEY EXTRACTOR CO., P.O. Box 7997, Greensboro, NC 27407, Phone: (919) 299-3973, Day or Night. TF

HONEY EXTRACTORS FOR HOBBY BEEKEEPERS — Affordable Prices. FREE Literature. BEE LINE MANUFACTURING, 1019A Saint Elmo, Austin, TX 78745 TF

HOBBYISTS HONEY EXTRACTORS — SUPPLIES. Free Literature. **BEE LINE MANUFACTURING, Box 15682-B, Austin, TX 78761. 12/85**

Manufacturing Telescoping Covers and Inner Covers. Send $12.00 pp. for sample. Complete Standard Bee hive w/o Foundation $35.00 pp. U.S. Only Hive Tops 25115 CR 54 R1 Nappanee, Ind. 46500. 6/85

REVOLUTIONARY NEW IDEA:
METAL SINGLE FRAME EXTRACTORS, 49.95 PLUS POSTAGE, **MULLIGAN'S APIARIES, DEPT. G, 18 RICHARD AVE., MERRICK, N.Y. 11566. 12/85**

PINE BEE SUPPLIES

9-5/8" hives dovetailed ..... **$4.00** each
6-5/8" supers dovetailed ..... **$2.75** each
5¾" supers dovetailed ..... **$2.50** each
Select grade heavy duty frames, all sizes
$31.00 per 100 **$280.00** per 1000
Hoffman 9-1/8, 6¼, or 5-3/8 specify style
Powers super frames 6¼, 6 and 5½
Wooden lids and bottoms (migratory)
$2.25 each or **$4.50** per set
Bee Pallets Cut To Order ..... **$6.50** & Up
Foundation available — plain or wired
Sale Price ..... **$3.00** lb. in 25 lb. box only
Wax rendering — combs, slum or cappings
Allow manufacturing time on all orders

MARVIN SMITH APIARIES
Rt. 1, Box 1268
Phone: 208-722-5278, Parma, Idaho 83660

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

MISCELLANEOUS

RENDERING every day in our all new plant. All honey saved from cappings. Rendering slumgum and old combs. Write for FREE shipping tags and rates. HUBBARD APIARIES, Onsted, Mich. TF

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

BEE PROBLEMS SOLVED
By mail or phone. SASE for
Free material to **WANDR FARM**
Box 125, Keysville, Va. 23947
7/85

POLLEN

FRESH, PURE, Bee Pollen available in 1 pound containers at $8.50 per pound postpaid. 10 pound bulk pack at $7.90 per pound. Large lots, ask for price. Hubbard Apiaries, Inc., Onsted, Mich. 49265. TF

Pure Fresh Bee Pollen in 1 lb. jars $6.50. In 50 lb. bulk — $5.00 per lb. Prairie View Honey Co., 12303 12th St. Detroit, Mich. 48206. TF

SPANISH BEE POLLEN. Excellent taste and quality. 3 lbs. $20.00, 6 lbs. $36.00, 10 lbs. $50.00, 20 lbs. $90.00. Free UPS shipping. BLOSSOMTIME, P.O. Box 1015, Tempe, Arizona 85281. TF

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

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

ROYAL JELLY

PURE FRESH Royal Jelly, 2 oz. bottle, $22 pp.; 1 lb. $120. Prairie View Honey, 12303 12th St., Detroit, MI 48206 TF

BEESWAX

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A.I. Root Co., Medina, OH 44256. TF

PROPOLIS

PROPOLIS U.S.A. has stopped buying until further notice. TF

BOOKS

Bee Books New & Old. Write for quarterly list to BBNO, Tapping Wall Farm, Burrowbridge TA7 ORY, Somerset U.K.. Visa/Access American Express welcome.4/86

HONEY WANTED

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

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. Hubbard Apiaries, Onsted, Mich. TF

All Grades of Honey. Any quantity drums or cans. Call Toll Free 800-248-0334. Hubbard Apiaries, Inc. Box 160, Onsted, Michigan 49265 TF

WANTED — All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, OH TF

WANTED: Comb and all grades of extracted in 60's or drums. Send sample and price to MOORLAND APIARIES, INC., 5 Airport Drive, Hopedale, MA 01747. TF

Established Beekeeping Business with buildings, acreage and up to 200 beehives. Preferable West Coast, including British Columbia. Gabriel Mikoleit, P.O. Box 927, Mercer Island, WA 98040. Phone: (206) 232-5668 or 232-8767 (Business). 7/85

HONEY FOR SALE

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

Beekeeping Folk Arts

By AMOS ARBEE

"Bee Skeps"

¼ Cup honey (mild flavor)
1 egg, beaten
1 tsp. vanilla
2 cups shredded coconut
1 cup walnuts or pecans (chopped coarsely)
1 cup chopped dates
2 Tbsp. flour

Combine in your mixing bowl honey, egg, and vanilla mixing very well. Stir in coconut and nuts. Flour the dates. Add to the rest of the mixture. Drop by tablespoon onto well greased cookie sheet and bake at 325°F for about 12 minutes or until done.

***Hint**
Just for fun try icing a few with Lemon Icing

1½ cups confectioners' sugar
2 Tbsp. water
1 tsp. Realemon Lemon Juice from Concentrate
a touch of nutmeg

Combine all ingredients: mix well. Spread on cooled cookies. A lunch box delight.

Charle's Butler's Feminine Monarchie

by KARL SHOWLER

Of the 832 titles included in the *Bibliography of British bee books 150-1976,* published by the International Bee Research Association in 1979 many were short lived and therefore forgotten in a generation, however a limited number having an enduring quality were in constant demand and therefore reprinted until superceded by more modern books. For example, the Reverend Charles Butler's *Feminine monarchie* first printed in 1609 was reprinted in several forms in the 17th and 18th centuries. In the 19th century it was superceded, by more modern works as beekeepers interests became centered on first bar and then framed comb hives. In 1969 the Dutch publishers "Theatrum Orbis" selected the first edition for inclusion in their reprint series of early English classics but this is now out of print.

The story of the Feminine Monarchie is interesting. The 38 year old Charles Butler, vicar of Wotton St. Lawrence near Basingstoke, Hampshire first published his book with the title *The Feminine Monarchie or a treatise Concerning Bees* in 1609, he created the best account of skep beekeeping in the English language. He also attempted to provide a description of queen piping using a musical notation. His interest in music, he wrote *Principle of Music* (1626), led him to expand the music in a second edition of Feminine Monarchie (1623) into a four part madrigal, and by printing the parts in opposition over two pages it became possible for two pairs of singers, facing each other, to hold the book by its corners and see their own part. This second edition was called *The Feminine Monarchie or the historie of bees.*

The Reverend Butler's interests also extended to the use of phonetic spelling and when he was 63 he published a phonetic edition of his bee book, which is possibly the only phonetic book on bees in English, this time the title was *Feminin' monarchi', or, The histori of bee's.*

After Butler's death (1647), R. Richardson translated the book into Latin which was published in London as *Monarchia foeminina* (1673), another Latin edition was published in Oxford as *Monarchia foeminarum, sive apum historia* (1682).

At the turn of the 18th century a translation back in to English was prepared by A. Baldwin and published in London as *The Feminine Monarchy* (1704) using the same type G. Conyers also produced another edition in London in 1704.

Today the Reverend Butler's books are much sought after and command a high price, so it is welcome news that Northern Bee Hooks, Hebden Bridge, Halifax England, are to publish a facsimile of the second (1623) edition that includes the bee music. The books will come in its own slip case as a deluxe edition.

In the USA and Canada the Feminine Monarchie will be available through Dr. Larry Connor's, Beekeeping Education Service, P.O. Box 817, Cheshire, CT 06410 at $40.50.

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