GLEANINGS IN BEE CULTURE

FEBRUARY 1981

Have You Checked the Quality **Of Your Combs Lately?**

Dark, old brood combs with many drone cells or damaged spots can cost you money in the long run. Here's what Dr. Elbert R. Jaycox, professor of apiculture at the University of Illinois, has to say about the economics of replacing old combs: ---

"Europeans use far more foundation than Americans because they believe that old, dark brood combs are a detriment to the colony. They maintain that such combs are possible reservoirs for organisms which cause adult and larval diseases. European beekeepers believe this because the cells of combs used continually for brood rearing gradually fill with layers of cocoons and larval feces. Brood comb rapidly darkens in color and becomes black in a few years. At the same time, the cells become smaller in diameter and are then lengthened by the bees. Adult bees reared in old combs are smaller than ones reared in new combs . . . We should give more consideration to the possible benefits of improving our management by using more foundation. For example, at Miel Carlota (Mexico) they compared the incidence of swarming in two groups of 100 colonies each. One group received five sheets of foundation in place of old brood combs; the other, none. Only one colony made swarm preparation among the treated hives while 23 did so when no foundation was given." (Bees & Honey, March, 1979)

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COVER STORY

Despite the snow and cold, bees sense the fact that changes in the season are in the offering. (For more comments on this topic see Bee Talk.)

Gleanings in Bee Culture

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An Interview With Dr. Eric H. A closer look at one of the most active beekeeping scientists in our country today.

GBC: As one of the most active beekeeping scientists in the country, how did you get involved in this business?

EE: It was a long and involved process. I went to college initially to study veterinary medicine and after a year there and due to a variety of circumstances I left school for a while, I came back and had to take a course in entomology because it was one of the few courses that I could find to fill my schedule since I was now out of sequence in the enrollment process. So I took that course in entomology and immediately fell in love with it. That moved me into insects and out of veterinary medicine. As I proceeded through entomology I came to feel that I wanted to work with something other than pesticides. I was given the opportunity to work with Bill Wilson (Laramie, WY Bee Lab) who became my major professor for my masters degree and of course that meant that I would work with bees. It was not that I was determined to work with bees exactly but I wanted to work with beneficial insects verses detrimental insects and I wanted to deal with their biology. Thus I came to work with bees and that is pretty much where I stayed. It is a nice insect to work with as far as understanding basic insect biology. I guess I see myself as more than one who is strictly interested in bees. I'm interested in the biology of this insect and its interaction with its environment, mainly flowers. So while some of my interests might be pursued with other insects, bees make the ideal insect to work with.

GBC: In your work you had an interesting combination of applied research, intended to have a practical application, and also basic research, which adds to our overall knowledge. What are some of the areas that you covered?

EE: Well my work goes in two directions. On one hand the pollination work deals directly with plants. I began first by looking at soybeans as a nectar crop and the possibility of improving the yield of soybeans. That opened up related areas like the effect of growing conditions on soybeans either as imposed by farmers or by the environment and on their ability to produce nectar or "be attractive to bees." This principally is the direction that we are moving in now with soybeans. We have shown that you can improve soybean yield with bees. Others now have stepped forward and done the same thing so it is possible. However, I don't think it will always happen. I believe that

there are conditions under which they

probably won't. We are beginning to



"We are trying to put together a research effort that will encompass many aspects of the wintering problem."

I am interested in the pollination of the new hybrid crops being produced by plant breeders. Alfalfa was probably the first insect pollinated hybrid crop. It is still around, but still not very successful by most definitions although some may argue otherwise. Certainly hybrid yields are far below the yields of open pollinated for these hybrids are of interest to me and to follow up on it we have to know basically what the plant breeding is doing to the flower as a whole. We have documented the problem pretty well in carrots. The problem is that the female hybrid seed

parent not only lacks pollen (as it should), but its other characteristics are being altered by the hybrid breeding system being used. By and large plant breeders aren't monitoring these other effects on the flowers and therefore can't predict what kind of floral abnormalities might occur and affect bee visitation. Basically, we found in carrots that the hybrid seed parents, as a rule but not always, produce less nectar, poor quality nectar, less aroma, and different aroma. They bloom at a different time. The sequence of bloom is either shortened or delayed. They appear different, the flower color is often different. The shape is different and there are some structural abnormalities that crop up. So by and large we could characterize them as being far less attractive to bees. Now, what you are then expecting of bees in this breeding system is to cross pollinate. Taking pollen from the normal pollen parent and moving it over to the female parent that has no pollen. Bees have a great ability to discriminate between floral sources and they exercise a strong fidelity to one or another. In hybrid seed parents the differences are great enough that the bees exhibit a fidelity to one or the other. Hence, the frequency of crossing between parents needed for pollination is very low. We have documented all this and now it is up to the plant breeders to move in the direction of creating or selecting lines that are compatible or very similar.

GBC: What sort of production increases from a percentage standpoint does the plant breeder expect to get as a result of this hybridization?

EE: I don't know that they look for any specific level of increase. Generally it is assumed that they are going to get increased production. In addition to increased production they are seeking improvement of product quality. In carrots, for example, better flavor, more disease resistance, less tough fiber in the carrot.

GBC: But, if they make the plant more difficult to pollinate, then they still have a production problem, don't they?

EE: Yes, there is a very dramatic production problem in hybrid carrots, hybrid onions are having difficulty too. I don't know of a bee or insect pollinated hybrid crop that doesn't have problems. Some are doing a little better than others and, some a lot worse, but generally none as far as I can determine are doing as well as the open pollinated type. In alfalfa for example, the best information I have, and remember hybrid alfalfa has been around for going on 20 years at least, is that yields per acre are on the order of around 500 pounds. That's about 1/4 of the potential of open pollinated varieties. Thus the cost of hybrid alfalfa seed production must be pretty high. Research is ongoing and scientists are trying to improve productivity. We are working some with them. Sometimes not all the problems are not tied with pollination. There are some incompatibility factors that are basic to the physiology of the plant exclusive of bee activity. We have some evidence for that in carrots.

GBC: In the area of basic research you have gotten into the electrical potential of honeybees, have you found anything there that you feel might have practical application in the future?

EE: I can't just now think of anything now that I could definitely say would have practical application in the future. I can see a lot of things that might well have practical application. I think that if we gain a further understanding of what is going on here we might well be in a position to be more predictive in terms of what to expect from bees in so far as successful pollination is concerned. And perhaps in so far as successful honey production is concerned. We have often hypothesized that one might eventually reach the point where one could program bees to forage in one place or another if electricity on the body of scout bees is information communicated to recruits. Perhaps you could electrically code bees to fly a short distance or a long distance. I don't know, these ideas are speculative. All of the work we have done with electricity is aimed at defining our environment and the bees' environment more completely.

GBC: You are in the process now of working on a book on the morphology of bees. Could you tell us a little bit more about what you have been doing in that area?

EE: Well, we began as you know, studying the honeybee close up using the scanning electron microscope. These studies were vital to our "I'm interested in the biology of this insect and its interaction-mainly flowers."



behavioral work. This hasn't been a major activity at the lab. It has been an extra project we have been carrying on, taking time as best we could to assimilate a large number of photographs. We now have about 130 plates that we intend to publish as a Scanning Electron Microscope Atlas of the Honeybee. We still have some captions to write but otherwise the work is essentially complete.

GBC: This will be primarily a University textbook?

EE: No, I hope not. I have two purposes for it. One is to have a book that is both informative and entertaining to beekeepers. We are trying to write it in a fashion that will allow anyone to read it and enjoy it - be wowed by it so to speak just as we have been entertained in doing the work. The other purpose is to create a book that would be useful at colleges and universities as a supplementary text in insect morphology classes so that someone could look at the comlete insect up close and see how certain specific structures on the insects body appear in the physical sense. I guess I would have to say the main reason I got into it was to simply build for myself a better understanding of what the bee was like because I need that to understand what is going on in a lot of pollination cir-cumstances and what's going on in a lot of the electrical circumstances which means we simply have to know

the insect a lot better than we do. That work has carried us into two or three offshoots. I have some students working to describe the sting of the bee, better than it has been described before. This work will soon be published. We have described the tentorium, the internal bridgework in the head and some characteristics of it which have never been described before. This work which is important to all of entomology is being prepared for publication. We want to carry on and see if we can define a purpose for some of the structures we see associated with the tentorium. We also have a person working on the tongue. We have found some unusual structures on the tongue thus we are trying to describe the tongue more completely than before. These are limited projects that will build a body of important knowledge when all the facts are assembled.

GBC: Just as a general statement in regard to the structure of honeybees, do you find a lot of variation say from one race to another, or one individual to another?

EE: As far as from one individual to another we find very little variation. I have not looked at races but I would not expect to see a great deal of variability even between races in general external structure.

GBC: What other areas are you working at the Madison Lab?



"If our theories are correct we can reduce the quantities of pesticides used, improve their effect on target insects and protect bees."

EE: Well, we are trying right now more in the overall direction of a concerted effort to look at wintering bees. As you know, we are the only USDA Lab in the northern states where overwintering is a major problem. We are trying to put together a research effort that will encompass many aspects of the wintering problem. For example, we have a biochemist, Yolanda Lehner, who is attacking some of the biochemical problems. Questions like how is a winter bee different but we don't know how they are different. Perhaps there is something we can take advantage of by way of improving on what is already a natural system. So we are looking at the biochemistry and we are looking at it among races of bees or as best we can define genetic types of bees. Ben Detroy, our agricultural engineer, is looking at it in terms of wintering rooms, indoor wintering. We know that indoor wintering works and we know people who are doing it very successfully. It's not our intention to probe that it can be done. What we are more interested in is trying to define the ideal parameters for indoor wintering. For example, most people who are wintering bees indoors have a fairly elaborate system of exhausting air and getting fresh air in. Questions occur like how often is this really necessary. Bees' metabolism is on a

24 hour rhythm; it peaks during the day and is very depressed at night. Therefore, if what we are trying to do is rid the storage area of "foul air" we should't have to do it as often at night as we have to during the day. So the question is how often do we need to do it and how should this need vary through the day. All of this relates to the whole energy circumstance because fresh air coming in has to be heated so you have an energy consumption problem. If you can minimize air exchange the system will be energy efficient and the beekeeper will still be certain that he has a functional system and he won't have to go through so much trial and error in order to get his system working. In this and related studies we have found that we have had to fall back 'to a point where we are investigating the internal conditions of the colony. There isn't good enough data on the temperature and humidity inside of the colony, both within the cluster and outside the cluster. And what about CO2 in the colony? How do these change over time? Are they rythmic, are they different winter to summer? How important are they in terms of colony survival? We are now monitoring colonies for humidity, temperature and CO2 and we have done some related work with those parameters in a controlled environment. We have some data that shows that there are significant interactions of those factors as they affect the overall well being of the bees. We are also looking at some new hive cover material which is corrugated plastic and acts like a little minigreenhouse or a mini-solor collector which will keep the colony much warmer than black tarpaper or paper hive covers.

GBC: Are you doing anything on winter hardy bees?

EE: Yes, we are approaching it basically in two directions. With our breeding programs we are looking at it in terms of a selection index; development of a selection index for beekeepers to use to evaluate their own material in so far as whether or not they are winter hardy. This work is being done in coordination with the Baton Rouge Lab because they are most interested in the selection index aspect. In our own lab we are in-terested in getting a few lines that are known to be winter hardy, or presumed to be and some lines that do not winter well, for whatever reason. Some of it may be behavior, some of it may be physiological. The selection index takes into account behavioral aspects. Yolanda is working on the physiological aspect. In other words, is the body chemistry different in the

best wintering bees versus the poorest wintering bees? Do they have more blood sugars, different blood sugars? We can look at other aspects of bee physiology as well. There are two ways in which this information would be useful. One, it could become a device to determine whether certain strains of bees are more likely to be winter hardy or not and two it might become a device to move us in the direction of bringing our own bees into a winter hardy state.

GBC: I understand you are doing some work on sunflowers. What does that entail?

EE: It relates to cytoplasmic male sterility and comes about because of our work in carrots. The Oil Seed Laboratory in Fargo, ND has asked us to look at the pollination problems in hybrid sunflowers. We are trying to put together the techniques we used on carrots to define the level of flower abnormality that may be occurring in hybrid sunflowers. After looking at a lot of male sterile sunflowers, we find that there are some which are sufficiently different so as to inhibit foraging by bees and hence reduce cross pollination. There are also those that are similar enough to enhance pollination so we are working in that direction. We are trying to look into several other male steriles as well, cabbage and maybe alfalfa. I'd like to think in the next few years we could build a base of knowledge on hybrid plant pollination and on which plant breeders could draw to avoid some of the mistakes that have been made already in terms of breeding and resultant flower abnormalities.

GBC: What are your plans for research in new areas at the Madison Lab?

EE: Our program of research, as we have discussed it, is as you can see a full one. It doesn't allow much room for new projects in the near future. We are looking for a way to bring our particular skills to the bee pesticide problem. Specifically, I am interested in looking at pesticide distribution as it is affected by electric potentials on plants. I think that it is likely that we can use electricity or our knowledge of it to help protect bees from pesticides, but, success will not come overnight. If our theories are correct we can reduce the quantities of pesticides used, improve their effect on target insects and protect bees. Concepts that we are developing here also apply to microencap-sulated formulations. We are now attempting to coordinate some preliminary studies with other laboratories and investigators.

GLEANINGS IN BEE CULTURE

Honey For Pharoah

"As we know, bees become very excited when they smell exposed honey..."

By H.C. MATHEWS Midlothian, VA

TODAY practically everyone (except beekeepers) use sugar as a sweetener for coffee, tea, or whatever they drink. Few realize that until a few hundred years ago sugar was unknown except as a luxury that only the wealthy could afford.

In some of the earliest recorded human history honey is mentioned, but before man appeared on the earth honeybees gathered nectar and went about their business of gatherng nectar and unintentionally pollinating blossoms so that seed or fruit would be borne by that plant.

According to geologists, the tertiary strata was formed in the earth's crust several hundred thousand years ago. Imbedded in the sandstone strata of that era fossil remains of bees have been found which were almost identical with the bees of today. Pollen they had gathered was with them.

The oldest known prehistoric cave paintings telling the story of man's quest for honey was discovered in 1919 at Cuevas de la arana near Bicorp, Valencia, Spain. It is thought to be at least 15,000 years old because many animals of that time also shown are now extinct. A man is pictured climbing up ropes to a hole in a cliff where he takes honeycomb out of a cavity and puts it in a basket. As would be the case today, bees are flying around the plunderer.

In the tomb of Pa-Bu-Sa, Thebes in Egypt, a wall painting shows Pharoah's beekeeper taking honey from the hives (long oval objects stacked before him), and pouring it from one pail to another. This is probably intended to show how the honey is strained to remove bits of wax and possibly bees that have drowned themselves in it. This is a far cry from our methods of extracting.

As we know, bees become very excited when they smell exposed honey, and in their efforts to retrieve the golden hoard which the beekeeper has taken from them, they often fly right into it. To avoid this confusion, we extract in a screened room. Ancient Egyptians working with bees. Scene from tomb of Pa-bu-sa at Thebes, 26th Dynasty. Photo from Metropolitan Museum of Art. Photograph by Egyptian Expedition.



The ancient Egyptian beekeepers must have known how bees behave when robbed of their honey, so they probably worked in a closed room.

The exaggerated size of the bees shown flying about (the size of pigeons when compared to the beekeeper) is a peculiarity of Egyptian art, in which size is often overemphasized or shown much smaller than the thing depicted actually is.

These Egyptian hives are exactly like those used in backward places in Africa today. The hives in the picture are shown much smaller than those in actual use. Travellers tell us that they are about two feet long and eight or more inchin diameter. To get at the honey the hives are simply cracked open. This is easy, as they are made of dried mud.

The ancients had a deeper appreciation of the value of honey than most physicians today. Besides eating it they also used it in cooking. In some tombs there have been found honey cakes, which, with the liquid honey, was provided to help sustain the traveller in his journey to the Great Beyond. Of course, the liquid honey was dried up, but plainly recognized.

They also used it as a medicine, internally and externally. Modern doctors ignore the value of honey. From my own experience I know that when a wound is covered with a layer of honey it heals guickly.

Investigators have found that many bacteria, even that of typhoid, cannot exist in honey. Thus it is one of the safest of foods.

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REFERENCES

ABC & XYZ of Beekeeping, A.I. Root. 1929 Ed. pp. 402-3-4.

Beekeeping in Antiquity, H. Malcom Fraser, University of London Press, pp. 1-4-22-31.



January 10, 1981

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

Wholesale Extracted	Reporting Regions								
Sales of extracted, unprocessed honey to Packers, F.O.B. Producer.									
Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs.(per can) White	42.00		33.60	33.00		38.10	31.20	32.75	31.60
60 lbs. (per can) Amber	42.00		32.40	31.20		33.25	27.60	31.00	31.00
55 gal. drum (per lb.) White	.59	.52	.56	.54		.60	.52	.54	
55 gal. drum (per lb.) Amber		.48	.54	.52		.55	.46	.51	
Caselots — Wholesale									
1 lb. jar (case of 24)	25.75	24.25	23.35	22.50	34.80	22.00		22.70	
2 lb. jar (case of 12)	25.00	23.50	21.95	20.55	33.60	21.25		21.50	21.50
5 lb. jar (case of 6)	29.50		24.25	25.75		26.00		24.50	
Retail Honey Prices								10000	
1/2 lb.	.90		.81	.76	1.10	.73		.75	.83
12 oz. Squeeze Bottle	1.22	1.19	1.15	.99		1.05		1.15	1.33
l lb.	1.35	1.35	1.37	1.28	1.75	1.22	1.39	1.19	1.35
2 lb.	2.55	2.53	2.79	2.29	3.25	2.30	3.00	2.19	2.39
21/2 lb.	3.15					2.90		3.19	3.25
3 lb.	3.80		3.53			3.50		3.41	3.95
4 lb.	5.00	4.79		4.35	5.80	4.45		4.05	
5 lb.	6.00		5.45		6.85	5.10		5.21	5.63
1 lb. Creamed	1.40		1.37					1.38	1.45
l lb. Comb	1.75		1.89		1.89	1.65			
Round Plastic Comb	1.50		1.50						
Beeswax (Light)	1.90	1.70	1.95	1.90	1.85	1.95	1.85	1.90	1.80
Beeswax (Dark)	1.85	1.60	1.90	1.85	1.75	1.85		1.85	1.70
Pollination Fee (Ave. Per Colony)	22.50		22.50				15.00	23.00	

Region 1

Weather has been cold through December with some snow. Moisture conditions fair. Bees are still in good shape but next two or three months may see winter losses in New England. Early feeding will be a must in many cases. Honey sales slow during the summer but up before the holidays. Some bakery grade honey being sold in New England at the top price which could turn customers away from honey. Much of this honey coming in from other states or is imported honey. Pollination will be going up to about \$30.00 this year.

Region 2

Honey sales are fair to good at retail. Bees went into winter in good condition in Pennsylvania, but temperatures were below normal in December. A few good flying days in West Virginia during early December.



Region 3

Bees are wintering well in Ohio. Temperatures below normal with moderate snow fall. Honey sales are very good, prices up slightly at retail. Most honey sold at wholesale. Bees wintering well in Indiana and Illinois. Hardly any honey in beekeepers' hands in Illinois. Demand at wholesale good in Indiana. Moisture very short in central Indiana and most of Illinois. Light honey short in supply and demand up.

Region 4

Fairly mild temperatures and very dry conditions in Minnesota and in lowa. Bees wintering well according to reports in late December and early January. Very little snow cover in Minnesota through December which makes beekeepers apprehensive about crop prospects for next summer. Honey sales are good, but concerned about economy impact during 1981.

Region 5

Warm weather through December in North Carolina and bees using up stores. When cold weather comes bees may be unable to reach available honey. Bees being placed in citrus groves in Florida. Most bees in fair to good conditions. Feeding of bees in Georgia is beginning.

(Continued on page 98)

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Gleanings Mail Box

QUESTIONABLE ADVICE

Dear Editor:

I thoroughly enjoy your magazine. If I have one criticism it would be that sometimes you permit novices to give poor advice without editorially taking note of the fact that it may not be the best advice. Some people believe anything they read. Tom Blake, Lebanon, TN.

Thank you for your comments.

It is true that some articles in Gleanings are written by novices, or even nonbeekeepers, but they are usually writers who are telling us about some interesting beekeeper or some unusual aspect of bees or beekeeping.

It is also true that many articles are by writers who are not commercial beekeepers. What we must understand is that many of these writers have had extensive beekeeping experience, are trained in science, are prominent educators and are innovative thinkers.

Most readers of Gleanings are familiar with the basic principles of beekeeping. Our articles should take the reader several steps beyond this and I can assure you that they are not usually written by novices. Of course, each reader must, from personal experience, determine if what a writer says is applicable to his own circumstances. Too often it is the reader's lack of beekeeping experience which leads to disappointments and failures rather than the failure on the part of the writer. Eventually, as we gain experience, the diversity of ideas, written in the light of varied experience, become increasingly valuable and less a source of confusion. Editor

ON CELL ACCEPTANCE

Dear Editor:

Regarding the comment "Workers Destroy Cells" by Mr. Lutz in the December 1980 *Gleanings*. I believe he has overlooked a couple of very important aspects in the process of his observation. (1) The cells he placed in that hive were not created by those bees; if they had been, it is unlikely they would have destroyed them. (2) It was obvious the bees were quite satisfied with the performance of their queen, even if she was in a cage for a day. (3) If for some reason the bees had left the cells and a queen did hatch the caged queen could easily have been killed by a sting right through the cage screen.

There have been and I'm quite sure there will be more in the future, good management articles on how to avoid the pitfalls Mr. Lutz experienced. There are, of course, also good books available on these practices. Another alternative would be to discuss this matter at a local bee association meeting. I wish Mr. Lutz success with his next attempt.

Some say beekeeping is an art; others say it is a science, but successful beekeepers would hardly argue that it is an intergral of both. Alden Marshall, Hudson, NH.

A MATTER OF DEGREES

Dear Editor:

It isn't often that one catches Dr. Grant Morse in error. I refer to his article in the December *Gleanings* where is conversion is centigrade to farenheit. Water boils at 100°C.

100 X 2.727 = 272.7°F.?

The correct answer is $212^{\circ}F$. The correct relationship is given by (Deg C) X 9/5 plus 32 = deg.F. George Ziegler, Jr., Carlisle, PA.

THE GOOD (?) OLD DAYS

Dear Editor:

I have been taking your magazine since the teens (1916) and also have all the copies. It is something to note the prices of supplies in the 1930's.

I sold a truck load of honey, water white clover, in new sixty pound cans for 41/4 cents (\$2.55) and had to truck it 250 miles. Now, the empty, new 60 pound can alone costs \$2.60!

I also have a record going of 49 years without missing a winter going south to Texas, and that is a lot of miles.

From 1921 to 1924 I was employed with Fred W. Muth Co. of Cincinnati, Ohio as shipping clerk before starting with bees in North Dakota and Minnesota. On a return trip from selling honey in Boston, MA we stopped in Medina at the Root Company and Mr. E.R. Root gave us a complete tour of the plant. I very much enjoyed knowing him. Several years ago I turned over the bees to my two sons and they operate 7,000 colonies and my son-in-law 5,000. My arthritis started acting up so I have 30 some colonies for bee stings and I tell you it gives me relief. Ivan Gunter, San Juan, TX and Erskine, MN.

It was a pleasure hearing from you, Mr. Gunter, and we at Medina hope you have a pleasant winter stay in Texas and a good honey season in Minnesota next summer. Editor.

WIPED OUT BY AFB

Dear Editor:

I originally subscribed to your publication last fall immediately after my then 14-year-old son, Peter, discovered a swarm of bees on the inside cover of a water pressure regulator box located in one corner of our front lawn.

Soon I had spent well over \$100, most of it with the only bee supply service in our end of the County.

We asked for, and received, a generous amount of information and instruction.... We were rewarded early in April with four frames filled with golden honey..... The quality was excellent and we looked forward to more.

However, toward the end of May we sensed a decline in activity.in the second brood chamber we found evidence of foulbrood, while the bottom was loaded with it. Needless to say, I destroyed the hive.

To bring this report to a close, and perhaps make some small contribution to other rank amateurs who will come after us, I would like to fix the blame for this experience: First, on my own complete ignorance concerning the project I was getting into; second, on the failure of those who sold me so much expensive equipment to warn me to medicate a new swarm of unknown origin with generous applications of (terramycin) as a precaution against what happened; and, third, the possibility (which I think unlikely) that we may have been sold contaminated supers and drawn comb (by another beekeeper).

Since many amateurs begin with a captured swarm, my advice would certainly be to MEDICATE — whether they need it or not. I feel sure, had I been so advised, I would still be engaged in this fascinating and rewarding hobby. Dwight J. Boileau, Camarrillo, CA.



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*He hauls package bees from the south each year and maintains queens for sale during the beekeeping season.

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Importance of Bees of A Water Supply — Its Vital Function In The Life of the Hive

By GRANT D. MORSE, PH.D. 121 Ulster Avenue Saugerites, NY 12477

WHEN A LOCATION for a bee yard is under consideration, one of the first essentials to make sure of is a good supply of fresh water.

Honeybees cannot maintain life without water. The quantity required is considerable, too. A typical colony in an area where the temperatures are average may consume as much as thirty quarts in a season. In a hot climate the volume would be much greater. During the height of the brood rearing season in the spring a typical colony may require as much as one third of a pint a day. But under hot drought conditions a strong colony might consume several times this quantity. Stanger. 1964 (as quoted by Johansson and Johansson 1978).

At first thought one might assume that one third of a pint is not very much. But when one considers that the water is brought into the hive in driblets of a drop or two at a time, the quantity immediately seems larger.

A second important use for water in the honeybee colony is for cooling purposes. To meet this need a colony may in a warm period employ as much as a gallon a day. If the weather is extremely hot, the quantity may be several times that amount. Without such a supply, colonies in some locations would experience the melting down of their combs, and the loss of life of all, or a large portion, of their population.

The population of a typical colony includes a few bees who assume the responsibility for keeping the unit supplied with water. They usually do nothing else. During emergency periods when the quantity of water provided by the regular suppliers is not adequate, as many other adult foragers as necessary join in the effort.

"A water gatherer may average as many as 56 trips a day..."

When the normal supply of water being brought in does not meet colony needs, particularly during hot periods when water must be evaporated in the hive to cool air, house bees that are present and aware of water needs, rush up to foragers as they return to the nest and urgently solicit the efforts of the foragers to abandon nectar and pollen gathering for a time, and divert their attention to bringing the water.

A water gatherer will on occasion dance to advertise her source of supply. New scouts looking for water are able to detect its presence below them through the existence of evaporated water in the air, as revealed by the greater humidity there.

Water gatherers upon return to the nest regurgitate approximately 70% of the water carried in their honey sacs and distribute it to house bees. These bees then act as temporary reservoirs until the supply is put to use. The remaining 30% of the water is ingested by the carriers.

A water gatherer may average as many as 56 trips a day; she may make as many as 100, depending in part on the distance away from the source. A round trip may be made over a short distance in a few as 2-3 minutes. As in gathering other items, individual bees vary in their gathering speed.

Like gatherers of nectar and pollen, water gatherers renew their energy periodically by helping themselves to a bit of honey before departure on a trip, or solicit a contribution from a house bee.

To reduce hive temperatures, the water brought in is placed in strategic locations about the hive, particularly on the top bars in as great volume as is necessary to keep nest temperatures under control. Honeybees do not usually store water though they have occasionally been known to do so when the only source of supply was a mile or more away.

Bees in confinement, particularly when being transported over a period of several days, crave water. In fact, over a relatively long period they cannot survive without it.

Water Needed For Brood Rearing

The chief use for water by a colony of honeybees is to dilute the sugar content of the honey or sugar syrup they are consuming, provided it contains more than 50% sugar.

The availability of water in early spring is essential for extensive brood rearing. In winter the moisture given off by colony members and condensed on the interior of the nest may be adequate to care for the small quantity of brood being reared at the time.

Not only is water needed by the house bees to prepare food for the larvae, but the proper moisture content of the nest is dependent on water being supplied so that larvae will not become too dry.

Honeybees prefer water in early spring that is warmer than some outside temperatures. Herein may lie the reason for the little understood early spring interest of bees in manure piles. Honeybees are attracted to urine also because of its salt content. And although bees will not use water that is heavily salted, they prefer water that contains a concentration of less than 1% to water containing no salt at all. Nurse bees seem to crave salt when feeding larvae. Salted water may be used to entice bees away from water sources where they (Continued on page 70)



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IMPORTANCE TO BEES OF A WATER SUPPLY — ITS VITAL FUNCTIONS IN THE LIFE OF THE HIVE

(Continued from page 68)

have become a nuisance, but the quantity must be carefully controlled.

Based on the volume of water used by a typical hive, the desirability of a water source that is not too distinct becomes evident. Too often the bees will find a water source at which their presence makes them a nuisance, as for example at a swimming pool, or a watering vat for cattle, and the like. The distance bees must carry water can become a significant factor in affecting honey production. Windy weather, which is a very common occurance, adds to the energy that must be expended in carrying water a considerable distance.

Since our bees are relatively small creatures, the presence of a dead bee in any part of the environment may go almost totally unnoticed, even by a beekeeper. Too often we are unaware of the hazards that reduce the working forces of our colonies. Winds can tear bees' wings while they are carrying water over relatively long distances. Such injuries are never repaired.

It isn't until the researchers mark individual bees for identification in their studies that the calamities which can befall gatherers come to our notice. I was impressed when reading the studies by researchers on scout bees to note how often a bee with a particular number designation on her back was found to have fallen victim to the jaws of a praying mantis or the sticky web of a voracious spider.

Studies show that colonies with a near-by water source actually produced a greater surplus of honey than one whose gatherers must make long trips to secure it. Furthermore, there are many days during a year when few if any water carriers can make the trip because either of strong winds (20 mph or more) or because of cool temperatures (below approx. 57% F.). On these days complete feeding of larvae is thwarted, and egg production by the queen may be reduced.

It is a bit difficult for me to comprehend readily the problems with which an absence of an adequate near-by source of water can confront the beekeeper. I have never had a yard of bees that did not enjoy either a small stream close by or a body of portable water.

Researchers who have looked into the matter have been impressed with the fact that most colonies in the world are located near a water supply, usually a stream. This adds one more to the fairly impressive number of favorable characterisitics which evidently are in the consciousness of the bee scouts when they recommend a home site to their members. Incidentally, proximity of a home site to stream may have subsidiary a benefits such as greater growth of vegetation that provides pollen and nectar.

Man-Made Supplies of Water

Bee yards located in warmer areas present an added challenge in that their colonies of bees use more water that those in cooler regions.

It is particularly important for beekeepers whose bee yards are located in areas where water supplies may dry up, to be aware of such a potential contingency and to have made plans to meet it.

In providing man-made supplies of water for honeybees, significant attention must be given the reliability of such sources with freedom from interruption. For if such supplies are interrupted, the bees concerned may be driven to the expediency of appropriating water from sources where they may become the maximum nuisance and disturbance. The bees may suffer significant falling off in production of surplus, or fail to find in time a source which they might normally have discovered if they had not depended on the source which failed.

Containers of various sizes may be used to bring water to the bees. Such containers should be equipped with floating objects at the top on which bees may safely land and get water without danger of being drowned.

A well may be dug or drilled. Building a dam to hold water that would otherwise run off may be of help for a time. It may not be feasible to provide warmed water during cooler weather, but as we have noted previously, bees prefer water at a temperature between 70-80 degrees F. The sun can help to warm the water if the right exposure is provided.

An elevated cover over a man-made water supply is advisable to prevent its acquiring feces cast by flying bees or dropping by birds, also to prevent evaporation.

Provision of water containers for use by the bees is likely to lead to their unwanted appropriation by other uninvited animals, both domestic and wild. Vandalism by unthinking youths can also present a problem. A barbed wire fence can often be of help.

Periodic cleaning of all parts of such water feeders should be provided else each new supply of water may become contaminated.

Feeding Inside the Hives

Feeding water inside the hives is a practice that few commercial operators could afford to undertake because of the time entailed. But such feeding is not at all impractical if time is expendable.

A Boardman feeder is on not-toodesirable device to suit the purpose. Of course it must be frequently replenished. There are also several types of internal feeders that may be considered. All of them must be so constructed that provision is made for preventing the bees from drowning while feeding. Some commercial houses supply such feeders. They may be used on other occasions for feeding sugar syrup.

Enticing Bees From Areas Where They Are Not Wanted

If your bees have become a nuisance at a water source from which you wish to train them, offering them water that is slightly salted may be successful. Such a substitute source must be in continuous supply else the bees will not be permanently enticed.

If the source where they are a nuisance can be temporarily covered in some manner, the enticing effect is likely to be more prompt and more effective, for honeybees are known for their fidelity to any chosen source, no matter what its nature may be.

Bees that are in hives that are temporarily covered to help prevent contamination from insecticides (or for any other reason), will benefit from the covering being thoroughly wetted so that it may be a saving source of water.

Temperature Comfort in the Hive

Ribbands (1953) quotes Dunham (1931) as having observed that when the coolest portion of the broodnest reached 92.72 degrees F. (34 degrees C) many bees in the hive who had been the beneficiaries of the cooling efforts of their hive mates, made their contribution to the cooling effort by

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IMPORTANCE TO BEES OF A WATER SUPPLY — ITS VITAL FUNCTIONS IN THE LIFE OF THE HIVE

(Continued from page 70)

leaving the combs and clustering outside the hive. Accordingly, the next time you see bees "hanging out" it is likely that the heat within the hive was uncomfortably high when they left. Such bees, however, will usually remain outside the hive until a fairly late morning hour even when the outside temperature has fallen to the point where they may be temporarily a bit uncomfortable. Perhaps their memories of the excessive interior heat overwhelms their natural inclination to seek a warm atmosphere.

Ribbands notes that during a heavy flow, the evaporation of nectar helps to cool the hive, and that at such times the need for bringing in water for cooling purposes is reduced.

Chadwick (1931) relates an instance of sudden rise in temperature to 103.67 degrees F. during a 1916 June night in California. The supply of water in the hives became exhausted, no more could be brought in until daylight, and so many combs were melted. Here we have specific evidence of the reliance of all honeybees upon use of water to combat the effects of high temperatures.

When moving bees, the most populous colonies being unable to gather water enroute, may melt down. I once lost seven double tiered colonles, the strongest in the load, as they were being moved. Every bee in each one of them perished. The combs melted partially. Wetting down such colonies before embarking on the move, and enroute, might have saved them. Such wetting is effective not only because of any small direct cooling effect the application of water on the exterior of the hives may have, but more particularly becuase it makes water available to the bees to employ in their very skillful way.

Hertz (1934) studied water perception by honeybees. She concluded that they can perceive the presence of water near by through distinquishing water vapor concentrations in the air.

Heran (1952) studied the interior hive temperatures preferred by bees of varying ages. He found that young bees up to 7 days old rested at broodnest temperatures (35-37°C. 35°C equals 94.45°F.). Older bees showed more latitude (31.5 - 36.5°C.). Bees' heat receptors are located in the antennae (Horan).

Reinhardt (1939) found that combs in normally ventilated hives took 1-5 days to ripen; in one example additional top ventilation (a screen cover) reduced the time by 3-5 days, while reduced ventilation increased it to more than 21 days. Bees fill cells with unripened honey to various depths; Park (1928). When the cells were ³/₄ full it took more than twice as long as when they were ¹/₄ full. Normally, bees fill their cells at least half full.

The evaporation from the comb cells for considerable expenditure of energy. Ribbands (1950) calculated that the elimination of each 1 lb. of surplus water necessitated the usage of 4-5 oz. sugar.

Worker bees and queens that have been shipped on a journey that requires 2-5 days to complete, may become dehydrated if a water supply is not provided for use enroute. Package bees are usually provided with sugar water and therefrom get at least part of their water needs. Queens shipped in cages do not.

Accordingly, most receivers of queens by mail take the time before introducing them to a colony to give them and their worker consorts a few drops of warm, clean water on the wire surface of the shipping cage. It will be noted that such offerings are usually absorbed eagerly.

Earlier we noted in this article the disaster that occurred to colonies in California when there was a wide increase of atmospheric temperature during a June night in 1916. Bees are normally able to care for over-night water needs by the practice of large numbers of them storing water in their honey sacs. At the times of transference of water from the water gatherers to the workers that volunteer to become storers, it will be noted that the abdomens of the gatherers contract, while the workers that store water show a distension of their abdomens. The storers habitually become relatively inactive while they take up resting positions on the periphery of the brood area.

Researchers have discovered through giving colored water to colonies that as many as 50% of the working force may become storers at one time. It seems that these individuals normally mix some honey with the water in their honey sacs and eventually deposit it in cells on the borders of the brood nest if they have not previously transmitted it to house bees for feeding purposes, thereby

giving a beekeepers in the process of examining a colony the false impression that there has been a recent deposit of new honey.

Lindauer (1954) stated that the speed adopted in gathering water depends rather directly on how fast the house bees seek water, the demand being almost non-existent as the need slows.

An additional need for water by each and every bee in the colony, not previously mentioned here, is to facilitate excretion. Bees emit liquid feces and hence must secure an adequate supply of water for the purpose. Bees give off water also through their cuticle, and through their repiratory system.

Water Content of Honey

Water plays an important part in the makeup of honey. Some of the nectars which the bees eventually tranform into honey contain as much as 80% water.

Since the water content of ripened honey must not exceed 20%, still better 18%, a large part of the water in nectar must be eliminated by the bees. The worker bees eliminate the water content through evaporation which they promote by way of the use of natural heat in the hive, and through fanning over exposed particles of the nectar as it is on its way to becoming honey.

A honey with a water content above 18.6 may ferment and sour after it starts to granulate. Granulation increases the water content of the nongranulated portion. Granulation of honey is retarded by heating it to 135-150°F. This needs to be done in such a manner as not to heat some portions of a quantity to excess while other portions are not brought to an equal temperature. The honey should subsequently, and soon, be cooled rapidly to avoid discoloration and and the destruction of valuable enzymes.

Honey produced in the eastern part of the United States tend in many cases to contain more water than western honeys. Accordingly, beekeepers in the East should be encouraged to leave a crop of honey on the hives until it has been totally capped over by the bees — a condition that is seldom achieved — but a signal by the bees, nevertheless, that it is ripe. If some of the frames are not fully capped, they should advisedly be left on the hives for about two weeks during which time the bees in

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If Honeybees Had Attorneys — Or — Hattie-Jane Gets a Lawyer!

By SAMANTHA RUSKIN Medina, Ohio 44256

HERE will be no doubt in your mind, I'm sure — but just for the sake of clarity, let me say that this article/story is to be obviously, imaginatively and marvelously FIC-TION. Now, fiction is a favorite category of mine because it allows the author great freedom of expression. I (the author) can tell you a totally fabricated story or one based on reality — with new names, dates and places; or even a partially true story with certain creative alterations. I can even leave it all behind and go for the completely far-fetched. This one is mostly far-fetched!

The idea came to me recently that it was a darn good thing that honeybees are not able to acquire the assistance of a good lawyer. Since law suits have practically become the national pass-time, it would seem a natural move....if such a move were feasible, of course. Luckily (?), these hard-working and delicately winged creatures cannot seek legal recourse for the injustices done them and their products. Still, I couldn't help thinking about it....

....It was nearly the end of another honey-producing season and Hattie-Jane Honeybee was bidding her sisters a fond farewell. She was off to the big city. She had decided: she was going to see a lawyer. She was going to stand up for her inalienable rights. No longer would she toil in the groves and gardens only to have her precious food taken from her and sold in dishonest jars and unrecognizable forms. It was not fair. It was unjust. It was plagiarism. Yes, that's what it was: plagiarism, plain and simple. No doubt about it! Any good lawyer would see it in a moment, she thought. So, she was going to get one!

The sun was shining through billows of white clouds as she hitched a ride on the first Greyhound to pass — "might as well leave the driving to them," she thought. It was not very far to the city and before long she was changing to a rapid transit

A Fairytale (?)

and headed for the downtown area. As the bus turned the corner she saw the sign:

"HONEYWELL & HONEYWELL, Attorneys at Law".

"Perfect," she thought. "A good omen, indeed." And she buzzed past the head of a man in a dark, pinstriped suit and into the lobby.

Hattie-Jane couldn't help but wonder what a cowardly lot these humans were. Why, at the slightest sound they screeched and headed for cover. Often in their hurry to escape whatever impending doom it was they seemed to sense, they even swatted at her. Imagine! And she hadn't done anything at all! These creatures were not at all like the humans she had seen around the hive, at home. Oh, she had known them to shout things similar to those she heard here, but rarely had she seen humans move so quickly and irrationally. These people were bumping into one another, walls, plants and everything in sight. Whatever it was they were frightened of, it must surely be horrible. She couldn't stay to investigate though, she must be about her business.

The elevator seemed over-crowded with these shouting, scratching, scrambling humans — she elected to use the stairs. She went to the third floor and quickly located the proper suite. Now, her troubles would really begin.

Finding the suite was one thing, but now that she was here, how on earth would she ever communicate with Mr. Honeywell or Ms. Honeywell, for that matter? Well, much as she disliked the language and dull as she found the method, she would be forced to (ugh!) speak. Of course, this presented still another difficulty as she had already noticed that humans were prone to hysteria. All humans? She wondered. She had noticed no sexually discriminate terror in the lobby...just total terror and irrational running, swatting and shouting. Suppose Honeywell thought it was a dream/nightmare? Oh well, she would have to try. After all, she had come this far, hadn't she?

"Miss Honeywell, your father will be unable to attend his luncheon today. He asked if you would be able to handle it for him?"

"Yes, Janet, that will be fine. Is my father ill? No one called me."

"No, he said he had another one of those bee meetings you two are always going to...."

"Janet!"

"Sorry. Anyway, he said the lunch wasn't urgent and he really wanted to go to this meeting...." her voice trailed off into some sort of mumbling.

"Oh yes, the Beekeepers' Association is meeting today. And you needn't mumble Janet. Father and I know how you feel about bees. I won't bother trying to convert you but the mumbling seems unnecessary criticism of something you admittedly know NOTHING about."

"Sorry, Miss Honeywell." She seemed genuinely apologetic.

"Quite all right, Janet. I'll be reviewing the Morgan case if you need me."

"Oh wonderful. Wonderful! This is too good to be true," thought the ecstatic Hattie-Jane. "Imagine and Honeywell, Honeywell beekeepers. Surely she will understand my reason for being here and help me defend honey against this ... this ... sinful syrup someone has been passing off! What could they be thinking of to do such a thing? It wasn't honey at all when they were done with the thing!" Oh, it just burned her up when she thought about it and she had really gotten her wings in a flap this time. She nearly flew into the window (it was closed) and lost her breath in the process.

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IF HONEYBEES HAD ATTORNEYS — OR — HATTIE-JANE GETS A LAWYER

(Continued from page 74)

She would need to calm down before approaching Ms. Honeywell. Boy, she was almost as reckless as the jumping humans she had mocked only minutes before. She would have to straighten up!!

Still, at least she knew what her assailant was: it was HONEY ADULTERATION and false claims to it's production. Some people even claimed on their labels to have produced the honey when everyone knew very well they had merely packed it. But that was like crying over losing your favorite wallet when it had contained your entire life's savings. Neither was pleasant...but you could live with the loss of the wallet!

The door to the office was about to close and Hattie-Jane flew in just in the nick of time. She took a deep breath and determined it would not get any easier as the day wore on: it was now or never. Hattie-Jane flew toward the desk. Miss Honeywell looked toward her and then started to open a window.

"Here we go," said Honeywell as she lifted the window. "I don't know how you got in here but this is certainly no place for a honeybee."

"But I need to talk to you," H-J explained. "It's very important."

"Did you say something, Janet?"

"No, it wasn't your secretary. It was me, the honeybee. See?" H-J landed on the edge of the bookcase.

"Very funny, Janet. Now mumbling is one thing but this isn't funny. Just because my father and I are hobby beekeepers doesn't mean we sit around talking to them. Nice try though."

"Maybe this is going to be harder than I thought." H-J flew over and hovered in front of Ms. Honeywell's nose. "I really do have to talk to you and I'm not your secretary. I know it's hard to get used to but, just for today, you are going to be talking to a bee. I hope you will anyway. I don't know where else to turn. Please keep an open mind about this."

That was it. Down she went in a thud of disbelief and (just as she fell) a hint of terror.

"Oh no," cried H-J as she began buzzing about Ms. Honeywell's head, creating a slight breeze with her tiny wings.

Miss Honeywell was about to discover Excedrin Headache number 3,781,978!! She sat up and looked around the room until her eyes came to the desk and Hattie-Jane.

"Oh my God...You're still here. It's true. I must be losing my mind. You're probably going to think this is crazy but....did you **say** something to me? Oh good Lord, now I'm talking to a bee!"

"No, wait. You really ARE talking to a bee. But it's okay because I'm talking to you too! See? It's okay to be a little surprised by all this. It hasn't been an average day for me either. It hasn't been average at all."

"I'm probably dreaming all this, and I certainly hope I am, but just the same: how....and....why?"

"Actually the how and why are not so important in this case as the what. But since you seem so concerned: How is really quite simple. All living things are capable of communicating but their disbelief and narrowness of mind keeps them from doing so in most cases. The why is that I have a message for humanity and the only way to get it to them is to have a human take it...you are that human. Does that help at all?"

"Well, if it's a dream at least it's a dream with logic. You do make sense. I have always prided myself on being open-minded. It would seem I am being put to the ultimate test. You say you need human assistance. Why this particular human?"

"If you mean were you chosen by some great power, I wouldn't have that sort of information. We bees are pretty much like you humans on that matter....we can only go by faith and good judgement. However, I was sort of *inspired* to come to you by virtue of your name: HONEYwell. It seemed to me a good omen. The honey in the name and all. I guess I'm impulsive. Anyway, I don't think I made a mistake."

"Thank you but that remains to be seen. You may well be talking to a 'crazy lady'. I hesitate to tell you that my first name is Beatrice. Bea for short. So, if you're looking for omens it seems you have found them. Still, it's very near winter and I'm sure you have a very important reason for coming here. Why don't you tell me about it?" "Well, my name is Hattie-Jane. My friends sometimes call me H-J and I was appointed to bring this message to humanity. But I really wanted to come!! You see, it's about our honey. Or to be more to the point it is about the ways that honey is being treated, mistreated, represented and misrepresented. We honeybees have tried to remain silent but can no longer be quiet while our name is associated with such inferior products. There comes a time when you must take a stand for what is right and I suppose that time has come for the honeybee family."

"Yes, go on "

"You and your father are no doubt aware that some people have been adulterating honey. Adulterate is really too kind a word for what they do to that purest of sweets. When we honeybees produce this it is food for our young: real, honest-to-goodness, natural FOOD. When they are finished with it, to feed it to our young would be nothing short of premeditated murder! To compare their product to ours is to compare apricots and arsenic. Both begin as an apricot seed but one goes on to become sweet, health-giving food and the other is nothing like unto it and will, upon occasion, kill you."

"It's bad enough that they alter our honey beyond recognition but they don't even have the human decency to give it a new name. They use our name: honey. We are the HONEYbees. HONEY is part of our name, our heritage. We resent this plagiarism and we want it stopped!!

Some people go on to cook it to death. Some choose to filter it until there is nothing left of that which it once was. Still others add so many chemicals to it that we don't know what it IS, but it ISN'T honey!

Just imagine how you would feel if you spent a lifetime fighting a case and at the last moment some new attorney steps in and loses the case, but when it hits the papers YOU have lost the case. The other lawyer's name is nowhere to be found. You'd be so mad you'd probably sue him, right?

"Well, this is my livlihood, I'd have to...oh, yes, I see your point."

"I thought you would. In your world artists are thought of quite highly. Suppose you had a beautiful Michaelangelo hanging in your living room. You would treasure it and (Continued on page 78)



FIRST LESSONS IN BEEKEEPING. C.P. Dadant. Charles Scribner's son, 597 Fifth Avenue, New York, NY 10017. 122 pages plus index, hardcover, \$7.95. A reprint of the book of the same name in a revised, up-todate edition.

PRACTICAL BEEKEEPING. R.J. and W.E. Howe. Saign Publishing Co., Ltd., 1 Royal Parade, Hindhead, Surrey, England GU266TO. 128 pages plus index, hardcover (no price given). The basics of beekeeping are described in chapters on hives, bees, hive products, seasonal activities, diseases and pests, and more. Contains a number of illustrations and drawings. Based on English beekeeping.

HUNTING WILD BEES. Robert Donovan. Winchester Press, Inc., 1421 South Sheridan, P O Box 1260, Tulsa, OK 74101. Hardcover, 180 pages plus index. \$11.95. The author has done a fine job with a rather limited beekeeping subject.

As the author says "There are very few people in the world who really need to know how to hunt wild bees" — but after reading from *Hunting Wild Bees* I think we may be missing some fun!

THE HONEY COOK BOOK. Lucille R. Penner, Hastings House Publishers, New York, NY 10016, 152 pages, plus bibliography and index, hardcover, \$9.95. *The Honey Cook Book* covers every stage of honey production. It also traces the development of beekeeping. Many little known but interesting phenomena concerning bees and honey are described by the author.

More than 50 recipes, representing every period of our honey-eating history and from around the world grace this fascinating book. All the recipes have been tested and adapted to the modern kitchen.

The artwork used in the book is interesting. It is illustrated with photographs and old prints which are arranged by Ronnie Ann Herman.



Some Beekeepers & Associates Part I By Joe Moffett



This new book tells about the history and current operations of many of the larger beekeepers, packers, and supply dealers in the United States.

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HATTIE-JANE GETS A LAWYER

(Continued from page 76)

guard it well. Now imagine that in the darkness of the night someone sneaks in and adds just a touch of blue to the sky or a dash of rose to a cheek. You would say the painting had been mutilated, defaced, destroyed. It is the same with our honey. It is our most prized creation. We think to alter it is to disfigure, mutilate, adulterate and destroy it. We ask only that humans apply a universal law of fairness. I believe those of your world call it THE GOLDEN RULE."

"I wish everyone could hear this, you really make a very good case."

"That's just it...why I've come here. YOU must now take this message to your people."

"Hattie-Jane, I believe in what you have told me but I could never tell other people I had talked to a honeybee! They would laugh me right out of the courtroom. They would say I was mad. It could cost me my career."

"I didn't say that you should say you talked to me only that I needed you to give them my message. You must decide for yourself what to say and to whom you should say it. What I ask is much and I know of the possible hardships. Some will laugh and it might even bring ridicule and some grief into your life. I can only remind you that the winds grow cold and the lives of honeybees are short. You must choose for yourself what you will be willing to give to bring my message to humanity. I think you know what I have given to bring it to you."

"H-J ..."

"I must go now. Always remember that whatever you do you have been a true friend to the honeybee. You can be proud of your open mind and kind heart. Farewell friend."

H-J was gone, out the window and lost from sight. Bea Honeywell lay back in her chair. Had it been a dream? Would she soon hear the

familiar ring of her alarm? Surely honeybees could not really talk!Yet, she recalled the clear, well thought out logic of her tiny friend, the final plea and that gentle farewell. She HAD been concerned about honey adulteration of late. Maybe this was a way to get people to see the problem in a new light. Whether dream or reality the points were all clear and made perfect sense. The comparisons were valid and the analogies good. It was nearly ten. She would have to leave right away if she was to make it to the meeting on time.

"Janet," she said as she took her coat and walked through the outer office. "Please call Phillip and cancel the luncheon engagement for me. I will be at the Beekeepers' Meeting if an emergency should arise. I must deliver the message of a friend. A good friend." She turned and was gone.

Shake you head if you will. Laugh if you must. Call it ridiculous. Say it is far-fetched (I warned you that it would be). But don't forget Hattie-Jane. She wouldn't forget you!

A Few Tips On Spring Feeding

"Granulated sugar will keep your bees from starving but it won't stimulate brood rearing."

By EUGENE SMITH Racine, Wisc.

DID YOU EVER put granulated sugar on the inner cover during the winter and come back two weeks later and find it so hard you couldn't chip it with a hive tool? We use a sheet of celotex under the cover for insulation and it soaks up so much moisture during the winter, it will keep the sugar soft. Granulated sugar will keep your bees from starving but it won't stimulate brood rearing.

A candy board works very good in early spring when it's still too early to feed sugar syrup. Here's the recipe. Put three pints of water in a large kettle, add 12 lbs. of granulated sugar, place on a hot burner and stir until dissolved, bring to a rolling boil. Remove from the stove and let stand for half an hour without stirring. Then stir for ten minutes and pour into an inner cover. Keep a piece of tin under the center hole of the inner cover until the candy hardens which takes only a



Feeder' bottle and the device for holding it upright.

few minutes. This will make enough to fill three inner covers. Place on the hive, candy side down, in place of the regular inner cover. It will stimulate brood rearing as much as sugar syrup. These can be made up during the winter when you have lots of time.

Our favorite method of feeding sugar syrup is with gallon plastic milk bottles. Make an inner cover of 1/4 inch exterior plywood with a half inch high rim. In the center cut a round hole 1-3/4 inch in diameter. A little circular saw that fits in your electric drill works fine for that. Now take a wood block 11/2 inch square and four inches long and cut a groove lengthwise in the middle of one side 3/4 inch wide and 34 inch deep. Put the neck of the bottle in the hole of the inner cover (rim down). Stand the wood block on end and press the handle of the bottle into the groove. Now put a wood screw up from underneath into the wood block. It will hold the bottle securely in place. Don't forget to punch a few holes in the bottle cap. You can always see at a glance how much syrup is left. Last spring we had these feeders on 25 hives of package bees during a 55 mile per hour wind storm and not one of them blew off. When you are done feeding, take the block off and you have a good inner cover to use.

.................... The Australasian Beekeeper The senior beekeeping journal of the Southern hemishere provides a complete cover of all beekeeping topics in one of the world's largest honey producing countries. Published monthly by Pender Beekeeping Supplies Pty. Ltd., Box 230, P.O. Maitland, N.S.W. 2320, Australia. Subscription \$US 11.00 per annum (in advance) Payment by Bank Draft. Sample copy free on request. SWEET CLOVER SEED White sweet clover seed has become very scarce the past few years but we have a good stock of 65% white and 35% yellow seed in stock. Yellow blooms the first year and a bit earlier than white **Pure Honey** and white blooms the second year. May require innoculation if clover has not been grown on the **IRISH BEEKEEPING** Accept land previously. Ask your county agent. This is the Read An Beachaire (The Irish best honey plant north of the MASON-DIXON Line. Beekeeper). Published monthly. No 10 to 15 lbs. required per acre. Sow Jan. 1st. to Subscription \$8.00 per annum, April 1st. post free. Substitute **JAMES J. DORAN** 10 lbs. Ship. Wt. 11 lbs. \$ 7.50 St. Jude's Mooncoin Waterford, Ireland 50 lbs. Ship. Wt. 52 lbs. 33.00 52 lbs. too heavy for UPS-Parcel Post or truck. The New Zealand Beekeeper WRITE FOR 1981 CATALOG Quarterly magazine published for THE WALTER T. KELLEY CO. the National Beekeepers' Associ-Clarkson, Kentucky 42726 ation of New Zealand. Editorial policy emphasizes practical beekeeping, latest research and feature articles with large format and BEE INTERESTED many illustrations. For beekeeping information read the American Bee Journal. New editorial em-Magazine for Countryside People We cover: Gardening, Small Stock, Health, Bees and Much More. Subscriptions: \$NZ 9 a year, phasis on practical down-to-earth material. surface postage free. including question and answer section. For Subscription rate: \$8.00 a year. more information or free sample copy, write "N Z BEEKEEPER" Farming Uncle® to lox 4048, Wellington, New Zealand AMERICAN BEE JOURNAL P.O. Box 91-B4 Liberty, New York 12754 Hamilton, Illinois 62341

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The California Corn Lily

"It...seems to me something worth investigating ... "

By D. WILLIAM BUCK Gardena, CA 90249

AN EXTREMELY TOXIC PLANT, California Corn Lily (Veratrum californicum) may pose on occasion a threat to honey production in apiaries located near moist meadows, marshes, and damp forests where the plant tends to thrive. A true member of the lily Family (Liliaceae), this particular species grows mainly in the Pacific Northwest from western Washington to California, but ranges eastward as far north as Montana and as far south as New Mexico. Known as False Hellebore or sometimes Skunk Cabbage, V. californicum flowers through the months of June to August, attaining a height of from four to eight feet. Small and white, the blossoms develop in thick clusters from long narrow branches. Broad ovate leaves are numerous and may reach a length of twelve inches.

Frank C. Pellett in his classic work, *American Honey Plants*, rated this particular lily as a minor nectar source but cited reports that dead bees had been observed below the blossoming plants. Nothing is said regarding any potential detriment to beekeeping operations and this writer is at present unaware of any serious losses from this native plant having been reported in recent literature. It's quite possible, however, that in isolated areas where corn lilles flourish in abundance, losses have been falsely attributed to other causes.

V. californicum is very common in certain meadow and marsh regions of Trinity County, California. Rural timber and gold mining country, Trinity has few good apiary sites. For the past few seasons I've successfully wintered hives at a small ranch I acquired. However, with good spring build-up, young queens, abundant forage, and no disease or swarming, I've been unable to secure any surplus honey. Colony populations inevitably dwindle just prior to the main honey flow. I surmise that one possible factor in colony decline just could be the poisoning of foraging bees partaking of the toxic nectar of blooming corn lilies. Unfortunately, I have been unable to be present when V. californicum is in full flower so I can offer no proof of evidence. Anyway, my suspicions came into being only at the close of this season. It does seem to



V. californicum in Trinity County, California.

me something worth investigating during the coming year.

That plants may produce nectar toxic to bees is indisputable. Adverse effects on colony behavior, broodrearing, and honey-gathering ability have been assigned to a rather small number of flowers and trees; it remains to be seen if this small list of toxic flora will expand in future years, especially with the increased introduction of imported, exotic species.□

SOURCES CONSULTED

1] The Audobon Society Field Guide to North American Wildflowers, Western Edition. Spellenberg, Richard. Alfred A. Knopf Inc., New York. Copyright 1979.

2]American Honey Plants, Pellett, Frank C., 5th Ed. Dadant and Sons, Hamilton, Illinois. Copyright 1976.

A Bottom Drive, Two-Frame Extractor

A detailed description with complete instructions for assembly.

By MEL KIRKWOOD (With Apologies to Bill Poggle) Seattle, WA

THE SMALL SCALE beekeeper is in a tough spot when the time comes to extract whatever honey he is lucky enough to have in surplus. The cost of an extractor these days makes it impractical for the small beekeeper to buy one. Satisfactory ones are out of sight and the "lower" priced ones I've seen aren't worth much. And anyone who has tried to get something done with a hand extractor knows what I mean when I say it's not practical except for a few frames.

I was in this predicament when I remembered a clipping made a long time ago, one from *Gleanings in Bee Culture* of July 1972. This article described how a fellow named Bill Poggle of Maple Valley, Washington solved this problem. I liked his idea for a bottom drive extractor and was attracted by his remarks about how well the machine worked. What also caught my attention was that Bill Poggle build his extractor back then Figure 1—The extractor set up and ready to go, showing the bucket in place fitted with a nylon paint strainer for filtering.

Figure 2-The ex-

tractor from above,

showing the top

cross bar held with

bolts bent at 90 degrees and with wing nuts, and the

basket in place.



for \$10 and that even now it could be built for about \$28-30.

Digging out the article from my scrapbook (I keep all kinds of clippings from many magazines) I looked it over again, decided it looked as good as ever and went to work.

It took a while, changes had to be made (not many), and a little backtracking was necessary to get the job done, but when it was finished I liked the looks of it and the way it sounded and acted when put to work.

In building this extractor an exploratory shopping trip to various and sundry places is necessary to get the important components together.

As shown in the photographs, the extractor is built into a twenty gallon trash can (new of course!). They're common and easy to find.

One thing that might be a little hard to find is the 12" idler pulley that was used in either the RCA Whirlpool



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W-580-8500 or the Kenmore 110-580-8700 clothes dryer. I solved the problem by looking up an appliance outfit that specializes in used machines. The local man had a lot of 12" pulleys piled in one corner of his shop and was glad to sell me one for \$2.50.

The bearing material is another thing that may take a little searching. Bill Poggle used Teflon blocks. I used Nylon pipe, 1/2" I/D, and a 1/2" thick block of the same material. I found those at a local salvage yard although they are very likely available elsewhere.

Finding a motor should be fairly easy. I stopped at an appliance store to inquire about used parts for a dryer. The fellow there asked if I wanted a dryer and finally worked out the whole thing and even loaded it into my VW Transporter free of charge. These 'people have a tough time disposing of used appliances so he was glad to load me up. Of course, if you're lucky enough to find one of the Whirlpool or Kenmore dryers I mentioned earlier, you've got the 12" pulley and a satisfactory motor. The 1/6th H.P. Motor I got out of that "gift" dryer supplies plenty of power for this extractor.

The 1/16" X 1" strap iron used in the basket is available in most hardware stores as is the hardware cloth.

When I built my first basket I used 1/2" mesh hardware cloth but later redid it using 5/8" mesh material which is just enough sturdier to suit me. Bill Poggle used 1/2" mesh hardware cloth and got a lot of service out of it.

For the structure to which the extractor tub is fastened, the base, top bar and risers, I found enough plywood and 2" X 6"s in my odds-andends pile.

ALL RIGHT! NOW WE'VE GOT ALL OUR MATERIAL TOGETHER. LET'S GO TO WORK.

I found that almost all trash cans leak around the bottom seam so I ran a bead of solder around the entire perimeter. This may not be really necessary, honey being rather thick, so it's up to whoever builds this extractor to decide what to do.

A disc of 1/2" plywood, the diameter of the underside of the trash can inside the flanges, need be cut. I cut it on my bandsaw, figuring the radius and rotating the plywood on a pin in its center. This gave a good, true circle but balance isn't necessary in this



Figure 3-Top view of the extractor tank with the top bar removed, showing the top shaft of the basket and the 90 degree hold-down bolts.



Figure 4-Underside of the extractor unit, showing the 12" pulley, the thrust bearing mounted on the baseboard, and another side of the motor mount.

case so the cut can be made just as well with a saber saw or even a coping exact center of the bottom of the saw for all that. This disc fills the space between the bottom of the trash can and the table to which it will be bolted.

A 1/2" oversized hole is drilled in the trash can and the plywood disc we've just cut. This is where the drive shaft will come through.

Next, two 1/2" pipe flanges with their electrical conduit fittings are prepared. As indicated in the drawing (Fig.7) the Nylon or Teflon bearing material is fitted into these. The completed structures are attached opposite each other, inside and outside the bottom of the extractor with a rubber gasket under the top flange. These two structures provide the bearings for the drive shaft and are drilled or reamed after installation to assure alignment.

The table to which the trash can is bolted has a hold of sufficient diameter to allow clearance for the pipe flange at the bottom of the extractor.

The drive shaft is a piece of $\frac{1}{2}$ " drill rod with a 2" washer welded to its top end. This washer acts as a drive plate to which the basket is bolted.

The 12" pulley is attached to the drive shaft about 1" from its lower end and either made fast with a set screw or with a hole drilled through the hub and drive shaft through which a pin is inserted. Bill Poggle used an 8d nail for a pin which is probably as good as anything.

The lower end of the drive shaft fits into a hold drilled into the Nylon or Teflon block screwed to the baseboard. The 12" pulley rests on this block which acts as a thrust bearing, supporting the weight of the basket and its contents.

At the front of the can a hole should be drilled as near to the bottom as possible and a 1" drain pipe soldered in. Into this pipe a cork is inserted. Both Bill Poggle and I use a cork for a "honey gate" because we don't cut off the flow of honey from the extractor except to change buckets beneath the spout.

To begin forming the basket, make two identical rectangles, $7\frac{1}{2}$ " X $10\frac{1}{2}$ ", of 1" strap iron. The open corners and the cross members are welded as indicated in Figure 4. Notice that the two cross members are attached opposite of each other. I had a local shop do my welding and they did it for the minimum charge which wasn't much.

The bottom cross member is drilled to allow two machine screws to pass through and attach the basket to the 2" washer welded to the top of the drive shaft. The top cross member has a short shaft in its center which extends into the bearing mounted on the under side of the top cross bar. This wooden cross bar is held in Figure 5-The basket showing the top shaft which enters the bearing on the under side of the top crossbar illustrated in Figure 2.

Figure 6—The motor mount arranged to allow the motor to operate on end. Note that slots are cut in the motor mount base so that it can slide one way or another to tighten the drive belt.





place by means of two 3/8" machine bolts bent at 90 degrees. They pass through holes drilled opposite each other in the sides of the trash can where the handles are attached. Using wing nuts to hold the top cross bar in place makes it possible to easily remove it and store it inside the extractor when it is not in use. Then the lid can be put on to keep the interior clean during storage.

Probably the hardest thing to fabricate is the basket. Both Bill Poggle and I had some trouble with this. I think that if one is very careful when forming the hardware cloth, keeping everything true without following the meshes of the screen, there will be less trouble. Also, in my last basket, I made it (partly by accident) in two sections and it seemed to go together truer and more easily that way. The two parts were joined by weaving with soft wire and soldered.

The wire basket, 7¹/₂" X 10¹/₂" X 18³/₄", is soldered onto the strap iron rectangles, top and bottom. A bottom for the basket is made of the same hardware cloth as the rest and is either woven or soldered into place. Rectangular holes for the honey frames' top bars are cut in the bottom and, if placed just right, one can extract either two deeps or four Western or shallow frames. See Figure 4.

The basket can be attached to the strap iron rectangles by weaving soft wire in and out of the hardware cloth meshes and around the strap iron. This works quite well and saves trouble for someone not too sharp with a soldering iron.

A motor mount may have to be built so that the motor operates on end rather than on its regular base. Figure 5 shows how this can be done. The motors from some washing machines are already mounted this way but the motor I took from a dryer was not.

The pulley at the motor must not be larger that $1\frac{1}{2}$ " diameter. My motor has one a bit less that that and I use a 3/8" rather than a $\frac{1}{2}$ " belt for the drive. This combination of $1\frac{1}{2}$ " to 12" pulleys gives a good speed for extracting and will not throw the comb from



Figure X—Showing extractor ready to go to work, uncapping tub with it's table, and bucket for receiving honey in place with filter (Nylon paint strainer) fitted. Note shallow pan in place below uncapping tub to catch honey from the cappings.

the frame. Some extractors run fast enough so that the first side can only be partially extracted, the second side fully done and then the first side again turned around and finished. This is a lot of bother and I'm glad not to have to contend with it.

I didn't build any kind of a special table to support the extractor nor did Bill Poggle. Both of us use a deep super or a couple of concrete blocks for support. These are easily put away when the extracting is finished.

Bill Poggle doesn't use a holddown for his extractor but I prefer to anchor mine with a couple of wires fitted with turnbuckles and running from either handle of the trash can to something solid. Then if I run into a few frames that throw everything out of balance because they're loaded



GLEANINGS IN BEE CULTURE

with pollen as well as honey I don't have much of a problem.

In the original article, Bill Poggle apologized for the ugliness of the finished extractor. I personally don't think it's bad. But he remarked that even if it was ugly it did a good job and time has proved that it went on doing so for years.

I liked Bill's idea of putting things together with wing nuts so that they can be taken apart easily when he was inclined to do so.

Bill didn't put a bottom in his basket so when he wanted to extract deep frames he had to invert the basket. I put in a bottom to overcome this disadvantage.

If one is so inclined, it wouldn't take much to make a four-frame extractor from this plan. It would mean substituting a 30 gallon trash can for the 20 gallon can and building a basket sufficiently larger to accomodate four frames. The rest of the extractor would be build the same. I preferred to build the two-frame extractor because I have a problem with storage space and the 20 gallon space and the 20 gallon can, 2-frame extractor takes just enough less space to suit me.

NOW! GO AHEAD AND BUILD YOURSELF AN EXTRACTOR! YOU'LL LIKE IT!

LIST OF MATERIALS:

One 20 gallon galvanized trash can. One piece ³/₄" plywood 15¹/₂" X 18¹/₂"(table).

One piece 3/4" plywood 151/2" X 28" to 32" (base).

Two pieces 2" X 6" X 18¹/₂" (risers). One piece ³/₄" X 2¹/₂" X 21" plywood or lumber (crossbar at top of extractor).

Two pieces 1/16" X 1" X 40" strap iron (top and bottom rectangles for the basket).

One piece 1/16" X 1" X 12" strap iron (basket top cross bar).

One piece 1/16' X 1" X 8" strap iron (basket bottom cross bar).

31/2 feet of 24" wide 1/2" or 5/8" mesh hardware cloth (basket).

One 2" washer (drive place for extractor basket).

Two 1/2" pipe flanges (drive shaft bearing support).

Two 1/2" electrical conduit fittings (drive shaft bearing support).

Four 5f/16" X 3" anchor bolts and four 5/16" wing nuts (hold-down for table).

Two 3/8?" X 4" machine screws bent at 90 degrees and two 3/8" wing nuts (hold-down for extractor's top cross bar).

1 rubber gasket under top pipe flange in extractor bottom (made from bicycle inner tube).

Nylon or Teflon bearing material.

One 12" pulley from either a RCA Whirlpool W-580-8500 or Kenmore 110-580-8700 clothes dryer.

1/4" X 20 slotted-head machine screws to bolt extractor to table and to attach pipe flanges to bottom of extractor.

Number 8 wood screws, F/H, for attaching bearing material to top cross bar and to attach the thrust bearing. Sweat and imagination.

Beekeeping Technology

"The primary objective of the beekeeping program is to

prepare ... "

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

BEEKEEPING EDUCATION AT A.T.I.

INDIVIDUALS not familiar with the beekeeping industry generally tend to think of it as an interesting hobby. Although this is a major aspect of beekeeping, an estimated fifty to seventy-five percent of the colonies in the United States are kept by commercial apiculturists who own at least three hundred hives and often thousands.

Statistics on the size of this highly specialized industry give a true picture of its scope. More that two hundred thousand beekeepers produced 237,268,000 pounds of honey from over four million hives in this country last year. In addition, the beekeeping industry produced 3,727,000 pounds of beeswax. Even these statistics seem insignificant when one considers the uncalculatable role beekeeping plays in the pollination of our crops. This phase of the industry undoubtedly adds billions annually to our gross national product.

The great importance of beekeeping to agriculture and the highly technical nature of commercial phases of the industry were major considerations in the establishment of the Commercial Beekeeping Technology in 1975 at the Ohio State University Agricultural Technical Institute (ATI).

The Institute is an administrative unit of the OSU College of Agriculture and Home Economics and is located in Wooster, Ohio adjacent to the Ohio Agricultural Research and Development Center. ATI offers seventeen two-year technical courses of study leading to the degree, Associate of Applied Science.

The primary objective of the beekeeping program is to prepare technicians for all phases of beekeeping: honey production, processing and marketing, queen and package bee production and crop pollination. A secondary goal is to meet the needs of the hobbyist or sideline beekeeper. Recently, a third function has evolved as developing countries express interest in beekeeping as a source of food and income for their rural populations. Several Latin Americans are among the graduates of the program and the school currently is training officials of the government of Burma under a US State Department contract.

Curriculum and Technical Course Content

Students in the Beekeeping program spend slightly less than fifty percent of their course work taking "General and Basic" subjects: communication, mathematics, social science, chemistry, biology, and botany. These courses are specifically designed for the demands of their future careers. Beekeeping students also take courses providing a solid background in business and marketing, agriculture, horticulture, and entomology.

Specialized technical courses in beekeeping include: Anatomy and Physiology of the Honeybee, Health and Protection of Honeybees, Honey and Beeswax, Queen Rearing, Crop Pollination, and Advanced Apiculture. Students are not required to participate in the two year program, and may elect, instead, to enroll only in Bee Courses.

"Hands-on" experience is gained through practicum courses - supervised practical experience working the more than 150 colonies located on ATI's 1500 acre Apple Creek Farm and throughout the surrounding area. Processing the honey and beeswax from these hives in the school's extracting laboratory provides additional practicum experiences. There students use an automatic uncapper, honey extractors, and several pumps and settling and liquifying tanks to remove the wax covering from the cells, extract the honey, and filter it for packaging.

In the beekeeping industry, students use honeybee queen artificial insemination devices, disease analysis procedures, and honey grading equipment. The queen rearing operation is located on the thirtyfive acre central campus. A shop for construction of hives completes the beekeeping facilities.

Another important aspect of the students' practical experience is the required occupational internship. For a minimum of ten weeks students work full-time, earn a wage, are graded on job performance, and receive academic credit. The concentration of certain aspects of the beekeeping industry in the South and West of the US and the higher than average percentage of "out of state" students attracted by the program has resulted in many internships being served outside of Ohio.

The value of the internship learning experience goes beyond the training the students receive on the job. Exposure to large scale operations and specialized aspects of the industry help students more effectively plan for full-time careers after graduation. Valuable industry contacts are often established. Internship is also an opportunity to "get a feel for the business" and learn first hand the often long hours involved in their profession.

Faculty Background

The Beekeeping Technology is coordinated by Assistant Professor James E. Tew (Ph.D. University of Maryland) who has specialized in apiculture. Another faculty entomologist, Assistant Professor Mark Headings (Ph.D. Michigan State University) teaches the bee disease course and crop pollination course. An advisory committee consisting of apiculturists from the OSU Columbus campus, Cooperative Extension Service, related state agencies, and the commercial beekeeping industry are consulted on course content and other matters.

Careers and Placement

Although the figures on the number of colonies in the US and annual honey production are impressive, only about eight percent of the beekeeping operations can be considered commercial. That amounts to approximately 1,600 commercial operations across the country. Despite this fact the demand for beekeeping technicians appears to be consistent or on a slight increase.

Technicians are needed to maintain colonies for commercial honey producers and operations that specialize in renting colonies and transporting them to the fields of commercial growers of fruits and crops for pollination purposes. A third field of opportunity for the technician is the commercial queen and package bee producers whose function is to produce new colonies for sale to other beekeepers. The nature of the work tends to vary depending on the size and geographic location of the operation. The work involves moderate physical labor and long hours including weekends.

Placement data for the 1978-79 academic year (the most recent available) indicates that 96% of the graduates seeking employment found beekeeping positions or related positions (eg. equipment sales person, disease inspector). Sixty-three percent of that total were working directly in the beekeeping industry. Starting salaries ranged from \$7,500 to \$15,000 with a mean of \$10,833. This year an increase of approximately ten percent is anticipated with several recent positions being listed in the \$12,000 range.

Admissions

As an administrative unit of The Ohio State University, ATI has an open enrollment policy. It is recommended that entering freshman have a minimum of four units of English, three or four years of collegepreparatory mathematics, two units of science and as much social science as can be elected in high school. Students must have a high school diploma or the equivalent. Either the ACT or the SAT should be taken (ACT preferred).

Incoming students are required to complete an on-campus preadmissions interview with the technology coordinator. Out-of-state students may complete the interview by telephone if an in-person interview is not possible.

Hybri-Bees Inc. Formed to Improve Bee Stock

An effort to broaden, and strengthen, the stock improvement portion of Genetic Systems, Inc. has resulted in the formation of a new corporation, Hybri-Bees Inc. also based in Florida. Maintenance and improvement of inbred lines, addition of new stock for additional selection, all with the objective of further improving queens for widespread use within the beekeeping industry, has become the responsibility of Hybri-Bees Inc.

President of the new corporate structure is Morris Weaver of Texas, Vice President Dewey Robson of North Dakota, and Secretary-Treasurer Charles Griffin of Florida. Director of Research and Operations is Mel Greenleaf, California born and educated. Lab and facilities will be the same as formerly used by Genetic Systems, Inc., the address Route 1, Box 712, LaBelle, Florida 33935.

Management is heavily oriented to commercial beekeeping, and with the operation scaled down to strictly stock improvement, it is anticipated rapid strides may be made in this direction. The intent is to quickly reestablish greater stock selection and testing, making use of commercial facilities in various portions of the country for field research under practical conditions. All of the members of the new management have extensive experience in honey production, pollination and in the production of queens and nuclei.



The Entomological Society Meetings in Georgia

The Entomological Society of America met recently in Atlanta on December 1-4. Bees were the topic of several interesting papers and conversations.

Collecting Sweet Corn Pollen

Dr. Charles Mason, of the University of Delaware, made observations on the time of day that honeybees visit. corn to gather pollen. The study was financed by the Pennwalt Corporation, the manufacturers of the insecticide Penncap-M. The long-range concern is to determine if one might apply a pesticide at a time when bees are not working the corn and thereby avoid a loss.

The varieties of corn studied were visited by bees as early as 6:00 a.m. The peak visitation time was 9:00 a.m. and after that the number of bees seen dropped off. There were almost no bees on the corn after 2:00 p.m. Dr. Mason cited a study made in the 1940's which indicated much the same thing. These data suggest that spraying corn in the afternoon with pesticides which break down rapidly might be a good way of avoiding a pesticide loss. However, there would still be a problem with flowering weeds in or near corn fields.

According to a report given at the recent meeting of Empire State Honey Producers Association, the manufacturers of Penncap-M are asking the Environmental Protection Agency for a label which will allow them to use their product to spray field corn. Penncap-M is now labeled for use on sweet corn and many beekeepers in the country have suffered losses as a result. The beekeepers that attended this meeting are forwarding a resolution to the EPA requesting that a label not be allowed at this time. Much more research is needed on the subject.

Bees That Lose Their Sting

Dr. Norman E. Gary of the University of California at Davis reported on the activities of bees that have lost their sting. Beekeepers are aware of the fact that such bees die because they rupture their outside skeleton which holds in their body fluids. However, Dr. Gary pointed out that they do not die immediately; in fact, they may live for several days. It is especially interesting that many of the bees without a sting continue to fly and harass the enemy they have stung (or another enemy which might be in the vicinity). They do so by flying around and around and into the individual. This can be quite an irritation and do much to cause an enemy to flee, which is apparently its purpose.

Research on Africanized Bees in South America

The US Department of Agriculture advertised, at the time of meetings, for a research scientist to head up investigations on the Africanized bees which are rapidly moving north in South America. In conversation with Dr. Thomas Rinderer, Director of the Bee Breeding and Stock Center Laboratory of the USDA in Baton Rouge, LA, I learned that the research on these bees is being reorganized and expanded. These bees are already in Colombia, and, as I reported a few months ago, there is evidence that they are also in Mexico. The November issue of Life magazine had another horror story which, in my opinion, was largely humbug. However, it is true that these bees are more difficult to manage and manipulate and it is important that we learn more about their biology and habits. I do not have sufficient data but I am convinced their mating habits are different from their European cousins and this has had much to do with their success in South America.

Yellowjacket Studies

Kenneth Ross, a graduate student

at Cornell, and Dr. Robert Matthews from the University of Georgia reported that they have had good success forcing yellowjackets to initiate nests in captivity, something which has not been done heretofore. This is the first step in growing these insects for the purpose of collecting their venom for study and to treat sensitive people. Unfortunately, many people mistake yellowjackets for honeybees and blame bees when they are stung. While these studies won't correct that problem, it will give some relief to those who are adversely affected.

Bee Foraging Behavior

Richard Nowogrodzki, also a graduate student at Cornell, described two studies on the foraging behavior of honeybees. One demonstrated that bees can regulate their numbers at a food source to avoid overcrowding; only when there was room for more bees to fit around an artificial syrup feeder was there recruiting of more foragers at the hive. A second study found consistent differences in the frequency of feeder visitation by individually marked bees from a single colony. Each day it was pretty much the same ones that made the most round trips per hour, while another group was consistently seen at the feeder only at infrequent intervals. These studies help to fill in our picture of the complex and efficient foraging pattern of honeybee colonies.

Apicluture Collections Presented to the Ohio State University Libraries

The Ohio State University Libraries have received a major gift of research material on bees and beekeeping. This valuable collection is that of the late William A. Stephen, Professor Emeritus in Ohio State's Cooperative Extension Service, and was developed during his more than fortyyear career in apiculture. Some 800 monographs, including almost all significant European and North American publications on the subject from the eighteenth century to the present, comprise the greater part of the gift. Of special significance also is a rich representation of relevant journals, pamphlets, and ephemeral material brought together by Prof. Stephen as a result of his work with several scientific bodies, associations of beekeepers, and individual researchers throughout the world.



THE TRANSITION to this shortest month is imperceptible - to us, but not to the bees. To us winter now seems endless. To them it is already ending. For they are guided less by the sight of snowbanks, which are so baneful and stubborn in their departing, but by the hours of daylight, and those have begun to increase - ever so slightly, but enough to tell the bees the time of the year. Maybe it is appropriate that February should be brief. It is the month of transition. It is the month of winter's dying efforts and of the portents of spring. Spring itself must wait a bit.

Queens begin to lay in February, even in those northern temperate zones where winter seems unabated. The temperatures outside can rival January's, but inside the hive the energy and warmth that have been stored in the form of honey are now more and more unpacked, so that the bees can gain an advantage on the season. Bumble bees are less fortunate. The queen bumble bee still waits alone, chilled to immobility, and when she finally emerges later on, when the weather has warmed, she will be obliged to start from rock bottom, one solitary bee laying the foundations of a colony, which will accordingly never grow very large. But by then the honeybee colony will be immense by comparison. The honeybees have learned not only how to gather the energy of the sun from the flowers in prodigious quantities, but how to keep it stored, so that now, when the sun is hardly felt, and winter seems to have conquered all, the honeybees still have the gift of the sun at their disposal, the energy of the golden honey stored up in the waxen cells. And now, in February, that storehouse is drawn upon, not just to maintain life, as it has been doing, but to fuel new life. New generations of worker bees are now begun, to replace the weary throng that has patiently clung together through the winter. Their role is fulfilled. What matters is the destiny of the hive. And now the necessary steps are taken to ensure that.*

For the beekeeper winter is the time for woolgathering and doing a little puttering, fixing up some old supers and frames, and melting up some accumulated beeswax. Those are good things for after supper, when your mind is too drowsy to work very well, but your body isn't tired enough yet for sleep. I'm very good at woolgathering, and while most of my ideas are sheer brainstorms, of no use to me or anyone, once in awhile I do hit upon something well worth trying. I jot down my ideas as they occur to me through the winter, then if they still seem worthwhile I try them out at the proper time.

And here is what I have been thinking about lately. I got to thinking about what the really perfect bee hive would be, working from the standard equipment available from the suppliers. And what I came up with is that the best hive would be made up from the deep extracting supers, the 6-5/8" depth, and nothing else. There is no reason why brood chambers and honey supers should be of different sizes. More specifically, I think that a colony used for raising comb honey should consist of just three such supers. The frames of such a colony are all interchangeable, of course, and a hive that size would be just right for raising comb honey except in those cases where special methods are used. You wouldn't need an excluder, provided the bees came through the winter and early spring with quite a bit of honey still in the top story. Honey - that is, honey in the combs - is the best queen excluder. The queen will not walk up over combs of honey to lay eggs above them; she keeps the brood nest BELOW the honey/storage area. Nor will the field bees store pollen in the supers if that top story of the hive has honey in it. Bees store pollen below the level where honey is stored. And that of course is very important if you are raising comb honey. You can't keep pollen out of comb honey supers with ordinary wire queen excluders, but you can keep it out by having a honey barrier between brood

nest and supers. And there is another advantage to having honey in that top story when the early spring flows start; namely, it ensures a colony that will be STRONG for gathering the new crop. The more honey the bees have in the fall the more they will still have in the spring, and the more they have in the spring the stronger the colony is going to be; and the stronger the colony is, the more honey they will put in the supers. You don't have any trouble getting the bees of a strong colony to go up into the supers and get to work there.

And what else do you need for that perfect hive? Well, I think that, if it is new equipment, the hive should be painted with creosote — the outside only, of course. The creosote will dry to a beautiful brown that will never peel or wear off. And there should be nine combs in each story, not ten. Maybe use ten if you are beginning with foundation, then reduce to nine when the combs are built; but as for me, I'd start with just nine, carefully spaced.

That's not a very big bee hive, but you don't want an awfully big one if you're going to raise comb honey. What you want is a not very big one that is just filled, as nearly as possible, with honey when fall comes and I mean, honey down in the hive, not just up in the supers. That abundance of stores will ensure zero winter loss and maximum crop the following year, as well as the absence of both brood and pollen in the supers when you come to harvest them.

Of course that advice, about having colonies made up of three deep extracting supers (6-5/8"), is not very practical if you have lots of colonies. If you are raising honey commercially you have to buy up used equipment and take what you get. But if you want just a few hives in your back yard, and especially if you want to raise comb honey — which is certainly what you should be doing if you have only a few hives — then I think that is just the kind of hive to work with.□

*From The Beekeeper's Record and Journal, Interlaken, NY, 1979.

> HEARTHSTONE Beekeepers Quarterly \$6.50 per year-Canada U.S.A. & Foreign- \$7.00 U.S. Box 58-Colinton, Alberta Canada, TOG 0R0

GLEANINGS IN BEE CULTURE

Diamond In The Rough

"Our Loss: Heaven's Gain!"

By "THE OLD TIMER"

JUST RECENTLY I came across a motley collection of notes written some years ago while on an impromptu excursion, so thought I would pass some of them on in the hopes others may find something of interest also, amongst them - To begin this narrative - a friend of ours, Andy Clyde, who lived up-country in the Caribou Region - where we used to reside and where John Junior still does suffered an accident, breaking a leg. After a bizarre winter journey (a story in itself) across frozen muskeg and mountainous terrain amid the omnipresent northern jack pine forest, involving several modes of travel and neighbours, he finally made the last stretch by bush plane to a hospital in a town a little distance from where we had recently settled. Since the missus and I could not leave the homestead together for any length of time during this season of perpetual chores, I found myself one evening, bereft of my better half's calm presence in matters of this kind about to visit a hospital for the first time. A real country bumpkin, I recall having some misgivings as I stood (boiled shirt and all) for a minute or two before that massive edifice for the unfortunate, and the scene of bedlam inside (visiting hour) certainly didn't help matters. Jostled by scurrying bodies (I seemed to be in everyone's way) and trying not to breathe in any more than I had to of the unfamiliar, unpalatable hospital air I followed a sign which led me down a passage that ended in a door to a stairway up which I proceeded to make my way. Uncomfortable, I remember, in the extreme heat I drew from my pocket a piece of paper on which was written 4th floor, room 12. From a relatively quiet stairway (everyone used the elevators apparently) I emerged shortly and again to a veritable mad-house. Just for a moment it occurred to me - how quiet and restful are the wilderness trails compared to this. I spied Andy even before I realized it was the room I wanted. He was sitting disconsolately on the edge of a bed, feet on the floor, one leg in a cast from the knees down. Suddenly spotting me he announced my presence with a stentorian bellow causing everyone within hearing distance to stop and gape and a nurse to come running. With everyone "normal" again, I handed him a brown paper bag containing a

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slab of comb honey and another of apples for which he began thanking the missus and me profusely. Then after being cut short on this expression of gratitude - continued with, "I don't know how a body is supposed to stay healthy on all this toast and jam and seerup and fried stuff they feed you here. If you ain't sick when you come, you soon will be." We chatted, but I could see he was restless and he suddenly blurted out "what'sthe weather like?". I replied, "Cold, blowing like blazed". "That's the trouble with this place", he went on, "you can't see out and there's no fresh air everything just sterile — it ain't natural. Look John, I'm going to sit in this wheel-chair, will you push me outside so's I kin git a breath o' fresh air and feel snow in my face"? I told him it seemed like a hare-brained scheme but, yes I would, for I could plainly see he was determined to go through with it. To tell you the truth I couldn't see any real harm in it then or now, as daydreaming, my thoughts drift back over the years to that eccentric episode. In fact I think it did him the world of good. So amid the confusion of visiting hour - trying not to look too guilty — away we went. Along the hall, down the elevator and finally outside into the blessed fresh air. And it sure was fresh as I recall. A biting north-easter picked up fine as dust dry snow crystals, flinging them at us so that in no time we looked like snow men even though we were under a substantial overhang. Andy had grabbed a blanket from his bed on the way out and with this wrapped around him was enjoying himself immensely. As would be expected under the circumstances we spoke very little kindred souls, Andy and I as regards the elements, we normally appreciate and enjoy all of her moods, knowing full well that storms as well as calm are part and parcel of nature's system. In this case however, not equipped for a blustering "white-out" I was beginning to feel a mite chilly in my "Sunday-go-to-meetings". Standing around in inclement weather dressed in paper thin "town" shoes and clothers never did make much sense to me - but here I was, doing just that. I was just about to say something along those lines when suddenly a nurse, obviously homeward bound, emerged. At sight of us she stopped dead and burst out "Mr. Clyde, what on earth are you doing out here?", then proceeded to wheel him protestingly back inside. Over her shoulder she barked out "And visiting hour is over". Embarrassed I called a "So long Andy, I'll see you again" and beat a hasty retreat. Note: another time when I visited him there at the hospital. I was surprised to find two current (then) copies of Gleanings in Bee Culture on a table with other good books - presumably for the benefit of both visitors and patients. It wasn't long before Andy (who no doubt had a lot to do with it) was farmed out to a sister's place to recuperate, and it was there I found him one spring day - chomping at the bit to get back up to his beloved hideaway up-country. Tea and talk ensued then just about leave-taking, limping slightly, he walked over to a window facing north through which he pointed saying, "You see that mountain yonder — well just a smidgen to the left of it there's a road, not a regular county road, actually just a collection of old logging roads and trails all joined up. Not much mind you but still and all there's seven or eight families spread throughout its 150 miles. It winds up back o' my place and the fishing all through that district beats anything I've ever seen anywhere else. Of course its a little early in the year to fish the lakes higher up, they'll still be ice covered - but the valley waters will be just teeming with trout. If I put the gas in your truck would you ... " I broke in with, "Never mind the gas and its a deal. We'll leave day after tomorrow, that gives us a couple of weeks or so before the garden goes in." And so it was - well supplied with comb honey, eggs, flour, etc. and the usual - off-the-beaten-path accoutrements, such as shovels, axes, saw, chains, tools and so on - we began another of our interminable ventures. About a day's travel and we hit the turn-off to Eden. I was pleased and surprised for although I has passed the entrance before I knew not of its existence. The "road" actually starts out in a southerly direction with a fairly steep, winding climb, the few dirt stretches deeply rutted and bushes of all kinds crowding in on us. However, we came shortly to open and more level country (and now heading due west) affording views of white clad peaks. Numerous streams poured across and down the way,

though none a hindrance. A few miles and we passed the first settlers' "farm". A hodge-podge of log buildings and split rail fences stopping just long enough for a neighbourly chat and tea. A small lake afforded us a gourmet meal of trout while dusky evening shadows ascended the slopes. I recorded - a moss covered log, our couch on a sandy spit simply covered with animal tracks. We also ate dandelion and new fireweed greens. Bird song and rushing water fills the air. Next morning - on again - up hill down dale, squeaking by rocky out croppings, skirting waterfalls, ponds and once fording a quaking corduroy (logs laid transversely over boggy area) road. I don't remember how many miles slipped by in this fashion (certainly not monotonously) until a grove of giant firs opened up to a long grassy area and to my pleasant surprise I perceived a group of three story bee hives (10) between a creek and a frame barn. Two hundred yards further on stood a log house and as we pulled abreast of the driveway we stopped and had just dismounted when a stentorian bellow from the cabin announced "Coffee's on you mountain bums". "That's George alright confirmed Andy grinning, "It's hard to get by his place without stopping for coffee and a chat." In a few minutes we were being greeted by a wiry little old man and woman in the kitchen of their two room abode. A HUGE cast iron stove dominated the place, standing well away from the north wall and atop this colossus, bubbling contentedly, reposed a coffee pot to match. I've NEVER struck a backwoods dwelling where I wasn't genuinely welcome but George and Margaret Baker carried the sincerity of making one feel "to home" to the Nth degree. They wouldn't hear of us leaving till at least Thursday (this was Tuesday) and only then if WE in-sisted. It is a fact in my case that I can associate more quickly with rural folk, since my farm is my life and I always learn something of value among these lines from people living close to the ground. So you see in no time at all we were one big happy family sipping coffee and talking weather, gardens, fishing, cows and of course BEES. Now as regards the latter I'll dwell somewhat, on the subject, as Gleanings is primarily that sort of magazine and in any case it was of vital importance to us four there in the cabin - I'll explain. Other than tea and coffee we are self-sufficient and as George so aptly pointed out, without such an abundance of honey our lives would be very different. Apart from the fact that honey and pollen are a cash crop (source of revenue for implements, vehicle fuel

and what not) it is also a very real and MAIN part of our diet - I myself eat at least a pound of comb honey every day of my life, more if I have a hard days work ahead of me. There is also the fact that using sugar as a alternative one's health would quickly deteriorate, something a person just couldn't tolerate, living so far from civilization where, without optimum health and strength one could not survive for long. Everyone knows how bad for the teeth and heart etc. is sugar, and so with the knowledge of how poisonous it is to human beings one does not need a high I.Q. to realize how detrimental it is to a honeybee which has not our VARIED diet. It has living cells much like ours. We even give honey to our animals in winter for optimum health by drizzling it on their hay and adding it to chicken feed. At one time during our visit there. Margaret brought forth a newspaper clipping stating, we (beekeepers) are now encouraged to use flavoured substitutes instead of REAL pollen as bee feed and unanimously shocked we agreed that that's hitting below the belt to a humble creature that has no protection against the wiles of unscrupulous man. So adding insult to injury, first sugar now this other garbage (what would you call it?) a mixture of dry skim milk (for bees??) soybean flour, cottonseed meal, corn glutten, whey, yeast etc. Disgusting - and you can bet your bottom dollar it's not for the good of the little honeybee. I was right, for on reading further I find this is to SAVE MONEY. On top of the fact that we consider unethical, there is another consideration - you only get what you put in friend - like any other living thing, they need REAL food, not junk. A truism: There are no incurable diseases - just bad food, and to a slightly lesser degree, Another chemicals. truism: Sometimes, man and animals are not able to distinguish bad from good food - but their cells can, and they (and you) will suffer. Any animal including our little honeybee cannot hope to live out its full and proper life span if nutritionally deficient. Somebody stated - honeybees are a most perfect creation, and since I'm partial to these wonderful little critters I AGREE WHOLEHEARTEDLY. If man were to pattern his principles after, these self-less little creatures. we'd be living in paradise. We've got a lot to learn and me-thinks the ghosts of a zillion zillion hapless little honeybees are shaking their heads in resignation at the ridiculous things done to and said about them. YEP, always get steamed up on what I consider mistreatment of fellow creatures entrusted to our care some say I drank one dipper too much of that old Buckinghorse River Water. Be that as it may - I, nor anyone else in the cabin there that night - would ever be guilty of, nor would even think of giving to a fellow man or animal anything detrimental to its health. We've got enough thanks - we're satisfied. 'Nuff said. I believe a colony of honeybees, more so even that other baby animals gives a child character, teaches humbleness, educates and is an all round excellent way to instill good values and lay the ground work for an honest, up-right and moral adult. Remember - MAN cannot teach an animal anything of benefit. BUT - on the other hand, who, among us hasn't learnt at least a little, and come away so much richer by observing a lonely pond with its teeming life on a quiet summer's day, where wisdom and understanding go hand in hand. I don't know about you friend, but in my case the older I get the more I realize how little I know.

Just before I put pen to paper I went out to the bee yard where a maelstrom of whirling bodies reaching high above the barn roof before fanning out to all points of the compass greeted me, and below, each entrance a tumbling, seething dedication. One weary little worker landed heavily on my arm pulsing; resting a moment before hurrying on, and I thought: "My GOD, how arrogant and stupid we humans are. Here is a tiny creature with a brain no bigger than a grain of sand, neglected, abused, slighted — a dumb animal - BUT, unlike Homo, the sap - its house is in order and its happy family philosophy, the roots and backbone of any upright, decent society, still first and foremost after how many million years? All despite set-backs (chemicals, artificial insemination etc.) by man." One thing is for sure - long after man has perished - there'll be honeybees, FLOURISHING, I'm convinced (my opinion again) that the only way to halt man's precipitous, materialistic stampede to oblivion is to get off his high horse and (using our little honeybee as an example) return to the days of "Happy Families" and home life.

To change the subject a little — I should like to relate a small incident from the past — but one which always brings a lump to my throat. I had driven Andy to one of those outdoor markets to sell the last of his honey (about 50, thirty pound pails). During the course of stacking them on the tail gate and hand printing a sign and what not, an elderly couple (I found out later he was 98) seemed, several times, about to say something and once we saw her turn and scrutinize a worn handbag. Andy picked up a pail, setting it to one side whispering to me, "don't sell this one." A few pails were sold before the old man spoke asking if we had just a pound for sale. Whereupon, like a flash Andy jumped to the ground, handing him a pail saying, "No sir, I don't have anything smaller, but I sure would be obliged if you'd accept this with our compliments — sort of like a sample — you see, my friend here and I had such a good year honey-wise (it was in fact the poorest year to date) and we'd like to be getting on home." The look on their faces and especially when tears came to her eyes, was payment enough. Old Andy has time and again demonstrated these spontaneous acts of kindness. A Diamond In The Rough — when he passes on, friend, it will be OUR loss: HEAVEN'S GAIN.

In The Hearts Of Man, Woman And Child

AM BY NO MEANS an authority in psychology or human behavior but consider myself a reasonably average working person in Western Canada. I am not overly emotional or high strung, but was brought up by very sensitive parents believing that one should respect the feelings of all living creatures, may it be man of beast. Of my twenty-three years, an in-finitesimal amount of time, each day has brought upon me new experiences which lead me to the conclusion that there are very few humanitarians in superfluous quantities. These good, solid citizens, of whom I am talking about, are not necessarily all in my age group or younger. On the contrary, I have found that various age groups or religious backgrounds are of no relevancy to the manner in which people feel (or do not feel). I, personally, cannot comprehend the zealous pleasures one might receive by trying to abase another person. I feel generously for those who accent the weak points, highlight the bad habits of others, and generally make a nuisance of themselves. My dear old Dad, better known to his friends as "The Old Timer", once told me that if I haven't anything good to say about a person, don't say anything at all. Of course I have heard this many times since and from a very many people but there is one other saying which tickles my mind: "It's better to remain silent and be thought a fool than to speak up and remove all doubt." Alas, I think my quest for good hearted folks is at a stand still. There are few of us left, those who love life, love people and animals and try to

overlook things that don't need to be remembered or talked about. In reading this, those of you who have children have the opportunity now to analyze your and your child's behavior toward others. This will most certainly be rewarding in later years. I myself, have found very many pleasures in my life, due to being unusually kind to all living things. If you feel that you are being kind to your children by allowing them to be disrespectful and disregardful to his parents and his friends, try to think of how resentful he will be toward you later in time wheh he hasn't any friends. For those of you who do not have children try it yourself, you'll be surprised at how good it will make you feel.

Bye for now and many grateful thanks to "The Old Timer".

Questions and Answers

Q. I am a beekeeper that in the last few years has changed from a hobbyist that loved to go through each hive each time I had the opportunity and slowly examine the whole colony looking for the queen - to a sideliner that now has 19 hives in 3 outyards with a minimum of time (I am a minister). I now realize that the more hives I get the less time I will be able to spend per hive - which is true of the commercial beekeepers. I am interested in knowing how the commercial beekeeper makes more honey and spends less time per hive than the hobbyist. What minimum manipulations do they carry out if they have outyards and can't run out there often? T.B. Tennessee

A. Perhaps a short statement about the qualifications of a commercial beekeeper would be as explanatory as what he does.

1. He must have the ability and initiative to plan and carry out a system of management day after day through the seasons. Like any professional, the commercial beekeeper organizes his resources so as to obtain the maximum profit from his investment in his bees. Colonies of bees are producing units; well cared for, but not allowed to be non-productive.

2. He must be versitile. He must attend to business details such as record keeping, marketing, finances and mechanical maintainance in addition to being a manager of bees.

3. He must understand and be able to work with bees and must be accustomed to working both indoors and outdoors.

The basic tasks in commercial beekeeping are as follows: No two beekeepers do these in exactly the same way but they do work their plan in order to obtain the maximum from their colonies of bees whether it be honey, packages and queens or pollination service. These basic tasks are performed with a minimum expenditure of time and energy on a planned schedule.

1. A spring inspection which includes such tasks as hive cleaning; brood and comb inspection; feeding of sugar and pollen, if necessary; and an analysis of the general condition of the colony and queen for the written records. 2. A follow-up spring and prehoneyflow inspection of the apiary to check on brood rearing and colony build-up. Selected colonies may be used for making increase, colonies requeened and measures taken to prevent swarming. Records are up dated.

3. Supering for the honeyflow. The whole apiary is supered at one time. Sufficient space is given to hold the anticipated honey crop.

4. The next visit to the apiary is to remove the honey although it is not unusual to make an inspection or two of the apiary during the honey flow to observe conditions in general and sample colony progress.

5. Extracting and processing the honey crop begins when the honey flow nears an end. Handling and transportation equipment, housing, comb and honey handling and storing facilities are planned so as to be adequate for the number of colonies maintained and the amount of honey produced, the bees and queens sold or the extent of the pollinating services contracted for.

6. The late season field work involves the final colony inspection, feeding where necessary and hive insulation added where needed. Other protective measures are taken.

7. Shop work includes hive and equipment maintainence and building new equipment, during the season when the bees are inactive.

In this simplified summary there is not mention made of the many complex and detailed operations involved in producing queens and package bees or the extensive moving and placement of colonies of bees for pollination or migratory beekeeping.

Q. In feeding bees is it a good idea to feed donut sugars? It comes from a donut house and contains different flavors. M.P. California

A. The sugar from the donut house was pure granulated or confectioner's sugar in the beginning but the addition of flavoring and coloring makes the sugar unsatisfactory for bee feed. Sugars which are unsable in the bakeries are sometimes sold at low prices but they could turn out to be harmful to bees, containing substances such as flavoring and coloring agents that cannot be assimulated by bees. Only pure, clean, granulated sucrose sugar should be fed to bees. Either cane or beet sugar is satisfactory.

Q. I cut comb to fit wide mouth pint jars, about five cases, immediately filled with liquid honey and sealed tight. They were very attractive and began selling immediately. However, after a lull of a few weeks the remaining two or three cases seemed to have fermented. The jars were tightly sealed but when I opened one it "popped" and gas seemed to rush out; bubbles appeared throughout the jar.

I don't like that. What can I do to avoid this problem? H.L. North Carolina

A. The fermentation which you have observed caused carbon dioxide, a gas, to build up in the jars of honey. Fermentation is the result of the activity of yeasts in the comb honey and perhaps the liquid honey, which began when the honey was packed. If the comb honey and the liquid honey was high in moisture content (above 18%) this could be a contributing factor to fermentation.

To avoid fermentation in your honey packs the comb honey used must be cut from combs which have been completely sealed by the bees. If there is still some doubt about the moisture content of the comb honey it may be held several days in a hot, dry room before cutting. The comb should be protected from high humidity conditions until cut and packed. The liquid honey used in the pack may be heated to a temperature of from 120 to 140 degrees F. without damaging the flavor to a noticeable extent. Heating will not only kill the activity of the yeasts but destroy the small granules of honey that may begin granulation, a significant cause of fermentation.

We suspect that warm, humid conditions when the honey was removed from the hives and during the packing period was the principal cause of the fermentation. The two steps of using only well ripened comb and using a low heat on the liquid honey will eliminate the problem you had with you chunk honey fermentation.

Q. Should I feed my bees corn syrup? The price is very attractive compared to sugar. M.H. Florida

A. I presume you are referring to the sweet syrup made from corn starch which is a mixture of dextrose, maltose and dectrins. It is not satisfactory as a bee feed and perhaps some harm can be caused by feeding it to bees, that is, if they will take it.

While on the subject it should be mentioned that no partially refined cane or beet sugars or syrups should be fed to bees. Sweet syrups from such other plant sources as maple sap are unsatisfactory.

The best and safest sugar for the average beekeeper is granulated white sugar which is pure sucrose. The isomerose syrups are being fed and have been generally acceptable, having the same sugars as honey. For this reason there is the temptation to use these syrups (they are made by several manufacturers) to excess, to supplement the nectar flow or to add to honey, either of which could have serious consequences when the "honey" is tested for adulteration.

* * * * * * * * * *

Q. I have some brood supers which are full of honey and I want to save for spring feeding. The wax moth is bad in my area and I am afraid they will get it before the spring. Will treating these supers with para moth killer ruin the honey for the bees? Q.O.D. Alabama

A. Paradichlorobenzene $(C_6H_4Cl_2)$ should be used to fumigate the stored combs in the fall, including those combs which contain the honey intended for bee feed. In the spring, a day or two before placing on the hives, the supers containing the honey should be given an airing in order to allow the remaining gas to become dispersed...There should then be no problem with using the combs and honey for bee feeding and for honey storage.

* * * * * * * * * *

Q. I have been keeping bees for 5 years but have never had this experience. We extracted our honey in the last week of July which amounted to about 165 pounds from four hives. I left a full super on each hive for their winter needs. Then, in late October, I extracted a little more surplus honey which they had.

After having this honey in the basement in five gallon plastic containers it crystallized a little. It was there for about two months until we moved it to the kitchen behind a stove to keep it from further crystallizing. The honey started thinning on the top and (Continued on page 97)



Notes From The Straw Skep

By BESS CLARKE 50 Lycoming Street Canton, PA 17724

EVIDENTLY the adulteration of honey has become a major issue in the beekeeping industry in the past few years. I was shocked to learn how widespread the practice is. The problem was addressed at the winter meetings of beekeepers' organizations in New York, Pennsylvania, and Ohio, and undoubtedly other states as well.

The development of isomerized or high fructose syrup has been a major factor in the practice of diluting honey with other sugars in order to increase profits for unscrupulous dealers in the honey market. There are two ways for an adulterant to get into honey: it can be fed to the bees, or it can be added to the extracted honey. Either way it is reprehensible.

I know that bees often need to be fed to keep them from starving to death during a prolonged period of time without a honeyflow, but there is a big difference between fending off starvation, and feeding the quantities necessary to produce a surplus of honey.

Jonathan White, this year's winner of the Hambleton Award at the Eastern Apicultural Society meeting, has been instrumental in developing tests which can detect the presence of either isomerized syrup or cane sugar in honey.

The current furor reminds me of an item I found when I was researching a history for the 75th anniversary of the Pennsylvania Beekeepers. Back in the days before the pure food and drug laws were passed by Congress there was so much adulteration of honey that it became unsalable in the extracted form. The only way a purchaser could be sure of getting pure honey was to buy it in the comb. A return to those times would be the death of the beekeeping industry as we know it today. We must not allow this to happen.

Naively, I have thought that we were protected by the Federal Food and Drug Administration which controls the pure food laws. However I have learned that their top priority is in controlling health hazards which are added to food (and rightly so) except that there are not enough funds to police economic problems such as honey adulteration. This means that the job must be relegated to the individual states, and some of them don't have funds or personnel to do the job.

What is comes down to is that our industry must patrol itself. In fact an organization has been set up to do just that. A five man task force, assisted by attorney Robert Rubenstein, is working in cooperation with Dr. White and his Honey Tech Corporation to test samples for adulteration. David McGinnis, Charles Adams, Ralph Gamber, Mike Ingalls, and Binford Weaver have complete information on the procedures to follow if you suspect that a sample of honey is adulterated. They need all the information on the label, the name and address of the store where the honey was purchased, and the reasons you are suspicious.

RECIPE

I cut a recipe for Yogurt Nog out of our local paper. It makes a delicious, nutritious drink. One reason I liked it, I think, is that I can remember my mother fixing me an eggnog after I'd been sick.

YOGURT NOG: For each serving, put 1 cup vanilla yogurt, 1 egg, and 2 tablespoons of honey in a blender. Blend at high speed until frothy. Pour into a tall glass and sprinkly with cinnamon. Serve immediately.

Strictly Backlot

By CARL CALLENBACH 135 College Avenue Elizabethtown, PA 17022

THE NOT-SO-COMMON Milkweed (and, as duly promised in last month's column — Scene Two: The Second World War).

Maybe there are few pictures more beautiful than two or three dark Caucasian honeybees working the pink flower of the common milkweed. According to *The World Book Encyclopedia* (Chicago: World Book-Childcraft International, Inc., 1978, Vol. 13, Page 465), "each flower is shaped so that an insect has to walk through masses of pollen before it reaches the nectar." The insect leaves the flower with two bundles of pollen, the article continues, and this creates the conditions for crosspollination.

Maybe this pastoral scene is a little deceiving. It's not always that simple. Lovell, writing in *The ABC & XYZ of Bee Culture* (The A.I. Root Company, 1974, page 482), documents a sticky predicament for honeybees walking through the pollen masses:

"The way in which the pollen masses are clamped to the feet or legs of insects is of much interest to beekeepers, and every season there are many inquiries in regard to this queer phenomenon. The bee can obtain its liberty only by breaking the connecting bands. If this happens, the pollen masses are left in a chamber near the stigma, and the bees bear away the membraneous disc with its empty stalk. Disc after disc may thus become attached to an insect until it is crippled or helpless."

Lovell notes that sometimes many bees are lost; that numerous explanations have evolved to account for the "curious structures" attached to the insects' legs: fungi, parasites, winged insect enemies of the bee: an incredible plot and array of characters suitable for a micro horror movie. He concludes: "If the insect is not strong enough to pull out the pollinia, or later to break the connecting bands, then it perishes slowly of starvation."

But apparently a majority of honeybees do successfully avoid entrapment or injury while working the common milkweed flower — during July and August. They return to the hive with a nectar that produces an exceptionally fine flavored honey. Lovell describes the physical characteristics as white or tinged with yellow, with a flavor somewhat suggestive of quince, a quality comparing with raspberry honey.

Honeybees may find the common milkweed blossom irresistable; however, listen to Billy Joe Tatum trumpet the gastronomic delights of the tender young milkweed plant (*Billy Joe Tatum's Wild Foods Cookbook & Field Guide;* New York: Workman Publishing Company, 1976, pages 154-155):

"Preparing milkweed is arduous and I find it not worth the bother for any part except the flower buds and unripe seed pods, which no other vegetable can top for taste."

She describes a blanching process for all parts of the milkweed plant and presents the reader with two succulent recipes, the second, I suggest, bordering on the ethereal. She asks that the following unique dish be served with plain venison roast, a green salad, and a light dessert.

Milkweed Pods With Black Walnuts

- 2 Cups black walnut meats
- 1 Cup fine dry bread crumbs
- 1/4 Cup butter
- 1/2 teaspoon salt, to taste

1/4 teaspoon crumbled dried thyme or
3/4 teaspoon chopped fresh thyme
3/4 teaspoon crumbled dried basil or
1/2 teaspoons chopped fresh basil
Freshly ground pepper to taste
3 Cups of milkweed pods, blanched
to remove bitterness, drained, salted
to taste

Water as needed

1. Preheat oven to 300°

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2. Toast nuts in a shallow pan in oven for 30 minutes, stirring occasionally. Remove nuts and raise oven setting to 350°

3. Mix bread crumbs, salt, thyme, basil, and black pepper.

4. Put into a buttered 1¹/₂ quart casserole, a layer of milkweed pods, a layer of nuts, and a sprinkling of the herbed crumbs. Continue layering the dish in this manner, ending with the remaining crumbs.

5. Sprinkle with just enough water to moisten topping — less than 1/4 cup.

6. Cover and bake for 30 minutes, removing the cover during the last 10 minutes to allow browning. Serve hot. Serves 8.

For the reader who prefers a less celestial dish, and hotter, Tatum includes "Milkweed Buds Mexicali", in which tender milkweed buds appear to be squashed in garlic and chili powder.

By late autumn the pink blossom has been succeeded by large, rough seed pods. Mabel Squires (*The Art of Drying Plants and Flowers*, New York: Bonanza Books, 1967, page 64) writes:

"Milkweed pods are a masterpiece of packaging. When the flat seam on the bumpy exterior of a pod is slit, it reveals how expertly each seed is packed, one overlapping another and equipped with a downy tuft."

Squires suggests that unusual corsages can be made with milkweed pods, dried without their silky tufts. She recommends tucking a couple of bright berries inside each pod (page 226) and tells how to add an individual touch to gift wrapping by adding milkweed pods, painted red, forming Poinsettia-like flowers to use on top of the package (page 237).

She cautions the milkweed collector: "Milkweed should be gathered conservatively because according to entomologists, the Monarch butterfly uses it exclusively for feeding."

A Monarch butterfly settled against the grey-green foliage of the common milkweed may in beauty rival Caucasian honeybees working the bloom. Few butterflies are more familiar to people than the Monarch. Its flight almost a slow sailing, the Monarch is well known for its autumn mass migration south to where the adults winter. Klots (A Field Guide to the Butterflies, Cambridge, Mass., The Riverside Press, 1951, page 78) records that Monarchs have been seen hundred of miles out in the Atlantic or Pacific. "It has spread across the entire Pacific from Hawaii, where it was presumably introduced in 1850, to Formosa and the Andaman Islands."

To the point, the Monarch larva, in the early stages, feeds on milkweeds and because of this intake of the milky, acrid, bad-tasting juices, both larva and adult butterfly are protected by bad tasting body fluids. They have, Klots notes, little to fear from birds. Birds on the wing, it appears, can neither blanch the butterfly the required three times nor smother it in garlic and chili powder.

A fascinating aside: the Viceroy butterfly (*Limenitis archippus*) departed at sometime in the past from the configuration of its relatives to mimic the Monarch (*Danaus plexippus*) in color and flight behavior. The Viceroy, like the Monarch is seldom attacked by predators.

Postscript — Scene Two: The Second World War

During the Second World War when my older brother had a Victory Garden and grew far too many radishes for my taste, when my second-grade teacher sold us Victory Bond stamps, when we had blackout curtains, air raid sirens, and shoe rationing, and Pearl Harbor and Japan not to mention Germany were just over on the other side of Tussey Mountain and I had fearful nightmares, every morning in that fall of 1942 on weekends when I didn't go to school, right after I'd picked out all the weevils in my breakfast cereal, my pal John Kimport and I would head for the fields to collect dried milkweed pods.

When the highschool cellar was full of hanging burlap sacks stuffed with the pods, all of us were paid twenty-five cents per bag, I believe. John and I took our money and headed for the Texaco station where we guzzled too many cokes and gobbled up enormous numbers of candy bars, oblivious to Monarch larvae. I was sick for three days. John, who was not allergic to chocolate, returned to the Texaco station the next day while I itched and brooded in my bedroom.

We were collecting the milkweed pods, I remember, because the army and navy needed them to stuff life preservers. Later when the war was over I heard that this was just another of FDR's tricks, like radishes and Victory Gardens, to rally the country behind the war effort. I heard that thousands of tons of milkweed pods were burned and buried at night all over the country.

(Continued on page 97)

Siftings

By CHARLES MRAZ Middlebury, VT 05753

PAGE 635, Dec. 1980, *Gleanings* is a letter to the Editor from Claudia DeBellis-DiGiovanni, Medford, New York. In this letter she says, "Even if honey does not cause infant botulism (and I am not convinced about that at all), it still doesn't belong in a newborn's diet, because as good as honey is, it is not a natural food for babies...only mothers' milk is the natural food and so the best; so feed mother the honey instead".

I don't know how long Mrs. DeBellis-DiGiovanni has been a mother. I also believe mother's milk is the best food for babies. Unfortunately there are mothers of new born babies that have no mother's milk. I have five children and none of them could be nursed very long on their mother's milk. It is a terrible blow to a mother that looked forward to nursing her baby and to find, in a few days, the baby is starving.

What would Mrs. DiGiovanni suggest? Would she let the baby starve because there is no mother's milk? I am not that much of a "purist" to see my babies starve because their mother cannot nurse them. Will feeding honey to mothers make mother's milk? We tried it with no success.

Mrs. DiGiovanni is not convinced that honey is not a cause of botulism poisoning. According to the report I read on this study, some of the babies were breast fed. Of the six babies studied, only three of them had honey to eat, some only once. None, that I could gather from reading the article, were on a regular program of exclusive honey-milk formula. From this report it could also have been concluded that mother's milk was the cause of this botulism poisoning, rather than honey.

Natural, unprocessed honey and raw clean milk, especially goats milk may not be the perfect food for babies, but I can assure you it is vastly superior to any of the commerical formulas on the market that have in the past caused some serious deficiency problems in babies. All five of our babies were raised on honey-milk formula and rarely did they ever have a sick day.

Our first "baby doctor", Dr. John Clark of Burlington, Vermont was known as the "Honey Doctor" because he put all bottle babies under his care on honey formulas. He specialized in "Premies", premature babies. He told me when you put a premie on a honey milk formula, they will be normal weight in less than 4 months.

I have seen babies on commercial formulas, literally starving, because they threw up the food fast as they drank it and it went right through them with diarrhea. In practically every case I recommended the mothers change to a milk-honey formula. Even Dr. Clark said, when you put a baby on honey-milk formula you have a new baby. I have seen babies recover completely with the first bottle of honey milk formula and remain in good health until they grow up.

Milk now being sold in most of the commercial outlets is so "super pasturized" and perhaps even polluted with drugs used to treat dairy cattle for mastitis, etc., that the milk is not fit for babies. Much of the milk sold today, will not even sour to make yogurt. It can sometimes be stored for weeks without it souring. Anyone feeding a baby such milk may have trouble. Like mother's milk, the milk from cows or goats should be used just as it comes from the udder; clean, fresh and free of all processing and pasturizing. We, fortunately, can get fresh, raw milk here in Vermont. All one needs to do is to use real milk again and see the difference.

It was not many years ago that the American Honey Institute, (how many beekeepers remember?) printed cards with formulas for infant feeding. Anyone with doubts about feeding milk-honey formula for infant feeding should read the original edition of *Honey and Your Health*, by Bodog F. Beck, M.D. The reprinted paper back edition has left out much of the most important parts of the original book.

Botulism spores cannot develop in honey for several reasons. Honey is acid in reaction and these spores cannot develop in an acid medium. Natural honey, not heated or filtered, contains the enzyme, glucose oxidase. This enzyme maintains a level of about 35 parts per million of hydrogen peroxide in honey, even when diluted. These spores cannot develop in the presence of oxygen; they are anerobic, they can grow only in the absence of any oxygen. Nacent oxygen from H₂O₂ will destroy the bacterium of botulism.

This botulism report stated that botulism poisoning only developed in babies that were constipated for a long period of time. Anyone experienced in feeding honey formulas to babies knows honey is one of the safest and best laxatives for infants and anyone else. It is virtually impossible for a baby on a honey formula to be constipated. In fact we used the honey as a perfect control of the bowel movements with the babies. If constipated, we added a bit more honey, if too loose, we reduced the amount of honey so the bowels could be controlled easily and safely.

I firmly believe that a natural honey/ raw, clean milk formula will not only NOT CAUSE botulism poisoning, but it will cure it in a hurry better than any antibiotics, safely, and with no side effects. Natural honey is antibacterial as we all well know, pathogenic bacteria cannot live in it. It will be interesting to hear from other mothers with experience in infant feeding with honey formulas.

A queen breeder friend of mine called up the other day to comment about the letter I received from Douglas Spence, Nov. 1980 *Gleanings*, page 591. I know a beekeeper in Huehuetenango, Gautemala, and my queen breeder went there to see him last winter. He said he saw some of the Peace Corps workers in Guatemala. His comments were not very complimentary; they were trying to teach the natives beekeeping, when the natives sometimes knew as much about beekeeping as the Peace Corps workers did.

My queen breeder friend found quite a lot of EFB in many of the hives, a condition that is so common in much of Central America. He said the main crop is that of beautiful golden honey, Acahual, the kind we produced in Central Mexico. It is a high grade honey that commands the highest price in the German market and never enough of a supply to meet the demand. It brings a better price than our best white clover honey.

Central America, I believe, has the greatest future for commercial beekeeping. None of these countries, except perhaps for Yucatan, is saturated with bees as Mr. Spence seems to believe. There is a tremendous room for expansion, especially if you don't mind traveling into the many valleys where there are no roads, only cow paths. Even in Puebla in Mexico, where there are many commercial beekeepers with thousands of colonies of bees, we could find plenty of room for 10,000 colonies within 50 miles of the honey house, where there are no bees.

(Continued on page 99)

MICHIGAN **Beekeeping Program**

Farmer's Week Michigan State University East Lansing, Michigan

Tuesday — March 24, 1981 Auditorium, Kellogg Center

A.M.

9:30	Visit and	Get /	Acquainted
10.00	11		

- 10:00 Movie 10:30 Package Bees - Installation and Problems, Dr. Roger Hoopingarner, MSU 11:15 Birdsfoot Trefoil Pollination,
- Gloria D. Hoffman, MSU Noon Lunch

P.M.

- 1:30 The Honeybee Close-up; An Examination of the Bee with the aid of the Scanning Electron Microscope, Dr. Eric Erickson, USDA/AR SEA, Madison, Wisc.
- 2:12 European Foulbrood -Cause & Cure, Gordon Wardell, MSU
- 3:00 Break
- 3:15 Honey Queen Report and Introduction of the Contestants for 1981
- 3:45 Question and Answer Period

Tuesday Evening

Auditorium, Kellogg Center

P.M.

7:30 Honey Queen Pagent, Choosing of the 1981 Honey Queen - Beekeeper of the Year Award, Presented by Richard Hubbard, Onsted

Wednesday - March 25, 1981 **106B Wells Hall**

A.M.	
9:30	Visit and Get Acquainted
10:00	Movie, "The Bee"
10:30	An Inside Look at the
	Honeybee Colony Over
	Winter, Dr. Eric Erickson,
	USDA/AR Univ. of Wisc.
11:15	Wintering Success — A
	discussion
Noon	Lunch
P.M.	
1:30	Agriculture, Crop, and Farm
	Loans for the Beekeeper, Dr.
	Ralph Hepp, MSU
2:15	The Development and Life
	of the Bee, Dr. Roger Hoop-
	ingarner, Michigan State
3:00	Break
3:15	Bee Venom Therapy: An Ar-
	thritis Case Study By

Denice Terebus, and Joyce and Dan Guthrie, Utica 4:00

Questions and Answers

News and Events



FLORIDA Marion Beekeepers Assn.

The Marion Beekeepers Association has elected Frank DeGarmo of St. Petersburg as its President. Membership in the association is by family and at the present time approximately 65 families and individuals belong to the association.



FLORIDA The 10th Annual Hubbard Award

Presented by L.M. Hubbard (L), for the Florida State Beekeepers Assn., to the beekeeper of the year, Marvin M. Brown (R), at the annual convention at Tampa, Florida, on November 7, 1980.

CALIFORNIA

San Francisco Honeybee Program

The Josephine Randall Junior Museum of San Francisco will sponsor a practical and cultural honeybee program on Saturday, February 28 from 10 a.m. to 1:30 p.m. The Museum is located at 199 Museum Way just off Roosevelt Way in San Francisco. It is served by the 37 bus from 14th and Market Sts.

Principal presentation will on Pollen, by Mr. Robert Schmalzel of the USDA Carl T. Hayden Bee Research Center, Tucson, AZ.

A panel of experienced city hobbyists will be on hand to answer questions about the particular problems of urban beekeeping in the Bay Area.

For the benefit of experienced beekeepers, Mr. Len Foote of the State Dept. of Agriculture will be on hand to make a presentation and answer questions about current beekeeping problems and issues.

There will be no charge for the program, but a lunch of a sandwich, drink and dessert will be available for \$1.25 from beekeeping club members and \$2.00 from others. The interested public is invited to attend and participate. For further information call 415-861-5636.

CALIFORNIA San Francisco Community College

The San Francisco Community College District will sponsor a series of five lecture-demonstrations in practical beekeeping for City hobbyists. The series will begin Tuesday, February 24 at 7 p.m. at the Marina Middle School, 3500 Fillmore St, San Francisco.

Opportunity to observe correct methods of handling bees will be provided on Saturday, March 21 as well as a hands-on experience for those who have participated in the lecture demonstration and are prepared.

There will be no course fee, but participants will be expected to subscribe to one of the bee journals and purchase one reference book from those which will be on display at the first meeting.

Instructors will be Louis V. Dubay and Leonore Bravo. For information call 415-861-5636.

CANADA Fanshawe College Beekeeping **Course Will Be Given**

A course in beekeeping will be given Monday evenings March 23rd to May 4th. This is a very practical course for those interested in the development of a worthwhile hobby or profitable business. There will be special emphasis on pollination. Demonstrations in the apiary will assist students in handling the bees.

(Continued on page 111)

The Australian Bee Journal Published Monthly \$A10.00 per annum. \$A11.00 per annum (overseas) BANK DRAFT PREFERRED. Write to — Editor Victorian Aplarists' Association P.O. Box 426, Benalia 3672 Victoria, Australia Sample Copies on Request.

STRICTLY BACKLOT

(Continued from page 94)

But read this, again from *The World* Book Encyclopedia, same page: "In 1942, milkweed floss was collected as a wartime substitute for the kapok fibre used in life belts." This is important because I have never been more afraid (or sicker) at any time in my life.

QUESTIONS AND ANSWERS

(Continued from page 92)

changing its flavor from sweet to sour. We quit using it as its taste is not good. The honey in one of the containers has a gas which causes pressure on the lid and is thinner than usual. It also has a strange sour smell. This seems strange to me as I always thought honey would keep its flavor and didn't contain anything to cause it to do this. Last year we did the same thing and it didn't hurt the honey. Was there something that the bees got that would have caused this?

We have about 130 pounds of this honey after having sold some and used some ourselves. I have heard that heating the honey will spoil its flavor but this honey wasn't that warm. It's still crystallized in the middle of the container. Does heating the honey spoil it? T.S. Pennsylvania

A. Honey is a very complex substance and is subject to changes in chemical and physical state in storage. Your honey was apparently of higher than normal moisture content; if not when extracted in July, it became so when the fall honey was added or the moisture was absorbed during extracting and storage. The storage of honey in tightly closed plastic containers should have prevented any further absorbtion of water from the air.

If the combs were less that three quarters capped over when extracted, this could be the reason for the poor keeping qualities of your honey. Fall honeys from your region are noted for their early granulation and fermentation frequently follows granulation. The removal of dextrose hydrate from Peaceable — Productive — Easy to Handle BANAT CARNIOLAN QUEENS Book now — \$7.00 Ea. Ppd. any qty. — Ready April 20 ADAMS & BREMER Rt. 1, Box 170, Marion, MD 21838 Phone (301)957-1284/ 623-8257

solution leaves a higher moisture liquid pahse in which moisture may not be uniformly distributed. This would account for the thinness that you noted.

The carbon dioxide gas formation and the sour taste due to the alcohol results from the activity of the sugar tolerant yeasts present in the raw honey. These yeasts can be inactivated by heating the honey. Low temperatures (between 120°F. and 140°F.) do not noticeably affect the honey flavor.

Last year the honey you extracted and stored was very likely lower in water content. Any honey above 17.2% moisture content is subject to fermentation if yeasts are present and temperature conditions are suitable.

Neither your basement nor near the heater are likely to be ideal storage places. Honey should be stored in a dry room, either below 52°F (11°C) or above 70°F (21°C). In well ripened honey, fermentation is said not to occur at temperatures above about 80°F (26.7°C). Stored honey should not be moved from cool to warmer temperatures.

Q. I am in my first year of beekeeping and my quetion is: Can I feed sorghum syrup to my bees instead of sugar syrup? I do have a good supply of this syrup which I do not plan to eat and this would be a good way to dispose of it. K.W. Georgia

A. Sorghum syrup should definitely not be fed to bees. It contains material which is indigestable to bees.

Q. Would it be safe to feed bees syrup made from peppermint candy? The ingredients are sugar, peppermint oil, and artificial food coloring. J.N. Tennessee

A. The sugar used would no doubt be satisfactory but when the peppermint oil and the artificial food coloring is added it becomes unsatisfactory for feeding to bees. Write for prices on 1981 Italian Queens GULF COAST BEE CO. Gilbert Bourg, Jr., Owner Schriever, LA 70395



IMPORTANCE TO BEES OF A WATER SUPPLY — ITS VITAL FUNCTIONS IN THE LIFE OF THE HIVE

(Continued from page 72

most cases will reduce the water content down to 17.4, a desirable level.

From all the above facts it becomes evident that water plays a very important role in the life of the honeybee, and in the honey which she produces.

SOURCES CONSULTED

Chadwick, P.C. 1922 Ventilation. American Bee Journal 62: 158-9

Dunham, W.E. 1931 A colony of bees exposed to high external temperatures. J. econ. Ent. 24: 606-11

Heran, H. 1952 Unterschungen uber den Temperatursinn der Honigbiene Z vergl. Physio. 34: 179-206

Hertz, Mathilde 1934 Eine Bienendressur auf Wasser. Z.vergl. Phsiol. 21: 463-7

Johansson, T.S.K. and Johansson, M.P. 1978 Providing Honeybees with Water. *Bee World* Vol. 59 No. 1 1978 and Vol. 59 No. 2 1978.

Reinhardt, J.F. 1939 Ventilating the bee colony to facilitate the honey ripening process. J. econ. Ent. 32: 654-60

Ribbands, C.R. 1953 The Behavior and Social Life of Honeybees. Stanger, W. 1964 Water Your Bees, *Univ. of California Newsletter*.

MONTHLY HONEY REPORT

(Continued from page 62)

Region 6

Early portion of December was very mild in Kentucky. Bee clusters are strong and stores are sufficient. Honey continues to move at retail but has shown some signs of slowing. Some early feeding in Tennessee as early winter has been mild and bees have consumed stores. Short on moisture which could affect spring honey flow unless some heavy rains are received. Honey sales are steady in Tennessee with bakery grade honey in demand. Very little honey still in the hands of producers.

Region 7

The price of local honey is up in Oklahoma but is in short supply. Due to having no fall honey flow bees did not build up well and are not in good condition this winter. High cost of sugar discouraged fall feeding. Packages and nucs demand will exceed supply in the spring in parts of the area. Arkansas is about 7" behind in rain fall but bees in good condition due to good fall honey flow. Will need rain fall soon for spring honey flows. Some honey packers are out of honey. Honey moving well at retail due to holiday sales and the price of sugar.

Region 8

Weather has been unusually mild in this region. Bee flights in December reported in Montana, Colorado and Idaho. Precipitation is below normal in western Colorado and snow fall short in the mountains of Montana. Large increase in hobby and sideline beekeepers in Montana and legislation planned to give more strength to beekeeping administration edicts on colony spacing and location.

Demand for honey at retail level is above normal and supplies of honey has been short in some areas for packers. Nearly all honey in eastern Idaho has moved into packers' hands. Very little honey remains in beekeepers' hands in Colorado by the end of the year. One Idaho beekeeper has placed 4,700 colonies under almond pollination contracts at \$23.00 per hive. Contracts were signed by year's end.

Region 9

Retail honey prices are reported up in Oregon, but wholesale prices holding or down a little.

In California almond pollination



contracts are mostly from \$20.00 to \$24.00 per colony; alfalfa contracts at about \$18.00 to \$22.00 per colony. Colonies are in excellent condition due to favorable fall weather and late blooms. Trading in honey was slow to moderate with buyers for packers cautious due to advancing interest rates. Some honey being purchased from China and Canada. Majority of 1980 crop has been sold by Washington beekeepers; and retail sales have been fair to good. Imports have kept state side beekeepers from being able to get more for their honey, producers feel. Wholesale prices have remained steady for some eight months but are expected to change soon, since retail prices have increased.

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SIFTINGS

(Continued from page 95)

The purpose of commercial beekeeping is not to "exploit" but to develop and make use of the thousands of tons of honey going to waste every year in these areas because there are no bees to collect the honey. These "cottage" beekeepers Mr. Spence mentioned can never develop large honey production in my opinion. In Mexico, some years ago, this was tried. Hundreds of colonies of bees were given, along with instructions to small farmers, with the idea of supplementing their diet and income with honey. Within a year, all that was left were empty hives eaten up with wax moths. If Mr. Spence goes back to visit these cottage beekeepers he helped start, I am willing to bet he will be lucky to find even one hive with bees still alive.

There are very few experienced commercial beekeepers in Central America and it will take years before any of them gain the experience to become efficient honey producers. In my opinion the only way to develop commercial beekeeping in these areas is to have experienced beekeepers from the US, where expansion in beekeeping is no longer possible, go into business in Central America and teach them commercial beekeeping by example as Miel Carlota did in Mexico. In Central America, as in the US, beekeepers are born, not made. Very few have the ability or the interest to become successful beekeepers, under the best of conditions. A commercial beekeeper from the US that decides to make his "fortune" in beekeeping in Central America I agree, must face the greatest obstacles of all in these countries, namely, politics, unstable government and even expropriation of all your property. It is a gamble for high stakes.



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F.D.A. TO REJECT PETITION TO LABEL HONEY

THE FOOD AND DRUG AD-MINISTRATION is expected to alert health professionals about the problems of infant botulism but reject a petition from the Center for Science in the Public Interest asking the agency to put warnings on honey containers that use of honey may cause infant botulism.

The FDA will consider publishing this information, and others of similar nature, if a single food or group of foods is identified as a high risk factor for infant botulism. The publication will be in FDA's DRUG BULLETIN.

The Bureau of Foods has ordered a survey to determine the incidence of Clostridium Botulinum spores in honey, cooked fresh carrots, dry infant cereal, commercially canned fruits, commercially canned fruit juices, corn syrup, dry commercial baby formula, regular cow's milk, non-fat dry milk, and sugar. (See Food Chemical News, 7/28/80 Pg. 16).

Apparently FDA is not convinced that honey contains more botulinum

(Continued on page 100)

FEBRUARY 1981

F.D.A. TO REJECT PETITION TO LABEL HONEY (Continued from page 99)

organisms than other foods or represents a greater risk than other infant foods.

The American Academy of Pediatrics, the American Medical Association and the Centers for Disease Control have all taken the position that since honey is not essential in infant nutrition it would be prudent not to feed honey to infants.□

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A JOINT research-extension position has been established on a temporary basis and the position has been filled by Dr. Basil Furgala of the University of Minnesota. Dr. Furgala has taken on these new duties since January 1, 1981. At this time the position is being filled on a temporary "inter-agency exchange basis" for a period of six months which can be extended. This procedure made it possible to act quickly rather than going through the lengthy process of getting approval for a new permanent position at this time.

This position will be joint between Agricultural Research and Extension. The incumbent will serve half-time as the National Research Program Leader on the Crop Production Staff, Agricultural Research Program Leader on the Crop Production Staff, Agricultural Research, Science and Education Administration. Major emphasis will be in the area of research on crop pollination, factors affecting pollinating effectiveness of honeybees and other species of bees, biology, nutrition, behavior, management and diseases of bees and the effects of pesticides on bees.

The encumbent will also serve halftime with SEA Extension, Agriculture, Plant and Pest Management Sciences as Program Leader, Crop Pollination and Bees. This staff is responsible for providing national leadership in determining educational needs and program design with respect to plant production (including crop pollination and apiculture) with pest management. ITALIAN PACKAGE BEES AND QUEENS NO DRONES

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

WANTED — Booklets on beekeeping written by Eugene L. Pratt, pen name SWARTHMORE. Cira early 1900's. J. Oliver, 1807 Wexley Road, Bloomington, IN 47401.

ALMOND POLLINATION NEEDS YOU. Build your colonies while making money. POLLINATION CONTRAC-TING. A brokerage firm now arranging contracts and offering reliable service in Central Calif. Hicken 209-823-1386.

EXPERIENCED BEEKEEPER seeks working partnership with northern operator; can provide seasonal labor in the north, plus wintering, spring build-up and queen rearing during the off-season, in the south, at his farm, located near the Texas/Oklahoma border. Resumes and references exchanged upon request. Reply to **Gleanings In Bee Culture**, Box RG, P.O. Box 706, Medina, Ohio 44256.

WANTED BEEKEEPERS interested in saving money on their spring feeding program. Have large quantity of hard candy available. Price substantially below that of sugar. Richard Barniak, Morgan Gulf Rd. Turin, NY 13473, 315-376-6947.

ROYAL JELLY

SUPER STRENGTH Royal Jelly capsules, 100 milligrams per bottle of 100, \$12.50; five bottles, \$60. Prairie View Honey, 12303 12th St., Detroit, MI 48206.

PURE FRESH Royal Jelly, 2 oz. bottle, \$19 pp.; 1 lb. \$120. Prairie View Honey, 12303 12th St., Detroit, MI 48206

POLLEN

FRESH, PURE, Bee Pollen available in 1 pound lots, \$6.50 per pound; 10 pound lots, \$5.90 per pound. Large lots, ask for price. Hubbard Apiaries, Inc., Onsted, Mich. 49265.

BOOKS

FIFTY YEARS AMONG THE BEES, Dr. Miller's classic now reprinted. \$7.95 softcover, \$12.50 hardcover. \$1.00 postage. Molly Yes Press, RD 3,New Berlin, NY 13411.

HELP WANTED

WANTED: Experienced beekeeper for Texas — North Dakota migratory operation. Year-around employment. Send resume and salary requirements to Gleanings in Bee Culture, Box EA, P.O. Box 706, Medina, Ohio 44256.

SINGLE MAN with a little experience, to work raising queens in south and producing honey in north. Howland Apiaries, Berkshire, NY 13736, 607-657-2517.

A BEEKEEPER with at least 3-5 years experience in all aspects of queen rearing; to work in Texas in spring and N. Dak. the rest of the year. The annual salary wil be \$10,000 plus a bonus based on honey production, which could be up to \$18,000; also paid vacation and holidays, health ins., and retirement program with housing available in ND. Reliablty and honesty a must. Dick Ruby, Milnor, N.Dak.58060; 701-427-5263 or 713-423-5143.

BEESWAX

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A.I. Root Co., Medina, OH 44256; Council Bluffs, IA 51501; San Antonio, TX 78204. Box 9153. BEESWAX WANTED — Small lots to truck loads. Write or call. DONALD SCHMIDT, 859 W. 9th Street, Winner, SD 57580. PH: 605-842-0350.

PROPOLIS

PROPOLIS U.S.A. has stopped buying propolis until further notice. Sorry, it's moving as slow as the rest of the economy. Will notifty when market picks up again.

HONEY FOR SALE

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

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

HONEY IN 60's FOR SALE. Bedford Food Products Co., 209 Hewes St., Brooklyn, New York 11211. Telephone: 212-EV4-5165.

CLOVER, ORANGE, U.S. and Yucatan Wildflower, in sixties. Other flavors and bakery grade available. MOORLAND APIARIES, 5 Airport Dr., Hopedale, MA 01747.

NORTHERN MICHIGAN light clover honey in drums. C. W. Scott, 616-947-2524.

HONEY WANTED

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

WANTED — HONEY, all grades, Send samples and price. M. R. Cary Corp., Box 818, Syracuse, N. Y. 13201.

HONEY WANTED—Any quantity in cans or drums. Walker & Sons Apiaries, Box 415, Milford, Mich. 48042. Phone: 313-684-2935.

WANTED: All grades of honey in 60's or drums, truck or rail, car load lots. Send sample and price to DUTCH GOLD HONEY, INC., 2220 Dutch Gold Dr., Lancaster, PA 17601 BUCKWHEAT, light and light amber honey. Bedford Food Products, Inc., 209 Hewes St., Brooklyn, N. Y.

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

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

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

WANTED—All grades of extracted honey. Send sample and price to Mac-Donald Honey Co., Sauquoit, New York 13456. Area Code 315-737-5662.

WANTED — White Extracted or Comb Honey. Send sample. Millersport Honey Co., Millersport, Ohio, 614-862-8594.

IF YOUR honey is better, I'll pay you more. U.S. or Foreign. Cans, drums. Sample: Allan Hardman, Kawana Honey Company, 2100 Kawana Springs Road, Santa Rosa, CA 95404. (707) 528-4377.

HONEY WANTED: All varieties, any quantity, also comb honey. Office 612]464-4633. Residence 612-464-7476 — 612-462-4774. Nature's Treat, 6764 W. Bdwy., Forest Lake, MN 55025.

SEEDS

SEEDS OF HONEY PLANTS. 15¢ postage brings descriptive price list catalog; \$3.25 for one packet seed each 5 annual bee flowers and catalog. Pellett Gardens, Atlantic, lowa 50022.

BUCKWHEAT! WHITE BLOSSOM SWEET CLOVER! We have both of these to offer in any size bag that you need. Call or Write: CAUDILL SEED COMPANY; 1201 Story Avenue; Louisville, KY 40206. Call us Toll Free: Inside Kentucky: 1-800-722-5011; Outside Kentucky 1-800-626-5357.

BEE SUPPLIES FOR SALE

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

RADIAL HONEY EXTRACTORS-5 frames, 6³/₄ or 5¹/₂". Patented. Wholesale and retail sales. GAMBLE'S HONEY EXTRACTOR CO., P.O. BOX 7997, Greensboro, N.C. 27407, Ph. 919-299-3973 Day or Night.

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

BEE EQUIPMENT manufacturers-Oregon pine woodenware, super ends rabbet-joint and beekeeping supplies, smokers, excluders, etc. Write or Call for commercial prices:MONCRIEF BEE SUPPLIES, Post Office Box 625, 1105 Lakewood,Lakeland, FL 33802. (813).858-6754.

WAXMASTER CAPPING SEPARATOR...melts cappings fast with temperature controlled, circulated hot water, electrically heated. Pack fine quality honey with the PAC-KING HONEY BOTTLING SYSTEM. All equipment stainless. Free brochure. HONEY SALES COMPANY, Mfrs., 2817 No. 2nd Street, MIN-NEAPOLIS, MINN. 55411.

WE CARRY A COMPLETE LINE OF BEE SUPPLIES and containers. Write for price list. E & T GROWERS. R. 1, Spencerville, Ind. 46788. (A suburb of Ft. Wayne). Phone 657-5136.

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

OUR OBSERVATION HIVES, are furniture crafted of beautiful oak and are reasonably priced. Be ready for spring! Write now for free brochure or send \$5.00 for our complete plans and instructions packet. Kawana Honey, 2100 Kawana Springs Rd., Box G,Santa Rosa, CA 95404, Phone (707) 528-4377.

FOR SALE: 5 Frame Nucs. Placed in your equipment. Italian bees. Available May 1. \$35.00. \$5.00 per Nuc Deposit to Book. Dick's Bees; Belmont, NY 14813. Ph; 716-268-7684 or if no answer 716-268-7850.

ROUND SECTION EQUIPMENT. Write for list of dealers and Special Offer. ROSS ROUNDS, INC. P.O. Box 485-C, Massillon, OH 44648.

For Sale: Radial Honey Extractors-5 frames, 6 3/8 or 5 1/2". Patented. Wholesale-Retail. Factory made. Gamble's Honey Extractor Co. P.O. Box 7997, Greensboro, N.C. 27407 Phone 919-299-3973 Day or Night.

"CONICAL BEE ESCAPES AND TEMPERATURE CONTROLLED VEN-TILATORS is our specialty. For free information write to: Trafalgar B. Equipment, 3371 Trafalgar Road, RR 1, Oakville, Ontario, Canada L6J 422."

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

BEE SUPPLIES & BOTTLES. Telephone Evenings 934-6676. Lewis Smith, 43 Puritan Way, Duxbury, MA. 02332.

PINE BEE SUPPLIES

*Beehives dovetailed — \$3.50 each *Super 5³/₄" or 6[%]/₈" — \$2.50 each *Frames heavy duty per 100 — \$28.80 *Frames heavy duty per 1000 — \$250.00

*Lids or bottoms (migratory) — \$1.75

each or \$3.50 per set

Allow manufacturing time on large orders. Marvin Smith Apiaries, Rt. 1, Parma, Idaho 83660, Phone 208-722-5278 days.

BEESWAX, old combs and scrapings collecting? Process it easily and economically with the BEESWAX PROCESSOR. Write Shots Inc., 4418 Josephine Lane, Robbinsdale, MN 55422.

BEES & QUEENS FOR SALE

WE USE ALL POSSIBLE CARE in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution. NUCS — 81 Starlines. Your equipment — you haul. \$18.00 — 5-6 frames brood by May 1st. Homestead Apiaries, RR 1, Box 119, Cannon Falls, MN 55009.

MARYLAND BEEKEEPERS and adjacent states: Package Italian bees for pickup April 11-12 near Frederick, MD (queens fed Fumidil-B). 2lb. pkg. \$21.00; 3lb \$25.50. \$4.00 per pkg. books order. Ernie's Apiaries, 9933 Kelly Rd., Walkersville, MD 21793. 301-898-9746.

NORTHERN CALIFORNIA ITALIAN QUEENS. April 1-May 15. 1-5 \$6.00, 6-25 \$5.50, 26-99 \$5.25, 100 up \$5.00. After May 15: 1-5 \$5.50, 6-25 \$5.00, 26-99 \$4.75, 100 up \$4.50. Ship air mail post paid and insured. Live delivery guaranteed. Backman Apiaries, 1801 Calin Lane, Anderson, CA 96007. Phone 916-365-4029.

NUCS or SINGLE COLONIES-OUR BEST NORTHERN STOCK- 1981 QUEENS. Now taking orders for May. We are located in South Central NYS. HOWLAND APIARIES, Berkshire, NY 13736. (607) 657-2517.

TWO HUNDRED HIVES, 300 7-5/8" supers. 70% 1980 queens. Fireweed locations, apple pollination. 10 frame equipment, inspected for shipment to California. Russell Hardin, 661 Worline Rd. Bow, Wash. 98232, phone: 206-766-6170.

ITALIAN QUEENS — APRIL 1-MAY 5: 1-5 \$6.50, 6-24 \$6.25, 25-99 \$6.00, 100-499 \$5.50, 500 up \$5.00. AFTER MAY 5 20% off RICKARD APIARIES, Rt 1, Box 2241, Anderson, CA 96007. 916-365-5551; 916-365-6556.

FIVE HUNDRED HIVES; locations available. Lots of extra equipment. Will sell all or part. Bill & Kit Jones, Rt 4, Box 31, Harrisonburg, VA 22801. Phone 703-867-5286.

THREE HUNDRED SINGLE STORIES — Available May 21. Waubay, S.Dakota or Hastings, N.Dakota. 20% to book balance 15 days before pickup. \$48.00 each. Richard Walters, Waubay, S.Dakota 57273. 605-947-4532 After 6:00 p.m.

PACKAGE BEES delivered to Michigan's Upper Peninsula. Escanaba, Marquette, Iron Mountain, Ironwood, Houghton, John Lewis, Box 110, Houghton, Michigan 49931. May 1st. 200 standard hives with new queens. \$45.00,20% booking. 813-635-3381.

MICHIGAN BEEKEEPERS: I will be hauling package bees from Georgia again this Spring. For prices, dates and information call Don Reimer (517) 695-9031.

NUCS — \$25.00. Three frames with young laying queen. Hybrid stock. Call for quantity discount F.O.B. Dixie Honey Company, E.A. Cannady, RT 3 Box 2068, Shallotte, NC 28459. PH: 919-579-6036.

PACKAGE BES delivered to Wisconsin near Green Bay, Eau Claire and at my home. Ronald Hazard, RT 2, Poynette, Wis 53955. Phone: 414-992-3217.

2-lb. packages. Italians w1/2 queen. Order early. Pick up Owatonna mid-April 507-451-7713. Gene Karaus, R2, Owatanna, MN 55060.

PENNSYLVANIA DOUBLE-GRAFTED QUEENS. Northern hardy stock. Mating nucs fed Fumidil-B. Book now with payment. Live delivery guaranteed! 1-5 \$6.75; 6-up \$6.00. Marking 50¢. James Mentzer, 717-354-8042, RD 2, New Holland, PA 17557.

FOR SALE

USED — HONEY FILTER.USED — 50 FRAME EXTRACTOR.USED — 80 FRAME EXTRACTOR — LIKE NEW.USED — HONEY PUMP.LARGE CAPPING MELTER — LIKE NEW. HONEY DRUMS, GOOD CONDITION. HUBBARD APIARIES, BELLEVIEW, FL 32620. PHONE: 904-245-2461.

A NUMBER of collector's items books. Langstroth, Miller, Root, Etc. Write for details. D. L. Crowson, P.O. Box 404, Petal, MS 39465.

ROOT STAINLESS 45-frame extractor with motor (excellent). Clean yellow capping wax. 4-frame nucs delivered to Indiana. White honey in 60's & drums. Clover Blossom Honey, Box 75, LaFontaine, IN 46940, 317-981-4443.

ALL OR PART of my 1,000 colony operation plus 1 acre with honey house and 2 bedroom mobile home. Financing available at low interest rate. Write to Coulee Bee Farms, Whitehall, WI 54773.

BEEFEED POLLEN — No minimum order. \$2.50 to \$3.50 per pound, plus shipping. Inquire: TETON BEE CO., Box 176, Victor, Idaho, 83455.



NEWS AND EVENTS

(Continued from page 94)

Instructor is Harold Killins, BSA — a practical beekeeper. Apply to: Dan Link, Fanshawe College Continuing Education, 520 First St., Bay 20, London, Ontario. Phone (519) 452-4444.

MASSACHUSETTS Middlesex County Beekeepers' Assn.

The regular monthly meeting of the Middlesex County Beekeepers' Association will be held Saturday, January 31, 1981 at 8 p.m. at the Waltham Field Station, 240 Beaver Street, Waltham, Mass.

CONNECTICUT Beekeeping Short Course

A short course will be given at the White Memorial Conservation Center and Museum, Litchfield, CT. The instructor will be Prof. Al Avitable of the Univ. of Connecticut and co-author of *The Beekeeper's Handbook*.

The course will consist of three Saturday morning and afternoon sessions (bring a lunch). Sessions begin with lectures at 9:30 a.m. immediately followed by trips to bee yards for demonstrations. Demonstrations will include: How to hive package bees and swarms. How to rear your own queens, how to divide colonies, how to manage a two queen colony and many other demonstrations related to bee management.

The dates for the course will be March 28, April 4 and April 11. Cost will be \$25.00 per person for entire course. For additional information contact the museum at 567-0015 or Al Avitable at 757-1231 (area code 203).



Italian Bees and Queens

Swarms shipped only from our Louisiana bee farm. Queens from Louisiana and Kentucky via Prepaid Air Mail. Clipping or painting queens 40¢ each extra. Due to slow parcel post delivery we are shipping swarms only to the following states:

LOUISIANA MISSISSIPPI ALABAMA ARKANSAS

TENNESSEE KENTUCKY OHIO

ILLINOIS MISSOURI

INDIANA

Queens \$6.25 ea. Write for prices on 24 or more. 2-Ib. swarms w/queen, wt. 8 lbs......\$19.00 3-Ib. swarms w/queen, wt. 10 lbs...... 24.00

THE WALTER T. KELLEY CO. Clarkson, Kentucky 42726

POLLEN SUBSTITIUTE

Feed your bees pollen substitute early in the spring to stimulate brood rearing so as to divide, them later on. Much cheaper than buying package bees, — however, be sure that they have plenty of honey or they may starve before a honey flow comes on. Especially valuable for early package bees received before natural pollen is available. This one item replaces the previous mixture containing **EXPELLAR PROCESS** SOY FLOUR which is not longer available. This is a HI-NUTRIENT, HEAT TREATED SOY FLOUR, HIGH PROTEIN, LOW IN FAT, MOISTURE AND FIBER, WITH AM-PLE ASH, CARBOHYDRATES AND NITROGEN SOLUBILITY, — and the best part about this is that tshe price is 50% LESS than last years mixture.

This is a fluffy flour and can be easily blown by a light wind so it is far better to mix it with sugar syrup into a patty form which should be placed on treated paper, or thin sheets of plastic, directly over the cluster on the top bars. This POLLEN SUBSTITUTE will greatly stimulate brood rearing but care should be taken that the colonies do not run out of stores and starve before the honey flow. Cat. No. 72 5 Pounds Pollen Substitute 71bs. \$2.50 Cat. No. 73 25 Pounds Pollen Substitute 27 lbs. \$8.50 Cat. No. 74 100 Pounds Pollen Substitute 101 lbs \$27.50

THE WALTER T. KELLEY CO. CLARKSON, KENTUCKY 42726

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GLEANINGS IN BEE CULTURE

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ITALIANS		19	81 PRICE L	IST		
TALIANS		PACKA	AGE BEES & Q	UEENS		STARLINE
IN LOTS OF	QUEENS	2-POUND	3-POUND	4-POUND	5-POUND	
		& QUEEN	& QUEEN	& QUEEN	& QUEEN	
1-9	\$6.60	\$20.00	\$25.50	\$31.00	\$34.50	
10-99	\$6.40	\$18.75	\$24.50	\$29.25	\$33.50	
100-up	\$6.00	\$18.00	\$23.50	\$27.50	\$32.50	
STARLINE QUE	ENS ARE 75¢ E	XTRA.				
		PARCEL F	OST SHIPPING	CHARGES		
			1 Pkg.	2 Pkg.	3 Pkg.	
	2 Lt	s. W/Queen	\$4.50	\$6.50	\$8.00	
	3 Lt	os. W/Queen	5.00	7,00	8.75	-
	4 Lt	os. W/Queen	5.75	8.50		
	5 Lt	os. W/Queen	6.25	9.25		
SHIPPING CH	IARGES INCLU	JDE POSTAGI	E, SPECIAL H	ANDLING AND	INSURANCE.	
PLEASE ADD	THESE CHAR	GES TO YOU	R PARCEL PO	ST ORDERS.		
QUEENS ARE	SHIPPED PO	ST PAID.				
Packages can accompany of	only be shipp rder. Prices are	ed parcel pos e subject to c	t. To book par hange.	cel post orders	s, check or mone	ey order must
Live delivery of	on package be	es can only b	e guaranted u	ntil May 20th.		
Marking and/g	or clipping of c	ueens is 50¢	extra per que	en.		

WE HAVE THE LABELS THAT SELL!

Approximately 20 different label designs to choose from in a variety of colors and styles, including our newest honey label in full color, with the beekeeper in mind. Send for your free samples today, you'll be glad you did.

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Branch at 1106 East Grand St., Elizabeth, New Jersey 07201 Send for a free catalog for the listing of your nearest Root Dealer.