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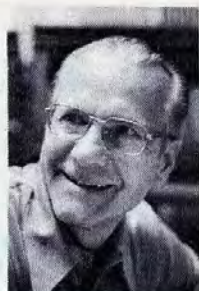
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COVER STORY

Harold Lange of Lange Apiaries, Mount Vernon, Washington, holds a frame of honey for the Editor's camera during a tour of the Pacific northwest.

Harold, incidentally, owns the usual number of hive tools, but a borrowed screw driver made do in a pinch when we made an unexpected stop to take a picture. — Photo by L. Goltz.

Gleanings in Bee Culture

November 1978

Vol. 106, No. 11

Created to Help Beekeepers Succeed

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Monthly HONEY Report

LAWRENCE GOLTZ
October 10, 1978

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								
In 60 Lb. Cans	1	2	3	4	5	6	7	8	9
White (per lb.)		.50	.50	.48	.46	.51	.45	.45	.45
Amber (per lb.)			.46	.45	.43	.43	.41	.42	.43
1 lb. jar (case 24)			21.20	17.80		19.00	19.70	17.50	17.75
2 lb. jar (case 12)			20.15	16.50		18.50	19.25	17.25	17.25
Retail Extracted									
8 oz. jar			.70	.65		.56	.59	.60	.59
1 lb. jar	1.25	.99	1.12	1.02	1.25	1.05	.95	1.05	1.12
2 lb. jar			2.25	1.82	2.25	1.91	2.19	2.05	2.06
2½ lb. jar	2.80	2.39	2.39						
3 lb. jar			3.30	2.85	3.25	2.88			2.75
5 lb. jar	4.98	4.00	4.90			4.50	4.30	4.40	4.75
12 oz. creamed			1.12						
16 oz. Comb	2.00	1.25		1.69					

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Misc. Comments:

Vermont—Bees in good condition and hives in most cases heavy with honey for the winter. Rain on the short side. Clovers just fair.

Rhode Island—Good honey flow this year. Colonies in good condition to winter over. Good crop of fall honey.

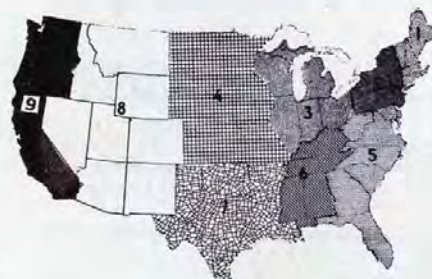
New York—A good season but fall flow was a failure. Very poor bloom of goldenrod through whole area, no more than 10-15 pounds per colony.

Illinois—Northern Illinois had poor crop, good to moderate in rest of state. Most of crop already sold. Quality of honey is best in years. No fall honey flow.

Michigan—Rainfall conditions improved in south but middle and north of state still dry. Some honey buyers offering very low prices. Bees in good condition.

Indiana—Honey sales remain good, both wholesale and retail. Prices slightly higher. North central Indiana has a good crop but spotty in northern Indiana. Some feeding will be necessary.

Ohio—A good honey year overall but fall honey crop short. Bees in good condition.



Minnesota—Southeast Minnesota has a poor honey crop; too much rain during main honey flow. Feeding will be required. Balance of state has best crop in years, but not as much light honey. Bees in good condition for winter.

Nebraska—All colonies going into winter in top shape; plenty of bees and honey. Best honey crop in years.

West Virginia—Good crop year. Bees strong.

Virginia—Dry. Honey selling well. Colonies in good condition for winter.

Alabama—Rainfall has been scarce in the southeastern part of the state, with many colonies light on stores. Some feeding is being done.

Kentucky—Very warm and dry. Fair to excellent honey flow in some areas but too early to tell if fall flows have made up for short spring and summer crops.

Tennessee—Promising fall honey flow but a little dry.

Arkansas—13 inches rain brought on fall flowers. Best soybean honey flow in years. Insecticide losses caused loss in production. Bees in good shape for winter.

Texas—Cotton honey crop from the plains in west Texas looks very promising as extracting begins. Recent rains have brought broomweed and white brush to full bloom. Honey sales steady.

Oklahoma—Rainfall short at end of September. No chance for fall honey flow.

North Dakota—Fall moisture conditions are good in most of North Dakota.

Montana—Produced 7,280,000 pounds of honey this season in state with estimated yield of 80 lbs. per colony; 36% more than in 1977. Moisture conditions good.

Colorado—Extracting nearly over at end of September. Bees in excellent shape for winter.

Washington—Too much moisture.

Oregon—Bees in good condition. Moisture conditions good. Honey prices holding up well.

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Book Review

Dear Editor:

Things were put back into perspective for me when I read the **Siftings** article in September **Gleanings**. For centuries people have known of the wholesomeness and even medicinal properties of honey and have used it to and for their well being. So I am sure many people like myself were thrown off balance by the reports of, is honey botulism linked to crib deaths? But after reading the **Siftings** article about botulism in honey it was easy to see the truth about honey's wholesomeness now as it has always been. I hope everyone reads the **Siftings** article and that it gets as much publicity as the botulism reports. The reports are phony, like glass compared to diamonds and I hope everyone sees the real thing!—M. Giardinelli, Walla Walla, Wash.

Dear Editor:

The honey industry reminds me of an ostrich in relation to the possible botulism problem. If the facts are examined, the answer is quite apparent.

Honey is a very stable product that will keep for centuries if treated right. If it has 1% too much water it will turn bad in very short order unless sterilized.

The newborn child is also very delicate. It has been in a protected environment for nine months. When first born it is kept in semi-sterile surroundings. The baby usually stays in a fairly clean environment until it starts crawling. Then it starts eating dirt, lint, dog hair, etc., gradually building up an immunity to the world.

We all know that honey contains bacteria, yeasts, etc. in its natural form. The high concentration of sugars prevent the bacteria and yeasts from developing. When added to a baby formula these sugars are diluted and the bacteria can multiply.

The answer is quite simple. Sterilize the honey when using it in a baby formula. Yes, the honey will darken and lose its enzymes but it will still be a better food than the syrups it replaces.

Some twenty years ago when we were bottle feeding our children, my wife sterilized our honey in a pressure pan just as if she were canning beans. This was used in formula.—L. Dooley Toyne, Sedgwick, Colo.

Editors Note: Honey is a very delicate, organic substance which does not lend itself well to what we commonly think of as sterilization or rendering free of living micro-organisms. The botulism threat, if indeed it is such, is also concerned with a sporiferous organism associated with a host, the baby, that is beyond the control of the honey processor.

Honey Marketing: Tips for the Small Producer, Sidney A. Gross, 52 pages, \$3.95 postpaid. Kitchen Harvest Press, 3N681 Bittersweet Drive, St. Charles, Ill. 60174.

Gross' *Pure Honey* is not a large producer and packer of honey but the author may have some fresh, new ideas as well as some tried and true ones for anyone who is interested in selling honey. Kitchen Harvest Press is a family enterprise (Sue and Sidney Gross) which began with "a loaf of rye bread and a mimeograph machine" in 1973.

Catskill Mountain Views, Grant D. Morse, Ph.D., 90 pages, hardback, \$6.95. Wicwas Press, 425 Hanshaw Road, Ithaca, New York 14850.

The author, who is a regular contributor to **Gleanings in Bee Culture** displays his literary versatility and sensitivities perhaps unknown to readers of the beekeeping articles. Other books by Grant Morse are: **Rip van Winkle's Retreat and Other Poems** (1955) and **Glimpses of Nature and Human Nature** (1964), both now out of print.

The poems of **Catskill Mountain Views** are grouped under three heads: Contemplative, Animals and Nature, and Nostalgia.

If you enjoy down-to-earth poetry **Catskill Mountain Views** will please you.

Living Off the Country, For Fun and Profit, John L. Parker, 198 pages, hardcover \$7.95, softcover \$4.95. Bookworm Publishing Company, P.O. Box 3037, Ontario, California 91761.

Honeybees, along with various kinds of poultry and small livestock are classified as "Money-makers". Helpful hints in the book are concerned with the problems usually associated with the back-to-the-land movement. The ten pages devoted to keeping bees leaves something to be desired—but then, who has learned apiculture in ten pages—it's a start.

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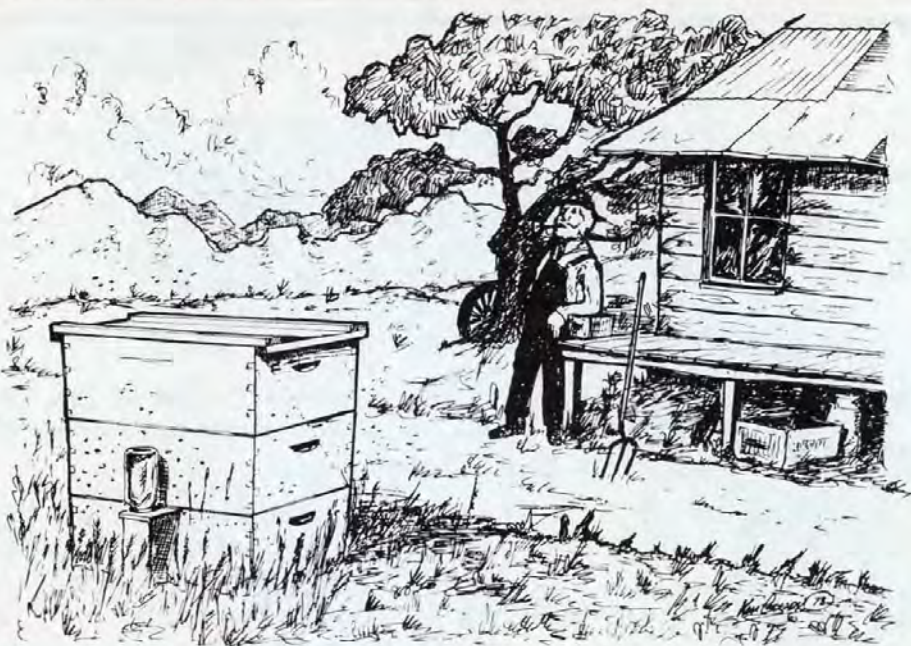
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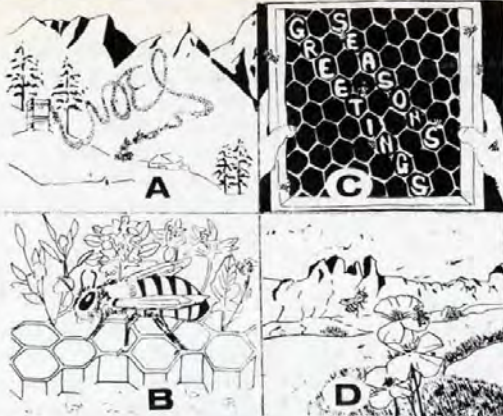
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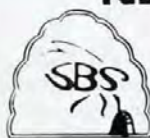
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Wintering Honeybees in the North

Which is more detrimental, moisture or cold temperatures?

By GRANT D. MORSE, PH.D.
Saugerties, N.Y.

THERE ARE beekeepers who say that it is not the cold temperatures, but moisture, that kills bees during the winter. Like so many other theories, this is a half truth. Yes, moisture is a greater threat to the bees while they are in the winter cluster than low temperatures are.

But cold temperatures can be killers, too. Over a long stretch of severely low temperatures the stamina of the individual bee can be lowered. Also, the effort to maintain tolerable cluster temperatures, plus the wear and tear of consuming abnormally high quantities of food, the conversion of that food to energy, and the expenditure of that energy, tend to sap the strength and resistance of every bee in the cluster.

Repeated research shows that at approximately 57 degrees F. (14 degrees C.) the winter cluster in the hive becomes well defined. As the temperature drops, the bees in the center of the cluster generate heat while the bees on the exterior of the cluster serve as insulators. From the time the queen begins to lay in December or January, the internal temperature of the cluster must be approximately 93 degrees F. in order to protect the brood there.

But there is a limit to the temperature which the bees on the surface of the cluster can endure. Accordingly, as the temperature drops, the cluster consumes additional food (if it is available) and generates enough heat to maintain a cluster surface temperature of between 43-46 degrees F. (6-8 degrees C.).

Beekeepers who subscribe to the theory that it is not low temperatures which destroy colonies and keep them from wintering successfully, forget the tremendous burden imposed on the members of the winter cluster in trying to maintain their cluster surface temperature during a period of severe weather that drops the thermometer to sub-zero figures.

This is one reason why those beekeepers who either maintain full depth and width entrance openings, or who set the upper of the two hive bodies back a distance of

3/8ths. inch or more, have such heavy winter losses.

There is no necessity for such gross exposure. The elimination of moisture from the nest shell can be accomplished in any one of several ways without such extravagant exposure.

Medics who have studied the question of wide-open windows in the human bedroom at night have come to similar conclusions. On a severely cold night there is no necessity for a wide-open window in the human bedroom. On the nights that have the lowest temperatures, a small crack below the movable window will provide adequate circulation of air, provide satisfactory lowering of the temperature in the room, and furnish escape for moisture.

Human sleepers who contend to the contrary are driven to the necessity of either piling on more covers, or turning up the thermostat in the electric blanket.

As noted above, the honeybee winter cluster often faces circumstances which make it difficult, or even impossible, for it to move to food sources during extended cold periods. Under such circumstances the cluster members die. Many a beekeeper in the spring has found dead clusters of bees with more than adequate stores in the nest which the bees could not reach.

In many cases colonies will survive the winter adversities but become so weakened as to contract EFB or one of the other brood diseases usually caused by stress. Such colonies seldom renew their strength fast enough to be able to produce a surplus even if they do, indeed, survive the debilitating effect of a brood disease.

Experienced beekeepers who operate in the North have come to recognize the importance of a natural windbreak around an apiary. Winds that beat upon a hive over extended periods make the maintenance of normal cluster temperatures difficult, particularly after brood

rearing begins on a fairly large scale in the mid-winter months.

The fact that a windbreak proves of value to an apiary likewise demonstrates the value of packing against the ravages of low temperatures and winds.

The Upper Exit

There are many ways of providing escape holes above the cluster. One is to bore a hole in the upper front part of the second hive body. Personally, I prefer not to do so, though it is an easy procedure. Such holes can be stoppered in the following spring with corks secured from a druggist.

A better way, I believe, is to notch a side of the inner cover. Or, better still, to place a small wood sliver 3/8ths. inches wide under a front corner of the inner cover. This last method works especially well if one wraps his hives with lightweight black paper (not heavy roofing paper), and cuts an escape hole in the wrapping paper over the corner hole, or space, under the inner cover and just above the top of the hive body rim. When cool weather arrives, the regular entrance on the bottom board may be entirely closed off when packing is provided and the upper exit is assured; or, for those who prefer, it may be restricted in size.

That an upper exit for the escape of moisture is essential (other than merely into some top packing), is evidenced by the fact that a colony produces about one gallon of water for every ten pounds of honey consumed. No packing will absorb and hold six or more gallons of water over the winter period.

Packing the Hive

Wrapping hives that must winter in northern hemispheres may not be necessary in the years when the weather remains rather mild. But periodically we experience winter temperatures and severe winds that truly try the endurance of the typical winter bee cluster.

Such wrappings do at least two things: they act as a partial windbreak; they provide a means of attracting and temporarily holding some of the heat of the sun on an occasional day when the bees need a cleansing flight, and would not otherwise be warmed soon enough, if at all, to be encouraged to leave the nest.

Top Packing

I am convinced that packing at the top of the hive is no more needed than at other parts of the hive. If a beekeeper places packing at the top of a hive with the idea that moisture will thereby be absorbed adequately, he will usually be disappointed—unless there is an escape provided from the packing to the out-of-doors.

Such exits in top wrappings are not too easy to provide since they may become agents through which rain and snow may be admitted. As I have said, I believe that the best escape for the moisture is between the inner cover and the rim of the top hive body.

During the years that I packed my hives without providing an upper escape, using packing of hay, straw, leaves, or crumpled newspaper, I too often found in the spring that the packing had absorbed all the moisture it could, particularly at the point where moisture rose through the hole in the inner cover, then had permitted the surplus moisture to drop back down upon the combs and the bees. Even if the bees were not totally destroyed in all cases by surplus moisture, some of the combs were wet, often moldy, the population of the cluster was decreased, and the comfort of the cluster members was materially diminished.

Wintering Nuclei over Strong Colonies

Nuclei can be wintered advantageously over strong colonies by double screening the inner cover hole over the lower colony and thereby allowing the small cluster of the nucleus to receive the rising heat from below. "Double screening" means a screen both on the under and upper side of the hole in the inner cover.

But it is doubly essential that an adequate escape for moisture be provided at the top of the hive body that houses the nucleus in such a case else it will be drenched with moisture.

A nucleus can be advantaged, too, by placing it immediately adjacent to a strong colony and packing the two together. I have never found the wintering of a five frame nucleus difficult under that plan, provided it had good numerical strength, adequate stores, and an exit for moisture. I always took pains to fill the unoccupied five frame space in

the nucleus box with packing of some kind such as crumpled newspapers.

Other Factors in Wintering

But there are additional essential features that enter into successful wintering in the North. The first of these is the presence in the colony of a young queen plus bees that are partially of young age. The examination of the interior of a colony about August first should indicate whether a colony is queenright, and whether she is laying in a good pattern. Too many colonies that fail to winter had an inadequate queen in the fall. Colonies found at about this time to have inadequate queens should receive replacements promptly, or else be united with another colony.

The weight of the stores that are expected to tide the colony over to the first honey flow the following spring should be adequate. Italian bees (if you are using them) will prove to be liberal users of honey stores. A strong two-hive body colony needs 60-70 pounds of honey unless the operator plans on spring feeding. And this means 60-70 pounds of honey, not that quantity of honey, and pollen, and furniture, etc. Most experienced beekeepers despise being compelled to go through the process of spring feeding. Many experienced beekeepers today are double checking the weight of their colonies' honey stores. Many find they can determine the desired weight by lifting one end of a hive. Some can. Others find themselves to be too optimistic. A scale is the only truly reliable agent.

A goodly supply of pollen in the hive in the late fall is essential if winter and early spring brood rearing are to be possible. Many operators today are placing patties of pollen mixed with honey over the top frames in March or before. Experienced beekeepers in most areas know from experience whether local sources of pollen are normally adequate. In many areas this is not a problem.

Restricting, or eliminating, the bottom entrance, and providing an upper one are significant factors in helping a colony winter without being subjected to the unnecessary stress of inrushing winds at low temperatures.

How about the space below the bottom board? Yes, contact with the ground at that point can have a constantly chilling effect. It is for this reason that most commercial beekeepers provide hive stands. An air space between the bottom board and the ground furnishes some natural insulation. It also retards rotting of bottom boards.

Some Pests that Threaten Bees

How about mice? They constitute a constant menace to colonies if they are allowed access to the interiors of the hives. Just placing mouse poison adjacent to the hives will not always assure their failure to gain admittance. Once inside they wreak havoc, destroying combs and pollen, and harrassing the cluster with an abominable odor.

In many northern locations skunks can prove to be exceedingly destructive unless their depredations are detected early, and they are positively dealt with. Skunks usually attack the weaker colonies and damage them through consumption of a goodly portion of their worker population, and by demoralizing them through persistent irritation. Skunk attacks can occur both in the fall and in the spring. They are seldom active around hives during the summer months when other insects are abundantly available.

Bears can be almost totally destructive. Frequent visits to the apiary, or daily observation by human neighbors adjacent to apiaries, are the best providers of information about the onslaughts of bears. Even when their presence is detected they may be dealt with only with great difficulty. But if not dealt with, they usually are totally destructive, returning night after night until every unit has been devastated.

The Presence of Disease

The annual examination of colonies about the first of August should include a very positive effort of the beekeeper to determine whether AFB is present. This is especially true because this examination may be one of but two examinations given by the operator, the other being the spring examination. At the least, an examination of activity at the outside entrance should be given. Any colonies showing weakness should be examined for AFB.

Conclusion

A colony of bees today is of too great dollar value to warrant any less individual attention than I have outlined. It's true that an internal examination takes time, but at least a spot check in every apiary is a must.

Packing takes time and effort, and costs money. But how many colonies have you been losing recently during the winter? If the number is greater than you like—or you can afford—positive effort in the areas I have outlined should be taken. If these areas are dealt with carefully, losses through wintering should be almost totally eliminated.

Eastward Ho!

"It took less than three days
to traverse just over
three thousand miles."

By J. R. DUNCAN
North Gower, Ont., Canada

ON SATURDAY, April 29th, Mark Hopkins, President of Marasan Honey Limited, left Glenn, California, with a load of 2,000 three-pound packages of bees. On Tuesday, May 2, just sixty-five hours later, the cargo arrived in Ottawa, Ontario, thus completing the longest commercial package haul out of California!

Traditionally Marasan Honey Limited of Ottawa, Canada, has provided beekeepers and bee supply dealers in eastern Canada and the northeastern states with package bees and queens from the southeastern states. This usually entails transporting bees 1,500 to 1,800 miles in about a thirty-six hour period.

This year sufficient packages were booked with a southeastern Mississippi shipper in January, but the unusually cold winter and much delayed spring brought the early pronouncement of a one week postponement. After an additional two week postponement of the shipping date and numerous excuses, it was abundantly clear that alternative arrangements would have to be made to meet commitments to customers. Because the major southeastern shippers were by this time solidly booked until mid-May and later, California shippers became the only alternative source for package bees, (the California shipping season for commercial loads usually declines after April 20th).

Although by late April there were bees available in California, this unfortunately created a bit of a dilemma. The availability of bees was offset by the risks incurred in transporting them over three thousand miles by truck through some hot, arid country.

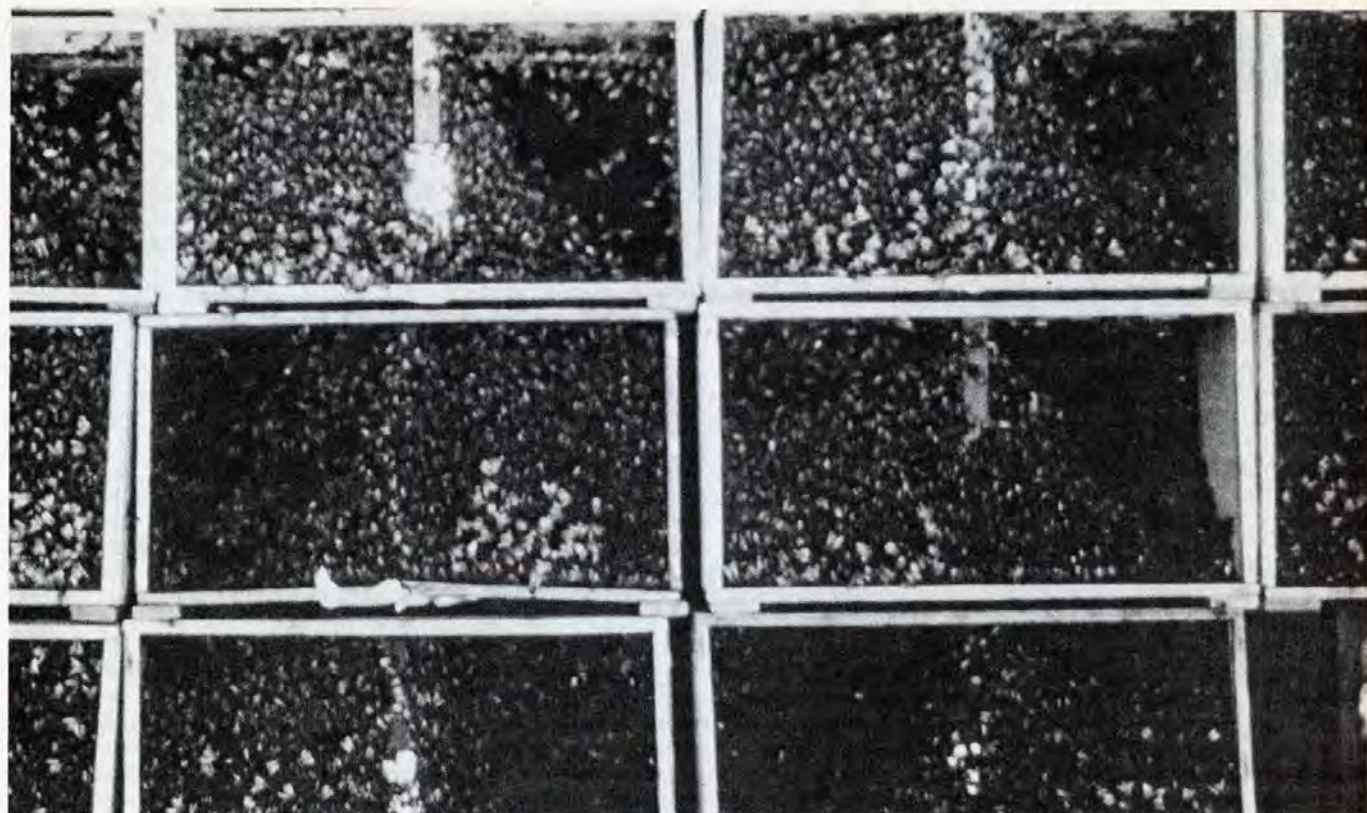


Discussions were held with John Woodburn of Polar Bear Honey Limited, Grimshaw, Alberta, regarding the use of his refrigerated trailer. Although single story nuclei have been hauled in "reefers" with good results, package bees have not enjoyed the same measure of success. A Thermo King NWD 30, which can keep frozen ice-cream at -10°F. can't keep 3,000 two-pound packages of bees below 75°F. during normal daytime temperatures. Air circulation inside the reefer is not complete and the air can smell a bit stale at times.

Hopkins and Woodburn felt that crushed ice could be blown on to the load if necessary and the rear doors left open in the daytime to facilitate air circulation. In addition, by opening the side door when stopped for fuel and meals, they felt there would be sufficient air circulation to reduce the build up of carbon dioxide. However, the risk was still high and it was agreed that the normal "live delivery" guarantee of the transporter would be waived. Marasan Honey Limited would assume sole responsibility.

Arrangements for supplying the bees were made with C.F. Koehnens & Sons of Glenn, California (north of Sacramento). The choice of supplier, which was based solely on the ability to handle the order (three-pound cages are not usually stocked in California), was most fortunate. Realizing the potential problems in the trip, the Koehnens made a special effort to supply fresh, young bees (no swarm bees) on a small honey flow. They were able to fill 2,000 three-pound packages in less than two days. This seems typical of the impressive production capabilities of the California shippers. Willingness to cooperate with each other, which is evidenced by the standardization of cages in that state, is another very valuable characteristic.

And there is a noticeable difference between California and the southeast in the feed can utilized. Instead of a can with two small nail holes punched in the lid, the California can has a 1/2 inch hole covered by a cloth screen that is held in position by a plastic snap ring. This closure will allow the can to be refilled. At



Three pound packages ready for loading. They are nicely clustered and have good weight.

the end of the journey it was found that these western cans contained more feed after traveling almost twice the distance.

Another problem to be considered was the loss of syrup due to changes in atmospheric pressure over high elevations. The Donner Pass (altitude 7,088 feet) was one of the many potential hazards. If too much syrup was lost during the climb, then the bees could, conceivably, be short of feed long before arrival at their Ottawa destination.

Hopkins decided to test the leakage of syrup from a feeder can while ascending and descending the Donner Pass and it amounted to about one-quarter of a cup. The assumption that altitude and resultant pressure changes cause excessive loss of syrup is not necessarily correct. The feed dripped out at irregular intervals at a rate which the bees could easily consume. Probably more syrup is lost on bumpy, frost-heaved roads. Using thick syrup and a trailer with air suspension should greatly alleviate this problem.

The equipment supplied by Polar Bear Honey Limited withstood the rigours of continuous high-speed driving with only one combined meal/fuel stop and one additional meal stop per day.

The three drivers, Mark Hopkins, John Woodburn and his employee, Wayne Mutch, combined considerable experience in package hauling with a strong back-

ground in long distance trucking. No time was lost for coffee breaks, and the company slogan on the rear of the Polar Bear trailer, "I like my honey raw and wild", amused many a highway traveler and weigh-scale operator.

On a transcontinental trip the truck stops eventually lose their distinctive identities, becoming vague and confused memories. Those of Nevada are a notable exception. Boomtown, just inside the Nevada border, was the first and most spectacular. "The most glamorous truck stop I've ever seen", remarked Hopkins. "It was also a 24-hour a day gamblers' haven. There's nothing like it in the east." However, when asked if he wanted to try his luck, he replied, "No thanks. My gamble is parked out on the lot."

It took less than three days to traverse just over three thousand miles. Continuous driving and cool weather contributed to the success of this latter day odyssey.

In retrospect, it was an accomplishment. However, when planning the trip and wading through a myriad of last minute details, there was plenty to worry about. Carrying the risk of a load of bees worth more than \$46,000 across many miles of desert on probably the longest truck haul ever attempted out of California made for many anxious hours both

before and during the journey. "If it hadn't been for the need to supply beekeepers, whose livelihood required these packages, we would have never attempted the trip", Hopkins commented.

Sequel

According to Murphy's Law, everything that can go wrong will. At the same time that Hopkins was en route back to Ottawa with the California load, Marasan Honey's own truck and trailer were to leave Louisiana and Mississippi with close to two thousand packages of various sizes. This load, which had been originally scheduled to leave Mississippi on April 12th, finally left on April 26th. Instead of the expected 1,900 packages, there were only 700--not enough to cover expenses.

To make up for this additional shortage from the southeast, 1,000 three-pound packages and 500 two-pound packages were brought in by air from California. Although the air freight was expensive, the bees arrived in perfect condition and incurred no visible stress.

Thus air freight to the east for a small additional charge may be the ultimate way to ship package bees. The superior condition of the bees on arrival is worth the extra cost. Better packages mean a bigger crop. That's what it's all about!

There Have Been Some Changes Made

"Today such practices as finding all queens using a large crew to pack and unpack bees, hand mowing of the bee yards, sorting all combs and finding make-work jobs are not feasible due to the high cost of labor."

By CHARLES LESHER
Northumberland, Pa.

RECENTLY WHEN pursuing a 1905 edition of ABC's and XYZ's of **Bee Culture**, I was struck by the fact that beekeeping remains much the same and how little is new.

But over the years there have been changes, some of which will be evident, when you read this account of my first two years working for beekeepers.

In response to an ad in **Gleanings in Bee Culture**, I got my first job with Archie L. Coggsall of Ithaca, New York, in the early spring of 1936. Then in the summer months a neighboring beekeeper, Fred Lamkin of King Ferry, was needing help so I transferred there. The spring of 1937 found me in Natchez, Mississippi working for the Stover Apiaries and after the package bee season concluded, I went to Ripon, Wisconsin to work for A.J. Shultz.

I left my Pennsylvania home and reported for work April 1. Mr. Coggsall at that time ran about 900 colonies of bees. Spring had not yet arrived. It was still cold and wintry, but the shop where we worked was warm and comfortable. It was kept that way by a wood stove in which scrap lumber and junk beehives were burned. One can never forget the mingled smells of the woodshop and the peculiar aroma of the burning bee boxes.

On these cold spring days the shop was a beehive of activity. Mr. Coggsall had a buzz saw powered by a one cylinder gas engine. He spent days sawing pieces for plain non-spacing frames out of basswood lumber. My job was to nail these frames together. As a young novice it seemed I hit my fingers more than the nails giving me blood blisters on top of blisters. Some days were spent putting together and painting hive bodies. Another project someone else was working on was making winter packing cases for beehives, dimensions of the case 4x4x8 foot. Bottom boards and covers were being constructed. I remember that sideboards from defunct supers were used in new bottom boards. Work started

shortly after 7:00 A.M. and continued until 6:00 P.M.

When I arrived in Ithaca the bees were still in their winter packing cases. At that time packing bees was considered a must. Mr. Coggsall packed four two-story hives in a large case and the empty space remaining was filled with a mixture of sawdust and planer shavings.

There were many opinions as to how bees should be wintered. Mr. Lamkin for instance packed a jumbo depth single story hive two to a case. Other beekeepers packed single story Langstroth and even single story eight-frame. In a neighboring county, Seneca, the double walled or single packing case hive was in vogue. It was left in place the year around. At one time the A.I. Root Company manufactured a double walled hive called the Buckeye. We used to call the single packing case hive a Seneca County dog coop. One of Mr. Coggsall's friends, Mr. LeRoy Keet of Watertown, New York, successfully cellar wintered his 1,200 colonies. The method used was to take most of the honey away with the honey supers and reduce the hive to a one story brood nest. In the late fall these brood nests were fed heavily with sugar syrup and in late November the colonies were put in a cool bee cellar where they remained until early April when they were carried out of the cellar and later hauled to the bee yards.

To continue the account of my first year's activities—on the first spring like day I was thrilled when we took a trip to the outyards to see how the bees had wintered. To examine a hive at this time we had to remove the packing case cover, paw away the sawdust over the hive, then remove the inner cover. To find dead colonies we would look for entrances with no bee activity. Due to the deep freeze effect of the heavy packing not all the bees would be flying. We would blow into the entrance of such colonies and listen for a buzz.

Mr. Coggsall at that time was modernizing his outfit. The newer hives had a wooden inner cover, but on many of the older hives oil cloth or a piece of carpet was used instead.

We started unpacking the bees in early May. Our four man crew would get up at daybreak and go to the bee yard. Pieces of canvas were spread around the packing case. The case was lifted away from its bottom leaving the sawdust spill out on the canvas. Then the hives moved off the bottom of the case and set aside. The bottom and top of the case were carried to the side of the yard and put back together. The canvases with their loads of sawdust were gathered up and dumped back into the case and the hives set back in their original position. This process was repeated for each case in the yard. Several yards were unpacked each morning. We would stop when the bees became active and resume our unpacking the next morning.

One morning during unpacking I got my baptism of fire so to speak. I was carrying a hive of bees when I stumbled and fell. The hive went crashing to the ground and broke apart. I got about fifty stings which were painful at the time, but I recall no ill effects.

A job for the beginner was to mow the bee yards with a scythe. Not being too proficient at this one would invariably hit hives aggravating the bees that became increasingly belligerent as the work progressed.

This first year I was young, naive, and inexperienced. Mr. Coggsall did his best to transform me into a beekeeper. He would admonish me—"always have your hive tool in your hand or in your pocket". "Have your smoker going and be ready so you can keep the bees under control". "Walk faster, we have work to do".

Some of the things that impressed me about the Ithaca countryside that spring were the cascading waterfalls and the flocks of wild geese returning to Cayuga Lake.

GLEANINGS IN BEE CULTURE

In mid June I went to work for Fred Lamkin. Mr. Lamkin was very exact and precise. Many of his yards had exactly 100 colonies neatly arranged in ten straight rows. Back of each pair of hives was a winter packing case that stayed in place the year around. All the bee equipment was painted white. Each helper was assigned a locker in which he kept outside work garments as well as the smoker, veil and hive tool that had been issued to him.

We did such routine summer jobs as supering bees, putting foundation in new frames and mowing the bee yards. But the work that occupied most of our time was clipping queens for swarm control. Mr. Lamkin was the only beekeeper I have known that methodically clipped the wings of all his queens bees. In June each queen was found and the wings on one side of her body were clipped with a little scissors we carried with us for that purpose. One year the right wings were clipped and the next year the left. This practice had certain fringe advantages. In our search for the queen we would find colonies preparing to swarm, drone layers and possibly disease. Then we could correct the situation. It took a long time for the crew to clip 1,000 queens.

After the queen clipping the early white honey was extracted to make way for the later dark buckwheat. Most of the bee yards had a small building in which supers were stored during the off season. At extracting time a portable extractor and gas engine were set up in the building. In the old days a hand turned extractor was used. I know a beekeeper who extracted all of his honey from 700 colonies with a hand extractor. Honey was removed from the hives by smoking, shaking and brushing the combs which were returned to supers and put on a flat wheelbarrow, wheeled to the building and shoved through a trap door to the men who were extracting inside. On some occasions escape boards were used rather than the brushing, but this required a second trip to the bee yard.

When the extracting was done in a building in the bee yard it was essential that the building be tight. One time we finished the extracting, drained off most of the honey from the tank, closed up the building and left for several days. During our absence the bees had gone into a robbing frenzy. They had discovered a crack in a board giving them access to the inside of the building with its honey-wetted equipment. When we returned we found inches of dead and live bees in the extractors, honey tank and a thick layer on the floor. All honey handling equipment had to be taken out and washed. Bees were swept out. I remember helping Mr. Lamkin scrub out the building with lye water to make it unattractive to bees.

The buckwheat honey was produced in July and August. Bees were noted for their ugly dispositions during the buckwheat flow, particularly late in the day. This purplish, dark, strong flavored honey was often in oversupply. Mr. Coggsall told me he sold it for as cheap as two cents a pound. Now it commands a premium price. Buckwheat honey used to be put in wooden kegs and shipped to New York City to supply the Jewish trade.

This area of the country was the birthplace of commercial beekeeping. It was here that beekeepers learned to run outlying apiaries. The industry was well established by the turn of the century. This was made possible by the great acreages of buckwheat.

I arrived on the scene during a period of transition. Farmers were growing less buckwheat. Traditional beekeeping practices were giving way to new. Beekeepers were reducing the size of the apiaries. Trucks and good roads made a central extracting plant desirable, marking an end of the honey house in each yard. It was the end of an era.

In February, 1937, I left Philadelphia, Pa. by ship for Savannah, Georgia. On that short ocean voyage I developed a passion for sailing that later in life as a seaman did not diminish. From Savannah I went on to the Helena branch of the Stover Apiaries. A few days were spent working with the bee crew in the white sand and under the pine trees of Georgia. Then Mr. Fortune, manager of the Stover Apiaries, had me accompany him to Natchez by way of Mayhew. In those days a long train ride was a joy.

The first few days in Natchez were spent feeding bees. Each morning we would mix up a barrel or two of syrup on the back of a truck using water and bags of sugar and stirring with a paddle. Then we spent the rest of the day visiting some of the network of yards that were used for the production of package bees. Each hive contained a division board feeder in which we would put a shot of syrup to stimulate brood rearing. It was sticky business.

In a week I was assigned to the package bee crew as a queen finder. The package crew's first task was to bring in screened hive bodies of bees to stock the queen yard. Shortly before dark these hive bodies of bees were wet down so the bees could not fly and a quart dipper was used to measure out bees for each nuc. Bees and a queen cell were placed in the nuc which was closed tightly the first day.

Making up the queen yard took a couple of weeks and by that time the first nuclei made up had laying queens. With

queens available we were ready to ship package bees.

The package bee crew to which I was attached was made up of eight men. Five men looked for queens. After the queen was found frames of bees which the colony could spare were set on the ground outside the hive, and the queen with the rest of the frames retained in the hive. Two men using a funnel shook the bees into a shipping cage which was weighed on a small kitchen scales. The shaken frames were returned to the hive. A man in the screened truck inserted a syrup can and a caged queen into the packages and crated them together.

The package bee yards were located in areas where there were plenty of trees, vines and wild shrubs that provided a prolonged pollen and nectar supply. Under these conditions with favorable spring weather the bee population in our hives soared. We would shake most of the bees into our packages and return ten days later to find the colonies stronger than ever.

At the end of the day we returned with the packages of bees to the train depot platform where they were unloaded and addressed to await the night train. This was the heyday of the railroad with efficient Railway Express service. I was captivated by the far off destinations. Such interesting names as Thief River Falls, Moose Jaw, Saskatoon, Medicine Hat, and Portage La Prairie come to mind.

The Natchez queen mating yard was an interesting place. Its setting was a grove of aged live oak trees festooned with Spanish moss. Entering we passed the crumbling remains of a pre-Civil War plantation house. Only the stark columns remained intact. To me this was somehow symbolic of the old South. A small wooden building served as a work center. Close by were more than enough colonies to maintain queen cell production. Then, extending out as far as the eye could see, row upon row were hundreds of queen nuclei.

Five men worked in the queen yard. On weekends I would go along with the queen crew who had to work at least part of the day seven days a week. Here I observed Mr. Blankenship, the queen breeder, graft cells and maintain cell building and breeder queen colonies. I accompanied the other crew members working nucs. This consisted of feeding syrup, examining the nuc, caging queens and inserting queen cells.

At Natchez we learned to work bees under adverse conditions. We would do our best to get orders for packages out as booked even though we had to work in

the rain. To this day I do not like to work bees in the rain.

Natchez brings back memories of the Mississippi River, antebellum mansions, sunken roads, black folks chopping cotton, and the scent of honeysuckle.

After a hectic April and May the package bee season came to an end. To find summer work I had written some of the beekeepers to whom packages were addressed and was successful in finding work with A.J. Shultz of Ripon, Wisconsin. After a long bus trip, I arrived June 8 in America's dairyland, cool and lush Wisconsin.

Each section of the country is different when it comes to beekeeping and honey production. The beekeeper adapts his methods to meet these conditions. In Wisconsin rather than a number of honey flows as in New York, there was one prolonged flow from the clovers and alfalfa which produced a beautiful white honey. There was little fall honey and all of the honey could be extracted by an early date.

Mr. Shultz used all homemade equipment of jumbo depth. None of the hive bodies had hand holes. At first they were awkward to handle but in time one got the knack of it even when they were full of honey.

After my arrival the first big job was to demaree all colonies. Demareeing was the method of swarm control Mr. Shultz used. To prepare for the demareeing one of the workers had spent a month sorting all the combs in the super pile and the good combs with mostly worker cells were separated from the others. To demaree we would examine the single brood nest and find the queen. All but two frames with brood and the queen were removed. They were replaced with the sorted good combs. A queen excluder was added and the removed frames most of which contained honey and brood were put in the center of the several supers that were added at this time. For this manipulation all equipment had to be interchangeable. It took a three man crew several weeks to demaree Mr. Shultz's 700 colonies.

Mr. Shultz's beekeeping was more nearly like that practiced today than what I had experienced in New York. There were no buildings in the out apiaries. The supers of honey were all brought back home to the central extracting plant. Empty supers were kept in a cellar of one of the buildings. Fume boards were used to take off honey. The repellent used was phenol, sometimes called carbolic acid. The extracting set up consisted of a hand steam knife, a brand melter, merry-go-round, and an extractor. One man did nothing but extract while two men took off honey in the yards. We handled each

super of honey singly. The hand nose truck with pallets had not yet appeared.

When working for Mr. Shultz part of our time was spent packing honey. The honey was put in jars and retailed to stores. We worked in a neat attractive honey house kept fragrant by the heating honey and melting beeswax. The business part of the enterprise required most of Mr. Shultz's time so he only occasionally accompanied us to the bee yards.

Mr. Shultz packed jumbo depth single story hives in a two colony case. Light colonies were fed sugar syrup, before packing, with friction top pails.

In 1937 horses were still widely used on farms as draft animals. Horses and bees are not compatible. The Cogshalls placed many of their apiaries in clearings made in farm woodlots for this reason. At Mr. Shultz's I remember an incident in which a farmer was harvesting grain near a bee yard. The bees got after the horses with dramatic results. Mr. Shultz got an ultimatum to move the bees immediately. This entailed removing the honey supers, stapeling and screening the hives, then trucking them away at night. Mr. Shultz took his development in stride exhibiting his characteristic good humor. Moving bees during a honey flow is one of my least favored occupations.

Different materials were used for smoker fuel than used today. Planer shavings were readily available in the packing cases. Every feed store had old burlap bags for the asking. Many beekeepers preferred punky wood. Of course in the south we used pine straw.

Mrs. Lamkin was the first lady beekeeper I worked with. She readily admitted she preferred working with the bee crew than to do housework. Queen clipping was a job at which she excelled. She demonstrated that a woman can be as competent a beekeeper as a man.

In those days work was done at more leisurely pace. Labor was cheap, \$30 a month with room and board for a beginner. So the beekeeper hired enough help to take care of the busy seasons and the helpers given other work when not needed in the bee yard. At Mr. Lamkin's I might find myself mowing lawn, weeding the flower bed or hoeing the garden. Mr. Shultz grew an acre each of potatoes and popcorn. To hand care for this, run 700 colonies of bees and pack honey, he had four fulltime helpers.

With the exception of the Stover Apiaries I lived with the beekeeper and was treated as a member of the family. Although wages were very low, your expenses were nil. This arrangement worked out well both for the employer and the employee.

Today such practices as finding all queens, using a large crew to pack and unpack bees, hand mowing of the bee yards, sorting all combs, and finding make-work jobs are not feasible due to the high cost of labor. Present beekeepers cannot afford excess help.

I do not believe I could have had a better indoctrination into apiculture. For instance much of my bee yard time during this period was spent finding and catching queens. To do this successfully you learn how to handle bees. There is no place for gloves. You learn how to use a smoker and find that stings, although painful are bearable. It was my privilege to be taught by experts, my employers. I fondly remember these early days when each facet of beekeeping was a new and exciting adventure.

Shortly after Thanksgiving Day in 1937, I said goodbye to Mr. Shultz, his family, my co-workers, and started hitchhiking for home thus ending my odyssey.



OHIO HONEY QUEEN

Christine Ellis of Brunswick, Medina County, Ohio, is now Ohio Honey Queen for 1978, with the resignation of the former Queen for personal reasons. Chris' first appearance was at the Eastern Apicultural Society meeting in Wooster, followed in quick succession by the Ohio State Fair and Lebanon Honey Festival. The daughter of Mr. & Mrs. David Ellis will be a Freshman at Cuyahoga Community College this fall.

GLEANINGS IN BEE CULTURE

The PSU Beekeeping Short Course

By BYRON SUDBURY
Gibsonia, Pa.

DURING THE WEEK of July 31-August 4, 1978, dozens of beekeepers and future beekeepers swarmed to State College, Centre County, Pennsylvania. The occasion was the annual "Beekeeping Short Course" held at the beautiful Pennsylvania State University campus in University Park, Pennsylvania. Judging from the attendance, interest and enthusiasm of all participants, this excellent course does not need advertising. However, I was very favorably impressed by the course, and cannot resist the opportunity to let others in on some details about this great educational experience!

The final head count indicated that 56 people registered for the Pennsylvania Beekeeping Short Course. Although the majority of the students were from Pennsylvania, people from California, Michigan, Virginia, Washington and West Virginia also attended the course. About 15% of the class had not yet begun to keep bees. The rest of the class participants ranged from novice beekeepers to beekeepers with many years of experience.

My wife and I opted to tent camp in this scenic central Pennsylvania region. Not only would this provide economical housing, but it would also hopefully quench our desire to spend a week camping. And quench it did—the frequent nocturnal rains during that particular week made for rather damp living conditions. Those residing in the almost equally economical dormitories were spared this discomfort. Physical discomforts aside, the week was a resounding success.

A number of instructors were involved in teaching the short course. The instructors were all very knowledgeable, helpful and congenial. The three main instructors were outstanding!! Excellent!! Dr. A. W. Benton, Professor of Apiculture (PSU), welcomed and introduced us to the course and gave lectures on honeybee basics. Dr. Clarence H. Collison, Assistant Professor of Entomology Extension (PSU), gave a number of lectures on some of the fundamental aspects of beekeeping. Dr. Dewey Caron, Associate Professor of Apiculture (The University of Maryland), presented lectures dealing with various aspects of honeybee management.

In addition to the primary lecturers, several special topics were covered by other individuals. Richard Heckman, graduate assistant in Entomology (PSU), presented several excellent lectures on stinging insects and on venoms. Bill

Clark, Jr., former Extension Entomologist (PSU), commented on honey house designs. Thomas B. Rishell, Bartell Honey Bee Products, lectured on honey processing. We also had the pleasure of meeting Dr. Fred Snyder, Director of Short Courses (PSU) who did an excellent job planning and coordinating the short course.

The 1978 Pennsylvania Beekeeping Short Course was announced in *Gleanings* (106:5, 239; 106:6, 289; 106:7, 346). The course started at 3:00 p.m. Monday and ended at noon Friday. For the information of those interested in taking the short course in the future, a list of the lectures in the order presented is as follows: Beekeeping Equipment and Supplies; Colony Organization; Selection of the Apiary Site; Beginning with bees; Installation of Packages; Products of Honeybees; Spring and Summer Management; Bee Diseases; Fall and Winter Management; Insecticides and Honeybees; Swarming and Its Control; Queen Rearing; Stinging Insects Other than Honeybees; Requeening; Bee and Wasp Venoms; Nectar Secretion and Floral Sources; Honey Houses; Honey and Its Uses; Honey Production (Extracted and Comb); and Processing Honey for Market.

The lectures were very informative in content, and were liberally illustrated with excellent slides. In addition to the lectures, three movies were shown. Also, a number of very useful handouts were distributed to the class. A variety of flavors of honey were available for tasting. Lois Benton enabled us to sample a honey recipe (walnut bread), and Mrs. Lois Drower kept us well supplied in coffee and tea.

The second portion of the course was comprised of afternoon field trips. The class broke into three groups for the field trips in order to facilitate improved visibility and participation. The three primary lecture instructors also served as the field trip instructors. The weather cooperated and only the last hour of the last trip was rained out. A tour was made through Dr. Benton's honey house. Field trips were also made to the PSU apiary and to one of Dr. Benton's bee yards. The bee yard visits started with basics and progressed from there. During the final trip to the University bee yard Dr. Caron gave a very interesting and educational demonstration on queen rearing. As with the lectures, the field trips were excellent educational experiences.

My wife and I have five colonies of bees, and have kept bees for less than a

year. Upon beginning our hobby, we immediately subscribed to *Gleanings in Bee Culture*, and also purchased a number of books on beekeeping (the most useful book that we have purchased to date is *The Hive and the Honey Bee*). Having jumped into beekeeping with established colonies, we read extensively in order to be able to feel our way along in beekeeping. For this reason—although just beginners—we had already encountered a fair amount of the lecture information in our reading. However, the lucidness of the lectures, coupled with the excellent illustrative materials, provided a very clear coherent picture of the topics at hand, and thus the lectures proved to be very educational and beneficial to us. Another advantage of the course over reading (reading cannot be replaced, only supplemented) was the ability to receive a response to questions, and to participate in discussions on specific points of interest. Also, a number of practical hints and suggestions were offered. It was also beneficial and educational to meet and discuss beekeeping with numerous other beekeepers. My wife felt that the most outstanding single component of the course were the slides used as illustrative support for the lectures. Although it is difficult to decide, I guess, I was most impressed by the opportunity to obtain guided hands—on experience in the bee yards.

My wife and I were favorably impressed by the course—as indeed were all with whom we talked. I highly recommend the course to the person interested in beekeeping as well as the novice and even the experienced beekeeper. We are glad that we attended.

During the course, mention was made of a ten-lesson PSU Correspondence Course titled "Beekeeping". It costs a very reasonable \$5.50, and is available from: Correspondence Courses, 307 Agricultural Administration Bldg., The Pennsylvania State University, University Park, Pa. 16802.

Although I have not yet read through or taken the correspondence course, it appears to be an inexpensive learning tool. I hope to take it next year as a brush-up course. (This same address, c/o Short Courses, may be used to inquire about next year's beekeeping short course.)

It was a great week. The course, overall as well as in the various details, was outstanding. Al, Bill, Clarence, Dewey, Dick, Doris, Fred, Lois, Thomas—Thanks!!

Siftings

By CHARLES MRAZ
Middlebury, Vermont

ERIC C. MUSSEN of Davis, Ca. was kind enough to send me a copy of the JAMA article, "Infant Botulism", specifying honey as a possible cause. In my previous Siftings I gave reasons why I believe honey could not be a cause of infant botulism. But not because I do not believe there are botulism spores in honey. I believe it is well understood botulism spores can be in anything we touch, eat, breathe or drink, even in honey. They are everywhere, we cannot avoid them. They are difficult to kill by heat, even by boiling for hours.

It is also well understood that botulism spores can only grow and produce the botulism toxin in a completely anaerobic condition. That is, completely void of any free oxygen. With these facts in mind, how does honey enter into the picture of infant botulism as described in the JAMA article?

That honey can be a cause of this problem certainly is not proven in this article. Even one of the doctors, I believe, said, honey may not have anything to do with it. Of the six infants investigated, only three were exposed to honey in the diet. Apparently one may not have had it in the diet, but honey was smeared on a nipple to induce the infant to nurse. No mention is made if it actually had eaten any honey in a formula. In one, honey was mixed with water at an outdoor campsite. Not much is said about how much honey these infants used, or what kind of honey. Was it honey heated over 150°F. and filtered through filter presses? Such honey could not possibly contain spores, they could only enter after the jar is opened. Was it "Natural" honey with no processing or filtering that contained its active biotic material such as glucose oxidase, enzymes and diastases of various kinds? One sample of unprocessed honey was purchased from a beekeeper. This I believe proved negative. Poor evidence, it seems to me to even think of accusing honey as a possible cause.

It would appear that there should be something in common in all six infants that could possibly cause such botulism and the article does mention one. Each one was constipated prior to the development of symptoms. The problem then is not the fact the food contained botulism spores, that cannot be avoided, but a condition did develop in these infants that produced an anaerobic condition in the intestines so that the spores could develop and produce toxins.

It is reasonable to assume that with constipation, the waste matter in the intestines cannot move but accumulate for many hours or perhaps days. All free oxygen in the food or waste in the intestines could all be used up in putrefaction, causing an anerobic condition ideal for botulism spores to develop and produce toxins.

Also interesting about these infants studied, four of them were taking additional fluoride and one acetaminophen. In one case drugs are not mentioned if they were or were not given. Since active fluoride and some drugs could cause anaerobic conditions in the intestines of infants when constipated, they might be a more probable cause than honey.

On the positive side, Dr. Bodog F. Beck, *Honey and Your Health*, 1938 has some excellent references on infant feeding, referring back to *The Papyrus Ebers*, 1600 BC, that mentions that infants were fed honey then, almost 3,600 years ago. Many references have been made since then and apparently never any mention made of any adverse effects. Dr. Paul Luttinger, Pediatricist of the Bronx Hospital in New York City recorded 419 feeding cases of infants where honey was used. Luttinger found so many decided advantages in honey for infant feeding that he discarded other sugars. He used about two teaspoons honey to 8 oz. of feeding mixture. Dr. M.W. O'Gorman, Chief of the Division of Hygiene, Dept. of Public Affairs of Jersey City, N.J., used honey for 25 years as a valuable addition to milk modification for infant feeding and the growing child's dietary. The fact that many of the infants admitted to his institution had been suffering from malnutrition, some even with little chance to survive makes his statement more impressive. He adds that honey has a decided laxative effect on infants. The effect, it is stated, is lost if the honey is boiled. Other instances are quoted but not one word of any adverse effects of any kind.

On the personal side, my five children ages 16 to 47 years, were all raised on milk modified with honey. Seldom did we walk the floor at night. In addition a number of neighbor's babies that could not tolerate their formulas, because of vomiting and diarrhea, usually became happy and healthy after the first bottle with honey added and remained that way. The pediatrician of our two older boys was a Dr. Clark of Burlington, Vermont.

He used honey almost entirely in formulas, especially with premature babies. He told me on honey these "preemies" were normal weight in a very short time. He told me when you put a baby on a honey formula, you have a "new baby".

One friend of mine, parent of a "preemie" some 30 years ago told me recently, "If you want to know what honey will do for a baby, just ask me". "Kevin", he said, 3 lbs. at birth, "never had a sick day, hardly even a cold". He is now a healthy, tall, 200 pounder and a professional musician.

When we examine the evidence, honey, I believe, will prevent infant botulism for two reasons at least. One is that on a honey formula, constipation is most unlikely. I know with our own babies, we controlled the amount of honey by the condition of the bowels. A slight increase in honey almost immediately relieved any constipation. Apparently, if one can avoid constipation, the problem can be avoided. Due to the good work of Dr. White, we know honey contains glucose oxidase. This remarkable enzyme in honey will produce H₂O₂ in honey, even in dilution. It is possible with natural honey in the diet, this glucose oxidase could very well maintain a high oxygen level in the intestines in infants. In the presence of oxygen in the intestines, botulism poisoning cannot develop.

There is one serious problem, however. Glucose oxidase is heat sensitive. Heating will destroy it and filtering may even remove it. Honey so treated, as is most commercially bottled honey today, may not contain this valuable enzyme and it may also lose its laxative properties. For this reason it may make a great difference in any investigation for the cause of botulism in infants to know what kind and how much honey was ingested. There is a difference, a big difference, and should have an important bearing on any investigation of this kind.

As a contrast in publicity, the July 1978 issue of *Gaceta del Colmenar*, (Beekeeping Magazine from Argentina) contains the following articles: "Effect of Royal Jelly in Defective Vision", "Bees and Cancer", "Various Medicines of Honey for Rheumatism and Cardiac Diseases", etc., all in just one issue. It is nice to know at least somewhere in this world, honey and bee products are considered a wonderful medicine and not just another sweet "no different than sugar".

BEE TALK-----



By DR. RICHARD TAYLOR
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LAST TIME, because I ran out of space, I had to stop in the middle of talking about Frank Pellett, whose name beekeepers the world over associate with honey plants. Of course Mr. Pellett was much more than an authority on honey plants, much more than a beekeeper and horticulturist. He was an extraordinary human being, profoundly learned and virtually self-taught, a man whose great achievements were exceeded by his own modesty. He never puffed himself up, spoke glowingly of the achievements of lesser people but never of his own, and reserved his awe for God's creation, which is the whole of nature, rather than for the works of man.

Besides his writings, it was his honey plant garden, which is still carried on by his son, that brought Mr. Pellett worldwide attention. There he tested hundreds of plants, many of them from seeds that were sent to him from all corners of the earth. He had, from his youth, a certain conviction about horticulture, partly expressed in his remark that a weed is only a plant whose virtues have not yet been discovered. He thought it was largely a matter of accident which plants had undergone extensive cultivation. He noted that virtually all of the scientific research was done on plants that had already been extensively studied for a thousand years or more, while others, some of which might be of great potential value to mankind, were largely ignored. This gave part of the impetus to his test gardens. Once a visitor to them was heard to remark that someone could really do something with these gardens if only they would first clear out those weeds! Any beekeeper can understand Mr. Pellett's interest in "weeds". To us, for example, acres of golden dandelions are certainly not weeds.

Mr. Pellett was best known to the beekeepers in Iowa for his studies of American foulbrood. He cultivated and tested various strains of bees to see

whether there were not some that were resistant to this disease, and he proved that there are indeed. This illustrates once again the positive approach he tried to take to all things. In his **History of American Beekeeping**, summing up his long experience, he sadly concluded that there is no hope of eradicating American foulbrood by burning up diseased colonies; for though it may be put in check temporarily by this means, it always, he noted, comes right back in whatever area it has been found.

Mr. Pellett, so far as I have been able to discover from the records available to me, was apparently not a strong adherent to any particular church, though an old copy of **Who's Who in America** contains the single word, "Methodist", in its biographical outline. Apparently he found in nature the assurances that others seek from the pulpit. He composed his own remarkable creed which, though without reference to his creator, is nevertheless filled with the religious spirit. He set it down thus:

The universe is mine with all eternity to explore.

My limitations are only such as I myself shall make.

No one can injure me but myself. The greatest calamity that can befall me is but temporary and in the light of the future will seem but a trifle.

I will, therefore, be serene, unruffled and content, knowing that if the thing that I desire is beyond me today it will come to me tomorrow.

Tastes differ, but I think that one could hardly improve upon that.

There was, beneath the horticulturist and apiarist, the scientist and naturalist, a profoundly religious and even mystical consciousness, which rarely crept into Frank Pellett's writings except as hints.



But in the last chapter of his very first book, **Our Backdoor Neighbors**, written during the gloomy days of the first World War, he disclosed a bit more than was customary of this mystical vein. Sitting downcast under a tree, he observed a common butterfly, which stirred him to these remarkable reflections, expressed in the third person:

"Reading so much of death and destruction filled him (Pellett) with gloom and raised many questions as to the cause, purpose, and end of life. The agnostic had almost convinced him that death was not a door but a blind wall beyond which one could not pass. On this basis, he tried to formulate some satisfactory philosophy of the purpose of life, but there was none. He speculated much on the futility of man's labor in building his house on sand.

"Tiring of this useless speculation he threw himself down in the shade of an apple tree under which grew a milkweed. A butterfly alighting caught his attention. The plant was examined and eggs were found there. The butterfly was concerned about only today, why should it bother about a longer time? The tiny eggs soon hatched and ugly little caterpillars with black and white stripes appeared. As the youngsters neared maturity, they were taken to the study where they transformed from the larvae. They had eaten their portion of rough herbage and were preparing for the day when they would sip nectar from the flowers. Then the most wonderful change took place. No more could it be described, but the questioning caterpillar gradually became incased in a beautiful casket of green and gold as though some invisible fairy were preparing it for burial. Finally the casket was split from within and a strange creature came forth. It was not the caterpillar which had been seen to enter the strange habitation but a far more beautiful creature and as different in its habits and physical appearance as day is from night. Man may watch silent beside the casket of the silent occupant and note the wonderful change in the creature that comes forth, but how the change is wrought is not for him to know.

"The naturalist had lost all traces of his gloom. He was convinced that nature would do no more for the caterpillar than for him. He no longer speculated vainly concerning the beginning or the end of life. He was content with his coarse fare, even as the caterpillar had been, being assured that when it no longer was sufficient to sustain him, the invisible fairies that prepared the casket for the

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From the West



By **CHARLES J. KOOVER**
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Speaking of Science

WRITING IN *Science Magazine* for June 9, 1978, J.L.M. reports as follows under the title "Killer Bees: O Death, Where Is Thy Sting?", "The popular image of 'killer bee' has them attacking humans—and killing them—in a manner reminiscent of the birds in the Alfred Hitchcock movie. Perhaps not surprisingly, many observers, including officials of the United States Department of Agriculture, think that this picture has been overdrawn. Although no one disputes the nasty disposition of the creatures, their main threat appears to be more in the economic health of the beekeeping industry in affected areas than to the public health. In fact, officials of the USDA and scientists studying the problem wince at the name 'killer bees', which they think is a misnomer, the result of sensationalized reporting. As Marshall Levin of the USDA put it: 'I feel the same way about the term 'killer bees' as the president of General Motors would feel about the term 'killer cars'.'

Africanized bees are more easily disturbed and provoked to attack than are European bees. Despite this—and despite the deadly reputation Africanized bees have acquired—Orley Taylor of the University of Kansas, who has been studying the natural history of the bees for the past 4 years, says that he heard of fewer than a dozen attacks, only some of which are fatal, each year in all the areas of South America that are now inhabited by the bees. (For comparison, at least 40 persons, usually individuals who are allergic to bee venom, die of bee stings annually in the United States.) Although there is no system for reporting such attacks and there could be more that do not come to Taylor's attention, he points out that a phenomenon this hard to track down could not be very widespread. If the impact of Africanized bees on public

health has been slight, their impact on beekeepers has been severe. Taylor says 50 or 60 percent of the beekeepers whose colonies are taken over by Africanized bees quit the job because the invaders are harder to manage than the European bees they are replacing. Beekeepers may need special equipment for handling Africanized bees, such as protective clothing, which is a nuisance in hot climates. They also need to establish their colonies at least 200 meters away from human habitation and domestic animals to minimize the bees being provoked to attack. Another problem for beekeepers is that Africanized bees do not want to stay put in the hive. A colony of Africanized bees may produce as many as 8 swarms per year compared to the one or two produced by a European bee colony. Swarming occurs when a queen, together with her workers and drones, leaves the parent colony to establish a new colony. This divides the population and honey production goes down until the population goes up again. Swarming occurs when conditions are good. When conditions are bad bees tend to abscond entirely as they leave the hive to search for greener pastures. Africanized bees are highly prone to absconding. When Africanized bees swarm or abscond, they often travel long distances, up to an estimated 50 miles before establishing a new home. The fact that the bees have been found on islands 10 to 12 miles from the coast of French Guyana indicates that they can fly at least that far on a single flight.

These flying feats have enabled the Africanized bees to travel great distances since their release. The southward migration has currently ceased in Argentina, but they are still moving northward and have now been spotted in Caracas, Venezuela. They may eventually—perhaps in 10 years—reach the United States, although this is not certain. Taylor points out that there are many wild bees in Mexico whereas there were few in South America before the Africanized bees moved in. Lack of a vigorous population of indigenous wild bee competitors has been a major factor in the expansion of the Africanized bees throughout South America.

Whereby they will be able to out compete and displace the bees of Mexico as they readily as they have displaced those of South America is not clear. If they began to breed with and acquire some of the characteristics of the Mexican bees they might also become less aggressive.

Moreover, colder climates may help to block the northward spread of African-

ized bees. There are indications from the distribution of the bees in South America that they cannot tolerate the cold as well as European bees. Lack of cold tolerance may have stopped the southward migration in Argentina. Of course, Africanized bees might pick up cold tolerance by breeding with European strains, but this has apparently not yet happened, a fact suggesting that the two strains are not completely compatible genetically.

The USDA Bee Breeding and Stock Center Laboratory in Baton Rouge is exploring to moderate the aggressive tendencies of the bees by genetic means should they arrive in this country still as feisty as they are in South America. One promising line of research involves the identification of the pheromones (chemical communicators) that may be responsible for evoking their aggressive behavior. Thomas Rinderer of the Baton Rouge laboratory says that it may be possible to select strains that either produce less of the pheromones or respond poorly to them. Such strains should be gentler and less prone than the Africanized bees to take aggressive defensive action when they are disturbed. The gentle strains might then be used by beekeepers and commercial bee suppliers to breed out the aggressive traits of the immigrant bees."---

The trouble with the foregoing report is, that a scientist for well meaning purposes brought the African bee to South America and has started a chain reaction we have not yet seen the end of.

And this report also brings out the fact "that 50 or 60 percent of the beekeepers whose colonies are taken over by Africanized bees quit the job because the invaders are harder to manage than the European bees they are replacing."

Some scientists have a way of placing themselves above the law. They have no right to do this. In the foregoing case it has led to disaster with the loss of many human and animal lives and also the loss of the livelihood to many beekeepers and the end of all this misery is not in sight as yet.

Use



Root
QUALITY

Bee Supplies



Research Review

Honeybees Possess Natural Magnetic Material

SOME REMARKABLE experiments with delicate instruments show that adult honeybees have natural magnetic material in their bodies. When live or freshly killed bees were tested a substantial natural magnetism could be shown. This was not present in adult bees dead for two months; however when these dead bees were treated with a strong magnetic field a permanent magnetic field could be induced in them. The researchers suggest that during the two months after the bees died the fields randomized but a brief exposure to a magnetic field reoriented the material in their dead bodies. An egg, larvae and a young pupa showed little natural or induced field but older pupae did. The magnetic "domains" apparently are formed and oriented during the pupal stage. This would certainly be possible as the pupae lie motionless in the same position for about 12 days while their bodies are forming.

The magnetic material, which is magnetite, could be found in the front portion of the abdomen only. It was not associated with the gut. This does not prove that honeybees use the earth's magnetic field for orientation. However, within recent years there have been suggestions that they do so.

In the dance language bees convert the angle flown with respect to the sun to a gravity field when they dance on the side of a comb. However, there are small but consistent errors in the information conveyed, depending upon fluctuations of the earth's field. Finding this material in honeybees is new but a similar substance is known from bacteria and the paper cited below states similar magnetic crystals are present in other insects as well.

Research in the 1930's and 1940's showed that both nectar and pollen contained measurable quantities of iron, thus bees would have no trouble obtaining the building materials they needed.

We have also wondered how bees were able to coordinate the building of parallel combs. Studies in Germany indicate that swarms build combs in the same plane as the parent colony. While we at Cornell, and others, have not been able to duplicate the results of



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these tests we have information which suggests to us that we should not give up these studies and that the earth's magnetic field may be one of several components used by bees in comb building.

Does this information have any practical significance or is it merely a curiosity? We have manipulated honeybee colonies for our own purposes very successfully. However, this does not mean that with all the iron, wire and nails we have used to construct beehives that we might not have disrupted normal honeybee communication in some manner. Perhaps we could make our bees even more efficient than they now are.

Gould, J.L., J.L. Kirschvink and K.S. Deffeyes
Bees have magnetic remanence. *Science*
201: 1026-8. 1978.

Varroa Disease in Africa

VERBAL REPORTS from Tunisia indicate that *Varroa jacobsoni*, the dreaded Asian mite which kills bees in the pupal stage, is now in that country. Apparently it was introduced there just recently when bees were carried to Tunisia from eastern Europe.

Varroa disease, which was confined to Asia until about 1965, is now found in several countries in Europe, in Argentina, Paraguay and Brazil in South America, and now in northern Africa. These introductions testify to man's carelessness and make it clear that we in North America must rigidly enforce our ban against introducing foreign queens.

Winter Brood Rearing Normal

STUDIES CONDUCTED in Connecticut indicate that winter brood rearing is normal and that it may be controlled, at least in part, by day

length. Seventy colonies of bees were killed at weekly intervals during the winter over a three-year period and the bees weighed and eggs, larvae and pupae counted.

The average colony had 21,000 bees in November. This decreased to a low of 12,000 in early March. The average number of bees dying in each colony was 72 per day. The number of eggs, larvae and pupae was lowest in the average colony in November and December. Some colonies had no brood during this time. The average number of eggs laid each day in December was 25; this increased to 110 per day in January and was 161 in February.

Part of this study included a comparison of colonies headed by young queens and queens more than a year old. The total number of eggs, larvae, and pupae in colonies with young queens was nearly twice that found in colonies with old queens; 11,300 versus 5,900. This is certainly strong testimony that annual requeening will result in stronger colonies in the spring.

No drone brood was found in any of the 70 colonies during November through the first two weeks in March when the studies were terminated each year. Only ten adult drones were found among the 1,175,100 bees examined.

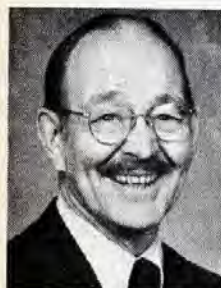
Avitabile, A.
Brood rearing in honeybee colonies from late autumn to early spring. *Journal of Apicultural Research* 17: 69-73. 1978.

SUGAR INDUSTRY TROUBLED

Sugar, a competitor to honey while at the same time a production tool in the bee industry is fighting a losing battle to maintain its status as the principal sweetener. *Business Week* (Sept. 25, 1978, pg. 74) says sugar may be turned into other energy uses such as for livestock feed, industrial products, and even fuel.

From an all-time high of \$1,267.50 per metric ton in 1974, the price has fallen to \$203.70. The U.S. is the world's largest consumer at 11 million tons and produces 10% to 15% of the world's 90 million to 95 million tons a year.

Fundamentals for All



By W. A. STEPHEN
Worthington, Ohio

"Dirft" An Acronym

I THOUGHT that I had seen everything in the way of wrong doing on the part of man in construction and lack of proper assembly of frames, but I was wrong. Let your imagination run wild and you probably won't exceed what I met up with recently.

A friend had undertaken to rehabilitate some colonies which an orchardist had in delapidated equipment. The bees were being kept for pollination only. Rotted-out bottom boards must have been detrimental to the health of the colony, from the human viewpoint, but the bees had lived on. Maybe there had been intermittent hive occupancy. It didn't matter to the bees that combs were crossed and crooked. They had built them that way and from their standpoint were probably more suitable than the slabs of straight comb I like.

The absence of bottom bars did not bother the bees. Ordinarily, bottom bars are a barrier to bee-efficiency in the brood nest. The bees are not able to build their combs down far enough to get to them easily from the bottom board. The bottom bar is a barrier bees don't like. They do not draw out the foundation well at the bottom. Only on foundation-built combs in supers can you expect the bees to build the cells to the bottom bar and especially in the corners. Experienced beekeepers know this and have their foundation drawn out in boxes (variously called shells, brood chambers, supers, hive bodies) above the brood chamber. But, for the orchard bees, some frames had bottom bars, some had not.

Some frames were deeps, some shallows, some in-between sizes, in the brood chamber and some were missing. In the shallow super, section comb boxes may have been in position at one time, but now were decidedly askew and broken up as if some domestic disturbance in the colony had emulated human civil disturbance

outbreaks. There was evidence that foundation had been used, because wedges, used to hold the sheets of foundation, were nailed in place. That is, some were nailed. Some apparently, had been pushed into place, had later fallen down and now reinforced the comb part way down. And how some were nailed in! Inch-and-a-half nails were used, but had been cut in two and each part used in one end of the wedge. No regard had been paid to the way the end bars had been put on. Some of them had a single nail driven down through the top bar; some of them had not.

At one time, wax moths had had their way and cocoons were here and there where succeeding hive inhabitants, the bees for which the hive was designed, were unable to dislodge them. Frames were riddled with the holes made by wax moth larvae; some top bars were displaced and weakened, so that they broke in extricating the lot. Patterns formed by pupating wax moths were everywhere. All in all, it was quite a jumble, the likes of which, I hope, you'll never see. Plain neglect would not give you a comparable mess. Human avoidance of propriety in apiary management had to play a part. And it did!

This was the most extreme evidence of man's disregard for proper equipment assembly I have ever seen. But there are plenty of examples of all grades of disregard not so extreme, as any bee inspector can testify. The fact the equipment is becoming more expensive does not deter the bee-haver from sticking frames together and tacking foundation into them without considering future annoyance to himself, if not to the bees. The parts fit so well in most factory-made equipment that it appears as if it would be easily held together, but not so.

I have practically eliminated breaking off shoulders of frames as I pry them apart when examining combs. I have done this by using glue when assembling. It is always a puzzle to find that propolis will stick two frames together so firmly that one shoulder will break when the combs are separated. Yet I have never been able to propolize it back into place. I have put propolis into the break and forced the shoulders back in place but they won't stick as firmly as they do for the bees.

Well, with end bars glued to top and bottom bars and inch-and-a-quarter nails put in at right angles in the top bar—that is, one on the wedge side, driven in from the top and another (the most important

one) driven through the end bar into the solid side of the top bar—you will have a trouble-free frame good for a lifetime. I also make sure that the foundation is properly wired. I do this, using four wires in spite of what manufacturers and a few successful beekeepers say, by first putting staples with a Tot stapler (the smallest one you can buy at a stationery store) about a quarter of an inch from the hole through which I shall draw the No. 28 bee wire. The staples are so positioned that, when the wire is tightened, they prevent the wire cutting too deeply into the wood. The wire is drawn as tight as possible, being tied off first around a five-eighth inch nail (not brad) in the side which is then driven all the way in. The wire is then drawn tight enough to "sing" and twisted around the top nail. When the nails are hammered into the edge of the end bar, so that the head is buried, the wire is easily broken off by wiggling it back and forth. No points are now sticking out. The staples under the properly-tightened wires do not interfere with scraping the end bar when cleaning the frame in years to come.

Recently, seeing how wired foundation in unwired frames would make it impossible for the beekeeper to have good interchangeable combs, I decided that I should devote a "Fundamentals" to proper use of foundation. This is to come.

When I put a frame fitted with foundation on the hive, I have over a dollar invested in it. If the bees don't do their part in making it into a perfect comb, I can forgive them. But I never forgive myself for nail points sticking through the top bar, or shoulders protruding above. I recently assembled a lot of frames where it was necessary to drive the top bar off a little from its seat in the end bar because the manufacturer's saw had cut a sixteenth of an inch too deeply in one end of the top bar. For me, such an adjustment is a must, because when I want to clean off the top bar, I don't want to have nails, or anything else, interfere. When extracting, I like to clean burr comb from the top bar. I do this by slicing downward with the uncapping knife. Nothing man does with bees annoys me more than to nick the knife on a nail point sticking through the top bar, or shoulders protruding above. As for the end bars, you can imagine how I feel about eyelets not inserted far enough, nails and support pins, and bobby pins (Heaven forbid!), the heads of which spoil my day by using up seconds of time unnecessarily. Lastly, the ends of the

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Notes from the Straw Sheep



By BESS CLARKE
Canton, Pa.

A VERY PLEASANT custom in this area of the country is known as the **Harvest Supper**. Many local church and civic groups prepare and serve dinners to the public as a means of raising funds.

The custom began, I am told, because the oversupply of garden produce at the end of the season made it easy to obtain donations of fresh foods to serve, and the less that had to be expended in cash meant more profit for the organization.

Sometimes a bazaar is held in conjunction with the dinner where handmade gift items, homemade pickles and preserves, and house plants may be purchased.

This year I am acting as co-chairman of the Supper at our church. We're serving a family style roast beef dinner, complete with mashed potatoes, gravy, glazed carrots, cabbage slaw, tomatoes (if the

frost hasn't gotten them all) applesauce, brown bread and dinner rolls, with homemade pie for dessert.

The women's organization, which runs the show, has enlisted the aid of the men. One fellow, who used to be an army cook, will prepare the cabbage salad; another has grown the carrots especially for this event. Others will assist with placing the tables, slicing the meat, mashing the potatoes, and washing the dishes. It turns into a busy, exciting, happy event for all those who are involved.

I have found out that there's a lot more to the Harvest supper than preparing and serving the food. Planning takes several committee meetings and much telephoning, not mention a little wrist twisting. It goes better if each specific task has a separate person in charge. Some of the advance jobs include preparing and placing the advertising posters, placing ads in local papers and on the bulletin boards of radio stations, distributing advance sale tickets, making a shopping list of needed items and cleaning the kitchen and dining area beforehand.

At a meeting at Cornell last summer a group of us discussed the need for some good recipes for beverages containing honey. The E.L. Sherrills from East Hampton, N.Y. subsequently sent me this recipe for homemade root beer which they say has great flavor and effervescence. I must admit that I haven't made it but it

sounds as if it should be easy to do. They modified the recipe that came with a bottle of Hires root beer extract as follows:

Shake bottle of extract well before using. Pour contents over two quarts of honey and mix well. Dissolve mixture in 4-3/4 gallons lukewarm water. Mix a rounded teaspoon of dried yeast in a cup of lukewarm water and let stand 5 minutes. Add yeast mixture to the liquid solution. Mix well. Pour into sterilized bottles immediately, filling to within 1/2 inch of the top. Seal bottles with cork or crown stopper. Place bottles on their sides in a warm place (70-80) until effervescent—about 8 or 9 days. Move to a cool place for further storage. Refrigerate before drinking.

Another beverage which tastes good this time of year is **Mulled Cider**. Combine 2 quarts cider, a stick of cinnamon, 6 whole cloves, 3 whole allspice, and 1/4 cup honey. Heat slowly and simmer half an hour. Strain before serving hot in warm mugs. Decorate with a slice of orange or a maraschino cherry.

Punch for a Crowd makes 75 servings. Boil together 2 cups honey and 2 cups water and cool. Combine this syrup with 2 cups strong black tea, 2 cups lemon juice, 2 cups orange juice and 5 cups pineapple juice. This may be prepared in advance. At serving time add a 12 ounce bottle of maraschino cherries with juice, 3 gallons water, and 2 quarts ginger ale. Pour over ice in a punch bowl.

Questions and Answers

Q. I'm wondering if anybody has the experience I'm having right now. I have three hives of bees here in town and keep them on the roof of the garage about ten feet high and their line of flight is way above people and in that way bother nobody.

My trouble now is that I have a bunch of yellow jackets around and can they sting if you get in their way! The trouble is the sting lasts about 24 hours or so and it hurts like h--l.

Bee stings don't bother me at all as I don't bother to wear gloves and sometimes not even a veil in the right kind of weather, but never bother them when a rain could come along.

I never had this yellow jacket trouble before and I can't find where they come from. I've looked all over. If I could find their nest I'd get 'em. It's the smell of the honey that lures them and they like to be mean.

Tell me why is their sting so much harsher than the honeybee we have. I don't mind getting stung from my bees, it does keep rheumatism away. It must help because at 86 I haven't any.—G.P., Michigan.

A. Entomologists say that the yellow jacket population is increasing due to the invasion by a new species which migrated from Europe. They have spread westward from the East Coast and have

been a real nuisance in our Mideastern states.

The yellow jacket is a ground-nesting insect. To destroy their nests the entrance must be located, which is usually in the vicinity of the hives. Nests may also be found in the siding of buildings.

Whether you are zapped by a honeybee, yellow jacket or hornet, the pain is relative to the recipient's level of sensitivity, in my opinion.

☆☆☆☆

Q. Why do bees feed on their sealed supers of honey in early August? There have been and are various flowers in the fields.

What is the use of leaving a super of honey for them for winter feed if they consume it before winter arrives?—M.B., FL.

A. Bee behavior, and this would apply to your bees in regard to their feeding habits, may be quite variable depending upon conditions in which they live.

Late season use of honey stores may taper off as the season closes. Often there is a late summer cycle of brood rearing in which bees are born that will survive the winter months. Although there may appear to be forage available, it may not be accessible to bees and they are, therefore, called upon their reserves to maintain the elevated rate of brood rearing.

If honey reserves become depleted or are insufficient during your period of dearth, feeding may be necessary.

☆☆☆☆

Q. I bought two 4-pound packages of bees in May. One package of Caucasian and one package of Italian bees. The Italian bees left three days after I put them in the hive. Both hives had foundation. What caused them to leave? I also hived a swarm on July 19th; it left the next day.

My bees failed to make any surplus honey. They have the brood chamber full and each filled a shallow super. I put the comb supers on top of the shallow supers on September 12th. They failed to make any honey in the comb supers.—R.S., PA.

A. Bees will occasionally leave a hive after they have been installed either from a package or from a swarm. No one seems to know exactly why although this usually occurs in new hives and when they have been hived on foundation. Apparently they are dissatisfied with their surroundings or their scout bees sent out to look for a new home returned and encouraged the swarm to follow them to another home. Perhaps they were short on food.

A colony's failure to store honey is usually due to an insufficient honey flow or the poor condition of the colony. Either of the above two conditions could be the cause, especially if you are attempting to produce honey in the comb which calls for both a strong colony and honey flow plus very special handling of the colony. September 12th is too late in the season to super for comb honey in your state.

☆☆☆☆

Q. About 30 Amtrak and local train services pass 200 feet behind my house

each day. If I put my ear to a door frame as a train passes there is a lot of rumbling through this 20 year old house.

I would like to put a hive or two about 60-70 feet from the tracks. I picture the brood being shaken right out of their cells.

Can you tell me if anyone has had any experience as to whether the bees mind the vibration of nearby trains?—W.S., Mass.

A. I do not believe any tests have been conducted on bees subject to disturbance from traffic such as heavy trucks or trains.

At one time someone did mention to me that they believed their bees were disturbed by trains passing nearby and since moving them the bees have done much better.

On the other hand, we have hives at the A.I. Root factory which are continuously exposed to heavy truck traffic and do not seem to suffer any adverse effects although we cannot compare them accurately with hives which are protected from this street traffic.

☆☆☆☆

Q. This is our first year in the honey business and we are having some trouble getting our beeswax separated from the honey.

We hear that we shouldn't heat it and yet we don't know what to do.

Isn't there an easy process for getting the two separated without all of the fancy equipment?

Please let us know soon how most small businesses handle this.—D.C., MI.

A. Most of the honey produced is destined to be extracted honey. There is no very good substitute for removing the honey from the comb without an extractor.

If you have only a hive or two, may I suggest that you cut the comb from the frames, putting this into a container creating a double boiler effect; therefore, minimizing the damage to the honey by melting it in contact with the beeswax. They will separate, the honey going to the bottom and the wax rising to the top. Using the double boiler effect is very important to preserve the quality of the honey. Some place comb in a cloth bag and press the honey out.

Another alternative is to produce honey in the comb, and many people prefer this form to liquid honey. Manufacturers provide special shallow frames and supers for this purpose.

Another alternative is to share extracting equipment with other beekeepers in your vicinity or with other members of the association of beekeepers which may exist in your county. Cooperative use of an extractor is common, but caution should be used that honey from diseased bee colonies is not extracted.

☆☆☆☆

Q. I am just starting out with bees. I have a brood box with ten frames and starter wax in it. I captured a large swarm on the 19th of August. To me, they look as though they are working well.

The problem, I think, is that cold weather is going to get here before they fill the brood box up with honey. Is there anything I can put in the box to keep them over winter if they don't make enough honey?—G.H., PA.

A. This is an extremely late date to hive a swarm. Your chances of overwintering this colony are not good.

If your bees do not store sufficient honey for winter we suggest you start feeding sugar syrup immediately until the colony weight reaches approximately 120 pounds including the hive and the bees. They will need additional storage space beyond one brood box, usually provided by another deep hive body. Sugar syrup is prepared for fall feeding by mixing one part of water to two parts of granulated sugar. Heating, but not boiling the mixture will aid in the preparation. Feed the sugar by means of an inside the hive type of feeder. Feeding should begin before the onset of cold weather.



ALABAMA HONEY QUEEN

Pat Miller, 17-year old Greenville High School senior, is Alabama's new Honey Queen. She was chosen at the recent annual meeting of the Alabama Beekeeper's Association in Birmingham. Pat is the daughter of Mr. and Mrs. Ollie B. Miller. She was sponsored by the Wiregrass Beekeepers' Association.

GLEANINGS IN BEE CULTURE

24th Annual E.A.S. Conference

By LIZ RODRIGUES
Colts Neck, N.J.

A HUGH swarm of over 600 hobbyist beekeepers from 25 states, Canada, England, France and the West Indies landed on the campus of Wooster College, Wooster, Ohio and they stayed for the duration of the 24th Annual Conference of the Eastern Apicultural Society.

President, John A. Root called the Conference to order Thursday morning and presided over the day's program. The Rev. Paul Varner gave the invocation and Dr. Roy M. Kottman, Dean of the College of Agriculture gave the welcome.

A group of 180 ladies were bused to a luncheon held at the Ramada Inn. They were entertained by speaker, John E. Ford, Curator of the Secrest Arboretum who spoke about "Secrest Arboretum—It's Treasures and Secrets, Old and New". For the first time, a very enjoyable fashion show was conducted with 20 EAS members participating.

Buses transported conferees to The A. I. Root Company in Medina where the group toured the entire facility. The store was bustling with customers and the entire afternoon was very enlightening. Many expressed surprise and delight at the candle making part of the operation. Refreshments were served on the grounds. The Agricultural Technical Institute personnel conducted the following workshops: "Cobana Honey Production"—Mr. Barry Semegran (2) "Package Bee Installation"—Victor Thompson (3) "Candle Making"—Dr. Robert Berthold (4) "Swarming"—Dr. John Ambrose (5) "Candle Making"—Ms. Jody Semegran and (6) "Disease Inspection and Identification"—Gordon Rudloff.

A cash bar preceded the barbecue which was held Thursday evening at the Medina Fairgrounds. The assortment of delicious food with second helpings and delightful desserts was satisfying. A book auction was conducted to help provide funds for the Honey Queens.

Following is some of the business transacted at the Annual Business Meeting: The minutes of the '77 meeting were dispensed with. Liz Rodrigues, Secretary-Treasurer gave a report on the years activities and the following Treasurer's Report for 1978: Total receipts, \$6,095.19, total expenditures \$5,299.60 and total EAS assets as of August 9, '78—\$17,794.73. None of these figures reflect any monies received from the present Conference.



Dr. Richard Taylor and Siemen Terpstra.

A quilt in the arts and crafts show.



In the absence of Dale Bray, Chairman Jack Matthenius gave the following Sites report: 25th Annual Conference Aug. 8-11, 1979—Carleton University, Ottawa, Canada; 26th Annual Conference Aug. 1980—University of Vermont, Burlington; 27th Annual Conference Aug. 5-8, 1981—Rutgers University, New Brunswick, N.J.; 28th Annual Conference Aug. 1982—University of West Virginia, Morgantown.

New EAS Officers and Directors, August 11, 1978-1979, Wooster, Ohio: Jacob C. Matthenius, Jr., Chairman of

the Board, N.J.; R.E. Ross Hopkins, President, Canada; Hugh J. Macleod, 1st Vice President, Canada; John J. Tardie, 2nd Vice President, Vermont; Liz Rodrigues, Secretary-Treasurer, N.J.; Philemon J. Hewitt, Historian, Conn.

Directors (4 years)—Dr. Clarence H. Collison, PA.; Paul R. Comer, MA.; Clyde Hutchinson, W.VA.; Paul H. Rylander, R.I.; Matthew Scott, ME.; Mervin J. Vaillancourt, Quebec, Canada; Dr. John T. Ambrose, N.C.

After much talk for many months as to

whether or not EAS should stay in or pull out of Apimondia, a motion was made that EAS withdraw its membership from Apimondia. After considerable discussion, both pro and con, the motion passed by a 62 to 59 vote.

A fruit punch social preceded the Banquet at Lowry Center which opened when C.A. Divelbiss gave the Blessing. Show Chairman, Dick Corrigan presented seven silver trays and two sterling bowls to the following winners of the Honey Show: Dadant & Sons Beeswax Trophy—Al Delicata, Mass.; A.I. Root Trophy for Comb Honey—Carl Reichers, N.Y.; Thomas E. Raney Honey Cookery Trophy—Rose Marie Craig, Ohio; The Speedy Bee Trophy for Extracted Honey—John Cantatory, N.J. (4th consecutive year); The Presidents Award for Chunk Honey—Al Delicata, Mass. (4th consecutive year); E.A.S. Directors Trophy for Gadget Show—Peter Bizzoso, N.Y.; The Carlton Slater Trophy for Mead—Joseph Uttaro, Mass.; E.A.S. Sweepstakes Bowl for Honey Cookery—Mrs. Eliese Davis, Virginia; E.A.S. Sweepstakes Bowl for Honey Show—Mrs. Eliese Davis, Virginia.

Yvonne Root reported there were 20 entries in the Fashion Show at the Ladies Luncheon and announced there was no ranking of the winners who were given token prizes. There were 3 categories: **Garments** (13), **Hats** (4) and **Purses** (3). Winners were: **Garments**—Inga Littig, Lakehurst, N.J.; Rowena Stockwin, Sussex, England; Grace Vogel, Old Bridge, N.J.; Joanna Melgey, Norwich, Conn.; Patricia Kalonick, Adena, Ohio; Hillary Barrett, Action, Mass.; Shirley Kleinic, Burbank, Ohio. **Purses**—Norma Wright, Chester, Conn. **Hats**—Elsie Schavemaker, Neshanic, N.J. and Sue Evans, Easton, Maryland. The ladies enjoyed participating in the Fashion Show so much, they expressed that they hoped it would be continued in future Conferences.

A top public speaker, Mr. Don Wolfe, Assistant Manager-Editor of the Toledo



Roger Morse explains honey grading.



Putting on a bee beard.

David Hampton [left] and Dale Maki.



Gary Rudloff demonstrates disease in spection.



Blade, was the main speaker and succeeded in keeping the entire audience in a constant state of laughter. Incoming president, Ross Hopkins thanked John Root for his work and exceptionally good administration and presented the President's Plaque to John Root for his dedicated service as EAS president for 1978.

Dr. John T. Ambrose presented the J.I. Hambleton Award to Dr. Hachiro Shimanuki, USDA Honey Bee Disease Laboratory, Beltsville, Maryland who is this year's recipient, for his outstanding contribution in research work.

Total attendance was 573 from 25 states, Canada, England, France and the West Indies.

The conferees bade farewell to their old acquaintances and newly made friends after having attended a very interesting



Joe Gitta makes a straw skep.

and successful Conference. With plans to return for the 25th Annual Conference to

be held August 8-11, 1979 at the Carleton University, Ottawa, Canada.

Factors Affecting Nectar Secretion

By FRANCIS O. HOLMES
Henniker, N.H.

IN RECENT YEARS there have been numerous reports of increased nectar production as a result of fertilization of soil, or spraying of plants, with various substances. These reports are so widely scattered in our apicultural literature that not all beekeepers are aware of them.

In 1931 Oertel concluded that some factor other than available calcium in the soil was probably important in limiting nectar secretion in white clover (*Journal of Economic Entomology* 24 (3):627-632). In 1960 the fertilization of red raspberry and alsike clover plants with boron, in the form of aqueous borax solutions, was reported to bring honeybees to collect nectar from treated plants not previously attractive to them (*American Bee Journal* 100:102-103). In 1968 it was reported that red clover increased its nectar secretion after receiving 2 kilograms of boron, with 30 kg. of phosphorus and 40 kg. of potassium fertilizers per hectare (*Vedecke Prace Vyzkumneho Ustavu Vcelarskeho v Dole* 5:101-139). In 1969, boron additions at 0.2 and 0.5 parts per million were reported to increase sugar concentration in nectar but reduce nectar quantity in white clover (*Crop Science* 9 (1):75-76). Curiously, boron topically applied to cotton plants increased secretion from floral nectaries but decreased secretion from foliar nectaries (*Report IX, Pollination Conference, University of Arkansas*, 1970, pages 25-27).

In buckwheat, cobalt and zinc supplements were reported to stimulate nectar

secretion (*Pchelovodstvo* 87 (3):40-41, 1967).

Red clover showed nectar increases of 22.8% when treated with 500 grams of zinc, 49.1% when treated with 1,000 grams of manganese sulphate, and 52.8% when treated with 150 grams of ammonium molybdenate per hectare (*Pchelovodstvo* 37 (3):15-17, 1960). In 1967 it was reported that red clover secreted 30.5% more nectar if one hundred grams of a molybdenum salt was applied to each hectare of land (*opyt. Rab. Pchel.* 1966:160-163).

Spraying buckwheat plants with succinic, ascorbic, or citric acid was reported to stimulate nectar secretion (*Trudy nauchao-issled. Inst. Pchel.* 272-282, 1966).

Fertilizing *Drachocephalum moldavicum* with 0.1 to 0.8 gram of potassium per plant favored nectar secretion (*Apicultural Abstracts* 719/72). On the other hand, potash manuring decreased nectar secretion in red clover (*Tidsskr. Planteavl* 46 (2):267-297, 1941). In cotton there was a 130% increase of nectar after fertilization and a 170% increase after fertilization with superphosphate (*Pchelovodstvo* 32 (8):44-46, 1955).

Alfalfa, rather surprisingly, secreted more nectar if treated with the herbicide 2,4,5-T at the rate of 20 grams per acre (*Crop Science* 4:560-562, 1964).

Most of the substances thus far cited in apicultural literature as increasing nectar secretion are substances universally recognized as needed by plants in general. This is certainly true with respect to boron, phosphorus, potassium, zinc, manganese, and molybdenum. Hence we may assume that their action in increasing nectar secretion probably indicates that the plants to which they were applied during the tests were receiving insufficient amounts of the test substances and had use for more of them. Just why cobalt should have a favorable effect when applied to buckwheat is more puzzling, because cobalt is only known to be beneficial to plants that are like legumes in utilizing nitrogen fixation by microorganisms that live in their roots. The cobalt in these cases favors the microorganisms directly and the plant hosts only indirectly.

In the case of potassium, which was reported to increase nectar secretion in cotton but to decrease it in red clover, we can imagine that the cotton was growing in a somewhat potassium-deficient soil but that the red clover was in soil that already had an excess of potassium before the experimental treatment.

The favorable effects reported for sprays of succinic, ascorbic, and citric acids remain unexplained, but the reports would surely justify further tests of this kind. The favorable effect of the herbicide 2, 4, 5-T would also seem to justify further experimentation both on alfalfa and on other nectar plants.

Bee Journal of a Novice - Year 2

"I can manage all I want, but nature obviously has the last word."

By MARCIA BONTA
Tyrone, Pa.

LATE MARCH—Suddenly it warms, and I worry about the bees. It was a long, hard winter with little opportunity for cleansing flights. Piles of bee bodies outside the hives decorated each fresh white snowfall, and often I dug snow away from the entrances. Once or twice I eased my worry by tapping on the hives during a warm (45°), sunny day. Despite the deceased on the ground, a reassuring buzz greeted my tapping.

Finally, though, it is warm enough to check the hives. I am amazed when I remove the top super. It is very light, and I discover that all the honey is gone! Two deep hive bodies and two supers are completely empty at two hives. The third hive has just a little honey left. Quickly I mix up eight pound cans of sugar syrup and turn them upside down over the hole in the inner cover. I also make pollen cakes for all the hives.

April 13—Mostly it has been cold and rainy—a very late spring. I check the hives again. The bees are very active; the syrup cans are empty. Again I fill them and then we leave for a six week vacation trip to Spain and France.

June 1—We return home. The first thing I check is the beehives. Absolute hoards of bees are humming in the bee yard. I remove the empty syrup cans and moldy pollen cakes. To my surprise, all three hives need supering. The empty hive bodies are now filled with brood and honey. I talk to friends and learn that we had a very rainy spring. How have the bees managed to fill up two hive bodies and two supers already?

I have my answer almost immediately when I notice a sweet scent in the air. The black locusts which surround our house and our bee yard and heavily populate the edges of our field, are blooming heavily, the first time in the seven years we have lived here. Never have I seen such beauty. Whenever I work in the yard, I am surrounded by the continual humming of bees—a happy sound.

June 17—The bee inspector comes and makes my heart glad. My hives are the best he has seen, he tells me, and he pulls out frames of perfectly capped locust honey to admire. I stand beside him bursting with pride at his compliments. No disease, he reports, and a

brood pattern as consistent as textbook pictures. In addition, all the hives must be supered again. Oh, this beekeeping can be a wondrous thing!

I do speculate, though, about a policy of benign neglect. Is it, perhaps, more logical than management? My friend, Mary, counsels me that I should tear my hives down in early spring and clean out the bee bodies. I had time merely to swipe at the entrance with a long stick when I removed the entrance reducers before we left for Europe.

Of course, my feeding them obviously saved their lives and stimulated their brood rearing, a lucky move really. Then, too, while we were in Europe, the grass was not cut as well or as often and the dandelion crop was more abundant than usual.

But how can I discount the vagaries of nature? What special combination caused such a marvelous flowering of the locust trees? I can manage all I want, but nature obviously has the last word. The queens are good, the bees are good, there is no disease, the locusts have bloomed, and I have neglected most good beekeeping management to take a vacation. The bee yard was unkempt, grass obscured the entrances, and still the bees harvested. I didn't have the time or opportunity to give the bees the recommended spring medicine and yet there is no disease. Yes, indeed, when nature cooperates, a beekeeping policy of benign neglect pays off.

Perhaps, I should be more like my neighbor, Margaret, who has kept bees for many years. She works her bees without smoke and calms them with a little salt sprinkled at the entrances, a trick she learned from the Amish, and she only takes off honey when she needs it. Last fall she took none since she was busy with a sick brother. During the last two very severe winters she lost no colonies. She reads very little on the subject but relies on instinct and a deep-felt empathy with her bees. Working with them just makes her feel good, she says, and she is unmindful of occasional stings. She is, indeed, harmonious with nature and with her bees. I hope, some day, to be equally at peace.

July 9—Milkweed is in blossom and is filled with humming bees. White clover grows on our lawn and the bees hover over it. My herb garden planted for the bees has borage in blossom.

Previously they worked the tiny blue flowers of blossoming sage. Still, after the delights of the locust, I wonder that the bees still find enough to keep them busy. But every nice day I pass the hives which are humming with activity.

July 15—We finally, with the help of our local bee inspector, locate a second-hand, four-frame, non-reversible extractor with two large uncapping knives thrown in for \$50.00. The owner is an old man, heavy, tired and defeated by hunters who pushed over many of his hives on a hillside a short walk from his home along a highway. After we purchased the extractor which is very clean and beautiful in the simplicity of its design, we walk up the road to see his small patch of land. It overlooks a lake and mountains in the distance and is an open field with fruit trees, grape vines, and a garden of tomatoes, peppers, eggplants, melons and beans. A few old hives still have bees flipping in and out but most are deserted and in a sad state of repair. He speaks of trying to salvage some. I sense, though, that he probably won't. Beekeeping is physically too much for him. But we are young and strong and filled with high hopes.

July 16—Bruce cleans up the extractor while I wash up a couple dozen honey jars I have saved for this long awaited day. It is hot and humid, but the hives are crowded and the supers full. We simply must extract. But first, once we get dressed and the smoker is going, Bruce has to jack up and shim the overlaid hives which are leaning too far forward. He uses a small eight ton house jack while I wield the smoker. After nearly an hour of hot, sweaty work, surrounded by nervous bees, the hives are relatively straight.

Now the business of the day is at hand. We decide to shake the bees off the frames and insert them quickly into an empty super which is covered with a lid and a bee escape. Bruce shakes and holds out the frame for me to brush off the remaining bees. Then I lift the super lid off, Bruce drops the frame in, and I quickly cover it. We work very fast, put the hive back together again, and make off with the super, feeling very much like thieves. By the time we reach the verandah, most of the bees give up the chase. We

do a second check for stray bees on each frame and then carry the groaningly heavy super into the kitchen, our makeshift honey house.

At first I am nervous about bees getting in through the windows and doors but not one comes in the whole day. A large pot of boiling water holding the two uncapping knives is on the stove, the extractor sits on the table, a little high for a comfortable reach. A collander is placed over a mixing bowl to hold the cappings. I try to uncap but am unsuccessful. Bruce takes over and does a slow, careful job, using at least four changes of knife per side as each time the knife remains hot for only a few seconds.

The boys are all gathered around, waiting to dab at any drip of honey, and when it is time to turn the extractor, three eager volunteers vie for the chance. But best of all, after the first super is empty, is the jarring of the honey. One boy holds a bottle under the spigot as the honey flows out. Jar

after jar is filled until we have 22 pounds of light-colored honey. Everyone has a spoonful. The boys are adamant. "This makes the store-bought honey look sick." Bruce sums up the operation as the most enjoyable harvesting of any crop we have ever produced.

We do two more supers with a total of 76 pounds of honey for the day's work. The honey from the top super of two hives is capped over so we take those, but for the third hive we take the next lower super, the locust flow honey. It is darker than the other but delicious.

Bruce, though, pays the penalty for the day's thievery. As we extract the last super, storm clouds whirl up, and he rushes out to return the empty frames to the bees. The empty super is nearly filled with bees, all angry, all returned from a day of foraging, they vent their rage on Bruce. They sting through his pants, his gloves, and his shirt, and he tells me he lost count after eight stings. That night his left thigh and one finger

swells painfully. "Next time we use a bee escape," he decides. "And please get me a bee suit for our anniversary," he adds.

July 17—We speculate about the source of the lighter honey. It has a slight tang quite unlike anything we have ever tasted, and it is evident by the bees' frenzy that some kind of a flow is on. Surely the few wild flowers and herbs have not created such activity. We question our beekeeping neighbor, and she says it is basswood honey. Our son, Steven, who spends all his time in the woods of our isolated mountaintop, agrees. The hollow is filled with basswood, and it is blooming. This, too, Pennsylvania, seems incredible. Two unpredictable sources, locust and basswood, have both been outstanding. After two years of hardship, Pennsylvania beekeepers, at least in our area, have something to rejoice about. And I am rejoicing, how I am rejoicing, that at last we are becoming successful beekeepers.

Bees at Texas Folklife Festival

By **DR. CARL MOORE**
San Antonio, Texas

"Will those bees bite me?"

"Are they making honey?"

"Why is that jar of honey dark and the other one light?"

These are some of the questions asked by the thousands of visitors to the Beekeepers Exhibit at the 7th Annual Folklife Festival in San Antonio, Texas, August 3-6, 1978.

The observation hive provided by Dave Tuttle, Bee Supply Manager, A.I. Root Company in San Antonio, drew a steady stream of inquisitive visitors. The fact that a few "neighborhood bees" were flying around the outside of the hive discouraged very few. During the 3-1/2 day Festival, more than 100,000 persons visited the grounds of the Institute of Texas Cultures watching everything from rail splitting to sheep shearing, shelling and grinding corn, and the beekeepers booth.

The constant crowd of people around the observation hive asking questions and talking about their own experiences reflected a high degree of interest in bees, honey and beeswax. In addition to the observation hive, Dave Tuttle had provided an empty beehive with some drawn out comb. Patty Raspino and I were able to



"You can see better close up." Paul Graham giving the observation hive a close look.

pull a fully capped frame from one of our hives to use during part of the Festival.

With more time for preparation, a much more informative and attractive exhibit could have been prepared. how-

ever, Myrtle Adams and O.L. Tolman who had planned to provide the exhibit had to cancel at the last moment, and Joe Graham, Resident Folklorist at the Institute, began calling locally to find persons to man the exhibit. Dave and Patti

Tuttle, Patty and Darryl Raspino, Mr. and Mrs. "Tiny" Forrester and my daughter, Susan, and I took turns answering questions and telling the story of bees during the 3-1/2 days.

Many interesting things happened. One man wanted the whole story of beekeeping from beginning to end. He listened intently, asked several questions, and went away apparently satisfied. Quite a few people wanted to talk about their experience with bees, and still others mentioned that they remembered seeing their parents and grandparents taking care of bees. Children were especially interested as they poked their faces up close to the observation hive and asked a million and one questions. Fortunately, we were able to locate the Queen, show eggs laid in the cells, and watch baby bees chewing their way out of cells as they hatched.

I don't recall anyone asking about "killer bees" or mentioning the movie, "The Swarm". There were a few who kept their distance, exhibiting a healthy respect for the bees flying around the observation hive, but one lady, admitting to extreme allergy to insect stings, did not hesitate to take in all of the exhibit and ask several questions.

This experience illustrates again the need for all beekeepers to take advantage of every opportunity to inform people and to promote our products. We were able to give a few samples from the honey bears so that people could taste the difference between the dark and light honey. Patty Raspino sold several honey bears during the stay at the exhibit. All of us look forward to participating again next year with a much more carefully planned exhibit.

The Annual Folklife Festival, a self-sustaining project of The Institute of Texan Cultures, is held on the grounds of The Institute in HemisFair Plaza in San Antonio. People come from all over Texas and surrounding states to see the many demonstrations of activities rarely seen in today's modern world. An old wooden, hand-cranked corn sheller was available next to the bee exhibit for any who wanted to shell corn the hard way. In addition to many similar exhibits, authen-



Two interested visitors watching bees in observation hive.

Author and Paul Graham looking for the queen in observation hive.



tic Indian dances and a variety of performers provided entertainment, while

food booths offered everything from tamales to homemade bread.

USDA MEETING IN WASHINGTON

In a meeting chaired by Dr. Phil Kearney, Office of Environmental Quality Activities an agenda prepared by Dr. E.C. Martin was discussed by members of the EPA, ASCS and the several beekeeping representatives, including M.D. Levin, SEA/FR.

The subjects discussed were varied and included the request for an extension apiculturist on the national level, the revision of existing rules on labeling and application of pesticides.

Other matters concerning pesticide regulations and their effect on the beekeeping industry were brought to the attention of the various representatives

present.

As these various proposals are evaluated and acted upon more information will quite likely be forthcoming from the USDA and the EPA. The fifteen proposals made at the August meeting are too lengthy to be reported here but may be requested by contacting: Dr. E.C. Martin, USDA SEA/FA, National Program Staff, Beltsville, Md. 20705.

GLEANINGS IN BEE CULTURE

Early Beekeeping in America

By WILLIAM G. LORD
Raleigh, N.C.

BEEKEEPERS are constantly searching for new and better ways of doing things, but in our search for the new we often forget the past, and thus lose sight of a colorful history. One part of the beekeeper's heritage that is still lingering is the log hive, or "gum". It is still possible to find these hives in use, and they provide an interesting insight into the beekeeping methods of the not too distant past.

Log hives were called gums because they were usually made from a section of black gum tree, which seemed to have an affinity for being hollow. The logs were cut into 24 or 36 inch sections and smoothed down on the inside with a long-handled chisel. The next step involved giving the bees somewhere to hang their combs. Four holes were bored halfway up the hive so that two sticks could be inserted at right angles to each other. The bees would hang their brood combs from these cross-sticks and store their honey in the

section above. The honeycomb was suspended from the "head", or plank top, which was nailed to the top of the hive or held tightly in place by a stick run through two wooden "eyes". Next, a slanted roof was put on top to keep the rain out and the hive was set on a bottom board. The hive could be tilted on several small rocks, or notches could be cut to provide an opening for the bees. The hive would now be ready for habitation, and suitable tenants could usually be found in bee trees or as swarms.

The gums were robbed once a year to provide the beekeeper's family with a source of sweetening. It was generally recognized that the bees should be robbed in late spring or early summer to give them plenty of time to build up for the winter. The first step in robbing was to thoroughly smoke the bees to "calm" them. Smokers were unknown, so smoldering rags or leaves were piled in front of the hive or shoved under

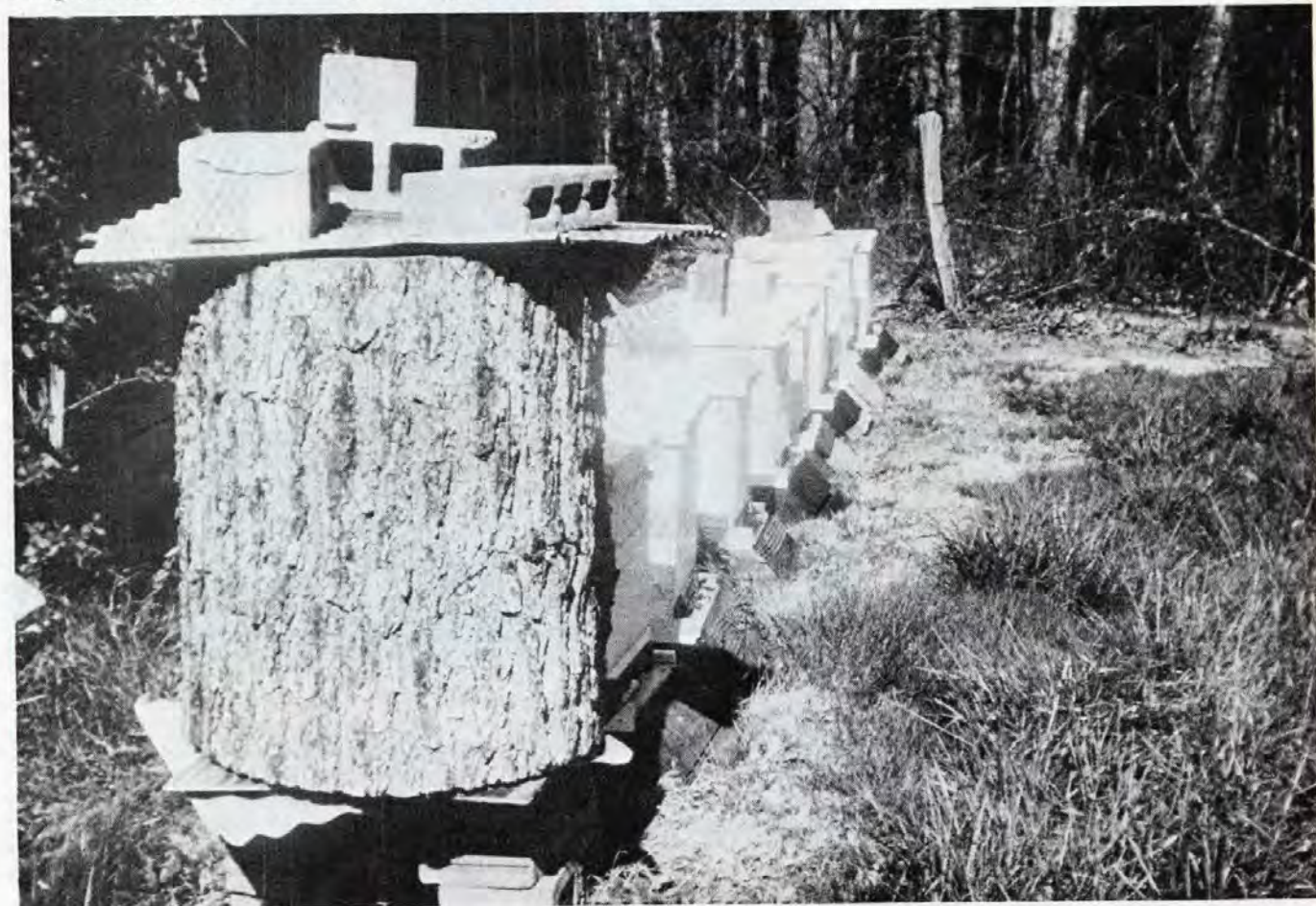
the entrance and the beekeeper waited until the bees "calmed down", or were most likely overwhelmed by the smoke. Next, a long-bladed knife was inserted under the lid and the combs were cut free. The top was taken off and the combs were cut from the sides and removed, finishing the process.

This simple procedure sounds easy enough, but it usually worked a tremendous hardship on both the bees and the beekeeper. Frequently the bees were oversmoked or burned out if the rags flared, and numerous bees were crushed and drowned when the beekeeper cut the combs out. It was a messy, sticky job for the beekeeper, and he usually received generous numbers of stings for his efforts.

The first European beekeepers in the New World (circa 1638) used straw skeps. But these bees soon escaped to the wild and began inhabiting hollow trees. The early beekeepers saw this

(Continued on page 537)

Bee gums were popular 20 years prior to the introduction of the Langstroth hive.



How Much is Enough?

By S. L. LOYER
Winthrop, ME

OVER THE LAST 20 years it has become apparent that the amount of honey required to winter a colony of bees varies considerably due to the strength in numbers, race of bees, severity of the winter and the type of weather during the spring and early summer.

Every year each of my colonies has been weighed about October 1 and again about April 1 to check their consumption of winter stores. At least one hive has been weighed at monthly intervals to note the loss before the main honey flow. Each hive has a 2 x 4 hive stand with four large screw eyes, one near each corner. A length of braided clothes line is threaded through two screw eyes on one side of the stand, run over the top of the hive and through the other two screw eyes. The ends are then tied together. A tripod of sufficient height is set over the hive and a block and tackle with two double blocks with $\frac{1}{2}$ " rope is secured to the apex of the tripod. A steelyard or 300 pound spring scale connects the lower block to the lines passing over the hive. The hive is hoisted clear of the ground and the weight noted and recorded. Other means of weighing hives have been described in *Gleanings* and are probably as efficient.

After the frost goes out of the ground a platform scale is placed under one of the colonies and a daily check gives accurate information of weight gains and losses throughout the summer and fall. It's not unusual to have a daily loss of a pound or more for several weeks at a time and then suddenly have an increase of from one to 20 pounds per day. Sometimes when these sudden gains and losses occur it is almost impossible to believe. Nectar-bearing plants continue to bloom but produce nothing. Plants that bore profusely last year are barren another year. Last year goldenrod was a total failure, this year it's bearing profusely.

Consumption of winter stores from October 1 through April 1 for the years 1974 through 1978 of four hives are listed below. The bees were Caucasians, Italians and their crosses.

	Hives: 1	2	3	4
Year	Lbs.	Lbs.	Lbs.	Lbs.
1974-75	40	45	25	43
1975-76	55	35	45	37
1976-77	32	40	27	35
1977-78	70	60	85	75

When the colonies were given their February 1978 inspection to check for

brood and location of stores in relation to the cluster it was noted that although the temperature ranged between 10°F and 20°F the bees were not in the usual cluster. They were occupying three and four brood chambers nine frames wide. The usual 50 to 75 square inches of brood was found but there were three times the usual number of bees. This same cross had never produced this result before.

By May 1 these four hives had consumed 85 lbs., 85 lbs., 100 lbs. and 95 lbs. respectively. The weather was very favorable in May and each of these four showed a gain of 60 to 75 lbs.

June was a wet, cold month but each made a gain in weight of about 50 lbs.

The first 20 days of July the scale hive registered a gain of 109 lbs. when the honey flow ended a total 360 lbs. had been extracted.

From the end of the flow until August 11 the loss was a little more than a pound per day. From August 11 until today, August 22, the scale hive has made a gain of 27 lbs. All hives are back to four deep and one shallow brood chamber and have at least 100 lbs. of honey for winter.

A scale capable of weighing every hive without too much trouble is a definite asset. A platform scale is convenient for the hobby beekeeper so as to see just what is going on in the apiary daily.



MISSOURI STATE FAIR HONEY SHOW

A honey show and sales booth were featured at the Missouri State Fair in Sedalia.

In the back row is Chester Crain,

Kansas City Contestant, Charles Perrin, Pleasant Hill contestant, Joe Maher, Honey Judge. In the front row is Beth Haworth, Kansas Honey Queen, Jack Runyan, Director of Agriculture for State of Missouri, Gloriann Glawe, American Honey Queen, and Roger Nichols, Champion Apiary Products Display winner.

GLEANINGS IN BEE CULTURE

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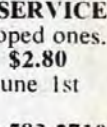
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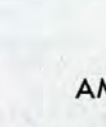
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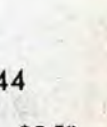


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NEWS and EVENTS



COLORADO

Colorado Beekeepers Assoc.

Winter Meeting—December 8, 9 and 10, 1978 at Holiday Inn Denver West, 14707 W. Colfax Ave., Golden, Colorado

Friday, December 8, 1978

A.M.

9:00-Registration (\$5.00 fee for individual or family).

9:30-Bee Disease Seminar by Dr. Wm. T. Wilson, Laramie.

P.M.

4:00-Bee Lab:

Field and Laboratory Identification of Bee Diseases.
How to get Help on Bee Diseases Prevention and Control.
Distinguishing Between Pesticides Losses and Honeybee Diseases

Saturday, December 9, 1978

A.M.

9:00-Registration
9:30-Call to Order

Invocation

President's Report

9:45-Comments by Larry Martinez

10:00-"Management of Colonies in Areas of Heavy Pesticide Exposure; PennCap-M Research; Wyoming Bee Lab Sunflower Spray Project in Northern Wyoming"; Adair Stoner, Laramie Bee Lab.

"Beekeepers and Federal Pesticide Regulations", Dan Bench RPAR Co-ordinator, Environmental Protection Agency.

Noon

12:00-Lunch

P.M.

1:30-"Experiments with Queenless Workers", Michael Breed, Biology Dept., Univ. of Colorado.

2:30-"Late Summer Queen Rearing and Fall Introduction of Queens; Indoor Wintering; Cook and Beal Extracting Equipment", Jim Kuehl, Loup City, Nebr.

6:30-Banquet-Speaker: Louis Sokol, Pres., U.S. Metric Assn., Topic

Mettrification of Beekeeping
Films: Mathematics of the Honey Comb and Language of the Bees

Sunday, December 10, 1978

A.M.

9:30-Call to Order

Reading of the Minutes & Treas. Report, Committee Reports, Business Meeting and Election of Officers.

MASSACHUSETTS

Middlesex County Beekeepers Assoc.

The Middlesex County Beekeepers' Association of Massachusetts will feature a honey show for members only at their monthly meeting, Saturday, November 25, 1978 at 7:30 P.M. at the Waltham Field Station, 240 Beaver St., Waltham, Mass. Guests welcome.

XXVIIth INTERNATIONAL CONGRESS OF APICULTURE APIMONDIA

Preparations for the XXVIIth International Congress of Apiculture of Apimondia are now well in hand at the Apimondia Head Office in Rome and in Athens.

The pre- and post-Congress tours have been decided upon, and now preparations for the Congress plenary sessions of the Standing Commissions are being made.

All details in connection with this important international event of Apimondia are given in the Congress Information Bulletin No. 1 already brought out by the Apimondia Publishing House. It will be circulated to all Apimondia-member associations, and to all institutions and people desirous to attend.

Other people may apply for the Bulletin No. 1 to Apimondia, Rome, Corso Vittorio Emanuele 101; to the Greek National Organizing Committee, Melissokomiki, Makriyianni Street 57, Nea Chalkidion, Athens; or to the International Beekeeping Technology and Economy Institute of Apimondia, Str. Pitar Mos 20, Bucuresti I, Romania.

NEW YORK

Empire State Honey Producers Assoc.

The annual meeting of the Empire State Honey Producers Association will be held on Friday and Saturday, December 1 and 2, at the Hilton Motor Inn in Syracuse (Thruway Exit 36 at the Interstate 81).

A honey workshop will be held Saturday afternoon. Beekeepers are invited to bring samples for color grading and determining moisture content. Judges will grade samples for those who might care to know how their product might fare in a honey show.

IOWA

Iowa Honey Producers Assoc.

The Iowa Honey Producers Association Annual Meeting will be held November 18, 1978 at the Rolling Prairie Inn, 11001 University, Clive, IA. There will be a social gathering with entertainment, at the Inn on Friday evening, November 17th.

Following is a lineup of speakers who will appear on the program:

Dr. Elbert Jaycox, University of Illinois, will speak on "Colony Development".

Walter J. Diehnelt will speak on "Beekeeping in Wisconsin".

Dr. Carl Johansen, Washington State University will lecture on "Insecticides and Bees". Dr. Johansen is one of our best known authorities on insecticides.

Mr. Leo Erickson of Kansas City will tell us "All About Honey". Mr. Erickson is a well known chemist.

Dr. Eric Erickson of the USDA Bee Research Lab, Madison, Wisconsin will give us more information on soybeans.

Dr. Basil Fragala, University of Minnesota, specialist on Nosema Disease has chosen a topic of "Bee Diseases Without Antibiotics".

Other professionals in their field are scheduled to appear.

(Continued on page 536)

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NEWS & EVENTS

(Continued from page 534)

Room reservations can be made by contacting the Inn directly. The address is: Rolling Prairie Inn, 11001 University Ave., Clive, IA. Telephone (515) 225-2222.

Reservations must be made with us for Saturday's luncheon and for the Saturday evening banquet.

Invite friends, including farmers, chemical and fertilizer dealers and applicators.

Cards will be mailed to be returned for reservations. Those not receiving cards make reservations by letter or phone.

OHIO

Ohio State Beekeepers Assoc.

The Fall Meeting of the Ohio State Beekeepers Association will be on November 18, 1978 at Capital University, in Columbus, Ohio. The annual business meeting and election of officers for 1979 will take place as part of the meeting. Both Tom Sanford, recently appointed Extension Apiarist at OSU, and Jim Tew, who recently assumed the two year beekeeping course instructorship at the Wooster Agricultural Technical Institute, will take part in the meeting. Highlights include:

Dr. Alfred Dietz, Department of Entomology, University of Georgia—two presentations: "Nutritional Requirements of the Adult Honey Bee" and "Honey Bee Research in Europe".

Jim Tew—"Update on the Beekeeping Program at ATI".

Tom Sanford—"Apicultural Extension in Ohio".

Gordon Rudloff, State Apiarist—"Ohio Disease Statistics for 1977-78".

A panel discussion, made up of OSBA members who have seen **The Swarm** will be featured, concerning Public Relations for Beekeepers.

Registration charge including lunch and breaks, will be \$6.00 per person, or \$11.00 per couple, \$4.00 for students.

MISSOURI

Midwestern Beekeepers Assoc.

The Midwestern Beekeepers Association meet on the third Sunday of each month at the Westport Methodist Church at 500 W. 40th, Kansas City, Mo. Meeting time is 2:30 p.m. and visitors are always welcome.

The November meeting will feature Sue Nichols, Secretary of the Midwestern

Association. Mrs. Nichols, beekeeper and mother of five, will present a program on "Have a Honey of a Holiday". The program will feature many holiday hints and recipes using honey. Cheryl Perrin, 13—3rd place ribbon winner at the recent Missouri State Fair at Sedalia, will demonstrate her prize winning candies. This should be of special interest to many beekeepers wives. Samples will be given out and the aroma promises to be irresistible.

VIRGINIA

Virginia State Beekeepers Assoc.

The Winter Meeting of the Virginia State Beekeepers will be held on Saturday, November 11, 1978 at the Shearton Inn, Harrisonburg, Va. Directions to the Inn and a program will be sent each member later.

FUNDAMENTALS FOR ALL

(Continued from page 522)

bottom bars must not protrude beyond the end bars.

A few years ago, someone promoted "KISS" as a key word for speakers. It is called an acronym. It means "Keep it simple, stupid". I'll keep this simple. Remember, it's no annoyance to the bees if you don't put equipment together right, gluing and nailing all parts where wood touches wood. (This includes hive bodies, bottom boards, outer covers, and especially inner covers and frames.) I'm now coining a word, an acronym, to be used by you in assembling hives, frames, etc., but particularly frames. This word is "DIRFT". It means "Do it right (the) first time". Keep this in mind, follow correct procedures (not necessarily those of the manufacturer, or the bee-haver neighbor) and you will be a much happier beekeeper.



MINNESOTA HONEY QUEEN

1978-79 Minnesota Honey Queen, Pam Anderson from Cannon Falls, Minnesota. Pam is 19 years old and is a sophomore at

Inver Hills Community College. Her sponsors are Mr. & Mrs. Robert Banker of Cannon Falls, Minnesota.

THE BEST SUGAR

What sugar is best to feed to honeybees? In virtually all instances the best sugar is sucrose—ordinary in table sugar.

In terms of measuring "best" we can examine bee longevity, attractiveness to the bee and must consider toxicity and other negative factors. Sucrose usually always is found to be the most attractive sugar to bees whether the bees are in a hive, in a cage or are the foragers outside the hive.

Some sugar sources are harmful to the bees.

The one factor that favors a sugar other than table sugar is economics. In some areas, beekeepers can obtain a high fructose corn syrup or a partial invert 50-50 syrup blend. Since the time and equipment for storage and mixing are saved by purchase of a liquid, these sugar sources can be economical if heavy sugar feeding is necessary. Some beekeepers in the west will feed 10 or more gallons a year. Otherwise the very best sugar is plain sucrose.—From **The Pollen Basket**, Pub. by Univ. of Maryland.

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BEE TALK

(Continued from page 519)

caterpillar would do as much for him and he would lie quietly down for a long sleep. Since the caterpillar could not foresee so wonderful a change as would make it a butterfly, neither could the naturalist foresee what might be in store for him. He had faith to believe that the same invisible Hand that had transformed the sleeping caterpillar would prepare him for such a state as would bring the fullest development to his dormant powers...From a lowly and insignificant creature he had learned what the greatest philosophers had failed to teach him."

EARLY BEEKEEPING IN AMERICA

(Continued from page 531)

preference and assumed it was nature's way. Hollow trees do in fact provide suitable homes in nature, but as is frequently the case, nature's ways are not necessarily considered the best ways by man. The disadvantages of this mode of beekeeping are obvious. First, the bees had limited space to expand their colony and frequent swarms emerged. These swarms were considered good luck, but in actuality swarms gained

was honey lost. The supping method was crude, as the different honey flows could not be separated from one another as we now do with movable frames. It was impossible to inspect or manipulate the hive. The beekeeper had no idea what the bees were doing inside the hive and could not manage them for better honey production or even be forewarned of a coming swarm. If the bees were diseased, the beekeeper did not find out until the colony died, giving plenty of time and opportunity for the disease to be spread to other hives. Finally, robbing usually proved to be a vigorous test of the bees' ability to sur-

vive adverse conditions. They were smoked almost to extinction, and then had their combs crudely carved out with much running honey, mangled bees, and a good chance of having the queen killed.

Bee gums were popular for about 200 years prior to the introduction of the Langstroth hive. They were a product of the times, and served their purpose well. Most beekeepers long ago gave up the log hives for similar plank "gums", and finally moved up to the ten frame "patent gum" that is currently in use throughout the nation.



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BEES BUZ-Z-Z UP BUSINESS IN SHOPPING MALL

By FLOYD MOORE
Lutz, Fla.

A DISPLAY of bees in two observation hives with beekeeping tools, and equipment with honey for sale, created so much interest during a recent five-day zoo-rama in the Tampa Bay Center Shopping Mall that the management asked for a repeat performance a month later.

Tampa Bay Beekeepers Association was happy to participate in the renown Jerry Lewis Muscular Dystrophy Telethon and gave more than \$70 to the drive from proceeds of the sale of honey during the one-day exhibit.

Beekeeper Floyd and Kathleen Moore arranged the details and with the help

of Jerry and Nancy Harris designed the display for both exhibitions.

Florida's 1978 Honey Queen, Miss Jill Jacobs, helped in the July display at the zoo-rama, but the request for the second exhibition came too fast to fit another visit into her busy schedule.

Children, adults, male and female are all fascinated by the bees' activities in the observation hives wherever they have been displayed in the Tampa area. After watching the bees intently, they look over the tools and equipment and many buy the delicious orange blossom honey displayed in honey bears and jars for sale.

Experienced beekeepers volunteer their time to man the exhibit and answer the many questions asked. The first is always, where is the queen? There are always other visitors telling of an experience they have had with bees or beekeeping.

The success of the Tampa Beekeepers Association displays are convincing people that bees are useful in more ways than just production of delicious table honey. Informing people about bees and flowers will result in more people eating honey and support for the existence of bees in today's environment.



Florida's 1978 Honey Queen, Miss Jill Jacobs, flanked by Kathleen and Floyd Moore answered questions helped by Frank Moore, a beekeeper unrelated to

Floyd as children and adults examine the bees in two observation hives displayed with all the tools and equipment used in basic beekeeping sponsored by the Tampa

Bay Beekeeping Association during the five day Zoorama at the Tampa Bay Center Shopping Mall in July.

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5-lb. pkg. w/q	32.50	32.00	31.50	31.00
QUEENS	5.50	5.40	5.30	5.20

STARLINE OR MIDNITE

	1-3	4-25	26-99	100 up
2-lb. pkg. w/q	\$16.65	\$16.40	\$16.15	\$15.90
3-lb. pkg. w/q	21.40	21.00	20.75	20.40
5-lb. pkg. w/q	32.90	32.40	31.90	31.40
QUEENS	5.90	5.80	5.70	5.60

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Nosema Locustae Kills Grasshoppers But Not Adult Honeybees

By DIANA M. MENAPACE, RICH-
ARD R. SACKETT, and WM. T.
WILSON

Normally grasshoppers and crickets have nothing in common with honeybees (*Apis mellifera*). However, serious problems do arise when large acreages, especially in the western United States, are treated with an insecticide such as malathion to control grasshopper and cricket populations. Not only are grasshoppers killed but so are large numbers of honeybees.

In an effort to find new ways of controlling grasshoppers without applying insecticides, a USDA entomologist in Bozeman, Montana, Dr. John Henry, has been studying the diseases of grasshoppers. He has found that grasshoppers die, and large populations can be controlled, if he sprays the grasshopper's food or a dry bait (which is then applied to the fields by airplane) with spores of *Nosema locustae*. This protozoan parasite multi-

plies in the gut of grasshoppers and eventually they die. The parasite, *N. locustae*, is similar in some ways to *Nosema apis*, a parasite of adult honeybees.

Newspaper articles in the western United States during the spring of 1976 told that a campaign was underway in Dinosaur National Monument to control the Mormon cricket with *N. locustae*. Understandably many beekeepers and bee industry leaders became concerned about what effect *N. locustae* would have on honeybees. Would the bees collect the spores along with pollen while visiting flowers and carry the spores back to the hive? If this happened would adult bees get "grasshopper" nosema and die?

An experiment was done in which 400 adult honeybees were individually fed *N.*

locustae spores, observed for 26 days, killed and the thoracic ("chest") and ventricular (stomach) tissues examined for the presence of *N. locustae* spores. None of the bees were found to be infected with *N. locustae* (Menapace et al. 1978).

The use of microbial insecticides, which are basically host specific, such as *N. locustae*, not only cuts down chemical pollution of the environment, but also reduces, and in many instances eliminates, damage to beneficial insects. Our data so far shows that it is safe to use *N. locustae* spore treatments to control grasshoppers in fields where honey bees are visiting plants in bloom. Even if the bees ingest some spores they will not be infected. This is a good example of research that has benefited the bee industry.

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THE INTERNATIONAL BEE RESEARCH ASSOCIATION regularly publishes new information on bees, beekeeping, and hive products, for beekeepers and scientists all over the world. Consultant IBRA Representative for USA: J. Engelhardt, 1500 Maywood Avenue, Ann Arbor, MI 48103. IBRA PUBLISHES: **Bee World**, a quarterly journal for the progressive beekeeper. **Apicultural Abstracts**, a survey of scientific literature from all languages. **Journal of Apicultural Research**, for original bee research papers. Books and pamphlets on all beekeeping topics. Catalogues of publications and details of journals and membership \$1. Specimen copy of **Bee World** \$1.50; **Journal of Apicultural Research** \$1.50; **Apicultural Abstracts** \$2.00, from INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks. SL9 0NR, England.

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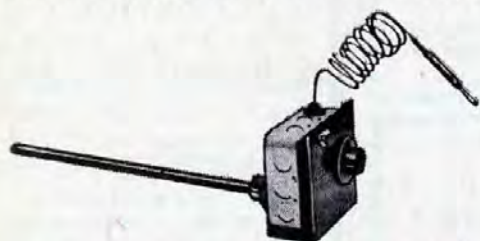
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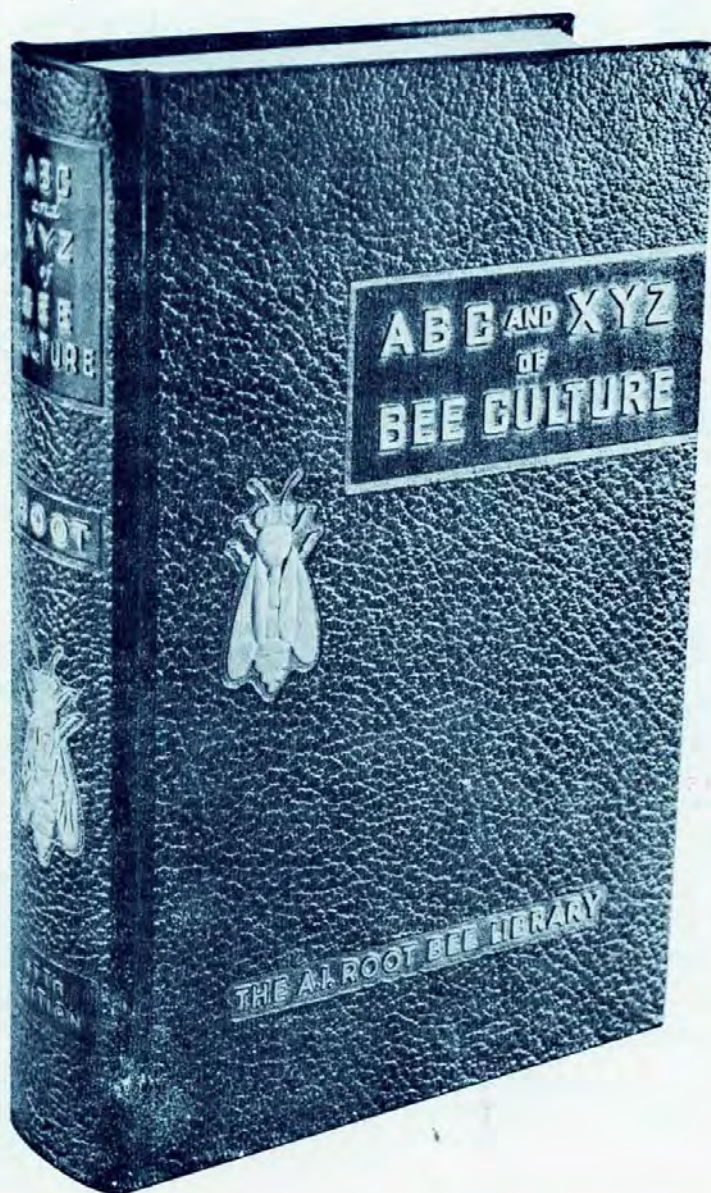
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