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Lawrence Goltz

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Cover Story

A gathering season and the signs of a coming winter. The hive bodies grow in number as harvesting continues. All around the beeyard, autumn embraces the hard work of summer and heralds the need to prepare for coming cold months.



NOTES FROM THE BEEYARD

Thanks To Our Subscribers

We want to take a few minutes to thank you, friends, for your new or continuing support of Gleanings In Bee Culture. Since April of this year our circulation has been leaping ahead by an amazing number of new subscribers per month. We certainly are pleased by this, but even more, take this as a good sign for general interest in beekeeping. For our part, we've been offering you folks approximately 35% more actual reading per issue since April. We try hard to be the journal of practical beekeeping. Our objective is to present helpful beekeeping information in a manner that can be useful to everyone who reads it. Our emphasis is on what you, the beekeeper, needs to know. We strive to present articles that are educational and enjoyable and not encumbered by items that few can understand or benefit from.

Some of our readers may not realize that in addition to being one of the top circulating bee publications, *Gleanings* is the oldest English language bee journal in the world to be published, without interruption, by one family. This is remarkable both in terms of magazine management and longevity within the beekeeping world.

We have all of you to thank for helping make that possible.

Thoughts On The Self-Wintering Colony Of Bees

One of the oldest beekeeping maxims is: when you think you know it all, you're really in trouble.

Perhaps the best application of that old saw is to the continually problemsome craft of wintering bees. Few aspects of bee management have generated as many words, or differing opinions, as the proper procedure for maintaining colonies over the cold months.

There are, of course, basic and often repeated wisdoms governing preparations for winter but, despite carefully providing bees with abundant food, proper ventilation, wind protection, drugs and everything but a color television set and video games, many are the unhappy beekeepers who have scratched thier heads, in springtime, upon finding their colonies dead.

Adding to the mysteries of wintering, comes this report from northern Wisconsin, where long, lingering winters frequently precipitate dysentary in hivebound bees, making successful wintering an uncertain prospect.

This past spring, a smalltown beekeeper received a call from a neighbor who, on a whim, had established a bee colony four years earlier, only to discover that he had an unnatural fear of bees. He had done absolutely nothing with them from that time on, but decided to call the local beekeeper to offer a deal on whatever might be left. The beekeeper, out of curiousity, decided to take a look, but was far from hopeful that he'd find anything worth looking at. Two of the four years had been among the worst in Wisconsin history. One winter brought below freezing temperatures for nearly five months.

What the beekeeper found was this:

A dilapidated, weather-beaten structure comprised of four deep supers. The entire mass, orignally set on bricks, had settled so deeply that there was barely an entrance hole left. The hive was situated so as to bear the brunt of Wisconsin's harsh north and west winds. In short, the entire scene was a testimony for what **not** to do in preparing a colony for winter. Except for one thing — the colony, after four years of mismanagement and no management, was strong, productive, healthy and ready to meet another spring.

To the beekeeper, who had lost many a colony after the best of preparation, it was amazing, perhaps even a bit irritating, that a colony, with all strikes against it, should not only survive but thrive in the face of four bitter winters.

Obviously, there is nothing in the way of scientific conclusions that can be gained from the observation of one isolated colony. And yet, the very endurance of that colony, in and of itself, must be proof of something beyond confirmation of bees' resistance to severe cold.

When first opened by the beekeeper,

the colony was discovered in the super second from the bottom. Although there were no top holes provided for the colony, the hive equipment was in such poor condition that natural cracks and holes did exist. Is it possible that ventilation, created by cavities purposely unsealed by the bees, and additional air space afforded by the top two supers, might have been the key to this colony's long-term success? Many beekeepers practice wintering with two or three hive boxes or, on occasion, four shallows. In this case, the extra room was left inadvertantly but, perhaps, provided an environment roughly corresponding to that which bees would provide themselves in a natural, wild setting such as a tree.

A possible lesson?

Humans seldom improve on nature all by themselves. They improve on nature by managing, rerouting and amplifying nature in such a way that it improves itself. In preparing bees for winter, one might do well to remember that, sometimes, less is more and more might be too much. It is both wise and recommended that prudent pre-winter preparations be made to help a colony survive and stay productive, but it is equally essential to remember that any society, forced out of what it would choose as its naturally suited environment, is destined to some degree of failure.

It is fittingly ironic that this report should end with the words of the beekeeper who entered this colony after it had survived four winters without human help. "I suppose," he said, "that now that I've cleaned their hive, given them the proper drugs, provided a windbreak, fixed up all their equipment and given them all the right things they should have had to begin with, they'll all be dead the next spring for sure."

He was being facetious — but not completely.

Thoughts On Bumbling

Perhaps you've noticed that beekeepers tend to be the type of people who appreciate the senses, be they applied to burying one's nose into a fragrant bloom or a handful of freshly turned loam; knowing the time of the year by the wild scents



North American Bumble Bee.

in the air, hearing the changes in wind and the calls of things hidden by nature; touching the texture of all that is new or unusual, simply to know how it feels.

I suppose this all comes from becoming intensely interested in one type of life. To be fascinated by honeybees is to begin recognizing the many links and webs of natural dependencies. What good beekeeper does not begin to observe nectar plants in a way that, perhaps, held absolutely no prior interest for that person?

Similarily, I suspect that many folks, interested in honeybees, become interested in their cousins (a few times removed): the bumblebees.

Several days ago, I captured a colony of bumblebees — *Bombus vagans* — that had built in a rotting birdhouse hanging in my neighbor's yard. Identifying them was not a quick process, for there are more than 60 bumblebee species in North and Central America, all of which possess slightly varying characteristics.

My original intention was to colonize the entire nest into some sort of observation hive. This is often fairly easily accomplished with bumblebees. The colony was, however, about 60 strong and so aggressive that, even with complete suit, veil and gloves, I was nervous working with them. Perhaps the best method for handling active colonies is to anesthesize them by burning ammonium nitrate in a smoker. However, I could only find ammonium nitrate in 55 pound bags - enough for 114 years and several million bumblers. My choice, therefore, was to rob a section of brood and honey, and then to let the bees go their own way.

A much easier way to begin a colony is to capture a queen in the spring. Queens are the only bumblebees to survive the winter and, the fat bumblebees one hears buzzing along like a helicopter in early spring months, are always queens. On a good day, dozens can be captured in a few hours. Basically, an artificial nest consists of a small plywood box with a gravity feeder through which slightly diluted honey can run. Bumblebees like nesting material so the box should be lined with upholsterer's cotton or similar material. A golf-ball sized wad of pollen (made from pollen honey and a few drops of water), is necessary for beginning brood rearing.

SEPTEMBER 1983

As indicated by the photograph accompanying this article, bumblebees keep their honey pots and brood clusters separate from each other. Most of these nests are subterranean, but bumblebees are not infrequent tenants in nests previously used by mice. Unlike honeybees, which will make a surplus of honey, bumblebees gather very small amounts — just enough to tide the queen through the winter and stimulate subsequent brood rearing.



Nest of Bombus vagans

Bumblebees have other obvious differences from honeybees. Their tongues are longer. That is why bumblebees are so quick to work the easily accessible red clover. The flight and temperature control mechanisms of bumblebees are quite intricate and fascinating, and deserving of study.

For anyone interested in learning more about the Bombidae of North America, I recommend: *Bumblebee Economics*, Bernd Heinrich, Harvard University Press, Cambridge, 1979. 245 pp. and *Bumblebees and Their Ways*, O.E. Plath. The Macmillan Company, NY 1934. 200 pp. Both books are well detailed and include suggestions as to how one can colonize bumblebees for observation purposes. Heinrich's book also contains a color page identifying the prevalent North American species.

No one is apt to launch a publication entitled: *Gleanings In Bumblebee Culture*, but for personal enlightenment, many folks might find bumblebees a worthwhile experience.

Thoughts On The Past And Future Of Beekeeping

Recently, I've been listening to a series of interviews featuring Huber Root, taped several years before his death.

Among other things, Huber recalled the days when the printing press for *Gleanings* was run by windmill power. His brother Ernest claimed that their father, A.I. Root, rousted him out of bed so many times in the middle of the night, to take advantage of a good wind, that the sound of a nocturnal breeze caused him anxiety even many years later. A.I., himself, often worked with a wind that ran his press so fast he couldn't properly feed sheets into it and, consequently, *Gleanings* occasionally had pages printed crooked. A.I. explained this away, to his subscribers, as an act of God and the power of nature, over which a humble editor had no control. It is a crafty argument and I suspect, someday I'll have an opportunity to use it.

There are many stories, related in these tapes, about the bee supply and honey business — about migratory beekeeping and unusual employees. Huber recalls a man connected with the Root Company's Florida operation, who would work all day with a live water moccasin snake draped around his neck. One wonders if that man called his boss "sir" or if it was the other way around.

Of most interest, though, are the accounts of how the beekeeping industry has had a history of ups and downs — of growing and diminishing interest — of cyclical successes and failures. Several hopeful lights shine through these stories. One is that the industry has consistantly been able to overcome difficulties. Secondly, beekeeping is graced with a legacy of beekeepers and manufacturers helping each other out in rough times. Even fierce competitors seemed to sense the periodic need for cooperation. One hopes that some measure of that mutual respect and fraternal feeling still exists.

All of this makes me more alert to the recent efforts, by the American Beekeeping Federation, to initiate a marketing program whereby assessments on produced honey would be used for research and promotion purposes. The obvious successes by other agriculturally related industries, stemming directly from effective, creative public promotion of their products, makes it obvious that this is a long range answer to helping beekeeping and honey marketing thorugh hard times that, from time to time, arise. This type of program is of a character corresponding in wisdom and cooperative effort, to the spirit of working with each other, recalled by Huber Root as having been the salvation of American beekeeping in days gone by. After all, it is far too easy to speak of tariffs and import restrictions. These artificial ballouts may or may not be part of the answer, but ultimately, the health of the industry can be insured only through the application of hard, inventive work toward a way of establishing marketing programs that can make American honey competitive under any circumstances.

> Mark Bruner Medina, Ohio





LAWRENCE GOLTZ

July 10, 1983

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.		2	2		5	6	7		0
	40.00	2 00.00	04.00	4	05.50	00.40	00.00	05.00	04.00
ou lbs. (per can) white	42.00	33.00	34.20		35.50	38.40	30.00	35.00	34.00
60 Ibs. (per can) Amber	42.00	27.00	31.80		33.50	34.50	34.00	33.00	33.40
55 gal. drum (per Ib.) White		.56	.58	.57	.56			.56	
55 gal. drum (per Ib.) Amber		.45	.53		.54		.54	.54	
Case lots — Wholesale	a second								
1 lb. jar (case of 24)	28.50	25.00	26.25	25.90	26.50	24.00	24.50	26.25	24.10
2 lb. jar (case of 12)	27.50	23.00	24.25	23.75	25.00	23.50		24.95	25.50
5 lb. jar (case of 6)	30.00	27.80	27.25	26.00	28.00	27.10		27.25	26.00
Retail Honey Prices									
1/2 lb.	.90	.90	.90	.86	.89	.90		.90	.97
12 oz. Squeeze Bottle	1.50	1.25	1.50	1.17	1.25	1.35	1.39	1.40	1.39
1 lb.	1.50	1.45	1.50	1.43	1.50	1.55		1.49	1.69
2 lb.	2.70	2.60	2.85	2.59	2.45	2.60		2.65	2.69
21/2 lb	3 45	2100	2.00	2.00	3.25	3 25		2100	2.00
3 lb	4 00		3 55		3.69	3.85	3.69	3.85	
4 lb	5.00	4 95	0.00	4 99	4 75	4 90	0.00	4.80	
5 lb	6.00	6.00	6.00	4.00	5.50	5.90		6.00	6.50
1 lb Creamed	0.00	1.55	1.55		1.40	5.00		1.50	1.60
1 lb. Creathed	0.05	1.00	1.00		1.49	1 05		1.59	1.09
T ID. COMD	2.25	2.25	2.25		1.99	1.85			
Hound Plastic Comb	1.75	1.75	1.65		1.75				
Beeswax (Light)	1.25	1.15	1.30		1.25	1.50		1.15	1.20
Beeswax (Dark)	1.25	1.00	1.05		1.10	1.40		1.10	1.10
Pollination Fee (Ave. Per Colony)	24.00	20.00	25.50	14	20.00				18.00

Misc. Comments

Region #1

Bees in Connecticut are in good condition. The honey crop will not match that of 1982 but should be close if remainder of season is good. Some reports of insecticide damage. Honey imports hurting sales. It would help if consumers would purchase from producers.

Region #2

Sale of honey is slow in Maryland but steady. Local and state beekeeping meetings well attended. Prices of imported honey discussed with concern. Some beekeepers increasing pollination efforts. Honey production spotty in New York State. Some areas of Southeastern New York and Connecticut reporting good honey flows. Honey sales slow. Good gains reported in early July but honey flow ceased. Bees in good condition. pesticide losses reported in New York State. Very hot and humid in West Virginia. Honey



sales slow. An average early honey crop in Pennsylvania. Honey sales off more than usual due to hot weather.

Region #3

Ohio honey crop is excellent in most areas. Hot weather and fair skys with rainfall on the short side. Indiana has a good crop of fine quality honey. Dry weather may cut back fall honey flow. Generic honey retailing for \$2.05 for 2 lb. jar. Quality is below what most would want to sell to customers. Illinois is experiencing a good crop of light honey in most regions from sweet and white clovers, perhaps best flow in many years. Soybeans beginning to bloom in late July. Very hot for several weeks in July with dry conditions. Honey crop in Southeastern Wisconsin should be a good one. Will average at least 100 lbs. per colony.

Region #4

Bees were short on stores in Minnesota until basswood bloom, from which colonies made up to 90-100 lbs. Some honey may come from alfalfa during remainder of season. Honey sales slow during the summer season. Packers are estimating a 20% reduction in honey sales due to giveaway of surplus commodity honey. The honey flow began about June 20th in North Dakota. Temperatures during most of July running well above normal. Moisture supply good until middle of July when some heat stress on plants showed up. Conditions promising for good honey crop. Sun flower acreage down 44% from last year in North Dakota, but state is still leading sunflower growing state.

Continued on next page

\$121 (\$104) TO \$25



Region #5

Florida plant conditions are good with some very dry conditions in certain ares. Colonies in North Florida at a standstill in early August, but colonies moved south have fared better. Prospects good for a fall honey flow. Extreme heat and dry weather have cut crop in North Carolina but there are fair to good crops from clover, vetch and wild flowers. Sourwood flow is promising with excellent quality being reported from the mountain areas. Bees in excellent condition. Good growth of asters and goldenrod giving hope of good fall honey flow. Imported honey visible at markets with no indication of country or origin as required under new regulations.

Region #6

Extremely hot and dry weather seemed to cut short the honey crop in many sections of the state during July. For the season most beekeepers were reporting a fair crop so far. A portion of central Kentucky has experienced an excellent crop. A few beekeepers are reporting slow sales especially where dark honey is concerned. Best honey flow in years in Tennessee, of good quality. Retail sales are slow. Prospects for fall honey flow is good, but rain needed. Demand is good for bakery grade honey.

Region #7

Bees build up very well in early June in Arkansas. Some areas of state badly in need of rain in mid-July. Honey sales are fair.

Region #8

Colonies strong in Colorado. Excellent moisture conditions and hot weather have promised a bumper crop im most of Colorado. Swarming has been at a minimum where ample supers supplied. Honey is mostly white, with most coming from sweet clover. Customer demand for honey has been good. Larger quantities of honey are being purchased as canning season approaches.

Montana summer weather patterns have dropped plenty of rain on some small scattered areas and left others bone dry. Areas of better than averge rainfall have produced an exceptional honey crop and extraction began in middle of July. Most of the state is about 65% below normal in, moisture and it is here where the honey crop will be below normal. The good areas are not large enough to bring up the state average. Irrigation will help but the volunteer nectar crops are dry. Late July rains and better August weather could help fall nectar plants.

Region #9

Lots of rain in Pacific Northwest. There promises to be a fair honey crop in Oregon this year. Need honey reporters in Washington State and California.



Glen Stanley, state aplarist from Des Moines, presented a \$50 check to Julie Teggatz for writing the top 4-H essay on bees. Teggatz, from Marion in Linn County, received the award from the lowa Honey Producers Association, Des Moines, Iowa. The award was presented at the State 4-H Conference held recently at Iowa State University, Ames, Iowa.



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Gleanings Mail Box

Dear Editor:

To coin a phrase "I stirred up a hornets nest" when I took exception to the claim that a slatted rack has insulating value. Some of the flack came from my friends in the neighborhood and from attendees of the Virginia State Beekeepers Assn. meeting at Bridgewater, VA recently.

Certainly any barrier will have some insulating value, but I took the statement, 'It has a definite insulating value, allowing better use of the lower part of the brood nest by the queen.'' (*Gleanings*, March 83) as an indication that it had some effect in the tempering of the outside air so that more area was used by the queen in which to lay eggs. I would welcome an explanation of that phrase by the original author, if it was meant differently. Ordinarily no eggs are laid in the bottom chamber in the winter, unless it is the only hive body, and a slatted rack should have no effect in the upper chamber of a two chamber hive.

I have a number of friends and acquaintances who use slatted racks and they swear by them — do you know anyone who would condemn something and then use it? They use several kinds, all of which have a solid board at the front and the slats spaced about $3/_a$'s inch apart. Obviously they will keep mice out of the brood nest but so will a $3/_a$ " entrance or $\frac{1}{2}$ " hardware cloth inserted in a $\frac{3}{4}$ or $\frac{7}{a}$ " opening.

Certainly J.G. Davis' use of the rack will accomplish this, but I don't agree that it in itself promotes an expanded brood nest as, even before I went to a 3/8" entrance, I had queens that laid eggs in every frame (wall to wal!) and didn't have honey or pollen in them on the lower chamber. Therefore I dispute the claim that it is the use of a slatted rack the promotes egglaying by insulating or reducing the amount of light entering the brood chamber. There are other ways to reduce light admission, but I perceive no value in them in that I have found bees living in combs on branches of trees and the queen laying in all available cells.

That Mr. Davis' racks have runners resting on the landing board is in their favor as they provide ladders and, if not placed between the bottom board rails and the lower body, can be easily removed for cleaning. One friends racks are interposed between the bottom and the hive body and the bees draw curtains of propolis and wax downward in order to provide their own ladders. Strangely, the curtains are U-shaped with the opening to the front which would indicate to me that the bees do not want to restrict the flow of air or the admission of light.

A hive properly placed will not permit the prevailing strong winds to blow into the entrance; therefore a slatted rack might help protect the hive from the weather only if the hive is improperly positioned.

Unless and until the claims made by Mr. Davis and the author of the answer in the March '83 issue of *Gleanings* are proven I shall continue to consider them as experimental and no claims should be made for them in an authoritive way (two extra letters in word doesn't make its meaning less clear). The maker of this statement is inexperienced and uneducated in the use of slatted racks and will continue to be as long as his bees keep filling all the frames with honey and survive from year to year, just as unmanaged bees do in trees and houses without slatted racks.

I maintain that the slatted rack, divised by Dr. Miller, was used by him because he kept his bees in a single body over a two inch bottom space. I find no mention of the slatted rack in any other literature available to me except one manufacturers catalog. I believe that if it was so effective that all manufacturers would make them or, better yet, incorporate them into bottoms.

I hope this discussion will spark comment on other facets of beekeeping by professional amateurs who have something to contribute to the art or craft.

Vic Glazevic 102 Evergreen St. Sterling, VA 22170

Dear Editor:

Rereading Charles Mraz's "Siftings" (January, 1983): A refreshingly truthful insight was his recognition that "beekeepers themselves are also to blame for the drop in honey consumption" due to "green," unripe honey, etc.

We must always get back what we give, and our industry will reap that reward also. Seeing we are responsible for our own actions, rather than blaming others, is the way to a truly bountiful business, with a wholesome, top-quality product. According to my favorite innerdevelopment author Vernon Howard, "Self-responsibility is often wrongly seen as a burden, when it should rightly be seen as an opportunity."

> Judith Anderson 701 Elm St. Sp 43 Boulder City, Nevada 89005



THE BEEKEEPER'S HANDBOOK: A Practical Manual of Bee Management, by Owen Meyer. Published in England by Thorsons'Publishers Ltd., distributed in the U.S. by Sterling Publishing Co., Inc. 2 Park Avenue, New York City 10016. Pp. 253, \$8.95.

British beekeepers are perhaps the most skilled and enthusiastic to be found anyplace, and have always contributed more than their share to the literature of apiculture. This book, by the author of *Basic Beekeeping*, examplifies that skill and dedication.

The book is rather general, and in this respect resembles many others. The various ways of doing things, such as controlling swarming, are described, and the readers is more or less left to take his choice. I prefer books in which the author says catergorically how he does things and why, even though his methods may be eccentric; but of course there are virtues to both approaches.

There are the usual chapters here, all clear and well-written, on equipment, instructions on how to find the queen, harvesting honey, bee diseases, and so on, as well as a discussion of bee anatomy and a good discussion of methods of testing honey.

It has always seemed to me that British beekeepers do a lot of manipulating and meddling with their bees. Of course there is nothing wrong with that, if you have time for it, and it certainly is a pleasant way to spend one's time. It is not the way to approach commercial beekeeping, however, even on a small scale. I love being in the apiary, watching the bees come and go, but I don't go poking my nose into their hives unless I absolutely have to. I'm sure the bees appreciate this policy. Perhaps my casual approach would surprise writers like Mr. Meyer, but British writers sometimes, I think, make beekeeping look more complex and difficult than it really has to be.

I could not find any discussion of comb honey, which is too bad; but then, the British do not go in much for that. Richard Taylor



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SEPTEMBER 1983



Varroa Update Summary of Distribution

Varroa disease of honey bees is caused by the mite Varroa jacobsoni. This mite was originally found only in Asia where it is a pest of the native Indian honey bee. Man has accidently spread the mite by shipping queens and bees to other beekeeping areas. It was found in European Russia in 1949, Bulgaria 1967, Germany 1971, Paraguay 1971, Brazil 1972, Tunisia 1975 and Libya in 1976. Thus, in less than 30 years three continents, Europe, Africa and South America have become infested.

The Situation In South America

The mite that causes varroa disease was accidently introduced into Paraguay in southern South America in 1971. It was brought there by a Japanese beekeeper who was visiting Japan and who carried some European queens on his return air flight to Paraguay. A year later he gave some queens, that were apparently infested, to a friend about a thousand miles north in Brazil. A few days later a commerical beekeeper in Brazil took two truck loads of bees, again apparently infested, another thousand miles north. It must be emphasized that none of these beekeepers had any knowledge of varroa disease and did not know they were transporting a pest.

Today, Dr. David De Jong, the only North American researccher studying the disease full time, reports it is found in five contiguous countries in South America: Parguay, Argentina, Uruguay, Brazil and Bolivia. It was reported from Bolivia in 1980. In Brazil at least 15 states are infested and no one knows how far north it has spread in that country.

It also appears that I, and others, have been wrong in thinking varroa disease was more severe in tropical areas than in temperate areas. De Jong has just returned from Argentina and reports that thousands of colonies there have died from the disease; he will be reporting on this together with data on the degree of infestation in greater detail this fall.



Varroa mites (enlarged) infesting a pupa.

More important, De Jong writes that Argentine beekeepers are using a wide range of chemicals in a desperate attempt to control the pest. Included in this list is a DDT-like material that is reported to give good mite control but that has a long residual life. Argentina does not have the strict legislation that we have in the United States regarding the use of insecticides. Our chief concern, of course, is that imported honey could be contaminated with a pesticide. Since there is no labeling as regards the source of a honey, and some packers keep no or few records of their blends and/or packing dates, U.S. beekeepers could be blamed if contaminated honey were found. This places the U.S. beekeeper at a considerable disadvantage.

In Europe

The July issue of the B.B.K.A. News, a monthly report from the British Beekeepers Association, gives details on

the spread of varroa mites in Europe. Recently it has been reported from the Alsace area of France, the east of Holland (the Netherlands had not previously been infested) and the queen rearing station on the Friesian Islands has been closed. The only countries in Europe that are thought to be free of the disease are Norway, Sweden, Denmark, Spain, Portugal, Belgium and the British Isles. Search training courses are now being offered to beekeepers by the British Association.

Plans For North America

Most of the people with whom I have talked agree that preventing the mites that cause disease from entering the United States is a nearly impossible job. The rapidity with which the mites spread within Sao Paulo state in Brazil indicates that they are moved easily from one colony to another. We suspect much of the moving is by way of drifting, infested bees. In a recent survey made by De Jong there was not a single colony in the whole state that was not infested. That included colonies in trees and houses.

On July 21st I attended a meeting in College Park, Maryland, of apiculturists, persons from APHIS (Animal and Plant Health Inspection Service) and representatives from the Entomological Society of America. Varroa disease has been ranked among the top ten most important pests that threaten U.S. agriculture by APHIS. They have prepared a plan to cope with the problem should it be found in this country. I have not yet seen a copy but expect one will be sent to me shortly. I understand too that APHIS hopes to slow the northward spread of disease.

The varroa problem has generated a great deal of conversation, a number of phone calls and, we understand, a number of isolated and insular countries are thinking about expanding their package bee and queen production. Beekeepers in these countries think that should the United States become infested then they could serve as a source of disease free bees and enter what appears to be a lucrative market. This might be possible. The same B.B.K.A. News cited above indicates that in 1982 4,562 queens were imported into Britain. New Zealand sent 1,336 of these and the U.S. 3,196. New Zealand has long been known as a major honey producing area and has long contributed to the international honey market.



I've been honey harvesting the past few days, and I just love it. It is sort of the culmination of the beekeeper's year, and when there have been some real good honey flows, like this year, and hot weather for the bees to make good comb honey, then the rewards are doubly sweet.

It seems to me that the years have taught me quite a bit about how to harvest honey, so I'm going to describe just how to do it. My method is relaxed and leisurely. Some of the important details have been gleaned from experience, since they are not described in the manuals I have read.

I use the two-way escapes, properly called Porter bee escapes. I've tried a blower and every other method, but have settled on this one as the best. Its only drawback is that it requires two trips to the apiary, but this is no drawback for those whose bees are near home.

I use escape screens, rather than an escape board. An escape board is nothing but an inner cover with the bee escape fitted into the hole. An escape screen is the same thing, except that it is constructed mostly of eight-mesh screen rather than wood. The center, with the hole for the two-way escape, is wood or masonite, but the areas on each side are screen. There must be a rim around the edge, on **both** sides.

Bees vacate a super faster and more completely if a screen, rather than a solid inner cover, is used. No one knows why, but it obviously has something to do with maintaining communication, through the screen, with the colony below. These escape screens are easy to make up. They can be made with ordinary fly screen, which is sixteen-mesh, but the eight-mesh is much stronger and better, though more expensive.

You need only one opening for the escape device. I've seen escape screens fitted with two or more, on the theory that the bees will vacate the super faster, or that if one of them gets plugged, by a dead drone for example, then the other will serve. But the bees leave just as fast through a single escape, and it will not get plugged, unless you happen to slip the escape screen in under some brood. Then the bees will get it plugged, in their desperate effort to pass back and forth through it to attend to the brood up in the super. But of course, honey supers should never have any brood in them.

Here's the way I use these screens.

Standing in back of the hive—or in front of it, for that matter, it makes no difference—I pry loose the supers I intend to take, draw them towards me about an inch or so, tilt them up with my left hand, and slide the escape screen under them with the other. Then I lower the supers back down onto the escape screen and slide supers and screen forward to the original position on the hive. It is all very simple and requires no heavy lifting at all. The screen and supers can be positioned readily with the hive tool.



Honey harvesting (from The How-To-Do-It Book Of Beekeeping, Linden Books, Interlaken, NY 1980).

Now a few details should be noted.

The first is, that the inner cover covering the super should not be pried loose. It will have been glued down with propolis by the bees, and must be left that way until you come back to get the supers. Otherwise, you will create a crack from which the bees can start robbing the honey out.

Second, the inner cover opening should be covered and can rob a super out through the inner cover hole. I use scraps of asphalt shingles for this, for they can be flattened down to make a tight fit.

Third, and for the same reason again, the supers you intend to take should not be pried loose from each other. If you are taking two or three or more, then leave them stuck together, and remove them all together. In addition to avoiding the creation of cracks through which bees might re-enter the super, you also avoid a lot of stickiness this way, by leaving intact any burr comb that the bees will usually have

built between the supers.

And finally, don't leave the escape screens there very long. Get the honey off and into the honey house quite promptly. Some beekeepers come back to get the honey the very next day after inserting the bee escape screens, but I usually leave them there for two nights. That's plenty long enough, but not too long.

There are many reasons for this important rule. One is, that the bees have less time to plaster the escape screen with burr combs. If you leave the escape screen there for a week you are apt to find it covered with sticky burr combs. Another reason is that the bees have less time to gum up the wires in the escape device. If you leave it there too long the wires get so propolized that the thing might not work at all. Again, if the escape screen is there only a day or two, then the bees do not have time to rob out the supers from any crack or hole you may have overlooked, nor is there time for such a crack or hole to develop. And finally, you won't have supers of honey, empty of bees, sitting out there in the apiary through some rainy day or night. It is not too serious if this happens, but I feel better if the honey is home in a dry place.

A few other things need mentioning here.



An escape screen fitted with a two-way bee escape.

One has to do with gummed up escape devices. In time the wire springs do get propolized. If they are metal, you can clean them up by dunking them in hot water with a bit of lye in it—but be awfully careful. Lye is dangerous, and should be added to water **before** it is heated, and then with care. A safer way to clean them is with a broom bristle or something comparable. You can just poke this into the device and clear the wire springs well enough so they'll work okay.

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*Editors Note: The strong detergent used for dishwasher machines is a good substitute.





Bees and Gardens

Looking good! This quip we sometimes hear in TV commercials holds good for the bees and gardens in our part of the country at the end of July. Despite the ferocious heat and being sometimes on the dry side, or too wet, the widely spaced rains have kept the gardens growing, and the nectar flowing. There are some beautiful garden plots to be seen around our county as I drive to my various apiary locations.

Now it is extracting time, what we beekeepers look forward to each year, right? All winter we envision super after super of capped combs with glistening white cappings covering deep cells filled with fragrant, fresh honey. Of course, extracting sometimes turns into an irksome, long drawn out chore if your equipment is inadequate, the working space inconvenient or the condition of the combs or honey is unsatisfactory. Sometime, too, the job seems endless when the crop is heavy, no help is available, the weather is hot and other demanding tasks interfere with the extracting. Once extracting is started it is a nuisance to have to stop and begin another day. Stopping extracting for a period of time seems to break the rhythm but unless you have only a few supers, it is usually necessary to restrict your extracting to only a few hours at a time over a period to days or weeks. At the beginning of each extracting session it may be necessary to warm supers that stay stubbornly cold after a cool night; heat up the honey processing equipment plus a dozen other details before the honey again begins to flow smoothly from combs to storage tanks. Intermittently, or which generally make up, somewhat at least, for the hot, sticky hours spent getting your honey to that stage of processing.

If everything has gone right (and it never does, actually) or at least reasonably smooth, the end product may justify the mess we beekeepers charitibly call and frenetic poets glorify as the "joys of the harvest".

Speaking of bottled honey, if you want to create a mild furor at your local bee meeting, take some samples of your honey and exhibit them on a table, asking everyone for their opinion on the floral composition of the various jars of honey. Slip in a few jars of honey from other parts of the country if you want to really keep things lively. The opinions you hear are apt to be many times more varied than the numbers of colors and flavors present. Some of the opinions are likely to be surprising, I have found by having been close to several such sportive discussions. There are usually present some self-proclaimed "experts" who will positively identify one as a "soybean honey", for example (this, a dark honey gathered in an area where there is not a large soybean field within hundreds of miles); another sample, a rich, dark, reddish tinged honey, gathered in the Appalachian foothills, as 'sourwood"; and a clear, light bodied honey from a clover growing region as apple blossom honey from someone's back vard!

If you wait patiently and endure you may eventually have at least one individual sidle up to your table, carefully look over the jars, handle a few, taste the sample and mutter- h'm-m-m-m. If you want a worthy opinion, grab this person by the arm and hold on tight. If pressed for an opinion and this person says something like - "Well, I dun-no-maybe-"you may have then found someone who may have an opinion of substance, perhaps close to the right answer about the composition of the honey. If this person's eyes appear shrewd and knowledgeable, has a voice tuned down to a smooth, resonant pitch and apparently has the emotions under control you can be reasonable certain that you have found your local expert. You can be very certain if he or she begins by saying such things as "last month I ran out 18 supers of pure poplar-never seen such good body-right good taste too-"(or)-brought in a load of (sourgood wood) (locust) (clover) that ran darn near

161/2 % and water white-etc., etc."

Yes, when it comes time to identify a honey there are the "experts of the moment" and then there is the person who "reckons there might be a good bit of blackberry mixed with some later persimmon and maybe a touch of locust from off the ridges where the frost didn't hit the trees those two mornings in late April." His hesitency to expound further may cause you to decide to loosen your grip on his arm, and this individual is likely to melt away in the crowd, never to be seen again, that day, or forever. After that you will be forced to give the guessing game back to the rank and file experts. Once again you will begin to hear such expressions as-"now I know this is dandelion honey, the darn things were all over my and my neighbor's lawn this spring and those bees were all over them every day, making honey; (or)"-see this other bottle-buckwheat, sure as hell-can tell by the color every time-without even tasting it"; (or)-"don't know about this one, probably from hickory trees, got plenty of 'em around here-", and etc.

Yes, beekeeping is fun, and sometimes profitable and, like gardening, we generally have some kind of a harvest to show for our efforts despite floods, drouths, hail, predation, our own mistakes and those who so willingly pass along a lot of poor advice.

L. Goltz



HALE, Aldren Hathaway, Jr., publisher, inventor, mfr., b. Danbury, Conn., Jan. 24, 1910; s. Aldren Hathaway, Sr., and Lottie (Engelage) H.; Ph.B. cum laude, Brown U., 1931; m. Sarah Alice Higginbotham, Mar. 7, 1936. With H. McLachlan & Co., 1931-35; stock market operator, 1936-37 actuarial studies, 1937-38; writer, 1938-41; newspaper editor Tyler & Company, 1941-42; asso. editor National Carbonator and Bottler, also Laundrymen's Cleaner's Guide, Atlanta, 1943-46; pres. Hale Pub. Co., Hapeville, Ga., 1946-; owner The Hale Company, 1954-. Served as pvt., AUS. 1943. Mem. Phi Beta Kappa, Kappa Sigma. Editor of Southern Beekeeper, Bees, 1947-61. Took early retirement for health reasons. 1973 became intensely interested in yachting. Lived aboard his yacht, VEGA II, 1975-82. Passed away Sept. 21, 1982, Atlanta, Ga. 🗆



Here's What The Scottish Bee Journal Says About The A.I. Root Company Honeybee Slide Shows:

Now for a real treat. Really splendid beekeeping slides. This particular series is aimed at the general public and is designed to captivate its interest. The second part is designed to help the beginner to get properly started. How often have we longed for a really effective set of slides to show to the non-beekeeping audience — here it is par excellence. The photography is excellent and John Root has a rich round voice, with clear diction which makes it very easy to listen. This is only one of several sets issued by the A.I. Root Company, publishers of 'Gleanings In Bee Culture'.

Set 1 — **Honeybees** — (67 slides). An introduction to the honeybee; showing the development and describing the behavior and activities which is basic to the understanding of this amazing animal. For beginning beekeepers or anyone interested in learning more about the honeybee.

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This is your opportunity to purchase these newly created slide sets at a special introductory offer: Sets I, II, III or IV — \$35.00 each or all four sets for \$120.00. Nectar and Pollen Plants — \$60.00 — Plus Postage

The A. I. ROOT COMPANY P.O. Box 706 Medina, Ohio 44258



Pollen Marketing: Profit And Protection

We have periodically reported developments in the case of Wilhelm F. Gollub of Richmond, Virginia, who was sued by George M. Coles, who experienced an allergic reaction after purchasing and ingesting pollen packaged by Mr. Gollub. The following exerpts from a letter written by Mr. Gollub, provide additional background information as to how this legal action has concluded.

Re: Honeybee Pollen Allergic Court Case

Dear Folks,

The enclosed papers are ones collected in my effort to counter the claim that I was responsible for the allergic reaction that Mr. Coles, a lawyer, received after injesting honeybee pollen that I had sold to a health food store in Charolottesville, Virginia.

On November 12, 1982 I received the initial letter from the law firm of Tucker and Parker who represented Mr. Coles in the lawsuit against myself, as I sell under the Honey Hollow label, asking for \$1,000.00 in damages.

At the time I was preparing to take, for the first time, 40 beehives to Florida for overwintering and was very busy in preparing the bees, building a truck bed, working to obtain enough money to finance the project and learning of all the paperwork involved. I asked Virginia Moore who was to check on my mail during my absence to write a letter to postpone my response until my return from Florida.

Upon my return I was very busy with Christmas with my children and then New Years so that it was not until the first week in January that I phoned to set up a meeting between myself, Mr. Coles and his attorney Mr. Parker.

Two days later I received the "Warrant-in-Debt" charging me with \$1500.00. A \$500.00 increase from the initial demand of \$1000.00.

I decided at this time that matters were getting out of hand and it was time for me to obtain a lawyer. I tried several in Charlottesville but all knew, associated or had past legal dealings with Mr. Coles.

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Finally I retained a lawyer, Mr. Joseph Serkes in Nelson County, some 120 miles from Richmond and 35 miles from Charlottesville.

At the same time I sent a letter concerning this matter, after discussing over the phone, to Mr. Serkes. I also sent letters to all the bee suppliers magazines and organizations asking for their comments on this matter.

The response from my letter varied from disinterest to deep concern but for the most part were very supportive. The letters encouraged my initial feeling that there was no basis for the suit and that Mr. Coles was only trying to obtain a large amount of money at my expense as I had no insurance to cover the sales of pollen or any other bee products.

I contacted the State Food and Drug Department obtaining a copy of "Virginia Food Laws" from Mr. R.D. Saunders and the regional supervisor. He informed my by phone that my current label met all existent laws in the State which only require that labels state the product, weight and producer.

Because the basis of the suit was the premise that my label was substandard; "Honey Hollow...failed to contain adequate warnings as to the dangers inherent in the product". "...it is the standard of the industry to so warm potential customers." I felt that I had a case to countersue.

Since Mr. Coles was a lawyer the regulations for labels should have been easily accessible to him. Since his actions caused me to spend money for a lawyer plus considerable time, money and energy preparing a defense in addition to losing the account at the store where the pollen was bought as Mr. Coles was a friend of the store owner, I felt that I should be able to recover my money spent and loss of business of about \$100 per month.

After contacting numerous lawyers I found that in this somewhat occassionally crazy world justice is a legal and not a moral matter. The consensus of the lawyers was that because you are sued does not give you a basis to countersue. After several weeks I came up with the idea of fringe benefits. Lawyers have the right to bring lawsuits which disrupt others and I as a beekeeper have the privilege of enjoying fresh honeycomb whenever I choose. Whatever the particular trade we have been given this life there are certain fringe benefits that go with it.

My lawyer is the meantime had postponed the case and with the information I supplied him and with his research sent the letter of January 28, 1983 in which he explained that he did not think Mr. Coles had a basis for suit mainly because of my meeting the Virginia labeling requirements.

After several additional delays, my lawyer informed me that a "certificate of non-suit" had been entered. This withdraws the matter from the courts attention while it leaves the possibility open for reinstatement at some future date. Since is is very unlikely that Mr. Coles will reopen this matter for all intents the case ended in my favor.

Mr. Coles incurred \$160.00 in medical costs and asked for \$1000.00 later raising it to \$1500.00 when presented to the courts. As in most nuisance suits it would have been cheaper to arrange an out of court settlement. However, I elected to fight and thus it cost me the lawyers fee, loss of business and other costs to where it is currently about \$1000.00 In spite of monetary considerations I still feel that my actions were proper both morally and legally besides being in the best interest of beekeeping.

After discussions withmy lawyer I decided to change my pollen label from a simple statement of contents to include a warning on how to take pollen and it's possible allergic reaction. At the same time I balanced the label by putting in a statement on the benefits of pollen.

I wish to thank all those who have written or called me for their support and encouragement. Originally I was depressed when I received the letter asking for \$1000.00 (which I did not have) but later as I learned that this was the first case of its of its type in the United States I felt considerably better and encouraged to maintain initial stance.

> Sincerely; Wilhelm F. Gollub HONEY HOLLOW Rt. 4 Box 54B Louisa, VA 23093

Continued on next page



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The case of Mr. Gollub vs. Mr. Cole is important because it represents an aspect of marketing and consumerism that needs to be considered at a time when the interest in pollen products seems to be growing. Because all beekeepers deal with pollen in one form or the other, certain serious questions must be considered:

1. Is is prudent to carry a warning label similar to the one used by Mr. Gollub (see illustration on this page)? The law does not require such labeling, but does common sense dictate it? Will it hurt sales? In light of the fact the almost every food can cause allergic reaction, why should pollen be the focus of a label warning when strawberries, or chocolate, tomatoes, milk, etc., are not subject to warnings but can cause reactions? These choices are now left up to individual pollen sellers, but the ramifications could affect the industry at large.

2. Do pollen processors follow strict preparation procedures? Clearly it is wise Pollen is the only natural food which contains all the vitamins, minerals, amino acids, enzymes, proteins and trace elements found in and needed by the human body.

Nature's Perfect Food 100% Pure

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POLLEN

To avoid sudden metabolic imbalance gradually build up pollen intake. Start with one pellet. Double amount each day. 1 to 3 tsp. for daily health. In doubt consult physician.

Net weight - two ounces

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Honey Hollow's Revised Label For Pollen Packages

that they do. Improperly dried pollen can mold, with the possible result of creating toxic by-products. Moreover, certain types of pollen, e.g., from the rhododendron, are said to be toxic to humans. Furthermore, the establishment of pollen contamination by pesticides requires laboratory analysis. Does there need to be a quality assurance requirement for processed pollen sold for human consumption?

3. Will it become necessary for pollen producers to carry Product Liability insurance? What might be the consequences of that upon the pollen industry?

4. What is the responsibility of those marketing pollen in-so-far as making claims as to its value as a food? Are there substantiated, validly documented scientific research statistics that prove the claimed curative powers of pollen? If so, what are they? If not, what prudency must be exercised to avoid accusations of false advertising? No industry wishes to be compared with the sham enterprises of snake oil salesmen. What can be done to safeguard against such a comparison?

There is no doubt but that most in the beekeeping business and industry, welcome the growing potential of pollen marketing. Any chance to expand and diversify the sale of honey and hive products is a positive occurance. It is essential, however, that those of us involved, directly or indirectly, in this business, police ourselves by demanding excellence in quality, complete honesty in advertising claims, and a constant objectivity that will help us identify possible problems and pitfalls.

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Moving Bees

I have four buddies with whom I keep bees. We migrate together, share outyards, build the anti-bear fences together, and I hope, are friends. One man has just finished his second year and is getting quite competent. The others have had bees, I guess, 8 to 12 years and are darn good beekeepers. However, even though one commanded a combat engineer company in Germany all have trouble lashing down the loaded hives. They are still of "the fox comes out of his hole, rounds the tree, sees the hunter and pops back into his hole" school. (e.i. the Boy Scouts teach the bowline knot this way) and hide in a closet and practice before the truck has to be loaded to go to blueberry pollination.

Well, the way they tie the tensioning knot has to be seen to be believed because I just throw the rope around and make the knot illustrated, but so help me both friends make the two loops grab a bite and go on just as the photgraph shows. I doubt they can do it blindfolded or in darkness, but their way works and the knot tensions and locks properly.

Even if you never figure to move bees, this knot will be handy to know to tie things on top of your sedan or in or on the bed of a truck. It is ridiculous the way the great American public ties things on. You and I could have furnished a boarding house with the mattresses and other furniture and built it with the lumber that have blown off the loads.

Now little chums cut out the photo and thumb tack in in the closet. Then practice! \Box

The Great Wax Melter Adventure

The ten year old pictures shown may amuse John Root. Ten years later the story is now no longer a source of embarassment so I will tell it. As you see I built a wax melter from a monel steel hot water tank that after 40 years died of old age. All I did was cut the tank in half, drill a hole, and silver solder on a flange that would take a one inch pipe. Then I screwed in an ARTM-750 watt Chromolox combination heater thermostat unit and slaved the original lower 1500 watt unit to it. Next I silver soldered an elbow of copper low on the tank, soldered a piece of copper tubing to it, and where the pipe stopped about eight inches above the top of the tank, I soldered a #2 tin can. Finally I insulated the tank after I soldered in a top overflow. Gee it was pretty - all covered with the blue vinyl faced floor carpet pad-





A 20 gallon Monel tank cut from an old hot water heater made into a wax melter. Final configuration has a one inch top wax spout. Chromolux heater thermostate shown.

Did it work? Yup, just fine. I filled it with old comb all crushed up. Added more water, set the thermostat at 200 degrees and when the hot water caused the cells to disintegrate, I put a lot more old combs in. When the old combs were melted and wax was showing, I poured water into the tin can. It ran down and into the bottom of the tank. The wax level raised and flowed out. A real gadget. Then I goofed. I thought that I could dream up a way to strain out the bits and pieces, cocoons, etc., so I made the expandable holder for the filtering cloth shown. Obviously I was a true genius, and since the melter had worked well before, and while it was still all pretty, I photographed it, wrote a "how to", and sent it to Gleanings.

This was a colossal goof! I had no need for a wax melter for several months, and did not test it with the added "improvement" before I sent the article into Gleanings. Came the fate-full day. I fired the wax melter up with the strainer in place and screwed in tight. Yup, the wax melted; I could hear gurgling. I poured the hot water in to float the wax up and it did. In fact it did float up and out. Then I did not know why, but wax melters of this type I now know have a period of subsidence when you add more hot water again. Oh boy, that was wrong! When the wax passed through the strainer the first time and then the subsidence occurred, there was a coat of wax left on the cloth. When the second heating started, the darn thing exploded...all over the ceiling, all over the floor, all over my table saw, jointer, work bench, and a fair amount on me! Louise came down, looked, and chewed me out. She really had a fit.

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Honey Marketing

Part IV

By SIDNEY GROSS 3N681 Bittersweet Drive St. Charles, IL 60174

I am going to devote this entire installment to a single sales instrument. Because you have to create it yourself, its monetary cost is quite low, but it will require substantial planning and effort from you. I'm referring to a honey newsletter printed material which you distribute to your customers with each purchase.

I got the idea for a newsletter more than ten years ago and I have been using it continuously since. I was selling honey during a sidewalk days celebration in a small town not too far from where I now live. While standing behind the table I asked myself how all of the people who were buying my honey would find me again when they needed more. From that thought it was a short step to the idea that I ought to be handing out a piece of paper with my name and address; it was a shorter step still to the realization that the printed material should also have something of interest to the customer on it so that he would read and keep it. That's how Sidney's Sweet Talk was born. In my booklet Honey Marketing: Tips for the Small Producers I've included a sample issue of Sweet Talk as the centerfold. The booklet is available through the A.I. Root Company.

Sweet Talk is a single 8½ x 11 sheet of paper folded along the center of the eleven inch dimension. This gives four pages. If you own a mimeograph machine or a tabletop offset press you can print the whole thing yourself. Probably, however, for most of you it would be best to have the work done by a printer. With the proliferation of fast print stores this should present no problem no matter where you live. You can also run the newsletter on a copy machine but I don't recommend this since for bulk runs a copy machine is the most expensive method imaginable.!

My standard format for Sweet Talk hardly varies from one year to the next. My name, address and phone number as well as the word HONEY appear at least once on each page. The opening paragraph on page one is a short nontechnical description of foraging conditions over the early part of the current season; this reassures the customer that I am a direct producer and am not simply distributing somebody else's product. I need hardly tell you that the opening paragraph must be light hearted and optimistic even if your crop that year was a total failure and in fact all of your honey was purchased from another beekeeper. Below the introductory paragraph I list current honey prices; this information always appears on page one because there's a good chance that some of the people who get the newsletter will not bother to read beyond the front page. Because I do produce most of the honey I sell, my major economic variable is the cost of containers. I mention this because I print all of my newsletters in a single run and stick by the published price for an entire year. If you change your prices every few months you may want to print fewer newsletters and insert new prices on each run.

In the center two pages I provide information about some of the many facets of bees, honey and beekeeping. You can talk about granulation, about comb honey, about the differences between bees and wasps - the possible topics are infinite. I also devote part of the middle section to specialty items I sell like gift packs and candles. The last page contains a discussion of something positive that happened in the business over the past year (this is never anything very personal), e.g., a newspaper feature about us, a new piece of equipment, a prize at a fair for the honey. The last page is also a good place for a honey recipe.

Having outlined the format of the newsletter I now want to discuss its technical preparation. Use colored 8½ x 11 paper rather than white which is too clinical. If you use a mimeograph machine buy twenty pound mimeo paper since the cheaper sixteen pound will show printing from one side of the page onto the reverse. For offset printing obtain sixty pound offset paper. If you are sending the newsletter to a printer have him fold the newsletter for you. He has a special machine which will do this otherwise tedious job in minutes.

If you use a mimeograph, type your copy directly onto a mimeograph stencil. Use "bulletin stencils" since this style

already has the proper page format printed on it and you will have no problem with the margins. You should pepper your text with illustrations - even squiggly lines between paragraphs to hold your readers' eyes - and these illustrations are drawn using special mimeo style, shading plates and backup plates. These items are readily available wherever you buy mimeograph supplies. For offset you will need "camera ready copy". The printer works directly from the copy you provide so any mistakes or sloppiness will show up in the actual printed newsletter. Type your mock-up on four half sheets (81/2 x 51/2) of 81/2 x 11 white paper and then with Scotch Magic Tape (the kind which is almost invisible when applied) attach pages four and one to one whole 81/2 x 11 white sheet. Do the same on another sheet with pages two and three. Tell the printer that he is to "print one sheet, front and back." Look at the illustration of the mock-up:

PRINT FRONT and BACK

Type the mock-up on white paper of low rag content since this reproduces better in the offset process. If at all possible use a carbon or a polyethelene ribbon in your typewriter for a sharp image. MAKE CER-TAIN THAT YOUR KEYS ARE CLEAN. If you make a mistake white it out with correction fluid and then type over it. The white-out will not show in the printed version. Drawings should be done in black ink. You will save yourself mountains of aggravation if you draw any pictures you plan to use on separate pieces of white paper. Cut them out, leaving a generous border, and then paste them to the typed copy using rubber cement or magic tape. If you ever become involved with a printing job larger than the newsletter you may want to cut and paste every typed paragraph individually. This method gives you complete control over the format of each page. Make certain that the edges of your paste ups are flat against the copy, since any shadows will reproduce in offset.

If you have a surplus of even a few hundred pounds of honey to sell, have the printer run off a ream (500 sheets) of newsletters. In printing the cost of each copy gets cheaper as the size of the run increases (this, by the way, is why I advised against coin operated copy machines the cost per unit is constant throughout). If you have the time, get cost estimates from two or three printers, providing each with exactly the same job specifications. Often, the speedy places with the cute names are not the cheapest to deal with. On the other side of the coin, if a printer comes in low but does a shady job,you will never want to use him again. Remember that not only will the preparation of the newsletter take time, but the printer himself may have a heavy work schedule which will cause delays. Give yourself several weeks to get things inorder before you plan to distribute the literature. This is not a job you can do by

Continued on page 469







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BEEKEEPING FOLK ARTS

Honey & Hive Products For Cooking And Other Home Uses



While visiting recently during a break time with one of my co-workers, one thing led to another, until eventually he came up with what I consider one grand piece of wisdom handed down by his father who has taught school for most of his lifetime.

In turn I enjoy the privilege of passing it along to my fellow readers of *Gleanings* to ponder upon. "If by chance you might be looking for something very valuable to stow away for future use that requires almost no space at all, try KNOWLEDGE." In regard to cooking and baking with honey, once you have gained the necessary knowledge in using it in your favorite recipes you probably almost always will wind-up with very good results.

Canning Peaches With Honey

3 cups water 1 cup honey about 1 dozen peaches

Prepare syrup by boiling the water, and honey for about 5 minutes. Scald the peaches to loosen skins, peel, cut in halves and remove the stones. Cook fruit in syrup for 5 or 6 minutes. (Place one peach stone to 6 peaches).

Place hot peaches with cut side down in jars. Fill to within about ½ inch of the tops with hot syrup and remove the air bubbles with a clean knife. Place lids, process in a boiling water bath for about 20 to 25 minutes.

I recently overheard someone making the statement that if you are not part of the solution, then you must be part of the problem. This is very familiar to most of us. However, I could not help but be reminded of how closely this relates to cooking with honey. I feel that, without any question, honey has for the most part has been the solution to most all recipes in which it is used. Without a doubt it tends to enhance most all baked goods by contributing to a finer texture, flavor and also making them more moist. By AMOS ARBEE

The following recipe is one I highly reccomend everyone try at least once:

Spy Apple Honey Cake

4 cups apples, peeled thinly sliced 3⁄4 cup brown sugar 3 tsps. cinnamon 3 tbsps. flour 3 tbsps. soft butter 3 eggs 1 1⁄4 cups honey 1/3 cup vegetable oil 3⁄4 cup milk 3 cups flour 1 tsp. salt 3 tsps. baking powder 1⁄2 cup pecans (chopped)

Mix brown sugar, 3 tablespoons flour, cinnamon, soft butter, and pecans. Set aside. Mix eggs and honey in a bowl and beat for about 2 minutes on high speed. Add oil, milk, 3 cups flour, salt, baking powder. Beat about 2 more minutes. Pour about half of the batter into a oblong pan (greased and floured). On top of the batter place the sliced apples and then the cinnamon and nut topping. Place remaining batter over topping disregarding whether or not it entirely covers completely or not. Bake at 350 F. for about 15 or 20 minutes and then reduce to 325 F. for 30 to 35 minutes.

For that extra something, heat slightly before serving and if you like go one more step and add whipped topping.

Machines & Beeswax

Visiting with a machinist who happens to be a very close friend of mine brought to light a very valuable use for beeswax that I must confess I was truly and totally unaware of. He tells me it is an extremely fine lubricant in place of oil. It seems that oil will burn-off at rather high temperatures, whereas beeswax will continue to hold-up while cutting the metal.

This, according to him, is also very true at high speed drilling or operating on a metal lathe. A thin coating of beeswax will also prevent a polished piece of metal from rust and oxidation.



An internal strainer as shown will cause an explos ion. You can get scalded with hot wax which wil burn the hide and hair off of you.

I called Mr. Root and had the article pulled. But to go on ... I know I am a slow learner. Would you believe I snuck the melter into the stable and set it in one of Louise's horse stalls? Do you suppose it exploded again? Yup, it did...all over the window, walls, ceiling, oat box, etc. I thought Louise would kill me, but she was too stunned with my stupidity.

Well, after I figured out what was causing the explosions, I flung out the strainer cloth and its clamp, and added a much larger diameter wax outflow tube. I waited till Louise went to visit her Mother and tried the wax melter out, but outside NOT inside the house or in the stable. (I do learn!) It worked fine, but since by now it was a sore point in my relationship with an otherwise affable wife, I never used it again. It now has a good home. It is used and wax from it has won several prizes. As you could guess, it does not have an internal strainer.

Honey Marketing

Continued from page 467

staying up late the night before. One nice thing about using your own mimeograph is that you do get instant service. If you get into the composition and distribution of your own literature, a mimeograph will pay for itself in no time.

I hope that the discussion of the preparation of a newsletter doesn't sound too complicated to you. Do it once and you'll see that it's easier than perhaps I am making it seem. In marketing honey the newsletter may well become your most important tool. Even if you are dealing with a steady customer, the newsletter may well get passed along to a friend.

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Feeding Bees For Over Wintering

By MARION ELLIS State Apiarist State of Nebraska Dept. of Agr. P.O. Box 4756 Lincoln, Nebraska 68509

Are you overwintering or over wintering your bees? There have been volumes of articles written on successfully overwintering honeybee colonies, but little has been said about over wintering of honeybee colonies. I am somewhat of an expert on the subject of over wintering by virtue of having made most of the mistakes imaginable. Since many of you may not have acquired as much expertise as me, I have described the most common "goofs". Take heed, lest you too become an expert on over wintering honeybees.

Take your winter loss in September. It is tempting to try to nurse weak colonies through the winter, but not profitable. If you feed, give the feed to big strong colonies that already have 30 or more pounds of honey stored. Even if you successfully nurse weak colonies through the winter. one strong, well-provisioned colony will have more brood in it by May 1 than three weak ones. This brood can be used to make up new colonies to replace those you opted not to winter and the feed you saved from these colonies can be used to build up new ones. Over wintering (wintering lots more colonies than you actually need and hoping enough make it to restock all your equipment) has a lot of hidden cost. Colonies that die out usually consume 20 to 30 pounds of honey before they perish. They often become infected with nosema and contaminate the comb with their nosema laden waste. Cleaning out dead colonies takes time and is a disheartening and unnecessary chore. Strong, well-provisioned and wellprotected colonies will come through the winter with fewer of the stress related diseases (chalkbrood, sacbrood, nosema) and build up rapidly. In weak colonies, the ratio of house bees to field bees is very high. In strong colonies, a larger percentage of the bees in the colony will be foragers; therefore, strong colonies collect more early pollen and nectar and build up much more rapidly. If 20 to 40%

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of your colonies are not starting to build swarm cells by mid-May, you are probably not doing a very good job of overwintering. If you want to maintain 100 hives of bees each year, you should be able to choose the strongest and heaviest 75 to winter and kill the rest, saving the feed from the 25 you destroy for divides you make to recover your count the next spring. Feed those 75 good colonies two gallons of heavy syrup (or more if needed), add Fumidil-B to control nosema, and protect them from the elements with cartons or wraps.

Before you even begin to think about overwintering, you should decide what you want for bees the next spring. If your objective is to maintain your colony count at the same level, killing off some colonies in the fall is prudent. Too many bees too soon is a hungry liability that will present swarming problems. If your objective is to make increase or to sell nucs, your need for bees and brood will be greater, and you should make your wintering plans accordingly—; but even then, wintering weak and very light colonies does not pay.

These suggestions apply to the midwestern states where the main honey flows typically do not occur until mid-June or later and may not be applicable to other areas. In the midwest, new colonies made up in mid-April can be built up to populous colonies by the time the main flow comes by providing them with combs of pollen and honey and lightly feeding them with sugar syrup to stimulate brood rearing. Strong, well-provisioned and protected colonies will come through the winter strong and by mid-April, most will have five to seven frames of brood or more. If you leave these colonies with four frames of brood and bees, any surplus brood and surplus bees can be used to make up new colonies by using four frames of seal brood covered by bees (you can mix brood and young bees from different colonies with little or no fighting), two combs of pollen and nectar, two combs of honey, and two empty combs. The arrangement of combs is as follows.



Give the new colony a reduced entrance of only one and one-half inch width and preferably move it to another apiary. Introduce a caged queen and feed sugar syrup if natural nectar flows are not coming on. If you care for these colonies properly, you can have them to swarming strength by mid-June. If you do a good job of overwintering your bees and do not take some bees and brood away from them, you will lose a lot of them to swarming unless you are able to manipulate your colonies every few days. If you have more than one apiary, this would be difficult to do. Using the management practices described, your overwintering, colony increase and swarm control are all a part of one overall management plan.

It is probably that overwintering will become an increasingly attractive option to beekeepers in the decade ahead. Package bees are not cheap, and the price of fuel and other operating expenses for migratory beekeepers will undoubtedly go up faster than the price of honey; also, one must move a large number of colonies to make lengthy moves profitable. Indoor wintering is an exciting possibility for those with enough colonies to justify the initial investment, but for most beekeepers, outdoor wintering will remain the most economical option. Beekeepers who regularly prepare their bees carefully for winter expect a 5% loss, but anything over 10% can usually be attributed to inadequate preparation. Overwintering too many colonies and not properly preparing those that are overwintered are the most common limiting factors in profitably managing overwintered colonies.

Continued on next page



The Tinker Strikes

By R.G. BYRNES Rt. #2

Fredricktown, Ohio 43019 "Finally!" I exclaimed loudly. "I know what I am. What I was destined to be for the rest of my life."

My wife who was kneading bread said disinterestedly, "Whats that?"

"A Tinker." I was reading the dictionary. "It says here a Tinker is someone who repairs, adjusts, or experiments."

She leaned over my shoulder. Her flourcoated finger moved up the page. "It also says here a Tinker is an itinerant mender of household untensils or an unskilled mender." She turned back to her kneading mumbling, "If that word started with an S.....

"I heard that", I said feigning anger, "and I liked my definition better because it fits me. I'm a Beekeeper."

"That you are", she said philosophically.

"All right. You're the master bottler and label sticker-oner. I'll give you that but the Tinker is the one who comes up with all the schemes, projects, and experiments."

Although her back was turned toward me, I knew she was laughing. She turned around giggling, "Its a bird, its a plane, no...its Super Tinker!"

I couldn't help smiling, "How about...the Tinker strikes again?"

"Okay", she said. What's this all about. What scheme have you cooked up this time?"



Photo 1. Inserting Spacers

"As you well know, we have a litle void in our honey sales. A few years back we purchased those plastic cut comb boxes to market comb honey. Remember how





Photo 3. Box Ready For Foundation.



Photo 4. Inserting Foundation.

disappointed we were when we didn't sell as much as we expected? So I quit on the cut comb project. Now each year we're getting more and more requests for comb. I know how we can fill those orders easily and still produce a marketable package."

She appeared interested so I continued. "I happen to know that three of the cut comb boxes will fit in the center of a standard super frame with some space left on each end. Suppose we insert spacers to fill those voids in the frame."

"Then we'll cut off the bottoms of the plastic boxes with the table saw. We'll cut centered saw blade groves in opposing sides of the now bottomless plastic box."

"We'll insert a piece of cut comb foundation through the grooves and crimp it down. We can wrap a strip of duct tape around the boxes to hold the wax in place and keep the sides free of bee tracks and propolis."

"I'm sure a strong colony will accept one or two of these tinkered frames in the center of an eight or nine frame super at the start of a good honey flow."



Photo 5. Crimping Wax.



Photo 6. Applying Duct Tape.



Photo 7. Finished Comb.

"The wax foundation will maintain its taut position and won't balloon or slip as sometimes happens in full cut comb frames."

"We won't have to cut comb and wait to drip dry before packaging. No frames to clean up. Just insert new prepared plastic boxes in the original frames."

Continued on next page

Heads Of Grain From Different Fields



Photo 8. Plastic Top Installed.

"This will not induce swarming and it's an inexpensive and unmessy method of producing some comb honey."

"The comb is sealed in the box by the bees. We just snap the plastic lid in place to protect one face of the comb and cover the other side with plastic wrap. Place this in a comb honey carton and Voila! The Tinker has struck again."

She laughed, "I just love it when you speak French but it does sound workable. Do you suppose we could patent it?"

"I've been thinking about that too. You've read about Cobana and Ross Rounds?"

She nodded.

"We could get some manufacturer to make the boxes with the opposing grooves built in. Maybe a little heavier box would be better. We could have wraparound labels printed up. We could call them Tinker Squares and we could...."

I'm sure she had some mending or urgent house cleaning to do because she left the kitchen rather hurriedly.

Beekeeping In Partnership By EMMA MAHONEY RFD #1 Box 83 Altona, NY 12910

I am a member of a small group of women known as "Beekeepers' Wives". Over the years I have noticed that we haven't gotten very good press. I would like to remedy that now and clear up some of the common misconceptions concerning a beekeeper and his wife. First the

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myths! A beekeeper has to put himself against his wife in order to keep his beloved bees. She is usually characterized as either indifferent or hostile to the bees and "is not allowed" or "wouldn't be caught dead" in the honey house. If, by any chance she does try to help, she can be counted on to be a "well-meaning" klutz, dropping bees or honey at inappropriate times. On the whole, she hates the idea her husband is involved with bees, or at the very least, thinks it's strange for a grown man to be enamoured of insects. All in all, no asset to the operation!

As we see it, however, beekeeping is a business which lends itself beautifully to a husband-wife partnership. Rather than dividing the matrimonial bond, we feel a strengthening of our relationship through a shared endeavor. This is how our partnership evolved.

Steve and I have both always agreed that we would eventually own and operate our own small business. We wanted something that would involve both of us as well as our daughter, thus insuring a close family bond. It had to be something that we could get into gradually, as we didn't have a lot of capital to invest. Of course, we also wanted to enjoy what we were doing! Steve's interest in bees seemed to point us in this direction and the adaptability of the beekeeping business to our particular needs, sealed the course.

Our house was chosen with beekeeping in mind, having a beautifully southsloping hill for an apiary site, a large barn for storage and an old milk house which has since become our honey house.

We make all our own equipment, fromthe bottom boards to the hive covers. Steve cuts out all the pieces on the saw, while I have become very proficient with a hammer, banging everything together. I have also put in many an hour in the frame department. Because Steve works a 9 to 5 job, I have had to carry a great deal of the responsibility for our fledgling business, but I also had an immense amount of satisfaction when we harvested our first honey crop and I realized that I had helped earn that money.

We are at the beginning of our third season and have had our "ups and downs" for sure. We feel, however, that the most important thing we are gaining is experience. Each year we expand our number of hives and dive a little deeper into the business of keeping bees. This year, for example, we pollinated two of the local apple orchards. We are also trying a new method of swarm control using a double-queen system. I find it all fascinating and feel I have matured as an individual in learning to cope with the failures and mishaps that are part of any business venture.

Lest you think our daughter, Katie, is left out, let me assure you she is not! She

is in there pitching, be it making equipment or extracting honey. Especially eating, I mean, extracting honey! She also accompanies us on all our trips to the out apiaries, donning her own custom made beesuit. She brings some toys to play with while Steve and I work the bees and occasionally helps us by holding a frame or fetching things for us. Her favorite job is smoking the bees. I think she is the only five year old beekeeper in town! When the work is done, we find a nice spot and enjoy a picnic. What better way to spend the day!

Let me conclude by saying that we have no guarantee for success. We can only work from year to year and continue to build up our business until we reach the point where it will support us, and Steve can work at it full-time. Whatever the outcome, however, I think we have proven that matrimony and beekeeping not only mix, but, when combined, produce a lifestyle that's hard to beat!

My Bees

By STEVEN C. PAUST

I hope you all read my article in *Gleanings*, titled, "How I Got My Beehive". That article was in the June 1982 issue. I am now writing a follow-up to that story.

I stated, in my previous article, I was going to purchase a 4-frame nuc from Fred Munzer of E. Northport, N.Y.. Well I did; and this is where my story begins.



In this picture I'm holding up a brood frame. I very much enjoy keeping bees.

During the winter of 1982 I assembled my hive I bought from Barry Semegran in Georgia. Every dovetailed joint fitted perfectly, and the frames were also easy to assemble. The sweet smell of the foundation and cypress wood will always remain in my mind. With the hive completely assembled I admired the work I did and then several days later I gave it several coats of woodlife to make the hive last much longer by preventing rot.

Continued on next page



After letting the smell of the woodlife go away in several weeks, I then painted my hive with a good oil-base paint. After letting the paint dry for several days I tucked the hive away down in my basement until spring.

I then decided it would be easier to start from a nuc rather than having all the problems of setting up a package hive. I wrote to Fred Munzer, a master beekeeper and a local supplier of bees, and asked the prices of the nucs. He then wrote back telling me the prices and the price was fairly reasonable so I sent him a deposit for the nuc and he said he would write me when they were ready to be picked up. The long process of waiting several months began so I took this opportunity to read all I could about bees. I also wrote to many other beekeepers asking questions. This is one thing that many beginning beekeepers should do either by joining a local bee club or writing to others.

I also made friends with a local beekeeper named John Arleth. He volunteered to help me install my nuc when I picked it up.

The librarian at my Junior High School is a beekeeper named Lyle Parrish. He helped to answer my questions and we would exchange bee magazines. He took me to look at his 12 hives and showed me the queen, brood and other important things.



Here you see Mr. Arleth transferring a frame from the nuc into the hive. Note: he isn't wearing any gloves or vell.

One day in late April I received a letter from Fred Munzer saying my nuc was ready to be picked up. My father drove me to E. Northport where Mr. Munzer lives to pick up the nuc. When we got there he greeted us outside and brought us to where the nuc was nestled in front of some bushes. The nuc had a screened entrance and you could hear a light hum. from the bees. After talking about bees a

Continued on next page



Heads Of Grain From Different Fields Continued from page 474



In this picture I pointed to the queen Mr. Arleth just removed.

while, we then loaded up the nuc into the back of my fathers truck and drove carefully home.

Only one bee was flying around in the back of the turck when we opened the truck door. We then carefully carried the nuc to where I already positioned the hive. I then opened the screen covering the entrance of the nuc as instructed by Fred Munzer. As I did, a great number of bees came rushing and tumbling out of the nuc and flew around. This did, in fact, scare me since this was really my first exposure to bees. The bees were very gentle, though, and it was toward dusk so they became quite calm.

That night I called up John Arleth and asked if he could help me install the nuc. The next morning he came to install the nuc. As you see in the pictures he used no veil or gloves. This can be a mistake that new beekeepers make. Until thoroughly comfortable with bees you should at least wear your veil because stings near the eyes or nose hurt much more and swell up more than normal stings.

Mr. Arleth then proceeded to remove the frames from the nuc. As he did I spotted my marked queen running along the frame. We then had all the frames of bees in the hive, but there were still a lot in the nuc box so Mr. Arleth dumped them all in front of the hive. That day I was sitting by the hive watching the bees busily entering and leaving the hive gathering their nectar and pollen and pulling out the old and weak bees that didn't make it.

I kept on feeding the bees until all the foundation was all drawn out, and I did manage to get about 30 pounds of honey the first year. During the fall I left two hive bodies and one shallow super filled with honey for the bees to winter on. All the bees lived and the first load of pollen was brought in on Feb. 25, 1983. I noticed the bee bring it in while watching them.

I do like and enjoy my bees and whenever someone comes over and asks about the bees I can now say these are my bees.

First Adventures In Moving

By MRS. VELMA L. CLINTON P.O. Box 1098 Hope Valley, RI 02832

Although I'd kept bees for four years, ranging from one to four hives. I had never moved a hive, but when I got an opportunity to buy three hives, each in three deep chambers, for a total of \$150, I jumped at the chance. I had a friend who wanted to start keeping bees; she was planning on buying new equipment and ordering two packages with queens in the spring so, when I asked her if she would be interested in buying two of the hives, she was very enthusiastic. As I didn't have a truck, the seller agreed to deliver all three hives to my house, from which my friend, Denise, would move her two hives in her pickup truck to her place, about 20 miles away.

The weather was chilly and the bees settled down while it was still light, enabling the seller to get an early start; he delivered the bees at dusk, with the entrances closed with screening. Before he left, while the bees were still very upset by their jostling, he removed the screening, receiving about a half dozen stings for his trouble. He was, by his own account, violently allergic to bee stings and, as he gave a running total of stings as they occured, my nerves were crawling like a can of worms by the time he departed.

The next day I called Denise who said she would pick up her two hives that evening. Once again it was chilly and the bees settled down early, so I put the screening back in the entrances around 4:30 P.M. Denise showed up slightly after 8:00 P.M. and, being the middle of October, it was pitch dark. She had brought a friend with her to help load the bees. As he and my husband hefted one of the hives onto the truck, Denise noticed that some bees were loose. Using a flashlight, I checked the entrance and sure enough, the screen was bent, allowing bees to get out. With the light shining on the entrance, attracting them, a quantity started to emerge. I quickly turned the light off and used an old rag to close off the bent area. This solved the problem, with only two slight stings being received by me, but they were richly deserved since my carelesness had caused the trouble.

I then used a piece of wood to completely seal the entrance of the other hive and the men moved it onto the truck. Wishing Denise good luck, my husband and I went into the house and Denise and her friend drove off with the bees.

About two hours later the telephone rang and a highly excited, almost distraught, Denise was on the other end. When she had finally gotten home, after a very slow trip over very rough, very hilly roads, with the hives sliding around in the back of the truck, she found that she couldn't put the bees where she wanted because a backhoe had been left in the way. In addition, her friend had gone home so she didn't have anyone to help her get the bees off the truck. She wanted to know if it would be alright to leave the bees on the truck and take them back and forth to work with her the next day, leaving the screens in the entrances, since the truck was her only means of transportation. I strongly advised against that plan, telling her that if she could get the bees off the truck, onto the ground, it would be OK to leave them there for a day, until she could move them to their permanent location the next evening. I also advised her to take the wood entrance closure off as soon as she got the hives off the truck in order to give the bees some ventilation, and that she could leave the screens on until morning, when the bees would be calm and she could take the screening off without being stung. She said she would ask her father to help her get them off the truck, so we bid each other goodbye.

When I told my husband that Denise had only her father to help her, he hit the ceiling. He said the hives were much too heavy for Denise to handle, and that I should have told her we were coming to help. I called her back, to say we would come, but her father answered. He sounded as though I had awakened him; I was sorry about that, but at that point I would have awakened Rip van Winkle if it would have done any good. I asked to speak to Denise but he didn't know where she was, whereupor I explained the situation and asked him to have her call us before trying to move the bees. We had to talk to her in order to get directions to her home.

Well, my husband and I sat, and stewed, and worried, and waited. My husband took a gloomy joy in forecasting that Denise would attempt to lift the hives from the truck and one or the other would slip from her flimsy fingers, crash to the ground spilling zillions of angry bees, and our next news would be from the local hospital. Quite a bit of time passed before Denise called back. She was still excited but more triumphant than otherwise. She hadn't gotten her father up because her brother had come home and it seems that despite the great weight of the hives, desperation had lent strength to her arms and Denise had, with the aid of her brother, removed the bees from the truck with no one getting stung. I was very relieved to know that things had gone so well and advised her, before moving the bees again the next day, to stuff their entrances with grass instead of the screen-

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Heads Of Grain From Different Fields Continued from page 475

ing and to leave the grass in the entrance overnight, until about noon the next day. This would help signal to the bees that they had been moved once again, and encourage them to reorient themselves as they would only be moved about 100 feet.

When next I heard from Denise, the bees had been moved to their permanent location and were busily going about their business. Knowing that bees have a very keen sense of smell, she had used grass taken from their permanent homesite to close off the entrances, with the hope that the smell, plus being confined in the morning, would help them find their new location; it must have worked because there were no lost bees flying around the original site.

This was a first adventure in moving bees for both Denise and myself. Some things didn't go too well, there were some mistakes and some scary moments, but the move was a success and we feel confident that if the need arises, we'll do a better job next time.

FREE By ERNEST WHITE Pinehurst, Texas

"If you can get the hives out they are yours...by the way they haven't been worked in two years." Twilight removal of said bees in July resulted in near heat exhaustion, one pick-up truck bed seething with disoriented three-banded Italian bees, and three weather ravished hives. In bee removal of this type, advice is freely given but actual assistance scarce.

The next morning revealed a mess. Not only were the rabbet joints broken down but phylum cousins of the "Apis" were tracking in and out of the cracks...ants.

Our local barber shop bee tutor said transfer of bees and destruction of old hives seemed to be the obvious but difficult solution. Never suggest this procedure to the uninitiated. After the failure of less direct methods, I created a feeding frenzy unequalled in the piney woods. The midsummer breeze wafted strong wild honey, melting beeswax and angering bees. Nonverbal communications were popping against my bee veil.

Having only two complete hives I desperately needed another complete deep super. The "here and now syndrome" separated me from clear thinking and hard earned money. A local "good ol' boy" helped solve my problem. Temptation was just too great, ie., the inexperienced buyer meets the experienced seller. Satisfying the "here and now syn-

drome" proved that convenience costs. I should have borrowed a bee supply catalogue and practiced patience.

In conclusion, to paraphrase one of "Murphy's Laws," "Every beginning beekeeper has a scheme for getting free bees that does not work."

There Are Robbers In My Apiary By PATRICIA R. YUNKES 18265 Rt. 700 Hiram, Ohio 44234

My first experience with bees robbing honey came as I was finishing a job taking bees out of a house. I had exposed the nest from the outside of the building and had removed most of the comb and bees. There were a few bees still flying around and landing, and as I vacuumed, I thought to myself that I could spend "forever" on these few bees, as they never seemed to diminish in number.

Then the realization came that these were not just field bees returning to their hive, but robbers coming from a nearby aplary or wild nest taking advantage of the free honey. As I was satisfied with the amount of bees I had and didn't have "forever", to add a few more to my vacuum, I packed up my equipment and left the meager supply of honey that remained to the robbers.

That experience was often repeated and made me aware of robbing, but left no lasting impression. My head is pretty dense and sometimes it takes a real blow to knock some sense into it. That blow came from a tree that had fallen in a heavy windstorm.

The storm came about 6:30 a.m. in late spring. My husband and I had hoped for a few extra hours sleep on that Saturday morning, but that was out of the question. Snug under the covers, we listened to the wind buffeting the house and trees and prayed (as usual under those conditions) that the large oaks and maples in our front yard would weather the storm and spare the cars parked beneath them.

The storm was of short duration, and by 8:30 my husband was helping neighbors clear debris off the roads with his chain saw and I went out to check my out yards to make sure there was no damage to my hives.

Around noon, I was home again, gathering up sticks blown down over the yard. The cars had been spared, but those trees had shed a fair amount of twigs. The phone rang and it was a friend who is caretaker of an estate about 10 miles away. A bee tree had blown down, and was I interested? Of course I was, but our chain saw was in use and I didn't know when it would be free.

"Now sweetle pie", you all jest ain't

listenin''', his southern drawl enhanced his 70 odd years of charm. "The Missus, she wants them bees gone, so I'll git some of my boys to cut out the part of the tree with them bees in it, and we'll jest lay it realy gentle like right on the back of your truck. All you have to do is git on o'er."

Now, what beekeeper could resist that? I grabbed some bee equipment, plastic sheeting, screening and masking tape and was on my way.

The tree had cracked right through the bee's nest and along with their entrance made a pretty large opening. However, the bees were quiet, and I taped the screen over the hole. As his boys cut the log, I applied plastic to any other places bees could escape. They loaded the four foot section on my truck and away I went. This was the easiest bee log I had ever obtained.

As the day had gotten warm I decided to remove the bees right away. I parked my truck by my front door, and ran an extension cord through the door to my bee vacuum. The honeycomb was fully exposed from the entrance hole and the crack in the log, and on one end where the chain saw had cut through the end of the empty chamber the bees were nesting in. All I had to do was remove the screening and plastic vacuum.

In 45 minutes, I had removed all the comb and was intent on cleaning up the remaining bees. First I sucked up most of those near the entrance hole, as some bees had taken flight and were landing and some inside moved back and forth, away from the vacuum.

Ten minutes later, I was still vacuuming and ten minutes after that there seemed to be more than when I had started. If this kept up, I would have to change cages inside the vacuum so the bees would not become overheated and die.

I paused for the first time since I started, looked up. I couldn't believe the sight that greeted me! The air was filled with thousands of bees. The front of my house, the truck and the whole yard was alive with them...they were simply everywhere.

Two thoughts hit me instantly. Robbers! My own bee yard was robbing and I was vacuuming up my own bees. My other thought was a silent prayer, "My God, don't let anyone come in the drive, especially my husband! Anyone who came into that mass of frenzièd robber bees would get a surprise he wouldn't soon forget.

I yelled at grandpa and my son to stay inside, and started cleaning up. I drove the truck to the back yard, put all my tools under cover until I could clean them, then hosed the truck and the log down. I also hosed the grass in the front yard, but it

Continued on next page

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was a full two hours before anyone could venture out. When my husband returned, he noticed a few extra bees around, but the crisis had passed, or so I thought.

A couple hours later, I went to put the new swarm in a hive. My aplary is in a small man-made clearing in our pine woods, about 500' from the house. When I arrived, the whole area was a frenzy of bees. There was no nectar flow at the time, and once they had gotten a taste of free-and-easy honey, they were looting every weak hive the could. Besides the bees in the air, and combat, there were dead and dying bees everywhere, both robbers and valiant guards, defenders of their homes. It was like a drunken orgy after a battle of war.

The first thing I did was to light mysmoker and smoke all the hives. As this calmed them somewhat, I pulled large clumps of grass and shoved them into the entrances, closing them almost completely, leaving enough room for only one or two bees to enter. Then I took my masking tape and sealed all other cracks in the hives. The heat of the day was over, but before it got hot tomorrow, I would bring some plastic screening and tape it over the ventilation holes, leaving it in place for a few days.

The bee yard settled down over the next few days, and I took the time to read up on robbing. I learned that when bees act suspiciously when entering a hive, flying around and hesitating instead of entering directly that they may be robbers. And if they drop a little when they leave, or climb up the side of the hive to fly from a higher vantage point, they are taking honey away, not bringing it in.

I usually have some robbing at my home apiary as I am always bringing in new bees and honeycomb, or splitting or experimenting with the hives there. But now, I take more care reducing entrances and sealing up holes in new hives, shading them if necessary. Weak hives always have only one entrance and all hives are kept as strong as possible. Splitting is not done unless there is a nectar flow. If I have to feed at a time when there is a dearth of nectar, I feed all hives (spring or late fall), or give the weak ones capped honey from another hive.

Above all, no excess honey is exposed in the open, Empty hives, tools and equipment should be cleaned immediately. I make sure honey supers have no holes in them, and extracted supers are placed back on the hives for cleaning right away, and never left to be robbed clean. I have learned to extract before the flow is completely over, and to seal my extracting room. You can imagine the plight of my basement one day when I arrived home with another load of supers from an outyard and found the door open. I vacuumed the basement windows for two hours before I would allow my husband access.

Sometimes my escapades with bees try his tolerance sorely, but I think he is amused at some of the situations I get in. I know I am. They help make beekeeping one of the most exciting things in my life. \Box

Harvesting A Bee Tree

By M.T. STAHL Rear 206 High St. Flemington, PA 17745



Photo 1. After the tree was felled the process of confining the bees to their home became the first objective. By cutting the tree at the point where we thought the cavity diminished, the first cut was made. By stapling the screen over the entrance and the exposed portion of the log, the colony was now partially confined.



Photo 2. The second cut was made to separate the tree stumpshot from the now

buzzing log, which was then screened over. Now came the task of transporting the log to the aplary for opening and transfer to a modern hive.



Photo 3. Upon arrival at the apiary the log was opened at the site that the new hive would soon occupy, then by cutting at a 45 degree angle in order to avoid mauling the intricate comb, the log was halved.



Photo 4. Shows the manner in which the combs were removed in order to tie them into commercial frames, starting with the bottom most combs fullest with brood.

Continued on next page

Continued from page 478 After removing the last

of the comb and tying it into place, we started smoking the adult bees into their new home. The last of them moved into the hive with a small cluster of bees still clinging to the log.



Photo. 5 The queen finally makes her appearance with the help of a little smoke.



Photo 6 Shows how narrow the combs were that we tied in.



Photo 7. Shows the final touches of the transfer. As an added note, we used cotton kite string to tie in the wax as it is easily removed by the bees after the combs are drawn out to fill the frames.

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Mead: Once More With Feeling

Beekeeping and the resultant harvest, honey, is cyclical—the old truism surfaces once again. When we get into a situation like the one we face now depressed market prices, Honey surplus, competition from imported honey—the people who know lean forward, furrow their brows and say very solemnly: "Better marketing. We need new markets for our honey."

A hush falls upon the assembled throng as they ponder this challenge until from the back of the crowd—a voice rings out: "Wait, wait, I've got it!" And a pink cheeked, wild-eyed visionary pushes his way to the front.

"Mead!" he breathes, his eyes glazing. "We'll make Mead. The Vikings made it, the Anglo-Saxons drank it, and the Hindus. We'll change the course of American wine consumption. We'll all be saved...we'll become rich..."

Well, we wild-eyed visionaries are all alike. We all think we've come up with a new idea. I barged into Jim Tew's office, pink-cheeked to offer my vision-only to discover that Roger Morse had had the same vision in 1950. I had entered into the visionary fraternity where they give out pink cheeks and glazed eyes as membership badges. Dr. Morse, in his excellent book, Making Mead, comes to the conclusion that the future of honey drinks is limited, but adds that a good promotional program may prove him wrong. After all, Perrier convinced thousands of Americans to drink imported French water at premium prices.

William Oliver and his family are doing all they can to pick up the gauntlet and make mead a viable commerical commodity. Oliver is a professor of law at Indiana University in Bloomington, Indiana and the owner of Oliver Vineyards, producers of Camelot Mead. The mead accounts for 75% of their total sales.

Although they have been producing Mead since 1974, the Olivers' aggressive marketing techniques are a recent development. Oliver's son, Bill Jr., a recent marketing graduate from Indiana University, is handling marketing, advertising and retail relations for the vineyard. As a result of these intensive marketing efforts, Camelot Mead is now being distributed thorughout the eastern United States and Texas. In addition, Camelot Mead has recently entered the export market.

By PAMELA J. SPENCE 510 Lincoln Street. Wooster, OH 44691

"My father is a friend of Birch Bayh," says Bill Jr., "and Bayh introduced us to Mr. Luu. Mr. Luu has offices in Indiana and Hong Kong and specializes in exporting Midwestern agricultural products to Hong Kong. He went crazy over our Mead. He even served it at his daughter's wedding. So now we are exporting to Hong Kong to a distributor who covers South Korea, Japan, Taiwan, the Phillipines and Singapore. We have been aware at trade shows, for instance, that people from Asian cultures seem to like the Mead even more than do we Westerners."



Bill Oliver, Sr., Mead Master and Chic Dresser.

The Olivers have used some creative marketing techniques in promoting their mead. They have targeted large outdoor festivals, particularly Renaissance fairs. "We have a hot air balloon that carries the Camelot Mead logo," says Bill Jr. "It gives us a lot of leverage for getting into festivals. We've found that the balloon is relatively inexpensive as compared to other forms of advertising. Plus I get to fly it," he adds, smiling.

Camelot Mead had been to a wide variety of festivals in Indiana, including the Rose Festival, the Mermaid Festival, music and Oktoberfest festivals. But the grandest of them all, of course, is the Camelot Mead festival held at the winery every year, the first weekend in June. The festival is a two-day affair drawing several thousand people to view the continuous entertainment and sample the wine. This year, the Olivers had lined up Morris dance teams, gypsy dancers, jugglers and mimes, musicians, magicians, and craftsmen. In collaboration with the Bloomington Society for Creative Anachronism, they staged jousting tournaments, and Medieval fighting tournaments.

Bill Oliver got hooked on Mead when he was teaching at UC-Davis and met Earnest Lane. Lane had devised a formula for making mead — a formula that Oliver purchased for use in his winery. "Dad liked the wine a lot and saw the possibility of making our winery something different," says Bill Jr.

This winery is different all right. When I asked Oliver's wife, Mary, how I could find Bill Oliver Sr. at the Mead Festival, she said, "You won't have any trouble finding him—he'll be the one wearing the horns," And he was.

The Olivers have started something by commercially producing and marketing their mead. As more people find out about mead, try it, like it and begin asking for it in wine stores, we could conceivably realize a whole new market for honey.

There are, in addition, a number of books on the market that provide information on home mead making. Just picture yourself on a snowy Christmas eve, dispensing steaming mugs of homemade spiced mead, made from the honey of your own hives. Warm compliments to the beekeeper-winemaker ring out — because after all, that honey wine can give you quite a buzz.

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[Presque Isle Wine Cellars, 9440 Buffalo Rd., north East, PA 16428. Catalogue #15 "Everything for the Home Winemaker" **the last is a source for winemaking supplies at reasonable prices.]

*Address for Oliver Winery: 8024 N. St Rd. 37, Bloomington, IN 47401.

The Mouth Parts Of The Honey Bee

The mouth of an insect is a very important structure because in many instances it can be used either as a tool of destruction or of construction. The type of damage an insect mouth can cause depends upon what type of mouth it is. The wax moth larvae found in brood combs of weak colonies or in the combs of stored hives have a chewing type of mouth. Needless to say, insects with chewing mouths often cause a great amount of destruction, especially to plants and stored products. The presence of holes in these materials are frequently the symptoms resulting from this type of feeding activity. The adult wax moth, however, has a siphoning-type of mouth which really is not capable of causing damage.

Another very destructive type of mouth is the piercing-sucking type. The mosquito and the aphid are examples of insects having such. The symptoms in this case may be a swelling on the skin of the subject the mosquito fed upon or a brown spot on the plant where the aphid mouth punctured the plant. In both cases, saliva is first injected and then blood or plant juice are sucked into the insect. The house fly has a sponging mouth and the thrip a rasping-sucking mouth.

However, the most useful and versatile insect mouth of all is the type found on the honey bee. It is referred to as a chewing-lapping type mouth. It consists of four basic parts: the labrum the madibles, the maxillae and the labium (Figure 1).

LABRUM—The small flap on the lower front face of the honey bee is called the labrum or upper lip. It is located between and in front of the base of the mandibles. It serves as a protective covering for the upper front of the mouth. It is believed organs of taste are located on a small lobe attached to its inner surface (Root, 1978).

MANDIBLES-A pair of jaws or chewing structures called mandibles are located on each side of the lower part of the head. The mandibles move from side to side and meet in the front midline of the head when closed. The queen honey bee has the largest mandibles, the worker second largest and the drone the smallest. The mandibles are used by the worker bee to perform work. One might compare them to a pair of pliers used by a mechanic to accomplish certain tasks. They are used to drag dead bees and intruders out of the hive, to hang on to each other at times in the colony, to shape and construct the wax comb cells, to cap and uncap the cells, to clean bits of debris from the cells, to feed on pollen (beebread), and to support the base of the proboscis (maxillae and labium) when feeding on nectar, By DR. MARK E. HEADINGS The Ohio State University Agricultural Technical Institute Wooster, OH



Figure 1. The chewing-lapping mouth parts of the worker honey bee.

honey or water.

At the base of each mandible is a small opening leading to a mandibular gland located in the head of the bee. These glands in the worker bee are smaller than those in the queen but larger than those in the drone. The glands in the worker bee produce a liquid which is thought to be used by the bee to soften wax (Dadant and Sons, 1975). The mandibular glands in the queen produce chemical materials known as "Queen Substances" which among other things are believed to signal the presence of the queen and attract workers to her.

MAXILLAE—Two thick elongated structures attached behind the mandibles and hanging down each side of the central tongue-like structure are called maxillae. There is a very short maxillary palpus (which is difficult to see) attached to the upper part of each maxilla. In some insects with chewing mouth parts, these antenna-like palpi are quite long and probably serve a sensory function. The maxillae serve an important use by enabling the bee to imbibe liquids.

LABIUM—The labium is also referred to as the lower lip. In the honey bee it takes on the form of a central tongue-like structure which has two labial palpi attached to its sides. These antenna-like palpi have four segments and are much longer than

the maxillary palpi. They also probably serve a sensory function. The terminal half of the tongue-like structure is called the glossa. It is comprised of a series of hard rings connected with membrane, thereby allowing it to be shortened and lengthened. A flexible rod running inside the length of the glossa is attached to muscles which control the glossal length. When feeding on honey, the worker bee bends its glossa back on the surface of the honey and moves it back and forth in a lapping motion. This movement is apparently produced by the rod muscles (Dadant and Sons, 1975). The maxillae and labial palpi, when held against the sides of the glossa, form a food canal through which nectar, honey and water are sucked up into the mouth. When these mouth parts are not being used, they are folded up against the lower side of the head with the mandibles clamped shut around them at the base.

Another important role of the mouth parts is their sensory function. One of the more significant sense organs involved is that of taste. Honey bees can apparently distinguish between sweet, sour, salty and bitter tastes (von Frisch, 1971). The sugar concentration of a nectar may determine whether or not bees will forage a given plant source. They tend to prefer the richer nectar sources and when finding them imbibe greater quantities of the nectar. The mouth parts undoubtedly also contain sense organs of touch and possibly even smell. The hairy glossa, the palpi and inner side of the labrum are likely the more significant sites of sensory organs on the mouth parts.

In summary, the chewing-lapping mouth of the honey bee is extremely useful for constructing and cleaning comb, protecting the colony, cleaning the hive and for selecting, gathering, sharing and storing food. It is a marvelous device when considering the variety of functions it has and the precision with which the honey bee performs them.

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Wintering the Honeybee Colony Introduction: Ventilation Part II

Beekeeping Practices

F.E. Todd was of the opinion that M. Quinby's substantial contributions to apiculture have been neglected42. An example of Quinby's rational approach was his practice from 1843 onwards of wintering his box hives upside down in a dark room. He attributed the successful results to the improved ventilation that permitted the moisture produced by the bees to escape43. Also in 1843, E. Townley's "treatise" appeared with a chapter on ventilation that clearly spelled out the importance of providing for the escape of excess heat in the summer, and excess water vapor in the winter. His patent hive accomplished this with a wire screen bottom, and ventilator at the top44. T. Nutt's earlier "collateral hive" had a 1 x 9" perforated cylindrical tube in the center, as well as four 3/," holes in the corners of the hive. A thermometer placed in the tube was used to observe hive temperatures as an indicator of when to undertake measures to prevent swarming45. V. Shaparew and P. McTaggart-Cowan have also stressed the importance of ventilation during the summer to prevent swarming, and to secure a maximum collection of nectar**.

The 1879 "Conversazione" by the leaders of British apiculture" exemplifies the observation in 1895 by F. Benton, the first American federal apiculturist: "... the question of ventilation ... has occasioned more discussion and experimentation than any other point concerned in the wintering of bees. The amount of ventilation both indoors and outside, whether upward ventilation or lower ventilation, or both, and whether through the wooden walls of the hive alone, have given rise to thousands of experiments based on all sorts of theories and innumberable losses have resulted. The matter is really more complicated than would seem at first thought"48. How cogent Benton's view remains today will be seen in the review of literature that follows, the ongoing discussions of wintering whenever two or more beekeepers assemble, and the increasing attention given to the subject in recent bee journals49.

L.L. Langstroth, one of the early promoters of beekeeping in the United States, suffered a loss of 19 of his 20 colonles during the winter of 1855-56. Since the single surviving colony was housed in a hive lacking a bottom, and the box for surplus had one-inch holes open to the north, Langstroth concluded that ventilation was an important ingredient for success in overwintering. He advocated an By T.S.K. JOHANSSON And M.P. JOHANSSON Queens College of CUNY, Flushing, New York 11367 And Queensborough Community College of CUNY, Bayside, New York 11364

upper entrance with the bottom entrance closed during the winter50. In Langstroth's first edition, the chapter on ventilation in cluded six pages devoted to the subject of ventilation in human habitations for the promotion of good health. This material was greatly reduced in the third revised edition, the the focus of his discussion remained the promotion of upper ventilation as a feature of his patent hive. Although No. 26 in Langstroth's list of "Requisites of an improved hive" specified ventilators owing "their efficacy mainly to the cooperation of the bees themselves", his patent did not specify such as a hive in-vention. As a matter of fact, the "ignorant and careless...are advised never to open the ventilators unless when their bees are shut up, for any reason, in the hive"51. One of the first books on beekeeping that Langstroth acquired was by E. Bevan where he was introduced to R. Golding's experiments on the Greek hive, and the concept of the bee space that Langstroth used in designing his own hive32. Bevan had little advice on wintering but did realize that ventilation continued, "to a certain extent, even during the depth of winter53. In his copy of C. Butler, Langstroth would have read that the bees fly out when warm enough through the "winter doors"54. V. Shaparew's recent "honey drying ventilator" is also described as an "automatic device using a bimetallic thermostat set to open a door at 68-70 °F."55

When J.E. Crane of Vermont packed his single story hives for winter he incorporated a tin tube to provide ventilation and to serve as an exit when the bottom entrance became clogged with ice56; as did V.M. Tetushev and A.G. Chetaev59, Such a temporary upper vent should not be confused with the practice advocated in the northwestern U.S. and British Columbia in the late twenties of using a top entrance throughout the entire years. A.W. Finlay stated that A.C. Miller had urged F.D. Todd to undertake experiments. Todd passed the idea on to Finlay who inititated investigations in 1921. Although Sheppard's brief 1923 report went unnoticed, Finlay's 1927 article did create interestse. In Hungary, M. Boczonadi's controversial large hive (4300 in 3) with a top (middle) entrance had been widely accepted after its introduction in 1902**

The 4th edition of the British Columbia Bulletin contained an insert "Directions for using the 'top entrance' to avoid the problems experienced with its use"". Sheppard recommended the entrance be shifted to the "middle" position below the broode2 and also modified the design so the frames in the lower hive body could be lifted without first removing the en-trance⁴³. N. Baker found that colonies provided with middle entrances had lower mortality and more brood compared to those with bottom entrances only. Colonies with both middle and lower entrances were not significantly different although there was greater variation in the results⁴⁴. By 1938 the revised Sheppard bulletin contained directions for making a simpler upper entrance in the cover for ventilation during the winter months only. This seems to be the type on one of Charles Courtman's hives illustrated in a photograph (1922?) in the earlier editions of the bulletin. Entrances in any position are fine as long as they are in place, but when removed the air space where they were is quickly full of returning field bees seeking the missing entrancees.

E.W. Brown of Illinois had started using a top entrance about 1903 with the assistance of a hoist to lift the brood chamber(s) when he needed to add or remove a honey super from underneath the brood chamber(s)**. In 1933 H.J.W. Lipsett reported his use of the top entrance, and that the Alberta research station had studied the practice for four years. The editor of the American Bee Journal referred to Lipsett's article stating that upper entrances to "take the cellar out of northern beekeeping" were used by a number of beekeepers⁸⁷. C.C. Miller reminded his readers that the Luneburg (Germany) and Dutch beekeepers had used skeps with a top entrance exclusively for centuries. It was claimed this prevented moldy combs and diarrhetic bees in winter®. A. Latham in Connecticut found top entrances unacceptable for summer use, but advocated them during the winter to avoid wet, moldy combses.

W.F. Clarke, exponent of hibernation theory for successful wintering, had admonished beekeepers to be wary of allowing too much ventilation and noted that in Canada, D.A. Jones kept entrances nearly closed⁷⁰. There were many disastrous losses as a result⁷¹. E.F. Phillips was perhaps the most prominent opponent of hive ventilation. He considered the lower entrance "the weak place in hive insulation", and recommended reducing it during cold weather to a single ³/₄" auger hole

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Ventilation Part II

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to prevent the loss of heat. He was not concerned about providing an upper entrance for the escape of moisture on the grounds that "... if a colony is sufficiently packed, moisture does not condense, except possibly at extremely low temperatures.. The beekeeper...should not count his bees well packed for winter so long as he must provide for the escape of condensed moisture"72.

Jay Smith provided 1x4" entrances in a tunnel underneath the hives in his 8-colony winter packing case to minimize the effect of wind action through the hives. He understood that the bees would be obliged to fan in order to create an exchange of air, and that during cold periods the moisture from the saturated air condensed and froze in the tunnel. In extremely cold areas, he suggested placing a layer of tar paper as a moisture barrier between the inner wall of the wintering case and the packing material to prevent accumulation of moisture which would reduce the value of the insulation73. Phillips recommended that covers sealed down with propolis by the bees be left on the hives when they were packed to prevent moisture from getting into the packing. But Krause lost 43 of 44 colonies in packed hives; the exception had a warped inner cover that enabled moist air to seep into the 8" packing above74. Often moist air does enter the packing material and condenses against the cold cover of the packing material and condenses against the cold cover of the packing case. Dyce and Morse considered packing material the appropriate exit for moisture and advised against top entrances75.

In 1937 an article was published in Gleanings In Bee Culture by H.A. Schaefer, a Wisconsin commercial beekeeper, relating his favorable experience with top, middle, and bottom entrances during the winter: 1) They eliminated the danger of the bees suffocating when the bottom entrance was clogged with dead bees or ice and snow, and also the need to visit apiaries hundreds of miles away to clear out clogged entrances in cold weather; 2) top entrance tunnels were kept warm and bees were able to fly and carry water on warm days during the winter; 3) very little heat was lost from the entrances (confirmed by E.J. Anderson4; 4) the average colony was stronger and ready to be divided at the time of unpacking (May 1 in Wisconsin; May 25 in northern Minnesota)76. An editorial in the same issue invited further discussion" and in 1938 readers comments were solicited on the question: "Shall we have only a bottom entrance, a top entrance, or both?". Belatedly, the publishers of Gleanings also joined in the debate as to whether the orthodox recommendations for wintering were based on valid principles backed by positive data.

Replies to the above queries ranged from the analogy of a baby swathed in blankets replete with top breathing hole by supporter J.F. Norgren⁷⁸ to reasoned opposition to top entrances by G.D. Morse", and indicated a lively interest in the subject. The dominant contributions were from John Conners of New Jersey, an associate editor of Bee Keeper's Item who had promoted the importance of ventialtion, particularly where winter loss was caused by excessive moisture*0. By the end of the Confab series, E.R. Root published the first portion of an entirely new article on wintering for the forthcoming 1940 edition of the ABC & XYZ of Bee Apiculture¹¹. It included the revelation that the Root's had for many years lost colonies overwintered in heavily packed hives that became wet from moisture condensing in the packing. These losses had been replaced by purchasing bees in all sorts of warped, leaky, nondescript old box hives--without it occuring to anyone to wonder why the colonies in these dilapidated hives wintered more successfully than those packed so carefully in the orthodox manner! Colonies in such neglected hives are reputed to survive winters better provided they are strong and have sufficient stores⁸².

The decision for the new orthodoxy was in favor of using a reduced bottom entrance plus an auxillary top entrance 1/4 -1" in diameter during the winter rather than a permanent, exclusive top entrance. There were objections to the year around top entrance: 1) returning field bees remained in flight around the hive during manipulations; and 2) manipulation of honey supers was complicated by the fact that the brood nest was located at the top of the hive below the entrances. If the bottom entrance was closed during the winter, there was a disruption of the colony each time the shift was made¹⁴. More recent studies to ascertain the results of providing various degrees of ventilation are described in next month's conclusion to this article.

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To Pack Or Not To Pack — And Other Preparation Tips For Winter

Preparing For Wintering Bees

Getting the bees ready for winter is not something that can safely be left until late fall. It begins earlier in the year with such fundamental matters as beeyard location, hive stands, feeding, quality of the queen, size of the cluster, freedom from disease, availability of sunshine, size of entrance, upward ventilation, and so on.

Often, the location that helps your bees gather a crop of honey is not a suitable place to winter. A good wintering location provides a windbreak, good air drainage, availability of sunlight, safety from flooding, accessibility by truck, freedom from depredation by bears, proximity to an early supply of pollen.

Colonies should be assembled in early fall, to be assured of absence of disease, and the presence of a queen of good quality (judged by her brood pattern and the size of her worker population). A weak queen should be removed immediately in order that her replacement may have time to add some young bees to the colony's population.

At that time of year there will be plenty of colonies in your beeyard that can afford to contribute a frame of brood to bolster a colony that is weak in numbers. Many colonies that do not succeed in wintering fail to do so because the queen became weak following the honey flow. Also, her weakness makes it impossible for her to build up an adequate number of workers which are essential to constitute the cluster.

About September 20-25 in northern states, if each colony doesn't have at least 60 pounds of honey on hand, it should be fed not less than the quantity to bring up its stores to that weight.

In trying to determine whether a colony actually has a 60 pound surplus of honey, one must remember that a two-hivebody colony with cover, bottom board, comb and furniture weighs approximately 75 pounds. Therefore such a unit with a surplus of 60 pounds of honey will weigh approximately 135 pounds. Whether a colony weighs that much requires the appraisal of a careful person. Don't be too easily mislead in this important matter.

If you follow the practice of providing Fumidil-B to help control Nosema, now is the time to supply it to the bees in the sugar syrup you feed, using two parts

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sugar to one part water by volume or weight; there is no magic ration in this matter.

This is the time (or earlier) to judge whether the site where the hives are is a good one. If not, there's still time to move. Each detail I listed above as being essential to a good location is vital, a windbreak most of all.

Hivestands are a must. Regardless of what material they are made of, they should keep the hives approximately six inches off the ground, and furnish a rather tight air space under the entire area of the bottom board. Stands made of 2 x 6 material give each unit a little evelation and thus make for less bending over by the operator. It's a good plan to build stands that will accomodate two hives. Recommended dimensions are: 48 inches long and 20 inches wide. The two cross members of the stand should be 32 inches apart center to center. Such a stand allows for moving the two hives apart during the warm months, and shoving them close together during the winter. During the cold months, they help to keep each other warm. The hives are thus kept dry and free from wind being blown underneath them. If such stands are treated with creosote or some similar preservative, they will last much longer and also discourage the intrusion of ants and termites.

Often the provision of a windbreak, be it of a material in the form of trees or shrubs, or be it a hand-made obstruction, may shade the hives too much from the winter sun. Accordingly, the colonies should be strategically located to benefit both from the windbreak and from the sun.

I have found the best type of entrance closer to be a strip of lath cut to the right dimensions. Some beekeepers today are closing up the regular entrance altogether and compelling the bees to exit and enter by an upper route. This procedure has the advantage of eliminating a draft of cold air thorugh the hive. If a lower entrance is allowed, it should probably be no larger than ϑ_a inches high and ϑ_a inches wide.

The use of a length of lath, secured with a small nail at each end, assures that no foreign agent is likely to knock it out of place. It is especially well adapted to use if the hives are wrapped with black paper for it can be employed to help hold the paper in place.

To Pack Or Not To Pack

There are probably some winters when packing is not needed, (the winters of 82-83 for example). But no one, not even the almanac reader, knows for sure how severe a coming winter will be. Some beekeepers in the North have been losing 25-40% of their colonies during severe winters. That's more than most beekeepers can afford — and far more than they need to lose. I am convinced from my own experience that if a beekeeper loses more than 5-7% of his colonies during the winter, he is doing something or several things, wrong.

There is little question that packing can help reduce winter loss, lower consumption of winter stores, and help spring build-up. Packing with black paper rapidly raises the temperature within the hive when the sun shines on a warm day in winter. This prompts the bees to leave the cluster and void their faces outside the hive. Without such encouragement there are winters that compel the bees to re main so long within the hive that they are compelled to foul the premises. This is damaging to the health of the colony.

How To Pack

A light weight paper should be used, black in color, It may be held in place with staples, or with lengths of lath or some other light-weight strips, and binder's twine. Staples may in some cases not hold too well.

No packing on the sides is needed but packing at the top is essential in order to provide a rafter-like effect that serves to shed rain and snow. Straw, hay, or crumpled newspaper make good top packing. Mouse poison should be distributed in the packing. The use of a sheet of black paper on top of the pack, tied down with twine and further held in place with a couple of good-size stones, make it possible to take the hive covers to the honey house and paint them.

The most important single detail of the entire pack is the provision of an upper exit for the escape of moisture. A super of packing at the top is definitely not adequate to abosrb all the moisture that escapes unless there is an additional exit.

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SEPTEMBER 1983



Beekeeping Technology

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

Sideline Beekeeping – Some Trial & Tribulations

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

A significant aspect of beekeeping is the posisibility of generating income at several different levels of production. We all know of many beekeepers who say their beles pay for themselves and that they're not trying to make an income. Yet other beekeepers of similar colony numbers are more financially oriented and occasion ally receive a significant supplemental income from their operations.

I have some personal acquaintance of mine (who would probably wish to remain namel less here) that was given two hives appro ximately 10 years ago. An immediate and raging case of "bee fever" result led. This problem seems to be quite comr non among some new beekeepers and I in select cases is carried throughout one's life. The beekeeper made an immed late decision to expand his operation to i is many as possible, but with an ultir nate goal of several hundred thousan d colonies. Obviously an increase of this size from a base of two colonies wo uld definately require some creative thi nking.

My friend began to advertise that he W /ould take bees out of anything (houses, f ild cans, tool boxes and old Chevrolets to name a few places). After all they were free bees. Now bear in mind that this beekeeper had had his first two colonies for about two weeks when this decision was made. Almost immediately the first call same in - bees in a house. The house was slated for destruction and the beekeeper could do whatever he wanted In order to get to the bees. I expect many of you know how they story goes from here, My friend quickly discovered the bees in the house were happy there and were not really interested in moving part and parcel to the new hive located outside the wall of the house. The decision to remove bees from anything was recinded obviously, transferring bees was labor intensive and would require several life times to get colony numbers up to a respectable count.

It was apparent other procedures would have to be developed to get numbers up but to keep costs down. Wooden equipment was a major expense for the developing sidelines. Building one's equipment would definately lower costs and would elicit respect from fellow beekeepers at local meetings. This idea fared better than the decision to transfer bees. For the next 21/2 years my friend constructed his own equipment (as needed) made splits and successfuly got his colony numbers up to 35. Not much honey was produced however, since so many splits had been made. At this point in the bee business development, the young beekeeper left home to attend a university. This absence required someone to care for things while he was away at school. Help was also needed on those short holidays when the beekeeper could not get home. By this time my friend's reputation had spread among family and friends avoidance - at all costs. Brothers, cousins, friends, parents - all were tried with varying degrees of success but all ultimately ended in failure. Labor became an immediate problem.

There were not enough bees to pay for assistance but too many (and growing) to comfortably work part-time. Adding to the problem, the process of trying to build equipment had become a tremendous time sink. At approximately 60 colonies and after two Christmas vacations and all other holidays invested in standing in front of a table saw, the practice of building equipment was terminated. The problem at this point was not enough income to justify quantity discounts but too time consuming to continue building equipment from rough lumber.

At this stage, transportation was a problem also. On the annual occasion of moving bees to pollination or to a new yard required a small truck. Borrowing a truck occasionally was a short term solution. Finally an old truck was purchased and it was agreed never to get farther than 40 miles from home with this old machine. After five years of moderate growth, \$1500.00 was borrowed to purchase 25 colonies and a used extractor to supplement the other 10 frame extractor. Other small loans were made to purchase a Cowen Mini-uncapper, honey pumps and sumps along with other processing equipment. For once, I think my friend had a true understanding of an agricultural risk. He simply had to get a decent crop the next season in order to repay the loan. He did.

Acquiring a bee supply dealership proved to be very wise. Some problems developed when the beekeeper could not maintain regular hours, but customers did respond to the immediate source of equipment. This aspect of beekeeping proved beneficial in that it provided small amounts of income that my friend could add to the income generated from honey production.

Suddenly, with no warning, several set backs were experienced. One yard of 13 colonies was killed out right by insecticide exposure. Another colony was shot repeatedly with shot gun pellets at close range while another was intentionally run down by an automobile. Also, in later months, a tree fell across two hives. As abruptly as is started, the run of bad luck subsided. After this period finally ended, losses were counted, repairs were made and life moved on.

Currently, the operation being discussed is just over 100 colonies. The bulk of those colonies, except for the 25 that were purchased, were derived from colony splits or were captured swarms. After approximately 10 years of slowly building from two colonies to 100 plus hives, the operation has a complete extracting operation, a pick-up truck, pneumatic staplers and other such ancillary equipment. All equipment, including hives are paid off. The beekeeper has approximately \$4,000 in a bee supply inventory and has about \$3,000 in the bank. Outstanding debts totaled about \$1,000. My friend said that at times it's impossible to tell if you're successful. As one would expect, there are seasonal variations. Unfortunately, good years seem to be somewhat of an exception.

In retrospect, this sideline beekeeper says to expect the following problems or situations:

 Labor — during early development labor cannot be justified. Free labor is difficult to arrange and can cause embarrassment to the beekeeper.

 Cash flow — For the first four to five years of colony increase in a nonmigratory operation, a negative cash flow can be expected. The bee supply dealership, when aggressively pursued, developed and properly managed can be a

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Bee y DR. NICHARD TAYLOR Talk

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The other thing to mention is that you should insert the screens only under capped honey, and never, as noted before, under any patches of brood. Of course if you inadvertently get a super of insufficiently capped honey you can always put it back on the hive, to get finished up.

Those are the basic principles. More precisely, what I do is this. When I add a comb honey super I put it under those that the bees have already started working in. That way, the supers that will be ready to harvest first will be on top. Then on harvest day I go through the apiary and, one by one, remove the outer covers, tilt up the supers to be harvested, slide the screens in, lower the supers onto the screens and, with one or two deft motions, get the supers back squarely over the hives with the hive tool. When all the screens are in I go back and inspect the supers for any cracks or holes. There will be bees at any opening overlooked, which is a giveaway. Any suspicious opening gets taped over with masking tape. Inner cover holes are covered with a scrap of asphalt shingle, and the outer covers are replaced. A couple days later the supers are removed; I. don't even need veil or smoker for this. Then, with supers loaded and left uncovered on my little truck so that any drones or maybe a few workers can escape, perhaps with a bit of help from my bee brush, I light up the smoker, put on my veil, blow a puff of smoke through each escape screen and remove it, dislodge in front of the hive the bees clustered on the under side of the screen, and replace the inner and outer covers.

That't it. The rest will consist of dismantling the comb honey supers at my leisure.

Ventilation Part II

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Winter Preparation

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There are variety of ideas as to where and how the escape exit should be provided. Some bore a half inch, or one inch, hole in the front of the upper hive body, usually right under the hand hold. I dislike that location for several reasons: it damages the hive body; it makes a great place to get stung when one accidently puts his hand there when lifting; it is too close to where the cluster should ideally be located.

Others provide an exit by placing a strip of shingle between the two hive bodies. I prefer to provide an exit by placing a small strip of wood under the inner cover at one of the front corners; or to furnish a slot 2-3 inches wide in the rim of the inner cover. Some prefer to turn the inner cover over so that the exit is close to the upper rim of the upper hivebody. An exit through the wrapping directly over the exit space in the hive needs to be provided, of course-and if one can afford the time, it may be advisable to tack a small strip of wood above and below the hole, or tar, in the the paper, in order that access to the exit may be assured to the bees, and that it may not become unnecessarily enlarged by the wind and snow.

Unless it is necessary to look inside the hive, it is probably conducive to a stronger spring build-up if the packing is not removed earlier than the accustomed time of spring examination.

Packing of the type I have described is often durable enough, if carefully removed, to last more than one season.

If one questions whether it is financially advantageous to pack colonies, let him consider how much he loses when a colony dies because of the rigors of a severe winter that packing would have thwarted.

I know of few experiences in beekeeping more satisfying than the opening of a packed colony in the spring and finding it well supplied with honey, queenright, wealthy in brood, and thriving in all ways. But successful wintering is the consequence of good management far in advance of the onset of winter.

Ventilation Part II

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valuable asset in that supplemental funds can be generated. Beware of inventory items that are not fast movers.

3. Develop and expand the market for honey as the operation is expanded. During several periods of growth, honey crops produced exceeded market demands. Consequently several drums of honey set unsold for part of a season.

4. Develop local visability — Having the community know the location of a well established beekeeper can result in increased equipment sales and swarm calls during swarming season. Presenting discussions on beekeeping at local fairs, schools or other public gatherings when tastefully done will go a great distance toward establishing good local rapport.

Were this operation in a warmer climate, other variations such as queen production on a small local scale could possibly bring in extra income as could the sale of collected pollen.

In any regard, a sideline honey bee operation can be a profitable sideline. A significant point to be remembered is the percentage of profit compared to the side of the operation. A small operation will produce a small profit.

Sideline beekeeping is normally not a big profit-short term project. However, it is dependable and can be very rewarding — both financially and personally.

A Personal Note

If readers correspond with me concerning articles or questions, please include your name and telephone numbers. Occasionally, it is easier to telephone than to attempt to write long, detailed answers to questions or problems. Thank you.

James E. Tew

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Extracting The Honey

Wrapped up in canvas, rubber and gauze, we walk out to the hive. It is August, and hot. The sun stings us through our thick gloves When we lift up the cover: a brisk wind of bees.

We pry through the propolis and loosen the supers. All summer we have not talked. We brush clean the sagging frames.

Back at the house we slice the wax caps off and crank up the extractor The honey flows, limpid and gold.

Our hands slick and sticky, we strain out the bees' legs, feelers and fuzz. We open our difficult mouths. Now our tongues turn to honey. For the first time all year we are giddy with our sweet lives.

RON WALLACE From: Plums, Stones, Kisses & Hooks University of Missouri, 1981

GLEANINGS IN BEE CULTURE

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Protecting Bees From Insecticides

Protection of bees from insecticides mainly involves attention to certain key factors which contribute to the increase or decrease of bee poisoning problems.

Bloom

Wide-scale bee poisoning catastrophes have not occurred without the contamination of flowering plants by insecticidal chemicals. This fact provides an important direct approach for reducing damage on short-blooming crops such as tree fruits. Insecticide applications are never recommended during the blooming period.

Residual Action

Residual action of a chemical is of major importance, because it largely determines whether an insecticide can be safely used on a flowering crop. A material such as Dibrom[®] (emulsifiable concentrate) can be applied with relative safety in late evening, because it has a short residual toxic effect on honey bees, even though the initial hazard at application is high.

Temperature

Temperature has a significant modifying effect on residual action. Unusually cold nights following hot summer days cause condensation of copious dew on foliage, and the residual action of insecticides is then increased, and many more bees may be killed the following day. Foliage residues of Orthene® held at 50°F were as toxic to honey bees after three days as residues held at 85 °F were at four hours. Regional differences in the hazard of a given pesticide to bees are often explainable in terms of differences in climate. Malathion often has a fumigant effect on bees in warm California, but not in cooler Washington state. Phosdrin® normally has a short residual effect in California and can be used when bees are not in flight. Conversely, it sometimes continues to cause significant mortality through one full day in Washington state, and cannot be safely applied to blooming crops.

Timing

Timing of applications is obviously related to the above factors. Application during late evening, night or early morning provides relative safety to bees from short-residual chemicals. Again, there is considerable variation by geographical

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region. In the Pacific Northwest, the period between about 6 p.m. and 7 a.m. next morning is the non-foraging period for honey bees. However, E.L. Atkins tells me that in California bees are commonly active between 4 a.m. and 8:30 p.m. whenever temperatures are above 60°F. Night application, with floodlights mounted on wings of airplanes or on tractors, is being resorted to on an increasing scale, especially where critical beepollinated crops are involved. Kill of foraging bees is often 2-4 times as great when applications are made in early morning as when they are made in late evening.

On corn, honey bees forage typically between 8 a.m. and 1 p.m. each day. We found that 85% of the corn anthers are exserted from the male flowers between 4 a.m. and 1 p.m. during mid summer in eastern Washington. As temperatures rise, the pores at the bottom of the double anther tubes open, and the pollen usually sheds completely in 4-5 hours. Bees enter the cornfields and actively collect the pollen as it begins to shed. Thus, shortresidual insecticides can be applied to corn between 1 p.m. and midnight with minimal hazard to bees, except under more moist conditions where the timing may vary considerably. Even in arid areas of eastern Washington, as temperatures become cooler in late summer and fall, the time of bee activity in corn may shift to 10 or 11 a.m. in the morning and 3 or 5 p.m. in the afternoon.

Formulation of Pesticide And Adjutants

Dust formulations of pesticides are usually more hazardous to bees than sprays. Wettable powders often have a longer residual effect than emulsifiable concentrates. This typical sequence probably is due to differential adherence of toxic residues on the bee. Our investigations have shown as much as a 6-fold greater kill with powder formulations than with liquid formulations, even when treated foliage contained more of the active ingredient following liquid formulation applications.

Adherence may be associated with the branched or otherwise modified body hairs of bees, adapted for holding pollen grains. Addition of solvents and oily substances to spray materials tends to make them safer to bees. The 2 lb./gal. formulation, is safer for this reason. Use of small particle sizes in flowable formulations tends to safen the product to bees. Stickers added to insecticide formulations may greatly decrease their hazard to bees. Addition of a sticker and use of a smaller particle size are the thing which make Sevin XLR® much less hazardous than other spray formulations of Sevin®. Acidifiers which increase the effectiveness of Dylox® against pest insects do not increase the hazard to bees except at excessive rates.

The polymeric micro-capsules of Penncap-M[®] (methyl parathion) show a special propensity for adherence to foraging bees. They persist in stored pollen, retaining toxicity to bees from one season to the next, and they cause a delayed break in the brood cycle, similar to that experienced from Sevin[®] dust formulations applied to corn.

Strength of Colony

Strength of the honey bee colony has a definite effect on toxicity. Populous colonies always suffer greater losses than small colonies, because more foragers are exposed to the insecticide residues: often the kill is at least four times as great, with the same applications.

Distance From Treated Fields

Honey bee mortality is inversely proportional to the distance of colonies from treated fields. On the other hand, when there is a dearth of pollen and nectar, bees may be severely poisoned by treatments applied at some distance from the apiary. Investigators have noted such occurrences at distances of 3-4 miles. Our investigations have shown up to a 9-fold reduction in kill as little as ½ mile further away from the treated area.

Lack of Bee Forage Plants

Lack of suitable pollen and nectar plants has severely aggravated damage from bee polsoning in the USA since the late 1940's. We tried to develop bee forage preserves to counteract this trend, but found it was not feasible. Pollen gathering often is reduced by insecticide treatments, and if pollen is available on other crops, poisoning may be reduced. Provision of pollen cakes, in the hive prevented bee mortality from corn in Wisconsin, but the use of pollen traps on hives did not reduce bee mortality from gypsy moth sprays in Michigan.

Development of efficient herbicides has

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Insecticides

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led to severe reduction in bee forage on both cultivated and wild lands. This involves not only direct removal, such as elimination of sweetclover from wheat fields, but also treatments which cause displacement of bee plants by herbicidetolerant plants yielding nothing to bees, such as Dalmatian toadflax, yarrow and nightshade. There can also be a conflict of interest when noxious weeds (e.g., yellow thistle) are excellent pollen and nectar sources. Ever increasing monocultures of crops, and the associated removal of fence-rows and wild strips, have reduced both bee forage and nest sites for wild bees. These developments have caused greater dependence upon honey bees for pollination of crops, and have simultaneously forced beekeepers to pasture their bees on insecticide-treated fields.

Age of Bees

Age of honey bees affects their tolerance to insecticides, newly-emerged workers being most susceptible to many pesticides before they have fed on pollen and completed maturation. Coversely, older workers, beyond three or four weeks, become increasingly susceptible to chemicals again.

Newly-emerged alfalfa leafcutting bees are much more tolerant to insecticide poisoning than those that have been active in the field for three or more weeks.

Body Size

Susceptibility is greater for smaller species of bees than for large species; their surface area (to which the insecticide adheres) is larger in relation to their body weight. Alfalfa leafcutting bee (mean weight 33 mg) is more susceptible than the alkali bee (mean 87 mg), which in turn is more susceptible than the worker honey bee (mean 128 mg), and it is more susceptible than worker bumble bees (mean 180 mg). When we used the surface/volume ratio of the honey bee as an index of one, the surface/volume ratio of the alfalfa leafcutting bee became two and that of the alkali bee became 1.3.

Selectivity of Chemical

Many insecticides which are highly toxic to warm-blooded animals are also highly toxic to bees. However, there are many exceptions, two of the most striking begin malathion and Sevin[®]. Endrin is outstanding for controlling major pests on bee-pollinated crops, and it presents a short residual hazard to honey bees. UnPreviously, the probable source of extreme susceptibility of honey bees to many of the carbamate insecticides was thought to be their lack of certain detoxifying enzymes. However, recent investigations show honey bees have all of the known kinds of such enzymes present in other insects.

Honey bee tolerance of isopropyl parathion has well be documented. Correctly timed applications of it are relatively safe to honey bees, alkali bees and alfalfa leafcutting bees. We investigated the unusually high tolerance of the leafcutting bee to Dylox[®]. Only the relatively high pH of the body fluids (compared with that of the honey bee) was correlated with this specificity.

From a study of the variability in tolerance to four insecticides in 18 colonies of bees, it was concluded that selection based on existing polygenic variation could provide only minor increases in resistance, and that useful developments would require major gene mutations.

Type of Exposure

Granular formulations of insecticides fall down into the crowns of plants and onto the soil without becoming a surface hazard to bees visiting the flowers. With good conditions (warm temperatures and young, vigorous plant growth, many plant systemic insecticides are quickly abosrbed and translocated, providing effective control of pest insects with minimal hazard to bees. Monitor[®] has mainly polsoned bees when it was applied to potatoes, but drifted onto alfalfa with old, senescent foliage. We have shown at least a 2-fold increase in hazard of several systemic materials with old foliage compared to new regrowth alfalfa.

Soil injection of granular systemic insecticides has provided a useful way to protect pollinators. Temik® and Cygon® are the only systemics presently known to have a nectar-contamination hazard to foraging bees in the field. However, neither material presents a problem when properly applied, at least under Pacific Northwest conditions.

Conclusions

Following are 9 major ways to protect pollinators:

1. Use low-hazard materials. Insecticides toxic to bees should not be applied to crops in bloom, including adjacent crops or winter-plants and flowering weeds in orchard cover crops or field edges. With aerial application, the aircraft should not be turned, nor the materials transported back and forth, across blossoming fields. 2. Use low-hazard methods of application. Systemic insecticides should be injected into the soil, when such methods are effective in pest control. Ground application is generally less hazardous than aerial application, because there is less drift on the insecticides and smaller areas are treated at one time.

3. Use low-hazard formulations. Dusts and wettable powders are more hazardous than emulsifiable concentrates or solutions. Granular formulations are low in hazard to bees. Stickers often reduce the hazard of insecticides.

4. Use low-hazard timing of applications. Chemicals which break down with a few hours can be applied during late evening, night or early morning, with relative safety to bees. Early morning applications are more hazardous than late evening or night applications.

5. Remove weed blooms. Flowering weeds should be eliminated from orchard cover crops or field edges by mowing or beating. Treatment with herbicides is the best way to remove dandelion blooms.

6. Modify spray programs in relation to temperature. Insecticides should not be applied when unusually low temperatures are expected afterwards, because residues will remain toxic to bees for a much longer time. Conversely, when high temperatures cause bees to start foraging earlier in the morning, or to continue foraging later in the evening, application times should be shifted accordingly.

7. Use low-hazard aplary locations. Establish holding yards at least four miles from crops being treated with toxic materials. Select sites relatively isolated from intensive insecticide applications, and not normally subjected to drift of chemicals. Do not leave unmarked hives next to orchards or fields that might be, treated; the beekeeper's name, address and phone number should be marked in print large enough to be read at some distance, so that he can be contacted when hazardous sprays are to be applied.

8. Use selective insecticides and integrated pest management programs. Encourage the development and use of selective insecticides and integrated control measures. Integrated programs which rely upon biological and cultural methods as part of the pest management system, tend to minimize use of chemicals. Selective insectlcides are often less hazardous to bees and to other beneficial insects.

9. Use educational programs. Many ways are known which will help to alleviate bee poisoning. Often, severe losses could have been avoided by relatively simple modifications of pest control programs. Teach growers, pesticide applicators, and beekeepers how to reduce poisoning. This is the most important method of prevention.

A Very Effective Honeybee Presentation For The Classroom

The Beginning

About seven years ago a neighbor child in sixth grade invited me to come to her class, which was studying insects, and tell them about the honeybees I have in the garden.

Louis Dubay readied his portable demonstration hive showing one frame of brood with queen and not so many workers that it would be difficult to spot the queen without marking her. Another advantage of low population was to make it easy to see the developing larvae.

I got out the "San Franciso Honey Bank", a collection of 4 to 8 ounce jars of local honey marked as to neighborhood and gathered all of the related flowers that were blooming around our neighborhood at the time. Included were Eucalyptus and Fennel with flavors strong enough be to easily associated with their flowers in the case of Eucalyptus, and leaves in the case of Fennel. The Eucalyptus flower is wonderful for teaching both nectar and pollen. The children can rub their small fingers in the nectar and taste it! And the stamens and pistil are very prominent. (Eucalyptus globulus).

The class was divided into groups which in turn visited the demonstration hive where they discussed what they saw with Louis; and the honey-flower exhibit where they tasted the honeys and associated them with the floral sources as indicated above. We also discussed pollination, seed formation, and germination. Another group activity was summarizing or drawing pictures based on the experience.

Word got around very quickly about our bee lesson and at that point we began to charge for it. We had more requests than we could handle. The local press did some beautiful photographs to accompany a story that they published and we found ourselves in the bee education business.

The Materials

As time went on we added a beautiful natural beecomb which was made by some hardy bees one summer in a Cotoneaster tree in an overgrown garden. It wasn't discovered until it had a set of 10 combs measuring over all about 24 x 20 inches and 24 inches deep. In the course of doing wasp removal we collected a fine paper wasp nest which had been conve-

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By LEONORE M. BRAVO 47 Levant Street San Francisco, CA 94114

niently constructed in the branches of a Pyracantha bush. We collected it late in the fall when the workers had all departed and the queens had left for a more secure place to overwinter. I sprayed it with colorless lacquer to help hold it together. We have frequent use for these items not only in our school lesson as it has developed but at other fairs and exhibitions. It clears up in the public mind the confusion between a "beehive" and a wasp's nest.



Lenore Bravo Looks On At A Future Beekeeper.

One day Louis was called to remove some bumblebees that had chewed up a carpet in storage to make a nest. It contained three or four hundred bumblebees in all stages of development which gave us fine additional material for our lesson.

Along the line I added little jars of honeybee workers, drones, bumblebees, wasps and finally a queen bee as well as a jar of queen cells. These keep very well with a few moth balls in each jar. We used to have the teacher have hand-lenses in the classroom for inspection of these items, but now we have in addition to the jars, some little one-inch clear plastic boxes, one side of which is a magnifying lens. They were inexpensive and are wonderful. Ours were purchased in the California Academy of Sciences in Golden Gate Park. We bring along a beautifully varnished Langstroth hive consisting of a deep brood chamber and a shallow honey super with bottom board, inner cover, queen excluder and bee escape in order to demonstrate how bees are kept in the garden and how honey is removed. The children frequently ask "How do you get the honey?" With that we have a shallow frame of honey in a glass case so that they don't stick their fingers in it, and a piece of cut comb honey for them to taste.

Organization

I have been able to design a very effective lesson. First, I send out two weeks in advance of the lesson, a set of DADANT HONEY BEE STUDY PRINTS and a set of companion slides asking the teacher to use the printed material on the back of the pictures to prepare the class for the lesson. We send a brochure describing the lesson and requesting among other things and most important that the class be diveded into five equal groups. Since there are usually 30 children in a class this means five groups of six children. Each pupil is to arrive at the lesson wearing a colored name tag. There will be six blues, etc. This automatically groups them and makes it possible for us to call them by name.

Bees are very exciting to children. Without order, you'd have pandemonium and minimal learning would take place. For one thing they'd all try to stand by the demonstration hive at once, and couldn't be moved.

The room where we do the lesson should be set up with five large tables or sets of two smaller ones, with chairs around but set up the flowers in jars or half milk cartons of water with the honey for tasting at that table. We also sef out the insects at which table we have pieces of wasp comb and honeybee brood comb and the bumblebee nest material in berry baskets covered with cellophane.

To begin, we put the natural beecomb, the wasp nest, the bumblebee nest material, the Langstroth hive, smoker, and bee escape, piece of wasps comb and honeybee comb on a table which the children can gather in front of, sitting on chairs from the tables which they take with them when the discussion is over, on the floor.

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Classroom

Continued from page 493

I wear a white bee suit and have my gloves and hat and veil handy as I introduce ouselves and tell them that we've come to talk about honeybees and their relatives the wasps and bumblebees with which they have experience in the environment. Using the wasp nest and the bumblebee nest material I describe how these insects exist in nature and their value. I mention the long association of man and the honeybee including bee hunting, early clay hives, straw skeps and log gums. Then I focus on the Langstroth hive, showing the foundation and the other items mentioned above to illustrate its use. At the point where I describe lighting the smoker to remove honey, Louis who is a charming (but slow) story teller explains why smoke controls bees and also the relationship of wearing white or light colors while working with them. I have one on hat, veil and gloves as I would be working a hive.

In that segment we talk about stings and how to deal with them. This causes the children to raise their hands and want to contribute their bee stories. We tell them that we will reassemble for questions at the end of the presentation or we would never complete it in the 45-60 minutes allotted if we didn't proceed directly with the rest of the lesson.

We tell them that they will have five experiences examining the beehive and trying out the hat, veil, gloves, and smoker and tasting comb honey at the table; tasting honey and learning about the flowers in association with it; examining the insects and noting the differences between them, e.g. the hairy bodies of the honeybee and bumblebee designed for collecting pollen, and the smooth body of the wasp which uses animal matter for protein for its developing young; viewing the live bees in the demonstration hive, and doing some summarizing work at the fifth table.

The brochure that goes out two weeks before we arrive states that it is absolutely necessary to have five people in order to do this lesson with maximum benefit. Whatever beekeeper takes the job on should have a partner, with one person handling the demonstration hive, and the other the honey and flowers. The classroom teacher, after listening to our opening remarks and having used the DA-DANT STUDY PRINTS as directed should be able to take care of the insect table, reiterating our points about the anatomical differences to be observed and making sure that all children in a group see all. A piece of honeybee brood comb and a piece of wasp comb are part of this exhibit.

Many classrooms now have teacher's aides. The aide in such a case can take

care of the table with the Langstroth hive and the beekeeper's equipment and the honeycomb to taste. The fifth table, summarizing, can be attended by a parent. Very often the teacher, in schools where there are not aides, has two parents helping. They enjoy the bee lesson as much as the children. As a matter of fact, one of our minor problems is that all of the adult personnel in the school will come to see our bees and taste the honey. This can clog the works unless they are accomodated between demonstrations or when we are otherwise not doing the lesson with the children.

The person who conducts the honeytasting and plant smelling is the one who spaces the lesson. I deliver each sample right to the child's mouth, on a toothpick. for speed and neatness. As soon as I have explained the flower parts, nectar and pollen and pollination, and each member of the group has tasted the honey and made the association with the fragrance of the plants involved I ask everyone in all groups in the room to stand up and remain standing without talking while I explain how the groups will move. It's important for the person with the demonstration hive to cover it at this point, or you won't get their attention. I then direct "the reds will move to that table", pointing, "the blues will move to this table", indicating, etc....then say "everyone walk quietly to the next table". I do this every time. There are always a few mischievous kids who will get in the wrong group or go the worng way for fun, or really don't understand unless things are clearly spelled out.

Over seven years we have been in over a hundred classrooms in all kinds of social and economic circumstances and widely varying levels of behavior. Our lesson plan, especially the part just described insures order and a maximum learning experience.

Other Details

The lesson has been done in 45 minutes with older, well behaved and highly motivated well prepared children. For the most part, schools arrange for a 60 minute session letting recess go in order to achieve it. Ten minutes are alloted to the opening remarks. As I finish using each item Louis puts it away in the case of the wasp nest and natural beecomb, which we don't want destroyed, or on its proper table, as with the Langstroth hive. Six to seven minutes are allotted at each table. about five minutes occupied in moving the groups around, and a ten minute period remains at the end for the questions which have occurred to them. For this activity they seat themselves as they were at the beginning of the lesson.

The better prepared they are, the better the guestions they ask, since they are based in large part upon what they have heard or learned in the two weeks preparation. Some will raise their hands and start to relate "stories". We direct them to tell those stories when they get back to the classroom, using the little time that they have with us to ask questions.

In the last few minutes Louis talks about swarms, the essentially gentle nature of the honeybees but the need to treat them with respect and not to throw rocks or otherwise antagonize them. He tells them that he hopes that some will become beekeepers, which no doubt they will judging from the intense interest and enthusiasm of some children!

We generally charge \$30.00 a lesson and plan it for other than the local swarm season. Poor districts pay for the lesson with federal money for equalization of opportunity. Other districts pay for it with PTA funds, since Prop 13. Obviously the

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L. Dubay Presents a Demonstration Hive in His Bee Lesson.

Beekeeping In Tropical Asia

Beekeeping with European honey bees is now well established in Burma and Thailand. About 2,000 colonies are kept in Burma and well over 10,000 in Thailand. Queens are being reared successfully in both countries, the best beekeeping areas have been identified, honey and beeswax are being marketed, and beekeepers are convinced there is a future for the industry in the area. The local markets can abosorb more honey and more bees are clearly needed for pollination as agriculture intensifies. I expect that beekeeping with European bees will soon spread to and benefit neighboring countries.

European honey bees have been introduced into Asian countries many times during the past several centuries. They have been successful in temperate Asia, but have always failed to become established in the tropical countries. Many good accounts of this have been written; a good source of information is the British Bee Journal, which began publication in 1873.

It has been reported in the past that European honey bees introduced into tropical Asia thrived for one to two years, when their populations declined. Beekeepers saw wasps, birds, toads, lizards and many insects prey on the bees, and incorrectly concluded that these pests caused the slow decline. (These pests are, however, a serious nuisance in many areas in tropical Asia.)

In 1962 it was learned that two mite species are the most serious problem for beekeepers in tropical Asia. Varroa jacobsoni is a parasite of the so called Indian honey bee, Apis cerana. The other mite, Tropilaelaps clareae, parasitezes the giant bee, Apis dorsata. The biology of both mites is thought to be similar; Varroa jacobsoni has been better studied, since it has been accidentally introduced into Europe, North Africa, and southern South America.

Varroa jacobsoni females that are ready to lay eggs move into brood cells, especially those with drone larvae, just before the cells are capped. They go to the bottom of the cells where they burrow into and consume the royal jelly located there. Just before it spins its cocoon, the bee eats the remaining royal jelly and thus cleans the mite(s). At this time the mites deposit their eggs, larvae soon hatch from them and insert their mouthparts into the developing bee to feed on its blood. If only one or a few mites feed on the bee it can survive, but if many are present the bee will be maimed or die. The mites mate in the brood cells and the males die. The female mites emerge from the cells, attach to worker bees and burrow under one of the abdominal segments on one side of

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the wax glands. Here they feed on the blood and we presume this aids, or is even necessary for, egg development. It is not clear how long mites remain on the adult bees but when they disengage they move back into a brood cell and the life cycle is repeated.

A second problem in establishing European bee colonies in new areas is mating. We know that a queen may mate with up to 15 drones. Only one paper has been written on how many drones must be present in an area for a queen to mate; it suggests that at least 2,500 are needed. Queens and drones fly to special places called drone congregation areas, where mating takes place. We presume the large number of drones is necessary for the queens and drones to find each other. Drones fly farther than queens to find a mate. We suspect one reason that European honey bees have failed in many areas is that when supercedure took place the queens could not find males with which to mate.

In May 1983 I visited several countries in tropical Asia, including Thailand, Malaysia, Indonesia, Singapore, and India. In 1982 I traveled to Burma and Nepal, and had visited the Philippines earlier. In 1966 and 1968 I saw a thriving beekeeping industry in the Philippines built on the use of the European *Apis mellifera*. All those colonies are now dead because in the 1960's we did not know how to control the mites. Part of my assignment on this year's trip was to prepare a meeting on Asian and Pacific beekeeping to be held in early 1984 in Thailand and Burma. The chief purpose of the meeting will be to demonstrate that beekeeping with European honey bees is possible in tropical Asia and that it is more profitable than using native honey bees.

Three honey bee species are native to Asia. The most common is Apis cerana. This bee is smaller than the European honey bee, but it lives naturally in hollow trees and may be kept in hives. Apis cerana varies greatly in size from one country to another. It is widely used and some countries, notably india, have successfully cultivated this species. Apis cerana is difficult to keep in many ways. It yields much less honey than the European bee; more important, it absconds easily if there is too much smoke or it is manipulated too much. The bees in the colonies I have examined run on the comb, forming large clusters on the frames that may drop off onto the ground easily. Finding queens is difficult. No one has worked out a simple method of rearing Apis cerana queens.

The other two honey bee species found in Asia are the largest of all honey bees, *Apis dorsata*, and the smallest, *Apis florea*. Both species live in the tropical parts of Asia only. Both build a nest within one comb; the cells near the top of the nest are made very deep to hold the honey. The two species use most of their bees to insulate their nest, which is usually built under a tree limb. Both use this blanket of bees to help control the nest temperature. Neither species can be hived. Both are

Continued on next page



A comb fron a nest of *Apis cerana*, the most common Asian honey bee. Note how the bees have run to the corners of the hive, a behavior typical of many races of this bee.

Tropical Asla

hunted and are a source of much of the honey and beeswax on the market in tropical Asia. Unfortunately the honey from both is usually high in moisture and ferments easily.

While traveling in Asia I have met several people who believe European honey bees cannot survive in tropical Asia, especially near the equator. Other are convinced *Apis cerana* is easier to manage and is more likely to succeed. The events in Burma and Thailand indicates both ideas are wrong and that major changes in beekeeping are impending for the whole area.

An important consideration that is misunderstood in many parts of the world is that one does not plant honey plants for honey production. Rather, one searches out the places where honey plants abound and moves the bees to them. In Thailand much of the beekeeping is centered around the northern area near Chiangmai. Two good nectar-producing plants grow here. The better of the two is longan (Euphorbia longana); the other is lychee (Litchi chinensis). The primary honey flow takes place in March and April with longan preceding lychee. A common leguminous weed that was introduced to the area some time ago is a good source of pollen that aids in building colonies for the honey flow.

Longan, a well-known regional fruit, has been grown near Chiangmai in large quantity for more than 100 years. Until a few years ago no one realized it was a good honey plant and for a long time tons of honey were not harvested and went to waste. I have no doubt that throughout tropical Asia other good sources of nectar will be found. Many coconut groves I have visited contained healthy *Apis cerana*, and I suspect *Apis mellifera* would also thrive in such places.

Research on longan by Dr. Pongthep Akratanakul of Kasetsart University in Thailand has shown that yields of this fruit can be increased by 30% if the area is saturated with honey bees. Little or no research has been conducted on many common plants in tropical parts of the world to determine their pollination needs. The two excellent books on pollination answer some questions about problems in the tropics, but most of the work on pollination has been done in temperate areas.

In Chiangmai I visited two beekeepers who owned about 200 colonies of European bees, and had been in business only six years. I was able to look into many colonies in five apiaries. These beekeepers, I was told, preferred light Italian bees that were gentle. Their colonies were in one or two supers since the honey flow was over and they were preparing to move the colonies. Equipment was homemade and in very good condition; standard Langstroth dimensions for 10-frame hives were being used.

During my stay, mite control was being undertaken in the Chiangmai area. Their methods differed from those used in neighboring Burma (reported in August 1982 in this journal) but appeared equally effective. In Burma the queens were caged for just over three weeks and the colonles fumigated. In Thailand the brood was removed and allowed to die. About five grams of a mixture of fine sulphur and naphthalene were placed on the bottom board as a fumigant against the mites. In both cases it appears that breaking the honey bee brood rearing cycle also halts the mite life cycle. Honey bees can endure such a break in their life cycle but apparently the mites are less tolerant of such a change. Mites are never eliminated from a colony but their numbers can be reduced to an acceptable level. This process must be repeated once or twice a year. It appears to me that the chief reason European honey bees do well in North Asia, including China and Japan, is that there is a natural break in brood rearing in most colonies in the fall. However, even in Japan I have been told some kind of chemical is necessary to reduce mite populations.

The honey I tasted in Chiangmai was of excellent quality. The local market was good, and beewax, used primarily to make candles, was selling for more than the current world market price.

I have no doubt that *Apis cerana* and the other two honey bee species will continue to survive in all Asian countries. Even today about one million colonies of *Apis cerana* are believed to be kept in China. In Japan I inspected one healthy colony of *Apis cerana* that was growing and had gueen cells.

No one knows the potential for beekeeping in tropical Asia. In Burma the acreage of sunflower for producing cooking oil is increasing rapidly, and it is well known that sunflowers benefit greatly from cross pollination. As agriculture in the area continues to change, so will the need for bees.

The meeting in Thailand and Burma, sponsored by the Food and Agriculture Organization of the United Nations, will be attended by persons from several countries. All interested beekeepers will be welcome.□



A colony of European honey bees in Chiangmai in the North of Thailand. All of the colonies I examined were in good condition and appeared disease free.

Uniting Bees

Uniting Bees

Autumn is the time to consider uniting weak colonies or nuclei. After the main honey flow is over, combining bees can provide the added safety factor of "strength in numbers" that can greatly increase bees' chances of winter survival.

The Newspaper Method

A generally recognized safe way of uniting is to place the colony being moved directly on top of the colony with which it is to be combined, with a single thickness of newspaper between them. By the time bees gnaw their way through the paper, each colony is likely to be familiar enough with the other that no fighting will take place. If the weather is extremely hot, poking a few small holes in the newspaper will aid ventilation and prevent smothering.

Some Things To Remember When Uniting

1. In the cool part of fall, after brood rearing has ceased and bees have begun to cluster to generate heat, bees can usually be united without danger of destructive fights. None-the-less, it is advisable, if combining directly without use of a newspaper, to use smoke as a pacifier, and to always watch the bees for a few minutes after unification to insure that any trouble can be remedied with additional smoke applications.

2. If bees are united soon after a honey flow, older bees will have the tendency to return to their former hive stand. Two possible solutions to that are: A.) unite bees from two separate yards. B.) originally place hives in pairs so, when uniting a colony with its neighbor, one hive can be removed and the other placed midway between where the two initially stood. Because the new location will be so close to where both colonies were, bees will not be faced with difficulties in finding home.

3. The arrangement of pollen and honey in the lower part of the hive is very important to survival of the winter cluster. Uniting should be accomplished with very minimal or no disruption of frames. Bees need the freedom to arrange their winter stores as naturally benefits them the most.

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By THE EDITORS

Uniting and Requeening

During uniting in the fall of the year may be a good time to requeen. If the queen of one of the units to be combined appears to be superior it should be assured that she is the surviving queen. The queen to be replaced should be removed or destroyed before uniting the two colonies. If neither queen is satisfactory a new queen should be introduced at the time of uniting. Having deprived both colonies of their queen when they are less inclined towards natural queen replacement (supersedure and swarming) extra precautionary measures may be needed to help assure acceptance. Supplementary feeding and long introductory periods may be needed, before the new queen is released. On the other hand, the unification of two weak colonies or nucs may prove to be less risky to a newly introduced queen as compared to being introduced to a strong colony in the fall. No one can predict with certainty the reception a newly introduced queen will receive in a hive of bees at any time of the year, so much must be learned by experience under your particular circumstances.

Invoking A Migratory Beekeeper

for George L. Mayo (1894-1980)

Ah, Grandfather, bring one last load of honey home. Let it be wild clover from Moses Coulee or Hunters a mountain range away. Let us hear you shift and slow down the summer tons of loaded Chevrolet.

I will run to open the pasture gate and shout "He's home." Let the neighbor girls, Alice and Shirley, come now. with the red sun to the extracting room. I will open the big doors and wrestle with my brother on the floor.

Ah, bring one last load of honey home, Grandfather. Let us untie your knots. We will coil the ropes as you slide down from the truck seat—dead from hours of night Highway across Snoqualmie, your bees three hundred miles

away. We'd sing Tipperary and Irish Eyes to keep awake. I fed you peppermints three at a time and salt nuts by the sack. Remember that truckstop in Entiat? You knew the waitress there, sang her a song for pie.

Let us feel sweet weight again, Grandfather. Once more, give "the boys" seventy pounds of honey to stagger us. We'll pry the covers off white supers and hear the hum of that last lost bee—the one who forgot to leave.

She stowed away inside her work, she stung me right between the eyes to almost tears. I'm that bee now, Grandfather. You're that bee. You're dead but I'm here remembering Alder where we worked that honey house together.

Ah, let us start the boiler and wax melter. Let steam rise and sway. Give Alice the capping knife to slice away the thin scroll of wax. Let us see how she opened comb after comb to gleam and drip, ready to give up gold.

Let us believe, Grandfather, as we whirl away in this extracting world, that such summers can't be lost. Such love can crystalize forever like honey did in King Tut's tomb. See how it pours gallon by wordless gallon

into the settling tank, Grandfather? Again, you are thick around me. I must claim you who claims me to the end.

George Venn 1/4/81



to AMERICAN BEE JOURNAL

Hamilton, Illinois 62341

Chinese Box Hive.

GLEANINGS IN BEE CULTURE

P.O. Box 998, Jesup, GA 31545.



Arkansas

Beekeepers of Arkansas held its fifth areawide bee meeting June 25th. Fayetteville, Ark. Dr. Gerald Wallis of the University of Arkansas, did a fine job with arrangements, and programming.

B.O.A. members were honored to have as its guest. Bill Carlile, of Glenwood, lowa. A session was held in George Sego's motel room the night before our meeting. Those that attended talked bees, till 12:30. No one wanted to go home, or to their room. If I hadn't said go home then, they may have stayed for breakfast.

There is not much new to an old season beekeeper, but fellowship, but to the new and the hobbyist, there is wealth, from the much stung. And the general milling and talking, sounded like a hive beginning to swarm.

Our areawide meetings have drawn more than 500 keepers, and one more at Hope Arkansas is planned. Our statewide meeting will be held in October in Little Rock, Arkansas.

The 83-84 season will produce upward of ten area meetings. And from past meetings our association will continue to grow.

Any firm wishing to furnish literature, for our state meetings or the area meeting, ship to George E. Sego, 2000 Thayer, Little Rock, Ark. 72202, c/o Sego Industries.

Developmental Beekeeping Seminar Held In Wooster, Ohio

Participants from around the world came to the Agricultural Technical Institute in Wooster, Ohio to attend a three week beekeeping seminar. People from the Asian countries of Burma and Yemen (located at the tip of the peninsula occupied principally by Saudi Arabia) and from the African nations of Tanzania, Uganda and the Sudan attended. Representatives from Central and South American countries were present in addition to several representatives of agen-



This group photo of the participants in the third Developmental Beekeeping Seminar held in Wooster, Ohio includes representatives from Europe, Asia, Africa and the Americas. Most participants are involved with beekeeping at home or abroad.

cies interested in overseas development of agriculture. Several Peace Corps workers home from overseas assignments were in attendence to lend assistance.

Instruction in the seminar came from various staff members of the Ohio Research andd Development Center. The organization of the program and the proceedings were under the direction of Dr. James Tew with the assistance of Phil Mariola of the beekeeping institute staff.

Week one from July 11th to 15th covered basic beekeeping. The second week was devoted to applied beekeeping and the third week consisted of instruction related to development beekeeping. Subjects and activities were varied, including such fields as hive management, disease and pest control, queen rearing, crop pollination, bee biology, beekeeping equipment and its use. The participants worked with bees and equipment, went on field trips, and watched demonstrations when they were not in classes. Speakers and demonstrators came from within the Ohio State University and from other

organizations.

The continuation of the program will be in the form of Development Beekeeping Seminar IV to be held in Wooster, Ohio 1984. The Agricultural Technical Institute of Wooster, Ohio, the site of the seminars, is a two year technical school of The Ohio State University.

Florida

Beekeeping Course

Beekeeping Course to be held at Hillsborough Community College, Dale Mabry Campus, Tampa, Florida, beginning September 17 through October 22, 1983. Saturdays from 9 until 1 o'clock.

This course is designed to introduce the beginner to the basic principles and procedures of handling the honeybee colony. Topics will include: installing package

News & Events

bees; management for honey production; dividing colonies; pollen trapping; bee diseases and honey extraction.

An enrollment fee of \$13 per person is charged.

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

KANSAS

Kansas Honey Producers To Meet In Pratt & Larned October 14-15, 1983

The Fail Meeting of the Kansas Honey Producers Association will begin at 2 p.m. Friday, October 14, 1983, with a tour of the Adee Honey Farms, Larned, Kansas. Following the completion of the tour, the group will move to the Pratt County Community College, Pratt, Kansas, for an evening program featuring the 1984 Kansas Honey Queen Contest plus tips on honey marketing and other fun activities.

Regisration will begin at 8 a.m. on Saturday, October 15, 1983, at the Pratt County Community College with the Business Meeting covening at 8:30 a.m. Featured speakers will be Marion Ellis, Nebraska State Apiarist, discussing Winter Management and Gary Reynolds, a local queen producer, giving tips for buying queens. The traditional Auction for the Kansas Honey Queen Fund and a Field Trip (Bring your vells!) will complete the day's activities.

Everyone interested in bees and beekeeping is invited to attend.

Further information may be obtained from the Kansas Honey Producers Association Secretary, Duane Levin, Box 5, Stuttgart, Kansas 67670. Phone 913-543-6210.

LOUISIANA

Southeast Louisiana Beekeepers Display

Saturday and Sunday, April 16 & 17, 1983, the annual Spring Garden show was held in New Orleans. Organized by the Metro Area Horticulture Advisory committee and sponsored by the L.S.U. University Cooperative Extension Service.

Ott's Pet Shop in business 32 years in New Orleans, an authorized dealer and representative for A.I. Root Company beekeepers supplies, sponsored a display booth organized and maintained by members of the Southwest Louisiana Beekeepers Association, Mr. Phil Lemaine, president of the Association along with its members and their families, displayed bee hives, bee equipment, and answered any questions on beekeeping and honey harvesting. Tasty samples of liquid and chunk honey were given to booth visitors. Much to the delight of all who visited the beekeepers booth, two observation beehive exhibits were on display.

The purpose of the Southeast Louisiana Beekeeper display booth is to increase and familiarize others on the importance of the honey bee and the values of pure honey.

For further information write:

Ott's Pet Shop 5505 Magazine St. New Orleans, La. 70115



Melissa Hart, American Honey Queen, with Allan Herrman, marketing division of the Wisconsin Agricultural and Consumer Protection Department in Madison.

SOUTH DAKOTA

Beekeepers Association Annual Meeting

The South Dakota Beekeepers Association will be holding its 1983 annual meeting on September 10, 1983 at the Holiday Inn at Mitchell, South Dakota. Registration will begin at 8 a.m. with speakers scheduled to talk in the morning and early afternoon. The business meeting will be later in the afternoon. A banquet in the evening will include the coronation of the new South Dakota Honey Queen. All beekeepers and interested persons are invited to join us.

TEXAS

Texas Beekeepers Assoc. Convention

Texas beekeepers will converge upon the Capital of Texas for their 1983 annual convention November 3, 4, and 5 at the Sheraton Crest Inn which is located on the edge of both Town Lake and the Austin business district. Scheduled are programs for the entire beekeeping community, including the novice, experienced amateur and the commercial or professional. Concurrent scheduling of programs and activities should assure accomodation of the varied interests and concerns of the Texas beekeepers. In addition to convention programs, beekeepers present will be provided the opportunity to participate in the widely acclaimed short courses for beginning and intermediate beekeepers offered by Dr. Larry Connor of the Connecticut-based Beekeepers Education Service.

Beekeeping in Texas has an impact that extends far beyond its state borders. A significant contingent of migratory beekeepers and beekeepers from surroun-



From left to right is Eva Cisek of Polesia Czar Apiary, Melissa Hart, American Honey Queen, Michell Cisek, Junior Honey Queen, and Kelly LaViolette, Door County Honey Queen. These three Honey Queens participated in store promotions, radio interviews, and the June Jubileee Parade in Sturgeon Bay, in which their float won first prize.

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ding states are always present at TBA conventions and are warmly welcomed. Texas' position as a front-line state facing the northward advance of acarine mite infestations and Africanized bees will be of key concern to many present. Dr. William T. Wilson, Research Entomologist with USDA at Laramie, Wyoming, will speak on the acarine mite in Mexico. Dr. Alan B. Bolten, Department of Zoology, University of Florida at Gainesville will address the topic: "Africanized honey bees in South America separating myths from realities." Both Dr. Wilson and Dr. Bolten will also share their research findings concerning pesticides and their effects upon honey bee colonies.

Steve Taber, California beekeeper, queen breeder and frequent contributor to beekeeping literature, will also be a featured guest speaker. Breeding bees for disease resistance and other selected genetic traits, a specialty of Taber Aplaries, will be discussed. All those interested in queen rearing with careful attention to honey bee genetics should find much excellent information in Steve Taber's discussion of his breeding programs.

A diverse range of topics, including colony management techniques and annual management planning, honey processing, queen rearing, candle making, production of mead, record keeping, beekeeping and the I.R.S., women in beekeeping, Texas nectar and pollen sources, urban beekeeping, Texas Bee Laws, and the Honey Loan Program will be discussed in informal workshops. Contests for honey, wax, beekeeping gadgets, tall tales of beekeeping,, and beekeeping-related photographs are also planned. On Saturday, November 5, participants in the annual Hobby School will visit both a commercial honey house and an efficient hobbyist extracting set-up.

Social events at the meeting will include the Thursday night "Bee Buzz" before the convention and the annual TBA banquet on Friday evening, November 4. During the convention the new Texas Honey Queen will be selected and crowned. Fund raising events including an auction are also being planned. Space is being allocated by numerous commercial and non-commercial exhibits. Tours of Austin will be available for spouses and all others who are interested. At the end of the convention on Saturday afternoon the annual business meeting will be held.

All interested persons are warmly encouraged to attend this annual meeting. For further information and registration details write: Texas Beekeepers Association, Route 1, Box 95-B, Edcouch, Texas 78538 or call (512) 262-1722.

SEPTEMBER 1983

"Treat Yourself This Halloween" By STEVE FORREST

Are you tired of staying home over the Halloween season and not treating yoursellf to any goodies? If so, then the Southern State Beekeepers' Federation (SSBF) Convention might be for you. On October 30, 31, November 1 and 2, the SSBF is going to hold the biggest and best convention in its proud 55 year history in Myrtle Beach, South Carolina. The Ocean Dunes Resort is hosting the convention and the facilities that they offer are truly some of the best anywhere and at bargain prices.

Dr. Roger Morse and Dr. Basil Furgala have agreed to a debate on the proposed impact of the African Bee invasion. As many of you know, there is much disagreement in our industry as to the imposing threat of the African Bee. Some researchers say it will be the worst blow to beekeeping in the U.S., while others claim it's here already and that some researchers are using the threat to secure more funds for their research. Hopefully, the debate will shed some light on this controversy, but certainly the debate forum should afford a much better vehicle of expression.

We will follow the African Bee with a presentation by Dr. H. Shimanuki, the USDA Beltsville Bee Lab Chief, and Jimmy Green, the President of the Apiary Inspectors of America, on the parasitic bee mites. Some researchers have suggested the mites brought in by the African Bees will pose a larger problem than the bees themselves.

After bees and mites, we are going to cover the products of the hive. These will be presented by Charles Mraz, Joe Parkhill, Royden Brown, Elton Herbert and more. Here too we are going to try to resolve some of the dilemmas our industry faces. Is pollen really good for you? Do bee stings help arthritis? etc. By offering pros and cons to these questions, we hope to continue to "treat" the attendees.

On the final day of the SSBF Convention, we will discuss promotion in the beekeeping industry. This past year the SSBF launched our "Save the Bees" campaign, and we are very pleased and excited over the tremendous response we received. In addition to our promotional efforts, other ongoing industry promotions will be covered by Chuck Dadant (Dadant & Sons, Inc.), John Root (A.I. Root Co.) and Melissa Hart, the American Honey Queen.

If speakers are the meat and potatoes of a convention, then we offer some "dessert" activities to sweeten up each day. On Monday, a bus shopping tour to Waccamaw Pottery and Outlet Park — this is one of the most reasonable and diversified shopping areas imaginable. Come ready to do your Christmas shopping. We'd also like to extend an invitation to any golfing beekeeper to play in our Golf Tournament held on one of the best golf courses in the U.S. Monday night brings a mead, wine and cheese tasting party with the days' speakers pouring wine from the countries of their hertitage. Dr. Roger Morse will pour and describe a variety of meads he is collecting for us.

On Tuesday, we offer an all-day tour of the local historic areas concentrating on visits to four plantations and a trip to Brookgreen Gardens. Enjoy lunch in the dining room of a local plantation. Ride throughout the low country with a guided tour from Nancy Rhyne, a local author and personality.

Later Tuesday night, we offer a reception for the days' speakers with a dance featuring "Southern Nights", a ten-piece Dixieland band that also plays 30's and 40's dance music. So bring your dancing shoes and look forward to a fine Southern evening.

On Wednesday we end our convention with a "pig pickin" outside and more singin', dancin' and local color.

For those that can't get enough of that good ole beekeeping technology we suggest our Short Course that follows the popular N.C. Master Beekeeper format.

The facilities we offer are the finest with an indoor pool, Jacuzzi, saunas, steam rooms, supervised exercise room, tennis courts, golf courses and of course, the beautiful Atlantic Ocean for fishing or just plain enjoying. You won't be disappointed.

Pre-registration costs are \$30.00 per person or \$45.00 per family. Room rates are \$38.00 per room per day (each room has two double beds). Pre-registration cost for the Short Course are \$15.00 per person and \$25.00 per family.

For more information and a pre-registration form, please write:

The Southern States Beekeepers' Federation 1403 Varsity Drive Raleigh, NC 27606 Classified rates, 49¢ per word, each insertion, payable in cash in advance. Each initial, each word in names and address, 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 Co., Advertising Department, Gleanings In Bee Culture, 623 W. Liberty St., P.O. Box 706, Medina, Ohio 44258-0706.

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

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For Sale: Bulk Pollen. Minimum order 300 lbs. 806-896-4552 Millet Apiaries 9/83

FOR SALE: 200 strong one-story colonies, inspected. \$60.00 each, available after October 1st. Can be delivered South. Dick's Bees; Belmont, NY 14813. Phone (716) 268-7684. 10/83

For Sale: 100 colonies with locations in Northwestern Ohio. 419-523-4145. RW 9/83

Must Sell 37 Hives Due To Allergy. Reasonable. Morris Chapin, 5455 Fayette, New London, Ohio. 419-929-7011 9/83

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200 bee hives; SS extractors; SS heating coils; hot water jacket; collector tanks; SS uncappers; capping spinners; SS storage tanks; botilng tanks; much more — selling a complete honey operation from bees to market. For brochure contact: Odle-Cumberlin Auctioneers; P.O. Box 248; Brush, CO 80723; (303) 842-2822. 9/83

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For Sale: 65 Colonies of Bees, 75 Hive Bodies w/foundation, 225 Supers, 65 Hive Top Feeders. Valdosta, GA 912-244-0562 or 242-8642 — Robert. RD 9/83

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For Sale: 36 Frame Radial All Stainless Steel Honey Extractor NEW \$750.00. PA 1-412-654-6521. AB 9/83

For Sale: 1959 COE 2 ton Ford 16' axel flat bed truck. Dropped frame, rebuilt engine, rebuilt transmission. Front end rebuilt. Excellent condition \$1600. Contact Grant. 916-265-3595. CH 9/83

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

OTHE 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, HIII 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.

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.

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 (Sterling cheque 2.22 p.or U.S. \$6.) Post paid. 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.

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

PROPOLIS WANTED — \$8-\$15/lb. Clean, no wax. Send 1-5 lb. sample. We reimburse shipping, small lots accepted. Santa Cruz Apiaries, Box 2292, Santa Cruz, CA 95062. SCA 9/83

Young experienced beekeeper wanted. Send resume. B-Appy Ranch, 26833 Tannahill Ave., Canyon Country, Ca. 91351. BW 10/83

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 Aplaries, Inc., Onsted, Mich. 49265.

BEE HEALTHY & ENJOY the best bee pollen. Excellent flavor, superior quality. 3 lbs. — \$22.00, 6 lbs. — \$39.00, 10 lbs. — \$54.00, 20 lbs. — \$100.00. No charge for shipping via UPS. Prices subject to change. BLOSSOMTIME, P.O. Box 1015, Tempe, AZ 85281. TF

Pure Fresh Bee Pollen, 1 lb. jar \$7.50 postpaid. Prairie View Honey, 12303 12th Street, Detroit, Michigan 48206

HELP WANTED

Translator Needed: Person or persons with beekeeping interest and expertise in translating Finnish and Norweigan. Contact: Translator, c/o *Gleanings In Bee Culture*, Box 706, Medina, Ohio 44258.

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

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BEESWAX

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A.I. Root Co., Medina, OH 44256; Council Bluffs, IA 51501; San Antonio, TX 78204. Box 9153.

WANTED — Beeswax any size shape block \$1.00 to \$1.10 per pound. Prompt payment, small lots welcome. A. VanWees, Greenlane, PA 18054. TF

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