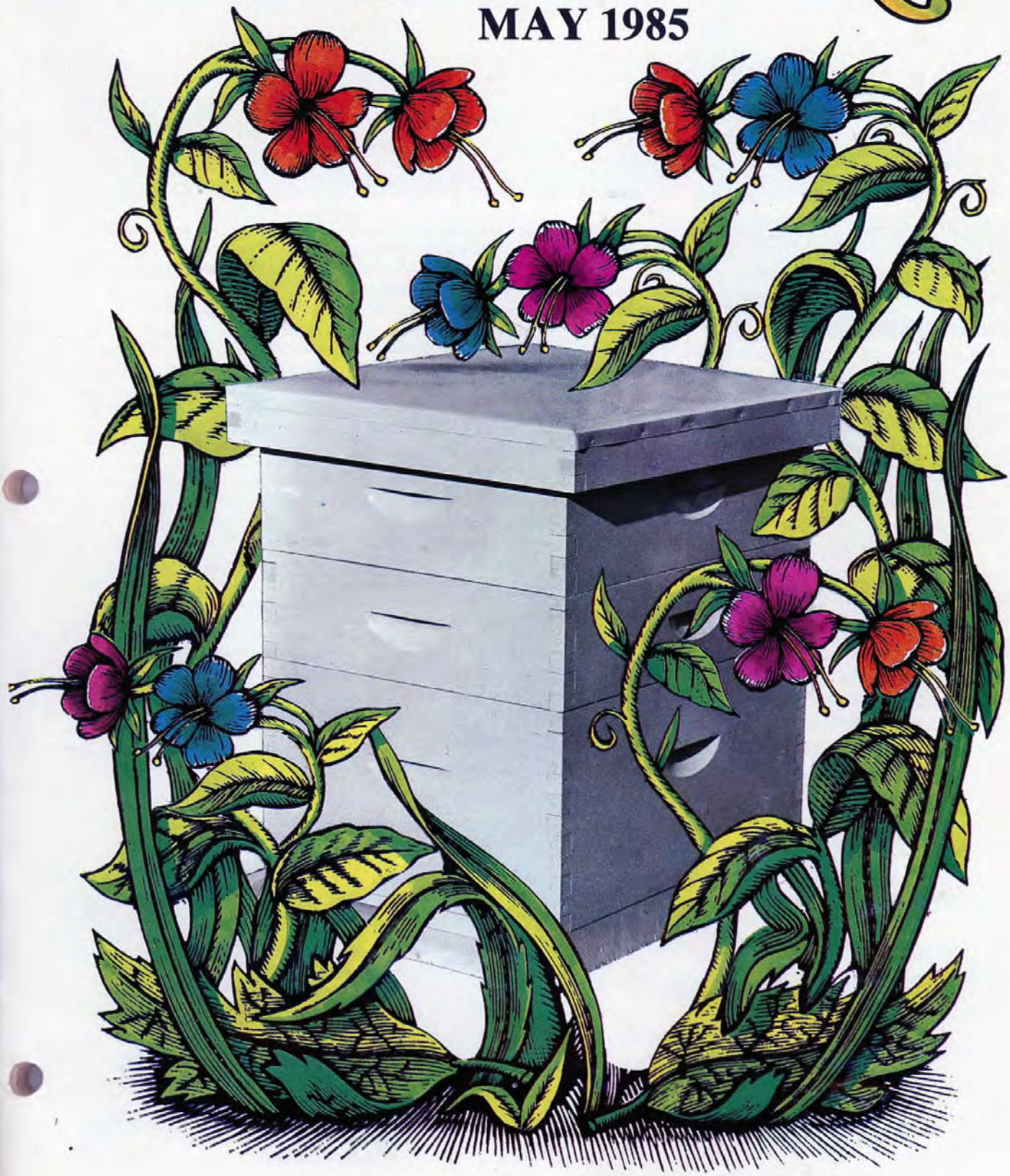
GLEANINGS IN BEE CULTURE

MAY 1985



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CONTENTS

COVER STORY

A May splash of color. Some of you have written asking about last month's cover. It features A.I. Root working his bees, circa 1920. He is being helped by his grandson, Alan. See special offer on page 227.

NOTES FROM THE BEEYARD

by Mark Bruner

APIANOMICS: MAKING SENSE OUT OF THE DOLLARS AND CENTS OF U.S. BEEKEEPING

There have been two "hot" items in beekeeping news since this past July. The *acarapis woodi* infestations in the U.S., and the infestation of the U.S. beekeeping industry by Reaganomics. Depending on whom you talk with, the latter might well be considered more potentially destructive than the former. After all, the mite is a biological factor, presumably controllable and/or tolerable. I've found few folks of the opinion that politicians and bureaucrats are similarily manageable.

But, before getting into all of that, let's have a quick update of the acarine situation. For all practical purposes, the federally supervised national survey for mite infestation is completed. In total, ten states were found to have or have had infestations; all of which have been previously reported in this and other journals. Whether or not this constitutes "widespread" infestation, is debatable, but it seems likely that, perhaps by press time of this issue, the federal government will drop its quarantine restrictions realtive to acarine. State regulations requiring health permits for interstate movement will, of course, be applicable and can be expected. On the whole, the initial fevered concern over acaraine seems to have diminished. It seems now unlikely that Canadian borders will close as a result of infestation. Surveying methods have been implemented for the purpose of establishing health certification; research studies are underway to further our understanding of this parasitic beast, and beekeepers in general are growing (for better or worse) to be of the opinion that acarine will cause minimal colony management problems.

From Washington, however, the message is far less upbeat. Regardless of whether or not one agrees with the wisdom of dropping the honey price support loan program from the 1986 budget (as has been done in the administration's proposed farm bill), it is quite essential for every beekeeper, hobbyist or commercial, to consider the possible tangles and ramifications of this action.

To begin with, I seems that U.S. beekeepers tend to think only in terms of their own particular circumstances. Hobbyists ignore the financial problems of commercial operators; commercial beekeepers often regard hobbyists as insignificant. The foolishness of such bias becomes manifest at times like this when cooperation between all stratums of beekeeping pose obvious advantages in helping ourselves through tough times. As an extension of that, we must all acknowledge our own negligence as a contributing factor to our current political and economic problems. There can be no doubt that, as a whole, our industry has been far less creative and innovative in marketing honey as we could have been. There is inefficiency that can not be excused and, perhaps, deserves to be done away with, either through improved procedures (necessity being the mother of invention) or by abolishing the systems by which government tempted us away from doing many of the things we should have been doing for many years. That is not to say that even the best of preparations could have permitted U.S. producers to compete with radically inexpensive foreign imports; but such imbalances are always temporary, and in that regard, a stronger base for U.S. beekeeping would have helped many more folks weather the storm. Similarly, our major beekeeping organizations have hurt themselves. Despite numerous accomplishments (and, yes, the frequently repeated whine of how little money we have to work with is as much a true inhibitor to progress as it is an annoying excuse), the national organizations give, to many, the impression of devisiveness due to a collective history marred with political infighting, bruised egos and cronyism. Interestingly enough, our major associations do not differ politically on numerous subjects, and it's absolutely unforgivable that they do not cooperate more on these or numerous nonpartisan issues. This past weekend I attended an inter-industry conference at which there was representation from the Southern States Beekeeping Federation, the American Bee Breeders Association, the Eastern Apicultural Society, the Western Apicultural Society, the American Honey Producers Association, the A.I. Root Company, the Speedy Bee, and Gleanings In Bee Culture. Efforts were put forth, in among other areas, for the purpose of promoting a much needed federal extension agent's position, and the organization of a Congressional reception, for later this year, at which the entire industry could exert itself in an effort to make our nation's legislators more informed about the nature and problems of U.S. beekeeping. This group of people, representing associations and businesses, was called together by the Southern States Beekeeping Federation; a fact which, in my mind, removes its activities from the suspicions of commercial motivation. If others do not join in with this spirited, cooperative initiative, it is a shame and a pathetic indication of what we can expect of future progress.

Having accepted some of the blame, we must also recognize how politics has caught us up in extremely complex situations. On one hand, abolishing the federal support system for honey might save the nation some money. On the other hand, it will put beekeepers out of work. Some of the folks who will go out of business probably deserve to go out of business. Others, sadly, will be caught in the squeeze through no mismanagement or business faults of their own. One of the undefined aspects of the entire debate is exactly what consequences the dropping of the support system would have. Commercial beekeepers, of course, will have us believe that they'll all go out of business. That won't be so, but sometimes our own statistics relative to the cost of producing a pound of honey, etc., are so vague that it is difficult to make sound, supported arguments about the ultimate impact.

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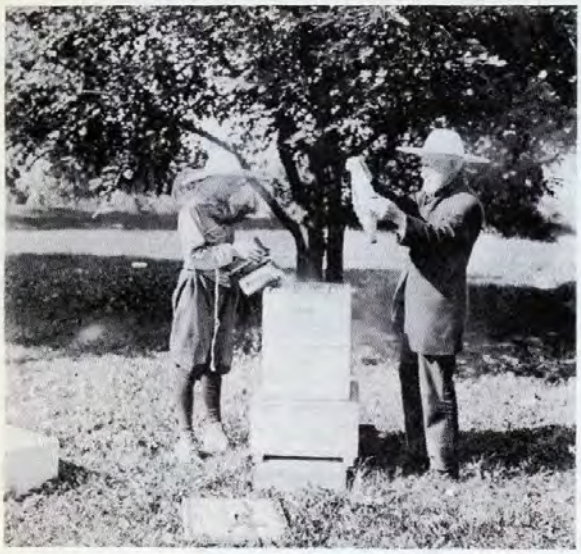

One of the few existing photographs of A.I. Root working his bees. He is being helped by his grandson, Alan. Catalog number G0486. Title: ROOTBEES

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The government, for its part, has argued that by raising pollination fees, beekeepers could make a go of it despite the circumstances dictating the honey market. In one sense, it is true that we have done a miserable job in cultivating this dimension of our market. However, many beekeepers are locked into forage areas where they must rent from landowners. It is ridiculous to expect that a landowner, comfortable from years of collecting rent PLUS receiving free pollination services, will be likely to take pollination fee demands seriously. Furthermore, the assumptions of the government that wild bees will compensate for any decline of domestic colonies, probably will not be borne out by fact. many entomologists believe wild populations to be inadequate in number and ability to effectively pollinate the half of our crops which are not native to this country. The example of certain Arizona alfalfa crops, producing approximately 400 pounds of seed per acre before pesticide use depopulated domestic pollinating bees a few years back, and only about 100 pounds per acre today, suggests the danger of the government's assumption. Moreover, such ill effects may not be readily noticed, but may accumulate in severity until real, lasting harm is done. An irony in this is that the U.S. beekeeping industry can expect little or no support from U.S. growers who require bee pollination. Although many of them recognize the vital need for honeybees, they are also bound by economics. Any situation causing commercial beekeepers to compete more between each other for limited pollination business, promises to drive existing pollination fees down.

To some (this writer included), the long term solution to our industry's problems lies in promotion and education. Later this spring, hearings will be held on the National Honey Promotion bill which was recently signed into law. We will be providing more information about that program in upcoming months. Whether that system of assessments on honey will provide necessary relief remains to be seen, but it is certainly movement in the proper direction. Others see political relief as necessary: specifically, tariffs and/or import restrictions. Therein lies the stickiest of philosophical considerations. To apply such measures would be contrary to the precepts of free trade and creates the potential for economic retaliation by trading partners. But it is not as simple as all that. Free trade is not necessarily fair trade. Our 1 cent per pound tariff on imported honey is far below the rates established by other countries. Therefore, we are made uncompetitive by regulations beyond our control. What then should the U.S. government do? It could respond in kind with higher tariffs or import quotas, or it could seek to encourage trading partners to become more liberal in their application of import laws. Although it is generally considered unlikely that the current administration would consider quotas or tariffs, it is interesting to note that a recent Senate vote unanimously called for relief from Japanese car imports, and that a U.S. Commerce Department action cleared the way for penalty duties to be applied to Canadian pork imports. In the next issue of GLEANINGS, we'll discuss a Senate bill which, if successful, will call for a Section 22 investigation of honey imports. Should such an investigation demonstrate economic hardships to the U.S. honey producer caused by imports, protective action is theoretically mandated. In actuality, nothing may occur, but the bill is thought to be a psychological tool in convincing legislators of exactly how hard hit by imports our industry is.

Disconcertingly, the entire matters seems to boil down to the old cliche about the squeakiest (and wealthiest) wheel getting greased. Senator Jesse Helms, for example, in his proposed farm bill (as alternative to that of the administrations), sanctions the continued quota system for sugar, which in effect protects domestic sugar concerns from importation of 3 - 4 cent per pound sugar available on the world market by recommending continuation of the U.S. price support program for sugar at 18 cents per pound. Yet, in the next paragraphs, he suggests a five year phase-out of the honey price support system through which support would be given at 75-85 percent of the past five year's high and low (averaged) market prices for honey. Although some might find that preferable to the administration's outright abolishment of the price support system, the levels of approximately 37.2 cents per pound the first two years of Helms' proposal, declining to 27.3 cents per pound the fifth, is, in the opinion of most commercial producers, a slower but equally certain death knell for their businesses. Even more glaring, of course, is Helms' rabid protection of the tobacco industry -- understandable in the context of its economic importance in his home state of North Carolina, but questionable in the respect that the American Cancer Society has estimated direct health costs of smoking at $15 billion annually, compared with an annual tobacco crop value of 2.3 billion. Obviously, the purity of a product isn't necessarily its salvation.

Throughout the entire debate, pollination seems to be the hidden factor. Despite the fact that pollination contributes somewhere in the neighborhood of 19 billion dollars to the food producing industry (far in excess of the 150 million dollar honey business); despite the fact that some food crops would be non-existent or costlier without domestic bee pollination; despite the fact that many types of wildlife have their habitats intricately linked to the activities and prosperity of bee colonies, it remains the up-front millions of dollars spent on the honey loan program that seem to stick in the minds of lawmakers. Is this shortsighted. Probably. But then, too, we have sometimes been guilty of shortsightedness, too. It may be too late to change immediate momentums, but it is never too late to look ahead. What specifically can we do? What we should have started doing long ago: working more closely TOGETHER; prioritizing what minimal moneies we have for the purposes of education and generic promotion; providing ourselves, in whatever way we can, better procedures for gathering statistical information relative to the value of our industry; developing underused aspects of marketing hive products and cultivating pollination services.

There is some speculation that the farm bill will not pass Congress this session; and that if there is such a failure, the following year, being an election year, may not produce significant changes. The hope, on the part of many is that the honey support system can escape total elimination or (in that politics, as they say, is the 'art of compromise') that it can be altered only minimally. Even if that is to be the way it will be, none of us can neglect the fact that somewhere at the heart of this complex, confusing world of Apianomics, is the inescapable truth that our industry's health and survival depends upon our individual and collective willingness to act and react. In all cases, we will be affected, to varying degrees, by circumstances out of our reach. It is our responsibility to identify what we have the power to change or control with regard to our future. Then we must take such things into our own hands. If we do not, someone else most certainly will.

OHIO NEEDS AN EXTENSION POSITION!

Even if you are not an Ohio beekeeper, I hope you'll read this and help out. Extension positions in beekeeping, so valuable to maintaining the educational and promotional progress of apiculture, has taken a severe beating in most parts of the U.S., with positions left vacant or only partially filled. At present, there seems to be a some possibility that the Ohio legislature might approve funding to help fill this void in Ohio, but it is necessary that Ohio beekeepers write their state legislators IMMEDIATELY pushing for the extension position to be filled. For those of you, out of state, who want to lend support in pro-

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Last minute report Acarine infestation has been confirmed in Meigs, Georgia causing suspension of Georgia's package bees and queen shipments into Canada. This has been and isolated indentification and should not stop domestic buyers from purchasing Georgia stock with health certificates. More in next issue.

The Monthly Honey Report

April 10, 1985

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

Wholesale Extracted — **Reporting Regions**

Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs. (per can) White	45.00	42.00	50.00	35.40	42.00	40.00	33.00	36.00	42.50
60 lbs. (per can) Amber	45.00	40.00	42.00	32.40	33.00	35.00	30.00	34.00	37.80
55 gal. drum (per lb.) White	.52	.54	.50	.50	.64	.60	.55	.56	58
55 gal. drum (per lb.) Amber		.53	.42	.45	.53	.52	.50	.57	.54
Case lots — Wholesale									
1 lb. jar (case of 24)	30.50	24.50	23.95	20.45	25.00	24.00	24.00	24.85	25.20
2 lb. jar (case of 12)	29.50	23.40	22.75	19.20	26.20	22.50	24.00	24.55	
5 lb. jar (case of 6)	32.00	26.00	23.75	24.00	28.50	24.00	26.00	25.00	24.60
Retail Honey Prices									
½ lb.	.90	.83	.75	.78	.90	.90	.89	.90	.89
12 oz. Squeeze Bottle	1.50	1.25	1.35	1.29	1.25	1.35	1.50	1.30	1.19
1 lb.	1.65	1.40	1.35	1.29	1.50	1.55	2.00	1.70	1.40
2 lb.	2.70	2.59	2.65	2.50	2.50	2.60	3.00	2.70	
2½ lb.	3.55				3.55	3.25	3.50	3.25	
3 lb.	4.00	3.75		3.49	4.60	3.85	4.00	3.59	3.40
4 lb.	5.00	4.95		4.69	4.98	4.90	4.75	4.55	
5 lb.	6.52	6.00	4.95	5.80	5.75	5.80	5.25	5.45	5.25
1 lb. Creamed		1.75	1.45	1.49		1.39	1.50	1.60	1.40
1 lb. Comb	2.25	2.00	2.25		2.00	1.85	2.00	1.70	2.25
Round Plastic Comb	1.75	1.75	1.85			2.00	1.75	1.65	1.75
Beeswax (Light)	1.35	1.37	1.10	1.40	1.25	1.40	1.10	1.25	1.50
Beeswax (Dark)	1.30	1.10	1.00	1.25	1.12	1.30	.95	1.15	1.25
Pollination Fee (Ave. Per Colony)	24.00	23.50	27.50	15.00	20.00	21.00	25.00	18.00	25.00

REGION ONE

Vermont reports slow honey sales, ample moisture with bees wintering well. Connecticut pollination fees increased due to mite. Honey prices relatively unchanged with gift packs the best bet.

REGION TWO

N.Y. reports no change in retail market, but an easy winter for bees. Concern about high ABF incidence. Reports that high quality foreign honey is available for 37-44 cents. West Virginia bees active with some winter kill. Honey prices up slightly. Maryland experiencing cool, wet weather keeping bees confined. Some feeding still required. Honey sales steady. PA bees wintered in average condition, but with above normal feeding necessary. Many hives for sale.Honey sales off 30-35 percent from two years ago. NY pollen situation looks good with pussywillow, maple and crocus.

REGION THREE

Sales slow in Indiana, but wintering went well with loss around 8 percent. Some hives carried pollen off wild cabbage 2nd of March. Maple trees budding. Brood good. Keep an eye on food stores. Wisconsin honey sales still very slow. Illinois wintering went well with feeding now going on. Ample moisture. Maple and willows out.

REGION FOUR

Missouri survival rate good with mild spring weather and heavy brood. Honey sales still slow. Some pollen coming in. Moisture heavy.

REGION FIVE

N. Carolina colonies a mixed bag -- some areas very strong; Kernersville reports weakness. Some pollen now coming in.. Moisture inadequate at present time. Honey sales very slow except for Valentine's Day period. Florida orange blossom is over. Flows south of state road 62 were fair to good with some hives making upwards of 90 pounds. Weather dry. gallberry flow questionable.

REGION SIX

Extremely cold in Louisiana until Feb. 20th. Warm since. Slow build-up. 2 weeks behind. Some feeding. Package and queen sales slow. Tennessee colonies wintered well, but stores are short. Sales of honey and package bee demand slow. Kentucky winter loss 10-20 percent. Pollen

Continued on next page

available from soft maples. Temps milder than normal with light rainfall. Equipment sales normal to hobbyists and sideliners as beekeepers relax about the mite. Honey sales slightly stronger.

REGION SEVEN

East Central Oklahoma build up slow with the 3rd wet, cold late spring in a row. Honey selling slow. Fruit in full bloom and clover 6 inches high in other parts of Oklahoma. Texas honey sales weak, but pollen flow heavy due to fruit bloom. Temps 60-80 range first part of March.

REGION EIGHT

Montana bees returning from California almond pollination to pending clover flow. Early March snow aided moisture which will help volunteer clover and alfalfa plants. Irrigated pastures have sufficient water in storage for summer irrigation. Colorado retail honey sales have slowed down. Very little inventory. Some feeding necessary. Willows blooming. Moisture above normal. Temps mild. Low winter loss. Snow in northern Utah valleys about gone. Feeding needed soon. Arizona bees in good spring condition. Fruit and wildflower blooms good with adequate moisture. Retail honey sales somewhat slow.

REGION NINE

Washington winter longer than usual. Alders blooming. Winter loss 10-20 percent. Honey sales steady with prices unchanged. First bee swarm reported in Central Coast California Feb. 12. Almond and seed broccoli pollination ongoing. Almonds paying $24 per box in San Joaquin. Less in Paso Robles area. Watsonville apple pollination $17.50. Central Coast avacado pollination pollination starts mid-March with three month contracts at $45.

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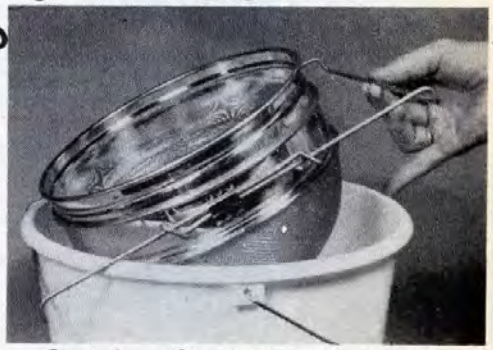

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Pollination

(A talk presented to the Ohio Beekeepers Association, July 1984)

by STEVE TABER of Taber Apiaries 3689 Oak Canyon Lane Vacaville, CA 95688

There has been so much written and discussed about this pollination thing that I suppose some of you must be quite bored by the subject. I know that for the 25 years I was doing bee research for the USDA I was continuously amazed at the hundreds and hundreds of papers published and talks given that essentially repeated the work of Charles Darwin.

Then I bought a small prune orchard in California and all my neighbor farmers also had prune orchards. You wouldn't have any trouble guessing that I soon got into a scrap with one of them because he was going to spray the pesticide Diazanon on his orchard and he told me that some would drift onto my property.

We argued about his point at some length until I ended it with a threat of a law suit if any of that pesticide drifted onto my property. Well, he sprayed with something else and we calmed down. He then said to me that rain pollinates his prunes and he didn't need my bees or any other bees and he would just as soon see all the bees gotten out of our little valley. This fellow was well educated but not well enough. So for all those bad thoughts I have had about all the redundant research done over and over on one plant after another, I now realize that, yes, it's really very necessary.

I just wonder how many of you beekeepers have run into such absurd situations from farmers. So I say that it is absolutely necessary that we not only talk and write about pollination among ourselves but as often as possible to civic and community groups as well. California is a unique and progressive agricultural state and beekeepers here received over 50% of their gross beekeeping income from pollination fees this year. In fact when I talk to groups I tell them that EVERYTHING they eat and EVERYTHING they wear had to be pollinated. Then I say that there are a few exceptions and can anyone name me ONE?

Someone says "leather in shoes" and I say the leather came from a cow and the cow ate the grass and the grass grew from a seed and the seed would not have been a seed unless it had been pollinated. And so on until I have to name the exceptions of salt, metals and cloth made from oil. Then to be as honest as possible I tell them that honey bees do not pollinate lots of plants, such as grass seeds particularly, wheat, corn and sugar cane. But the honey bee is symbolic of the pollination act. And as you all know, symbols are extremely important.

What we really need are some imaginative approaches to pollination problems that will benefit beekeepers. Let's use a rather common farm plant as the illustration — soybeans. I don't know how many varieties of soybeans there are but there are lots. Some are attractive to bees and others are not. Some make crops of honey for beekeepers and others do not. Let's just itemize all the known facts to show that a concerted program could benefit most everybody.

1) Soybeans are grown on more than 40 million acres and are now a major farm crop in the USA.

2) Soybeans are considered to be self fertile.

3) Efforts to produce hybrids have been successful and they increased production over either parent from 13% to almost four-fold.

4) Bees do visit some soybean varieties and some beekeepers have made some honey from those plants.

5) The flower of the soybean is typical of the legume family, most of which have to be cross-pollinated by insects.

Now to solve the problem will take a two-fold attack. Soybean varieties have to be bred by the plant breeder to be more attractive to bees. I wrote about similar work by L. Teuber in the June 1984 issue of the *American Bee Journal.* Soybean flowers that would secrete and yield more nectar would attract more bees to the fields. Secondly, a bee breeder such as myself could breed bees that prefer soybeans. Mackensen and Nye showed that this could be done with alfalfa and I am sure the technique could be applied to soybeans too.

The combined result of this work would benefit beekeepers wherever soybeans are grown. Seed production would probably be increased in single-variety plantings and hybrid-seed production would increase seed production as much as four-fold. As for the bees, I could produce a bee preferentially attracted to soybeans in three years at a cost each year of $10,000.

A special soybean-pollinating bee would most likley not benefit a beekeeper by producing more honey; it would benefit the grower by getting more seed. With a pollination recommendation on soybeans as we now have on almonds of three colonies per acre with growers paying up to $25 for each hive, you are talking about three colonies times 40 million acres.

All of this is quite exciting and interesting and cause for a lot of heavy daydreaming. (200- pound crops of soybean honey and a $25 pollination fee for each colony — say, which way is the bank?) Don't forget the basics; rain and wind will not set a crop of apples, prunes, alfalfa seed or melons. So when you see this kind of work on pollination that is redundant or repetitive which is done by state and federal bee researchers, don't knock it! It's very necessary.

In conclusion, how many of you have a copy of S.E. McGregor's book, *"Insect Pollination of Cultivated Crop Plants"*? If you don't have one, you need one — the cost is $5.90 from

Continued on next page

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Superintendent of Documents, Washington, D.C. 20402: Here's why you need it. You are driving down the road and see a new crop for your area. You stop and figure out what it is and hunt down the farmer. You two get talking and, yes, the crop does need bees. But can you tell him how many colonies per acre he would need?

That happened to me last year. The farmer was growing 20 acres of carrots for seed. He also planted 40 acres of squash, cucumbers, watermelons and cantelope for seed. After he hangs up the phone I find in McGregor's book the number of colonies per acre he will need as well as what kind of placement.

Finally, if you have never done business with the farmer before, draw up a pollination contract stating how many bees, where they will be placed and the strength of the colonies. Include how much per colony you are to be paid and when. Also state that you have the right to remove your bees if toxic materials are applied either by the farmer or by his immediate neighbors and that you have access to your bees for servicing at all times. A copy of the contract I use is reproduced in the column to the right.□

TABER APIARIES — Pollination Contract

This contract made and executed in duplicate on the date herein set forth between the undersigned grower and the undersigned beekeeper(s).

The mutual promises are as follows:

I. The duration of this contract shall be for the year(s): _____

II. Beekeeper agrees to do and perform the following:

(1) Supply and place in grower's location in _____County, at _____, _____number of honey bee colonies, hereafter called colonies. This represents _____ hives per acre for a total of _____ acres.

(2) Colonies will be placed on _____ or within ten (10) days of grower's notification. It is agreed that the intention is to place the colonies in location at the beginning of the flower bloom.

(3) The colonies will be spaced as follows: _____

_____

_____

(4) The colony strength shall be:

(a) A laying queen in each colony at bloom time.

(b) The colonies will consist of two stories.

(c) Colonies will have an average of _____ frames of bees. In case of dispute regarding strength, grower or beekeeper may request inspection by a County Agricultural Inspector. Cost of inspection will be paid for by the grower.

(d) There will be no charge for colonies below _____ frames of bees.

(e) The colonies will be removed _____, or, after five (5) days' notification by grower, or after verbal agreement that the bloom has finished.

(f) The colonies will be maintained according to good beekeeping practices at all times during bloom

III. The grower agrees to do and perform:

(1) Pay the beekeeper at the rate of $_____ per colony, payable as follows:

_____

_____

(2) Grower will not use or allow to be used, any chemical material known to be at all harmful to bees without obtaining permission from the beekeeper. If use of harmful pesticides becomes necessary, the beekeeper must be given 48 hours notice in which to remove the colonies from the location. If necessary to place the colonies back into the location again, there will be a charge of $_____ per colony. Ownership of the colonies remains with the beekeeper.

(3) The beekeeper reserves the right to move his colonies from the location if harmful chemicals are applied within the normal flight range of bees (1.5 miles). This is done without penalty to this agreement and after notification to the grower. This is at the expense of the beekeeper and the bees will be returned after the danger period.

(4) Beekeeper shall bear the entire risk or loss due to theft or damage to colonies (except by a willful or negligent act on the part of the grower).

Grower will supply a suitable place to locate the hives. The beekeeper shall be allowed entry at any time that is necessary to service the bees. The grower assumes all responsibility for loss or damage to his fields or crops resulting from the use of trucks or vehicles in handling or servicing the bees.

IV. It is understood that either party may be excused from performance hereof in the event, prior to delivery, such performance is prevented by causes beyond the control of the party.

Executed this _____day of _____, 19_____.

Grower _____

Address _____

_____

_____

Stephen Taber — Taber Apiaries

3639 Oak Canyon Lane

Vacaville, CA 95688

(707) 448-7130

Beekeeping Technology

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

"Do I Have A Future In Beekeeping?"

A major part of my job is beekeeping education. In that capacity I talk with a number of potential students as a matter of course. Such conversations were much easier a few years ago. There was no honey surplusage then. The hybridized bee ("killer bees") were far if ever in coming and few beekeepers had any idea of what tracheal mites were— much less a varroa mite. Sometimes it seems that when it rains, it pours.

When a potential students asks me, "Do I have a future in beekeeping?", what should my response be? I hear, as do all of you, the daily barrage of high interest rates, tight money and high incidences of agricultural default. Doesn't sound good, does it?

When I was an apiculture graduate student at the University of Maryland, I stood in long lines with all the other "Organic Food Freaks" to get my wholesome organic peanut butter and what ever sandwich. I would have no part of salt or sugar in my diet. I only drank aseptic fruit juices produced without the benefit of any chemcial pesticides whatsoever (at least that is what I was told and that was certainly what I wanted to believe). And everywhere, people wanted pure organic honey. Most honey markets boomed. Those long lines waiting to buy all those organic products seems now to have moved to my local grocery store. The thrust of organic food market appears to be centralized in organic food stores or specified areas in local grocery stores. But it's no longer the burning issue that it was. So now with subsidized honey prices, mites here and more on the way, as well as killer bees, what do we do now? People what should we do now? I really don't know and I'm not sure who does know. But I can tell you some things that I do know about beekeeping. Most importantly, I still enjoy keeping bees very much. I love the hum of an active hive on a warm spring day — a day, that in my memory, is always bounded by blue skies and pleasant clouds. I'll always enjoy the smell of foundation in a new pine frame, the aroma of a new crop of honey, the excitement of a big swarm, the satisfaction of producing nice, fat queen bees. Those things I am sure of.

In some regards, things have changed and are changing in beekeeping. We often overlook the fact that some of these changes may very well be for the better.

The new world of computers is presently a vast untapped resource. In the near future, they will help us manage our hives more efficiently, keep our financial records more accurately and keep us better informed. Look at the improvement in extracting equipment. Not many years ago there were belts and pulleys with levers everywhere. Now extractors have small compact motors controlled by electronic circuitry. It's safer and more efficient. On the near horizon is the developing concept of recombinant DNA. With all it's potential problems, it offers tremendous promise. Possibly some of our old problems such as breeding disease, resistant bees or controlling bee temper may be resolved. Researchers are understanding the biology of viruses more and more. Solving that problem could allow our bees to live longer thus making the hive more productive.

However, none of this changes the fact that tomorrow morning a number of states will still have tracheal mites. Nor will the great surplus of honey evaporate. It's not hopeless though — not by a long shot. Beekeeping will survive. Admittedly, some aspects of the industry are going to change. And those changes may seem to be for the worst now. Consider this. If the pressures our industry are now under results in a greater awareness of our industry by legislators, consumers and the general public, then we have bettered ourselves in spite of the problem. If the tracheal mite arrival results in our industry being better prepared for the varroa mite, a far worse pest, then acarosis served at least one positive purpose. For the long run, things may not be as bad as they seem.

My effort has not been to write a "RAH-RAH" article — to rally the troops so to speak, but rather to address a difficult question that I'm frequently asked, "Do I have a future in beekeeping?". If one derives true enjoyment from beekeeping and understands the problems our industry faces, and if that person is aggressive, open-minded and creative, having the ability to take new ideas, techniques and technology and put them to work, then I can confidently and honestly say that from my experience, that person can have a promising career in beekeeping (Thank Heavens).

Procrustean Beekeeping Theorms

Just when you think you won't be stung, you will, and you will be stung where you least expect it.

As I was leaving the University Apiary one day, a woman with a young child approached me and asked to see inside a hive. As usual, I was in a hurry and asked the woman to return later. The child was obviously crestfallen. I consented to quickly open a hive "for just a second". I asked the mom to stand at a safe distance while I enveloped the child's entire body in my veil. Using no smoke and realizing I was taking a chance, I opened a 4-frame nucleus hive and successfully found the queen along with honey, pollen, brood and everything else a good crash course should show. As I closed the hive, a bee, bent on suicide, flew up my nose and stung me. To my great embarassment, I cried before a 3-year old child and her mother. I would think neither of those people are beekeepers today.

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QUESTIONS & ANSWERS

Q. What would be the best time to have my five packages of bees arrive for this area? Will pollen be necessary for building them up? What medication should I use to prevent disease? **R.A. Trudeau, Huntington, Mass.**

A. Try to have them come the first two weeks of May. For buildup, just use sugar syrup. Mix about five pounds of granulated sugar, more or less, per gallon of warm water. Feed them this slowly until all but the outer two combs are drawn, then exchange those two combs with adjacent ones, discontinue feeding and add supers. There is plenty of pollen from dandelions, etc., at that time, so supplemental pollen is not necessary, nor is any medication necessary or desirable.

— Richard Taylor

Q. What is the best way to attract swarms to bait hives? Can you use a regular empty hive? Should it be on the ground or up high? Should there be old combs in it?**Arthur Young, Norwalk, WI**

A. Studies done at Cornell University suggest that bait hives should be about fifteen feet from the gound, shaded but very clearly visible, and that the size should be about that of a regular hive body. If an empty box is used instead of a hive, it must be snug and tight with a hole near the bottom, with a nail across the hole to keep birds out. Doctors Seeley and Morse, who made the studies, did not find that boxes with old comb in them were more attractive to swarms than those without. Persons wishing this bulletin should send a dollar bill to: Distribution Center, 7 Research Park, Cornell University, Ithaca, NY 14850, requesting "Bait Hives" Bulletin 187.

— Richard Taylor

Q. If a colony dies out over winter, can I leave it in the apiary until I get a swarm to put in it without wax moths destroying the combs? **Marvin Floyd, Artemus, KY.**

A. Yes, but first shake out the dead bees and get the hive up off the ground and in the sun to dry it out and reduce mold and decay. Wax moths shouldn't be a problem until August, and you'll have bees in the hive again before then.

— Richard Taylor

Q. I have read that, when you install a package of bees, you should drench the queen in sugar syrup and then liberate her among the bees. What for? And do you remove her from her little cage before drenching her? **Sara Farmer, Dublin, VA.**

A. It is not necessary to do that, since the queen will be pretty much accepted by the bees by the time they arrive, but it is a good idea. The bees immediately lick the syrup from her, establishing friendly feelings on both sides. More important, it prevents the queen from flying off, as she is too sticky to fly. Just dunk the little queen cage, queen and all, into sugar syrup, then release her at once among the bees.

— Richard Taylor

Q. I have acquired three strong colonies that have been untended for several years. They are so congested that it would be hard to remove the frames without extensive damage. How can I get the bees into new equipment? **Jack Russell, Charlotte, MI.**

A. I think you will find that, once you get one or two of the frames out, the others can be removed without damage, and you will probably find that they are in better shape than you think. Remove all the combs, one way or another, one hive at a time, set to one side those that are useable, put them in your new hive, bees and all, keeping the brood together, and fill the hive out with foundation. If the brood appears healthy, then the worthless combs with honey in them can be saved until August, then set out for the bees to rob dry. The new hive will then have to be placed where the old hive was, or else moved at least two miles.

— Richard Taylor

Q. If I have no bait sections for my comb honey supers can I create them by spreading honey on the foundation of new sections? **Marshall Slotterbach, Sellersville, PA**

A. That won't work. You would just have a sticky mess and the bees would not be fooled. You don't really have to bait sections, although one such section per super is useful for the first super to go on the hive.

— Richard Taylor

Q. You have discouraged planting for bees, but wouldn't an acre of sweet clover help them out? I rotate gardens and it makes a good cover for a fallow plot.
Dennis Fay, Levering, MI

A. Of course an acre of sweet clover can make a considerable honey flow, given the right soil and weather. What is not profitable is cultivating honey plants for no other purposes than to supply nectar to bees. If you need a cover crop, by all means make it clover or buckwheat, and get the double benefit.

— Richard Taylor

Q. I want to expand to ten colonies, both to pollination of my orchard and for surplus honey. I prefer gentle bees. Which kind do you recommend? **Thomas R. Anderson, Delphi, IN**

A. I think one race of bees is about as good as another for pollination. Carniolan bees are generally the gentlest, and breeders of these queens advertise regularly in this magazine. A friend of mine who is an excellent beekeeper reports very good results from Carniolans as honey getters. They have a strong tendency to swarm, however.

— Richard Taylor

Q. My old smoker is in bad shape, and I'm thinking of replacing it with a new electronic sound emitting device which is supposed to calm bees. What do you think? **Thomas Clark, Thorntown, IN**

A. I do not wish to evaluate commercial products, but almost any old smoker can be restored to

Continued on next page

Continued from previous page

working condition with a few cents worth of duct tape from any hardware store, whether it is the bellows that has worn out or the cannister that has become corroded through, and a smoker costs nothing to operate.

— Richard Taylor

Q. A lot of crown vetch is being planted here on the roadside banks. Is this a good honey plant? **Andrew Wengerd, Harmony, MN**

A. There is a lot of crown vetch along the roadside banks in Pennsylvania, and more and more other states are beginning to put it to the same use. I have also had a large patch in my front yard for nearly twenty years. It is very beautiful, but I almost never see bees on it. It doesn't seem to be much of a honey plant here, but I would be interested to learn what others may have found.

— Richard Taylor

Q. We have friends who have a hydroponic greenhouse and raise tomatoes. Can bees be used to help pollinate the tomatoes in a greenhouse? We thought possibly a hive could be placed outside the greenhouse with an entrance into the greenhouse. Their tomatoes are ready to be pollinated by April and on into the summer. Normally, this pollination is all done by hand with an electric toothbrush. **Laura Graber, Rt. 1, Box 1178, Amboy, IN 46911**

A. Tomatoes produced in greenhouses are normally pollinated by vibrating or shaking techniques. The tomato does respond favorably to cross-pollination by insects even though wind is the normal pollination agent. Not much is known about the relationship of bees and tomatoes. With current tomato varieties, however, I doubt that your bees would enter the greenhouse to collect pollen from tomato plants unless there was a severe shortage outside. Many other insects eagerly visit tomato flowers and are, no doubt, tomato pollinators.

- Dr. James E. Tew

Book Review

by DR. JAMES E. TEW
The Agricultural Technical College
Wooster, Ohio 44691

The Golden Insect — A Handbook On Beekeeping For Beginners

Stephen Adjare — Author
Technology Consultancy Centre, University of Science and Technology, Kumasi in Association with Intermediate Technology Publications Ltd., 9 King St., London WC2E 8HW, U.K.

Printed by the Russell Press Ltd., Bertrand Russel House, Gamble St., Nottingham NG7 4ET, U.K.

"The Golden Insect" is a bee book with a different slant for must U.S. beekeepers. The book was published for use in Ghana. Beekeeping techniques employed in Tanzania and Kenya are combined with a concise readable text that is divided in seven chapters and are supplemented with five appendices.

A detailed introduction that outlines the problems and conditions to be expected in beekeeping start the book on an informative note.

The first chapter (Equipment) discusses beekeeping with standard hives as well as top bar hives and long hives. An appendix is provided to give measurements for top bar hive construction.

Solid information is presented in the remaining six chapters on bee biology and behavior as well as honey and wax processing. All information is presented with African conditions in mind. Chapter six is an interesting chapter on the various problems, pests and predators to be expected. Pictures and diagrams are used to illustrate pertinent points throughout the book.

Beekeepers having an interest in other beekeeping techniques or those expecting to keep bees under the described conditions would profit from the information in this text. As I stated at the beginning, this book describes beekeeping from a different view.

Anatomy Of the Honey Bee

R.E. Snodgrass — Author
Cornell University Press
124 Roberts Place
Ithaca, NY 14850

Forward by Dr. Roger A. Morse
Department of Entomology
Cornell University Press
Ithaca, NY 14850
Paperback, 324 pages, $12.95

It would be a rare entomology student that is not acquainted with some of Robert E. Snodgrass' publications. His texts on the *"Anatomy and Physiology of the Honey Bee"* (1925), *"Insect Metamorphsis"* (1954), *"Principles of Insect Morphology"* (1935) as well as *"Anatomy of the Honey Bee"* (1956) are but a few of the 79 papers and books that he wrote. *"Principles of Insect Morphology"* and *"Anatomy of the Honey Bee"* are unsurpassed as major works in the field of insect anatomy.

"Anatomy of the Honey Bee" is for the serious student of beekeeping and entomology. True to form for most of Dr. Snodgrass' entomological works, the text is incredibly detailed and precise. The reader must be alert to particular terms as they are described since they will be subsequently assigned abbreviation. Such abbreviations are referenced throughout the text and are rarely defined again.

The text is divided into 15 logical chapters each containing numerous references to previous works as well as abundant original observations. Detailed original diagrams are freely used to elucidate particular structures. Some of these diagrams have been cited and used with permission in many ensuing bee books.

Throughout the years, I've found this book to be an invaluable reference source on practically all anatomy related questions. Questions on stinging, wax production and manipulations, flight mechanisms and the reproductive system of queen bees are but some examples of topics that are covered in great detail.

"Anatomy of the Honey Bee" is a standard on the subject. I can categorically recommend this book to any serious beekeeper or entomology student.□

Bee Talk

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

Spring will probably come on pretty fast now. I had a look at my bees the other day — I'm writing this in mid-March— and every colony was not only alive, but heavy as lead. I hadn't looked at them since November. Some of my beekeeper friends have found a few dead colonies, and have rushed emergency feedings to others threatened with starvation. Not me. My bees all got to keep almost all the fall flow. That's why they are so heavy now. And why they are all not only alive, but strong. And it is why they will be real power house colonies when those first honey flows begin. And, as you can see, that is why, with just a bit of luck, I'm going to get a good big crop of early light honey, honey that the bees will store in the supers instead of building up on. They already have their honey to build up on— the fall honey I so generously left them last year. So the bees come out ahead and, what is more important to me, so do I.

The apicultural principle just described, which beekeepers almost never follow or even think of, is called "the Taylor principle," and on it rests my slim hope for immortal fame as a beekeeper. It is a simple principle, but far less obvious than it seems. It also requires the beekeeper to suppress his greed in the fall— but only to indulge it once more in spring.

But I also foresee a problem in my apiaries. My hives are, every one of them, one and a half stories high— a full-depth brood chamber, a shallow super on that, and that's it. That's what the bees have, year 'round. I super over that one and a half story hive. The reason I don't use bigger hives is that I raise only comb honey, and you've got to crowd those bees a bit to get them up into the comb honey supers.

So what's going to be the problem? Swarms. The hives are loaded with honey, which is going to be used to nourish the exploding populations in those hives, and the bees are going to want to swarm.

In the past my way of coping with this problem has been to split nucs out of the colonies I thought might be prone to swarm. I would remove from each such colony three good combs of brood and bees, making sure I didn't get the queen too, replace them with empty combs or frames of foundation right in the center of the brood nest, put the three combs of brood and bees in a nuc box, give them a new queen and sell the nucs for twenty-five dollars a piece. That always worked pretty well.The colonies thus treated rebuilt their populations in no time, rarely swarmed, and I got my honey from them. And I am convinced that there is no practical way to control swarming other than by splitting the colonies, one way or another.

The trouble is, that method involves introducing new queens from the south into the nucs, and I've been a little worried about introducing tracheal mites. I thought a bit about raising the queens myself, but the trouble is I wouldn't have them soon enough.

I've decided not to worry about that. Last year we read, and learned through TV, that these mites had made their way into Texas. Thousands of colonies were being "depopulated," that is, killed, by the bee inspectors, in a desperate effort to stave off disaster. Before long, perhaps, all the bees in the country would succumb to the mite, agriculture would come to a halt, the continent would face starvation, the world would come to an end— something like that. Soon after that we learned that they had been found thousands of miles from Texas and, a bit later still, they began turning up all over the place. It began to look like the mites had been around quite a while, and seemed to be causing a lot less trouble for the bees than for their frightened owners.

So I'm not going to worry about the mite. The best authorities say they don't make any significant difference to a well managed apiary anyway. And my queen breeder down there, who has given me fine service for years and whom I trust, assures me no mites have been found in his yards anyway.

I do plan to make one change in my swarm control system, however. I've done it before, so it's nothing new. Instead of making up three-frames of nucs, I'm going to make up complete nine-frame colonies and sell those. That will require fewer queens, and I'll get rid of some of the extra hive bodies I've got laying around. I'll take three frames of brood and bees from each colony that looks prone to swarm, put nine of these in each new hive body, add the bottoms and covers, introduce the new queen, close down the entrance and stuff it with grass for a day or two to discourage robbing, replace the missing three combs in the hives thus dealt with, and that's it.

Now someone will ask: Won't the bees fight, if mingled together that way from different colonies? No. The field bees will have returned to their parent hives by the time I get the entrances to the new hivews closed down and stuffed with a bit of grass, and the young bees left with the brood in the new hives will all get along just fine, with each other, and with their new queen.

[Questions are welcome. Please enclose stamped, addressed envelope.]

Research Review

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

How Serious is the Tracheal Mite?

I spent three weeks in Brazil in February. I visited beekeepers in three of the southern states in that country. *Acarapis woodi,* the tracheal mite that causes acarine disease, had been found in Argentina in the 1940's. It was found in Brazil, in Santa Catarina State, which was one of those I visited in 1971. There is a great deal of migratory beekeeping in the areas I visited.

So where is the problem I asked? All the beekeepers I talked to shrugged their shoulders and said there was no acarine problem in Brazil today. I was told that at the time the mite was found, acarine disease caused difficulties. However, when I asked about symptoms I was given information that suggested the problem they referred to could have been caused by one of several things, and not necessarily by tracheal mites. Affected bees had tremors, disjointed wings, slow reaction to smoke, and weak bees could be seen crawling up stems of grass in front of the hive. These are also symptoms of pesticide poisoning, viruses, old age, nosema and a complex of disease situations. I have made many trips to Brazil and never in the past has anyone wanted to talk about acarine disease, it is clearly no problem for Brazilian beekeepers.

In February and March of 1984, I spent five weeks in Egypt at the request of the Egyptian government. They were concerned about nosema and acarine diseases; both can be found in many parts of the country. I spent most of the time searching for the "problem". I found one apiary in middle Egypt where the colonies were weak, but their populations were building slowly. This was the only apiary where there appeared to be difficulties that could be attributable to the tracheal mites. But, Egypt's climate is much like Florida's. The beekeeper had made splits in early January, much too early as Florida beekeepers will testify; that, not a disease, appeared to cause the colonies to be weak.

In neither country is American foulbrood a problem suggesting both races are good house cleaners. We are aware that races of bees differ greatly in the rapidity with which they remove the sick and dead from the hive. Keeping a clean hive is the best way to eliminate or reduce the importance of a disease. Just because acarine disease is no problem in the two countries mentioned does not mean it won't be a problem here but it does raise interesting questions.

How Serious Is Varroa Disease In Brazil?

In the Brazilian states where varroa mites are found it is possible to find at least a few mites in every colony. Dr. David De Jong, who is working on the Cornell project in Brazil, has shown that mite-infested brood is either killed or develops into adults with reduced life spans. Still, as I moved around the southern regions of Brazil, where we could find mites in any colony we examined, no beekeeper complained about a varroa problem.

I visited with an Argentinian bee researcher who was working temporarily in Brazil. He assured me that varroa disease was causing great problems in his country, including the principal honey producing area, which is more or less west of Buenos Aires.

All this raises some important questions as regards our research. Is varroa not a problem in tropical areas because of the climate or ecology? Or, is it possible that the Africanized bees present in Brazil and elsewhere have some degree of resistance to varroa mites? In our research we have been trying to grow European and Africanized colonies side by side in Brazil. It is proving to be a difficult task as the Africanized bees out-compete the European bees in Brazil's tropical climate.

European beekeepers are very much upset by the presence of varroa in their colonies. They report that colonies are sometimes killed and certainly colony populations are reduced, as is the honey crop. It is an interesting puzzle for which we have no answer at present.

Africanized Bee Aggressiveness

We visited an apiary of about 30 colonies of Africanized bees in Brazil when a honey flow was just starting. We examined several colonies and took samples looking for various diseases. No one was stung much except me, but I was taking pictures with a black camera in a black synthetic leather case; I also made the mistake of wearing black socks. I was reminded once again that one dresses properly when examining Africanized bees or suffers the consequences. There is no question that in tropical areas Africanized bees are more aggressive than are European bees.

In Florianopolis we visited with Professor Helmuth Wiese and Dr. Luis Cornejo; the latter was visiting from Argentina. Wiese says he thinks that the Africanized bees in southern Brazil are becoming gentler because of selection by beekeepers. Dr. Cornejo emphasized that Africanized bees posed no problems for Argentine beekeepers despite the migratory beekeeping in that country. According to his observations, the African bees cannot live in a temperate climate.

Bait Hive Soundness

A question we have asked ourselves several times is whether or not

Continued on next page

honeybees can measure the soundness, or thickness of the wood, used in a bait hive. Dr. Thomas Seeley, who initiated the work on bait hives and what bees could and could not measure, made all of his bait using 5/8 inch thick plywood.

In Brazil I saw bait hives with sides made of thin aluminum sheets such as those used in publishing newsprint. Beekeepers in this country sometimes use similar aluminum sheets to cover their wooden hive covers.

The bait hives were equipped with a standard wooden cover but the sides were the flimsy and thin aluminum. The same beekeepers who built these hives told me they had used cardboard boxes covered with plastic for bait hives successfully insofar as trapping the bees was concerned; however, in the high humidity of tropical Brazil the bottoms of the cardboard boxes soon rotted away. I was told too that another beekeeper in the area had used ¼ inch plywood to make his bait hives and they were occupied by bees.

The soundness, or thickness of the wood in a bait hive is apparently not a consideration insofar as the bees are concerned. However, it must be remembered that the bees that occupied these nests were the Africanized bees of Brazil, not the European honey bees that we use in North Africa. In Africa I remember seeing metal cans and drums being used as bait hives, apparently successfully.

Persons not familiar with bait hives may care to obtain a copy of Bulletin 187, "Bait Hives for Honey Bees", Cornell University, 8 pgs., which is available for $1.25 by the writing Distribution Center, Building 8, Cornell University, Ithaca, NY 14850.

Honey Prices in Brazil

Interest in beekeeping in Brazil is at an all time high I was told. Attendance at recent beekeeper meetings has exceeded expectations. One of the chief reasons appears to be the high price of honey. The price of honey in Brazil is not affected by the worldwide glut of honey for the simple reason that Brazil does not allow honey to be imported into the country.

Brazil exports a number of agricultural products including many to the United States. At the present time much of the frozen orange juice we drink is being produced in Brazil. Coffee has been a major Brazilian export for years.

The free trade policy that the United States has been following is a one-way street in many parts of the world. Somehow it all doesn't seem very fair. □

Thesis Review

The mixed subsistence — commercial production system in the peasant economy of Yucatan, Mexico; an anthropological study in commercial beekeeping by Deborah Merrill Sands. Cornell University Ph.D. Thesis. 570 pages. 1984.

The title of this thesis is horrible but the contents are fascinating. The author is an anthropologist not an apiculturist. To me her study reads like a novel and does much to explain the complicated international honey market we see today. It will be important reading for those who study the boom and bust economy of beekeeping in the future.

Twenty-five percent of the honey produced in Mexico comes from the Yucatan peninsula. Mexico is one of the six major honey exporting countries in the world. Until the late 1960's beekeeping in the Yucatan was in the hands of large operators and the "moneyed, class" according to the author. The a great change took place and the peasants in that area became the beekeepers. There are now about 8,000 beekeepers owning about 250,000 colonies; obviously their individual holdings are small. "Hives are inconspicuously placed in small clearings, removed a short distance from the footpaths which wind for miles through the forests of Yucatan."

Because of the vast majority of the honey produced in the Yucatan has always been exported from the inception of the industry in about 1900 to today, Yucatan beekeepers are at the mercy of the world market. It is a market they have never understood. "One honey producer asked me" — (the author)— "if it were really true that Yucatan honey was used in Germany to make automobile tires."

R.B. Willson, who was well known as a world honey dealer, played an important role in bringing the Yucatan honey to the attention of the world market. Willson made his first trip to the area in 1945. He subsequently made cash advances to buyers and this "guaranteed him access to the region's entire crop." For several years Willson was the area's sole broker. The author's treatment of him is generous and he is not cast in the role of an exploiter. "After surveying the situation of the honey crop in Yucatan, he "—Wilson—" would meet with a select group of exporters in the bar of the Hotel Merida to make them an offer reasonable with market conditions.

Whereas the beekeeping operations are small, mostly 25 to 50 hives, the management scheme is intense. The author kept a small apiary of her own so as to be able to better understand and report on the beekeepers' routine. A summary of the production cycle is presented. Methods of feeding, swarm control, equalizing colonies and coping with disease are described. During the dry season it is important to provide water for the bees. It is not uncommon for beekeepers to carry "drums of water weighing 100 pounds or more on their backs" to the apiaries.

In a section entitled "Commercial Beekeeping as a Development Strategy" the coming of the Africanized bees and their effect are discussed. There is no question that honey production in the area will be seriously disrupted for several years by these bees. The author argues that "peasant beekeepers in the Yucatan are receptive to new technology" and that the "Africanized bee can be accomodated and adjusted too." I applaud this positive statement that is quite different from the statements often made of gloom and doom. However, I also agree that a greater government presence and assistance in preparation for the change is necesary if beekeeping in the Yucatan is to survive.

The text is complete with anthropological jargon and references to

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Testing Your Beekeeping Knowledge

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

The social behavior and success of a honey bee colony are highly dependent upon the size and organization of the broodnest. Colony development and survival are directly related to comb availability, size of the worker population, characteristics of the queen, available food stores and some protection from the environment. Honey bees efficiency regulate broodnest temperature and humidity, eliminate polluted air, remove foreign objects, wastes and dead bodies and control parasites and pathogens that attack them and their food. How well do you understand the organization of the broodnest and how workers control the internal environment of the hive? Take a few minutes and answer the following questions to find out how well you understand this important topic.

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

1.____ Pure beeswax as produced by honey bees is white, odorless and tasteless.

2.____ All three types of brood-cells found in a honey bee colony are reused for brood production.

3.____ Both worker size— and drone size-cells are hexagonal in cross-section.

4.____ Prior to egg deposition, the queen honey bee inspects each cell.

5.____ Worker and drone-size cells slope slightly downward toward the mid-rib of the comb.

6.____ Cells used for the storage of pollen in the broodnest are never capped.

7.____ Once a cell has been used for food storage, bees prefer to use it for brood production.

8.____ The number of drone cells constructed by a honey bee colony is inversely related to the number already present.

Multiple Choice Questions (1 point each)

9.____ Worker honey bees normally produce wax and build combs when they are _____ days old.

A) 12-18 B) 6-12 C) 18-24
D) 24-30 E) 1-6

10.____ The central broodnest during the summer is normally maintained at temperatures of:

A) 89°-91°F B) 97°-99°F C) 86°-88°F
D) 92°-94°F E) 95°-97°F

11.____ The temperature within a comb-building cluster of honey bees is about:

A) 98°-91°F B) 95°-97°F C) 99°-101°F
D) 97°-99°F E) 92°-94°F

12.____ The distance between combs and the exterior parts of the hive is often referred to as "bee space". The open space is between:

A) ½-¾" B) 1/8-3/8" C) 5/16-½"
D) 1/16-¼" E) ¼-3/8"

13.____ Please explain why the cappings over brood cells are colored differently than those placed over cells of honey. (2 points).

14.____ Under what condition will you possibly find two laying queens in a colony? (1 point).

15.____ Describe the storage patterns of honey and pollen in relation to brood on a comb removed from the central broodnest. (2 points).

16.____ Please list two ways in which honey bees reduce the temperature in the hive when it becomes too warm (2 points).

17.____ Describe the procedure workers use to pack pollen in the cells after the pollen pellets have been placed there. (1 point).

ANSWERS TO TESTING YOUR BEEKEEPING KNOWLEDGE

1. True Beeswax in its purest form is white, odorless and tasteless. Pollen and propolis stain the wax and are the primary sources of beeswax's distinctive color and odor.

2. False Both worker size— and drone size-cells are reused for brood production in the honey bee colony. Queen cells, however, are destroyed by the workers after the queen emerges or is killed by rival queens prior to emergence.

3. True Combs are composed of two different types of horizontal cells; drone and worker. While they differ in size, both are hexagonal in cross-section. Irregularly shaped cells are constructed where worker and drone cells adjoin and where the combs are attached to their supports.

4. True When laying, a queen moves over the comb searching for empty cells that the workers have cleaned out. Upon locating a suitable cell, she stops at its opening and puts her head and forelegs into it. This cell inspection usually lasts around three seconds. If the condition of the cell meets her approval, she inserts her abdomen and lays an egg.

5. True Worker and drone cells slope slightly upward, at 9° to 14° angles. This slope undoubtedly helps to keep material from falling out of the cells.

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James I. Hambleton and Student Apiculture Awards

The James I. Hambleton memorial award was established by the Eastern Apicultural Society of North America to recognize research excellence in apiculture. The E.A.S. Student Apiculture award was established to recognize students studying apiculture at the undergraduate or graduate level in a recognized college or university in the United States or Canada. The awards for 1985 will be presented at the annual meeting of the society to be held at the Franklin and Marshall College, Lancaster, Pennsylvania.

Nominations are now being accepted for both awards. This is an excellent opportunity for those of us in the beekeeping industry to recognize the research excellence of fellow associates. Undoubtly many deserving researchers are bi-passed for this recognition for lack of sponsor.

Each proposal must be accompanied by a biographical sketcch of the nominee, a list of his/her publications, specific identification of the research work on which the nomination is based an an evaluation and appraisal of the accomplishments of the nominee, especially of work in the last five year period.

Judgement of nominated student candidates will be made on the basis of demonstrated excellence in Apiculture (teaching, research, extension and beekeeping), letters of recommendation (at least 2 required) and other supporting information supplied by the nominee and the person who nominated the student.

Nominations and supporting information should be submitted to:

The Hambleton Award Committee
c/o Elton W. Herbert
Bioenvironmental Bee Laboratory
ARC — East Bldg. 476,
Beltsville Research Center
Beltsville, MD 20705

Siftings

by Charles Mraz
Box 127
Middlebury, VT 05753

In my last Siftings article I asked if any old time beekeepers had any of the "Honey in Infant Feeding" cards that were printed by the American Honey Institute years ago. Much to my surprise I received cards from three different sources. It is indeed good to see these cards again from the days when honey was still respected as an ideal "Health Food". It does have the seal of approval by the American Medical Association.

Just today I noticed an article in our local paper about the "protective factors" in natural foods; "Cow's Milk May Offer Protection Against Virus". It goes on to say "Cow's milk may protect babies from diarrhea virus that is a major killer around the world. Cut commercial formulas do not supply this natural defense a new study says."

"Like mothers milk, the kind from cows is rich in germ-fighting chemicals called antibodies. The researchers found that some of these antibodies can keep diarrhea germs from multiplying."

In concludes by saying, "Experts estimate that at least four million to five million children die each year from dehydration caused by severe diarrhea."

It is these protective agents found in most natural foods that make them so important to the diet, especially for infants, who do not have much protection going for them if they do not have the natural protection factors found in mothers or cows milk. Commercial formulas don't have these natural protective factors. We know honey has them, one being the glucose oxidase enzyme. There are no doubt there are many more in honey that protect the bees and brood from many common pathogens. These protective factors are transmitted to those who consume these protective foods. We know so little about these things that Mother Nature has been using for millions of years.

It was encouraging to see Barry Semegran's article on page 115 in March 1985 *Gleanings*. There is no question that "BIG BUSINESS" in any field wants to take out, one way or another all competition. Nothing unusual about that, it has always been this way and perhaps always will. It gets down to the fact every one must take care of themselves. Only we beekeepers and honey producers can tell the truth about honey in the face of all this opposition.

Kent Teller on page 117 raises some good points. According to the records, in botulism supposed to have been caused by honey there were no deaths to infants. Are they outlawed? Are the doctors that prescribe them sued? Of course not.

Milton Schalow on the same page, in spite of the evidence in his own personal experience questions that honey cannot cause botulism. We must be more positive than that, I am convinced that natural honey with a high level of glucose oxidase will NOT cause botulism, but it will actually prevent and even cure it. This is where some research comes in that could easily be financed by beekeepers and honey packers, with feeding experiments on rats and other test animals. Botulism toxin is available to run such tests as are the test animals. This would be a great project for some enterprising high school or college student majoring in biology. It would be a great term paper. If such a test is carried out and if it shows promise, such tests could be documented on video tape. It makes a most impressive medium to demonstrate such research and with video equipment available almost everywhere, it would be easy to do. We just need someone with the intelligence and initiative to do it.

On occasion I get requests from students for information for projects that they want to do on their school papers. This would be a great one and could be financed easily by the Beekeeping Federation and Honey Packers.

The trachea mite controversy goes on and from what information I have been able to gather from Brother Adam over the many years that I have known him and experience in Mexico, this is going to cause a lot of problems when it really builds up. All efforts to confine, eradicate this problem are useless. This can never be done and is a waste of time and money to even try it. Over the years Brother Adam has already indicated what is going to happen.

He has already tested queens from the U.S. for their resistance to the mite in England and has found that the bright, yellow inbred strains of bees here in the U.S. are highly susceptable to the mite, to cause heavy losses of bees and colonies. I say bright yellow in-bred queens, because it is impossible to develop and maintain "high yellow" strains of bees without inbreeding. Even yellow bees, soon as they are cross-bred, even with other yellow strains, tend to revert back to the original dark Italians which is their normal color.

This means that beekeepers and queen breeders will have to change their whole ideas as to what makes a "Good Queen". It will no longer mean a big, fat, yellow in-bred freak queen of which there are too many today, but beekeepers are going to learn if they want to survive, that good queens are those resistant to the Tracheal Mite.

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Such resistant queens by necessity will be dark, sometimes small, runty looking "dirty hybrids" as some beekeepers like to call them. They will be queens cross-bred to build up vitality and resistance to the mite as well as to other diseases. This is one law in nature we cannot change: In-breeding builds up susceptability and genetic weakness, cross-breeding builds up vigor, variation and resistance to disease. If you do not believe this, when the mite comes to your bees, you will be out of business. Brother Adam stated when the mite first invaded England, 98% of the native bees were susceptable and died out. Only the old strains of Italian and Carniolans of those early strains proved to be resistant and survived. That is what the future looks like to me with the mite problem. I may be wrong, but I would like to be around long enough to find out.

An old friend, William Longgood has written a book, *"The Queen Must Die"*, which was rather a surprise to me as I did not know Bill was a beekeeper. I first met Bill when he was a reporter in New York City at the Long Island DDT trial. Every beekeeper will get a real kick in reading this personal account of Bill's experience as a beekeeper. Reading it, I could not help laughing and saying, "How true it is!" You will see yourself and a lot of your friend beekeepers in it. Talk about writing books, even I am trying to write one on my 50 years with Bee Venom Therapy. It may never sell and a few may never read it, but it is a lot of fun trying to write it. So I won't be disappointed if it turns out to be a "lemon".

Gleanings Mail Box

Infant Formulas

Dear Editor:

Mr. Charles Mraz in the *Gleanings*, March 1985 issue has again restated all of his honey formulae comments. He states that 40 years ago the American Medical Association approved of honey in infant feedings. Leeches were used to bleed sick patients in the past. Both leeches and honey — cows milk formulae are out of date.

The American Academy of Pediatrics recommends breast feeding for all infants. For those infants whose mothers' chose to formulae feed, a commercial formulae of altered cows milk and corn syrup is recommended. This formulae in all components resembles human break milk. The formulae is sterilized in such a manner that **no** bacteria or spores are viable — interested parties may phone Ross Laboratories, Columbus, Ohio (614) 227-3333 to check this statement.

Untreated cows milk is best for infant cows. It is not easily digestable for a human infant. Honey added to cows milk is **not** treated to sterilize botulism spores and therefore dangerous.

Mr. Mraz again states that hundreds of deaths have been caused by commercial infant formulaes. He made the same statement in *Gleanings*, September, 1981 and July 1982. In a private communication I asked him for proof in the form of one death certificate stating cause of death as "improper infant formulae". In a return letter he admitted he had none. I again asked him for proof. Just one death certificate is acceptable.

I agree with Mr. Mraz that 'Mother Nature' knows more about infant feeding than we do. He thinks Mother Nature provided cows milk and honey. I say it is human breast milk. The human race is here today because of successful breast feeding — not milk — honey formulaes. The greatest cause of infant mortality until 50 years ago was the inability of a mother to either breast feed or find a wet nurse for her infant.

The McNeil Pharmaceutical Company handled the Chicago Tylenol poisonings three years ago by being honest and straight forward. The American public accepted this approach. Tylenol is now selling as well as ever. The public is suspicious of denials and problems. To put the infant botulism problem behind us, all the honey industry must admit the problem. The "nothing to hide" approach works.

Forrest G. Hawkins, M.D.
1202 Faulk Rd.
Wilmington, DE 19803

A Part of Life

Dear Editor:

In May of 1983 I had a wooden spool out in the yard, which I kept the water hose rolled up on. Well, some honeybees got inside this spool. Then, the following week, on Monday, (I remember because it was Memorial Day and I didn't have to work), I was outside doing some work around the house when all of a sudden the air was filled with honeybees. My first thought was that the bees in the spool had left. I ran and looked, but the bees were still there in the spool. Then all of the bees settled on a post. I knew nothing about bees, but a man that I worked with knew some about them. So I called him and he told me how to get them. I nailed some pieces of plywood together and made a box. Then I got the bees from the post and put them in the box. They stayed and I enjoyed watching, both the ones in the spool and the ones in the box so much as they worked. The year moved on into winter and I worried about the bees.

Not knowing any better, I had left the bees in the spool and in the box. Winter passed and as the weather began to warm this year, I saw no signs of life in the spool. I cut into it and found all the bees were dead. It grieved me so much and I felt responsible for this happening. But the ones in the box seemed to be doing alright, and I decided that I must get them out of the box and into a hive. So I ordered the beginners kit. It came and I put my first hive and frames together. Then I got the bees into the hive. They seemed to like their new home, and I was so glad to see them there. I found part of my life in the bees, a part that had always been missing.

Thomas L. McGraw
Route 2, Box 275
New Albany, MS 38652

Vitex Seeds

Dear Editor:

We read in *Gleanings In Bee Culture*, where you wanted to find Vitex seeds. I have a large supply on hand, and would be glad to send you some to get started. Just send me a self addressed stamped envelope. Once you get the seedlings started, then you can save your own seeds since they do bloom the first year.

Louis Olds
Rt. 3, Box 124C
Roanoke, AL 36274

The Good Old Beekeeper

Dear Editor:

There are several different programs being kicked around and solicited throughout the nation pertaining to certifying one as "Masterbeekeeper", "Journeyman Beekeeper", "Craftsman Beekeeper", and what have you. I find myself becoming apprehensive and just plain turned off by these ambitious deeds. Maybe it's because I feel I've obtained all the "pedestals" in beekeeping that I've hoped to obtain. Or maybe it's a sense of insecurity or perhaps my need to just be a down to earth "good old beekeeper" with my dirty old raggedy coveralls, worn out smoker and veil, —searching for someone **like me** to stand around and exchange fruits of labor with. In a good old friendly neighborly way. Exchanging tall tales and yes,— even some practical facts. But most of all, getting a few laughs and a few—" you can lie better than I can," — in a friendly old

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sort of way. And when it comes time to really be serious. I just like to jump right in there and get to it. Knowing that if I run into a problem or have a question, that this old friendly neighbor is out there to help me. Or even to assist me. And guess what? Even though we aren't experts, or certified, or craftsmen, or masterbeekeepers we still have fun. But most of all, we've been averaging between 60 and 80 pounds of honey per colony over the last thirty some years. And you know what else? Old Bill down the road apiece got some pure "holly" honey off his bees, and I haven't ever tasted any of that, and I'm going down there and trade him some of my old poplar tree stuff for some of his. Andy maybe,— just maybe he'll let me put one of my gums down on his place next year. Now isn't that neat? He's a "good old beekeeper"

Anyhow, if I have some real serious problems, my state inspector is always standing by to help in any way he can. And you know what? I doesn't cost me a cent! Lord knows I've got sense enough to go to him when I need to. Besides, — that beekeeping club down the road has some good stuff going on at their meetings.

I mean— I just can't seem to get interested in all this education stuff. My daddy and his daddy and his daddy's daddy used to have bees. Mind you now, I didn't say keep bees, I said have bees. I'm the first beekeeper in the family and that's because of all the help I get from my neighbor beekeepers, the beekeeper club and the state inspector. And man—that's good enough for me!

You know, this pedestal business is just not comfortable for most hobbyists. It's sort of like keeping bees in the winter, if you know what I mean. It leaves you kind of cold. Lord only knows how it leaves the bees. It reminds me of this Ph.D engineer I work with;— knows all there is to know, on paper that is. But give him some wire, a soldering iron and scope and he is lost.

Now don't get me wrong, because these programs are well and good for those who are interested. My question is: When are we going to get away from all of this professional and technical madness? Especially in this one of few fields that man has left that helps him feel the closeness of his God. We're isolating and scaring away the hobbyist, "the good old Beekeeper". We're destroying one of the most personable and fellowshipping relationships between each other and nature that one has never known. Beekeeping is a lovely and beautiful art and should not be hung on pedestals with the rest of the material things of the world.

So let's table our ambitions, put on our glasses, come down out of immortality and take into consideration the real needs of our fellow beekeepers.

James A. Westen
Hwy. 925 So., Box 330
Waldorf, MD 20601

Beekeeping Posters

Dear Editor:

We are currently developing a series of posters depicting all stages of beekeeping. If your readers have original photographs or drawings they would care to submit, we would be happy to consider them. There will be no remuneration and pictures cannot be returned, however, all work will be credited. Submissions should include name, address, and telephone number on each print.

Susan K. Mitchell
Stillwaters Apiaries
Rt. 2, Box 10-A
Keysville, VA 23947

THESIS REVIEW

Continued from page 247

Marx and Lenin and sundry reviews of the economy that I read over quickly; these in no way detract from the value of this thesis. Sands has given us the most complete and best study of a segment of the world honey market that has ever been written. It should be read by everyone who works internationally with bees from Peace Corps persons to honey buyers. It will become a standard reference work in world apiculture.□

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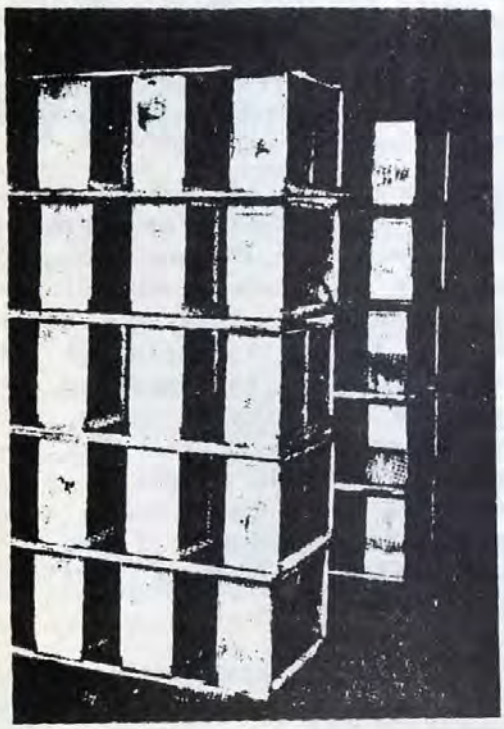

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5-lb.pkg. w/q	$39.50	$38.50	$37.50	$36.50
Queens	$ 6.75	$ 6.40	$ 6.20	$ 6.00

STARLINE OR MIDNITE

	1-3	4-24	25-99	100 up
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3-lb pkg. w/q	$26.85	$25.85	$25.10	$24.60
5-lb. pkg. w/q	$40.10	$39.10	$38.10	$37.10
Queens	$ 7.35	$ 7.00	$ 6.80	$ 6.60

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April 1985

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May 1985

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June 1985

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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

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FINANCIAL MANAGEMENT FOR THE BEEKEEPER

by Malcom T. Sanford
Florida State Apiculturist

If you missed the Beekeepers Institute at 4-H Camp Ocala last month, I suggest talking to someone who was there. It was the best attended ever and by one of the most enthusiastic crowds I've seen in a long time. All in attendance participated actively in every aspect of the programming. From the feedback I received concerning a presentation on financial management, those going into the beekeeping business and many old timers are more concerned with production problems than managing the financial part of the business. That's understandable, the allure of producing a product by means of managing a complex insect society is far more exciting than the mundane activity of manipulating numbers on paper. More than a few times I heard the comment, "I'm afraid to calculate how much it cost me to be in the beekeeping business. If I knew, I might have to think about doing something else, and I don't want to stop keeping bees." Perhaps, but it becomes more and more evident each day that it is only by means of a sharper and sharper pencil that the beekeeper will be able to continue to enjoy a profitable association with the honey bee.

The question that many financial managers are asking these days, "What business am I really in?" appeared to strike many beekeepers attending as something of an absurdity. But it is perhaps more relevant today than ever before. With the honey market in a shambles, can beekeepers ignore the fact that they must first and foremost be honey marketers and promoters, not simply producers? A classic example of this kind of "tunnel vision" can be found in a best-selling book sometime back, which analyzed the current conditions of the railroads. As super highways were constructed and more and more transportation was being done by truck and aircraft, the railroaders failed to ask themselves what business they were in. So, instead of stepping back and diversifying their real business, transportation, they continued to roll down their steel tracks, railroading themselves into some difficult times and leading a few into bankruptcy.

Some attending an Institute for the first time, who had experience in other branches of agriculture, considered discussions about the troubles of beekeeping industry more than just intriguing. They'd heard much of it before in poultry, hog and other livestock producer meetings. It is a too-familiar song, rooted in the fact that no longer is agriculture a favored son in an increasingly urban oriented society.

Just how important is financial record keeping becoming for agriculture in this decade? Some statistics, as reported in the July issue of the Farm Finance Newsletter, published by the Florida Cooperative Extension Service, might provide a clue:

> "Not many farms are making money today. It is those farms grossing between $40,000 and $200,000 annually that face severe financial problems. They are often too big to get a meaningful off farm income and too small to obtain the economies of scale that the super farms enjoy. The recent low commodity prices, plus servicing debts based on an over optimistic assessment of the future, makes this group particularly vulnerable."

Most, if not all, large sideliner and full-time beekeepers fit the above description. Perhaps more revealing are the ratios below:

Continued on next page

Year	Production Expenses per $1 Cash Receipts	Prod. Expenses per $1 Net Farm Income	Cash Receipts per $1 Net Farm Income
1975	0.65	1.61	2.47
1978	0.64	1.60	2.49
1979	0.69	1.82	2.64
1980	0.73	2.08	2.87
1981	0.71	2.13	2.98
1982	0.75	2.28	3.05

Again, the Newsletter states:

> "All the ratios show a gradually worsening trend for Florida farmers. Some $.75 in every dollar of cash receipts now go in production expenses, compared with $.64 in 1978. And for every dollar of net farm income, $2.28 must be spent on production or $.68 more than in 1978. Finally, it takes more cash receipts to produce a dollar of net farm income. Every $2.49 in sales provided a dollar of net farm income in 1978 compared with $3.05 today."

The profit margin in agriculture is steadily declining. The line between a gain and a loss becomes ever sharper and less and less room for error exists. This is especially true for those actively borrowing funds or contemplating going to the bank. Truly the agriculturalist, as one pundit put it, must, "Squeeze the eagle on a dollar bill until it grins." This is only possible through financial management.

A first step in managing finances is to develop a monthly cash flow statement. This is nothing more than a listing of sources of cash income and outgo. If there's more income than outgo, cash flow is said to be positive, a profit is made. If there's more outgo than income cash flow is negative, a loss is realized. This is routinely done by most folks at the end of the year, but is recommended on a monthly basis to financially fine tune an operation. Some larger concerns may even do this on a weekly or daily basis. Remember, this tracks the flow of cash and only cash transactions should be recorded. Even if a business has a great many assets, they often cannot easily be converted into cash, the necessary fuel needed to run a business on a day-to-day basis.

Agriculture is a prime example of an operation requiring cash flow analysis because it is seasonal in nature. Setting the cash flow statement down on paper is of utmost importance; it cannot be effectively done otherwise. Optimistic feelings about the business or intuition that things are going well can be extremely deceptive. The Florida Cooperative Extension Service publishes Circular 448, Cash Flow Analysis. Contact your County Agent for Availability of this publication and others dealing with financial analysis.

There are several major ways to juggle finances, including: reducing costs, increasing income and restructuring debt. The following are common sense ideas beekeepers might take advantage of in each category:

REDUCING COSTS:

1. BUY CAREFULLY:
   - A. SHOP AROUND--but don't spend ten dollars to save a penny
   - B. BUY AT DISCOUNTS--plan so you can buy in bulk
   - C. JOIN GROUP PURCHASING PLANS--pool orders to obtain bigger discounts

2. INCREASE LABOR OUTPUT:
   - A. USE IN SERVICE TRAINING--pay a living wage

Continued on next page

B. ORGANIZE WORK EFFECTIVELY--plan ahead using time management principles
C. DON'T HIRE MORE LABOR THAN NECESSARY--delegate more authority

3. SAVE ENERGY:
A. KEEP ENGINES TUNED--use less fuel
B. INSULATE--stabilize heating and cooling
C. INVESTIGATE SOLAR ENERGY--heat and cool naturally

4. BUDGET LIVING COSTS--write it down and stick to it

5. DELAY NEW INVESTMENTS:
A. OVERHAUL EQUIPMENT--rebuild, don't replace
B. DO ROUTINE PREVENTATIVE MAINTENANCE--make it last
C. LOOK FOR VALUES IN USED EQUIPMENT--find gold in another's garbage
D. EXPLORE LEASING OR RENTING--retain tax benefits
E. OPTIMIZE YIELD--intensify management to increase profit per unit

INCREASING INCOME:

1. EVALUATE YOUR MARKETING STRATEGY:
A. LOOK FOR NEW MARKETS--realize that most profit is made "beyond the farm gate"
B. ANALYZE STORAGE COSTS--seek out hidden costs

2. IMPROVE EFFICIENCY:
A. CULL OUT WEAK COLONIES--take losses early
B. INVESTIGATE LOCATIONS CLOSER TO HOME--reduce yard size
C. ELIMINATE INVENTORY NOT BEING USED--sell it for cash

3. LONG-LASTING MARKETING STRATEGY:
A. DEVELOP RAPPORT WITH CUSTOMERS--cultivate repeat business is essential
B. EXPLORE A MARKETING/BUYING COOPERATIVE--use resources more efficiently

RESTRUCTURING DEBT:
1. EXPLORE LONG-TERM DEBT SITUATION--increase cash flow
2. BALANCE LONG, INTERMEDIATE AND SHORT TERM DEBT--even out credit
3. SHOP FOR INTEREST RATES--take advantage of changing rules
4. CONCENTRATE CREDIT FROM FEW SOURCES--increase control

Where can you get help in managing your finances. It is readily available from several sources. Explore the Small Business Administration's programs near you. It sponsors a group of retired executives (SCORE) who volunteer their time to help small businesses. Lending associations and banks are prime sources of aid. The Production Credit Association (PCA) nearest you might be willing to help. Some sixteen Small Business Development Centers (SBDC) exist around Florida; they provide free counseling, seminars and computer time for the asking. And don't forget the Chamber of Commerce and/or Cooperative Extension Office in your county or city.

Reprinted from APIS, Apicultural Information and Issues, Cooperative Extension/Institute of Food and Agricultural Sciences.

In Defense Of Weeds

A yard should be a meadow, not a lawn
Weeded of all but grass, close-clipped
precluding flower and seed.
My house stands in a meadow holding sun near
its brow
And sprouting dandelions in perfect imitation
of their god;
In shadow where the pine grove leans
The purple violets hold their heads above the
grass
And evening mists drift by to drink this
fragrance
For an offering to the searching starts;
Spring beauty's deliacte pink skirts
Flounce on the spreading spruce;
And in its secret ways, beneath protecting
needles of a former year,
The partridgeberry trails and shows its
four-petalled flowers --
Enough to enchant the Wee Folk
drawn from hidden haunts.
The monarch's first arrival on a pink-tipped clover,
Who could deny himself this breath-taking vignette?
A yard should be a meadow not a lawn
Of close-clipped weeded grass,
Where one can see the gifts of spring
as March and April pass.

Fanny Kraiss DeVine

NO MITES FOUND IN ALABAMA
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Three Banded Italians
Prices start May 1st to May 10th

	Queens	2 lb. w/q.	3 lb. w/q.
1-4	$4.00	$17.25	$21.75
5-24	3.75	17.00	21.25
25-99	3.25	16.00	19.50
100-up	3.00	15.25	18.75

Prices include postage; insurance and special handling. Prices subject to change without notice. Balance due 2 weeks prior to shipping date. We do not guarantee live delivery—file claim with your post office and we will replace. No insurance to Canada. Fumidil-B fed to all colonies and queen rearing nuclei.

Packages picked up at my apiary—any number

2 lb. w/q.	3 lb. w/q.
$11.00	$14.00

Prices start May 11th to July—
Marked Queens .50¢ Clipped Queens .50¢

	Queens	2 lb. w/q.	3 lb. w/q.
1-24	$3.75	$17.00	$20.25
25-49	3.25	15.75	19.25
50-up	2.75	15.00	18.50

Packages Picked up at our Apiary—May 11th to July—

2 lb. w/q.	3 lb. w/q.
$10.00	$13.00

Prices on parcel post include postage and insurance. Disease and mite free certificate with each order.

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1—5	$5.90	$4.75
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25—99	$5.50	$4.25
100-up	$5.25	$4.00

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	1—10	11—99	100—up
2 lbs. w/queen	$18.75	$18.25	$17.25
3 lbs. w/queen	$23.25	$23.25	$22.75

Deduct $.50 per pkg. for customer pick-up.

- **All hives & nuclei fed Fumidal-B**
- **Fumidal-B in package feeder cans**
- **Queens shipped in banks of 100 upon request**
- **Mite and disease-free certification**
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Marking and/or Clipper Per Queen.

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Keeping Bees in Urban and Suburban Areas

by LARRY CONNOR, PhD, Consulting Entomologist
Beekeeping Education Service P.O. Box 817 Cheshire, CT 06410

During the past few years, a limited number of towns, cities and even counties in the United States have attempted to restrict or prohibit the keeping of honey bees (*Apis mellifera* L.), within their boundaries.

These proposed restrictions often result from one individual's specific complaint against one beekeeper. Perhaps a child was stung, or, upon seeing bee colonies in the neighborhood, a complaint was made based upon an alleged allergy to bee stings.

My purpose in preparing this statement is not to deny that bees sting. They are well equipped with barbed lancets and a powerful venom. However, like the man or woman who owns a gun for personal protection, the bee is very unlikely to use this weapon.

I propose that human and honey bee societies can continue to live together as they have for the past five to ten thousand years. There are both financial and ecological reasons for this relationship to continue.

History

Among the first livestock brought to North America by European societies were skeps filled with honey bees. These bees represented an important source of sweetner — honey — and light — beeswax. As European-type societies changed the face of North America, the honey bee was an essential part of that change. Honey bees provided pollination for many early gardens and orchards, seed for legumes for livestock feed, as well as provide sweetner and light.

Value of Pollination

S.E. McGregor, in "Insect Pollination of Cultivated Crop Plants" (1976) reported on the 100 + species of plant crops which depend upon or benefit from insect pollination. In 1982 a dollar value of honey bee pollination in the United States was placed at $19 billion dollars (Levin, 1983). There is no doubt that human society would dramatically change if honey bees were removed from it.

In home vegetable gardens, bees are also important. There are an estimated 40 million home gardens, each of which produces $400 worth of vegetables for home use. Of these vegetables, some like corn, peas and tomatoes do not require bee visits for fruit set. But others, like squash, cucumbers, pumpkins and other vine crops, depend upon bees for pollination; without bees visits there would be no production of these crops. Finally, many garden varieties depend upon bees for pollination of the seed used in the garden. The entire cabbage family, lettuce, radish and other common vegetables would not be available unless bee seed pollination occurs.

The value of bees to these home gardens vary from garden to garden, but Dr. Joseph Moffett of Oklahoma State University estimates the value at between one and two billion dollars per year.

For home fruit and berry crops, bees are even more important for pollination. Apple varieties depend upon bee pollination while peaches and sour cherries benefit by bee visits. Furthermore, strawberries which are bee pollinated are better formed, with more developed 'seeds' on each berry. Finally, berries like blueberries develop sooner, and as larger berries, when pollinated by bees.

Very few studies have been made into the economic or ecological benefit to honey bees to pollination of foods for birds and wild mammals. Dr. John Barclay, currently at the University of Connecticut, estimates that two-thirds of all trees and shrubs important to wildlife are also of importance to honey bees. This suggests a close evolutionary dependance, and Dr. Barclay states that the species carrying capacity is increased by honey bee pollination.

Thus, from birds at a bird feeder to deer and pheasant hunted by the sportsman, honey bees enable the species to find more food, and reproduce at larger numbers.

Results of Colony Removal

If a town or city forced the removal of all beekeeper-kept bee colonies from boundaries, I would predict the following events might occur:

1. Pollination of home vegetable and fruit and berry crops would become unpredictable. There would be no controlled supply of honey bees for this pollination need. In addition, pollination of tree and shrubs which provide food for birds and suburban wildlife would be reduced.

2. There would be a void in the ecosystem which would most likely be filled with yellow jacket wasps, hornets, other wasps, other bee species (sweat bees, leaf-cutter bees, bumble bees, etc.) and by wild honey bee swarms. Many of these species are not efficient pollinators. Replacement of non-aggressive honey bee colonies with more-likely-to-sting species of wasps and yellow jackets would only serve to **increase** the number of sting emergencies.

3. Wild bee swarms would be attracted to an area kept free, artificially, of other colonies. Thus, I predict an increase in the number of swarms flying into the city or town limits every spring!

Continued on next page

Continued from previous page

4. Bee colonies in hollow trees, sides of buildings, and swarming bees would be ownerless, and with no residents allowed to keep bees, likely to stay that way. With hobby and sideline beekeepers in an urban/suburban setting, there is an incentive to collect these unmanaged colonies and place them into regular beekeeping equipment so they can be more productive.

This also means that there would be no effort by urban/suburban beekeepers to provide alternate water supplies for bees, forcing wild swarms to visit bird baths, swimming pools, pet watering dishes, etc.

Public Education

I have served in some form of public education since 1967, and I know that most people in the general public are unable to tell a bee from a wasp. This means that many "bee" stinging attacks are actually another insect species.

The most commonly mistaken species in the yellow jacket wasp. Many people see the grey or brown paper nests and consider these yellow and black insects to be honey bees.

There is also a good deal of confusion about bee sting allergies. In part, I believe that this confusion comes from the medical profession, which must err on the conservative side because of liability responsibilities. For example:

If an in individual is stung by a honey bee and the body swells past one body joint, this is correctly called a large local reaction, and not anaphylaxis. While the large local reaction is unpleasant, it is not a life-threatening situation.

The medical profession has developed a system of using venom from honey bees to develop a positive immune response. By using venom, and not the whole bee body extract (no longer recommended), an allergic individual may obtain protection from honey bee stings.

A person may be allergic to one venom (from one species) and not to another. For example, in one survey of venom allergic individuals, only 12% of those tested were allergic to **both** honey bee venom **and** venom of yellow jacket wasps.

Plan of Action

In most instances, beekeepers will be able to keep bees in an urban or suburban setting without danger to children, pets, or allergic individuals. The use of a fence or living hedge to deflect bee flight into the air is recommended. Bee colonies should be located between 25 to 50 feet from public streets and passageways. A source of water should be set out for the bees to prevent bees from visiting other water sources. Finally, the beekeeper will be well advised to requeen with a gentle bee stock, such as the Midnite or Buckfast bees, to reduce stinging risks.

Every community with a history of bee problems may wish to follow this successful plan:

Develop a special committee charged with the responsibility of investigating possible bee hazard situations. The committee should consist of a beekeeper, an Extension Agent, and a member of town/city government. This committee should investigate the situation, and make a binding recommendation. If the bees must be moved, a fence erected, a water source provided, this is the group which should deal with the situation. □

Levin, M.D., 1983, The Value of Bee Pollination to U.S. Agriculture Bull. Ent. Soc. Amer 29(4): 50-51

McGregor, S.E. 1976. Insect Pollination of Cultivated Crop Plants, U.S. Department of Agriculture. Handbk. 496. 411 pgs.

The Washington Scene

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

Another week in Washington (March 25 through 29) found the Congress deeply involved with preparing a number of a big ticket bills and agriculture was getting its share of attention. Since our last trip in early February (3), farm bills have been introduced. By request Senator Jesse Helms and Congressman Ed Madigan introduced the Administration's farm bill. The Helm's bill (S. 501) and Madigan's (H.R. 1420) would terminate the honey loan program, but would allow the 1985 crop to be covered. In addition to this, Senator Helms introduced his personal bill (S. 616). The latter would drastically reduce the honey loan rate to a percentage of the world honey market.

THESE BILLS WOULD BANKRUPT THE COMMERCIAL BEEKEEPER IN SHORT ORDER. This fact is not understood by a majority of Congress. And therein lies our problem, especially so, since the Department of Agriculture has tried so hard to discredit us. If we successfully oppose these bills and write one of our own, our first order of business is to set the facts straight and educate congress on the true updated value of honey bee pollination to the environement.

We Need Legislation

The pending farm bills are mostly written for commodities that produce a surplus and needs some export business. Also, these commodities can be overproduced. Honey is a net importer and runs no risk of overproduction. All discussions about legislation pay lip service to pollination and in the final analysis give little attention to this important point. The main points in the above bills are a world market oriented loan rate and production controls. Neither point fills our need.

We can live nicely on the program Senator Helms (S. 616) proposes for sugar which provides for commodity loans of 18 cents while the world price is less than 4 cents. Duties and quotas are used so that the Commodity Credit Corporation takes over no sugar. **Ideal for us.** We need to tell our congressional contacts that we feel that we should receive the same treatment as sugar. We discussed this point in detail in the several congressional offices.

Mr. Helms tells us that the honey program is expensive, but on the other hand he tells us how the Administration keeps to cost of the sugar at zero levels by using duties and quotas. He justifies his support for sugar protection as follows—

> "In my opinion, lowering our loan rate for sugar at this time would send a contradictory signal to the Europeans about our willingness to support our farmers on the issue of fair trade. In addition, it would not be fair at this time to leave our sugar industry to compete in the world market with heavily subsidized foreign sugar selling for 3 or 4 cents a pound.
>
> "... In light of these factors, the sugar provision in my bill (S. 616) calls for a simple continuation of the current loan program with loan rate set for the life of the bill at the 1985 crop price of 18 cents."

Several congressmen on the Agriculture Committees advised us to call attention to Helms' favored treatment for sugar while ignoring the honey problem. Darryl Nirenberg (Helms' Aide) felt that the Senator's position on honey was good sound reasoning. Tut Tut!!

Send for Copies of the Legislation

Copies of S. 501 and S. 616 can be obtained by writing your U.S. Senator. A copy of H.R. 1420 can be obtained by writing your congressman.

What We Hope You Will Do

Please write your congressional delegation about the points I have raised in this article. So that you will be properly informed write for the bills. Also, urge other beekeepers to do the same thing. We must win this round. I feel that we can if enough informed beekeepers contact their congressional delegations. May we count on you???

OHIO EXTENSION

Continued from 228

moting the concept of extension work, please address letters c/o The Editor, GLEANINGS, Box 706, Medina, OH 44258 and we'll forward copies to the legislators most involved in this recent activity. The importance of this position should be evident to all. Ohio is a huge hobbyist and sideline beekeeping state with approximately 10,000 beekeepers statewide. The history of beekeeping research and development has been extensive. To abandon beekeeping by not comprehensively funding an state extension position to serve beekeepers' need for information and assistance, is to deny the great importance of beekeeping to Ohio agriculture and the national beekeeping industry it helps to support. Oddly enough, we have been advised NOT to ask readers to write letters. It seems that certain state bureaucrats (sadly enough, even some who were hired, in full or part, to help maintain Ohio beekeeping), are more concerned with playing political games and protecting their own turf than they are in helping promote this valuable extension position. Well, we've had enough. We believe that it is ALWAYS better to have the people decide these issues than it is to let it be decided in a hushed fashion behind closed doors. Enough is enough. We sincerely hope that all beekeepers will get behind this effort and help turn back a national tide that has growingly ignored the need for extension positions in beekeeping.

LEGAL BATTLES
How One Beekeeper Wins In Court

by GREGG MANSTON P.O. Box 4925 San Luis Obispo, CA 93403

I am a beekeeper who specializes in Pollination Services. On June 2, 1984, I received a call from Ed Acrey, a field man for the Royal Sluis Seed Company, Salinas, California. He wanted my pollinating services for a contract Seed Cauliflower and Seed Celery crop. These fields were located near Santa Maria, California.

On Saturday night, June 2, I placed my 28 beehives in the seed crop fields. On Sunday, June 3 and again on Monday, June 4th, I contacted the farmer who was actually growing the seed crop, letting him know my bees were in his fields and giving my name and telephone number in the event of pesticide application. Also on Monday June 4th, I contacted the Agricultural Commissioner's Office in Santa Maria to officially register this bee location and paid the registration fee.

Registration of a bee location in California requires that all users of pesticides notify all registered beekeepers within a responsible time prior to application of pesticides so that the beekeeper may protect or move his bees. This notification law protects the beekeeper against accidental spraying. In the event an apiary is registered and is sprayed, the pesticide applicators are liable for damages. If a beekeeper has a location that is not registered, he keeps that location at his own risk. Pesticide applicators are not liable for damages in unregistered locations. Registration costs the beekeeper ten dollars ($10) per year per apiary location. It is the responsibility of the applicator to check with the Agricultural Commissioner's officer prior to pesticide application to locate any registered apiaries.

On June 13th, I called Mr. Acrey to make sure everything was going smoothly and to inquire about any planned pesticide usage. He said he was not aware of any planned pesticide usage.

On Sunday, June 17, I was in the area and stopped by my apiary location to look at my bees. They seemed to be actively working both the Seed Cauliflower and Seed Celery. In fact, it appeared as if a heavy nectar flow was occuring form these seed crops. One could smell the flowers from a distance. My strongest hives were by far my most active ones.

In the early morning hours of Monday, June 18, my bees were sprayed. Two companies were responsible for this spraying. Western Farm Service of Lompoc, California was the Pest Advisor and supplier of the insecticides, and McCarthy Air Division, a part of McCarthy Land Company, Fresno, California, was the company that actually applied the pesticides. I was told that my bees were accidentally sprayed as the spraying occured very early in the morning while there was a heavy fog cover seriously reducing visability. Neither the Pest Advisor nor the Applicator had bothered to investigate if any registered apiaries were in the area of the pesticide spraying.

The chemicals used were Phosodrin, Meyinphos 400, and Medicyslox-R. All these chemicals are extremely toxic to honey bees. Also, if a field is treated that bees are working, there is a certainty that the bees will bring back poisonous pollen for queen food. Not only do foraging bees get killed, but also there is a large possibility of the queen to die from the insecticides with the colony dying later due to queenlessness. These chemicals have a short residual period. Therefore, there is less probability that less active colonies will suffer queen kills with an early morning spraying. A short residual period also makes chemical analysis more difficult, as speed in the analysis is of the essence.

To the credit of the Western Farm Service Company, Charles Boren, the supervisor of the Lompoc Office reported the accidental spraying not only to me, but also to the Agricultural Commissioner. He called the afternoon of the spraying. Mr. Boren also said there was little doubt in his mind that he could have "gotten away" without reporting the spraying. He felt it was his duty as a responsible individual to report this accident.

I was contacted the next day (June 19) by Mr. Boren advising me of another potential spraying date of June 21. I moved my bees from the Seed Crops on the night of June 20th to avoid future spraying. Mr. Boren also apologized again for the accidental spraying and said if I suffered any damages, I should send him an itemized bill. He also let me know that McCarthy Air Division was the actual applicator and I should contact them as well.

On June 26th, I contacted Dana Merril, the contact person for McCarthy Farms in Santa Maria. Mr. Merill admitted my bees were properly registered and it was an oversight that the bees were accidentally sprayed. He said that McCarthy was at fault, was negligent in their application, and explained that visibility was poor due to the fogcover on the morning of the pesticide application. Mr. Merril was very sorry that my bees were sprayed.

In my initial contacts with both Mr. Merril and Mr. Boren, they both inquired if my bees suffered economic damage. They asked me how much money it was. I stated to both individuals that I was unable to assess the damage at that time since I had to monitor the hives and would let them know of any damages suffered. I said that if I suffered damages, I would prepare an itemized bill for damages.

On July 20, after thorough monitoring, I determined that I had suffered

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damages. I calculated by losses as follows:

8 Colonies Lost (strong)	**$75.00 each**	**$600.00**
9 Honey Supers Lost	**$17.75 each**	**$159.75**
Honey Inside Lost Supers	**$.73/lb.**	**$328.50**
1985 Almond Pollination Fees Lost for 8 Hives	**$21.50/Hive**	**$172.00**
1985 Apple Pollination Fees Lost for 8 Hives	**$17.00/Hive**	**$136.00**
1984-85 Honey Crop Lost- 60 lbs./Hive x 8 Hives	**$.73/lb.**	**$350.00**
20 Colonies Weakened 1984-85 Crop Yield Loss (20 lbs./Hive x 20 Hives)	**$.73/lb.**	**$292.00**
	TOTAL	**$2,038.65**

This amount did not include my mental state of depression nor the effects it had on my business outlook of providing future pollination services.

Charles Boren, of Western Farm Service, called me within a few days of my billing, requesting to meet with me concerning the bill. He stated that he felt responsible for half the damages that were caused and said his company was willing to pay half the bill. In light of the positive attitude, the offer seemed eminently reasonable. On July 24th, I settled with Western Farm Service for $1019.32.

McCarthy Farms was a different story. After more than one month from the submittal of the July 20th letter, I had not heard anything from McCarthy Farms. I than contacted Mr. Merril, and he directed me to contact Mr. Robert McGasson, in Fresno, California. I made repeated calls, sent Mr. McGasson a second copy of my bill, all to deaf ears. I did receive one call from Mr. Phillip Carry. He said that he was the pilot who actually sprayed my bees and stated that McCarthy Farms was totally innocent of any wrongdoing. He was also extremely hostile.

On September 14th, 1984, I filed suit in Small Claims Court in Santa Maria, California, against McCarthy Land Company, Fresno, California, for the amount of $1500.00 (the maximum allowable). The suit included 50% of the above damages as well as my mental state of depression and negative business outlook. They were properly served by the Sheriff and a court date of October 23, 1984 was set.

On the morning of the court date, I presented my evidence which included a sprayed and damaged bee hive, my letters to McCarthy Farms, copies of my telephone bill showing I had made the long distance calls contacting the various people mentioned above, a copy of my cancelled check to the Agriculture Commissioner showing that the hives were properly registered, a copy of the pesticide analysis from the State of California, Department of Food & Agriculture, showing pesticide analysis and conclusions of my dead honey bees, a copy of the pesticide violation issued by the Agricultural Commissioner's office to McCarthy Farms for their unauthorized pesticide application, as well as having a well prepared presentation of the events and damages suffered. I wish to point out that the beehive was the best evidence. The judge could not take her eyes off the box and was very interested in seeing the inside of the hive.

Amazingly, McCarthy Farms never showed up to defend themselves!!! I won the judgement by default. In California, after one secures a judgement in Small Claims Court, one has to wait thirty days for the appeal period of the defendant, before one can proceed to collect on the judgement. Due to my schedule, I waited until December 16th to record my judgement. On December 16th, I recorded my judgement, and filed two abstracts of Judgements in Fresno County and Santa Barbara County. An Abstract of Judgement is a document that the plaintiff files in any county of California he desires. This Abstract prevents the transfer of Real Estate either by lease or by sale until the Abstract is satisfied (paid off). These documents can only be effective if the defendant owns or leases Real Estate. I also had McCarthy Land Company served with an order to appear for examination. This document requires the defendant to appear before the court and reveal all assets that he has. The plaintiff, who also appears at that time, can elect or attach or have the Sheriff sieze any money, real or personal property to satisfy the judgement.

On January 10, 1985, the Fresno Company Sherriff served the McCarthy Land Company with this notice to Appear for Examination. On that same date, Tom Amaro, corporate employee of McCarthy Land Company, telephoned me to arrange payment of my judgement. On January 11, 1985 he personally delivered a check for $1579.44. This amount included the total amount of the judgement, court costs, the cost to serve the defendant with various documents, recording of documents, and interest on the judgement.

In conclusion I wish to inform other unfortunate beekeepers of a possible course of remedy in the event their bees are sprayed with insecticides. The best remedy is not to get sprayed to begin with. If one's state has an apiary registration program, REGISTER ALL APIARIES. Remember, with an unregistered location, the beekeeper usually has no recourse. CONTACT NEIGHBORING FARMERS and let them know of the apiary. Make notes on the dates and times of the telephone calls, who was spoken with, and what was their response. Important: DOCUMENT ALL CONVERSATIONS. Notes made during telephone conversations are admissable in most courts. Don't rely on memory, WRITE IT DOWN WHILE ONE IS TALKING. If notified of a prospective pesticide application, MOVE OR COVER THE BEES. If one is sprayed, SUBMIT A BILL. When submitting a bill ITEMIZE THE BILL. No one will pay a bill if just an amount is given. People want to see how the amount was arrived at. BE SURE TO INCLUDE ALL LOSSES. KEEP A COPY OF THE BILL. If one goes to court and one can't remember what happened, one will lose. SIT DOWN AND WRITE A SPEECH. DON'T RELY ON AN OFF-THE-CUFF-SPEECH. In the speech, have a well presented narrative. Start at the beginning, use dates and times, who was spoken

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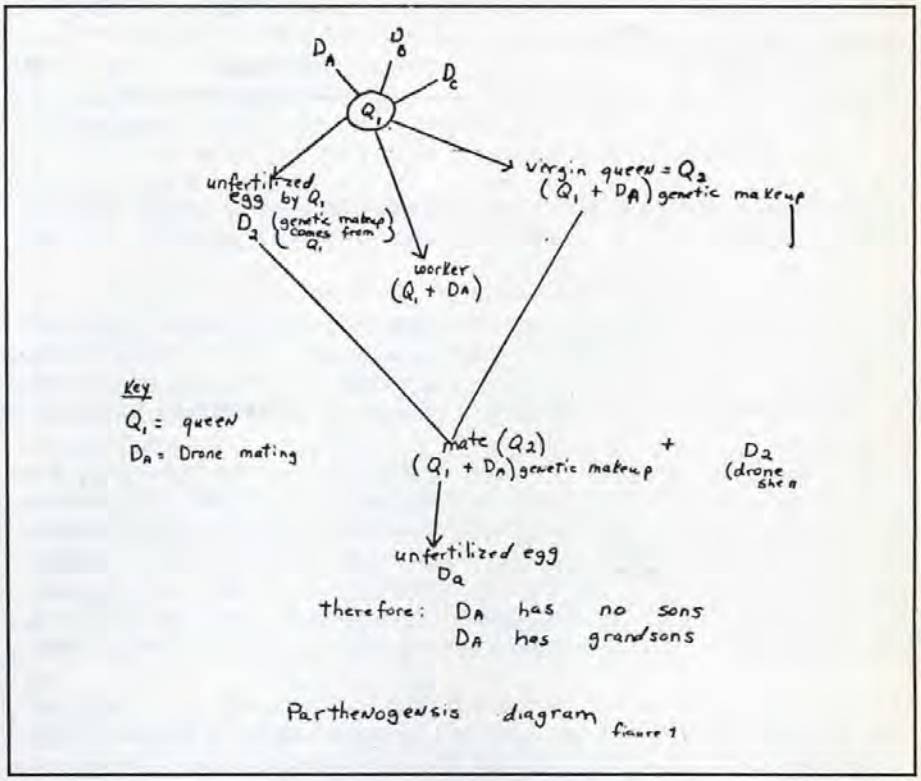
Drones — The Neglected Hive Inhabitant

by KATHY AND ROGER KATHY HULTGREN

In persuing the literature on drones one finds that the information is extremely fragmented. It is the intent of this article to synthesize the existing data and expand our present knowledge of the hive inhabitant known as the drone.

A drone is reproduced through parthenogensis which is reproduction with only the female component instead of the direct union of half the genetic chromosomes of the male and the female. This unfertilized egg which will be laid in a cell with a ¼ inch diameter will not reproduce a "son" but will yield "grandsons". The emerging drone within a hive is needed to mate with future virgin queens (Q2), who possess a genetic material from the mother queen (Q1) and the drone (DA) she mated. After the virgin queen (Q2) is mated she lays an unfertilized egg which is derived from her own genetic material (Q1 + DA) and results in a descendant (Da) of the grandfather (DA). See figure 1.



Aside from this phenomenon, a drone possesses other anatomical differences. They are larger and wider than the worker. Drones have two compound eyes while the workers have two compound and three simple eyes. The antennae of the drone consists of 13 segments with the outer eight containing their sense of smell with 30,000 organs per antenna. The worker's antennae have 12 segments with 6,000 sense organs per antenna. The drone's tongue is short for they are fed by the workers. It has been noted that one day old drones are fed less than their counterparts of two to five days of age. It has been suggested that their "begging" ability which requires them to stand on four legs and to tap the worker's head with their forelegs takes a few days to develop. The workers never feed pollen outright to a drone. They are fed a glandular mixture of honey and pollen until to eight days of age. It has been hypothesized that this diet could be a contributing factor in the drones ability to resist American Foulbrood over a queen or a worker. After eight days of age, drones feed themselves and avoid the brood chamber. The congregate in areas on the comb and are usually stationary. When they do leave these areas, they are not gone for more than two minutes. Since the drones main function within the hive is fertilizing virgin queens, they possess no stinger, wax glands or pollen baskets.

Drones can be laid by mated queens, virgin queens and laying workers. The drones produced by laying workers are smaller in size for they are raised in the cramped quarters of worker cells and have been underfed by the nurse bees. Aside from their size, these drones are similar in all aspects to the drones produced by queens. They possess viable spermatozoa and are capable of fertilizing virgin queens.

Drone rearing begins in late spring or early summer and requires 24 days before the drones emerge from their cells. In order to raise drone brood a hive temperature of 94° is ideal whereas to raiser workers a temperature of 92° is required. The number of drones raised within a colony is dependent upon the bee's species, the strength of the hive and the condition of the comb. Comb, which has been damaged will be repaired by the workers but the repaired area will contain drone cells instead of the desired worker cells. This is the major reason for replacing damaged comb for it controls the drone population to a degree. An average colony will raise approximately a few hundred drones each year.

After emerging, the drones make their first flights between the fourth and fourteenth day with the mean being six to eight days. Before taking thier orientation

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flights, special care is taken by the drone in cleaning his antennae and eyes. For when they leave the hive, they orient themselves to landmarks while the workers utilize the sun in their orientation. Their flights occur between 11:00 A.M. 5:30 P.M. with the majority occurring between 2:00 P.M. and 4:00 P.M. These flights have a duration of six to fifteen minutes. During the drone's lifetime an average of 25 flights will be taken. Drifting between colonies is quite common with drones. When this occurs, they are readily accepted by the hive and remain with it. It should be noted that 96.2% of the drones return to their "original" hive.

Drones require eight to twelve days to mature sexually which when added to the twenty-four days needed for their development results in thirty-six days before they are able to mate with emerging virgin queens. If food is scarce, even in summer, the workers will extract drone larva and expel it from the hive before performing the same actions with worker larva. However, if a colony is queenless or possesses a virgin queen, drones will be tolerated in times of dearth, through the fall and even into winter.

The mating flights range from 25 to 57 minutes with the average being 30 minutes. The drones, propelled by their larger wings, fly at a speed of 9.2 to 16.1 km.p.h.. In order to sustain the energy necessary to accomplish this feat, the drones engorge on honey. An average of 14 mg. of sugar is needed for such a flight. The carbohydrates are derived from the honey and are utilized to generate the necessary energy for flying. When mating is imminent, the drones and virgin queens converge on the drones' congregating areas. These areas can be on any type of terrain, as near as 50 meters or as far as 5 kilometers from the apiary site and are utilized by each new generation. Mating takes place between 20 to 100 feet in the air. A queen will mate with several drones until she fills her spermatheca with approximately five million sperm. The drone's genitalia, in comparison to its' body size, is extremely large and located in the abdominal area. The queen is pursued until her sting chamber and vagina are exposed. In fertilizing the queen, the drone's genitalia ruptures from the abdominal area and results in the drone falling and dying to the ground.

ITEM	DRONE	WORKER
egg	unfertilized	fertilized
cell size	¼" diameter	1/5" diameter
egg stage	3 days	3 days
larva stage	6½ days	6 days
pupal stage	14½ days	12 days
developmental time	24 days	21 days
life span	59 days	42 days summer
maturity	12 days	wax production
		13-18 days
		royal jelly
		5-15 days
		venon sac filled
		15-20 days
orientation flight	8 days old	7-10 days old
eyes	2 compound	2 compound & 3 simple
pollen basket	none	two
stinger	none	one
wax glands	none	four pair
# sense organs on each antenna	30,000	6,000
function in hive	fertilize queen	perform labor in hive

For more than 75 years queen producers have been controlling the breeding of queens through drone production and the utilization of isolated mating yards. Drone production is facilitated by placing drone comb within each brood unit. This foundation contains cells which measure ¼ inch in diameter. A pre-selected queen lays the drone eggs which are capped within 14 days. At this time, a new hive is established. Over the bottom board a queen excluder is installed and the capped drone brood is placed with ample pollen and honey. The workers from the parent colony are shaken in front of the new hive. These workers walk in and through the excluder to the capped brood. The queen excluder has a dual purpose in that drifting drones are prevented from joining this new colony and that the newly emerging drones will be confined to the brood chamber. After the drones emerge, they are used to restock colonies which contain virgin queens who are ready to be mated. In this manner, the drone population and species is totally controlled. The mating yard is the next area of concern in controlled breeding. These isolated yards require a tremendous amount of space and even this does not guarantee "absolute" control. Foreign drones may drift into these areas and the intended virgin queen could become mated prior to even reaching these areas.

Watson, in 1927 developed the technique of artificial insemination which eliminated the need for these individual mating yards. It was now possible to select the species and even the specific drone which would be mated with a queen. This provided absolute control over the mating process.

The drone's life span is usually 59 days. During this time the workers also tolerate his presence and allow him access to the honey stores. As the weather changes to frequent cool fall evenings, the workers' attitude towards the drone also changes. With the swarming season behind them, the workers being winter preparations. The honey stores which will be needed to survive the winter and to allow for spring buildup are horded. The drone's role in the life cycle of the hive is over and their demise is evident. The workers force the drones to the outer frames and then to the walls of the hive. Here they are prevented from feeding and become half starved. Some are chilled to death while the remainder are driven to the bottom board. In frenzied actions and adamant intent the workers chase and drag the drones to the front entrance. Once out, they are not permitted to re-enter. Some fly off to die while others, too weak to fly, are pushed off the bottom board. Here they will die from the night exposure. With this task completed, the winter preparations continue. In spring, the queen again lays unfertilized eggs which result in a new drone population and another turn in the life cycle of the hive.□

Discover Spring

Welcome Sweet Bee Time

by FANNY KRAISS DeVINE 1560 Beall Ave., Apt. A-7 Wooster, OH 44691

Beekeeping is frequently the favored avocation of the introspective human; the intellectual gravitates toward it; and the contemplative needs only a passing swarm welcomed with a straw skep to be on his way as an apiarist. Working with bees requires total involvement during the change of seasons, and each task sharpens a man's senses. The moods of the bees are shaped by weather, and their activities are a response to their immediate surroundings.

In a manner of speaking, the beekeeper is truly "laboring in God's vineyard," for the reasons of spring and autumn (to us the most visibly creative periods of the year) require that he "escape" from the fetters of his own harnessed culture and lend a hand to the most perfectly organized of all societies, that of the bees. The excitement of spring becomes almost palpable, for working with bees is a solitary task, but never a lonely one.

Along about March-April a man's bees provide plenty of opportunity to "discover spring"; this is a good time to go beyond the immediate need — to reconnoitre in the manner of the bee and discover your own nectar of the spirit; your own melodic symphony of joy mellifluously dancing above the organ note of humming bees. So, don't just stand there, go out and search for Spring; and for this, include the family.

Explore the side roads almost anywhere north of the Mason-Dixon Line. With the trees still bare, and the greening carpet beneath yet low and tender, a man may indeed stride across a meadow and through a grove, feeling like Gulliver, a King, or just plain Big.

If you believe in the good elves who blend their own special magic with this season, then you will walk through the woods and come near seeing the Wee Folk. Shadows get in the way when the breeze flicks at an oak leaf left here from autumn; or just when you think you've glimpsed a spirit, the tent pole of the Mayapple tilts, and the angle of the sun is deflected, so that your vision scrambles at the crucial moment while the Wee Ones escape you. But the possibility continues; and in the meantime, you may enjoy their Kingdom during the brief reign of the Lilliputian World.

During this period miniature gardens sprout in patches, almost over-night! A slow rain, followed by two warm days with sunshine — after the snow flowers, such as the trailing arbutus, and the snowbells and the skunk cabbage (which gush up along with the first running edges of the melting snow) and before the leafing of the willows — in this brief period, if you are lucky in judgement, you will see the rue anemone, thick and fragile in tissue-pink with wine-veins flowing through the five petals. You will come upon this tiny flower in an open patch, as if the pillow of the meadow had suddenly been embroidered for a great occasion; which indeed it had.

Where the oaks form thickets of saplings, and an accumulation of leaves keeps moisture to a spongy depth, the trillium or Indian turnip sprouts in groves — each to its own color: the deep red with liver-spotted leaves; the white with rosy stripes, tri-petaled, tri-sepaled, tri-leaved! The Trilogy of life's new and eternal promise. The Mayapple will be just setting buds; but its awnings are wide-spread, like trim concessions on a green fairground. Buttercups choose the higher, drier places where the soil is sweet and the sun bright — since they KNOW they are even brighter.

The trout lily likes plenty of water; so if you know where the marshy spots are, you will also find these lovely yellow six-petaled flowers, turned backward, like surprised, six-pointed stars, sharp at the tips. The Johnny-jump-up and the purple violet are both in bloom — but each in their separate patches; and this is one of the delights of nature: each surprise comes in its own individual package; never in confusion. The orderliness of nature's house is one of the marvels that makes our world so restful in the areas where man has not interfered.

Hapatica is never found sparsely , but in waves, as though a tide had swept them up and left them there for their brief, pink reign; and since the wild plum is the earliest to bloom, its lovely white plume is apt to sway high above a spindly cluster of trunk. The thrust of the wild plum's blossoms against a clean, clear blue sky in late April is a sight to quicken the heartbeat and put a spring in a lagging step. The bluejay delights in perching on the tip edge of the plum in flower, as if to dramatize the effect; just as the cabbage moth will light on the dandelion, as the ethereal forerunner of the butterflies about to leave their cocoons.

Sweet William (wild phlox) seems t like the hedgerows, almost as though bidding for human adulation! You will invariably find it alongside the trail: not quite blue, not yet violet — but a mauve which has give up much of its blue to the sun. In your search the low rolling tones of the mourning dove will drift to your ears — but you will probably not see the bird, for its dun color so perfectly blends with the bark of its high perch. But the unearthly notes will give credence to the scene around you, which lasts, at best, a week; and a gusty wind with rain in its pockets can reduce the period to days.

If you miss this miniature garden, with the trees still bare, and the greening carpet beneath yet low and tender, then you've missed your kinship with the Wee Folk in their brief reign! Because the rest of time, when summer arrives, and the hot sun is held back by the full-fledged trees, after that, we are again mortals — insignificant beings slinking through the underbrush along with the fox and the weasel! no bigger than we really are and no smaller than the next human coming up from the other side of the hill. □

Beekeeping Potential of Niger

by DJIBO MOUMOUNI and DEWEY M. CARON
University of Deleware

Beekeeping in much of Africa is practiced using ancient traditional methods. Peace corps volunteers such as Kathleen DeBold working in Central African Republic (see July '84 ABJ pgs. 532-533) are attempting to introduce new methods of beekeeping that compliment the old. Other students from African countries study beekeeping in the U.S. and then introduce change when they return. Kathleen, mentioned above, was a student of mine at Maryland. Presently Djibo Moumouni of Niger is taking Entomology courses with us here at Delaware. Both are working to bring about changes in beekeeping.

Djibo is from Niger. Niger is one of the Sahel countries of the southern fringe of the Sahara desert in West Africa. Algeria and Libya are to the North, Chad toward the east, Upper Volta and Mali toward the west and Nigeria and Benin are between landlocked Niger and the Atlantic Ocean on the south. Although large in size (equivalent of Texas and California combined), Niger is four-fifths arid desert inhabited only by Nomadic tribes. Along the southern boundry, 300 miles of the Niger River (the black Nile) with its surrounding savannah supports 90% of the 5.2 million inhabitants, 90% of which are in agriculture.

Niger is an independent country (1960) now ruled by a Military Council with strong economic and cultural ties to France, its former ruler. It has rich uranium deposits; with many drought years agriculture has not contributed greatly to exports although cattle and groundnuts (a type of peanut) are grown in large numbers along with sorghum, beans and some cotton. The nomadic groups primarily tend livestock. The recent drought years have been especially hard on these inhabitants.

As in other parts of Africa, bee hives in Niger vary from area to area. Many hives in the southern agricultural area of Niger are conical shaped and made of woven grasses. The inside of the hive is covered with a hardened mixture of several sweet smelling plant materials and fresh cow dung. The opening is covered with a slab of a colabas fruit or more dung that has small opening cut in it for the bees. Prior to placement of a hive it is thoroughly smoked inside with a mixture of plant parts. The hive serves as a trap hive.

The bait hives are placed off the ground in trees. Often the tree is a Bombacca tree which, when it flowers in November or December, is also a source for the bees. Hives are securely fastened in a horizontal position in appropriate trees. One or sometimes several hives are stationed in a single tree. Beekeepers know their own hives and trespassing on someone else's beehives is a serious matter.

Dbijo in the University of Delaware Apiary

A family may own 20-30 hives depending upon how well off they are. Virtually all beekeepers are farmers of millet and then often may keep other animals in addition to bees. Hives may be prepared and set out at any time and this common in April or May when rains are due.

After placement of a hive it is checked for occupancy. If no swarm has arrived in one or two weeks the hive is checked to be certain that a lizard, termites or other creatures are not now in residence which disrupts the hive. Empty hives may be resmoked to help provide an attractive home for bees.

These traditional hives are harvested two to three times per year. Harvesting is always done at night. One member of the harvest party scales the tree and removes combs from hives using a smoky torch of grass with palm leaves. A large fire is usually also made on the ground for smoke and to provide light to see. In harvesting, one or a few combs are almost always left in the inner part of the cone along with the adult bees. It is thought that the queen is usually in this group of bees being driven inward by the smoky torch of the honey harvester. Many bees are left from harvested combs in the nest and on the ground where combs are further brushed before the honey and brood is removed for use.

Beeswax from the comb is extremely valuable. It is extensively used to patch water containers. Many natives believe a heavily patched water container keeps the water cooler than a newly made vessel. Honey and brood comb are separated but both are consumed in the comb for the most part. Liquid honey is easier to use and eat in the comb than as liquid when few utensils are used in eating.

The beekeeper may sell or trade honey or brood combs for other goods. Eating the brood is thought to convey some immunity from getting stung and less pain with a sting. Brood is usually eaten soon after harvest but honey may be stored two or three months before use.

When Djibo completes his Entomological studies in the U.S., he wants to use his knowledge and interest in apiculture to further develop the beekeeping industry in his country. He will write a project to organize beekeepers. He hopes to supply them with beekeeping equipment and knowledge to improve the level of production among the beekeepers of southern Niger. He hopes USDA AID will assist with this project since AID is now extensively, along with over 120 Peace Corps volunteers, helping Nigers' farmers conquer the drought cycles of the Sahel region.

Endangered Nectar Sources

by FRANCIS O. HOLMES
Flanders Rd., Henniker, N.H. 03242

Mid-April used to find honeybees actively collecting nectar and yellow pollen from the maturing blossoms of the common New England pussy willow, *Sailix discolor.* But times have changed! Most of the plants are still there, but not blossoming, and the honeybees are no longer paying attention to them. What has caused this unfortunate change?

In the half mile of roadside west of my house I counted the number of these common pussy willow bushes in midsummer. There were about forty-five of them, but not one of them had produced a blossom that year. In order to keep the roadside neat and clean tractor-driven mowing machines had cut all roadside plants, including willows, as close as possible to the ground level during the preceeding autumn. The willow plants had sent out new branches from their stumps, but these new branches were not ready to blossom by the following springtime. The same roadside mowing was carried out each successive year. How long the injured bushes will be able to survive is not clear because their failure to blossom each springtime means that no willow seeds float in the breeze to colonize locations where individual willows may have died from simple old age.

So the common pussy willow, *Salix discolor,* much loved by the early settlers of New England for use in bouquets and other floral displays, has become an endangered species and is now much reduced in value to honeybees and beekeepers.

But we can do what the early settlers did when they wanted to make willow baskets to carry their farm products to market. They planted the basket willow, *Salix purpurea.* Fortunately this willow, once planted, has displayed the ability to grow tall and to live long where neglected.

At some country cross-roads this purple willow seems to be able to grow and blossom year after year even if entirely neglected. The humming of honeybees on the flowers can be heard even at a distance of 25 feet or more from the blossoming bushes in mid-April.

People often think that to find willow trees and willow bushes they should wander through the woodlands. Nothing is farther from the truth! In substantial woodlands almost no willows will be discovered. They cannot stand deep shade.

People also often think that willows are found at the edges of ponds and rivers because they need to grow in shallow water. But the willows know better! They grow along the streams and at the edges of lakes because they must avoid being shaded and the edges of lakes and rivers always provide some sunny spots.

Beekeepers that want to provide more nectar and pollen for their honeybees should plant purple willows wherever possible. Stem cuttings root readily in one inch of waer at 70 to 75°F. When the first tiny roots appear the cuttings can be planted out in suitable sunny spots, far enough from the pavement edges of roads to avoid the ominivorous roadside mowing tractors that would scalp them each year. They will grow to a height of 20 feet or more eventually and will make dependable substitutes for our endangered native willows.□

A SPECIAL OFFER FROM *GLEANINGS*

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

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

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

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

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

NEWS and EVENTS

Advance Notice of the Beaverlodge Beekeepers' Field Day Friday, June 14, 1985

The annual Beaverlodge Beekeepers' Field Day will be held on June 14th 1985 at the Research Station, Beaverlodge, Alberta. The morning session will feature displays and demonstrations and the afternoon will feature presentations on timely beekeeping topics. Anyone wishing to display equipment or materials should write to: Don Nelson, Agriculture Canada, Box 29, Beaverlodge, Alberta TOH OCO or call (403) 354-2212.

Annual Beekeeping Short Course

The annual beekeepers short course for beginners and more experienced beekeepers will be held on June 15 at the University of Georgia, Athens, Georgia. The meeting which is sponsored by the Department of Entomology and the Georgia Beekeepers Association, will be from 8:30 to 4:30 p.m. Registration will start at 7:30 a.m. at the Chemistry Building Auditorium. Demonstrations of practical beekeeping will begin at 1:30 p.m. at the University Apiary on the Horticulture Farm located on Highway 53, six miles south of Athens, Georgia.

Topics and demonstrations will include honey bee life cycle and activities, queen rearing and colony division, management for honey production, honey house operation, recognition of bee diseases, prevention and control, package bee installation and handling of bees. The potential impact of Africanized honey bees and the parasitic asiatic mites on beekeeping in the U.S. will be highlighted.

The teaching staff will consist of several honey bee specialists, including well known commercial honey and queen and package bee producers from Georgia. The course fee is $20.00 per person. Advanced registration is requested by June 12, 1985.

Requests for additional information, program and registration forms should be addressed to Dr. Alfred Dietz, Department of Entomology, University of Georgia, Athens, Georgia 30602 or phone (404) 542-2816 or 542-8711

Symposium of Practical Beekeeping To Be Offered In Iowa

The Apiary Division of the Iowa Department of Agriculture under the direction of Glen Stanley, State Apiarist, will conduct a 3-day symposium for all interested beekeepers in the United States July 30, 31, and August 1, 1985. This meeting will be held at the Starlite Village Motel in Ames, Iowa.

If you are interested in getting started with bees, have numerous colonies of bees, want to increase honey production or improve your overall practical knowledge of beekeeping, this symposium will let you share more than 100 years of practical beekeeping experiences of the Stanley family, successful practices and ideas of many beekeepers throughout the United States, as well as profitable discoveries from the USDA laboratories.

No matter what your status in beekeeping may be, this symposium will be highly beneficial to you. It will take you through each category of beekeeping via lecture and field work.

Bring the family to Iowa this summer and take part in this knowledgeable family program.

For more detailed information contact: Apiary Division, Iowa Department of Agriculture, Wallace Building, Des Moines, Iowa 50319. Phone: (515) 281-5736.

1985 Western Apiculture Society Meeting

For the latest in beekeeping information, socializing with a wide range of beekeepers, great scenery and a very good time, plan to attend the 1985 Western Apiculture Society meeting in August 13-16, at the LaSells-Stewart Conference Center on the Oregon State University Campus, Corvallis, Oregon.

Dr. Michael Burgett, 1985 WAS President and program chairman, has planned four full days of events that will interest people within all ranges of beekeeping skills. A variety of social activities that are sure to please, are planned throughout the meeting.

Registration will begin at 1 p.m. on Tuesday, August 13, at the LaSells Stewart Conference Center located on 26th and Western, across from the OSU football stadium. Abundant parking space for cars, trucks & R.V.'s is available next to the Conference Center. Housing and dining facilities are a two-minute walk from the Conference Center. Close and cozy are two themes for the 1985 meeting.

A Directors and Delegates meeting will take place from 3 to 4:30 p.m. on the 13th. At 7:30 in the evening a Wine & Cheese Welcoming soiree is scheduled at the home of the WAS president.

Speakers for the meeting will offer a wide range of topics. Mr. Lucien Alexander, a consultant forester and master beekeeper from Boring, Oregon, will introduce the attendees to the hazards and rewards of beekeeping west of of the Cascade Ridge in the Pacific Northwest. *[Yes Virginia, honey bees can live in a rain belt!]* Larry Goltz, past editor of *Gleanings In Bee Culture,* and currently working on a nearly completed revision of the A.I. Root book on honey plants, will speak on "Bees & Plants." Dr. Herbert Drapkin, owner of Perma-Comb Systems, will discuss the history and present use of plastics in state-of-the-art beekeeping. Mark Bruner, current editor of *Gleanings In Bee Culture,* will speak of the scoops and innovations his magazine has covered in "One Hundred Years of *Gleanings*."

Dr. Mark Winston, associate professor at Simon-Frazer University, British Columbia, will speak on current trends in Canadian Beekeeping. Dr. William Wilson, discoverer of the honey bee tracheal mite in Mexico in 1980, will address the current efforts to contain and control the mite now that it has entered the U.S. Sue Cobey,

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co-owner of Vacaville Apiaries and skillful artisan of instrumental insemination, will discuss the importance of drone stock in queen breeding. Steve Taber, USDA (ret.) will continue the theme of queen rearing by presenting his new queen rearing techniques. Wayne Robinson, a Puyallup, Washington beekeeper and professional engineer, will talk on systems managment of honey bees. This will be a look at an apiary as a production unit rather than a "cute, unusual hobby." Dr. Carl Johansen, last year's recipient of the WAS Oustanding Apiculturist award, will review his 30+ years of bee research at Washington State University. Carl will be retiring from WSU as of July 1st this year. Other speakers include that unique UC Davis stage team of "Mussen & Gary."

On Wednesday, August 14th, there will be an evening Salmon Bake held in Avery Park, a short four block stroll from the housing area. The feasting will begin at 7 p.m. and continue until the last beekeeping "fish story" has been stretched to its furthest limits.

Thursday afternoon is devoted to a "super tour", to the northern end of the Sillamette Valley to Pacific Wax Works, reputed to be the finest comb foundation maker in the U.S. On the return bus trip to Corvallis, a stop in Dallas, Oregon, to visit the Ellendale Winery will allow the participants to taste the superb meads produced by Robert Hudson. Thursday evening will provide a presentation by William Ruhl, constant American Beekeeping Federation sweepstakes winner, on preparing honey and beeswax for competition. . . this offering is a **must attend** for anyone who has ever entered a honey show.

And on the subject of honey shows: Be prepared for one of the largest honey shows ever seen at a WAS meeting. The competition should be especially keen this year. In charge of judging will be Doug McCutcheon, Provincial Apiarist, BC, and the original owner of the "Doug McCutcheion Memorial Tie," which brought in a revenue of $201 at last year's auction.

The formal program will conclude with the Friday evening banquet, to be held at the Corvallis Elks Lodge, a beautiful facility located on a hillside overlooking the Willamette Valley with a spectacular view of the Cascade Mountains.

The 1985 WAS program is full and varied. For any non-beekeeping family members the beautiful Oregon coast is just an hour away to the west and swift mountain streams with clear and cold swimming, just an hour to the east. We welcome all beekeepers to come to Oregon and enjoy our hospitality and share the wealth of scenery and knowledge. Registration information is available from: LaSells-Stewart Conference Center, Oregon State University, Corvallis, OR 97331, Attn: Mrs. Ruth Madsen.

New Jersey 3-Day Course Wed., June 26—Fri. June 28

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

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

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

Highlights

Film: "Secret in the Hive"; Honey Bee Life History and Avoiding Stings; Bee Yard: Colony Manipulation and Hive Members; Major Honey Bee Diseases and Enemies; Beekeeping Equipment and How to Assemble It; Bee Yard: Colony Manipulation, Assembling Equipment; Apiary Location and Obtaining Your Bees; Seasonal Management Including Swarm Prevention and Swarm Control; Queen Rearing & Introduction; Hiving Swarms, Packages and Nucs; Bee Yard: Hiving Packages and Swarms; Honey Plants; Beekeeping Organizations and Services; Removal, Extraction and Processing the Honey Crop; Presentation of Diplomas; Mead Making & Candle Making; Bee Yard: Removal, Extraction, and Processing of Honey. Simplified Brood Nest Inspection, Moving Hives. Candle Making.

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

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

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

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

World Honey Corp. To Market Bee Pollens

World Honey Corp., based in Greenwich, Connecticut, has begun to market uncommon honeybee pollens. World Honey is merchandising three cool-air dried varieties, which are claimed to be better tasting than most pollens.

John G. Hornblower, World Honey's founder and president,

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graduated from Harvard University, where he studied economics. A successful beekeeper on Martha's Vineyard Island, Horblower created World Honey Corp. as a link between rural beekeepers and the natural foods industry.

World Honey Bee Pollens are collected domestically from top beekeepers, packaged in New York City with the help of the mentally handicapped, and are shipped nationally.

For further information, contact John Hornblower at: (203) 869-0055; World Honey Corp., 10 Pine Ridge Road, Greenwich, CT 06830.

Above is a picture of Mr. Louis Baines who received "The 1984 Beekeeper of the Year Award" at the November 17, 1984, meeting of the Ohio State Beekeepers Association in Columbus, Ohio.

Mr. Haines is to be commended for his outstanding career in beekeeping and related activities in the interest of beekeeping and all beekeepers.

Shown with Mr. Haines and on the left is John W. Koch who received "The 1983 Beekeeper of the Year Award".

Texas Beekeeping Association

Marsh Engle is the 1985 Texas Honey Queen. She is the 20 year old daughter of Charles and Maxine Engle of Wolfe City, Texas. The Engle's are third generation beekeepers and the family has been in the business for over 75 years. Marsha is a Political Science major at Austin College in Sherman, Texas. Her hobbies include promoting honey, making and listening to music, cooking, traveling, public speaking, and slow pitch softball. In her spare time she teaches private piano lessons.

Florida State Beekeepers Assoc. Queen Committee

Alicia Watson was crowned the 1985 Florida Honey Queen at the Florida State Beekeepers Convention in Jacksonville, Florida. Alicia is the daughter of Mr. and Mrs. Jimmy Watson of Bristol, Florida. She is attending Tallahassee Community College and works part time as a cashier. Alicia is traveling throughout Florida promoting the Beekeeping Industry, in particular, honey.

Georgia Beekeepers Short Course

The Georgia Beekeepers Short Course will be on Sunday, July 2, Beekeeping Class for beginners from 2 P.M. until 5:00 P.M. A $20.00 fee covers materials and instruction from teacher with over 10 years teaching experience in beekeeping.

July 7th — Commercial Beekeeping Class from 2 P.M. until 5 P.M. Subjects covered — Queen Rearing, Control of Bee Diseases, Different Bee Races and Their Traits, and How To Buy Equipment and Sell Your Honey.

All students , will receive a Package of Vitex Seed, the Number 1 honey plant or 1 small Vitex Tree free.

To register send $20 fee to Honey Tree Bee Farms, 3272 Hwy. 27 South, Carrollton, Georgia 30117. Phone 854-4629.

Burke County Beekeepers Association

The Burke County Beekeepers Association is planning a membership drive for the spring. We are asking for donations from major bee supplies to provide incentives for membership.

Your assistance and contributions to this effort would be greatly appreciated. If you have any questions regarding our membership drive, feel free to contact me.

Steve Coutu/Secretary-Treasurer
Rt. 3, Box 63
Morgantown, N.C. 28655
704-437-7015

California State Honey Queen

Miss Caroline Comport of Sylmar was crowned the California State Honey Queen for 1985 at the California State Beekeepers Association annual convention held in South Lake Tahoe. Miss Comport is the representative of Los Angeles County Beekeepers Association.

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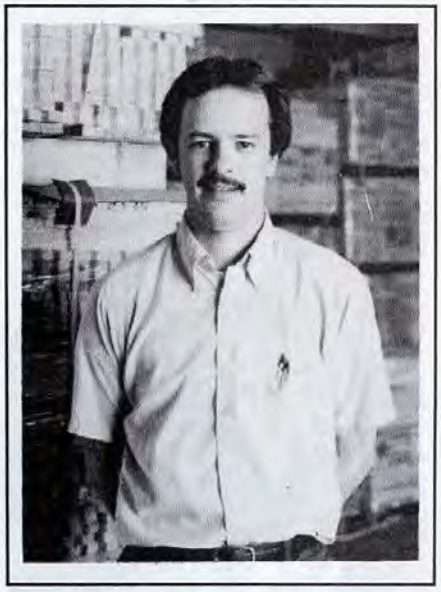
Miss Comport is an honor student at California State University Northridge and the Los Angeles Mission College where she is studying for a career in media communications.

Caroline will by busy throughout California this year promoting honey and the importance of bees to agriculture.

Miss Beth Penner of Red Bluff was recently selected the California Honey Princess for 1985. Miss Penner is sponsored by the California Bee Breeders Inc., and will assist in the promotion of the honey industry throughout California.

Beth is a senior at Red Bluff High School and is the dauther of the beekeeping family of Lloyd and Carol Penner.

Tennessee



Dwight Tew has accepted the position of general manager at American Bee Supply in Lebanon, Tennessee. Dwight is a native of Dothan, Alabama. He is married and has a two-year-old son (Renee & Stephen). Dwight has kept bees for about ten years. He served as president of the Wiregrass Beekeepers Association in Dothan for the past two years and as vice-president of the Alabama State Beekeeper's Association last year. Dwight also maintained a small bee supply dealership in Dothan for the last three years.

Florida

A short course on "Beekeeping" will be held at Hillsborough Community College, Dale Mabry Campus, Tampa, Florida, beginning May 25 through June 29. Saturdays from 9 until 1:00 p.m.

This course is designed to introduce the beginner to the basic principles and procedures of handling the honeybee colony. Topics will include: installing package bees, management for honey production, dividing colonies, pollen and trapping, queen rearing for the hobbyist, bee diseases and honey extraction.

The enrollment fee for this course is $13.00

For further information contact: Hillsborough Community College; P.O. Box 22127; Tampa, Florida 33622.

LEGAL BATTLES

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with. PRACTICE THE SPEECH before going to court. Read the speech at least 10 times in front of someone else. POLISH UP the presentation. A bad presentation will lose the case. ASK THOSE WHO LISTEN HOW IT SOUNDS. Don't be embarassed. COLLECT EVIDENCE and bring it to court. Damaged beeboxes, dead bees, telephone bills showing calls, notes taken during telephone calls, cancelled checks of apiary registration, notices of service of the defendant, and any other pertinent information are all VALID EVIDENCE. BRING ALL EVIDENCE TO COURT. HAVE A CLEAN APPEARANCE. A suit and tie are advisable when appearing in court. Don't look like you just crawled out from under a rock.

If a beekeeper follows the procedure described above, the chances of being sprayed are less. If one has to go to court, the chances of winning are great. One might want to hire a lawyer, but he will ask for the same things as I have described. He will follow the same procedure, and will charge you a lot of money.

My final advise is TRY NOT TO GET SPRAYED.□

BUY & SELL

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

MAGAZINES

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

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

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

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

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

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

BEE CRAFT — Official (monthly) magazine of the British Beekeepers Association. Contains interesting and informative articles. Annual Subscription $5.10 (Surface mail) and $7.10 (Airmail). The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex, RH10 3DS TF

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

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

WANTED

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

WANTED — Christain non-drinking beekeeper interested in possible partnership in California. Write Mr. Williams, P.O. Box 700, Yuca Valley, Calif. 92284. 5/85

HELP WANTED — Commercial outfit needs hired help for the 1985 season. Please write— don't call— Chris Baldwin, Rt. 1 Box 48, Fairmont, Nebraska 68354. Commercial experience not required. 5/85

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

SINGLE MAN — preferred, in the production of honey in the Northeast for our successful honey business of 50 years. Job starting May 1st. HOWLAND'S HONEY, Rt. 2, Box BEE, Berkshire, NY 13736. Phone: 607-657-2517 5/85

FOR SALE

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

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

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

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

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

For Sale due to illness. Equipment to run 300 hives, Supers $8.00; Hive Bodies $10.00; Large Cowen uncapper air conditioning system, complete for inside wintering; Extractors; Tank Pumps; Excluders; Inner Covers; Feeders plus more. All or part. Phone 1-414-788-4828 evenings. C.A. Litscher, RR5 Holland Rd., Appleton, WI 54915. 5/85

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

FOR SALE

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

SWARM LURE — Original synthetic pheromone developed at Rothamsted. Imported from England. Use as a swarm bait in empty hive. $3.50, ppd., two $3.00 ea. BRYANT & COOK, Box 488G, South Windsor, CT 06074. 5/85

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

For Sale: 35 Two and three story inspected colonies, on site in the upper Trabuco Canyon area of the Cleveland National Forest, Orange County CA. Write: N.J. KOBZEV, Box 271, Trabuco Canyon, CA 92678. 5/85

FOR SALE — 200 supers with comb 6⅝", $7.00 each, Eugene Smith, 5317 Chickory Rd., Racin, Wis. 53403. Phone: 414-554-8056 5/85

FOR SALE: 50 colonies (6⅝"-3 high). Move or stay. 40 frame extractor, mini-melter, extra equipment and supers. JOHN MURPHY, 459 Rushmore Lane, Madison, Wis. 53711. Ph: 608-238-3591 5/85

For Sale — 300 Colonies plus honey supers with frames. Esther Baltes, 12324 Greenville St. Mary Rd., Versailles, Ohio 45380. Ph: 419-336-6053 5/85

75 Single Story Hives standard equipment good or new condition. New queen ready to produce. $45.00 each. 814-236-2458 or message 814-236-0289. BD 5/85

For Sale: 3 Frame Nucs. State Certified.
THE BEE LINE, Onego, WV 26886. Ph: 304-567-2979 5/85

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

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

Bees & Equipment for 100 hives with extracting equipment. 80-Frame Extractor would like to sell all in unit. Holly, MI. 313-234-5126 5/85

For Sale: 50 single body hives $45 each; 200 pollen traps $12 each (309) 654-2771 evenings. 5/85

CYPRESS LUMBER — planed — 3,637 BF — 1x4's & 1x10's — $1,250. H. Rogers, Hope, Ark. Phone: (501) 777-5510. 5/85

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

For Sale: 600 deep supers—drawn comb. Carroll Couture, Belleville, KS 913-527-5805. 5/85

NUCS FOR SALE, no frame exchange, mite inspected. Delivered enroute from Louisiana to Central Minnesota. 5-Frame $32.00, single story with either pallets or telescope and bottom board $47.00. Rittenhouse Honey, Rt. 3, Box 108, Paynesville, MN 56362. Phone: 612-243-4330 or 318-345-1234 5/85

Supers with comb: $6^5/_8$"—$8.00, $5^{11}/_{16}$"—$5.50, quantity discounts. Root 45 frame extractors—$750. Pure Sweet Honey Farm, Barneveld, Wi. 608-924-1161 5/85

Pollinations — Services — Honey — Queens Peter Schmidl, P.O Box 1621, Yuba City, CA (916) 673-4502. 5/85

FOR SALE — 5-90 two story colonies, $65.00 each. Supers also available (four per hive, half new). (405) 762-3346, (405) 767-5204 5/85

For Sale — 40" wide x 30" deep Stainless Steel Liquefying Tank with hot water jacket & hinge top. MASON EASTRIDGE. Ph: (216) 252-5124 5/85

For Sale — Approx. 200 colonies, 150 in pollination. Equipment to run 1,000 — Must Sell. N. Illinois location. 815-385-6883. Call mornings 9-11 a.m. 5/85

For Sale — Complete Hopper Hive boom— electric, 24 ft. long — $1800.00. Empty 8 frame bee equipment. Call 805-736-1998. 5/85

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.

MICHIGAN from MISSISSIPPI. Package bees April and May. Caucasian and Italian. For prices and further details call Bill Hathaway 616-271-3192. 5/85

ROYAL ITALIAN QUEENS — Strong, healthy and productive. Discount prices start May 6th! Bruce Otte, Route 2, Box 99-AG, Karnes City, Texas 78118, (512) 780-3521 5/85

Nucs 4-frame Golden Italian stock $35.00 each or 3 for $100. Queens $5.00 each. All postpaid. Small orders only. Johnny J. Pennington, 194 Cooper-Hurst Rd., Pearl, MS 39208. Ph: (601) 939-5994. 5/85

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

California Italian Queens, clipped & marked, MITE FREE, no minimum $6.00 each. Woolf's Family Apiary, 4592 Quail Valley Drive, Redding, CA 96002. Ph: 916-221-2840 5/85

Mississippi 4-Frame Nucs for pick-up in North-Central Illinois after May 1st. Minimum order 10. Tanners Orchard, Speer, ILL. 61479. Phone: 309-493-7781, 309-493-5442 5/85

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

5-Frame Nucs and Single Story Colonies with new queens, fumidil fed, quantity discounts. Gary Lamb, Ridgeland, Wisc. 54763. Ph: 715-949-1823 5/85

100 Colonies, excellent condition, two story colonies $85.00 each, one story and half $65.00 each. Gale Hurd, 3762 Summit Rd., Ravenna, Ohio 44266. Phone: 216-296-3789 5/85

20 Colonies of bees three supers deep $55.00 each. (216) 467-5507. Sagamore Hills, Ohio.6/85

BEE SUPPLIES FOR SALE

20 Colonies of bees for sale. DISEASE FREE without antibiotics. D.L. Lewis, Rt. 1, Cory, PA 16407. 5/85

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

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

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

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

FOR SALE— 150 candy boards, 1.50 ea., 200 $9^5/_8$ bodies with comb, $10.ee ea., 1500 $6^5/_8$ supers with comb in good condition, $9.50 ea., covers with inners, bottom and 4 way pallets. WOLF BEE SUPPLY, Baldwin, WI. Ph: 715-684-2095. 6/85

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

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

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

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

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

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

SWEET HARVEST BEE SUPPLY
Serving upper midwest with Strauser quality wooden wear. Call or write for price sheet.
P.O. Box 4100
Rapid City, S.D. 57709
OR CALL (605) 393-0545 5/85

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

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

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

Bucket Opener easy to use, lifetime guarantee, made in U.S.A. with pride. Ppd. $21.50 each, 2-up $20.50 each. **Lone Star Honey Company, 17 Fair Oaks, Leander, TX 78641. Ph: 512-259-0524** TF

BUILD YOUR OWN EQUIPMENT. 34 clear plans available for as little as 49● each. Catalogue. Sunstream, P.O. Box 225, Eighty Four, PA 15330 5/85

PINE BEE SUPPLIES

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

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

Honey Equipment, Stainless steel, Filters, 3 storage tanks, sump, boiler, milter, pumps, filter, bees, supers, and misc. Syl Wagner, 296 So. 7 Mile Rd., Linwood, Mich. 48634. 5/85

MISCELLANEOUS

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

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

STUDYTRIP TO SWEDEN AND NORWAY
August 5-17 with possibility for individual programs afterwards. Visits to small and commercial beekeepers, research institutes, queen breeding station etc. Interesting countryside sightseeing and guided tours through Stockholm and Oslo. First class hotels and most meals included. English spoken guide. Send addressed envelope for full information to: Harold Liberman, 2701 Oxford Circle, Upper Marlboro, Maryland 20772, USA 5/85

MEAD — Complete kit for 5 gallons (except bottles and honey). Includes special yeast imported from Germany, $18.95 postpaid. BRYANT & COOK, Box 488-G, South Windsor, CT 06074. 5/85

HOLLAND HONEY CAKES have fresh, natural ingredients. Low Sodium, no preservatives or fats added. Outstanding keeping qualities with or without refrigeration. Special offer, variety package containing six cakes, only $9.95 postpaid. Visa, Mastercard, welcome. Holland Honey Cakes, 420 West 17th, Holland, Michigan 49423. Shipping promptly, excellent gift idea. 5/85

POLLEN

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

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

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

PURE FRESH EXCELLENT QUALITY BEE POLLEN. 1 lb. Packages $5.00 lb., Bulk 20 lb. Packages $4.00 lb. Prepaid. STAKICH BROS., INC. BLOOMFIELD HILLS, MI 48013. Phone: 313-642-7023 5/85

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

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

ROYAL JELLY

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

BEESWAX

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

PROPOLIS

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

BOOKS

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

Dr. Richard Taylor's *'Beekeeping for Gardeners'* **with order of any two books. Linden Books, Interlaken, NY 14847. 5/85**

Have your read Dr. Richard Taylor's 'How To Do It Book of Beekeeping' *"The Beekeepers Bible"* **$9.45 postpaid. Linden Books, Interlaken, NY 14847. 5/85**

HONEY WANTED

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

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

BUCKWHEAT, light and light amber honey. Bedford Food Products, Inc. 209 Hewes St., Brooklyn, N.Y.TF

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

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

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

HONEY FOR SALE

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

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

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

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

Goldenrod Honey in 60 lbs. can $32.00 each. Gale Hurd, 3762 Summit Rd., Ravenna, Ohio 44266. Phone: 216-296-3789. 5/85

"Top quality round section comb honey. 1985 Thistle crop available in quantity. Mountain Star Honey Co., Box 179, Peck, Idaho 83545. 208-486-6821" 7/85

SEEDS & PLANTS

HONEY PLANTS AND BEE-BEE TREES OUR SPECIALTY. SEND STAMPED ENVELOPE FOR CATALOG. ARLETH'S APIARY GARDENS. 395 CAROLINA ST., LINDENHURST, NY 11757. TF

Seed Buckwheat, bee pasture and ground cover, .50¢/lb. plus U.P.S. charges. Chucks Farm Store, Hartington, Nebraska 68739. Telephone: 402-254-3961 5/85

VITEX TREE SEED, 100 seeds 2.00. Hagerite Bee Keeper, 3456 Richmond Dr., Conyers, GA 302085/85

TESTING YOUR BEEKEEPING KNOWLEDGE

Continued from page 248

6. False Pollen cells are usually not capped over unless a layer of honey is placed on top of the pollen. Pollen stored in this way retains its nutritive value for a year or more.

7. False Egg-laying and brood rearing occurs as readily in new worker comb as in comb in which brood has already been reared. Vacated brood cells are subsequently favored for storing nectar or pollen. Once a cell has been used for food storage, it is no longer favored for brood rearing.

8. True
9. A
10. D
11. B
12. E

Drone comb production is related to the amount of drone comb already present in the hive. Colonies without drone comb built a higher proportion of drone-size cells and more cells per bee than colonies with drone comb.

13. Cappings placed over honey cells are generally 100% new wax, those over brood are only part wax. Old wax is used in capping brood cells and often contains pollen, propolis and bits of cocoons.

14. There is normally only one queen in a colony, although under conditions of supercedure an old queen and her daughter may be present and laying. Both may be present for many days or weeks without any show of animosity toward each other. The old queen, however, usually disappears within a week or so after the young queen begins to lay.

15. Honey will generally be stored above and on each side of the area in which brood is reared. A ring of pollen, 1-2 inches wide is generally found between the brood and honey.

16. Initially the cooling process involves cluster expansion and fanning. Groups of fanning bees are found throughout the broodnest and at the nest entrance; expelling currents of warm air from the hive. When cluster expansion and ventilation cannot cool the nest adequately, water collection and evaporation are used.

17. Upon finding loose pollen pellets in a cell, a house bee begins working them to the base of the cell by pushing them with her head and closed mandibles.

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

Index to Display Advertisers

ADVERTISING RATE CHANGE

GLEANINGS IN BEE CULTURE advertising rates will change effective May 1, 1985. Advertisers will receive, in advance, an updated rate card or can request one from the Advertising Manager, GBC, Box 706, Medina, OH 44258.

PACKAGE BEE SPECIAL

For Parcel Post Shipment or Pickup
MAY 15th TO JUNE 5th

Deduct $7.00 per package from our regular 1985 prices listed below. All orders shipped on first come . . . first served basis. Parcel post shipping charges are unchanged.

QUEEN BEE SPECIAL

MAY 15th TO SEPTEMBER 30th

1-5 . . . . . $5.00 EACH
6-24 . . . . . $4.00 EACH
25 up . . . . . $3.50 EACH

1985 PRICES (April 1st to May 14th)

BABCOCK GOLDEN ITALIANS are large golden yellow bees that are easy to handle, very gentle and produce very large colonies. They are extremely good honey producers developed from my top honey producing hives. They are "THE MOST BEAUTIFUL BEES IN THE WORLD."

BABCOCK IMPROVED SILVER GREY CARNIOLANS have been developed from hardy, tough strains from the far North and can be wintered very successfully outdoors in extremely cold temperatures. These large silver grey bees work equally well in hot or cool climates and are excellent honey producers. I believe my strain of Carniolans are the most Winter Hardy race in existence. These bees are extremely gentle and can be worked in good weather without smoker or veil.

BABCOCK RACIAL HYBRIDS are a true cross of my Silver Grey Carniolans and my Golden Yellow Italians. To obtain this cross bred hybrid, Carniolan queens are mated to Italian drones. This hybrid is a very prolific hard working bee developed for rigorous commercial honey production. This cross bred bee is very Winter Hardy and does well even under adverse conditions.

QUEENS — All of my queens are double grafted and are guaranteed mated and laying. My large 4-standard brood frame mating nucs allow me to carefully check the egg laying pattern of each selected queen before she is caged fresh and shipped to you via air-mail the same day. Fumidil-B is fed as a nosema preventative to all package colonies and queen mating nuclei. A government certificate of health inspection certifying our bees are free of all brood diseases as well as ACARINE mites accompanies all shipments. The state of South Carolina has never had a known case of honey bee trachael mites (Acarine Mite Disease). Queens clipped or marked or both, please add $1.00 for each package or extra queen.

Indicate your choice of race. Mixed orders will carry the quantity discounts.

1985 PRICES

Quantity	2-Lb. w/Queen	3-Lb. w/Queen	Extra Queens
1-9	$23.00	$27.00	$10.00
10-25	22.00	26.00	9.00
26-99	21.00	25.00	8.00
100-up	20.00	24.00	7.50

Add for shipping packages via parcel post:

1-2 lb.	$4.60	3-2 lb.	$7.90	2-3 lb.	$7.70
2-2 lb.	$6.90	1-3 lb.	$5.50	3-3 lb.	$8.80

Add shipping prices to packages if ordering by mail: Shipping charges include postage, insurance, special handling fees, and handling charges. Insurance coverage is for full value of bees only. Insurance does NOT cover shipping charges. Personal checks, money order or cashier's check accepted in U.S. currency only. Queens are postpaid and shipped air mail. Shipments begin April 1st. Please indicate desired shipping date.

HUCK BABCOCK — Queen Breeder

Post Office Box 2685
Cayce-West Columbia, South Carolina 29171

Office Phone — (803) 796-8988 Phone after 9 p.m. only (803) 256-2046

THE A.I. ROOT COMPANY

P.O. Box 706
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(216) 725-6677

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Council Bluffs, IA 51502
(712) 322-8438

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San Antonio, TX 78204
(512) 223-2948

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Athens, GA 30603
(404) 548-7008

P.O. Box 357
Fogelsville, PA 18051
(215) 285-2778

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(414) 262-9796