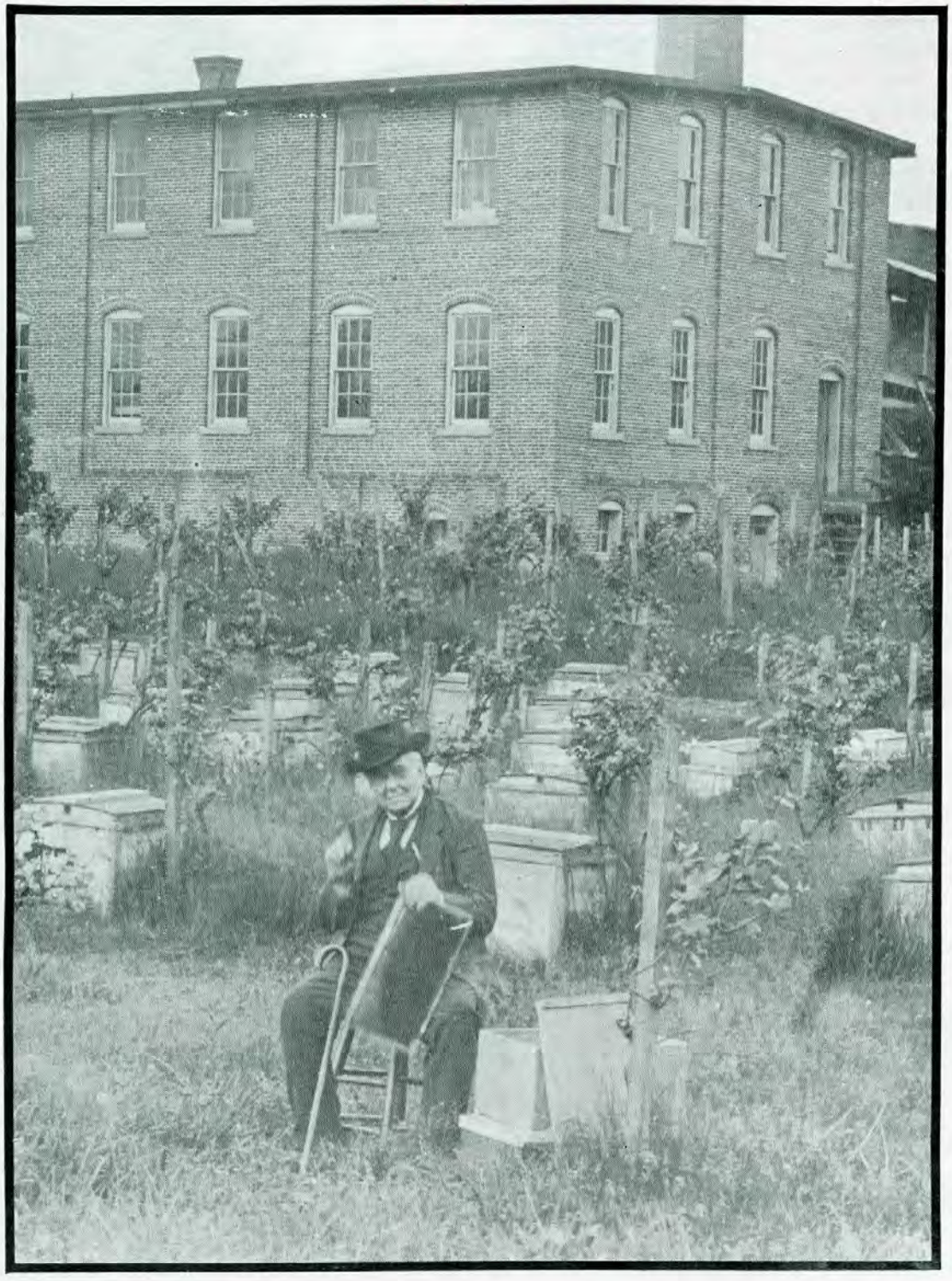
GLEANINGS IN BEE CULTURE

MAY 1984



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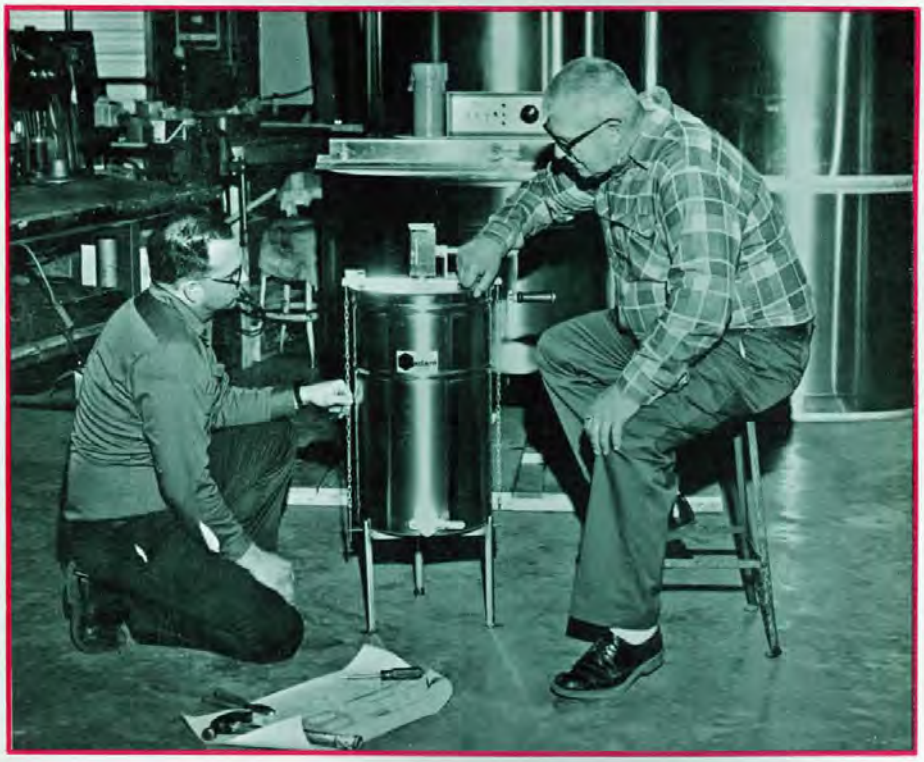

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REV. L. LANGSTROTH VISITS A.I. ROOT'S APIARY IN THE LATE 1870'S. THIS IS ONE OF THE OLDEST AND MOST VALUABLE PHOTOS IN THE "GLEANINGS" ARCHIVES. SEE SPECIAL OFFER ON PAGE 235!

THE BEEKEEPER'S FORUM

VARYING OPINIONS ON NUMEROUS TOPICS. READER FEEDBACK WARMLY INVITED

Editorial

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

Every year a few people, mostly young men, come into my office and ask if there is a future in beekeeping. My answer has always been the same. It is that a number of persons have made a good living keeping bees. That has been true for about 100 years; I think it will be true in the future. The industry has had its ups and downs and this will continue to be true. But, I think there will be more ups than downs.

At a recent meeting of beekeepers I attended there were several questions about the future of the industry. The amount of foreign honey coming into the country continues to increase. The incidence of American foulbrood is up sharply. Pesticides continue to plague many beekeepers. Talk about the possibility of new bee diseases threatening to invade the country does not give one comfort. Admittedly these are all problems, but they are not insurmountable ones.

The biggest factor that will affect the world's agriculture is our increasing population. The number of people on earth has approximately doubled in the past 30 years. Everything we see around us indicates it will double again in the next 30 to 50 years. China is said to have a policy of one child per family, but it is still new and no one is really sure if it will work or not. Even if it does, China is the only country with such a policy.

Every year we must produce more food and by the time the population doubles we will need twice as much. All this means a growing demand for food. In the past decade diets have improved markedly in many parts of the world. Testimony that this is so comes from the fact that so many of the poorer countries have initiated beekeeping projects. They recognize the need for better pollination, which means people are growing and eating more fruits and vegetables. So long as a demand continues for a large proportion of fruits, nuts and vegetables in diets, there will be a great need for colonies for pollination. The desire for honey will also grow as more people seek variety in their diets.

Thus, I conclude that while the immediate picture is not good, the long range demand for bees is evident. This means we must overcome the obstacles we see. I think this can be done. Beekeeping will continue to be an enjoyable occupation; good management practices are the key to successful beekeeping but information about these is readily available to those who seek it.□

GUEST EDITORIAL

U.S. HONEY INDUSTRY -- FACING REALITY

James D. Ford
7160 South Brookhill Dr.,
Salt Lake City, Utah 84121

The past few years have progressively pointed toward some unmistakable industry trends and problems. Much of late has been said and written about the problem of imported honey and its dynamic impact on the sales of domestic honey. Many articles and talks have been forthcoming to encourage beekeepers everywhere to place pressure on their congressmen to do a variety of things to help strengthen the bee industry. Much has been said as to what we can supposedly do to get others, i.e., government, to help us. Little has been said as to the obvious eventualities that are fast descending upon our industry and what we can do for ourselves individually. What we can do in respect to these realities is now much more important than to continue evading the inevitable.

First of all, we must actually perceive individual beekeepers as the majority of U.S. businessmen and citizens see us. We must also recognize just where we stand in relationship to the actual overall prosperity of the country and how the demands we are making of congressmen are really viewed. We must face up to the hard realities of supply and demand. And last, but not least, recognize just how important we are as an industry when compared to the foreign countries that are taking our market away from us.

The bee industry today basically represents a composite group of professional beekeepers and sideliners. The definition of *professional beekeeper,* I've come to recognize over the years, is a beekeeper who operates at least 1,000 hives and has learned to derive the major portion of his or her income from beekeeping. For the most part, these professionals have stood the test of time by long years of experience. As indicated by Dr. Eric Mussen, the extension apiculturist of California at Davis, there are nearly 300 professional beekeepers in that state. This represents approximately 10 per cent of the 2,900 professional beekeepers in the U.S. today. By in large, the majority of beekeepers are classified as sideliners who "make another living so they can support their bees" instead of the other way around; and hobbyists. Our industry is very, very small in dollars produced and individuals employed.

We have a copper mine here in Utah that is fast being outcompeted by foreign markets. Kennecott layed off a portion of their employees whose combined wages in one year alone was more than the whole bee industry's production value per year. A report from the Federal Register was read by David Miller, our associa-

Continued on next page

tion secretary, at our December convention dealing with the bee industry. It appears from the report that it is time to put away our letter writing campaign and prepare for the inevitable. In essence, the report stated our industry was of "insignificant" concern economically and does not merit further inquiry or consideration.

Now, I know we think we are important. Why, look at all the agricultural products we are directly or indirectly responsible for! It is true that pollination beekeepers are important and contribute a great hidden value to beekeeping, but developed pollination services are limited to a small percentage of professional beekeepers. It is safe to say that the almond industry and other pollinating industries will, themselves, insure the survival of the pollination beekeeper. However, it appears the congressmen see beekeepers, in general, as a relatively insignificant group within agriculture; and, I suspect, if anything we're a pain to them. The general public tends to see us as abnormal, antiquated dinosaurs whom they wish would go far away with their killer bees.

This overall general attitude is very important when one considers the continuance of the government subsidized honey program. One must also be realistic about political trends with regard to foreign competition. Let's face it -- the U.S. steel industry is, and has been, facing far worse import problems. What occurred there? Are we so sublimely ignorant not to be able to see the handwriting on the wall as to the outcome of government subsidized programs? Since 1957 I've seen lots of ups and downs in beekeeping, but never was I more concerned than when I saw more and more beekeepers taking free government handouts; and I feared that our industry would be lulled into a false sense of security. The story of the seagull and the garbage boats, unfortunately, is having a real life portrayal today. As with the gulls, when, after a few generations, the garbage boats left, the seagulls had forgotten how to fend for themselves and starved. Few axioms are always true, but this one has stood the test of time: *"There is never a free handout -- beware of easy street!"*

Beekeeping as much as any other industry is interdependent upon supply and demand, no matter if the Republicans or the Democrats are in office. Our industry, like many bigger ones, must compete or die in the world market place. Anything or anyone robbing from us the need to compete does us no favor, and may destroy us in the end. One can kick and holler, but that's the real world.

Now, let's talk about the international balance of trade and how it's affecting the honey industry. When I graduated from the University of California at Davis, in Entomology, in 1973, a world oil crisis occurred because OPEC countries had a stranglehold on the oil market. At that time, a large portion of imported oil came from OPEC countries. A UPI report in our local paper of December, 1983, clearly paints a different picture now. The major single country supplying oil to the U.S. has shifted to Mexico. In order to get that oil, there have been a good number of trade agreements. Mexico can write its own trade ticket and they are aggressive for US dollars. An example of what's occurring here in Salt Lake City may suffice. My neighbor is a past Olympic gymnist from Mexico. His cousin is from the Senora Mexico area. That gentlemen is importing honey into the Beehive State (Utah), and has made a very interesting comment. "Why is there no competition here? Doesn't anyone raise honey bees in Utah?" He's rolling semi-load after semi-load into Utah and making a bundle with his very high grade, low-priced honey; and private customers and honey packers can only do the economically prudent thing to do -- buy it. If we as an industry believe we can slow these imports by requesting an increased tariff or trade restrictions, that may well be the proverbial pipe dream.

Now, let's talk China and its "favored status" trade agreement. The U.S. desperately needs the friendship with the *new* China and is willing to pay for it. China is a "new" country with economic production potential that could make "Made in Japan" seem insignificant. The overall impact of gearing up China's industrial and technological might can only be termed awesome. IBM and Toyota beware. China is rapidly coming into the international trading arena. And where might that put our beekeeping industry? Very simply stated -- out competed.

All evidence seems to indicate that the price support program is in its 11th hour. Beekeepers who have grown to look forward to government checks better start looking elsewhere. That goes, too, for Canadian border beemen whose U.S. operations produced a whopping 400 pounds per hive as opposed to the poor 40 pound showing of their weaker Canadian bees. I'll wager there were some south-of-the-border bees with similar production.

So, when the garbage ship pulls away from our industry, what will we face? In short, a market place that is very well supplied with foreign honey -- they out-competed us and filled supply channels while we drank from the government subsidized cup, and stored our honey in huge honey co-op warehouses. Fair or not, it's done. And we have the audacity to holler: "UNFAIR ADVANTAGE!" Why? Their governments subsidize them and are dumping on us. That was exactly what the U.S. steel industry yelled as the economic waves sucked them under. Compete or die individually and as an industry.

So, what's coming? Can you survive selling your honey at 30 cents a pound? It's that simple and frightening! And, if you can't survive at 30 cents a pound for your honey, and you're a professional beekeeper, you had better do one of two things: learn how to run computers and join the 20th century work force, or find an alternate fiancial supply to support beekeeping. And, for those diehards, like me, who really love those stinging critters, diversify, conserve on fuel, cut corners, reduce numbers, develop a specialty hive products market or move to Mexico or China where labor is cheap and a better economic climate exists for beekeepers. The most dangerous thing we can do is to wait on others and do nothing for ourselves. We are an industry of individualized, independent thinkers, and individually we must each make decisions for the well being of ourselves and our families. Make your decisions in the bright light of reality, not in a pipe dream -- and good luck!

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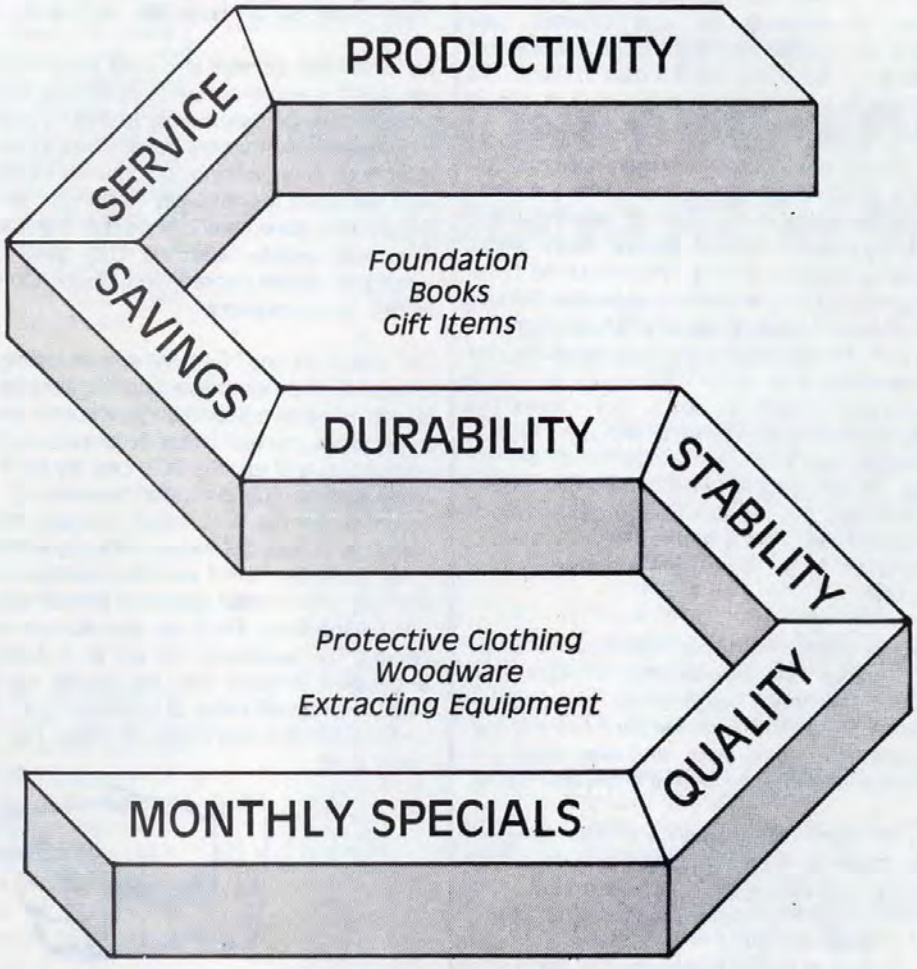

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The Monthly Honey Report

April 10, 1984

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

Wholesale Extracted	**Reporting Regions**								
Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs. (per can) White	42.00	38.00	42.50		36.00	40.00	33.00	37.25	37.00
60 lbs. (per can) Amber	42.00	36.00	40.00		32.00	37.50	27.60	35.00	34.80
55 gal. drum (per lb.) White		.50	.57	.58	.58		.55	.55	.58
55 gal. drum (per lb.) Amber		.45	.53		.52		.46	.54	.54
Case lots — Wholesale									
1 lb. jar (case of 24)	28.50	25.20	26.60	25.92	30.35	24.50	25.00	25.00	27.00
2 lb. jar (case of 12)	27.50	23.40	24.20	23.76	30.25	23.00	25.00	25.00	26.90
5 lb. jar (case of 6)	30.00	27.30	26.40	23.04	27.50	25.50	26.50	26.00	26.90
Retail Honey Prices									
½ lb.	.90	.90	.90	.84	.89	.90	.89	.90	.95
12 oz. Squeeze Bottle	1.50	1.25	1.40	1.25	1.49	1.35	1.45	1.45	1.35
1 lb.	1.50	1.45	1.55	1.50	1.60	1.55	1.39	1.55	1.65
2 lb.	2.70	2.70	2.70	2.65	2.69	2.60	2.59	2.65	2.65
2½ lb.	3.35			3.27	3.19	3.25		3.25	
3 lb.	4.00	3.50	3.49	3.87	3.79	3.85	4.00	3.85	3.75
4 lb.	5.00	4.95		4.99	4.79	4.90	4.75	4.90	5.00
5 lb.	6.00	6.00	6.10	5.90	5.99	5.80	5.50	5.65	5.50
1 lb. Creamed		1.50	1.55		1.55		1.43	1.60	1.60
1 lb. Comb	2.25	2.25	2.75		2.09	1.85		1.65	2.25
Round Plastic Comb	1.75	1.65	1.65	1.69	1.75		1.75	1.75	1.65
Beeswax (Light)	1.25	1.30	1.40		1.25	1.35	1.25	1.15	1.20
Beeswax (Dark)	1.15	1.15	1.15		1.10	1.25	1.15	1.15	1.10
Pollination Fee (Ave. Per Colony)	23.00	19.00	21.00	18.00	20.00		18.00	17.00	20.00

MISCELLANEOUS COMMENTS

REGION ONE

Bees in good condition for the most part, but feeding is a must. Honey sales have picked up on the wholesale level. Retail remains slow. Many bees for sale from $35-50.00 per hive. Those prices will probably rise very soon. Now is time to buy not sell.

REGION TWO

Little or average winter loss and good spring build-up. Retail honey sales good in Maryland. Off 15 -20 percent across the board in PA. Some beekeepers in this region still have honey supply to sell.

REGION THREE

Winter loss in Indiana around 15 percent. Honey sales steady. Reports of heavy winter loss in Wisconsin -- some ranging from between 30 - 60 percent. Illinois bees in good shape, however, with ample moisture conditions. Bees there were bringing in pollen mid-Feb.

REGION FOUR

A cold January in MO has accounted for about a 35 percent winter kill and has necessitated heavy feeding. Honey sales slow. From MN, reports that Twin City bottlers are only willing to buy light domestic honey, .46 TO .48 cents per pound. Winter kill, between 6 and 10 percent, much better than expected because of cold weather.

REGION FIVE

Slow colony build-up. Winter kill approaching 25 percent. Maple bloom spotty due to limb kill. Nosema noted. Heavy damage in some area because of tornadoes. Too soon to know extent of damage. No "Country of Origin" labels yet. Honey market very slow.

REGION SIX

March had below normal temps and normal rainfall. Bees worked red maples on

Continued on next page

the few warm days. Actually, more pollen was gathered during Feb. Wintering best in years. Few losses and less feeding than usual. Honey sales slow. Swarming may be a problem this year. Bee supplies moving well.

REGION SEVEN

Honey sales slow. Weather wet and cool. Bees in good condition requiring little feeding. Build-up a little slow, though. Some pollen coming in. Good attendance at local bee meetings. West Texas still needs rain. Some black brush and huajiello damaged by cold weather in South Texas. Queen production has been delayed for a number of migratory operations which will result in later than normal delivery times. Increased inspection demands in Texas resulting from a requirement that inspections, rather than affidavits be given for transported bees. If this affects you, contact the State Entomologist as early as possible. Local honey supplies exhausted with most honey being retained by the ASCS Loan program. Demand for local honey remains good. Commercial beekeepers in Texas remain very pessimistic about the future and see 1984 as a crucial year.

REGION EIGHT

Temps moderate and precipitation below normal in CO. Pussywillow and other pollen sources coming out. Winter losses at minimum. Normal honey sales. Dry in Arizona with average wildflower growth. Rain is necessary for Montana prairie plants. Shortage of honey on grocer shelves -- competition from off-flavor imported honey in baragin sales. High winter losses reported in Utah with a continuing cold spring. Washington reports good honey sales, but slow brood rearing in a colder than normal spring. Some bees out in apricot fields for pollination. Sweet Cherry pollination begins approx. April 1.

REGION NINE

California honey flow on strong. Almond pollination finished in good shape for apples. Swarming early this year, but swarms small (1-2 pounds). Honey market sluggish. Eucalyptus flow strong and early.

EDB, A Pesticide in Question

By ANN HARMAN

Man has always been battling harmful insects. Although only a small percentage of all insects are destructive, those few can cause severe problems. Insects can cause havoc in stored grain and those products made from grain. Fruits, including citrus, and vegetables cannot be sold when damaged by insects during shipment or storage. Some insects spend part of their life cycles in the soil of fields used for growing crops and emerge to feast upon the crop. Every farmer wishes to market his crops in excellent condition. And those who buy the crops, including the supermarket shopper, expect good produce.

Many years ago, actually in 1948, the chemical EDB was approved as a pesticide by the Department of Agriculture. EDB was not used extensively in agriculture although it is inexpensive and easy to manufacture. The chemical is quite effective as a fumigant for stored grain and for machinery used in milling grain. When fruits and vegetables are kept in quarantine, fumigation is necessary to protect them against insect damage. Protection of fruit and vegetables during storage and shipment is cheap and easy with EDB. The lumber industry frequently fumigated felled trees with EDB in order to produce clean, undamaged wood.

However, in 1980, the biggest agricultural use of EDB began when it was approved, in an emergency situation, for soil fumigation of soybean fields. The chemical in use previously was banned because of danger to humans. Soil sterilization is important for successful crops of cotton, peanuts, pineapple, as well as 30 other fruits and vegetables. The production and consumption of EDB increased as farmers used it to protect their crops against harmful insects.

EDB was also used for fumigations other than agricultural. Storage vaults were kept free of destructive insects. Termites could be controlled. And beekeepers could use EDB to protect stored equipment against the destruction of waxmoth.

Although chemicals are approved for use, their possible hazards are subject to review at any time. It is interesting to note that review of EDB by the National Cancer Institute began in 1975, several years before the USDA approval for soil fumigation. Tests showed EDB to be quite dangerous: not only highly toxic, but extremely carcinogenic. This information was enough to have banned the use of EDB at that time. However, no approved substitutes existed and time was needed to find a suitable chemcial to act as a fumigant for soil and crops. The crops could not go unprotected without serious economic results. In addition, regulations on the banning of EDB were lost in the shuffle of a new Administration. And so no action was taken, although some environmentalists urged a ban on EDB.

The Mediterranean fruit fly appeared in California in 1981. The chemical chosen to fumigate the fruits was EDB. Some concerned organizations were able to reduce the exposure limits for their workers who handled and applied EDB. However, EDB was not thought to be a hazard to the general public until residues were discovered in drinking water in Georgia and Florida. EDB used in soil fumigation had reached the groundwater and was contaminating wells and water supplies. Then residues of EDB were found in foods, particularly those made from grain. The stored grain had been fumigated with EDB. It was now apparent that emergency action had to be taken to protect human health.

Although studies have been made on EDB, dispute does exist on the quantity that poses a risk to humans. Nevertheless, the safest action was the immediate ban on the use of EDB as a soil fumigant, a stored grain and a grain machinery fumigant. Banning other applications of EDB was also initiated. These bans included the use of EDB to protect stored beekeeping equipment.

Suprisingly, the biggest use of EDB is not in agriculture but in leaded gasoline. Fortunately tests have shown that only very small quantities of EDB are present in the air around gasoline stations. But even this small amount is of concern. Since leaded gasoline accounts for a small share of the market, its use is declining, and it may not be necessary to find a substitute for it in the gasoline industry. The continued use of EDB in gasoline is still under investigation and the results will be known in a few months.

At present, the ban of EDB is not a total one. Termite control and storage vault fumigation can still be done with it by a certified pesticide applicator. This means that the necessary precautions to protect human health are made while applying EDB, deciding where it will be used.

It is certain the EDB causes cancer. Laboratory tests have shown this conclusively, as well as demonstrating the high toxicity of this chemical. Contact with EDB causes cancer at the contact sites. In man, nasal cavity cancers would arise from inhalation of the fumes and skin tumors from contact with the liquid. Accidents that result in spillage would expose humans to fatal quantities of EDB.

EDB is a dangerous compound. Safe and effective alternatives will have to be made for waxmoth control.□

Beekeeping Chemicals

By H. SHIMANUKI
Bio-Environmental Bee Laboratory
Beltsville, MD

The preliminary report on the Rebuttable Presumption Against Registration (RPAR) on ethylene dibromite (EDB) has just been issued. It appears that EDB fumigation of stored combs will be allowed, but the chemical may be classed as "restricted use." In addition, data gaps may need to be filled. The questions raised in the report included number of beekeepers using EDB, the amount used each year, potential residues in bee products, exposure levels of those using EDB, and the requirement of protective equipment for applicators.

The EPA has not issued a reply to the RPAR position statements issued on ethylene oxide; meanwhile, para-dichlorobenzene is on the candidate RPAR list. This means that both materials can still be used as shown on the EPA approved labels.

We are still awaiting approval to use *Bacillus thuringiensis* for the control of the wax moth. Unfortunately, the entire process is taking longer than we expected. Do not use presently formulated materials that contain *B. thuringiensis*, because they are not approved and probably ineffective.

The registration of other chemcials such as Terramycin® and Fumidil-B® remain unchanged. The former can be used for the prevention control of American and European foulbrood disease and the latter for Nosema disease Sodium sulfathiozole is no longer registered for use to prevent or control American fouldbrood disease.

Bee Talk

By DR. RICHARD TAYLOR
P.O. Box 427
Trumansburg, NY 14886

I've been hearing reports of heavy winter loss, as high as thirty and fifty percent, and whenever I hear of this it makes me think, how sad, and how needless! Beekeepers worry about swarming, which is not easy to control, and yet they probably suffer greater losses from winter, and this is something that can be virtually eliminated, with ease. The three requirments are adequate stores, ventilation, and protection from rodents. It is with respect to adequate stores that beekeepers fall down. The solution is to get all your extracting supers off the hives before the late or fall flows and let the bees have all this late honey for themselves. Not only will your bees survive the winter, they will come into spring strong, and the honey left for them the previous fall will pay for itself twice over, in terms of a bigger crop next year.

So much for that. I said I was going to offer some new ideas on the shook swarm method of raising comb honey this time, so now we'll turn to that. I described the basic system last time, so I'm just going to continue here from where I left off.

The shook swarm system was apparently invented by the late Fred Lesher, of Fayetteville, New York, and brought to the attention of beekeepers by the stunning success of Raymond Churchill, of Watertown, New York. Mr. Churchill holds ten trophies for comb honey from the Eastern Apicultural Society, not counting the countless blue ribbons he has won. It was Mr. Churchill who taught me the system.

Here is how Mr. Churchill does it. He selects a strong, two or three-story colony, and shakes **all** the bees from that colony into (that is, in front of) a shallow super containing frames of foundation only— no brood or drawn combs. (I have elsewhere referred to this as "radical" shook swarming, to distinguish it from the procedure described last time which shakes less than the entire population from the parent hive.) It is not necessary to find the queen, which is a time saver. He then adds the comb honey supers to this shallow, producer colony, but without an excluder, which he deems unnecessary, provided the supers are reversed from time to time, and turned end for end.

It is, I might note, my view that you can dispense with the excluder only if you can count on a heavy nectar flow as soon as you do the shook swarming. For myself, I would not dream of not using an excluder in this procedure, even though honey flows here are good. I'm virtually certain that I would find brood in the supers.

A problem, as noted before, is that the bees are apt to swarm out of the broodless and tiny hive and abscond. This can be prevented by clipping the queen, or by confining her to the hive for a day or two by means of a second excluder, **under** the hive, but Mr. Churchill prevents such absconding simply by doing the shook swarm procedure very late in the afternoon. He finds that this works, but it should be noted that it limits you to shook swarming only two or three colonies before it becomes too late.

Raymond Churchill

All the brood from the parent colony is now placed over another colony, atop an excluder. As the brood emerges, the combs are filled with honey, which is eventually extracted. But more important, this placing of brood, without bees, over another colony virtually eliminates any tendency of that colony to swarm. Why? Because that brood draws bees up from the brood chambers below, relieving congestion there, and giving the bees a full-time job tending the new brood. They have too much to do to even think about swarming.

One other thing Mr. Churchill considers essential to this system is the use of a scale hive. Honey flows can start and stop with great suddenness, and the adding and removing of supers must be timed accordingly.

It will be noted that Mr. Churchill hives the shook swarm in a shallow extracting super containing foundation only, no brood. His reason is to avoid travel stain the comb honey, which makes sense. My own reason for using only foundation is to induce the bees to enter the supers at once. When there is brood below, even if only a single comb of it, then the bees will concentrate their attention there. But this is probably not an important consideration when you do a radical shook swarm, for the sheer numbers of bees thus obtained will ensure their occupancy of the supers. And some expert beekeepers, such as my friends Ken and Sherry Nuss, in Iowa, do keep in one frame of brood in the new shallow hive. I'll describe their system, as well as some other modifications, next time.□

[Readers with questions are asked to make them brief and to the point and to include a stamped addressed envelope]

Plastic Foundations—
A Backlotter's Viewpoint

By DAVE TOZIER

I don't like plastics. Neither do I like tubeless tires or automatic transmissions. I paid extra to escape those great advancements when I bought my pickup. So I'm dated. I volunteer this information as a potential balance to observations offered here.

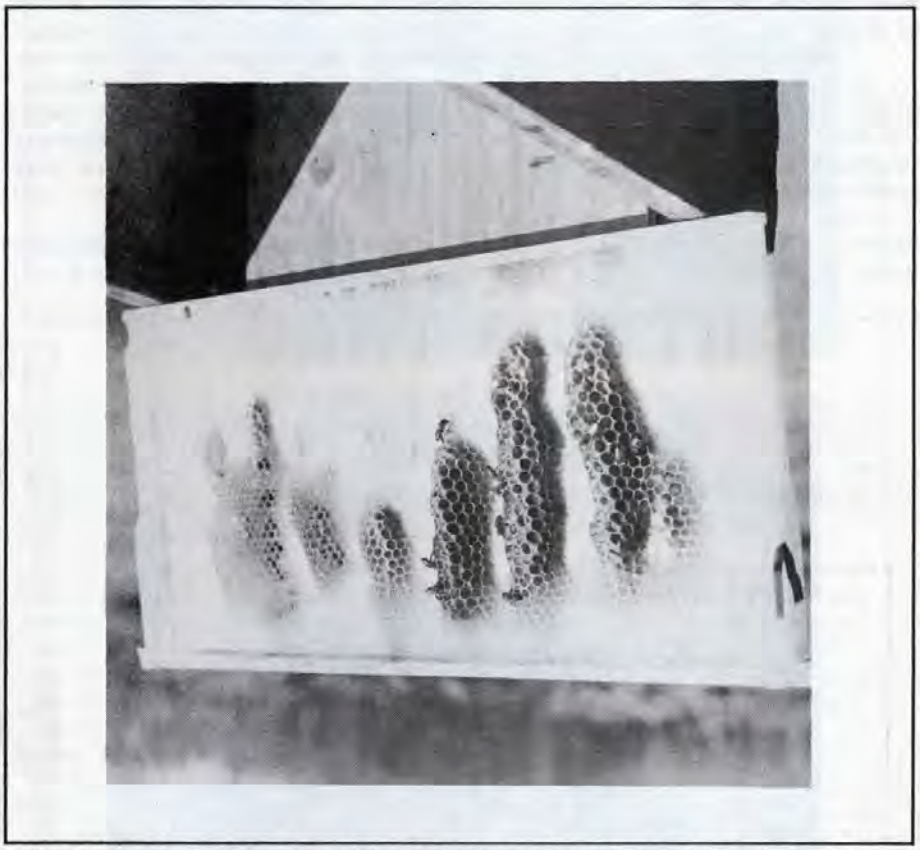
"It seems likely that new hives will be purchased with their full complement of frames integral with plastic comb or foundation. . ."[1] So the author closed an article summarizing years of testing plastic foundations at the Bavarian Beekeeping Institute in West Germany. He may be wrong; indications are he's right. Plastic foundation has arrived.

In the 141 years since Gottleib Kretchmer cranked a wax and starch-coated strip of tracing linen through his embossed roller and produced perhaps the first manufactured cell-imprinted comb base[2], men have tried to strengthen or prolong the life of beeswax in foundation. Pure wax may satisfy honey bees but not their keepers.

Paper, hardboard, metal screening and sheets, cloth, wood, cellophane and more have been coated, dipped, sprayed and bathed with animal, vegetable and mineral waxes in pure and admixed concoctions. String, hair, wire and fiber have been twisted, welded, braided, straight-laid and crimped before being mated to wax during or after the manufacturing process. Still we search for stronger, longer lasting—permanent?—foundation. What about plastics?

Consumers worldwide have been deluged with plastic stand-ins the past three decades. Why should apiculture escape the impact of this sometimes shoddy substitute? Foundation is vital to beekeeping; we might say it's the industry's bottom. Female honey bees have at least one thing in common with some human females: both species spend a lot of time fussing with foundations. Manufacturers recognize and work to encompass this broadening problem by trying to foresee user and handler needs in each instance.

I expect comb foundation makers cater to the largest market: commercial honey, package bee and pollination colony producers. Reliable manufacturers strive for quality and improved products. While they can't regulate local conditions or bee behavior they do work towards lower user costs and increased efficiency. Many materials have been tried in attempts to improve foundation. Why not plastics?



Pierco Frame Co. plastic frame foundation. Typical "strap hanger" comb built on frames 1,2,9 and 10 as numbered L-R from rear of hive. Facing comb usually had drone strips to correspond with empty areas between drone comb picture. Often repeatedly used for brood, as picture indicates, with many solid wax "plug" cells, I call them, and minimal nectar/honey storage. Never any pollen.

Most commerical operators probably aren't as perturbed over ill-drawn combs as is the average backyard beekeeper. Regardless of foundation type used they know with certain conditions, some colonies will create aberrant comb. Dislike it, sure; it cuts into profits. But large users see a percentage of hundreds or thousands of colonies, they don't count frames in a handful of hives. Above the crackling exhausts of truckloads of foundation—plastic foundation—wheeling to big outfits, the plaintive cries of carton-buying amateurs may not be heard. The backlotter, the small user, doesn't carry much weight with some manufacturers.

So what can we do, we "little people"? Use beeswax. It's easy to get, now. If it eventually goes the way of the five-cent lunch we can make foundation on the press we bought in 1984 and stashed with the family jewels. Or we can learn to use the intractable beast called plastic.

I first tried molded plastic frame/foundation units (hereafter simply called plastic) in 1979. Ten Pierco plastic deeps were top supered on a double brood colony that had one almost full deep super. Ten new wax-and-wire sheets in wood frames (w/w) were similarly placed on an equally strong colony. Two more hives I bottom supered with single boxes of medium depth plastic frames; The in-place deep supers were almost full. That was about midway of our single annual flow.

In another colony I tore up the bottom brood. Left to right, from the rear, I replaced frames 3, 5, 6, 7 and 9 with deep

Continued on next page

plastics. The remainder were two frames of emerging brood, two largely pollen and one honey. The queen was there, I shook in a bunch of new bees, added an excluder, replaced second brood and two supers.

At season's end 42 days later frame three was untouched, four, five and six were 80% drawn to worker cells and in normal brood use, and frame nine was pollen-packed. The supers were sad. Neither medium had been touched and the plastic deep had only a smattering of comb started. The w/w had a palm-sized glob of drone cells on one frame, nothing else. When the other installed supers were filled storage moved into the upper broods.

I attribute inaction on all frames to weather conditions and my timing, not to foundation material. The nectar flow was tapering off and colonies had no pressing need for more comb. It's normal for honey to go into broods when flow is slow or weather causes sporadic foraging near season's close.

sources, nectar availability and colony characteristics tend to average. Sometimes, not always, useable procedures emerge.

By fall of '82 I was ready to burn about 150 frames. I'd had it with plastic deeps. My catalog of ills would have raptured a hypochondriac. Insignificant, even nonexistent factors from a commercial standpoint became intolerable hindrances to this backlotter.

I found several reasons why molded plastic frame/foundation and wood-wax-and-wire frames weren't compatible. In mixed boxes bees often drew perfect worker cells on plastic at first, then arbitrarily tore down sections to hold "Can-You-Top-This" engineering competitions. Unbelievable waxen horrors took shape, usually so firmly attached to adjoining frames that individual removal was impossible.

One brood chamber had five soldily connected frames that I pried out as a unit.

Pierco Frame Co. plastic frame/foundation. Typical upper brood (on double brood chamber hive) frame result if wild comb wasn't cut out early after it was started. This is frame that escaped my hive tool surgery. From looks of comb this probably was in frame position 3 through 8. Wood frame w/wax foundation faced this in hive. As a rule, such combs would have only drone brood. Pollen and nectar in worker cells. Somewhat rarely, workers would be raised along with drones. As season progressed, honey arch came lower and lower.

A one-season trial is meaningless, as are most two or three-year tests. Maybe I'm slow to learn (others have used less kind words) but I play an idea at least four and five years. Personal preferences are determined and vagaries of weather, floral

Cells faced all directions. Tunnels and passages were everywhere. Massed bridging supported free comb and foundation was mostly bare. The bees loved it, brood and stores were plentiful. You can imagine the colony's temper when I finished that manipulative cleanup.

I often use a grip to remove brood frames. On wood, good. Pierco's have a thin, separated top bar that refuses to accomodate a grip unless painstakingly positioned. Too often I'd have a frame just clear the hive and . . . Flip! Lugs on one side of the grip slipped and down went the frame. Unhappy bees, except the dead. They were just dead.

Plastics are a bit narrower than standard wood frames. The more in a box the more extra space to contend. Bridge comb multiplied between top bars and often carried down the end bars to hive walls and comb surfaces. Pulling frames meant ruptured honey and brood cappings and hunks of wax that rolled and mashed bees. More unhappiness, human and apian.

Bridge comb usually was heavy from plastic top bars above, which made for sharp jolts when one finally broke the super loose and lower frames thunked back into position. Bees resent such mismanipulations and sometimes show their displeasure for days.

Three-pound package bees were always slower on plastic than on wax. Comb drawn was initially patchy, helter-skelter and seldom full depth. Bees later reworked those areas and queens laid decent patterns but valuable brood time was lost. Outer frames were not drawn until shuffled into the center. Upper or second broods went much better, perhaps because of warmer weather and better flight conditions. Incidentally, all colonies in the yard had top feeders until second brood was well established and bees could forage regularly.

Bees were more tolerant of plastic in deep supers. Full boxes of plastic worked best. After up to six days of refusal bees poured into them and results were good. Fortunately I ran only 10 of those.

Mixed supers were wild. Bees refused plastics up to nine days, then made from one to three lunatic beginnings before settling into acceptable work. Until that happened every other day I'd tip-check—raise rear box and peer up past bottom bars—and remove crazy comb. Even so I missed some startlingly original designs that later gave me fits.

By September 1980 I'd tentatively decided Nuts to plastic. But I'm bullheaded. I wanted to give them and me at least four years trial, they couldn't be all bad. They aren't, of course. I just thought so.

My biggest problem was in extracting. Plastic deeps are flexible, alarmingly so when honey-filled. In my Maxant 10-frame radial, fitted with notched rings to position

Continued on next page

frames, plastics came alive with destructive vigor. Five minutes in the extracting room could undo five weeks of work by sometimes cussed, sometimes coddled bees.

I've mentioned Pierco frames are narrower than wood frames. They're decidedly so at end bar bottoms, which fit loosely in the extractor's lower support ring. Frame flexibility plus improper end bar support equated to disaster in my machine. I learned details in subsequent tests. That first load remains a full color, enhanced stereo sound production in my memory.

At speed necessary to remove warm honey the frame's unsupported upper corner, where end bar joins bottom bar, flexed backwards enough to dig into comb on next frame. Multiply that by ten. Sections of honey-laden comb peeled loose, hung up between frames and caused load imbalance. Thick blobs on the extractor wall nudged whirling top bars out of slots. Frames flew from position and noisily tumbled about. The turnbuckle/chain-anchored machine whoooomphed and screeched as it danced in terror.

With a power extractor I don't hover near the cover. I was across the room uncapping more incipient devils to feed into my pet. Precious seconds passed as I tried to place the awful sounds. Was the dog orbiting again, his tail retangled in the air compressor drive pulley? Finally I flipped the switch and lifted the lids. Ugh! But not one frame was broken.

I tired many combinations of extractor speed, frame placement and honey temperatures from my normal 84°F to a sizzling 105°F. Nothing was satisfactory. I discovered that alternating one plastic and four woods was safe. If my machine had plain, unnotched, rings I think it would be okay. A tangential, basket extractor works good.

Before uncapping I stack-heat supers at 84°F at least 24 hours. At that temperature 10 plastics of thin honey ran fine. (Thin honey: 17.5% or greater moisture, determined by refractometer. Local honey usually is under 17%). Honey at 17.2% came if I timed speed increases and extracted for a ridiculous 40 minutes. Without special handling I couldn't use those white beasts. So I don't.

Plastic frames have their good points. Most obvious probably is durability: They're mighty enough but not indestructible. In my tests a few top bars cracked during extraction and many others showed stress marks. Neither defect openly impaired frame strength. They're not heat proof, a slow-moving uncapping knife easily gouged or caused melt marks on them,

Pierco Frame Co. plastic frame/foundation on top. Super frames. When plastic was interspersed with wood-and-wax this mess was almost guaranteed. Not at all unusual to have w/w capped honey cells extended and more honey deposited on top of existing cappings, with end result capped. These two frames removed from hive as a unit and separated to preserve cappings and subsequent dripping. (Frames faced each other in hive.) I don't recall ever seeing wet-capped cells on a plastic frame. They were common, as pictures show, on shallower portions of wood/wax that faced plastic.

no big thing. Cold too affected them. At temperatures well below zero they became brittle. End bars often snapped when heavy frames fell a couple inches into the box. Frames sometimes shattered if dropped and drawn comb readily broke loose if carelessly handled. But no one routinely works equipment in cold weather and plastics do withstand much rough treatment. One thing: I've never popped a thumb through plastic foundation.

Foundation area is a plus. Thin framework all around combined with no gaps between foundation and frame adds lots of cells. I've calculated the bonus but don't have the figure at hand. I believe, though, it's about 13%. That's a substantial increase in potential brood or storage area. And while bees can't chew out the edges they'll not always draw comb there.

Another positive is negative propolis. When plastics were shoulder tight in boxes, bees didn't propolize. If frames separated bees wasted much propolis trying to fill the end bar interstices before lackadaisically tackling the spacing gap. Negligible amounts were used on top bar/rabbet faces. Propolis on plastics: No problem.

I'm finicky about what hangs in my hives. Only two installed plastics warped beyond use. I can't imagine how. Plastics hold shape well.

One oddity still puzzles me. Perhaps 20 or 30 plastics were drawn as though the foundation was bowed. (It wasn't) Those always occurred in groups of three or four, usually in supers. One side had normal or slightly deep cells, the other graduated from normal depth at edges to $^{3}/_{16}$" at center. All would be capped honey. I scratched caps on such frames and dropped them into brood chambers. Bees then drew normal cells. I've no explanation.

It's almost worth having a carton of plastics on hand for one specific purpose: swarms. House a strong swarm in a box of bare plastics, fill the top feeder and . . . stand back. I did that at 1:30 a.m. July 18 (we have no real darkness between mid-May and late July). Thirty-six hours later 2 p.m. the 20th, seven frames were being worked, queenie was laying in half-depth cells and one frame had 90 square inches of eggs in a lovely pattern. Seven days later they immediately accepted the second all-bare box. Other natural swarms have responded similarly. I've not tried artificial swarms on plastic.

Dilemma: What to do with beautifully drawn comb on unwanted plastic deeps?

Continued on next page

I've repeatedly used deep frames or plastic paragraphs. It's intentional. I want to emphasize above comments pertain to deep plastic frames only, unless medium depth was identified. I'd worked with plastics four years when I decided I wasn't inherently masochistic. It hurt when I pulled about 120 deeps—I salvaged the wax—but our affair had failed. (I still have 40 or so lurking here and there. Attrition will get them.) During that period I also ran medium plastics. I still use and plan to continue to use that size.

Honey bees baffle me. Why most of those unfathomable females behave with utter decorum on medium plastics yet blow their collective cool on deeps make me (sometimes) yearn for earthworm breeding. In my yards plastic mediums work great. Bees like 'em and my now defensive extractor doesn't try to eat them.

In 1980 for physical reasons I began switching from deep to medium supers. I targeted 20 colonies like this: five got supers with 10 plastic frames; five, supers with frames 1-5 plastic, 6-10 w/w; five with alternating wax/plastic/wax, etc.; and five control colonies, supers with 10 wax-and-wire. Two controls were slow breeders and a little weak. Colonies were not grouped by fives but randomly sited throughout the yard. All colonies had routine management, no forcing or unusual manipulations and all were supered at the same time. I planned to let them go five days with no remedial action.

The worst first. Remember this applies to medium supers, not brood chambers. Two colonies with all plastics immediately went bonkers. They entered supers at once and in three days one had five frames, the other, four, with free comb between and firmly bridged to otherwise bare foundations. By end of fifth day there was no positive change and nectar was being stored.

Seven more colonies each had one plastic with wild comb by day three; some of those were started the first day. I tip-checked, to see and record performance only, each of the 20 supers late each evening. The fifth evening I cut or scraped irregular comb from all but two frames and replaced them in respective boxes. I left those two frames, one in each of two supers, for further tests. No w/w frame had any wild comb.

That was the last aberrant comb built that season.

In two more years I had things pretty sorted out. Last season—1983—was almost totally routine. Cumulative findings are interesting.

Any wild comb drawn was always started within three days. None ever appeared after the fourth day. When crazy comb was removed the fourth day, none was rebuilt. Additionally, when crazy comb was cut out bees built perfect worker cells at a frenzied pace. It seems that colonies that made wild comb had a delinquent urge that had to be accomodated. When the initial impulse was indulged and the bad comb subsequently removed, bees seemed to redouble their efforts to get their house in order. Additional supers of plastic were in all cases promptly accepted and properly worked.

Occasionally I left a single plastic with wild comb in some boxes. Bees apparently purged their deviant urge on that frame. After a few days it was ignored to season's end, if I left it that long, and other work was normal.

Supers with mixed frames provided astonishing results. Almost invariably the plastics were started first, drawn first, filled with nectar first. In some instances all plastics in a super were nectar-filled and being capped before the w/w began to be drawn. Frame placement didn't matter. Whether staggered with wax or clumped together, plastics drew bees first.

In boxes with all wax-and-wire rapid acceptance and good work was on par with plastics. Only in mixed frame application was a preference for plastic clearly demonstrated.

Extracting? A whiz. An absolute joy to see super after super produce frames perfectly drawn from corner to corner with surfaces as flat as the uncapping knife. My extractor cuddles 20 frames in its steel embrace as they whirl in equanimity at whatever speed necessary. Except during sustained maximum rpm trials not one frame had blown comb. No broken frames, not even a stress mark. Nice.

I've not discussed weather, flows, bee behavior, general managment, costs or a variety of things pertinent to any beekeeping operation. In a five-year span many conditions are encountered. Some should meld into a legible script. Mine plainly read: Renounce plastic deeps, retain mediums. So I have. Others may not agree with my procedure but the results may be helpful.

The plastics I used were, and are still, made by Pierco Frames, City of Industry, California. They were the first I got. I've toyed with plastic frames, an imitation Pierco, plastic foundations and crossed wire reinforced foundation. Two plastic frames were too heavy, too expensive, too easily broken when disassembling, too undesirable. The imitation was so obviously a Pierco copy I felt I'd waste my time messing with it. the crossed wire reinforced wax

Continued on next page

Pierco Frame Co. plastic frame/foundation on top. These are not paired frames. The bottom w/w frame faced a plastic that had practically no honey and only blobs of drawn comb. Most of that, as you can see, was erratic in pattern and depth. I don't know why I didn't shoot the two proper frames as a pair; probably had destroyed the plastic earlier. Typical of what to expect with plastic next to wood-and wax.

was so bowed—three orders, two successive years—that less than ½" separated sheets when hung back-to-back. Totally useless.

Plastic foundations didn't enthuse me either. As with the above items I hadn't given them a decent test but a couple years ago I did run 10 each of two types for 30 days in June-July. Five of each went into broods, five into supers. None was fully drawn, some untouched, when I pulled them. I was about played out on plastic.

Through circumstances two winters past I got by mail a trail pack of 45 beeswax-coated plastic foundations. I mounted them in wood frames and last June I arbitrarily dropped deeps here and there in broods, with one getting a clump of three. Mediums went into supers, five to a colony, alongside drawn comb.

I checked them two weeks later. All super frames were drawn and in use. Brood combs were at least 50% drawn and being worked. At season's end, however, six brood frames were heavy with drone comb. Unwanted, yes, but not cause for suicide. The rest were in good worker cells.

Marlin Schmidt of Midwest Extruders, Webster, South Dakota designed and makes those foundations. He phoned in September to get my opinion of his plastics.

Though Schmidt knew I was a backlotter and a small user, he was interested and we discussed at length probable cause of my drone cell eruption. I'll be buying and trying a bunch more of his sheets this year. Schmidt has asked for a year-end report.

Incidentally, more than a half-million of those comparatively new plastics are in use, most with commmercial outfits in the Midwest.

I emphasized that incident to show at least one plastics manufacturer has concern for the little guy. Not all do.

Will I stop using Pierco plastics? Deeps, yes; I've given reason. Mediums, no. They suit my bees and thus suit me; I can't ask for more.

Charlie and Babe Warren are British Columbia's biggest commercial beekeepers. They run about 3000 colonies and have "several thousands of perfectly drawn-out worker combs" on Pierco plastics, "at least two-thirds . . . drawn out in the brood chambers." They have drone comb, brace comb, cell drifting and transition cell problems too, but the Warrens said they're no greater than with beeswax foundation. They cited several advantages of plastic over wood-and-wax, all spelling m-o-n-e-y. And the Warrens appreciate the cheaper cost of plastics compared with cost and labor of buying, assembling and wiring frames, and mounting wax foundation[4].

Plastics are a part of contemporary beekeeping. The big boy sets the pace, the little fellow follows. Plastic frames and foundations aren't all bad. We don't have to like 'em to use 'em. We don't even (yet) have to use them. But it may be practical for us backlotters and hobbyists to check them out, to give them, our bees and ourselves a fair trial. The ones I've tested are far stronger than beeswax. Some seem more attractive to bees than does wax. Most are cheaper. Not a one, however, can melt down to be reshaped into a pleasurably sensuous candle.□

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Editors Note: The need for open discussion of plasticware for beekeeping is obvious and growing. Lately, we've received more requests for information on this subject than any other single topic. It has been our observation that many beekeepers, especially those in academic environments, have been unwilling to discuss the matter of plasticware because doing so means going out on a bit of a limb — detailed studies of plastic frames and foundation are not in abundance so, consequently, reports tend to be on the basis of personal observations. Few magazines have dealt with this topic, either; perhaps because of the fact that some of our own advertisers offer plasticware. *Gleanings In Bee Culture* **has always prided itself on being an open forum for discussion of important beekeeping issues. The above article presented both pros and cons of having to do with the use of plastics. It is our hope that, following the publication of this article, we will hear from those of you who agree and those of you who disagree with what you've read. We can then share that feedback and, by doing so, help all of us to a necessary understanding of what plasticware can mean to American beekeepers. Let this, then, be a beginning.**

Propolis

By CONNIE & ARNOLD KROCHMAL 119 Bell Road Asheville, NC 28805

I Status

A Cinderella among hive products is propolis, a resinous substance, just beginning to attract attention. The name comes from ancient Greek. "Pro" means "before", "Polis" means city or community, and the origin relates to the use of propolis by bees, to decrease the size of the hive entrance. It is also used to repair cracks in the hive body, and to fasten frames to the hives, and cover the bodies of dead invaders, which seals in organisms of decay.

Two Romanian over-the-counter propolis products. On the left is a 5% propolis mix used for respiratory infections, on the right is a mouthwash with propolis.

There is a difference of opinion as to the origin of propolis. In the United States it is belived to be harvested by the bees from buds of trees; willows, birch, pine, and others. However, in the U.S.S.R. apiculturists believe that the resin-like propolis is a product of pollen.

We cannot find detailed chemical analysis in English which could shed light on the origin. There are bee workers in England who feel propolis is collected in the form of resinous lumps on trees.

The chemical composition of propolis varies with source, and season. Russian propolis has been analyzed to show:

55% resin and balsam

10% essential oils

30% wax

5% pollen

In addition there are proteins, and other compounds, vitamins and minerals.

We ourselves have seen bees tugging at small spots of resin and then placing the drops in the pollen baskets on their legs. When they re-enter the hive, it is believed that other bees help remove the gummy substance.

There are both domestic and imported propolis products on the market, but none are specifically packaged for use as a food drug.

F.D.A., answering our inquiry, at present states "... propolis is deemed an unsafe food additive, and, therefore, cannot be legally marketed in the United States as a food, as a dietary supplement, or as a food additive." If it were sold as being useful in treating burns or wounds, it would be considered a drug by F.D.A., or if it were "...intended to be used for daignosis, cure, lessening, treatment or prevention of disease"; and that type of marketing would require huge sums of money for testing and research to meet federal requirements.

However, propolis can, and is, sold without recommendation, as to use, and increasing numbers of people are buying it.

PROPOLIS II (Medical and Human Use)

The main work on propolis uses has been in Romania, the U.S.S.R. and Yugoslavia. We have visited the first two countries to see first-hand the work going on.

In addition to the U.S.S.R. and Romania, studies of propolis are carried on in Yugoslavia, Poland, England, Belgium, Germany, Denmark, and Norway. A computer search we ran showed no research on propolis in the United States. A beginning could be made in assembling a world bibliography of such information if a modest source of funds were available.

In the U.S.S.R. we found no propolis products sold, and only small amounts available at the farmers' free markets. Yet a great deal of studies have been carried on, and reported.

In World War II propolis was used by Russian physicians to treat wounds, with good results. The inhalation of vapors of a mix of 60 g propolis and 40 g beeswax heated in an enamel pan set in a pot of water was reported as a good treatment for bronchitis. The treatment was repeated morning and evening for 10 to 15 minutes over as long as two months.

Again in the U.S.S.R., propolis has been reported as being used satisfactorily as a 10% alcohol extract to treat sore throat, tonsilitis and pyorrhea.

In both Russia and Romania we found reports that propolis ointment applied to the skin provided protection against radiation reactions, and encouraged the healing of burns.

In Romania where we have worked at two different periods, we found by far the highest development of the use of propolis. Products are available to treat burns, acne, respiratory disease and these are sold in tablet, cream and spray forms. In addition there are face creams, a mouth wash, and even a suppository.

The leaders of the research into the uses of propolis in medicine are a group of classical M.D.'s and D.D.S. who supplement their treatments with bee products. Our work was with Dr. Nicholas Mihailescu, who died in 1982.

Propolis by mouth as pills was used very successfully to treat benign skin tumors. Propolis pills, taken internally, he reported, resulted in a 70% healing rate of prostate problems. Mihailescu, and endocrinologist, treated thyroid problems, including nodules, and benign, beginning tumors of glandular origin.

He credited the usefulness of propolis to its repairing and regenerative effect on body cells plus anti-bacterial and anti-biotic actions.

The other physicians used propolis in

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PROPOLIS

(Continued)

gynecology to treat post-pregnancy, cervical problems, to hasten healing of burns, and produce well-healed scars. The dentists in the group used propolis for gum problems.

Our last meeting with Dr. Mihailescu will always remains fresh to us. He commented "It is a duty of honor for us, the physicians, to work with beekeepers to produce better medicines and newer means of providing better health care. Mankind waits for new healings from medicine and apiculture. Let us work together for humanity's interest."

Those thoughts are as true today as they were when said.

(We are appreciative of the use of the Ramsey Library at the University of North Carolina, Asheville.)□

Testing Your Beekeeping Knowledge

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

The social structure of the honey bee colony is maintained by the queen and workers and depends on an effective system of communication. The exchange of chemical secretions among members, along with communicative "dances" are undoubtedly responsible for controlling the activities necessary for colony survival. These chemicals and dances are used by the colony members to: locate new sources of food, attract a mate, provide instructions for duties that must be performed for the sake of the colony, determine the position they occupy in the social hierarchy and recognize colony intruders.

Please answer the following questions to find out how well you understand communication in the honey bee colony.

The first 5 questions are true and false. Place a T in front of the statement if entirely true and a F if any part of the statement is incorrect. (Each question is worth 1 point).

1. ____ Foragers use the round dance to convey both direction and distance of a newly discovered food source.
2. ____ A pheromone by definition is a chemical substance released by individual members of a society that evokes specific responses in other members of the same species or society.
3. ____ Footprint pheromone is distributed around the entrance of the hive and on the combs by crawling bees.
4. ____ In addition to indicating sources of food, the wag-tail or waggle dance is used to recruit nestmates to new nest sites.
5. ____ Neither queens or drones produce isopentyl acetate.

Listed below are several chemicals associated with honey bee pheromones. Please match the following chemicals with the body area where they are produced (1 point each).

A. Nassanoff or scent gland
B. Sting chamber
C. Mandibular glands of the queen
D. Brood-food glands
E. Glands on the body surface
F. Queen ovaries
G. Mandibular glands of the worker
H. Salivary glands

6. ____ 2-Heptanone
7. ____ Footprint pheromone
8. ____ 9-oxodecenoic acid
9. ____ Isopentyl acetate
10. ____ Citral
11. ____ 9-hydroxydecenoic acid

Following are several specific responses associated with particular honey bee pheromones. Please match the following responses with the specific chemical (Each question is worth 1 point).

12. ____ Attraction of drones outside of hive during queen mating.
13. ____ Inhibits ovary development in workers.
14. ____ Assembles workers.
15. ____ Attracts swarming bees who have lost their queen.
16. ____ Alerts other bees to impending dangers.
17. ____ Causes a swarm to settle and remain clustered.
18. ____ Inhibits queen rearing.
19. What are the two ways in which "queen substance" is distributed within the hive? (Question is worth 2 points).

Answers To Testing Your Beekeeping Knowledge

1. False Foragers use the wag-tail or waggle dance to convey both direction and distance of a newly discovered food source. The round dance is performed by bees that forage less than approximately 100 meters from the hive. New foragers responding to the dance, search in all directions from the hive. The floral odor associated with the dancer's body helps them to find the food source.

2. True The idea that specific chemical substances might control some aspects of social order in the honey bee colony was advocated in Germany in the early 1940's. By the 1950's several researchers, most of them Europeans, had suggested that certain actions by social insects might be regulated by hormone-like substances. In 1959 the word "pheromone" was proposed for these materials: the term was widely accepted immediately, and research has proven their existence. Most pheromones act as odors and are produced by both workers and queens.

3. True Footprint pheromone is believed to be deposited by the worker's feet and possibly the tip of the abdomen.

4. True After the swarm has issued from a hive and clustered near by, scout bees begin dancing on the cluster surface. Wag-tail dances are used to inform other searchers of prospective nesting sites.

5. True The main component of the sting alarm pheromone is isopentyl acetate. Newly emerged workers have no isopentyl acetate. Largest amounts are found in workers that are 15 to 30 days old which corresponds to the age when bees are guards and begin foraging in the field. Although the queen has a sting, she produces no alarm pheromone. Drones have no sting and do not produce or respond to alarm pheromones.

6. **G**
7. **E**
8. **C**
9. **B**
10. **A**
11. **C**
12. **D**
13. **A**
14. **G**
15. **D or G**
16. **B**
17. **F**
18. **A**

19. "Queen substance" is really a complex of more than a dozen chemicals that are produced by the mandibular glands of the queen. The queen's pheromones are dispersed over her body surface when she grooms herself. The retinue of workers that encircle the queen obtain the chemicals by licking her body or touching it with their antennae. The chemicals are then shared with other members of the colony in regurgitated food.

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

Number of points correct

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

Wintering The Honeybee Colony:
Preparation Of Hives On Summer Stands

By T.S.K. JOHANSSON and M.P. JOHANSSON
Queens College of CUNY, Flushing, NY 11367 and Queensborough Community College of CUNY, Bayside, NY 11364

Many readers of *Gleanings*, including the authors, acquired their first colony of bees without benefit of much premeditation; as we adopt a proffered kitten, puppy, or hamster. Suddenly a vague desire to have bees becomes a reality, and a responsibility. The former owner of our first colony was under pressure from his mother to get rid of it because of the assaults she suffered when she hung out laundry. The first time we worked the hive, a boy watching 400 feet away was stung!

Information about caring for the more usual pets is readily available from family, friends, or pet shop; but not so for keeping bees. Our first source of instruction was a borrowed copy of *How to Succeed with Bees* by Atkins and Hawkins[1]. We had forgotten until looking at a copy now that the first two chapters of this useful manual **start** with the subject at hand: How to prepare the colony for winter, and lay the foundation for a honey crop the **next** season. The beekeeper's "New Year", they said, begins eight weeks prior to the first frost! When autumn arrives there are some necessary things we should do to secure the colony for winter, but the most critical prerequisites for successful wintering must be met during the summer before the end of the nectar flow. If ideal conditions are desired, it may be necessary to keep the requirements for wintering in mind while deciding on equipment, locating the apiary, etc.

A catalog of the articles written about wintering bees would be a staggering chore, but they cover much the same ground as far as basic requirements are concerned. We have chose to use Dzierzon's four "requisites of a stock which is to stand the winter" as a framework on which to hang our discussion.

1. THE QUEEN

"A sound and vigorous queen, not more than two years old. One that is already three years old we must not winter, and must not shirk the trouble of catching her out of an otherwise strong breeding stock and replacing her with a young one; for since most queens die naturally in about four years, if they have not met with any accident before, the stock does not yield nearly so much as it might if the death of the queens takes place before the next swarming time, quite apart from the fact that an old queen, in consequence of her infirmity, does not lay so many eggs as a young one, and at the same time is especially inclined to the production of the drones."

A check that the colony has a queen should be made early enough in the season so that finding eggs and larvae can be used as indirect evidence of her presence. With hundreds of bees covering each comb, finding the queen herself can become a formidable undertaking. Beekeeping manuals suggest various stratagems to increase the chances of success, including the possibility of finding some artful queen on the back of her pursuer. A marked queen is easier to find and to determine her age if an international system of color coding is used.

The absence of worker brood and presence of extensive amounts of drone brood would be evidence the queen has exhausted her supply of sperm, and can lay only unfertilized eggs that develop into drones. If the queen is a drone layer or the colony is queenless, the disposition of the colony depends upon the circumstances:

A) If there is sufficient time for mating and a month of brood rearing, the colony can be given a comb containing eggs from another colony to rear a new queen. That queen cells are started will be evidence that the colony is, in fact, queenless; although the development of laying workers after an extended period of queenlessness would probably inhibit queen cell production.

B) Queen cells can be given to the colony from selected colonies manipulated a few days prior to checking the colonies[2]. Some queen breeders supply cells to those who can pick them up or by private air delivery.

C) Beekeepers who follow the admirable practice of keeping reserve queens in nuclei can unite a nuc to the queenless colony[3].

D) Queens can also be obtained by air mail from queen breeders, and a "bank" of queens ordered in advance can be held in a colony until they are needed.

E) If the colony is too weak to be wintered, it can be united to a substandard colony; or the combs of brood honey distributed amongst several colonies.

Requeening. "Some beekeepers are as fond of requeening as was Henry VIII, and in many instances with less reason"[4]. The authors let the bees decide when to replace queens. This usually occurs in the third season when they are two years old, the time that apiculturists consider queens should be replaced for maximum honey production[5]. Such supersedure is usually undertaken at the close of the honeyflow when any interruption in egg laying is not detrimental. The new queen will lay more and longer to make up for any brood rearing, and the bees are a month younger which is all the better for wintering.

Unlike swarming when a considerable number of queen cells are produced, only a few cells are made during supersedure and the queen continues laying eggs. In some instances the old and new queen may both be seen laying on the same comb[6]. Wadey believes the tendency to replace the queen without swarming is a genetic trait, and that it can be selected for. Queen breeders' advertisements may in time include the claim that their bees possess "the instinct to supersede their queens without swarming or becoming weak"[7]

If the colony does not supersede a two-year queen during the third season, she may become a problem the following spring when it may not be possible to replace here. Polish beekeepers replace their queens when they are two years eight months old[8]. If there is no concern about a colony other than the age of its queen, the colony will rear a replacement if the queen is removed. Colonies allowed to rear their own queen at the beginning of the main flow, produced near-

Continued on next page

ly twice (294 kg) as much honey as controls (166 kg)[9]. Fewer queens died in winter if they originated as the result of supersedure or swarming that as emergency queen cells or grafting[10]. If there is no honeyflow when queens are being produced it is important to feed sugar syrup[11].

Should anything go wrong with the supersedure, the colony can be given eggs to rear another queen, but they are likely to be too weak for wintering. They can then be united to another colony, or given a frame of young brood from other colonies each week until their own queen begins to lay[12]. If nuclei with reserve queens are maintained, they can be screened, and taken to yards to be united to colonies needing replacement queens. Introducing queens in cages requires more visits and is more expensive. The safest method of introducing shipped queens is to place the cage in a nuc with 2-3 combs from the colony to be requeened. The nuc can be screened and placed in a cellar if there is danger of robbing[13]. Seventeen percent of queens spending up to five days in the mails died in the first winter; 40% died if more than six days were spent traveling. The honey production was also affected proportionately[14]. The rate of supersedure for queens introduced after spending 48 hours in transit by air or surface mail was 27.8% compared to 5.3% for queens caged an equal length of time in their own colonies.[15].

Although many beekeepers do not requeen routinely, there are those who do requeen each year, as did F. Benton. queens active nearly all year as in the South will be physiologically older, and annual requeening may be advantageous. The young queen lays longer in the autumn, and the colony is considered to be less likely to swarm the next season. This may reflect the larger than usual population in the fall, or that queens do not lay at full capacity in their first season[16]? M. Reid indicated that under commercial conditions in New Zealand, it is more efficient to requeen entire apiaries rather than attempting to make judgements about queens on a hive by hive basis[17].

Stocks with a minimal rate of swarming were produced in Finland during 15-20 years of selection for queen and drone lines. But it is also important to provide more than adequate space for brood rearing and honey storage, or take the inevitable swarm off in the form of a nucleus from the largest colonies before the swarming season. In Finland, such nuclei are left on the colony during the summer; the young queen in the upper body is used to replace the older queen when uniting for winter. This practice provides an opportunity to observe the characteristics of the young queen, and is ideal where there is a fall honeyflow. Some queens may be indifferent layers the first season, and only in the second season do they exhibit their full potential[18]. C.P. Dadant found that many first class 2-year old queens proved to be good the third season as well. In Switzerland, 2-year queens were superior to first year queens, but the district had moderate honey-yields with queen laying a maximum of 900-1,500 eggs per day. Where queens lay 3,00-5,000 eggs per day, and crops are extremely large, it may be advisable to requeen at least every second year[19].

Queens in packages have been considered unlikely to survive the winter, and to need replacement. Although Nosema has been implicated in problems with shipped queens and packages, Nosema spores were not found at all in dead queens from colonies heavily infected in winter and spring[20].

Finding the old queen and introducing a new one is a formidable task for commercial beekeepers with hundreds or thousands of colonies, especially in regions where supers of honey must be lifted off and the queen searched for amongst thousands of bees. Such back-breaking labor can be avoided by requeening either in the spring, or in the fall after the honey has been taken off and the colony is broodless. I.W. Forster in New Zealand found that colonies with spring-produced queens yielded 20 pounds more honey than with autumn queens. Colonies that reared their own queens produced 25 more pounds of honey than those with introduced queens[21].

Attempts since 1890 to give a queen cell to the colony without first searching for and destroying the old queen have been undependable on a routine basis. It is most successfuly when done during the "upside" of the honey flow; after the peak it becomes increasingly undependable. Skirkevicius introduced queen cells to queen-right colonies using Titov cages: natural swarm cells were 1.2 times as successful as artificially produced cells, and requeened colonies produced 10.7% more honey. K. Simpson suggests that introducing cells on the 10th day after starting the cells (rather than the usual 5 or 6 days) reduces the chance of damaging the delicate larvae[22].

One of the difficulties in requeening is to judge whether or not the queen to be introduced will be better than the one removed. Whether there is equal, or better, stock in the apiary than can be bought is not an easy question to answer[23].

To be continued next month, with feature topics of "Bee Breeding" and "Colony Population".

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Continued on page 287

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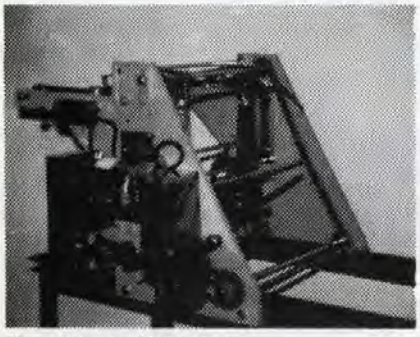

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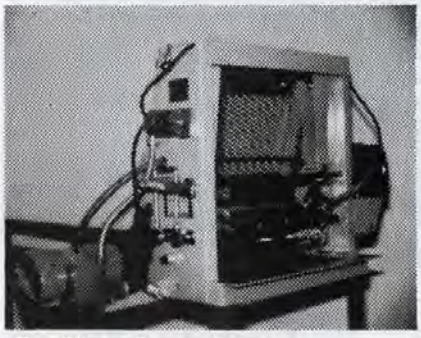

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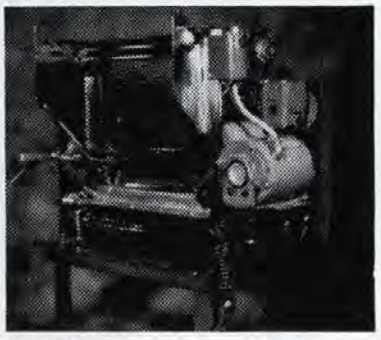

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A Gleanings Profile
Homer Park: Moving Them Out—To Almonds

By LARRY GOLTZ — Western Editor
1230 Canby #122 Redding, CA 96003

BE AT MY PLACE AT 7 O'CLOCK TUESDAY MORNING!

Homer Park has a way of putting things that doesn't leave much doubt as to what he wants. To me it was an opportunity to observe something I am hoping to become better informed about—almond pollination, and here was the chance to begin learning from someone who has been in the business a long time. Almond pollination is a game — no, a business that can make or break a beekeeper over a period of time.

Growers of almonds faithfully tend their orchards every month of the year; weeks of pruning, taking out unwanted, non-productive growth, "opening up the center" of the tree to admit sunlight. Pruning also keeps the tree symetrical for balance during the nut bearing stage. Spraying begins early in the season but is held off during the 2-3 week period when literally thousands of colonies of bees are in the orchards for pollination. It is obviously to the advantage of the grower to cooperate fully with the beekeeper in every way possible. This had not always been the prevailing attitude, as some beekeepers have found out, to their sorrow. A late spraying with toxic pesticides after the bees are in locations, which is usually at the "popcorn" or opening blossom stage, when the bees begin for forage, can cause havoc. The killed bees could represent as much as a quarter of the hive population or more, and most would be the field bees, or pollinators.

When moving day arrived, I met the Parks crew just as the sun cast first light behind the distant Mt. Lassen in the lower Cascades, to our east. There was frost on the windshields of the trucks, which had been loaded and tied down the evening before with bees picked up from the wintering locations. Most colonies had been fed and were into the second cycle of brood. The bees had been working the early manzanita for two weeks during an exceptionally warm January and they were ready to go to the almonds.

Another "guest" was riding along, having come down from Canada. For Charlie Warren as well, this was a first exposure to moving bees to almonds. Charlie is a honey producer on Vancouver Island, in British Columbia. We agreed that this was different for both he and I; different from Charlie's operation, where his bees do some pollination, but are run mainly for honey in the fireweed locations on Vancouver Island—and definately different from my "hobby" beekeeping back in Ohio.

Out on the highway, rolling south, the bees were holding well to the hives.

Photo 1. Vegetation under and between the almond trees is kept mowed. this prevents a drain on the resources of the trees and presents no distractions to pollinators.

The driver of the lead truck was coming up on a truck weigh station, prompting a call over the radio for instructions from Homer. "Roll 'em through the station slow and see what happens," radioed back Homer. "They've been after us to screen out loads, but as long as there isn't any long wait at the scales and the bees are quiet we can be on our way to the orchards without any problems." said Homer. We passed slowly through the scales.

As we by-passed Chico we were into the orchards. Many of the orchards were planted in English walnuts with their characteristic ring where black walnut root stock had been grafted with English walnut scoins. Here, too, were the almond orchards. Intermittently, there were groves of prune trees, but with only the almonds showing signs of blooming.

"I remember when I was growing up of coming here with dad," said Homer, as we passed one of the orchards outside Chico. Many thousands of almond trees have been planted since then, extending far southward in the central valley of California. Almond planting is still on the increase, new orchards being planted and older trees being replaced. We observed trees being taken out in blocks, first trimmed down to stumps and roots, fumigate the soil and replanted with young trees. "They are planting the trees closer together now," said Homer.

There is apparently some question of whether yield per acre is actually increased by closer planting of trees.

There is no doubt that mechanization is here to stay,however."A lot of college kids used to earn their tuition "knocking" almonds off the trees during harvest time—used to wrap an axe handle with

Continued on next page

Photo 2. In general, an almond tree produces more flowers than are needed to produce a crop. Excess flowers and nuts drop in several stages of development.

rubber and go at it," Homer reminiced. Now, a machine clamps a mechanical arm on a limb and shakes the nuts off. They are then windrowed by brushing from under the trees and picked up by conveyors.

"Some growers are better than others. Take this man, for instance," as we pulled into an orchard to begin unloading the bees. "He is a real genius. He gets crops when others do not. He knows how to prune these trees. Notice he doesn't have a lot of extra limbs hanging against others," Homer pointed out. "A fungus infected area had been isolated by chain saw surgery. Apparently infestations on the external surfaces of limbs do not always respond to chemotherapy, much the same as some human cancers do not."

The fight against pests and disease by land and air is a continuous battle. We were reminded as a biplane passed low overhead, possibly delivering a load of herbicide or fertilizer to nearby field crops.

The soil in the orchards seemed damp, but not as bad this year as last, we were told. Last year beekeepers had difficulty in trucking bees into the orchards; this spring it posed no problem. Unloading the bees by boom from the truck took less than an hour. Even the bees were not unduly disturbed—but then Homer and his men are skilled at handling the hives with the mechanical apparatus. The bees were lulled somewhat by the vibration caused by the running truck engine while the bees are being unloaded.

Grower's opinions vary as to how many bees they feel are needed to produce a full crop of almonds. Estimates vary from one to two and one half colonies per acre. Costs to the growers vary from $20 to $24 per colony, an investment that no almond grower can do without during the critical pollination period.

A crisis of sorts arose as the last colonies were unloaded. A call over the radio from Louis Parks advised that a grower in the neighborhood was planning to put on a late spray, possibly a pesticide, with the bees already in the almonds. The grower had been delayed by a sprayer breakdown.

Continued on page

The Almond

The almond *(Prunus amygdalus, Batch)* belongs to the rose family. It apparently originated in southeastern Asia and was introduced to California in 1843, where practically all the almonds are grown.

Varieties

Nonpareil is the principal variety grown in most California orchards for nut production, though other varieties must be grown with it to effect cross pollination. Usually two rows of Nonpareil are alternated with one row of a pollenizer variety. Trees are usually spaced 25 to 30 feet apart, but closer planting is being attempted of late.

Propagation

Budding is from trees of high productivity and vigor onto selected root stock which may be an almond, peack, plum or a hybrid. The budwood source and the rootstock selected influence the value of the tree.

Irrigation

Almond orchards are nearly all irrigated from either sub-surface systems or by above-ground watering from irrigation pipes. A water supply is needed for growing almonds; irrigation is probably the most important cultural factor in the production of almonds. A mature almond tree takes about 50% of its moisture from the top 3 feet of soil.

Cultivation

Most growers of almonds practice non-tillage with a ground cover of native grasses. The ground cover is kept clipped to an inch or two in height, often less.

Fertilization

Nitrogen is the most needed element, but potassium may also be needed along with the micronutrients zinc and boron.

Training and Pruning

Training a young almond tree and pruning during later growth helps to maintain a mechanically strong tree, shapes the tree for convenience of management, distributes the fruit over the tree and assures a succession of profitable crops. Almonds produce most of the fruit on young spurs, called fruiting wood.

Diseases and Pests

The almond is subject to several potentially serious scale and mite infestations, bacterial and fungal diseases and can suffer damage from several pests, including nemotodes. A noninfectious bud failure affects some varieties.

Hardiness

A dormant almond tree is quite hardy to below freezing temperatures but since it blooms early (February 10th to 25th) the blossoms and young nuts are particularly susceptible. Below 28 degrees F. 50% of the nuts can be destroyed; below 27 degrees F. 100% are destroyed. Earlier, in full bloom, 75% of the crop may be lost by being exposed to temperatures below 22 degrees F. It is most desirable that temperatures stay above 60 degrees during bloom time. Frost damage may be prevented or reduced by turning on the sprinkler system so that ice forms on the trees. The melting of the ice raises the temperature of the blossoms to above the critical point. The water is not turned off until the ice begins to melt. Alarms sound when a critically low temperature is reached in the orchard.

Production

Kern County, California is the leading almond growing county, followed by Merced, Stanlislaus and San Joaquin. Almond acreage is expanding, both because of increasing acreage and because of improved yields. The average yield (shelled meat) per acre in the 1973-77 period was 865 pounds; the average dollar return per acre during the period was $731.

Pollination

Almonds must be insect pollinated. Honey bees are the best pollinators. From 1½ to 3 or more colonies per pacre is recommended. Colonies are distributed through the orchards in groups of 12-14, or less.

References

U. of California Div. of Agr. Sciences Leaflet #2824(1979)
U. of California Div. of Agr. Sciences Leaflet #2463(1979)

Photo 3. A group of colonies placed in an almond orchard prior to bloom.

A hurried check pinpointed the orchard from which the notice had come. Growers have generally agreed to give beekeepers 48 hours notice before applying pesticide, time to move bees out under ordinary circumstances, but with the bloom likely to open in a matter of days, or hours, this was not the time to be asked to move bees from locations in the adjoining orchards.

"If we don't act decisively an errant grower could kill of a hive's working force and both the beekeeper and the growers would lose," said Homer. A couple of conferences and several phone calls from beekeepers changed the grower's mind within an hour. The threatened application, which had been planned for that evening, delivered by helicopter, was called off.

Photo 4. Four colonies to a pallet, arranged between rows of trees. Many growers prefer to have the colonies placed durng the "popcorn" or opening bud stage.

Homer Park is not one to stand quietly by without acting in such circumstances.

We were back in Palo Cedro by early afternoon. That evening more colonies would be loaded and taken to the almonds the next morning. Similar moves were being made up and down the full length of the central valley of California. The logistics of such movements are difficult to comprehend unless one is a part of it or is an observer, as were Charlie Warren and I.

In a matter of days, weather cooperating, that vast network of almond orchards would be in full bloom and the bees would be out in full force. The vast amount of planning, preparation and execution that goes into this and succeeding movements of bees is one of the miracles of modern agriculture.

I was fortunate to be a witness to a small part of these movements of bees and very thankful to Homer Park, one of the California commercial beekeepers who knows the pollination business well, for the opportunity to tag along.□

Photo 5. Homer Park gives us a lesson in moving colonies of bees to almond pollination.

IT PAYS TO KNOW

How to . . .

By P.F. THURBER
5522 127th Ave. N.E.
Kirkland, WA 98033

Let's Put Piggy Back Requeening In Perspective

With your permission I would like to go back to the February and March issues of *Gleanings* 1984, which I had hoped would tell you a fool proof method of requeening. Letters and phone calls show however, that obviously some people are completely confused and if you have not requeened a few times in the past, I can agree piggy back requeening is filled with details. You therefore have good reason to be confused. On the other hand the details are extremely important so let's beat the subject around again.

Requeening—any method can fail, and I think will fail if the bees have any thing to say about it. They are not the least bit unhappy that they may have rotten tempers (sting you, your wife, kids and any available neighbor). Equally if they can get enough honey to carry them through the next winter, they are going to cry about the fact that you got no surplus honey. If their bad tempers get you sued, they could care less. They do not know an attorney from an ant eater and I am sure do not want to know. Finally, the queen whose eggs produce those rotten tempered bees causing you trouble is their mother. She does not go to work every day so her children are not latch-key, possibly neglected, kids, and they love her. It follows they will not take kindly to you pinching off her head and foisting off some stranger who beat up by the U.S. Postal Service's tender mercies obviously is not their mother. I suspect that they think if the queen you are trying to give them had a lick of sense, she would not be imprisoned in a cage and so is probably no good anyway. So? Given a chance they will kill her and raise a queen, I suppose they are quite confident that they can raise a good queen — bees have been doing that successfully for millions of years. Given a chance to express their opinion of queen breeders, I do not think they would be very respectful.

O.K. So to requeen is chancy. However, as you know there are good and valid reasons to requeen probably each and every year. Since the breeder raised queens cost money, and a queen during introduction also takes time from the build up of the colony, you should use the safest way to requeen you can find. Now to my knowledge it is safest to introduce your new queen to a small colony of all very young bees because young bees are not normally aggressive towards anyone including a strange queen. That means you need tos tart a new colony of all young bees and introduce the queen to that small colony. Then later go into the colony you want to requeen, kill that queen and then combine the small colony and the now accepted and laying queen with newspaper.

Now the reason I piggy back the colony of young queens up on top of the existing colony is because first, I want to utilize the heat given off by the colony below, and second, I don't want to lose any bees from the new colony I am making up for the new queen due to drifting. Can this be done? You can find the technique written up in old bee books because it has been practiced for over 80 years. If this is so, what is so good about the King County Extension bulletin reproduced in *Gleanings* for February 1984? Simply this. It points out in detail everything I can think of that can go wrong — every mistake you can possibly make. Look, I have been teaching that method for years at field days, at conventions, and in my classes at a community college. All the students swear they understand yet they smother the little colony or get the old queen up in the new colony or it gets robbed out or when they combine the new colony with the parent colony, the new queen is killed. Hey, you name the problem — they have had it. Some people, too many in fact, will not follow directions to the letter and then they come crying the method is no good. I think about now I should give an example. A friend joined with me in a pool order for marked Caucasian queens from Howard Weaver. I picked up the queens at the post office so they would not get chilled or cooked in our mail box. Louise fed the bees Fumadil water for three days to kill any possible Nosema they might have. The friend picked up the bees and tried to piggy back requeen. He had the flu. The weather was not good, and after he got the queens in, he got caught with unexpected demands on his time so he could not do all the details he should have. The result? No one marked queen was alive at the end of a month and one hive was queenless. What went wrong? Everything? No, I think that 1. he probably got some old queens in the new piggy back colonies (the old queen would kill the new one). 2. He did not have time to cut queen cells in the lower parent colonies which were started after the parent colonies were dequeened and separated from the new queen and her oder (pheronomes) so the bees let those queen cells hatch and the virgins killed the breeder raised queens. 3. He did not consolidate the two brood nests so the hives had a Demaree situation which often leads to construction of queen cells, and 4. He did not super the lower colonies which were building up like gang busters due to a strong maple flow so they raised queen cells and swarmed. OK, I cannot say which of the four reasons caused the most deaths of the queens, but I feel sure that all logically could have caused the deaths of one or more of those ten queens.

I guess that is a horrible enough example but last year some piggy back nucs got robbed out and at least one smothered so now do you see why I insist on writing all the details?

Now let's go on to the March issue. What am I driving at? Let me put it really simply. The weather here, and maybe where you are, can be lousy when the queens come. When the weather is bad, it is tough on the bees and brood to tear apart a hive to hunt for two frames of about to emerge brood, some young bees, and frames of honey and a frame of pollen. Now to avoid chilling the brood, etc., I avail myself to any nice warm good days (up to 21 days before the queens arrive) to make up the little colonies that will become the piggy back nucs into which I introduce the new queens when they come. Of course I cannot completely make up the nucs because I do not have a queen for them, but I can set the frames of brood I want to use, and the honey and pollen in a third hive body above and excluder. When I set the brood and stores above the excluder, the nurse bees go up through the excluder to keep the brood warm and feed it if necessary. In other words I have made up a nuc of young bees complete for the queen.

Now all the above takes time and warm weather. If I have limited amounts of time and warm weather, I only check the brood for age and mark the frames for later. Then later when I again have good warm weather and time available, I go out and pull the two marked frames of brood, put them in a third hive body, add the frames of honey and pollen, and place that third hive body above and excluder and await the arrival of the queens.

When the queens come, all I have to do is lift the third hive body off, remove the ex-

Continued on next page

cluder, add the smell barrier, and the upper double screened bottom board and slip in the queen (with attendants removed) in top box. That I can do even if it is cold and raining in just a minute or two literally. In other words the method of setting up the piggy back nuc above an excluder before the queen comes makes on nearly independent of the lousy weather we enjoy (?) here! I should also point out this variation of the basic piggy back requeening only works if you have a queen breeder who is highly reliable in managing to meet promised shipping dates with 90% reliability.

Now please go back to your February and March issues and with the basic technique now, I hope, clearly in your mind follow the steps through exactly as written. You should attain 95% success in a month after you start the piggy back requeening. You should find 95% of your marked queens accepted and laying in the combined hive.

Let me remind you that if you will use a marked breeder raised queen and you find her in a month, your introduction method was successful. If you find her in the Fall, your swarm control and general management was successful, and if you find her still with the mark next Spring, your wintering technique was right. OK have had it — bekeeping does not take genius just attention to details.

Now one last gasp which the editor may or may not include. I think there is a possibility that a bee scientist may read the above. He will, I suspect by now be absolutely convinced that if I am not daft then at least I am a raving maniac because I have attributed human-like behavior to bees. (There is even a scientific word for that error). So to make my peace with the scientist I will say bees do not think like people, do not behave like people but the correlary is people do not think like bees. The English have an expression which I think is applicable. It is "More's the pity".

My wife tells me in no uncertain terms that when we learn to think like bees we will be better beekeepers.□

PLEASE NOTE:

On page 125 of the March, 1984, GBC, the reference at the end of Dr. Roger Morse's RESEARCH REVIEW column, omitted the author, G.D. Tribe, from the citation: Drone mating assemblies *South African Bee Journal* 54:99-100, 103-112. 1982.

Questions and Answers

Q. I have encountered problems of crystallization of the 2:1 mixture of sugar syrup fed to the bees in late fall and, particularly, the early months of February, March, and early April. As the weather warms up the crystallization decreases. I have tried adding tartaric acid dissolved in boiling water, but that has not solved the problem. What am I doing wrong? Patricia Mackenna, RR #1, Andrews West, Ontario, Canada KOC 2AO.

A. There is never any need to feed bees at all unless they are in danger of starvation, which they seldom will be if properly tended, or unless they are drawing foundation and there is no nectar flow. "Properly tended" means, here, leaving them with ample stores in the fall.

Apart from that, what you are doing wrong, I think, is trying to feed them too late in the fall and too early in the spring. Any feeding should be completed by mid-October, and not commenced before mid-April. If you put five pounds of granulated sugar into a one-gallon jar, fill that with hot water and stir with a stick (a spoon is apt to crack the glass) there will be no significant crystallization, and the bees should suck it all down in about a week or less.

Richard Taylor

Q. What can I do with supers containing granulated honey in the combs? Cut the combs from the frames and separate honey and wax by melting them? Or give them back to the bees to reliquefy? If the latter, then how can I eventually harvest the honey? Joseph Janutka, 111 Moore St., Schofield, WI 54417.

A. Don't try melting the combs. The honey would not be worth using if you did that. There is no way to get the bees to reliquefy the honey so it can be harvested. Return the supers to the hives, putting them directly over the brood nests or, even better, under the brood nests, and the bees will eventually clean out the granulated honey and use it themselves.

Richard Taylor

Q. Late last fall I found small drones in a heavy colony. Would these by laying workers? If so, is there any way to salvage the colony in the spring?

In another super I found chalk brood. The inspector said it should correct itself. Do you agree? Louis S. Martin, R. 6, Box 323, Hagerstown, MD.

A. Small drones are not necessarily a sign of laying workers, nor are they the best sign. If the colony had, or now has, patches of normal worker brood, then it does not have laying workers. A colony of laying workers would not survive the winter, so there would be nothing to salvage in the spring.

Chalk brood is not a very serious bee disease, and a strong colony usually overcomes it without assistance when the weather becomes warm and dry.

Richard Taylor

Q. One of my hives, which seemed strong in the fall, had no bees in the spring. The super was still half full of honey, and there was scattered dead brood down below. The brood did not appear to have died of disease. There were few dead bees in the hive, but the bottom was covered with wax particles. What happened?

Second question: When is the best time of year to replace poor combs? H.C. Wieder, Jr., 2511 Verhalen, Houston, TX 77039.

A. Your hive was attacked by robber bees. The reason you thought it was a strong colony, I suspect, is that you saw so many bees coming and going at the entrance. These were robbers. The reason the super didn't get completely cleaned out was probably that cold weather put an end to the robbing.

Poor combs often do not need to be replaced. The bees usually repair them satisfactorily, and if you get excess drone comb you need not worry about that either. It has been found that colonies with heavy drone populations produce about as well as those with few drones. But if you want to replace a comb or two, get them to the sides of the hives, and then replace them in the spring, before they get brood in them. If no honey flow is on, and you replace with foundation, feed sugar syrup, otherwise the bees will chew up the foundation.

Richard Taylor

Q.

Can Terramycin be used in the syrup along with the powdered sugar method on the brood frames?

2. If one divides a colony, is it best to buy a new queen or can you let the bees raise their own? Should you feed the divide? And what is the best way to make a divide? Oscar Nightingale, 795 Newgarden Ave., Salem, OH 44460.

A. Terramycin should not be fed in sugar syrup, as it loses its effectiveness in solution. It should be fed only in a mixture of powdered sugar, according to strength and the directions on the package.

A colony created by dividing a colony can be left to raise its own queen **provided** it is a strong colony. A weak one is likely to produce an inferior queen.

The best time to divide a colony is just before swarming season, probably the end of May in Ohio. Simply set the lightest of the two stories off onto a new bottom board, leaving the part with the most honey on the original stand, so that the honey will not get robbed out, which is sure to happen otherwise. Supply covers, and either let the queenless part raise its own queen, or better, if you have time, make sure the original queen remains on the original stand and requeen the part that was moved, which will contain only younger bees who readily accept a new queen. Neither part of a divided colony should be fed. The part left on the original stand has most of the honey, and does not need feeding. Feeding the other part will almost certainly incite robbing, since it will have lost its older, protecting bees, these having flown back to the original stand.

Richard Taylor

Q. I want to raise comb honey this summer by crowding the bees down to a single brood chamber, but I have to move them from their winter location to another place five miles away. Should I reduce them to a single story before moving them, or after? Also, are there any problems in using both round and square sections over the same colony? Dennis Sulpher, 233 Marshall St., Lansing, MI 48912.

A. It does not matter whether you reduce the colony before or after. It might be easier moving them if you do it before moving. If you do it after moving, then wait a few days for the bees to become oriented to their new stand, then make sure the producer colony remains on that stand when the field beees will return.

No, there are no problems in using both round and square section supers over the

Continued on next page

same colony, although the round ones will become filled more quickly.

Richard Taylor

Q. I have been asked to put an observation hive on the second floor of a museum, but am concerned about servicing it. If I remove or add frames, how can I keep the bees out of the public area? If I take the hive outside to do this, will the bees not return and enter the room through the entry tube? The last thing we need is to have museum visitors stung. Lowell Randall, 117 Clay Street, Bowling Green, OH 43402.

A. An observation hive seldom needs to be serviced. You will probably need to feed the colony during periods of nectar shortage. This can be done without opening the hive, by inverting a small jar of sugar syrup with a single hole in the cap over an opening in the top of the hive. The hole can be kept corked when the feeder jar is off. The only problem likely to arise is overpopulation if the colony is left to increase in numbers for six or eight weeks. This is solved by removing the observation hive at night, when the bees are inside, setting it on top of a normal colony at least two miles away for about a week, then removing it on a warm day and returning it to its normal place in the museum at night. The field bees will remain behind and join the normal colony, reducing the population of the observation hive. Any other servicing can be done in a similar way, by removing the observation hive at night, doing whatever needs to be done during daylight two or more miles away, then returning it to its place at night. Also, the fact that the observation hive will be on the second story makes it quite safe to passers by below. In fact, if anyone were to receive a sting, it would be more than likely be from some nest of yellow jackets rather than from the observation hive above. But you can be doubly safe by stocking the observation hive with a Carniolan queen, thus creating an extra gentle small colony. And you can also, of course, plug the entry tube to the hive any time you want to remove the colony, thereby preventing re-entry.

Richard Taylor

Q. I want to expand to a couple more hives and by dividing a colony. I understand that to make a nuc I should take three or more combs of brood from a strong colony, put them in a new hive and fill out with foundation. Can I put this new colony only five or six feet away from the original one? If I could do that, won't the bees from the new colony all fly back to the original one? Raymond Hayes, St. Johnsville, NY.

A. The older, flying bees will return to the parent colony, but most of the young bees will remain with the brood in the nuc. Close the nuc entrance down with grass, to prevent excessive loss of bees. The grass will eventually dry up and fall away. Requeen the nuc. Don't leave it to raise its own queen. After the nuc has built up somewhat, and bees are flying freely at the entrance, feed it sugar syrup to get the foundation drawn.

Richard Taylor

ADDENDUM TO "WHO'S WHO IN APICULTURE"

Following our April issue dealine, we received correspondence from several persons with new information too late to be entered into the 1984 "Who's Who in Apiculture" feature.

Massachusetts: State Secretary: August Skamarycz, Box 5, Tyngsboro, MA 01879. Chief Apiary Inspector: Al Carl, Mass. Bldg., Ave. of States, W. Springfield, MA 01045.

New Brunswick: Secretary Provincial Assoc., Vern Smith, 46 Beaconsfield St., Fredericton, N.B. E3B5H2. Provincial Inspector: Bruce Palmer, N.B. Dept. of Agriculture., Box 6000, Fredericton, N.B. E3B5H1.

Also, a correction for Wisconsin: The professor in charge of beekeeping courses is Dr. Eric Erickson, Madison; the State Inspector is Marlin Conrad, Madison.

Capping The News

THE EDITORS

"Beekeeping Small Talk"

Bacon and Bees

By ROLLIN MOSELY
P.O. Box 905
Scottsboro, AL 35768

Citizens of Cobb County, Georgia, wanting to dispose of any honeybees that might settle in their yards need not call an exterminator. They can call Smyrna Mayor Arthur Bacon.

Bacon has been a beekeeper for a number of years and is always on the lookout for new hives, especially during the summer, when the bees tend to take to the air for a new home.

Swarming bees have been known on occasion to find lodging in the eaves of houses or in trees in people's yards, where they are more of a pest than a producer of sweetness. Therefore, Bacon has been advertising over Smyrna Cablevision for people to give him a call at City Hall if they want the bees removed.

Bees & Project Elf

An MSU research project funded by the Navy through the Illinois Institute of Technology Research Institute (IITRI) is studying bees that occur naturally in the area of Michigan where the Navy's Project ELF research submarine communications antenna is going in. Like the other ELF research projects, the bee project, under the direction of Roland Fischer, professor of entomology and curator of the MSU Entomology Museum, is designed to reveal whether the activation of Project ELF affects the ecology of the area near the transmission wires.

"You can't judge whether such an event has changed some sublte aspect of the ecology unless you know what it was like before the event," Fischer points out. So the bee researchers, must gather what they call baseline data—the "before" part of a before and after study.

To do this, they are using computerized environmental monitors to collect data on barometric pressure, rainfall, relative humidity, solar radiation, temperature, wind speed and wind direction. All of these are either known or suspected to affect a bee's daily activities.

Computerized monitoring equipment collects this information automatically. Humans get involved only to change the chips on which the data are temporarily stored.

Machines cannot keep tabs on the bees themselves, however. Gathering field observations is a job for people.

What that amounts to, essentially is sitting in front of bee hutches all day, watching the bees come and go, and recording every observation.

Each bee is identified by little dots of paint dabbed on its thorax (midsection), Fischer explains. When the adult bees emerge in the spring, when they mate, when they begin nest building, what plants they visit to gather sections of leaf for nest building, what plants they visit to gather nectar and pollen, when they lay eggs, how many pollen gathering trips it takes to provision each next cell and the egg within it—such details already fill shelves of bees involved, the ratio of males and females in each species, the presence of parasites and predators, and each species' success in overwintering will also be compiled.

When each observation occurs—the time of year as well as time of day—is also recorded so that, eventually, bee activity can be correlated with environmental factors.

The experimental sites are within 100 feet of the overhead wires that make up the ELF antenna. Control sites are some 10 miles away. They are set up exactly the same as the experimental sites, in an environment that is as nearly identical as the researchers could find.

With two or three years of information from the environmental monitors and the field observations under their belts, the researchers will have a good idea of what is normal for these bees and how ordinary events such as changes in the weather affect them. Any extraordinary changes after Project ELF is activated should then be attributable to Project ELF.

Status of Research on Biological Effects of Transmission Line and Magnetic Fields

By JACK M. LEE, JR.
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Honeybees

A study involving 765-kV line in Indiana, and studies of the BPA 1100-kV prototype, showed that honeybees were adversely affected when hives were placed at certain locations near the lines. Effects included low honey production and increased mortality. An a.c. electric field induces currents into objects such as bee hives. Also, as indicated for plants, electric fields are concentrated by objects that project into the field. Therefore, depending on the strength of the electric field and hive height, currents strong enough to cause shocks to bees can occur within a hive. In the studies referenced above, some effects were evident when three foot tall hives were placed in electric fields of around 2-4 kV/m. However, most effects were associated with field strengths of 7-12kV/M.

The research also showed that the effects could be easily prevented. This was done by placing a grounded wire screen or plate on top of the hive which shielded the hive from the electric field. This also domonstrates that the effects are associated with the electrical environment induced in the hive where bees are flying. Because the grounded screen does not shield out the magnetic field, this also shows that the effects are related to the electric field.

I am not aware of any problems for beekeepers caused by BPA 500 okV lines. However, because of results of the two special studies, BPA recommends that as a precaution, honeybee hives not be placed directly on the right-of-way of these lines. If for some reason a beekeeper would want to put hives on a 500-kV right-of-way, BPA would provide information and assistance in shielding hives to mitigate effects.

Continued on next page

New Ordinance Puts Sting on Carpetbagging Bees

From Steve Wolters comes this article from the Miami Herald.

It was sweet revenge for Dade County beekeepers.

At their behest, the Metro Commission unanimously adopted an ordinance Tuesday giving landownders the power to evict "squatter" beehives.

The ordinance is aimed at stopping thoughtless beekeepers who truck their hives into South Dade each fall and dump them on the empty lots without securing the property owners permission.

The carpetbagger bees crowd out local bees, keepers say.

The new ordinance authorizes Metro police to impound squatter beehives after 15 days' notice. If the owners don't step forward to claim the bees — and pay for thier upkeep — the hives can be sold at public auction.

"We have 1,200 (squatter) beehives on property my family has leased and we have had no way of getting rid of them," said Paul Spadola, president of the Dade County Beekeepers Association.

"Every beekeeper around here has the problem, either directly or indirectly," said beekeeper Steve Wolters.

The Northern beekeepers haul their hives to South Dade for the fall and winter "honey flow" — when plants are in bloom and bees can forage for nectar.

Spadola said the invading beekeepers will intentionally choose a site close to that of an established local beekeeper, figuring the surrounding areas must be rich with nectar-producing plants.

Bees: Critical to Setting Almond crop

From California-Arizona Farm Press
21 January 84
By BOE CONNELL, Farm Advisor
Butte County, California

By now, everyone generally agrees that bees are of critical importance in setting a crop of almonds. A year like 1983 helps bring this need into focus.

Weather during bloom was terrible, to say the least. In a marginal bloom season, planning for strong bee colonies, good hive placement, and enough colonies per acre can really make a difference in setting a crop. Weak colonies, poor placement, and insufficient numbers of colonies in severe weather conditions may leave you with a crop that's hardly worth harvesting.

Survey Made

A grower survey conducted by Dr. Robbin Thorp of U.C. Davis, showed that for the 1982 crop the number of hives per acre explained only 8% of the variation in yield between growers surveyed. However, total frames of bees per acre was highly correlated with yield and explained over 30% of the variation between growers. In other words, the number of hives per acre is important, but it's what's in them that really counts.

Three hives per acre containing eight frames of bees each is worth far more than four or five hives per acre that each contain only four frames of bees. In our area, we're fortunate to have strong colonies available for almond pollination.

Pollen Traps

Pollen income per colony increased by a factor of 1.8. Traps that were too "efficient" and removed more than 50% of incoming pollen did have a detrimental effect on brood-rearing and subsequent colony performance. In conclusion, a well designed pollen trap could increase the pollination efficiency of a colony by a factor of 1.8 without hurting brood rearing.

Bee-collected pollen is of low viability and should not be processed for use in almond pollination.

Pollinizing Value of Bees

From California-Arizona Farm Press
20 January 83

The value of honeybees in pollinating crops — long recognized in some such as almonds and gaining recognition in others such as hybrid cotton — is established well enough for growers to want to reduce danger to bees from pesticides.

At the recent seed crop and pollinator seminar put on by the University of Arizona Cooperative Extension Service in Yuma, Larry Atkins outlined the delicate relationship between pesticides and bees while pointing out that both are necessary for agriculture, especially seed crops.

"We figure that directly or indirectly, of our $14 billion of agricultural income approximately 50% is due to honeybee pollination," said Atkins, a research entomologist at the University of California, Davis.

Food Service Program Has Honey On Its Mind

From Dr. Eric Erickson at the Madison, Wisconsin Bee Lab. This item from the School Food Service Journal.

Cobb County, GA. — Honey is among the numerous United States Department of Agriculture surplus commodities issued to schools nationwide for use in the national school lunch and breakfast programs. Georgia's Cobb County School System nutrition specialist, therefore, decided this school year to maximize the district's use of honey, thereby minimizing waste. To accomplish this task, all cafeteria managers were asked to bring to a scheduled meeting recipes and samples of nutritious dishes that have honey as an ingredient. All recipes had to meet the basic nutritional requirements and had to be items managers felt their customers would both eat and enjoy!

The innovativeness of Cobb County's school food service managers was in full bloom as dishes such as Sweet Potato Muffins, Sweet and Sour Pork, Honey Bar-b-que Sauce, Honey-laced Cookies, Honey Dip, and lots more rolled in for the big taste test. Managers made the search for new tasty recipes a schoolwide effort by encouraging suggestions from the PTA, teachers, and staff members. Soon, many of the great recipes prepared, samples, and chosen by Cobb's management team will be incorporated into school lunch and breakfast menus. Mary Nix, director of food service, also set up the week of November 14-18, 1983, as Honey Week so that many of the honey dishes could "premiere." This special week was a fun-filled week of activities with daily menus consisting of specialty bee dishes made with honey.

Bee Sticks

In a recent Hort Science article, Paul H. Williams from U.W. — Madison's Plant Pathology Dept. reports that large quantities of dead honey bees obtained from the local USDA/SEA Bee Investigations Laboratory, University of Wisconsin-Madison, were dried in brown paper bags at 60°C for 24 hours. Dried bees were then fumigated for 12 hours in a closed container in which 10 ml of propalene oxide had been added, then stored in 4 liter paper cartons. Bee-sticks were made by holding the honey bee by the wings and removing the abdomen, head and legs with fine forceps or a dissecting needle. A quantity of separated thoraxes are usually produced first; then, with a small drop of fast drying model cement applied to the tip

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Beekeeping Technology

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

Honey Bees and Crop Pollination

One does not have to be a beekeeper very long before learning of the current problems that plague the bee industry. These problems are forcing an evaluation of many of the principles that the industry has operated on for many years. One of these problems — honey imports, seemed to have a partial solution in crop pollination. A good argument has been presented on several occasions. The argument insists that support for the U.S. bee industry should not be cut or hampered by allowing imported honey to undermine the U.S. bee industry. Even though all apicultural products could conceiveably be imported, insect pollination of cultivated crops **cannot** be imported. An excellent review of the importance of pollination to the American consumer was presented in "The Value of Bee Pollination to U.S. Agriculture" (Levin, 1984) Even though many insects are admirable pollinators, the honeybee is foremost.

Our knowledge of honeybee biology, the large populations per hive and natural behavior of bees to remain constant to one floral source are reasons the honeybee is our major pollinator.

Renting hives for pollination purposes seems to have begun in earnest sometime around 1910. Work published in pear pollination as early as 1894 stimulated interest in crop pollination. From those early years, the practice of renting hives for pollination has grown rapidly. World War II stimulated a demand for legume seeds. Signifcant studies were made during the 1940's, in the area of seed production.

It's ironic that questions asked so many years ago are so similar to questions asked today. One of those questions has always been "How many colonies per acre"? Sometime around 1916, the suggestion was made that one colony/acre be used to pollinate prunes in California. That recommendation has been used to cover practically all fruit and vegetable crops at one or another since then. Some crops such as alfalfa that flower profusely would be benefitted by more than one colony per acre.

The colony placement inside the orchards or seed fields had received a great deal of research down through the years. Naturally from an energy efficiency view, the shorter the distance from the hive to the food source, the greater the pollination efficiency will be. Studies conducted by the U.S.D:A. have shown that there is no significant difference in the percentage of alfalfa pods set within 100 yards of the hive. The pod set dropped significantly beyond 150 yards from the hive. This and other work support the opinion that the greatest amount of pollination activity occurs within 100 yards of the hive in an orchard or field situation. Consequently, colony ranges should overlap at 100 yards. Six and one half acres would be contained in the 100 yard circle, thus justifying colonies being placed in groups rather than singly. Seven strong colonies in a group would approximately one colony/acre.

This brings to mind another prominent question that's often asked "How strong should the colonies bee"? After one has been a beekeeper for a while, it will become apparent when a colony is strong. However, many orchardists will want something a bit more specific than the beekeepers' "gut feeling". At this time, there simply is no standard hive. Distinctions such as square inches of brood or the number of frames covered by the cluster are often used to describe rental colonies. Even though a definate recommendation cannot be made, a colony that has eight frames of brood (each frame containing approximately 100 square inches) housed in a two story colony with abundant adult bees will make a good pollination unit. Brood rearing determines the amount of flight activity and subsequently pollen foraging activities. Research studies have indicated that colony requirement (eg. water collection, nectar collection, guard bees, pollen collection, etc.) determine the order of priority. If a large brood nest is contained in a hive, that hive, of necessity, will have to forage for more pollen that a colony with lesser brood.

Many efforts have made to direct or attract bees to a particular source. To date, both have been marginally successful at best. Bees have been fed sugar syrup that's scented with flower extracts from the target source. This principle seems to work, but not much better than simply scattering hives throughout the orchard. Attractants do not seem to work much better. At best, insects (including honeybees) are attracted to the targeted crop, but seem to mainly collect the attractant solution and ignore the open blossoms.

Assuming that special techniques have not been applied to the orchard such as attractants, foragers partition the target crop surprisingly well. Individual bees do not simply wander around the orchard unless the crop blossoms have stopped producing nectar. They limit their foraging activities to a defined area and collect nectar and pollen from a single species in that area. The more bees in a particular area results in smalller foraging areas for individual bees. Fewer bees in an area would obviously result in larger foraging areas per bee.

Pollen dispersing devices have been developed in recent years that require departing bees to walk through the appropriate pollen that has been hand collected. Such pollen is mixed with a carrier. Reports vary on the effectiveness of this technique. Either way, it is an expensive technique.

Pollination work usually involves moving colonies from their permanent location to the orchard area. Moving colonies is always hard work. The hours are bad since hives must be moved at night. Loaders are commonly used (eg. boom loader or fork lifts) to make the task easier. Occasionally special trailers have been used. Such trailers are economically built to save money and may serve no other purpose than migratory pollination functions.

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When colonies are moved, significant amounts of drifting may occur. It is not uncommon for a few hives to acquire the lion's share of the drifting bees while others are depleted of their field force. Research work indicates that 87% of the bees return to the new location when a hive is moved one mile. If a hive is moved five miles away, 94% of the bees return to the new location. Just after the colonies are set off in the new location, unpredictable patterns of drifting may occur within colony groups.

A final area of significant concern is insecticide exposure. Obviously many pest complexes abound within the orchard that will require some form of chemical control. Close beekeeper-grower cooperation is a requirement. Before sprays are applied, the grower should notify the beekeeper of the plans. Unfortunately, notification time is usually short. Hence the reason for mechanical assistance in moving hives as easily and quickly as possible.

Migratory pollination operations have problems and challenges that are unique to their segment of the bee industry. All beekeepers should be aware of the problems and at the same time be able to fluently explain the significance of bee pollination to a non-beekeeper. By putting the honeybee in its proper perspective in relation to pollination, our entire industry will be strengthened.□

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Gleanings Mail Box

Thoughts On The Country of Origin Label Regulation

Alan L. King 607 South Fuller Drive Indianapolis, Indiana 46241

Friends of the Beekeeping Industry:

The imported honey packers have dreamed up a lot of reasons why they shouldn't label honey with the Country of Origin. (I say imported honey packers who yet refuse to buy and pack foreign honey. Their number may be small and growing smaller, but they certainly deserve special recognition for not buckling under to cheap imports.) All these reasons seem to have a common thread. I'll enumerate some of the arguments I've heard from the imported honey packers, inlcuding a brand new one that they've run to Washington with, and in turn their legal counsel has run to U.S. Customs with. See if you detect this common thread.

"The Need to Buy Foreign Honey Theory"

Why do the imported honey packers need to buy honey from so many other countries? The following comments from an imported honey packer are contained under the heading "FACTS" in the U.S. Customs special ruling on Country of Origin Labeling of honey of October 14, 1983. "It is stated that the honey packers aim to achieve a high degree of uniformity in taste and appearance in their honey and, to do this, they purchase honey from worldwide sources based upon taste, grade, quality, and samples. Depending upon the availability of honey and its characteristics the origin of the honey in a particular blend over a comparatively short period of time can change rapidly." Now anyone who packs honey and food products knows that taste, grade and quality are very important, but these are secondary to price in this case. There's plenty of taste, grade and quality in domestic honey, but the price is higher of course. If the imported honey packers must buy foreign honey to survive — OK, but label it as such and let the consumer decide.

"Label Inventory Perpetuates Imports Theory"

It has been stated that the regulation will cause packers to maintain an inventory of suitable foreign marked labels such that even when prices of domestic and foreign honey come back into balance, packers will be forced to continue packing such foreign honey because of labels held in inventory. Scrutinize this philosophy carefully, as I suggest that just as the packers have brought foreign honey due to the price differential, so they will begin to shift back to American honey when the price differential makes domestic honey the more profitable of the two — and the number of foreign marked labels in inventory won't mean one iota.

"Weak Dollar Theory"

It has also been suggested by opponents of Country of Origin Labeling that "when the U.S. dollar weakens, the price differential between foreign and domestic honey will close and even without Country of Origin Labeling, packers will shift back to domestic honey. Must the honey consumer wait until the dollar weakens or some other such economic or market event transpires to know the truth about the origin of his honey?

"Glorified Foreign Honey Theory"

It is argued by some packers that Country of Origin labeling will actually glorify foreign honey. I don't believe this and I don't think they do either. If they did, they surely would favor Country of Origin labeling and we would have found them voluntarily using such Country of Origin marking to glorify the product that they pack.

"Substantially Transformed Honey Theory"

On February 14, 1984 a Washington D.C. law firm petitioned the United States Customs Service to except honey from this regulation on the grounds that the "Honey Processing is Sufficient to Substantially Transform Imported Crude Honey" further noting that "Due to foreign matter the imported article is inedible and saleable only to honey processors, not consumers." If imported honey is so terribly contaminated then we should work to have the USDA or Customs or the FDA to reject such trash. If, however, this imported honey contains a few bee parts, wax particles, etc. that are commonly expected to be contained, in small amounts, in bulk, unprocessed honey, then it is ludicrous to subscribe to this "substantial transformation" theory. Extracted honey that enters the U.S. in bulk, is still extracted honey when packed into retail containers, whether strained, pressure filtered or heated. A Datsun covered with dust and dirt that enters a U.S. port is still a car and still a Datsun after the auto dealer cleans and prepares the car for retail sale.

How much more obvious could it be that the imported honey packers who are fighting Country of Origin Labeling are grabbing for straws. They have no solid ground or legitimate arguments to support their anti-Country of Origin Labeling position, so we hear outright propaganda. Clearly, the reason they don't want to label their honey with the Country of Origin is that they don't want their customers to know that they've been deceiving them for several years, masquerading foreign honey as domestic. Above all they don't want to lose the profitability they've enjoyed in this masquerade by buying foreign honey for 20-30 cents less than domestic price, labeling it to look like domestic honey, then selling it on the grocery shelves right next to bonafide domestic honey, for the same price. Fact of the matter, these same importers have been subverting the law all along because the United States has required Country of Origin Labeling on honey since 1930, and only now have put extra teeth in the law by requiring importers to certify that they will comply. Isn't it about time for the imported honey packers to COMPLY WITH THE LAW and tell American consumers the truth?

Obituaries

Mr. Irven Louis Revell, who worked as an apiculturist at the U.S.D.A. Bee Research Laboratory at Laramie, Wyoming, for 20 years; died March 4, 1984 at the age of 91 in a nursing home near his daughter's home in Whittier, California.

Mr. Revell was born September 28, 1892, in Volga, Iowa, to Alfred and Ella Shaffer Revell. While a student at Iowa State College in Ames, he spent his summers riding a bicycle across the Dakotas, Nebraska, Colorado, and Wyoming, selling livestock books to ranchers. On his arrival in Laramie in July 1917, his bicycle was stolen, whereupon he got a job helping in research on parasites and diseases of livestock at the Wyoming Agricultural Experiment Station.

Mr. Revell worked for the U.S. Bee Research Laboratory at Laramie from July 1942 until his retirement in September 19672. Much of his research was in helping Dr. Arnold P. Sturtevant, then Director of the laboratory, in comparing different strains of honey bees for their resistance to American Foul Brood disease, which led to the breeding of a 4-way hybrid resistant stock, later made commercially available through the Rossman Apiaries of Georgia. He also helped Dr. Sturevast discover that one of the mechanisms for A.F.B. resistance was the ability of certain strains of honey bees to greatly reduce the number of spores of *Bacillus larvae* in honey be the straining action of the "honey stopper" in the digestive tract. Mr. Revell assisted with studies on the effects of many drugs and chemicals on both A.F.B. and Nosema disease, and he determined that spores of *Nosema apis,* when refrigerated, can remain infective for several years. He developed a pre-fabricated electric heater for honey tanks used in processing liquid honey. He rode a bicycle to work, and almost everywhere he went, all year long, except in severe winter snows.

His wife preceded him in death on January 4, 1973.

Tips on Dealing with the Press

By WALTER L. GOJMERAC, Professor of Entomology
237 Russel Laboratories, University of Wisconsin-Madison Madison, WI 53706

Now that summer are approaching, there are going to be times when bees and sometimes beekeepers are going to be the subject of "newsworthy incidents" — good or bad.

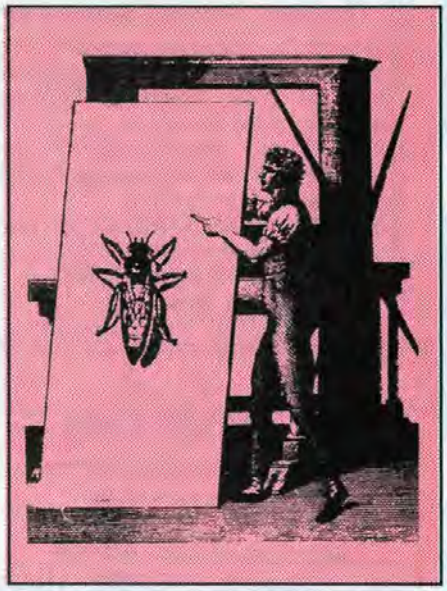
In this article I would like to offer suggestions on how you might capitalize on such incidents and portrait a favorable image of bees and beekeepers to the public. As beekeepers we need to continually make a conscientious and intelligent effort to educate the public about bees, beekeeping and honey. I'm going to assume that as a beekeeper you have the facts, so I'm concentrating on methods and procedures.

Radio, television and newspapers are sometimes taken for granted in the United States. I'm not going to philosophize on their function, role or responsibility to society other than to state that these news media can be powerful educational tools if managed or properly used. Professional media personnel will strongly resent the implication that anyone is able to manage or use news media to further specific objectives. Obviously nobody likes to be used, and our news media want to guard the traditions of a free press. The other side to this argument is that if we as beekeepers tell our story to the public so that it's logical, interesting and beliveable, this information will greatly help the cause of bees and beekeeping.

Events such as a swarm in a metropolitan area, an insecticide bee kill, the wrong person being stung, can sometimes be newsworthy events. Our challenge is to turn this event in the direction so it relfects a positive image. There are a variety of ways to do this. I will concentrate on techniques and procedures to use, assuming you as beekeepers know the facts and are in a position to provide them.

It goes without saying that the news media need and want timely and interesting stories or articles. Everyone knows news people thrive on conflicts and issues, provided they are broadly based. They also like sensational stories, but these media, print or broadcast a fairly large number of "human interest" stories, and it is in this area where beekeepers have a winner. Many people are interested, in fact, fascinated, about bees and beekeeping even though they fear them.

Many of us have heard of horror stories about someone who talked to a journalist and what came out in print or over the air was highly distorted, slanted or something entirely different. Because of these kind of reports many people are reluctant or apprehensive about talking to the press. While I will not or cannot defend sloppy journalism, I'm convinced responsible writers or broadcasters are interested in doing a good, accurate story. The question I often ask is: Did that person communicate his ideas to the journalist in a way so that it was understood?



You should welcome the chance to talk to a writer or broadcast journalist. They usually call for an appointment or will give you a specific time when they will be at your place. This should give you an opportunity and/or a **responsibility** to think through your story or organize your thoughts. Don't hesitate to write your ideas on a sheet of paper. If available, have some books or magazines handy just in case you want to look up some facts. This simple thing will generally impress a reputable journalist. He/she now knows that you know what you're talking about and are willing to have some facts verified. This is a chance for you to get your story across to the public.

More than likely, the reporter or writer will have a general idea of the kind of story that is needed for radio, TV, or newspaper. Concentrate your effort in explaining the answers to questions asked. If you do a good job in explaing, chances are you're going to have a good story over the radio, on TV, or in the newspaper. Be sure to stick to facts, and when you're expressing an opinion, make sure that this is understood — there is nothing wrong with expressing opinions as long as they're understood as opinions.

Assume you're asked for an opinion related to some controversial issue and you don't want to get involved or be indentified. Be sure you tell the writer **before** the discussion or interview takes place that you don't want to be quoted or to make a statement. If you talk to the individual at some length and then it occurs to you that you better not get involved, it's too late. Professionally, the journalist has his story. Whether the information you "spilled out" and now wish to "cover up or retract" is used is really up to the writer or editor. Professional media people will respect your right to not speak, but once you've spoken, it's their right (within reason) to use the information. Sometimes you might want to give a reporter background information — here too — state that this is for his understanding of the whole picture, before you get into what you want in print or broadcast.

A little more skill or understanding is needed if you're going to deal with radio or TV. Here, timing is critical, and one minute can be awfully long or short if you don't know exactly what you want to say.

These reporters generally like to visit a few minutes informally before recording, recognizing that you may be a little nervous or apprehensive, so they'll want to get you to relax, while they're thinking of how to state the questions. when the microphone is place in front of you, be yourself, don't try to imitate your favorite announcer, and try to answer the questions with as short a precise statements as possible, rather than ramble on and on. There are very logical reasons for this. These people are working within very precise time constraints or limitations. They need to edit the topic so that it will fit into their program, and hopefully, what sounds best.

If you're working with television, let the camera person worry about how you're going to "look on the tube". Once the camera person overcomes the fear of being stung, he/she will be fascinated by photographing bees. They like to take pictures of bees entering and leaving the hive and then some closeups. This can be done by removing the top and inner cover of one

Continued on next page

hive, and then gently smoking it. When talking to the reporter, ignore the camera, the camera person is responsible for "making you look good" and they usually do; that's their job, they're professionals. There too, be yourself and don't try to imitate your favorite star or anchor person on the evening news.

After you finish talking to a reporter, don't bother asking to see the story before it's printed or broadcast. To some, this implies attempted censorship, and reputable reporters will sometimes even resent the inquiry and usually ignore it. However, you might give the reporter a phone number where you can be reached (if possible) and offer or suggest that when he/she is working up the story, if they have further questions that they not hesitate to call. I have had a surprisingly large number of reporters call and even read the story over the phone before submitting it to the editor. If you're sincere in telling them you want them to get a good story and are willing to do what is possible to help them, my experience has been that if they have doubts, they'll call back to verify a point or two. Keep in mind they also want a good story.

Finally, don't be too disappointed if you spent considerable time with the person and only got 30 seconds on TV and/or a minute or two on the radio. Human interest stories are sometime preempted by more dramatic news events. The same can be true with newspaper articles. Colonies might have bees swarming during the third week of May — a reporter might have worked up a good feature story for that week, however, during that time period there might have been a murder, protest march, fire, and/or some disaster. Obviously the editor is going to pick and choose the most appropriate stories to fit available space. The feature story would be put off a week or two and by then maybe something else may be more newsworthy than your bee story.

So as beekeepers, let's make an effort to portrait bees as creatures no one need fear. We need them to pollinate our food plants and produce honey.

When and where possible, let's use the news media to get this story to the public. □

NEWS AND EVENTS

MARYLAND

The University of Maryland Apiary will be the site of a beekeeping lecture and field course titled "SPRING AND SUMMER MANAGEMENT" to be offered on May 11 and 12, 1984.

The program will begin at 6 p.m. Friday and will run all day Saturday. Course instructors include Dr. Larry Connor of Beekeeping Education Service, and Melanie Odlum, Extension Apiculturist at the University of Maryland.

Weather permitting, illustrated lectures will be supplemented by apiary demonstrations. A wide range of subjects will be covered, but special emphasis will be placed on feeding bees, swarm prevention, swarm control, equalizing colonies, making splits, supering, harvesting the honey crop, bottling the honey crop, and bee diseases and their control. Queen management will be an added feature.

Participants are asked to bring a veil and provide any other bee-protection gear. Coffee and hot water will be provided.

Until April 30, the registration fee is $25 per person. After April 30, the fee will be $30 per person. Special family rates are available upon request.

To reserve a place in the program, write Beekeeping Education Service, P.O. Box 817, Cheshire, CT 06410. Tel: 203-271-0155. Include a check or money order for the amount due. A confirmation and complete program will be sent by return mail. No charge will be made for cancellations if they are made before May 10th.

EAS Short Course

The 1984 Eastern Apicultural Society Annual Conference Short Course is set for August 6,7, and 8 for the University of Rhode Island campus, and will feature two optional specialty courses in addition to the regular three day program.

Particpants will have the option of participating in the program for one, two or three days, allowing them to arrive one or two days before the main conference to take in one of the specialty programs.

The main, three day Short Course theme will be UNDERSTANDING HONEY BEES AND BEEKEEPING, and will concentrate on developing and expanding skills by incorporating lecture sessions with field work. The main course will run from Monday morning to Wednesday noon.

Two specialty courses may be selected at the option of the student on a first come, first served basis. On Tuesday, August 7, a specialty laboratory course on Honey Bee Diseases and Pests will be conducted in an URI Entomology Laboratory, utilizing microscopes and actual disease specimens. Enrollment will be limited to about 20 individuals.

On Wednesday, August 8, a day long session will be offered on Introduction to Queen Rearing and Bee Breeding. The program will focus on the smaller beekeeping operator who wants to develop a stock improvement program. Non-grafting and grafting methods of queen cell initiation will be taught, and participants will be given a chance to try themselves.

Enrollment fees for the various programs are as follows:

THREE DAY PROGRAM (Main program and/or specialty programs) — $45.00

ONE DAY PROGRAMS (Per Day — $20.00 per person/day.

The Short Course is coordinated by Dr. Larry Connor, Director, Beekeeping Education Service. Instructors include Dr. Clarence Collison, Penn State University, Dr. Dewey Caron, University of Delaware, Ms. Melanie Odlum, University of Maryland, Dr. Robert Berthold, Delaware Valley College, and Dr. H. Shiminuki, USDA Beltsville Bee Lab.

The course represents a great value in learning, with a maximum fee of $45 per person. Early enrollment registration and information requests should be sent to: EAS SHORT COURSE, 107 Chatworth Road, North Kingstown, RI 02852.

American Honey Producers Convention

The sixteenth annual convention of the American Honey Producers Association will be held in Biloxi, Mississippi, January 9 through 13, 1985 at the Howard Johnson Motor Lodge.

The Mississippi Beekeepers Association will be in charge of local arrangements. The general format for the convention program will be the same as in past years, except the opening day begins on Wednesday instead of Monday. This later beginning will permit members to purchase "super-saver" tickets from the airlines, which will reduce travel costs considerably.

Details of the convention will appear in later issues of the journals.

PENNSYLVANIA

The Lehigh County Beekeepers Association (Pennsylvania) will be holding their May meeting on Saturday, May 19, 1984. the meeting will be held at the scenic Palmerton Rod and Gun Club, Palmerton, Pennsylvania.

The meeting will begin at 2:00 p.m. with a picnic. The association will have hot dogs and beverages on sale, and those attending are asked to bring a place setting for themselves plus either a salad or dessert. The picnic will be followed by a seminar-workshop dealing with preparing honey and other apiary products for show. The workshop will be presented by Dr. Bob Berthold, Delaware Valley College's beekeeping specialist. Dr. Berthold has been involved often in presenting similar programs over the years as well as serving as a honey show judge.

The Lehigh Association encourages members and non-members alike to attend the meeting. They also ask, if possible, that those attending bring along any honey bee products that they have produced such as liquid honey, finely crystallized honey, comb honey, and beeswax for use in the workshop.

Continued on next page

Additional information about the meeting can be obtained by contacting either Mrs. Pam Weber 215-767-0933 or Mr. Paul Krepicz 215-285-2778.

Nebraska Honey Queen

Miss. Barbara McKeone, daughter of Joe and Betty McKeone of Cozad, Nebraska, was crowned the 1984 Nebraska Honey Queen at the Nebraska Honey Producers annual meeting held in Lincoln. Barbara is interested in sports, speech and drama and is currently a freshman at the University of Nebraska, majoring in Public Relations and Broadcasting. She comes from a commercial beekeeping family and has assisted her father during the summer months.

Barbara is looking forward to promoting honey throughout the state. She will represent Nebraska at the National American Beekeeping Federation Honey Queen Contest in Tampa, Florida in January, 1985.

CALIFORNIA

George Murdock, formerly Chairman of the board of Murdock International. manufactures of Nature's Way herbal products in Provo, Utah has become president and General Manager of the 90 year old Miller's Honey Company of Colton, California.

INDIANA
Beekeepers Auction

The Michiana Beekeepers' Association will host their 2nd Annual "Beekeepers Auction" at the home of: Earl Schumacker, 25115 County Rd. 54, Nappanee, Indiana. (3 miles East and ½ North of Nappanee . . . 54 runs East and West). Activities will begin at 10:00 a.m. (Indiana time), Saturday, May 19th.

Guest speakers' will include Professor Bill Chaney, Entomologist at Purdue University who will be discussing some of the upcoming College Honeybee Research. Also instructing us on "Plant Indentification" from the Elkhart County Park Dept. . . . Naturalist Tony Freudors.

A Porta Pit luncheon will be available with carry-in salad, casserole, or dessert appreciated. Bring your own tableservice.

A package of bees is to be installed and auctioned as well as queens, bee equipment, plants, books, baked goods, and much equipment donated by various Bee Suppliers.

New or disease-free used donations welcomed. Larger ticket donors may stipulate a percentage of sale price to be donated to M.B.A. an it's efforts.

COME ONE, COME ALL!

No purchase necessary to enjoy good food and fellowship with your beekeeping neighbors. Non-members welcome!

For more information contact: Mrs. Margery Ravenscroft, R.R. #3, Box 218-A, White Pigeon, MI 49099, Phone: (616) 641-7652.

OR

Jerry Shaw, 10910 Anderson Rd., Granger, Indiana 46530. Phone: (219) 674-9327.

Indiana Beekeepers' Assoc. Spring Meeting

The Indiana State Beekeepers' Association will conduct it's spring meeting at the 4-H Fairgrounds in Martinsville, Indiana on May 5th, 1984. Registration will begin at 8:30 a.m.

Several different guest speakers' will discuss various aspects of the Theme: "HONEY . . . FROM SUPER TO SHOW." A bee-beard demonstration will also be given. Response to assist in this was enormous when it was discovered President, Alan King was to be the beard recipient. Mr. King, however, prefered to elect assistants of his own choosing, preferably excluding the Association's hardworking Officers and Directors; (the man has no sense of adventure!)

While there will be a topic for everyone this meeting will especially assist those of you who would like to show honey at the State Fair as well as other events. DON'T MISS IT!!!

Non-members welcome! For more information and complete schedule contact: Claude F. Wade, Secretary, 613 State Office Bldg., Indianapolis, Indiana 46204. Phone: (317) 232-4120.

CAPPING THE NEWS

Continued from page274

of a double pointed round toothpick, the thorax is glued to the toothpick by inserting the tip into a hole in the thorax left by the junction of the head or abdomen. Bee-sticks can be placed is a soft styrofoam cup or block to dry. It is usually convenient to leave the wings on the thorax until it has been glued to the toothpick. Bee-sticks can be conveniently stored in 20 x 70 mm glass screw cap vials.

The bee stick may be stored or bagged with the flower by inserting the pointed end into the flower stalk, or it may be conveniently kept with a plant or group of plants being mass-pollinated by placing the pointed tip into the narrow orifice of a disposable glass Pasteur pipette, inserted in the soil next to the plant. Bee-sticks are effectively used in all forms of pollination (selfing, sib-matings and massing) and are discarded when finished with a particular pollination.

Beekeeping Folk Arts

By AMOS ARBEE

A popular western song, "I'm just a com'n man, driv'n a com'n van and my dog got no pedigree," really brings to mind several everyday things for me. One that stands out probably moreso than others is, SIMPLICITY. It has always seemed to me that making things as simple as possible is really the way to go. But after reading several articles recently it is now my conclusion that apparently my ship carries but one passenger. For example, the one article went on to say that someone was ENDEFATIGABLE. Now, why in the world couldn't this same writer have simply said, "tireless" in its place and all of us would have understood without carrying our dictionary with us. Do you sometimes get the same feeling as I do that these big words indicate the writer's size?

At any rate, the use of honey in your cooking and baking could not be anymore simplified if it wanted to be. The general rule of thumb in using honey to replace sugar is to use equal amounts up to one cup. Over one cup of honey, reduce total amount of other liquids by ¼ cup per cup of honey.

Add ½ teaspoon soda for each cup honey use.

"Lotwarrick Honig Boi"

2 cups applesauce
½ teaspoon grated lemon rind
½ teaspoon cinnamon
½ teaspoon cloves
¼ teaspoon allspice
½ teaspoon ginger
¼ teaspoon mace
1 cup mild flavored honey
½ cup melted butter
3 egg yolks

Line 9" pie pan with bottom pastry. Combine applesauce, grated lemon rind and spices. Mix cup of honey, butter and egg yolks. Add to applesauce mixture and pour into pie shell. Place top crust on and bake at 350°F for about one hour.

Hint: May be served with French Vanilla Ice Cream.

T-Shirt Advertising

By JOAN MANES OLSTROM
3164 Maple Court Reedsport, Oregon 97467

Not all advertising goes on the airways, the press, or word-of-mouth. There are bill boards — big expensive ones by the highways and little personalized ones on people.

T-Shirt ads are portable and inexpensive. Almost anyone can afford to have one. Many wear them. Everybody reads them. There's the shirt on the pregnant lady "Baby under construction." The ones on the kids coming out of the orthodontists say "Tin Grin" under a big silver smile.

And there is the AD shirt. "I'm not a tourist; I work at MO's" is worn by the waitress at a famous clam chowder place here in Oregon.

Figured I might as well get in on the act too. T-shirts come in all price ranges from the white "undershirts" sold at groceries and discount houses to the fancy colored ones at clothing stores.

Enlarge your label, by guess and by golly or with the aid of an opaque projector. Use a permanent magic marker; press it with white vinegar on a cloth afterwards to prevent "running" of color. Use iron on crayons or the ball point tube paints available in craft shops. Put your ad on the backs of some T-shirts. Put a bee on the front. Go shopping. Send your kids — properly decked in T-shirts, of course —

around the bazar or fair grounds where you are selling honey or just biking around the neighborhood.

Or buy one of those commercial Bees and Honey type shirts available from various bee supply companies and put yours on the back.

T-shirts are "in!" And comfy! Don't need ironing either. And once they're paid for they keep advertising on and on and on . . .

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

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

POLLEN (good tasting), PROPOLIS (clean), ROUND COMB, EXTRACTED HONEY. SAMPLES PLEASE! Moon Shine Trading, P.O. Box 896, Winters, Calif. 95694 6/84

Wanted: Old or unusual honey pots, dishes or plates with bees or skeps on them. Also old or unusual skeps, smokers, beehives and jumbo hives. Send price, picture or discription to J. Steed, P.O. Box 115, Richmond, KY 40475. 6/84

WANTED — Plate No. one in the the Beekeeping series of Porcelain by Patricia. Write: Lou Farrington, Rt. 1, Red Oak, Iowa 51566. 5/84

FOR SALE

Protective Clothing for Beekeepers. Write now for brochure. B. J. Sherriff, Dept. GBC P.O. Box 416, Nacoochee, GA 30571 TF

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

HIVE MONITORING STETHESCOPE
SPECIAL DESIGN
OVER-WINTERING or SPRING BUILD-UP
YOU SHOULD BE LISTENING
$9.95
PKECO, Dept. C, P.O. Box 448,
Louisville, KY 40201 7/84

COMBAT BEEKEEPING IGNORANCE WITH CONNOR'S TWENTY EDUCATIONAL SLIDE PROGRAMS. Box 817 Cheshire, Connecticut 06410. TF

FOR SALE: Top quality Italian bees and queens since 1940; also 3 frame nuclei and single story colonies. Bring your cages and save. WALKER APIARIES, Rt. 1, Box 34-B, Rogers, Texas 76569. Phone: 817-983-2891. 6/84

For Sale — 1,000 colonies of bees. 8-frame hives plus extra supers with combs. Jelinek Apiaries, Fillion, MI 48432. Phone: 517-874-4355. 5/84

For Sale: Frame Spacing Tools, fast and easy to use. A pair works faster. Eliminate costly nail in spacers. ½" aluminum alloy. When ordering — specify 8 or 9 frame. 1-$9.65 ea., 2-$9.45 ea., add $1.80 shipping. Wolf World Products, Box 707, Baldwin, WI 54002. 7/84

For Sale: 1000 good used 9⅝" brood/honey boxes, 1200 new supers, 10 frames, foundation, printed, call for prices, will deliver. Bob Bennett, Rt. 1, Appleton, Wis. 54915. (414) 757-5115. 5/84

TROPHIES: Stainless Smokers, Chrome Hive Tools. Send embossing details for prices. SOUTHWESTERN OHIO HIVE PARTS COMPANY, Monroe, OH 45050. 513-539-7258. 5/84

"FOR SALE — 200 10-frame double deep hives with new tops and bottoms. Available after May 15. 1983 Ford F350, 6.9L deisel with 20 ft. goose neck trailer. Cascade Honey Company, 1350 Bow Hill Road, Bow, Wa. 98232. (206) 766-6173. 5/84

50 TWO STORY HIVES ITALIAN BEES, GOOD CONDITION, STRONG, READY MAY 10th. C.J. HELINGER, COURT STREET ROAD, SYRACOSE, N.Y. 13206. (315) 457-2435. 5/84

HONEYSTRAINER — Really works, Guaranteed, Ppd. $3.50 each, 2 up $3.00 each. Try your Dealer, Beckman, Box 633-G, Stuart, Fla. 33495. TF

FOR SALE — Honey pots — my duplicates, write for price list. J. Steed, P.O. Box 115, Richmond, KY 40475. 7/84

For Sale — 20 hives $55 per. More than 100 extra supers ¾'s and full, most drawn. $10 for drawn full. Bottoms and tops. 2 frame reversible. Hives may be left at locations. All or part. All $2200. Barney Heller, 6522 Wetmore, Everett, Wa. 98203. (206) 355-5777. 5/84

For Sale — hives, covers, bottom boards, excluders, 60 lb. cans. Very good condition. James F. Bower, Proctor Star Route, Williamsport, PA 17701. 5/84

Four Frame nucs and singles available early in May in north-central Illinois. Tanners Orchard, Speer, Illinois 61479. Ph: 309-493-7781 or 309-493-5442. 5/84

For Sale: Standard 10F dovetail equipment in excellent condition. 150 brood chambers, 100 deep supers, 50 bottoms and covers, plus other misc. Priced to sell. Mike Schwartz, Fall Creek, Wisc., 715-877-2656.5/84

Black Locust ast little as 7 cents each and other trees. Cold Stream Farm (616) 464-5809. 5/84

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 ITOTF

For Sale: 1,000 SUPERS, excluders, pallets, Cowen uncapper, Bogenschutz, dovetail saw. 45 frame extractor, 300 shells. Covers. 608-924-3255 days.
PSHF 5/84

For Sale— Complete processing equipment used for manufacturing bee comb foundation of beeswax or sag-proof wax coated aluminum. Foundation rollers are of bronze ring construction, correct angle cell base. This processing equipment was designed and used by Alan Eby for Hyland apiaries, West Elkton, Ohio. Building and honey filter also for sale. For appointment call 616-323-6633. EAE 5/84

For Sale: Motorized honey extracting set-up. Vibrating steam knife, drainers, pump, sump, 20-frame radial extractor and large honey tank. Also, miscellaneous boxes and hive equipment. Bob Parsons, 609 Harrison Ave., Lima, Ohio 45804. (419) 222-8619. 5/84

For Sale: 90 telescoping covers. 3 years old. Steve Duerre (701) 459-2475. 5/84

For Sale: Light amber honey in 55 gal. drums. Baltes Apiaries, Versailles, Ohio 1-419-336-6053. 5/84

For Sale: 60 shallows with nine frame spacers, eyelet frames. New and used. Nine round comb. $450.00 all, or separate. Hugh Hyre (513) 236-5472. 5/84

For Sale: 1500 Shallow supers with combs $4.00 each. 2½ story hives $45.00 each. 15 ft. trailer. Misc. used equipment. Sharp's Honey co., Fishers, N.Y. 716-924-2747. 6/84

For Sale — Best offer. 55 Colonies with '83 honey crop on, with all extra equipment. Contact Carl 801-586-4376. 6/84

8x20 bee trailer w/22' electric boom. Dual axle, gooseneck with pickup adapter $4000. 8x16 flatbed dual axle trailer $2100. Write: P.O.B., San Jose, Ca. 95153 (408) 463-0672. BB 6/84

Small beekeeping business for sale. Southeastern Pennsylvania. Includes equipment at location. Call (215) 968-2921. (evenings only) WC 5/84

For Sale: 100 two story colonies with locations if desired. Equipment in good condition. Will sell part or all. Ralph Wischmeyer, Ottawa, OH 419-523-4145.5/84

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

20' dual axel trailer excellent condition built for hauling bees $2200. 400 gal. stainles jacketed tank $400. 3-frame NUCs 10-up $25.00 ea. E.A. Jones (804) 736-9885 Virginia 5/84

Carniolan and Italian queens $7.50, Golden yellow Italians $10.00. Pay in advance. Lester Selph, 2502 Winton Rd., Durham, N.C. 27707. (919) 489-95616/84

For Sale: 250 strong 2-story bee hives. Also, 1200 deep supers, drawn comb. Carroll Couture. Belleville, KS 913-527-5805. 5/84

For Sale; 2500 9⅝ Deeps with 8 combs, 2817 5⅝ shallows with 8 combs, good paint & repair, 5000 creasoted standard bottom boards, 2 Meyers E-Z Loaders with single and double wide mast, Two 14 foot Magnesium ramps. Artesian Honey Producers Inc. Box 6 Artesian, South Dakota 57314. 605-527-2423, evenings, 605-527-2318. 6/84

BEES & QUEENS FOR SALE

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

Nucs 4-frame Golden Italian stock $35.00 each or 3 for $100. Queens $5.00 each. All postpaid. Small orders only. Johnny Pennington, 194 Cooper-Hurst Rd., Pearl, MS 39208. Phone: 601-939-5994. 5/84

Nucs $25.00 — 3-frames/queen — Hybrid — Shipped in cardboard container. F.O.B. Dixie Honey Company, E. A. Cannady, 919-579-6036. Rt. 3, Box 206A, Shallotte, NC 28459. TF

Colonies for sale in Florida. Call Evenings only, (904) 567-9495. No Collect Calls. Terms Negotiable. TF

Royal Queens, Champion Nucs, Prime Cells. Bruce and Jeannie Otte, Rt. 2, Box 99-A, Karnes City, Texas 78118. (512) 780-3521. 5/84

3 Frame Italian Nucs. 84 queens. $30.00 Postpaid. 3 for $85.00 Extra Queens $6.25. Box's Better Bees, 410 N. Lide, MT. Pleasant, Texas 75455. Phone: 214-572-0428. 5/84

BEE SUPPLIES FOR SALE

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

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

BEE EQUIPMENT MANUFACTURERS. Supers ends rabbet-jointed for added strength and durability. Our frames are one of the best on the market. All beekeeping supplies at commercial prices. Write or call for price list.MONCRIEF BEE SUPPLIES, Post Office Box 625, 1105 Lakewood,Lakeland, FL 33802. (813) 858-6754. 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

NEW 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 each pp., Blossomtime, P.O. Box 1015, Tempe, AZ 85281. TF

50 Strong 2-story hives, good equipment, includes feeders, excluders, etc. $55.00 each. Lloyd Mullins, Arkansas Pass, TX 78336. (512-758-5053) 6/84

For Sale: 350 deep brood honey supers and 15-20 colonies of bees. Call 712-366-0425 or 366-1927.GS 6/84

10-Frame equipment, new and used. Shallows (6⅝") with and without comb, Cobanas, Deeps, Tops, Bottoms, Pallets, Feeders, 7 foot boom, extracting equipment. Roger Fuhrman 208-344-0100. 5/84

SWARM LURE — Original synthetic pheromone developed at Rothamsted. Imported from England. Use as swarm bait in empty hive. $3.50, ppd.; two $3.00 each. BRYANT & COOK, Box 488G, South Windsor, CT 06074. 5/84

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 PalletsCut 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

Free Beekeeping Supply Catalogue
Quality products at competitive prices
Praise The Lord Honey House
13808 Dragline
Austin, Texas 78728
(512)-251-3823
10/84

Radial Extractors, 5 and 10 frame, Stainless steel factory made, patented. Gamble's Honey Extractor Co., Dept. A, P.O. box 7997, Greensboro, N.C. 27407. Ph: (919) 299-3973, 5-10 PM Weekdays, anytime on Saturday. TF

"Temperature controlled ventilators, uniting boards, ventilating inner covers, pollen traps with 200 square inches of screen area. (My conical bee escapes/boards are now available in U.S.A. at all Root dealers). Free information. V. Shaparew, 3371 Trafalgar Road, R.R. #1, Oakville, Ontario, Canada. L6J 4Z2. 9/85

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

Candle Molds (Over 200) send $1.00 for catalog (Refundable) HARDIN'S, 4511 E. Broadway, N. Little Rock, AR 72117. 7/84

HERB PLANTS, SEEDS. COMMON AND EXOTIC. HONY PLANTS. 320 VARIETIES. CATALOGUE — $1.50 (Refundable). COMPANION PLANTS, Rt. 6, Box 88G, Athens, OH 45702. 5/84

Continued on next page

AUCTION — Bee Equipment, June 16, 1984 — Stratford, Iowa. Large amount of woodenware, extracting, misc. bee equipment. For listing write: Soder Apiaries, P.O. Box 214, Stratford, Iowa 50249. 6/84

SEEDS

"Mixed Sweet Clover seed, 50% white, 50% yellow. 10 lb.— $7.50 plus U.P.S. Innoculent $1.50. Visa or Mastercard. Higgins Apiary, 3801 U.S. 50, Hillsboro, Ohio 45133. Tel. 513/364-2331. 5/84

HONEY PLANTS AND BEE-BEE TREES OUR SPECIALTY. SEND STAMPED ENVELOPE FOR CATALOG. ARLETH'S APIARY GARDENS, 395 CAROLINA ST., LINDENHURST, NY 11757. 8/84

POLLEN

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

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, & guaranteed pesticide free. 3 lbs. $25.00, 6 lbs. $46.00, 10 lbs. $65.00, 20 lbs. $120.00. Prices subject to change. Free UPS shipping. BLOSSOMTIME, P.O.B. 1015, Tempe, AZ 85281 TF

SPANISH POLLEN. Excellent taste and quality. 3 lbs. $22.00, 6 lbs. $39.00, 10 lbs. $54.00, 20 lbs. $100.00. Prices subject to change. Free UPS shipping. BLOSSOMTIME, P.O.B. 1015, Tempe, AZ 85281. TF

ROYAL JELLY

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

PURE FRESH Royal Jelly, 2 oz. bottle, $19 pp.; 1 lb. $120. Prairie View Honey, 12303 12th St., Detroit, MI48206 TF

BEESWAX

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

BOOKS

STRENGTHEN BEEKEEPING SKILLS and Save 25%. Beekeeping Basics Home Study Course, Regularly $39.95 now $29.95. Limited time only. Dr. Larry Connor, Box 817, Cheshire, Connecticut 06410. TF

POULTRY & WATERFOWL

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THEFT

Continued from page 259

colored object can be noticed even through thick brush. In a shaded area a dark color should not result in overheating of the hive in summer and would probably help the colony during the cool months.

MARKETING OR IDENTIFICATION — A second deterrent to theft is the prominent marking of equipment. painting the hive bodies your own distinctive color should act as a deterrent. The potential thief would probably think (correctly) that "your color" would be immediately recognizable by many people in the area and that he would be vulnerable until he could paint the equipment white. He would probably opt for easier pickin's. Even with the distinctive paint layer covered over, it would remain an essentially permanent marker that could help prove that the equipment was originally yours. Small daubs of color on newly assembled frames would add to positive identification should ownership of equipment be contested. A very light yellow or ivory color could be used on colonies exposed to full sunlight with nearly the same heat-reflective properties as white. The manufacturers of outdoor type paints probably have this type of information available.

Another type of marking that should deter theft is to engrave or burn in with large-size letters one's name, initials, or your state indentification number. In Tennessee the State Apiculturist's office can issue a personal identification number that looks something like TN984, for example. Branding irons are available through beekeeping supply stores. It is true that such markings can be removed, but the scar that would remain would cast suspicion on anyone in posession of such equipment. Legitimate buyers of marked equipment should keep a receipt and be thankful that the equipment is already marked even though it be with somebody else's name.

Less conspicuous marking might not prevent the original theft, but they could provide positive indentification that might result in the prosecution of the thief (if he could be located) and the return of our property. A simple stamp-type marker can be made by grinding the head of a nail into a distinctive shape. You could keep this marker locked in a pair of vise-grip pliers (to prevent loss and provide easy handling) and hammer away with the nail upside-down to impress the design into all your wooden-ware. You might want to use such a marker on both interior and exterior surfaces to provide positive identification. I would choose a large nail for such a marker and grind the head down to a manageable size.

The above suggestions are simply that. I am not a lawyer and have no idea how well they might work or "hold up in court". Perhaps you can come up with some better ones. □

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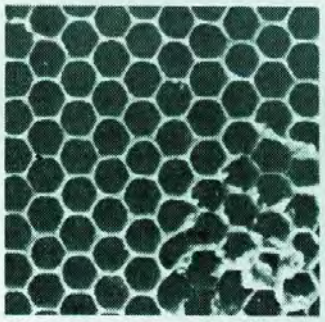

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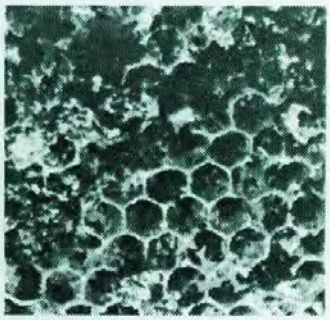

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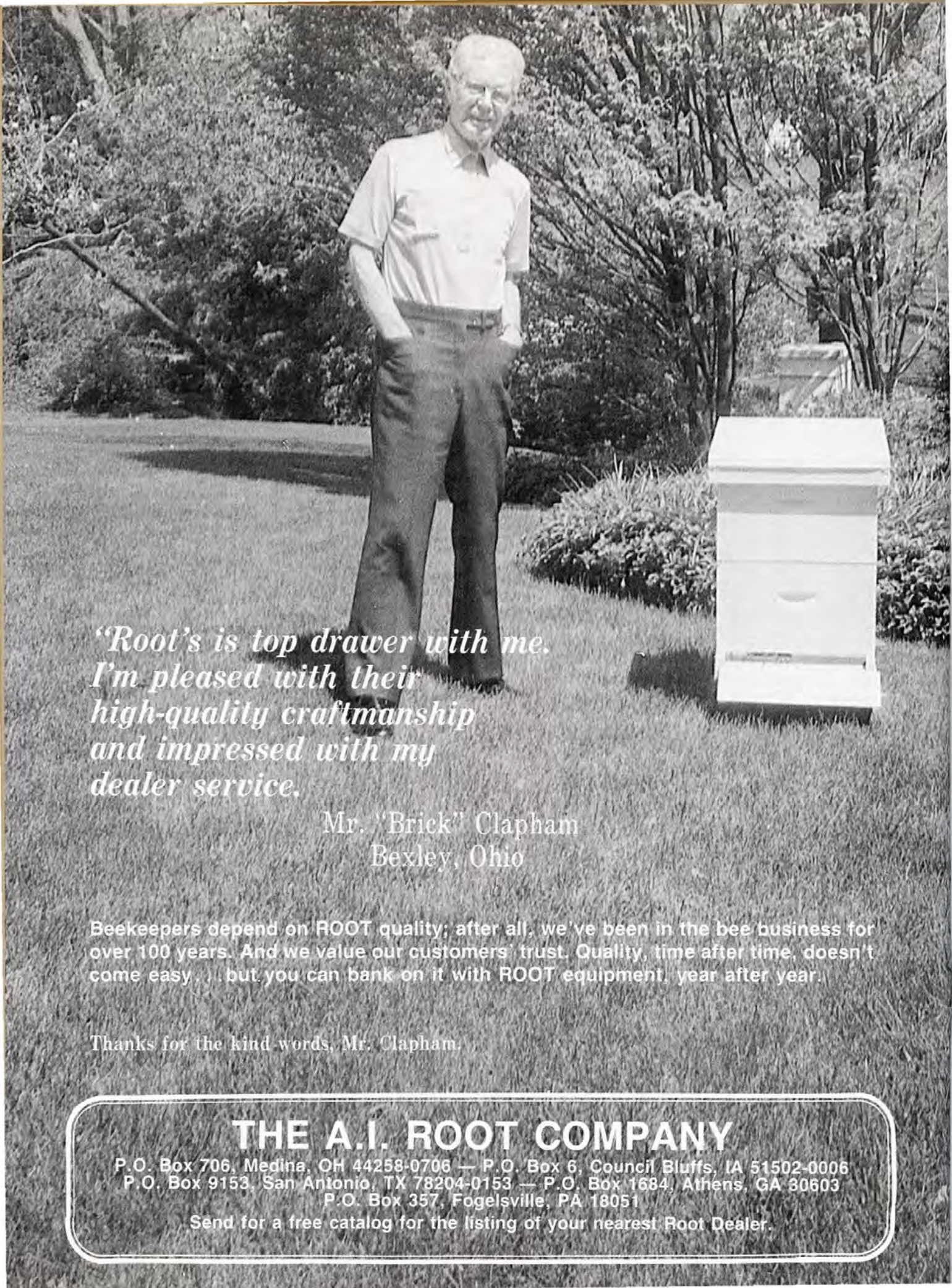

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