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COVER STORY

Though Spring may be only a wish in the northern states the skunk cabbage (*symplocarpus foetidus*) heralds the beginning of the greening in the wetlands to the South.

Bees seek out these early sources of fresh pollen. See "Spring Willows" in this issue.—Photo by Ken Adams.



Gleanings in Bee Culture

February 1979

Vol. 107, No. 2

Created to Help Beekeepers Succeed

106 Years Continuous Publication by the Same Organization

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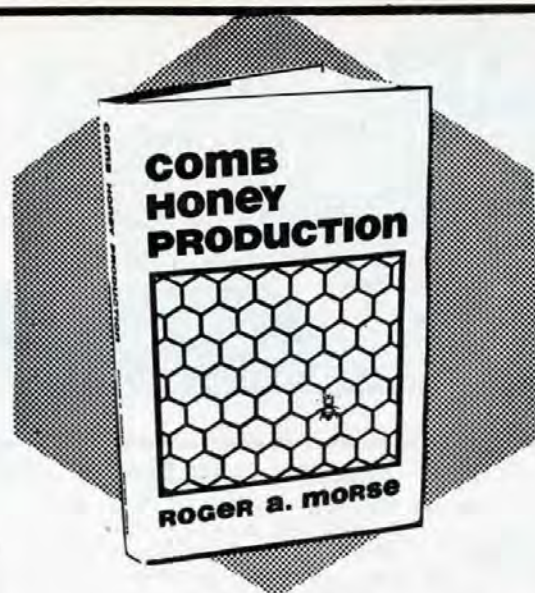
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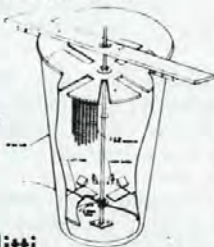
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Monthly HONEY Report

LAWRENCE GOLTZ

February 10, 1979

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

Wholesale Extracted

Reporting Regions

In 60 Lb. Cans	1	2	3	4	5	6	7	8	9
White (per lb.)		.52	.49	.48	.51	.50	.46	.45	.48
Amber (per lb.)		.45	.44	.44	.48	.46	.43	.42	.44
1 lb. jar (case 24)		19.10	20.75	18.10		19.00	20.10	17.75	
2 lb. jar (case 12)		17.95	18.75	17.75		19.00	19.60	17.25	

Retail Extracted

8 oz. jar		.60	.71	.55	.59	.61	.58	.59	
1 lb. jar	1.32	1.01	1.17	1.02	1.16	1.07	1.07	1.10	1.15
2 lb. jar		2.20	2.25	1.98		1.95	2.20	2.05	2.10
2½ lb. jar	2.80	2.48		2.39	2.50				
3 lb. jar	3.90	2.55	3.28		3.25	2.95	3.20	2.95	
5 lb. jar	5.70	4.55	4.85			4.25	4.25	4.75	
16 oz. Comb		1.65	1.77	1.69	1.45		1.35	1.70	1.80
16 oz. creamed		1.15		1.13					

Beeswax — Light \$1.70 — Dark \$1.60

Misc. Comments:

Vermont-Cold and snow during the last few weeks following heavy rains at year's end. Honey sales holding well. No changes in prices. Glass jars difficult to get.

Rhode Island-Colonies in good condition to winter over.

New York-Weather moderate through end of year. Bees in good condition.

Pennsylvania-Rainfall above average. Retail honey sales good.

Ohio-Cold and snow since beginning of new year.

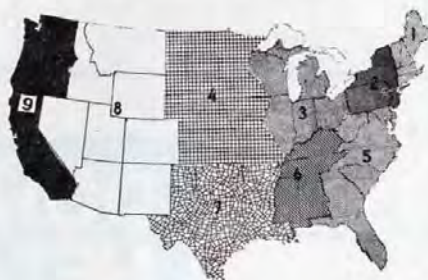
Indiana-Colonies light. Early winter weather was warmer than usual and clusters of bees large. Nearly all honey sold or contracted. Larger amounts of honey hard to find. Sales continue good at wholesale and retail.

Illinois-Northern half of Illinois have had heavy snows but southern half has had a milder winter through end of year. Bees wintering well. Hardly any honey left in beekeepers' hands.

Virginia-Winter has been mild through December. Moisture adequate. Honey selling well.

West Virginia-Weather moderate through years end. Bees in good condition.

North Carolina-Weather very moderate



through December. Bees in good condition.

Florida-Very wet fall, and poor fall honey flow. New crop of orange honey expected to start at 50 cents or better wholesale. Honey in short supply.

Minnesota-Much snow and bitter cold. Bees went into winter in good condition but hoping for some flight weather this winter. Retail honey sales good.

Nebraska-Cold in December. Bees in good condition.

Kentucky-Mild weather and heavy rainfall, through December. Bees wintering well. Normal honey sales.

Tennessee-Mild winter to date. Have had bee flights and colonies in very good condition.

Arkansas-Price of honey at retail up 5%. Bees wintering well. Rain 6 inches above normal at end of year. Small honey packers nearly sold out of honey. Honey moving well at retail.

Texas-Bees in good shape due to good fall honey flow. Very cold weather in early January. Honey sales steady. Bees in good condition.

Oklahoma-Bees in fair condition; using more than normal honey due to warmer days of early winter.

Colorado-Heavy snows and sub-zero temperatures will take its toll on bees this winter. Only strong colonies with surplus of honey will survive.

Montana-Winter weather about normal at end of December, after early winter storms. Good snowfall will provide moisture in the spring and run-off storage in ponds and dams for irrigation.

Washington-Watching for possible food shortages in colonies. Bees in good condition.

California-Bees in good condition. Moisture conditions good.

it's working
Thanks to you

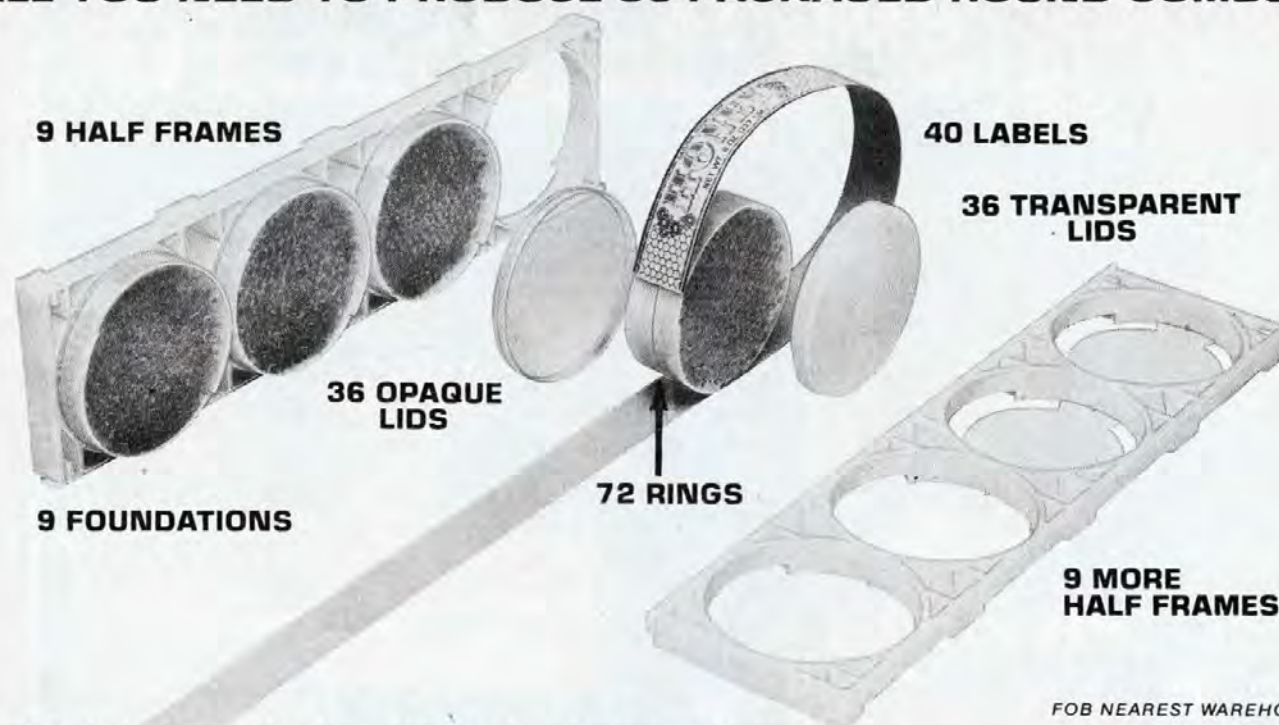


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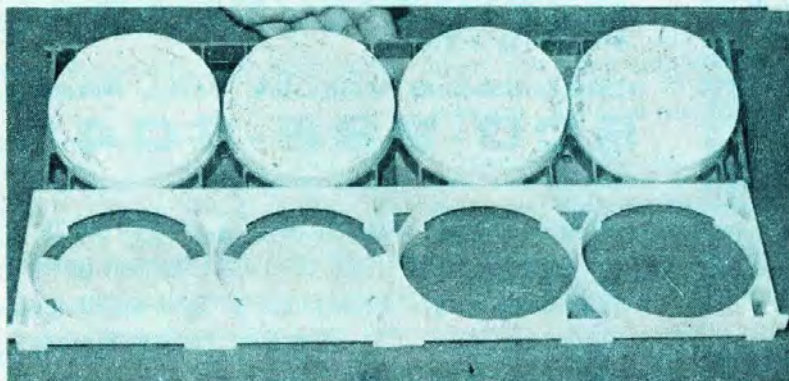
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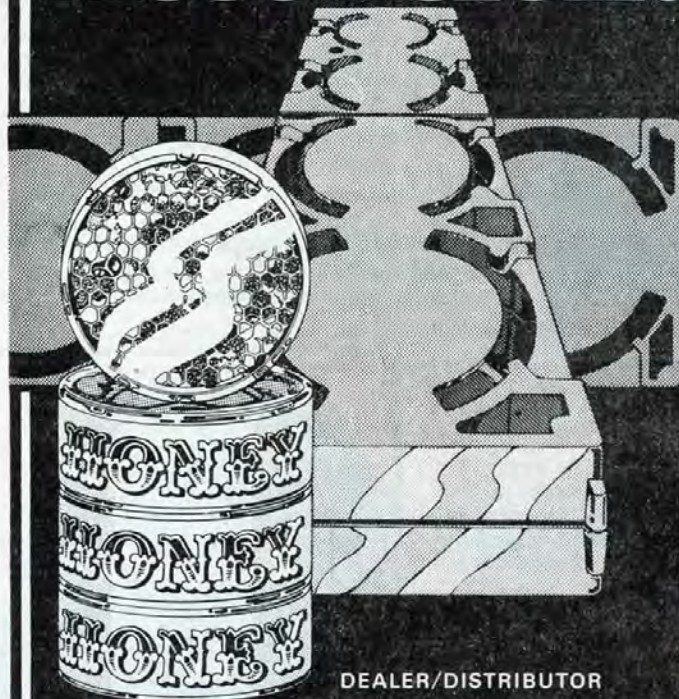
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Parkhill served as Director of the Arkansas Apiary Department for 18 years before retiring to promote the value of honey as a preventive medicine.

He was president of the Apiary Inspectors of America for 4 years, and he served on the Board of Directors of the American Beekeepers Federation. He has also traveled in many foreign countries, including Russia.

He has taught beekeeping for over 20 years. Since his retirement from the Arkansas Apiary Department, he has toured the United States giving lectures on honey as a preventive medicine, and has written two best-selling books on honey. The first book, the **Wonderful World of Honey**, is the only sugarless cookbook with the value of honey as a preventive medicine, facts about nutrition, honey as a beauty food, and over 300 sugarless recipes. The second book is **Nature's Golden Treasure**. His third book will be out in January, and is titled **In the Beginning**, and tells about honey, nutrition and food, from the Garden of Eden up to the present.

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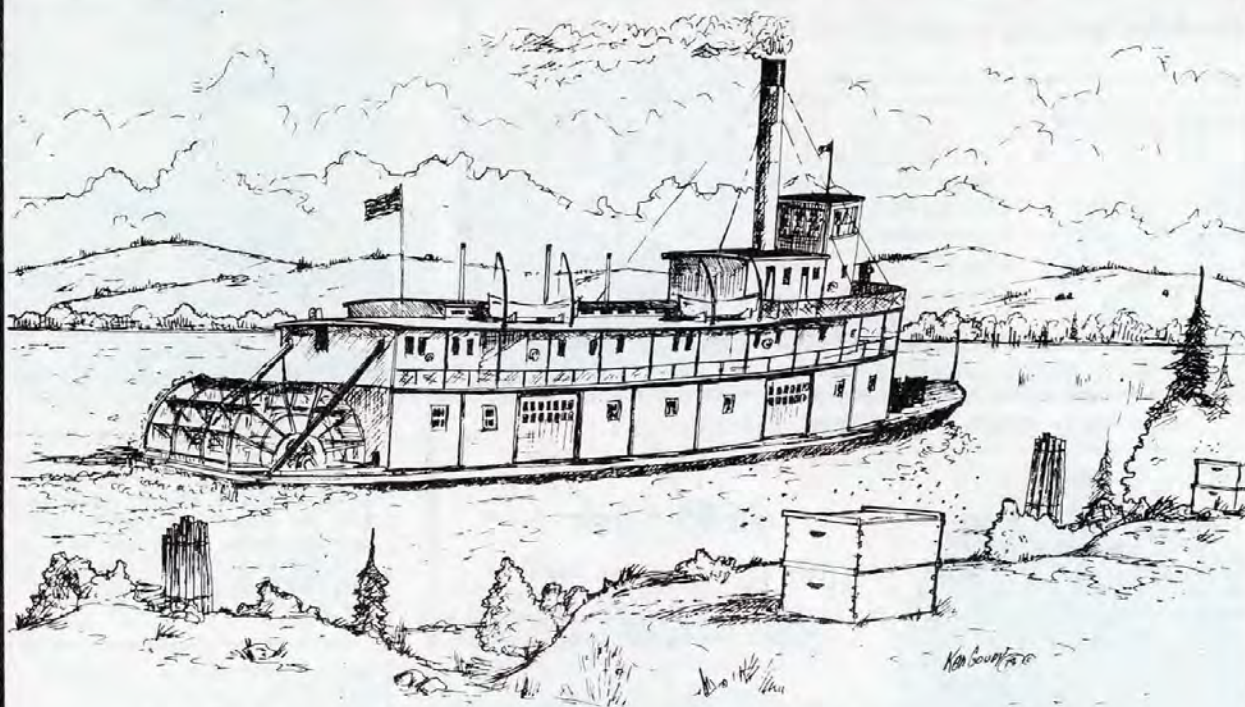
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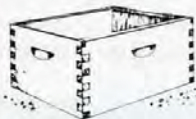
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Problems of the Commercial Beekeeper

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

Are They All New Problems?

COMMERCIAL BEEKEEPERS are confronted with new problems of major difficulty each year. The current new problem is probably the increased threat from insecticides used in agriculture.

But the old and fundamental problems do not therefore go away. What are the chief ones? They are undoubtedly swarming, and the problem of securing a new queen annually in each hive.

A commercial beekeeper told me recently that he did not know how many swarms he loses annually. Nor, he said, do I believe that many other commercial operators know how many swarms they lose. They do know, of course, which colonies fail to produce but they don't always know whether swarming was the cause of a colony's failure.

I recently sat with a group of commercial beekeepers as they discussed their varying techniques for swarm prevention, and securing new queens. They seemed to divide themselves pretty evenly into those who practice the let-alone method, and those who try aggressively to do something to prevent swarming.

The Let-Aloners

Some beekeepers seem to depend upon numbers to secure honey yield. They put a super of extracting combs on each colony early in the spring and hope the bees won't swarm, or will supersede their queens.

There is another group who practice moderate ways of swarm control such as reversing hive bodies of a colony that seems strong in numbers. Others occasionally inspect their stronger colonies and make up nuclei when they find queen cells. This group, and the genuine let-aloners, do not concern themselves ordinarily with replacing queens annually, or even bi-annually. They assume that the bees know how to take care of themselves; and if they don't all know, there will be enough sensible colonies to produce a crop.

I've heard several commercial beekeepers say: A year-old queen is right at the height of her productive powers. They're right. Research shows that swarms at new nests do not usually supersede their queens during the season in which they

swarm. That demonstrates the sturdiness of year-old queens. What it does not refute, however, is that these same queens are fully capable of helping produce the conditions that lead to swarming, and that these queens are sturdy enough to go along and help make the swarm succeed in their new quarters. J. Simpson, writing in the *Journal of Agricultural Science*, Vol. 54 #2 1960 says: "...so it may be concluded that swarming is more frequent with 2-yr. old queens than 1-yr. old queens; ...the percentage figures suggest that the ratio is at least three to one and possibly considerably greater."

No, the invention of the movable frame by Langstroth in 1851 did not totally remove the practice of swarming by honeybees. It did make it a bit easier for the modern beekeeper to practice control of swarming. But such practices are not easy.

Demareeing in some form is probably the most popular modern method used in attempting swarm control. In its most complete form it follows the practice of totally separating some of the brood from the presence of the queen.

In its less extreme form it follows the practice of spreading the brood throughout three or more hive bodies, thereby relieving congestion of the brood nest to some degree. But spreading the brood still leaves large numbers of bees in one contiguous unit, and so does not too thoroughly remove one of the chief prompters of the swarming impulse. Many an operator spreads the brood but does not check later to see if swarming has nevertheless taken place. Here is a definition of Demareeing as presented in the 33rd edition of *ABC & XYZ of Bee Culture*: "In brief, the Demaree plan means any method for expanding the brood nest by transferring the brood or the queen from one brood nest to another and then confining her activities to one brood chamber (usually the bottom one) by the use of a queen excluder for the purpose of the prevention or control of swarming."

The Ultimate Form of Demareeing

The ultimate step in swarm prevention is practiced by the more aggressive commercial beekeepers, in the group referred to earlier in this article, who go all the way in Demareeing.

Its practitioners separate part of the brood totally from the old brood nest and the queen, and seek to establish a separate unit—and at the same time in some cases to secure a new queen to replace the old one.

They do this by elevating five or more frames of brood with newly laid eggs, honey, and a goodly number of bees, above a doubly screened inner cover. Temporarily they plug the separate exit with green grass to discourage return to the old entrance of all the elevated bees.

This method of securing a new queen to replace the current one is not the easiest matter in the world. Time is the chief obstacle. An interval of two months is needed by this method to secure an elevated unit of this type strong enough to unite with the old one at the time of the nectar flow.

I'll spell out the time formula: 16 days to secure a new queen; six days before she mates (ordinarily); six days before she lays eggs (normally); 21 days before her first offspring is hatched; a week—or more—before the unit is strong enough to defend the new queen in competition with the old one. A longer time is desirable. Two months are the minimum.

In some localities the beekeeper does not have two months at his disposal in carrying on this scheme of queen replacement. If he enjoys the blessings of a long nectar flow, he's all right; if not, he has difficulties.

Here in the North where I live (100 miles north of New York City in the Hudson Valley) this procedure as I have described it would need to be begun about April 1. The weather at that time does not always permit the manipulations called for. But usually it does and so do other early days of April.

Any way you look at it, if this method prevents swarming; and doesn't too greatly reduce the productivity of the old unit on the bottom board; and if it reliably produces a new queen of good quality, much has been accomplished.

Certainly, swarming by a colony almost totally destroys its productiveness for an entire season. Superseding in the spring requires seven weeks before new bees are

available, and even then in very limited numbers.

But there is no specification in the Demaree formula that the upper part of the Demaree unit be reunited with the older and lower unit at any particular time—or that it ever be reunited. Certainly it should not be reunited until or unless its strength has numerically grown to the point where it is aggressive enough to assure dominance of its queen over the older queen below when the two meet.

The operator accordingly has options in deciding what to do about reuniting the two units. If the lower unit needs strengthening in order to profit from the nectar flow when it arrives, the upper unit may be removed during a day when the gatherers are in flight, and those from the upper unit will thus be added to the number below. Later, in the fall, the two may be reunited. This defers the demise of the queen below (if such is to occur) and gives the two units the benefit of her productiveness—for she usually is productive, as we have said.

If the upper unit has been in existence long enough prior to the nectar flow, and if the length of the flow(s) is sufficiently great as to make the maintenance of a queen in each of the two units helpful in jointly producing honey, an excluder between the two units may be desirable, the inner cover having been removed.

The Beekeeper and Nature

Many beekeepers realize that they are working at cross purposes with Nature in their need to prevent swarming, and in securing a new queen annually. What shall they do?

In setting up a unit over the old colony, as described earlier in this article, the beekeeper has options in determining the strength of the new unit. Its size should vary. If the old colony is extremely strong in numbers, a greater number of frames may safely be removed than in the case of weaker units. The ideal number should be arrived at on the basis of reducing the strength of the old unit to the point where it is discouraged from swarming.

From the point of view of the new unit's being strong enough to produce a good quality queen, it should be remembered that the upper unit has the benefit of heat from the unit below. It must also contain all the elements essential to building liberal-size queen cells, and feeding the larva in a postconstructed cell (a worker cell enlarged for queen rearing). If newly laid worker eggs are present—as should be assured by the operator—the bees have at least four days in which to get organized and to commence queen rearing. If fewer than nine frames are placed in the upper unit, the unoccupied space in the super should be filled with packing material such as crumpled paper. Ideally, a small supply of water should be provided, though it may not always be

needed. Also, as previously stated, the continued presence of the bees transferred to the upper unit must be assured by temporarily blocking the separate exit. Also, at the time of establishing the new unit, a hive body of extracting combs should be placed over the two hive bodies constituting the old unit. It is assumed also that these two hive bodies on the bottom board have been reversed to encourage the use of worker cells formerly next to the cooler area of the exit. Unless the old unit is more than usually strong, the entrance cleat should be left in place to combat the 40 degree temperatures that sometimes prevail at night.

Other Methods of Swarm Control

Some beekeepers practice the custom of weakening strong colonies to prevent their swarming by giving their unneeded frames of brood to nuclei that have been previously established in the apiary.

Care must be taken, of course, not to give more frames of brood to nuclei than they are capable of keeping warm. In such cases, too, entrance cleats will usually need to remain in place, at least temporarily.

Some operators who feel they can afford to purchase queens, divide the stronger colonies and introduce a new queen to one of the two hive bodies, the old queen first having been located. They may or may not unite such divisions after the nectar flow is well into its height.

Beekeepers who operate on a large scale often sense the desirability of rearing their own queens. Such individuals do not

underestimate the very real expenditure needed to undertake and maintain such a venture. So, many who have good queen sources at reasonable prices continue to purchase the queens they need.

Even the introduction of purchased queens requires the engaging of a helper knowledgeable enough to assure acceptance.

All of these and other procedures in attempting to secure new queens are weighed and watched, among other matters, by commercial operators in terms of uniform steps required, amount of time needed, and equipment necessitated.

Value of Year-Old Queens

Commercial beekeepers, and others, who are fully aware of the fecundity and sturdiness of year-old queens are constantly studying ways and means of retaining the productiveness of such individuals without contemporarily permitting the positive qualities of such queens to cause swarming.

The wisest and most successful operators find ways to keep the old colonies headed by such prolific queens, while concurrently taking advantage of the productive values possessed by these queens.

The solution of this problem is one of the chief elements present in the successful operation of a modern beekeeper who, in fact, is struggling at cross purposes with Nature.

MEET THE EDITOR OF THE

MINNESOTA BEEKEEPERS MAGAZINE



HANS BALLIN has been editor of the MBA magazine for the last 4 years.

Hans lived the early part of his life in Germany near the Hartz mountains (canary country). When he was 21 he came to the U.S. Why? As Hans phrased it—"Hitler and I just didn't get along".

Hans has been with University of Minnesota Hospitals for more than 30 years. Prior to his present appointment as

Manager in the Research Animal Resources, Hans attained a level of Associate Scientist under Drs. Gellhorn, Visscher and Najarian. Simultaneously Hans set himself another goal. He attended night school and after seven years received his B.A. from the University of Minnesota (magna cum laude).

In 1966, Hans, then a widower with two children chaperoned a teenage dance at the request of his elder son. At the dance Hans met another chaperone, DeeDee Ahrens, a widow with 5 children, who had also attended at the request of her son. (If the name sounds familiar don't be surprised. DeeDee is a former U.S. figure skating champion.) The teenagers were not dancing much, so DeeDee and Hans danced—at first to set an example for the kids—then—well they were married three months later. Hans smiled. "There aren't too many married couples that can say—our children introduced us".

The family lives on the Dellwood Peninsula in White Bear Lake and keeps busy with all sorts of hobbies. DeeDee sails, needlepoints, skis and plays tennis. The kids are into pottery, plants, photography—something new every week. Bees occupy Hans' spare time.

Spring Willows

"I like to stand there under the willows with the sun on my back and peer up at all this eager business."

By TAEDE W. VISSERMAN
Hazelton, B.C., Canada

I KEEP BEES and therefore I like willows. Not especially the ornamental ones you see on lawns, nor the knotted ones the Dutch make their wooden shoes from. Or, for that matter, the fast-growing ones that clog up sewer pipes and live vigorously for years despite your efforts to kill them. No, I mean spring willows. Just your plain ordinary willows that grow along brooks and on swampy places; a tangle of gnarled, fallen and growing jungle hardly noticed for the rest of the year.

Spring willows, you ask? Up until the willows flower Spring is a faint season, with little hint of the plenty to come. But now, suddenly, as the willows bloom, there among the otherwise bare branches, all that promise comes to life. They're suddenly giants, holding their bouquets to the sky even when their feet are still sometimes in the snow.

The bees go wild over them. I've not known bees to be idle when there's work to be done but also I've not seen them tackle a job with greater zeal than the willows. Every available hand is thrown into this wondrous field in the sky. For a mile around every willow is alive with bees; buzzing like great transformers, changing the season with their hum. It does not seem possible there could be so many individuals in those few hives I have in a row, even if it has to be because I'm the only one around here with bees and bee trees don't exist.

Now I know the bees have made it safely through another winter. Oh, I've had my ears to those hives and heard the grinding noise within that spells life, or have peeked inside and seen a mass of bees crawling between fat combs of honey and known they would make it. I may



"They're suddenly giants, holding their bouquets to the sky, even when their feet are still sometimes in the snow."

even have sorted empty combs and strung sweet foundation in frames in certain anticipation of the season's coming; yet every spring the willows surprise me.

Who but the beekeeper knows so well, so soon when spring has arrived? The robins may not be here yet nor the first mosquito hummed its way into your mind but the willows and the bees have kept their pact and speak of it. Not only can I hear and see them in the willows but walking by the hives in the evening the air is thick with the aroma of the nectar. The stronger hives fanning off their bounty advertise their strength by it. I think of them as perfect factories, concentrating the very essence of spring for me.

On the first sunny days when the willows bloom I have to drop everything. I like to stand there under the willows with the sun on my back and peer up at all this eager business. There always seemed a certain rudeness to their haste. It went against the lulling sense I felt til I remembered they'd just been freed from a five month lock-up and were celebrating. At last they were free to fly again even if the last fingers of winter might still grasp the land.

As I break open a hive it is apparent the cranky guards of the last visit have turned over a new leaf, or, more likely joined the celebration in the high fields. Plenty has mellowed them. Where only days before there were little patches of brood with darkening pollen on the outer combs are now huge stretches of larva glistening. Around them are rings of yellow pollen. The willows have laid their foundation for another season's building.

I think of one clump of willows and one day in particular: the day before I'd got my first bees, a package all the way from California. It was late April. Although it was only early afternoon bees were returning fully laden, crashing hard on the entrance ramp and rushing in while others were hurtling out. Not occasional bees, but seeming thousands, impossible numbers. I'd never seen such a scramble of animals in my life.

The bee-line went straight north and I followed it for about a half a mile over field and through bush until suddenly a hum, solid and loud, made me look up. There, in the wilderness were the little

(Continued on page 94)

Four Generations of Beekeepers

By M. H. STRICKER
Stockton, N.J.

THE CARHART FAMILY certainly has "bees in the blood". LeRoy Sr.'s grandfather and father both had bees and got him interested at the tender age of ten. Roy says, "That was about forty years ago and though we never did more than produce enough honey for us and our neighbors we all found the little 'critters' a fascinating pastime".

During Roy Jr.'s third year in college his interest became more than that of the previous generations so that he and his father went "commercial", buying a six hundred colony outfit in New York State.

For the first few years they were content to produce large crops of honey, selling both wholesale and retail. Then, as the "Marilee Apiaries" (combination of the first names of Roy Jr. and his Wife), they attempted with much success the supplying of bees for the pollination of blueberries and cranberries and other crops in New Jersey.

About this time Junior was called into service where he remains today as a surgeon in the Air Force, holding the rank of Major. The Major is still interested in bees and works them every chance he gets. If unable to get home, he takes every opportunity to visit other apiaries and is looking forward to serving his next hitch in an area where he can work bees in his time off.

Meanwhile, back at the apiary, Carhart Senior operates the business, at one time concentrating on supplying bees to blueberry growers in Maine and also doing pollination work for cranberries at Cape Cod. Now he says he is doing less pollination and concentrating on producing honey in New York and New Jersey but still doing more pollination work in New Jersey. He says, "Some of my customers got used to me, my service, and my bees so I continue that end of the business".

As for the honey crops in New York, he feels the area is not as productive as when he started some years ago, but is still good compared to some areas in Jersey where he has bees and the larger crops more than pay for the cost of travelling to New York State.

When speaking of New York beekeeping Roy has nothing but praise for New York bee inspector Ben Gabbert, saying,

"The Carharts have modified their equipment for efficiency in moving to the many crops they pollinate or produce honey from".



LeRoy Carhart, Sr. looking at a honey producer.



One-half inch holes are the entrance in lower chamber.



Steel strapping is used for moving and to foil vandalism.



Carhart unstrapping colonies for spring inspection.

"If all inspectors were as helpful as Ben beekeeping would be a constant pleasure".

"Ben always notifies me when he is going to inspect my bees, so I can be there if I want and Ben is the most efficient and careful of operators, never damaging equipment and cooperating with me one hundred per cent."

This winter he even took the time to notify me that some of my yards had been vandalized. This personal touch made me feel he was more of a friend than a government employee!"

The Carharts have modified their equipment for efficiency in moving to the many crops they pollinate or produce honey from. Brood nests are operated in single story ten frame standard hive bodies that have hardware cloth floor, and creosoted cleats that are left in position for moving or on location. Flush screens are used on top of these colonies so that many can be piled on a truck with a maximum of ventilation.

For an entrance five one-half inch holes are drilled in the center of one end. Being in a straight line, these are easily closed for transit with a small piece of masking tape.

Shallow supers are used above the standards, without excluders, with two one-half inch holes bored in each one allowing more access when colonies are used for honey production.

When I asked about the small entrance for the extremely large colonies needed for honey production he said, "If they

GLEANINGS IN BEE CULTURE

get too crowded I can easily tip the cover up allowing a top entrance, but I've always been surprised how with top and bottom screening, the colonies, no matter how big, seem to be content and do not seem to hang outside like the conventional hives.

It might be mentioned here that metal covers are carried to shelter the top screens from rain and to place on the colonies when they arrived on location.

LeRoy dusts with Terramycin whenever he opens colonies, and claims very little disease with this system. He explains: "When moving into strange areas and not knowing what my bees will get a chance to rob I began to use this as insurance, and it has worked out very well. It has been especially great since my son left and I am not able to do as much frame inspection as I used to. It has been a distinct advantage when bees are used for pollination in South Jersey where European foulbrood seems to always be prevalent".

When I asked Roy about the future, he was quite definite: "Well, I want to continue till Roy Jr. gets out of the Air



Dry sugar is fed in spring and fall.

Force, and I expect he will take over either on a full or part time basis, and who knows, maybe by that time, there will be a fifth generation of Carharts in the bee business".

The Blind Beekeeper

"...If you really set your mind to do something you generally can do it".

By **MICHAEL P. RICHMAND** ☆
Millbrook, New York

HAVE YOU EVER thought of why you became a beekeeper? I am sure there are as many reasons as there are honeybees in a hive. I became a hobbyist beekeeper because it was a subject that I knew nothing about. It seemed interesting and a definite challenge. When I received the catalog from the Library for the Blind about five years ago, I noted a title **The Complete Guide to Beekeeping** by Dr. Roger A. Morse had been recorded on talking-books. After listening to the book I was determined to get a hive of my own. In fact, that is exactly the way I started, by buying a hive from a local beekeeper. At present I have 15 hives.

I am sure the reader is interested in knowing exactly what a blind beekeeper can and cannot do.

Like most beekeepers I am interested in keeping up-to-date by reading the various periodicals and books which come out in the field each year. This is accomplished by friends reading to me or having the material read by various organizations on

tape. I certainly enjoy talking with other beekeepers, swapping both joys and aggravations. Like all individuals in the field, finding the perfect management system becomes a constant pursuit.

I have been able to master the making of most bee equipment. With some help I am able to put together both the brood chambers and honey supers. I find the nailing of frames a tedious and extremely difficult task. Here is where I get help, but I am able to assemble the frames ready for nailing by a friend. Placing eyelets in the side bars was a simple task to master. I have been able to place foundation in the frames and wire the frames. A standard wiring board which can be purchased from most bee supply outfits has proven quite adequate to my needs. I found embedding the wire with a standard electric embedder difficult at first. One of my beekeeping friends, who was watching me do this one day, noted that I was having a great deal of difficulty keeping both ends of the embedder on the wire. He suggested a simple solution which the sighted beekeeper may also find handy. All we did was to cut a groove in each end of the metal pieces which sit on

the wire. This holds the embedder perfectly in place.

I do not use paint on my hives because I find this tends to peel. I may get messier than the next guy, but certainly can apply the wood preservative to the outside of hive bodies. When I go to the bee yard alone or with a beekeeper friend, my hearing becomes the sense which must bring back messages as to what is happening. Close your eyes when you are down in your bee yard the next time and then you would be surprised as to what you would hear. You can tell whether the bees are particularly active that day and moving in and out of the hives on a regular basis. When opening the hive you can tell if there is some difficulty by the noise that they make. I am very proud of the fact that I am able to tell with pretty good accuracy whether a hive has a queen or not. The noise of bees in a queenless hive is distinctive. I tend often to say to a friend who is with me when we are opening the hives, "You better give them a little more smoke". This can be determined by the volume and kind of sound that the bees are making. Of course, the blind beekeeper is dependent on a sighted friend to describe what he is seeing in the hive. Your ears certainly cannot tell you what the laying pattern of the queen looks like, the presence of disease or how many queen cells there are. The amount of honey in a hive can be ascertained without sight, by lifting. A hive scale is also a handy tool for not only the sighted, but for the blind beekeeper. A quick feel of the scale's indicator can give me a rough idea as to how the hive is doing.

Smell is another sense which is utilized by someone who is blind. When there is a honey flow on I can smell the bee yard before I get there. Unripe honey has a particular pungent odor which I frankly do not like. As the honey is ripened and capped, the hive takes on an extremely pleasant odor.

I have long thought that the producers of package bees could have an advertising motto such as, "It's so easy you can do it with your eyes closed". This is certainly true of the blind beekeeper. Before placing the package bees in the hive, I feed them with sugar syrup. This is accomplished very easily by the means of a plastic spray bottle. I prepare the hives in advance and place them on the stand where I want them. As the sun is going down the packages are brought to the waiting hives. They are opened and the bees are shaken into the hives and the queen cage placed between two frames. A division board feeder with specially treated sugar syrup for nosema disease is placed in each hive. Those few bees that are stubborn and refuse to leave the package are left in the package in front of the hive to go in during the night and next morning.

(Continued on page 94)

☆Mr. Richman has a Master's Degree in Social Work. He is Director of Central Social Services at Greer-Woodcrest Children's Services, a large child caring agency in New York State. He is married and the father of three school-aged sons.

Honey Plants

By LARRY GOLTZ
Medina, Ohio

PART II

Pollination and Fertilization

THE HONEYBEE is intimately involved in one of the most critical steps in plant reproduction, pollination. Less understood but none-the-less essential to the life cycle of the plant is fertilization. Fertilization follows pollination if there has been a satisfactory distribution of pollen from the anthers to the stigma and is followed by the culmination of a successful union between the sperm nucleus carried to the ovule by the pollen tube and the egg nucleus contained in the embryo sac. The fertilized egg then contains the chromosomes of both parents and is the first cell of a new plant.

Seed Development

The seed carries the complex hereditary codes which will determine the characteristics of the new plant; it also contains the food supply for the new seedling. To trace the development of the seed it is necessary to go back to see what takes place in the stamens and the pistil, the plant organs most directly involved in seed formation. The sepals and petals of the flower have supporting roles.

Pollen grains are formed within four microsporangia or pollen sacs in each anther, the enlarged tip of the stamen. Different plants have pollen grains which range in size from the just barely visible to the naked eye to the microscopic. Their shape varies from nearly spherical to other odd-angled shapes. Some have smooth surfaces while others are covered with spines and other irregularities. Pollen grains have their beginning as microspores formed during the growth of the anther. Before the pollen grain matures and is shed a tube cell and a generative cell are formed within the pollen, the generative cell later forming two male sperms.

Just before the pollen is shed from the plant the walls of the mature anther disintegrate forming two pollen sacs filled with ripe pollen. When the sacs rupture the pollen grains are spread by the wind or are picked up by insects beginning the process of distribution which eventually may bring the pollen in contact with a stigma of a plant of the same species or kind. If the pollen grains reach a receptive stigma they cling to the surface until pollen tube growth begins. The



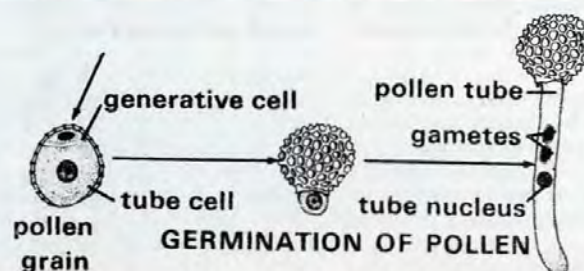
Seldom are both nectar and pollen gathered on the same trip but in either instance the bee will pollinate. Loose pollen clings to the hairs of the bee and is distributed from flower to flower.

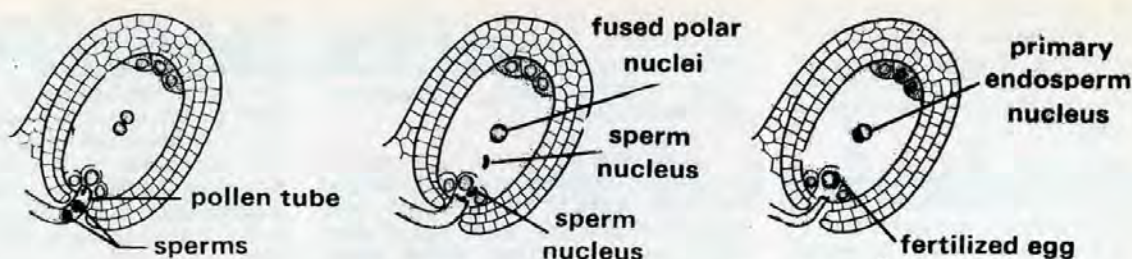
pollen tube grows down through the style and enters the opening in the ovule wall. Formation of the eggs take place within the ovules. Within the embryo sac one of the two eggs present unites with the male sperm carried down by the pollen tube. This initial union of egg and sperm nuclei is followed by a second fusion, the other sperm nuclei and the polar nuclei. Double fertilization, as this is known, must occur in every ovule if seed formation is to follow.

Pollination and fertilization must not be confused. Pollination is simply the transfer of pollen from a mature flower anther to a receptive pistil of the same flower or another flower on a plant of the same kind. Fertilization is the series of events which take place following polli-

nation, beginning with the growth of the pollen tube and concluding with the double union of the eggs and the sperm in the ovules.

Seed development follows fertilization. The fertilized egg grows into a seed embryo. A growing embryo is nourished by food reserves or endosperm and when fully developed within the seed coat it contains the primary seed leaves, embryonic shoot and stem of the seedling which will grow from it. In some seeds the endosperm is entirely used up by the developing embryo while in others such as the cereal grains the endosperm remains a substantial part of the seed and is used as food by the seedling and of course is an important part of the food value of the grains to humans and livestock.





Double fertilization. One sperm nucleus fuses with the egg nucleus, the other with the polar nuclei.

Flower-Bee Relationships

Of all the insects the honeybee is the most active in its relationship with flowers. Insect-pollinated flowers have evolved organs and mechanisms which particularly favor winged insects and in many instances favor the honeybee, the most numerous, adaptable and efficient of the winged visitors. Most flowers which require insect pollination secrete nectar from specialized tissue which exude the sweet fluid containing from five to sixty-five percent sugar. Not all bee visits to flowers are favored with nectar. Changes brought on by dropping temperature, too much or too little moisture or diminishing light, for example can cause momentary or permanent cessation of the nectar flow. In addition to variations due to environmental factors plants themselves vary considerably in their capacity to produce nectar, some giving none or very little while others offer a veritable feast to any visitors no matter what insect, or even bird, if adapted to siphon out the nectar, as does the hummingbird. The medium tongue length of the honeybee does not allow her to tap the deep-lying nectaries, leaving them to the moths and the butterflies.

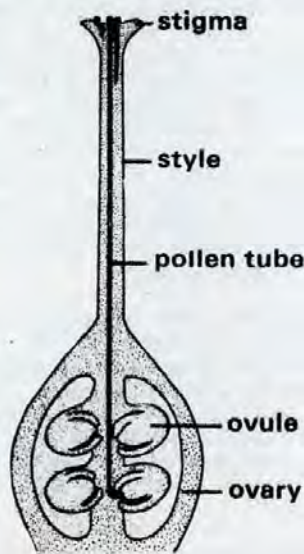
Flowers have adaptive mechanisms to protect the pollen and nectar from rain and unwelcome visitors. Sheaths, long tubular corollas and spring mechanisms foil penetration to reproductive flower parts until the time is proper or the right pollinator penetrates the defenses. Attractive colors are displayed which lure insects drawn by odors as well as by the colors. White and yellow, two predominant colors in flowers are both highly visible to insects particularly when guided to the nectar reservoirs by contrasting color markings in the manner of lines or dots. There is usually such a diversity, favored by cross fertilization, among plants, that bees can take advantage of a seasonal array of nectar sources. This enables them to survive habitats which present extraordinarily harsh conditions that may discourage or deny subsistence to many other animals.

The honeybee in turn has evolved body adaptations which allow it to take advantage of the dispersal of pollen and nectar by the flowers. An extendable tongue gives the bee a siphoning tube necessary to take up the nectar and the

peculiar bristles on the outside surfaces of the hind legs enable it to carry the loads of pollen. An expandable honey sac stores and protects the nectar loads while she bears her burden back to the hive.

Instinctively the bees favor those plants which offer the richest nectar and the most accessible and nutritious pollen. If a field bee begins to forage on one species of flower she invariably continues to stop at only that one species until a full load of nectar is obtained or the nectar flow ceases. This trait of flower consistency serves to the advantage of the flower as pollen is thus distributed principally to compatible stigmas.

All things considered it is inconceivable that the richness of our floral wealth could be maintained without the honeybee.



Pollen tube growth.

Nectar and Nectar Gathering

Plants with heavy, sticky pollen that cannot be carried by the wind must attract insect pollinators by giving nectar if they are to be cross pollinated. Nectar is a faintly sweetened liquid containing usually from 10 to 30% sucrose. Honeybees tend to favor the collection of nectars with the higher concentrations of sugar and this often leads to problems in bee management for pollination. Bees moved

to agricultural crops are sometimes distracted by rich nectar flows from non-target plants. The factors which determine nectar richness is not completely understood. The degree of a flower's dependency on bee pollination may be an influence on the richness of nectar in different flowers.

Flowers attract bees by odor, texture, color, shape or outline and by the density of the stands. Blossom odors vary in level of attractiveness to various insects and in intensity. Some flower odors are evident only to insects while others are easily sensed by humans. The scent of a freshly opened, unfertilized flower may be greater than that of an older flower. Flower texture and color attract foraging bees most beneficial to that plant. Distinctive markings on the corolla, some perhaps visible only to the bee guide the forager to the nectaries, usually located at the base of the floral structure. Flavonoids and plastids are the flower pigments which give color to the petals and other floral parts. Large concentrated stands of blooming plants naturally yield greater volumes of nectar. Beekeepers locate near dairy farms as these are good indicators that concentrations of legumes (alfalfa and clovers) are grown which provide good bee forage. It has been noted that bees prefer some floral shapes and structures over others, one being the irregular flowers of the legumes.

Considerable study has been given to the factors which influence nectar secretion. Researchers are interested in the internal or physiological processes of a plant that effect nectar secretion as well as the external or environmental conditions such as temperature, moisture, light and soil conditions.

Earlier investigations made by measuring colony production of honey under field conditions yielded some important principles in regard to nectar secretion:

1. The amount of solar radiation (sunlight) received by the plant a day or two prior to the honey flow is closely linked with the volume of nectar likely to be secreted. Solar radiation increases from south to north and from east to west in the United States when measured on a yearly basis. The long, clear days in the North and the West favor nectar secretion.

2. Daily temperature variations during the honey flow stimulated the nectar flow. Low evening and morning temperatures followed by high midday and afternoon temperatures led to greater honey storage on those days.

3. Soil conditions favorable to nectar secretion include ample moisture, nutrient and alkalinity balance. It is difficult to be certain about soil influence on nectar secretion as different plants react favorably or unfavorably to specific conditions found in a soil. As an example the asters and goldenrods yield nectar well in acid soil whereas clovers do very poorly.

4. Weather conditions in general either favor or retard nectar production by the plant or impede gathering by the bees. Some of the more subtle influences of climate and weather such as air humidity, winds, rain and snow distribution and temperature extremes effect plants and nectar.

5. All environmental influences external to the plant interact to influence nectar secretion. These influences are reflected in both the sugar content of the nectar and in the amount of nectar the bees find available, both important considerations in determining the amount of honey that can be stored from honey plants.

Manitoba, Canada nectar flow records kept from 1925 to 1944 and from 1950 to 1971 show variations in the dates of the start and ending of honey flows in that Province; however, the 15 day period of greatest gain in colonies on scales was fairly constant each year. The five day spread during which the peak flow occurred over these time periods falls between July 8th and July 23rd nearly every year. Consistency is not lacking in nectar secretion measured in a long time frame and under fairly stable conditions but can be highly variable otherwise.

Nectar secretion varies hourly during the day, a fact which apparently can be anticipated, within limitations, by the honeybee. Discovering new nectar sources is aided by communication within the hive by the dances of returning scout bees. Directions taken from interpretation of the dances are supplemented by visual and olfactory senses in locating the most promising nectar sources. Some plants which yield nectar cannot be tapped by honeybees due to their limited tongue length or the plants do not have exposed nectaries.

Pollen and the Plant

The pollen of the plant is the bearer of the male hereditary traits while the egg carries the female traits. When the male and female gametes fuse at fertilization each gamete contributes its own set of directives to the fertilized egg, which thus acquires a combination of traits. The next generation of plants produced from this union will then have its characteristics

determined by the genes carried on the chromosomes. Inherited characteristics determine the form of the plant visible to us, as, for example a tree, a stalk of corn or a tomato plant.

There are many interesting aspects of the transfer of pollen between the anthers and the stigma. Many flowers have adaptations that take advantage of every insect visit to bring about cross-pollination. A stigma may be so placed that a bee visiting the flower will brush against it delivering pollen picked up from another flower but not pollen picked up from its own anthers. This is most likely to occur when the elongated style sticks out beyond the shorter stamens. In some plants the pollen sacs of the anther ruptures releasing the pollen before its own stigma is receptive, therefore pollen from another flower is necessary to pollinate that blossom. Cross-pollination is also encouraged in plants when the style varies in length between individuals of the same species (heterostyly). A bee visiting the short-styled flower brushes against the protruding anthers while reaching for the nectar. Flying to the next flower she comes into contact with a long style causing her to brush pollen against the protruding stigma. Another interesting flower-insect exchange is illustrated by the manner in which pollen is dusted on the bee by a tripping mechanism in the salvia (*Salvia pratensis*). When the bee thrusts its head between the upper and lower lips of this irregular flower to withdraw the nectar she causes the anthers to be tripped from an overhead position and down upon her back, dusting her with pollen. The filaments bearing the anthers then return to their original position. When the bee visits another flower that is older she comes into contact with the stigma almost immediately as it has grown downward, the lobes opened to receive the pollen from the back of the bee where it has been carried from the previous contact with the anthers.

Some pollen, when transferred to the stigma from the anthers of the same flower will not bring about fertilization. This is known as self-incompatibility. Other flowers find "selfing" or the utilization of its own pollen to be perfectly or at least partly satisfactory. We refer to this condition in plants as being self-compatible.

Pollen and the Bee

Many of the important nectar flowers offer a bounty of pollen along with the nectar. An adult honeybee lives on a nearly pure carbohydrate diet of honey but during the grub or larval stage her diet was considerably different. Brood, or larval food is formed in the brood food glands of the adult nurse bee and is fed lavishly to the larvae. Body building (protein) food is very important to the growing larvae and the principal source is pollen gathered fresh in season or from the stored reserves in the combs. The adult bees possess enzymes which enable

them to digest the several proteins available from natural pollen or pollen substitutes provided by the beekeeper. The larval food secretion of the brood food glands is a sticky milky fluid very rich in vitamins and other nutrients. It is fed to the larvae for the first three days, though on the third day honey and pollen is added to the diets of worker and drone larvae. Larvae in queen cells are fed royal jelly.

Pollen Gathering

Brood rearing in a honeybee colony with its attendant need for quantities of pollen begins in late winter, even before freshly gathered pollen is available. Pollen gathered and stored the previous fall is used for this early brood rearing having been stored and preserved in cells usually located below the winter cluster. Farrar (1936) states that 300, 600 or 1,000 square inches of pollen, depending upon the locality, may be considered equally as necessary as large clusters of young bees, vigorous queens, 60 to 70 pounds of honey of good quality and adequate protection for good wintering.

Pollen is carried to the hive in compact globules in the pollen baskets of the hind legs of the honeybee. Most observations on bees have confirmed that honeybees forage either for nectar or pollen on their trips to the field, never or very seldom for both at the same time though the bee inadvertently picks up pollen on the hairy exterior of its body during many foraging trips for nectar. On landing on the flower the pollen gatherer plucks the pollen from the anthers, though the head as well as other parts of the body become dusted with other grains of pollen. Periodically the bee cleans itself of this body pollen using the pollen brushes of the front leg. She transfers it to the middle legs and finally to the inner surfaces of the hind basitarsi from which the pollen clumps are packed in the tibial pollen baskets along with that taken directly from the anther. It is only by this series of intricate maneuvers that the bee is able to transfer pollen collected to the pollen baskets and carry it back to the hive.

It is interesting to note that pollen grains remain attached to the hairy surface of the bee even on successive trips to and from the hive as the bee has difficulty in grooming parts of the head, thorax and abdomen. Pollen and nectar-gathering bees pollinate when their heads touch the stigmas but the pollen gatherers are more likely to pollinate when their bodies come into contact with the stigma.

The story of the production and the utilization of pollen is one of mutualism: plants and honeybees sharing a need that cannot be easily fulfilled without the presence of the other. Pollen dissemination by the plant, particularly when heavy sticky, heavy pollen is produced is

(Continued on page 90)

Is It Overstocking...

Or is it Jealousy?

By RON MIKSHA
Groveland, Fl.

IT SEEMS THAT the old question of overstocking bee locations has still not been answered in Polk County, Wisconsin. A couple of years of poor honey seasons—caused by changing agricultural practices, unfavorable weather conditions, and possibly beekeeping ineptitude—has aroused screams that the “outside beekeeper is stealing all our honey”. I refer, of course, to the actions of the Polk-Burnett County Beekeepers Association and the December *Gleanings* article “Beekeeping Ordinances in Northwestern Wisconsin”.

The idea that there must be two miles between every yard of bees is absolutely absurd legislation. It seems remarkable that anyone with even the most rudimentary knowledge of bees could have had any hand in enacting such a law as that now afflicting Polk County. There are many, many areas where I would not put 20 hives within two hundred miles, and other areas where I have sixty or more colonies at half mile intervals—and I don't doubt that they produce more honey per hive than any colony of bees owned by the vigilantes of Polk County!

In the late 1950's when my father first started putting his bees near Groveland, Florida there were three other beekeepers here. Two of those have since ceased their operations. But today, twenty years later, there are seventeen commercial beekeepers within the same area. During citrus bloom we have a density of nearly 200 colonies per square mile. Though it has become almost impossible to find places to locate bees production seems unhampered. Well managed colonies in the spring of 1978 averaged 80 pounds. In 1926, when John H. Lovell compiled his tome *Honey Plants of North America* the concentration of bees per acre of citrus was far below today's number. Yet, Lovell (page 176) says, “The average surplus in a good year is about forty pounds”. That was 1926. Of course, the 1978 crop was very unusual—sometimes no orange honey is produced. Nevertheless, the huge number of bees didn't hurt our production.

Polk county, Wisconsin is far from the “dumping grounds” that local beekeepers apparently imagine it to be. I wonder if the author of that article ever heard of Dr. C.L. Farrar, the most brilliant bee culture scientist in modern times. In many of Farrar's USDA publications he states that “fully 90% of the available nectar is lost

because there are not enough bees to gather it”. Dr. Farrar should know. He spent his acclaimed lifetime researching the subject in Madison, Wisconsin—and he retired in Balsam Lake, Wisconsin. Balsam Lake...county seat of Polk County!

Perhaps the father of beekeeping, Rev. Langstroth, can help illuminate the subject. Quoting directly from the original copy of the *Hive and Honeybee* we find Langstroth telling us, “I confess that I find it difficult to repress a smile when the owner of a few hives, in a district where as many hundreds might be made to prosper, gravely imputes his ill success to the fact that too many bees are kept in his vicinity”. He thought the question had been settled over a hundred years ago—obviously, there are still those beekeepers around who are over a hundred years behind times. How unfortunate that they should find themselves in positions of legislative authority.

I operate bees in several parts of the United States and Canada and have yet to discover a correlation between production and density of honeybees. Does anyone have the right to regulate the number of bees which can be located in a specific area when it is absolutely impossible to know how many bees that area can support? The Polk County ordinance says there must be two miles between bees. That gives each yard of bees a mile radius in which to work. Will the local government fine bees which fly beyond their mile limit? What about the millions of wild bees and butterflies and moths and wasps and other nectar gathering insects and birds that already thrive on those eighty-seven and a half million square feet of land that lies within one mile of every beehive? If there were a fixed, immutable amount of nectar available then common sense declares that through a balanced environment and many centuries of time, nature would have allowed the number of nectar seeking creatures to balance the amount of nectar available. Most of us know it doesn't work that way. When the chemistry and physics of weather, soil, moisture, sunlight, plant nutrition and God alone knows what else, all decide to combine properly everyone gets fed. If the combination doesn't arrive—move your bees!

This is America. The same opportunities are available to everyone of us. The

beekeepers in Polk County, Wisconsin are free to move their bees to Florida, California, Texas, or Mississippi for the winter. The regulation and legislation problem is in no way unique to the Wisconsin situation. In every corner of this great nation, and in every phase of life and business, people are inviting and encouraging laws which will “protect” them from the opportunity to learn, work, think, and live peacefully in what was a free world. We must hold our heads up and demand a free environment before it is entirely too late. If anyone chooses stagnation instead of growth, ignorance instead of knowledge, poverty instead of prosperity, please...don't ask the government to help you.

Are there too many bees? No. Not according to every major apicultural scientist in the world. Why the poor crops in certain areas? The fact is, in some parts of the continent the honey crops have never been better. Instead of fretting, worrying and complaining about the successful neighboring beekeeper, perhaps his habits should be imitated. His efficiency, skill and knowledge are available to anyone willing to apply effort and make sacrifices. No, apparently overcrowding is not the problem—the problems are ignorance and jealousy.

NEW SPRAYER DESIGNS

SEVERAL new concepts in pesticide application have been developed by USDA agricultural engineers stationed at the Research Center, Wooster, Ohio. One new sprayer now being refined and tested is a machine that mixes water and pesticide within the unit, eliminating handling and mixing risks. All liquid flows, mixing, and even flushing of lines and containers are accomplished by the operator at a control panel.

Also under test are spray units that detect plants in the row and trigger the release of pesticides at the individual target plants. The engineers are testing one unit which uses feeler wires to trigger the spray and one in which the plants are detected by a modulated infrared electric eye system. In test on cabbages, the intermittent sprayers were just as effective and required almost a third less pesticide during the season than continuous sprayers. Further tests are planned.

Taken from *Ohio Report* Nov.-Dec. 1978, pg. 90.

A Large Hive Story

"There is a strange and rather involved history behind the various sizes of hives and frames used."

By ALEX MULLIN
Long Sault, Ont., Canada

THE TIME OF the large hive in apiculture has almost gone, but it has left behind a legacy of large hives—what else would you expect?

The history of beekeeping means that quite a few of those old hive bodies people are bringing down from attics and out of storerooms are not the same as the standard Langstroth. In spite of the wise advice to avoid old bee equipment some of it will be used anyway.

Some of this old stuff was made of the best possible lumber and if it was carefully stored away it will be as good as new. If the frames still contain combs and they are free of any sign of scale or dried down remnants of dead larvae some will "take a chance".

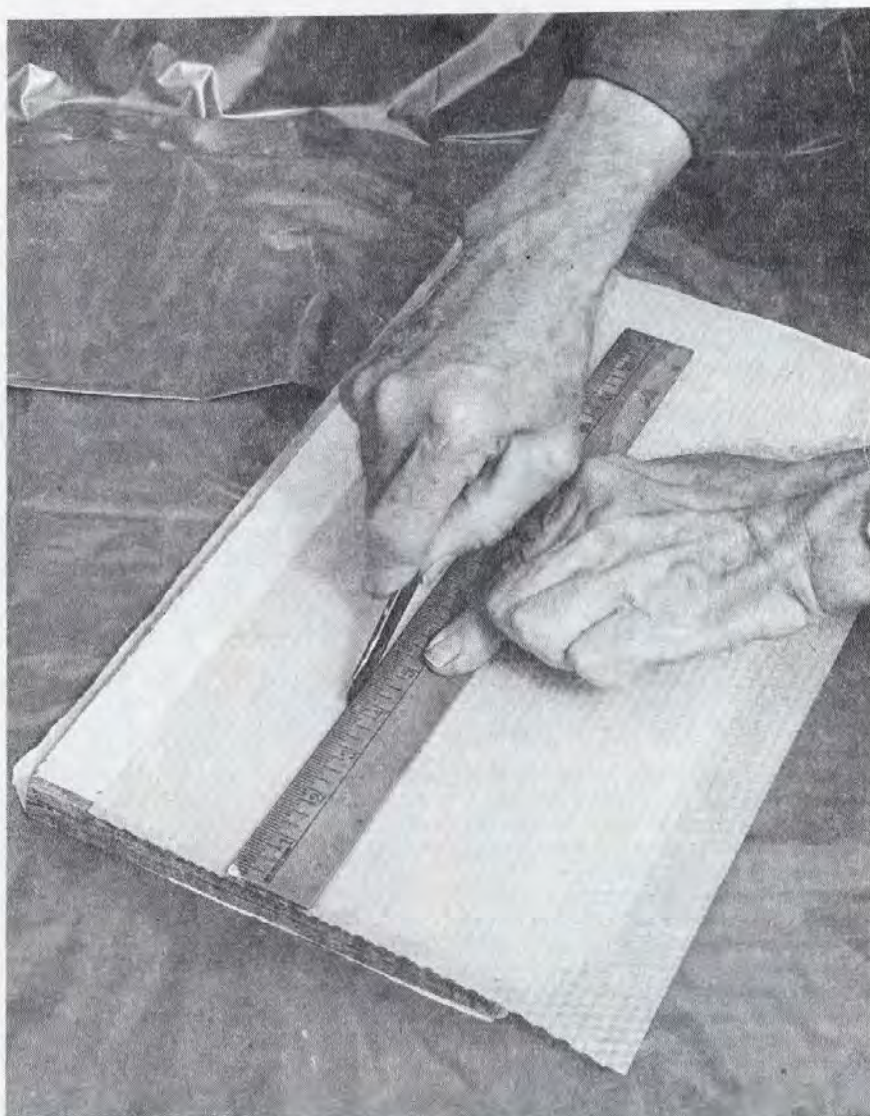
If the combs are gone, which is not unusual, the hive bodies, covers and so forth can be treated the same as material from colonies discovered to have American foulbrood, that is, the frames and remnants of combs should be burned and buried and the inside of the boxes scorched out.

With the proper precautions it should not be any less safe to use old equipment than it would be to use equipment from colonies destroyed on account of AFB infection. In Canada the likeliest larger size to be encountered is the Jumbo size, which is the same length as the ordinary Langstroth hive but two and an eighth inches deeper.

Until recently, anyway, at least one manufacturer offered Jumbo hive bodies and frames in his regular catalog and one other that I know of offered frames and foundation, and I believe still does. Others will make up special sizes to order, at an extra charge, of course.

If there is much of the old style equipment available it will pay to order the proper size foundation, but unless you live reasonably close to a dealer who stocks it, just getting enough for an odd few frames can be expensive and annoying.

I've found it quite possible to put two pieces of foundation together, one piece regular Langstroth size and the other a trifle over two inches wide trimmed from a sheet of plain foundation. Beekeepers are an ingenious lot and more than likely



The filler strip should be wide enough to fill the gap between the bottom bar of the frame and the larger sheet of foundation, plus a small overlap. Extreme accuracy is not required. A paper trimming knife makes a handy cutting instrument.

others have used similar methods. But it's handy to know it works.

As the pictures show the bees build out the foundation in one piece, usually with a row of accommodation cells. It's surprisingly hard to get an exact match because the foundation is slightly flexible. It doesn't quite do, either, to simply butt the two pieces of foundation up together and hope for the best. If you do that, I find, the lower bit sags away or bends over somehow and the attempt is wasted.

You may notice that the upper sheet of foundation in this little combination is wire reinforced, the lower piece is plain, as of course it almost has to be if it is to be cut to size easily. It amuses me to think that 20 or 30 years from now when I'm not around to explain it somebody is going to wonder how in the world anybody got that queer kind of wax foundation, partly reinforced and partly plain!

The same general idea could probably

GLEANINGS IN BEE CULTURE

be used to patch up combs with holes in them. In fact, this has been suggested a few times, or sections of drone comb cut out and pieces of plain foundation put in, although I haven't tried this myself. But I think this is a neat way of making use of just one or two odd supers of Jumbo or other extra sized frames when it would be expensive, or inconvenient, or both to order special sizes, or bother with just a few sheets of a size you just don't happen to have on hand.

Incidentally you can't get away with using an ordinary sheet of foundation in the upper three quarters or so of a frame and leaving the rest empty. That's just an invitation for the bees to build drone comb in the blank area, probably more than they would if there was no foundation in the hive at all.

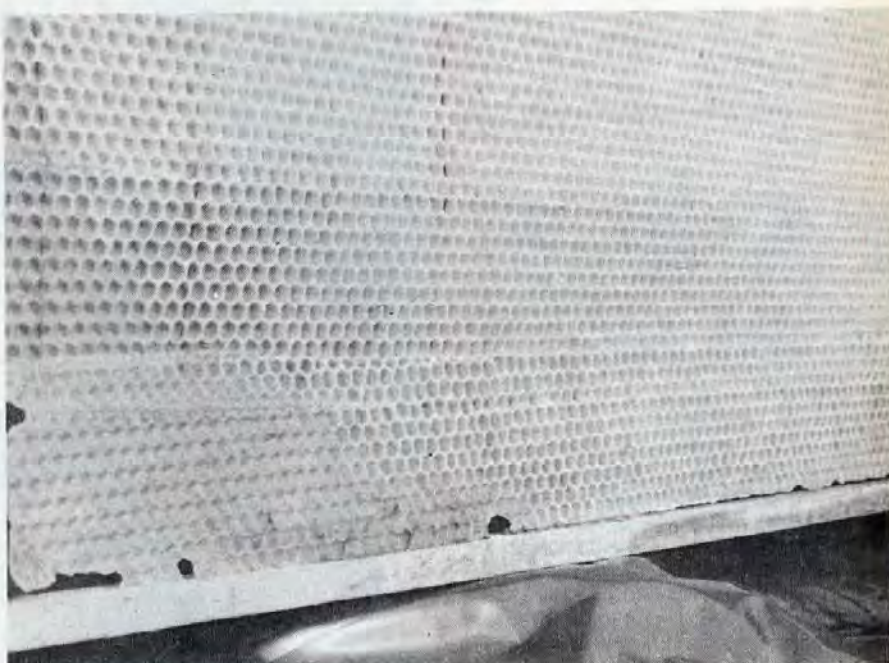
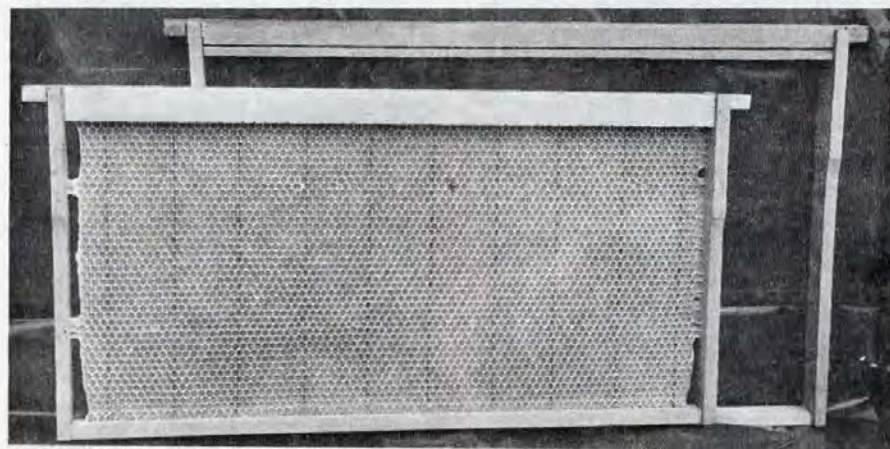
There is a strange and rather involved history behind the various sizes of hives and frames used. There were scores, perhaps hundreds in the past, and some still survive to a limited extent.

Rev. L.L. Langstroth noted the discovery of the bee space and the possibilities of enclosing combs in frames hung in boxes on Oct. 30, 1851, and by 1852 when he published the first edition of *Langstroth on the Honeybee* he had worked out the dimensions of the Langstroth hive, which strangely enough, were not the dimensions of the Standard Langstroth.

The size was 17 and three eighths by nine and one eighth inches. It seems to have been A.I. Root who really established the dimensions of the standard frame as 17-5/8 by 9-1/8 inches. A small footnote in the 1947 edition of *The ABC & XYZ of Bee Culture* says the change was made because the slightly larger frame would take four ordinary comb honey sections 4-1/4 inches square.

The change wasn't enough to destroy the interchangeability of the two frames and since A.I. Root was a leading manufacturer the slightly amended frame,

This comparison shows a comb drawn from new foundation in a Langstroth standard frame and a new factory made Jumbo frame. It is the same length but two and one eighth inches deeper.



The bees do not leave an excess thickness where the foundation overlaps, which should only be the width of a cell or two anyway. But unless the matching has been extremely good, there will be a row of imperfect accommodation cells along the joint. It is harder than might be imagined at first thought to get the slightly flexible foundation to match exactly.

rather than the actual original became the accepted standard.

But the world of beekeeping in the last half of the 19th century was a world of friendly rivalry—well, reasonably friendly, most of the time.

More or less contemporary with L.L. Langstroth, Moses Quinby was working out his method of keeping bees, and he was highly successful with box hives. But as soon as he heard of Langstroth's discovery he made use of it.

In his book, *Mysteries of Beekeeping Explained*, he acknowledges his debt to Langstroth for his idea, but he says he

prefers a simpler hive (Langstroth had a sort of porch on his) and that he thought the right size for a hive was 2,000 cubic inches interior size. This was to allow ample room for the queen to lay and enough room to store enough food for wintering.

Although Langstroth, in the third edition of his book, brought out 61 different reasons why his hive was best, the question of dimensions hardly seems to have entered into it. Since it was the principle of the hanging frame a bee-space from the outer box that mattered, one wonders why he didn't choose some even dimension, say 17 x 9, or something easy to remember.

Quinby was an authority whose ability cannot be overlooked. Among other things he gave the world the bee smoker. The size he preferred, according to the volume of the *Mysteries*, etc., printed in 1865, which was a revision of the first edition of 12 years earlier, was a hanging frame 18-1/2 by 11-1/4 inches.

He makes the point that this was about the largest comb that could be handled without falling out of the frame. No mention of either frame wiring or foundation. Eight made up a brood nest.

Quinby believed in keeping it simple and keeping down the investment, so his hives were plain rectangular boxes with no trimming at all. Except for their off-beat size they were practically the same as present ones.

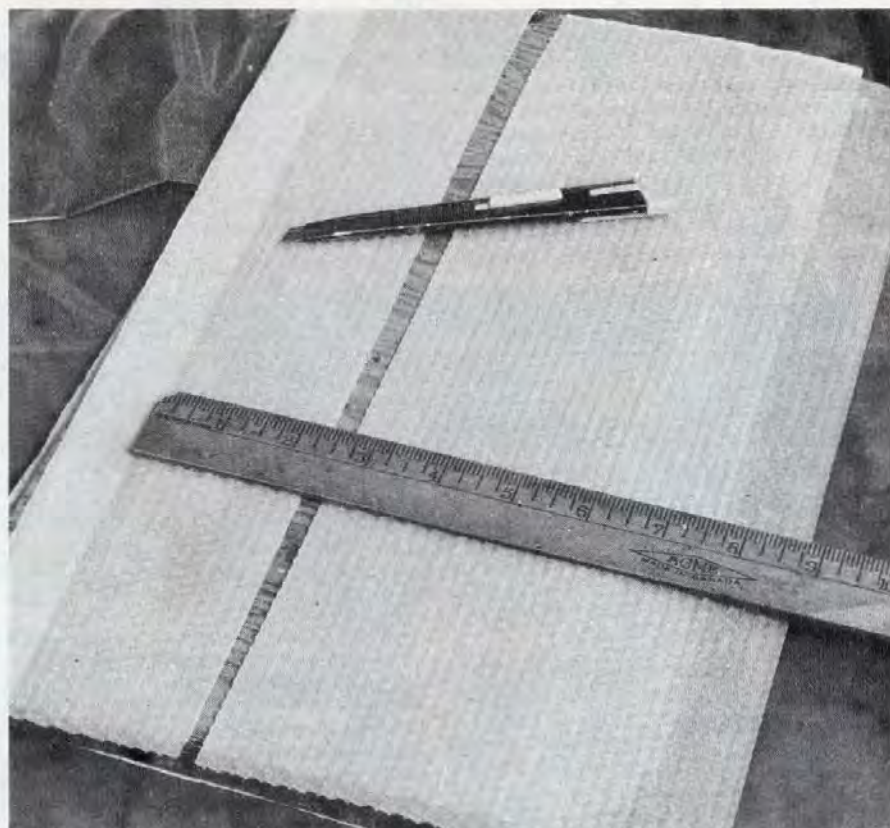
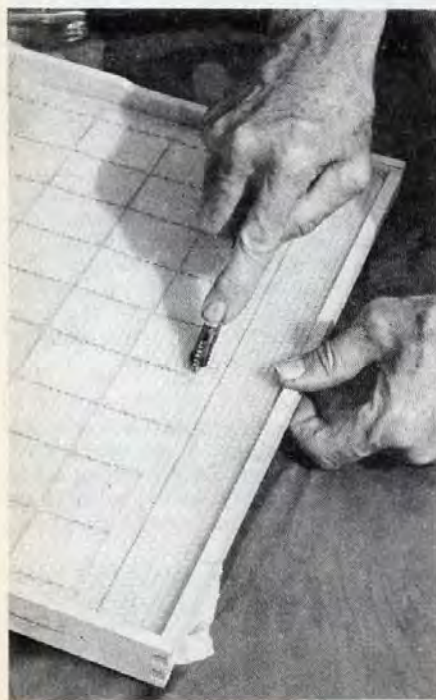
In the meantime, while all this was going on, another mainstream contributor to the development of the American bee industry was becoming established. Charles Dadant emigrated from France in 1863, by which time the frame hive was the accepted thing among serious beekeepers.

The Dadants adopted the Quinby frame, well, almost. Page 157 of their 1897 printing of **Langstroth and the Honeybee**, which they revised and enlarged, under the combined authorship of Charles and his son Camille Pierre Dadant, strongly recommended the Quinby frame, except that they made their hanging Quinbys one fourth inch deeper than the originals.

Moses Quinby had allowed space both under and above his frames, which were intended for box honey and not meant to be tiered up. None of those old hives were meant to be used except as single hive bodies, no double story brood nests were contemplated by the original designers, so far as I can discover.

Moreover, the Dadants made their hive 11 frames wide, although they said they generally used only nine with follower boards on both sides of the brood nest. The original Dadant was supposed to be used that way, it would appear.

The two pieces of foundation are pressed together with a wheel type wax imbedder. This should be warm, but not hot enough to melt wax, or scarcely so. You want the two sheets pressed together, but not a row of holes. Note the upper portion of the composite sheet is wire reinforced, the lower piece plain. That will be a puzzle for somebody, in the future.



Those paper cutting knives are sharp and quite safe if the blade is not projected too far. But the blade is hard and a bit brittle, so don't press too hard.

In the meantime, a phrase which crops up often, Mr. Quinby and his son-in-law, L.C. Root, adopted an altogether different hive called the closed end Quinby, which had a frame 19-1/8 by 11 inches. This was a different idea, because in summer, at least, the frames themselves on a special bottom board, with a hook device to prevent them falling over, made up the hive. An outer cover fitted over this apparatus for a winter case.

Although both Quinby's and L.C. Root's books were very popular the closed end hive, perhaps partly because it did not have the backing of a large commercial enterprise, did not catch on to the extent it might have, since it was used by some of the most prominent beekeepers in North America, apparently with satisfaction.

While all this was going on, nearly every beekeeper who made his own equipment, and probably many of the smaller supply makers, too, had their own hives and there were hundreds of sizes, a number of which survive in limited use although it is unlikely that they are being replaced with new equipment.

In 1885, after the subject had apparently been discussed for some time, Langstroth entrusted the modernization and revision of his book to the Dadants, so it happened that the literary legatees, so to speak, of Rev. L.L. Langstroth advocated a different kind of hive from the

Langstroth in their popular books, which followed through a series of revisions comparable to A.I. Root's **ABC and XYZ of Bee Culture**, and both are still published.

Ironically, A.I. Root in the introduction to his first edition in 1865, makes it clear that he derived much of his first knowledge of beekeeping from Langstroth. However, he published frequent Dadant articles in **Gleanings in Bee Culture**, which was a Root publication from the first, defending the large hive concept.

Charles Dadant claimed the large hives gave less frequent swarming, plenty of winter stores, and ample room for queens to lay. Dadant admitted that when colonies in his large hives sent out a swarm it would be a big one, but he was preaching against the idea of a small hive to force the bees to store in comb honey supers rather than against the Langstroth hive as such.

Root allowed that he was correct in many points, but countered with a few objections. The big hives cost quite a bit more. They were heavy and hard to move and the larger frames were somewhat harder to manipulate than the Langstroth.

On page 151 of the third edition of the revision of the Langstroth work, the

(Continued on page 89)

An Interesting Antique

By LAMBERT HOLLINGA
Orange City, Iowa

I WONDER how many of *Gleaning's* readers recognize at first glance the piece of apiary equipment shown on the photo herewith? This antique item was brought into my place of business by an acquaintance who knew of my beekeeping hobby and who thought it might be either of use or interest to me. He is a third-generation-on-the-same-place farmer who was retiring, and this machine had belonged to his grandfather and father, both of whom kept bees. For the past 30 to 40 years it had lain unused in the attic of his machine shed and had come to light when he was preparing for his closing-out farm sale. Rather than putting it up for sale he had brought it to me to do with as I saw fit.

The close-up photo reveals the purpose of the device, namely a "Comb Honey Section Box Assembler". While it is obviously a factory-made tool, as witnessed by the cast iron V-shaped box holder, it bears no nameplate or stencil indicating who made it or giving the manufacturing or patent date. Except for the single metal casting and a few bolts and nails, it is made entirely of wood, which seems to be soft pine with an ancient reddish stain finish.

If the reader will check the full-length photo, the general description of the device is as follows: The main portion consists of three vertical narrow boards. The outside two are stationary, but the center one is movable up and down. The center board is slightly tapered at the lower end as well as being cut away to a substantially narrower width, the purpose of this undoubtedly to reduce friction as the centerboard moves up and down while the machine is being operated.

Towards the bottom of the machine you will see an arm or pedal sticking out, one on the right and one on the left. These are foot operated, and pushing down on the left pedal raises the centerboard about 1-1/2 inches by a rocker system under the left foot pedal. In use you have a foot on each pedal, and pushing down on the left pedal not only raises the centerboard but raises the right pedal at the same time. Reversely, pushing down on the right pedal forces the centerboard down again and brings the left pedal back up. So by alternate pressure of the right and left foot, you can raise and lower the centerboard at will.

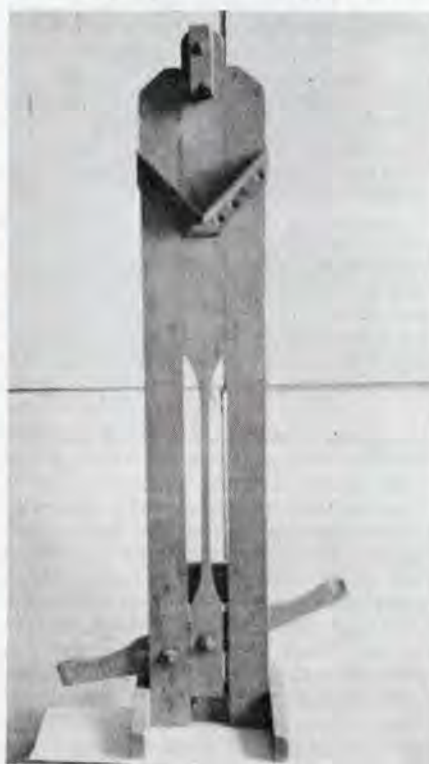
At the extreme top of the centerboard you will see a small V-block made of wood which of course moves up and down with the centerboard as it responds to the movement of the foot pedals. A few inches below the upper V-block is the larger cast iron V-block which is firmly fastened to the two outer stationary



A close-up view reveals the purpose of the antique.

vertical boards. The purpose of these opposing blocks is to form a square to put

A full length photo of the apparatus.



the section box into for the final joining of the dovetail joint of the box.

A full cycle using the machine would go as follows: Press down on left foot which raises the upper V-block. Take a wooden section strip with grooves moistened to prevent breaking and form into a rough square. With the dovetail ends uppermost, slip section box onto the cast iron V-base with the unjoined dovetail ends going under the small upper V. Hold the section box firmly against the frame of the machine and press down with the right foot at the same time. This forces the upper V-block down on the dovetail ends of the box and forces them to snugly interlock. Now press down with your left foot to raise the upper V-block to allow removal of the completed section box. After the concluding step the machine is again in position to repeat the cycle.

When your writer finally understood the complete function of the machine, of course I had to try it out. Everything went pretty well as described above, but my split section boxes gave joining problems. After a little study it dawned on me that this machine was in use long before there were split sections. Luckily an "Old Timer" had given me some solid or unsplit sections long ago, and digging some of these out I tried again. Immediately the old relic started turning out perfectly-joined section boxes, once it was fed its proper fodder.

While producing boxes with the machine seemed rather slow, I am sure that continual use and practice would speed it up greatly. It is possible that two persons were involved in the work, with one wetting the joints and folding the boxes into shape and handing them to the person seated in front of the machine who completed the joining. Many old timers produced nothing but comb honey many years ago, and with perhaps hundreds up to thousands of section boxes to assemble, the old machine was a real labor saver to them.

SECRETARY OF AGRICULTURE BACKS HONEY BEE STAMP

SECRETARY of Agriculture Bob Bergland, in a letter to Eugene Killion, Apiary Inspection Supervisor of Illinois promised support to obtain a commemorative stamp honoring the honeybee.

"The Department of Agriculture recognized the importance of the honeybee. I will be most happy to assist the American Beekeeping Associations in their project", says Bergland.

Siftings

By CHARLES MRAZ
Box 127
Middlebury, Vt. 05753

ONE OF THE best things that has happened to the honey and beekeeping industry is the announcement by Jonathan White of Navasota, Texas, that he is establishing a laboratory for the testing of honey. We desperately need such a laboratory that will work for the beekeepers. All of us that both produce, pack, buy or sell honey want to know for sure if what they buy is indeed pure honey. Without such testing available and with the difficulty the FDA has to enforce such adulteration regulations we really must be our own "policemen". Most of us that have handled honey for a long time can often tell if a honey is adulterated, but without a good test we cannot prove it. If we can prove it, then the names of anyone that knowingly sells and packs adulterated honey should be published. With such publicity it would not take long for such deceit of the public to stop. First we must have positive proof such as the new laboratory can give us.

In addition, such a laboratory should be funded by the beekeepers to also include testing the therapeutic activity of honey. We all know honey is not the same as other sugar, the metabolism of honey by the body is greatly different from that of cane or ordinary sugar. They are different not only chemically, but also metabolically.

A good example is the recent bad publicity we received from California with the information that honey might be a cause of botulism poisoning in babies. After reading this report as it came out in the medical journal it is difficult to understand how such a conclusion could be made. In none of the infants studied did it say that honey (what kind of honey?) was part of their regular diet. In one case it was to bait a nipple. The other infant was given some honey and water on a camping trip. In the case of one infant it doesn't say how it was used. Three of the six infants had no honey at all, and developed the same symptoms.

After 60 years as a beekeeper and with considerable experience in infant feeding formulas modified with honey I have found in practically every case of digestive problems with infants a honey modified formula relieves the condition.

It is interesting to note that the 27th International Apicultural Congress of Apimondia is to be held in Athens, Greece, Sept. 14-20th, 1979. The general theme of the Congress will be, "Honey in Man's Nutrition". This is indeed appropriate in many ways. Greece has been the traditional home of honey and

beekeeping where it has been held in high esteem for many centuries. This is in contrast with the U.S., for instance, where some plant pollens are accused of being cancer-causing and honey accused of being a cause of infant botulism poisoning. The contrast is that in Greece from the days of the Greek Empire honey has been long considered a "cure" or treatment of health problems and not a cause.

Perhaps some day, with an experimental laboratory such as that of Dr. White and with the cooperation of the whole beekeeping industry we can once again prove and demonstrate how important honey has been in man's nutrition through the centuries.

On page 25 of the Jan. 1979 *Gleanings* is the announcement of the Commercial Beekeeping Symposium that was held under sponsorship of Apimondia. There were 20 countries and 475 beekeepers represented in Tulcea, Romania last August. This brings wonderful memories of two years ago when I was a guest of the Romanian Beekeepers Association and visited Tulcea, located on the Delta of the "Blue Danube" where it flows into the Black Sea. Some of you may remember George Puscasu from Romania who spent several months in the U.S. working with commercial beekeepers. He took us on a wonderful trip through the myriads of channels in the Delta and visited the large apiaries on these Delta Islands on the boat, "Apicola". This boat is used to move the barges of bees as they are transported from the Delta to the mainland.

I will always remember a beautiful evening with George and his friends, having a barbeque at a church yard where some of the bees are established. They built a large bonfire and we roasted fresh meat on sticks along with all the other delicious food for a real picnic. This location was an excellent basswood location. George said there were three varieties of basswood in this area. No doubt some of these varieties of basswood would also do well in the U.S. The advantage of several different varieties is that they tend to bloom at different times and extend the bloom period for several weeks. It would have been wonderful to attend this meeting personally, but time and money are in short supply.

Another meeting sponsored by Apimondia, reported by Roger Morse, is the International Meeting of Beekeeping in Tropical Climates. The main subject on the program was the African bees as they are now established in South America and their effect on commercial beekeeping. I received a letter recently from a friend in Venezuela and he says that the African bee has finally reached his area and that some of their beekeeping operations are carried out at night. I don't know about African bees, but I would rather work with European bees by day than at night. At night bees may not fly much, but they

sure can crawl. At night it doesn't take long for the inside of your clothes to get full of bees and you cannot see them. You just feel them everytime you move and pinch them under your clothing.

Another friend in Germany wrote about the problem there with the mite, *Varroa Jacobsoni*. This pest apparently is a new problem with the *Apis mellifera*. This mite has apparently only recently successfully adapted itself as a parasite to the European bee. So far, there seems to be no successful control. More on this serious problem later.



Brady Mullinax [left] accepts award from Garey Snow.

BRADY MULLINAX SR. GIVEN AWARD

MR. Brady Mullinax, Sr. received the Kernersville, N.C. Chamber of Commerce Community Service Award, the town's highest honor. Mr. Mullinax is perhaps best known for his extraordinary persistence in promoting the attributes of honeybees and beekeeping—a persistence which helped him get the honeybee declared North Carolina's State Insect. He helped form the N.C. Beekeepers Association and is a director of the organization.

A town employee for 32 years—many of them as water superintendent, Mr. Mullinax has been active in various areas of community life.

Brady spoke to the Chamber of Commerce meeting after the presentation of the award about his favorite subject—the honeybee.—Photo from Kernersville News.

BEE TALK-----



By DR. RICHARD TAYLOR
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Trumansburg, N.Y. 14886

MY OFFHAND comment last time (Dec.), to the effect that swarming can be controlled, produced a lot of letters. This seems to be the perennial number one topic of conversation among beekeepers. I hardly ever talk to beekeeping associations without getting questions about swarm control. And it is an interesting subject, so I'll talk about it this time. It is not the first time it has come up in these pages. Indeed, when I was first asked to do these bee talks, years ago, I picked swarm control as my very first subject. I guess there will be no harm in bringing it up again, especially since I think I have learned something since then.

A lot of beekeepers worry too much about swarming, I think. I suspect that a lot more bees are lost through poor wintering than by swarming. What has always bothered me about swarms is the idea of their taking over hollow trees and other cavities in the vicinities of my apiaries and thus storing up honey, of no use to anyone, that my bees might have gotten instead. But I don't worry about that much any more. There are already "wild" colonies of bees all over the place, and there isn't much you can do about them. The people at Cornell estimate that there are already as many wild colonies in this county as there are hives, and I suspect this population of wild colonies stays about the same from year to year even when there is lots of swarming. And in any case, there are enough things in life to fret about without becoming agitated about nature itself.

So what I try to do is control swarming as best I can, keeping a proper perspective on things, and without going to a lot more trouble and expense than it is worth. If I see or hear of a swarm I try to recover it. If I see one way up in a tree where I can't get it, then I at least enjoy the sight of it, reflect once more on the wonders of nature, rejoice that my body is whole and that I am not going to risk my neck climbing, and then go about my work, happy. Or at least, I do my best to cultivate that state of mind.

They say that even powerful colonies headed by young queens will rarely swarm if given plenty of room, that is, supered up early, and I believe this. The age of the queen is critical. But I have never found that principle very useful for controlling swarming. It is quite troublesome and expensive to requeen an established, strong colony, and there is the risk of failure. Besides that, I cannot bear to throw out a beautiful, fertile queen, even if she is two or three years old. Still, if you just have an apiary in your back yard, and you have the time to fool around with it, it probably is worthwhile to have only young queens in it—that is, queens born not longer ago than the previous year. For this you'll need a foolproof method of requeening established colonies. And there is no such method. But there is a method that comes close to it. Namely, you make up a nucleus colony (a "nuc") by removing from the colony to be requeened three frames of brood and adhering bees, but make sure you don't get the queen. Get as many bees with those combs as you can, and have them mostly sealed brood, with some honey and pollen as well. Put those combs, bees and all, in a hive body or small nuc box, set it off to one side, introduce your new queen to this, and stuff the entrance with grass—not too tight, but tight enough so that it will take a day or so for the bees to work their way through. The way you introduce the queen to that three-frame nuc is just to poke a small nail through the candy end of the queen cage to get things started, and then lay the cage over the top bars in such a way that that bees in the nuc can poke their tongues in and get acquainted with the new queen. I never bother to remove the attendant workers. In about three days the queen will be out of the cage and laying eggs. When you find eggs, you can unite the combs and bees and new queen back to the original colony, by just putting them in the hive together. You don't need any newspaper method of uniting them, but you should remove the old queen at this time. The bees, finding a laying queen already accepted, will almost never reject her. This method works almost one hundred percent, and it is the only method I know of which does.

You do have a problem there, however, and that's this: When you removed those three frames of brood, you had to replace them with three frames of foundation or drawn comb. You must never leave even a single frame out of a hive even overnight, because if you do, then the bees will begin at once to fill that space with comb, and you'll have a mess on your hands cleaning it out.

The best solution to that problem is to requeen several colonies at a time by this method, then gather the extra combs together in hive bodies to use as second

stories for other hives. They will have honey in them, and usually eggs, too, but that's all right. So it isn't such a great problem.

If incidentally, you fill that space in the parent hive, which you create by removing three combs, with frames of **foundation**, rather than drawn comb, then this serves to inhibit swarming until you get the nuc combs reunited to that parent hive. Having foundation to draw tends to take the bees' minds off swarming. So there is a good way to get foundation drawn and control swarming at the same time.

You will notice that I said **three** combs. You have got to have three combs to make up a nuc. Four or five are okay, but you don't need that many. But you can't have less than three. Three combs of brood are like three logs on a fire; one or two logs won't burn well, but three will.

Another thing you can do is, when you make up the nuc, set it **on top** of the parent colony, entrance facing the other way. That way you won't lose any of the bees from the nuc when you unite it to the hive below. The flying bees will find their way into that hive eventually.

Still another improvement in the method described is to set the nuc, in case it is in a regular ten-frame hive body, over a **double screen**, with this right on top of the parent colony, but with entrance still facing the opposite way. Then the warmth from the parent colony below keeps the small nuc warm too, which is a great advantage. The double screen divider keeps the two queens from getting at each other.

If you use that double screen method, and you are awfully busy when the time comes to unite the nuc to the parent colony you can do it very easily by just pulling out the double screen. Chances are pretty good that the young queen up above will be the one that survives, **provided** she is laying well and some of her eggs have had time to hatch into larvae. If she hasn't started laying, then she'll probably be killed off. Of course with that method you end up with a rather tall hive, a full story taller than normal. But in case you use full hive bodies for supers anyway, then that is no problem. You will have requeened your colony and supered it up in one operation.

I'll talk about this some more next time. It is a rather fascinating subject, I think.

KEEP

GLEANINGS

COMING

From the West



By CHARLES J. KOOVER
1434 Punahou Street
Honolulu, Hawaii 96822

IN TIMES OF STRESS

IN MY WRITINGS I have learned never to mention anything of a personal matter but in my December column I slipped by mentioning the loss of my lifelong partner and I was immediately taken up on that. Not only did the readers console me but they told me of their own sorrows and how they overcame them. The heart of America is a very warm one indeed. I am going to give you an example and of course I never mention the name of the writer.

An army captain wrote: "Something I learned in the army....'You eat your emotions, or, they eat you if they are negative'. And then he went on to say, 'Happiness is uplifting and one of the best nutrients and too often overlooked. Beekeeping is an eternal wonder. Peace, Love, Light and Happiness'".

It reminds me of what Helen Lawrence wrote in the English bee magazine *Bee Craft* many years ago.

A Plea

Our beekeeping it seems to me
Should be a happy thing
Not moithered up with long
long words
That can't be made to sing.
Those ponderous tomes, those
volumes deep,
True designated "works"-
Results indeed, I gladly own,
Of patient long research.
But when we've read and
studied them
(By "we" I don't mean "me")
What have we at the farthest
end
But just our little bee?
New-made for sunshine, light
and warmth,
The joy of summer flowers,
To reap their sweetness day by
day
Harvest of sunny hours.
And as we watch her soar aloft

On light untrammelled wing
Our beekeeping it seems to me
Should be a happy thing.

I came to the keeping of bees during World War II and wrote a story about it. I submitted it to the former editor of *Gleanings* who accepted it but kept it lying around so I sent it to the *British Bee Journal* which promptly published it with an introductory note by the editor which read: "Charles J. Kooover sends us a delightfully intimate side of his beekeeping". That was in 1966. Now I am trying again and hope you too get to read it.

Bees came to our garden during the early part of World War II. Like many middle-aged men (I mean 45, not 65), I was aiding the war effort working in the blacked-out experimental department of a large aircraft manufacturing plant. Having spent my life in the out-of-doors, it was hard on me. Finally, after months of working day after day without a break, I cracked up. "Go home", said the medic, "and take a rest". Complete exhaustion was the diagnosis, and tired I was.

So for many weeks I rested sitting on a box in my garden next to the beehives, watching, and learning about the life of my bees. Their tireless efforts from morning till night made me stop feeling sorry for myself and helped me to sleep again and regain my strength. "The bees", my wife said later, "were a great help".

For 25 years now the bees have been around and will be, until the chore girl goes telling the bees. Only there are no chore girls anymore.

The bees and I have done well and the years have slipped by. Foulbrood has passed them up and I have learned to aid them in garnering large crops of honey. One change has come about, they no longer enliven our garden for I have taken them to a wonderful spot in the nearby mountains. They thrive even better there and it gives me an excuse to spend a great deal of time with them. For time I begin to have aplenty in my semi-retirement.

Sometimes on a late afternoon when a setting sun is about to drive me home I watch a haggard worn-out bee rush out of a hive, fall off the alighting board and drag her broken body away as far as she can to die a lonely death among the weeds. I compare her life with mine.

She gave so much and received so little. While I, in the evening of my life, am allowed to enjoy what I have been able to save. It makes me feel humble and grateful that it was my privilege to come into this world as a human being instead of a bee.

We were at war and it was a time of stress for all of us. The OPEC Nations

are driving us into depressing times with their constantly increased oil prices and we are once more faced with a warlike situation. For it is becoming increasingly difficult for most of us to make both ends meet. And again, like in war times people are turning to the less costly pleasures in life, like keeping bees, raising vegetables and trying to add to their incomes. In short they are turning to Nature.

I have been following the gain in subscribers to *Gleanings in Bee Culture* since 1966 when the actual count was 12,842. Today 1978 it has risen to 21,995 a gain of almost 10,000 readers. Who are these new subscribers? There are about 1,400 large commercial beekeepers in America. A few hundred more perhaps since the price of honey became established at around 40 cents a pound wholesale. But the large increase of subscribers has come from little fellows like you and I who keep bees for pleasure. How do I know? The 300 letters I have received so far in reply to my offer in the December issue are nearly all from beginners who are taking up beekeeping for one reason or another. Their letters are a joy to read. Such enthusiasm and such eagerness to do right by their bees. And also such honesty in admitting their lack of knowledge and willingness to learn. And especially appreciation for the help offered. And since this article is being written the week before Christmas their letters are bringing joy to my lonely heart. My mailman is flabbergasted by all that mail. Twenty to thirty letters a day and no end in sight. And I am keeping him guessing.

What is so heartwarming is that these writers trust me and appreciate it that I am trying to set them on a course to success. They have filled in what little knowledge I have, and by swapping information the good that will come out of it is, that the standard of perfection of beekeeping equipment is going to be raised. One writer, an M.D., states, "It is a shame that amateur beekeepers are committed to a learning process that forces them to commit the same mistakes of their predecessors. Many of the books on the market are full of printed errors and advise methods that are completely wrong. Your views are discussed frequently and many times hotly. We all hope you never retire from the writing business". And another one writes, "I have kept bees for two full seasons, now, and feel so terribly ignorant. The more I learn, the less I seem to know". That's the lure of beekeeping for you never reach the point where you know it all. For every situation that comes up the bees have at least half a dozen exceptions to the rules. Who thought that they would accept unwaxed plastic molded foundation and readily would draw it out into perfect comb? Every season brings new discoveries and as long as I can hold a pen I'll be reporting them to you.

I am so glad that so many of you have joined our beekeeping club.



Research Review

U.S.D.A. Report on Research

THE FEDERAL government supports bee research in seven laboratories across the country: Philadelphia, Pa.; Beltsville, Md.; Baton Rouge, La.; Tucson, Az.; Laramie, Wy.; Logan, Ut. and Madison, Wi. Their annual report, which is 11 pages long, is contained in a booklet on all U.S.D.A. activities in the plant and entomological sciences. Some of their accomplishments have been cited in earlier reviews in this column; others are discussed below.

Honeybees in colonies that were fed pollen patties containing chalkbrood spores became infected with the fungus. This provides good evidence, says the report, that chalkbrood was probably introduced into North America "in pollen purchased from European beekeepers".

Bee collected pollen containing micro-encapsulated methyl-parathion (the insecticide Penncap-M) remained toxic to bees for over 14 months. This poses a serious problem for the beekeeper who must either destroy combs with contaminated pollen or suffer a continued loss of bees while the pollen is used up.

Cranberry yields in Wisconsin amounted to only 500 barrels per acre in fields where there were not bees, however, when two colonies per acre were used for pollination the yield increased to 2,500 barrels.

Two new methods for detecting honey adulterated with corn syrup (isomerase)



By **DR. ROGER A. MORSE**
Research Editor of *Gleanings*
Professor of Apiculture
Cornell University, Ithaca, N.Y.

have been found. A third method has already been in use for some time. Both of the new methods make use of common and relatively inexpensive laboratory equipment, making their use by field laboratories possible.

There is now good evidence that soybean yields may be increased by adequate pollination. It is expected that studies on soybeans will be expanded as a result of increased appropriations from Congress.

There has been concern that the bacteria which causes American foulbrood might become resistant to Terramycin. However, several recent tests found no sign of resistance.

Alfalfa flowers have been shown to produce a burst of aroma at one time during the flowers' life, about three times greater than the normal aroma. This "aroma burst" makes the flower more attractive to bees. It is being investigated

further, as it is thought that it may signal the optimum time for pollination.

This report was prepared by the Government Printing Office and 1 pre-sume copies may be obtained from one of the seven laboratories or by writing Dr. E.C. Martin of the National Program Staff, U.S.D.A., Beltsville, Maryland.

Annual Report of the National Research Programs, 1977. Plant and Entomological Sciences, 1 Crop Protection. National Program Staff. Science and Education Administration. U.S.D.A. 1978. 262 pages.

Propolis a Component of Violin Varnish?

The very best violins were made in Northern Italy between 1550 and 1750, the golden age of violin making. Both the tone of the violin and color of the wood are said to be superior to anything produced since that time. There are several persons who suggest that propolis was the major ingredient in the varnish used on these violins. These people cite as evidence the color, aroma and plasticity of the old finishes. The varnish from one violin made about 1750 even contains pollen grains, hair and insect cuticle; items that are normally found in propolis. However, only one old violin has been examined critically in this regard.

The use of propolis as a wood finish has been rejected by some people who point to its poor drying qualities. However, a paper from Germany points out that the propolis from Northern Italy contains less of the slow drying balsam that is found in the propolis from Germany and probably less than that found in propolis from other countries. I think that beekeepers would agree that some propolis is much harder than others.

The secret formulas used during the golden age were apparently lost when the demand for violins increased and impatient violin makers and their customers could not wait for a slow drying finish.

Was propolis responsible for the fine tone of the old violins? That question appears debatable with strong opinions on both sides. The author of the article cited below suggests that it would not be reasonable to resurrect the use of propolis as a wood finish because it is so variable from one area to another. I am not sure that I agree, but he does present a strong argument for not doing so.

Jolly, V.G. Propolis varnish for violins. *Bee World* 59:158-161, 157. 1978.

BUZZIN THE WORD

HONEY probably has more meaning for Timothy Vota after his kindergarten class took a field trip to the Colts Neck Honey Shop, Colts Neck, New Jersey. Timothy a pupil at Marlboro Central, displayed this frame of bees containing about 800 honeybees to his classmates during a lesson by beekeeper, Harry Barth on how honey is produced.



Fundamentals for All

THE LAST CHANCE TO DIRFT☆

WHEN I coined the acronym "Dirft" for "Do It Right the First Time", I had not received Science Vol. 201 No. 4355. You can imagine my interest, then, when I read "News and Comments" pp. 506-511 about the Secretary of the Interior, Cecil D. Andrus using those same words in connection with the Alaska lands bill, which would give about 40 percent of Alaska special protected status. What Andrus said has come to be a favorite catch-phrase, "The last chance for us to do it right the first time"

I immediately thought of beekeepers assembling hives, frames, covers, and bottoms, and how few, from my observations, realize that, when doing it, it is their last chance to do it right the first time. The cardinal rule in assembling wooden equipment is: "Use glue and nails on all joints". Just today, in taking off a super of honey, a bottom bar came off—stuck to the top bar of the frame underneath. It had not been glued and was only tacked on with a couple of five-eighth nails. In this case I have the opportunity to correct someone's mistake caused by ignorance, stupidity, or just plain unfamiliarity with the stresses which frames must withstand. Someone didn't know the importance of **dirft**, and, now I'm stuck with an unnecessary repair job.

In my previous article "Dirft—An Acronym", I stressed the importance of using glue, long-enough nails, and small staples to prevent bee wire from cutting too deeply into the end bars; also the absence of protruding end bars, or nails which stick up above the top bar, or below the bottom bar. Assuming that you have observed, or are about to observe, these rules, you are now ready to put in the foundation.

Crimp-wired foundation is the best for brood chamber and extracting combs, either deep, or shallow. Beekeepers with thousands of frames to prepare have special systems of installation and may use plastic-based foundation. For the amateur, with no experience in having combs built, the crimp-wired beeswax foundation is best; but it **must** be wired. That is, there must be cross wires, the horizontal ones stretched tight enough to sing. You may get along with two wires, but taking it year after year, you will get better combs by using crimp-wired foundation supported by four cross-wires. The reason for this is that the wax will warp



By W. A. STEPHEN
Worthington, Ohio

and stretch. If not used soon after the wires are put in the frame, changing temperatures will cause the wax to bulge in the areas between the wires, and, where cross wires are used, there is less area to warp off center and of course the areas are smaller with four horizontal wires than with two.

I talked about this with a manufacturer of foundation once, hoping to get him to recommend the use of four cross wires in his catalog. He agreed with all my reasoning but said it was no use telling beginners what to do, for they wouldn't do it anyway. That is true of beekeepers but beekeepers who have made observations and keep close records know what it takes to get first class combs in brood nests and supers.

Those of you who appreciate what I am saying will know how to classify the owner of a few colonies to whom I was trying to get this story across. He agreed that it would be good to have the super frames wired, but as for those in the brood nest, that was the bees' home and he never messed with it! If that is the system of beekeeping to be followed there is only one reason for using frames in the brood nest and that is to comply with the law. In countries where beekeeping is most advanced, it is illegal to keep bees in box hives or log gums. The bees are quite capable of building brood combs without foundation and a couple of cross-sticks for support is all that is needed. The standard brood chamber becomes a box hive. Why go to all the expense of buying frames and foundation?

Where deep supers are used, it is necessary to wire the foundation to prevent breakage in the extractor. Even with shallow supers it is better to wire the frames. I haven't been so insistent in requiring cross wires in shallow super frames, but, recently, when extracting in a honey house where the temperature was in the nineties (30's°C.), I had several unwired frames break down. I also observed that combs built on foundation

which I had prepared, but didn't need last year, were warped between the crimp wires, giving a wavy effect. Cross wires would have prevented this.

How about supers used for bulk, or chunk, or cut comb honey? Here the lightweight foundation is much more subject to warping and stretching than wired foundation. Wires can be used with thin surplus and comb foundation. In fact, it may be the only way of being assured of having straight combs. Even with a hive set on a perfectly horizontal stand, foundation sheets may warp out of shape unless restrained by wires.

To remove the wires before cutting the comb simply clip at both ends and draw out through the hole in the end bar. One beekeeper who is particular about the appearance of his comb honey told me that he heats the wire with an electric current just prior to withdrawal.

With shallow supers there is not the same need for perfect embedding of the support wires but for deep frames proper embedding is imperative. Combs that are built in deep supers will eventually become brood combs and great care must be taken to see that they become as nearly perfect as possible. Remember DIRFT; the bees won't give you a second chance. The wire must be buried in the wax so that you can't put your fingernail underneath it. When you look at it over either the top or bottom bar you must not see any length of wire exposed. In spite of all your care, the bees will find a spot you missed. They will draw out the foundation on either side of the wire, finally putting in two rows of drone cells.

Do I need to use the argument of economics to get you to DIRFT? Each frame, unassembled, with the foundation, can cost you more than \$1.50. It requires ten minutes to glue, nail and wire the frame and insert and embed the foundation properly. Can you hire a person to "do it right the first time" for \$3.00 an hour? If so, it costs 50 cents for labor. Whatever you put into the hive doesn't matter to the bees. They might work more efficiently in crossed-up combs of their own design. These perfectly assembled frames, fitted properly with embedded foundation are an investment for your convenience. At two dollars each, they've got to be good—as nearly perfect as possible. When you leave the honey house to go to the bee yard, it will be too late to do anything corrective. When assembling equipment and putting the frames together and putting foundation in them, is your last chance to do it right the first time.

☆ An acronym used in a previous "Fundamentals".



By BESS CLARKE
Canton, PA.

Notes from the Straw Skep



LAST JULY, when Bill and I were at Cornell for the beekeeping short course, we missed an opportunity to hear Carl Sagan and I have felt sad about it ever since. Dr. Sagan, professor of Astronomy at Cornell University, has a great reputation as a speaker.

I'm excited about him now because I've just seen him on a television interview on the Donohue Show. He was promoting his new book, titled *Murmurs of Earth*, the story of materials which were placed aboard the Voyager II space probe as an interstellar time capsule.

The package weighs about two pounds and is attached to the outside of the giant space probe. It consists of an hour and a half long record of sounds of our earth, including greetings in 60 human languages to the makers of music for all times in all places. There are selections from Bach and Beethoven, an 8-year old Indian girl, Oriental instruments, black jazz and a wide variety of other sounds, in an attempt to make a comprehensive collection of the music of civilization as we know it. I think he said there are 180 photographs of our earth and the people on it included in the package.

The Voyager II was launched into space in March 1977 and flew by Jupiter a year later. It will pass Saturn late in 1980, and Uranus in the mid 80's, and will send radio data of those planets. It will continue its journey into space beyond the lifetime of this planet and will become the oldest artifact of man. It should reach the center of the Milky Way in 30,000 years.

Sagan was asked by the space agency to form a committee to prepare this material. Its function is not to get an answer but to present knowledge of our planet as we know it in the remote chance that it may be picked up. Sagan suggests that it is a bottle with a message dropped into stellar space.

Our sun is a star, one of 250 billion stars in the Milky Way galaxy. There is a very small chance of Voyager's being captured and an even smaller one that other forms of life could be similar enough to ours to make it comprehensible. The premise is totally fascinating to me and I hope I haven't messed up the story of the interview for you. He talked

so fast and said so much. If you ever have an opportunity to see and hear Dr. Sagan, take advantage of it.

We've had some requests for the recipe for the **Honey Raisin Buns** which appeared on the cover of December's *Gleanings*, so here it is.

HONEY RAISIN BUNS:

One and one-half cup skim milk, 1 cup oatmeal, 2 tablespoons margarine, 1 can evaporated milk (13 oz.), 1/4 cup honey, 1 tablespoon salt, 2 packages dry yeast, 3 cups all-purpose flour, 2 cups (about) whole wheat flour, 1 cup seedless raisins.

Bring skim milk to a boil, add oatmeal

and cook for 2 minutes. Add shortening, honey, salt, and evaporated milk. When mixture is lukewarm remove 1/2 cup to small bowl, stir in yeast until dissolved, and combine with other ingredients in mixing bowl. Add flour and beat well. Add whole wheat flour to form a soft dough. Add raisins. Knead until dough is smooth. (It may be sticky. I find that a pair of metal scrapers is a big help in kneading dough. They're available at kitchen shops.) Place in greased bowl and cover top with grease. Let rise until double in bulk. Work down, form into long rolls, and cut into 24 pieces. Form into flattened balls, using more flour if needed. Place on greased cookie sheet, brush tops with melted margarine, and let rise again. Bake at 375F. for 15 minutes.



TEXAS HONEY QUEEN

PATTI TUTTLE, of The A. I. Root Company of San Antonio, TX, offers a piece of honey candy to newly elected Texas Honey Queen Jan Walker, daughter

of Mr. & Mrs. G.C. Walker, Jr., of Rogers, TX. Jan represented Texas at the American Beekeeping Federation meeting in San Diego, California.

Questions and Answers

Q. Is there anything that can be done about chalkbrood? I have two hives that have it.—C.B., N.Y.

A. There is presently no therapeutic chemical registered for the treatment of chalkbrood. The best control at present is to attempt to strengthen the colony which may mean requeening or uniting with another healthy colony. Feeding the affected colony with sugar syrup will sometimes stimulate extra brood rearing and cleaning up the symptoms of disease.

☆☆☆☆

Q. Please explain how to produce honey without the use of a queen excluder.

Also, is it advisable to use 9-frames in the brood chamber?—H.L., N.C.

A. Producing honey without the use of a queen excluder is simply a matter of making certain sacrifices that may or may not appeal to the beekeeper. One sacrifice is having the queen lay in the light colored honey storage combs which, of course, darkens them for future use as honey supers. Secondly, the honey storage supers when removed may contain a small amount of brood, especially along the lower comb edges, consisting of drone brood.

The principal requirement in doing without a queen excluder is to have a strong beginning honey flow which will do two things: (1) Drive the queen out of the honey storage area and (2) Fill the combs with fresh nectar as the brood hatches out.

To use nine frames in the brood chamber is a personal choice although we believe that the consensus of opinion is that it is not a good practice. There are certain advantages, one being that the frames are easier to remove, although after a period of time the bees tend to fasten in the nine frames as they would ten.

☆☆☆☆

Q. What if a man and his little boy were walking near my apiary, and the boy received a sting and died from it. Could I be sued?—M.A.T., PA.

A. Richard Taylor of Trumansburg, N.Y. suggested this answer to the above question. There are homeowners insurance policies that insure against liabilities of this nature. I long ago checked with my own insurance agent, and received from his company a note that my insurance covered liability arising from bee stings. Since this risk is very slight, any insurance company should be willing

to include such coverage, and to say so in writing.

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Q. I would like to submit several questions for your Questions and Answers section of Gleanings.

1. How can I tell whether bees are returning to the hive with nectar or returning empty?

2. Can you explain (or suggest sources) the development and characteristics of the various hybrids: Starlines, Midnites, and Buckfasts. Bee literature, especially books, give very little attention to hybrids.

3. Can I requeen a colony with a queen of a different race or strain than the worker bees already there?

4. What can I do to encourage the purity of the strain of bees in my apiary? I know that I can requeen periodically with queens bought from breeders but is there anything else I can do?—K.F., Virginia.

A. In answer to your first question, it has been my observation that bees returning heavy with nectar tend to alight in front of the entrance and when using a hive stand they can be seen crawling slowly up the incline. Some beekeepers claim to be able to detect the difference in the bee when its honey sac is full of nectar. Perhaps this is true but I have never been able to see this. Perhaps if it was pointed out, the difference would be evident.

In regard to your second question, we would suggest your sending for the United States Department of Agriculture's production research report, No. 168, entitled "Development of Hybrid Honeybees". This is available for \$.35 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is \$.35 but the minimum order is \$1.00 for mail orders.

In regard to your third question, there should be no problem in requeening a colony of bees with any race or strain regardless of the heritage of the queen.

In regard to question four, I would have to say that I do not know of any steps that can be taken to guard the purity of a race of bees in your neighborhood. Drones which may mate with a virgin queen can come from any source. The mating is random and beyond your control.

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Q. I am a relatively new beekeeper—having increased from one hive four years ago to ten now.

I started with a standard ten frame hive and now have a mixture of ten frame and nine frame (Stoller spacer) hive bodies and supers.

By using a super with nine frames over a ten frame brood chamber or vice-versa are the spaces blocked for free passage-way or bees handicapped in their movements? How much space should there be between the tops of the frames of the hive body and bottoms of frames in the super?

There is over a quarter inch variation in the depths of my hive boxes—L.F., Oregon.

A. We can see no reason why there should be any undue interference from using supers with frame spacers above ten frame hive bodies as long as there is proper bee space between the top and bottom frames.

Bees seem little inconvenienced by bee spaces. Witness the fact of how readily they carry honey through a queen excluder when the occasion demands.

The ideal situation would be to have only a bee space, no more than 3/8 inch between the bottom of the frames and the top bars of the lower unit. This, of course, is virtually impossible to maintain accurately due to expansion and contraction of wood caused by changes in humidity and propolis buildup on the frame rests; so the space varies more than a bee space. This is generally considered the less of the two evils.

☆☆☆☆

OREGON PLACES RESTRICTIONS ON PESTICIDE

THE December 8th adoption of an administrative rule placed restrictions on the use of a pesticide highly lethal to honeybees, micro-encapsulated methyl parathion. According to Fred VanNatta chairman of the beekeepers pesticide control committee, a Salem area beekeeper petitioned the Department to adopt the rules. The process of microencapsulation results in a pesticide far more deadly to pollinating honeybees than anything previously marketed. The honeybees carried the small capsules back to their hive where it killed bees in the parent colony.

The Department rules restricted its application on field crops or fence rows where blooms exist and to orchards where one or more blooms per tree are open. An exception to the rule is permission to continue to apply the pesticide to white blooming peas. This is an area of potential kill about which the beekeepers continue to be concerned.

Gleanings Mail Box

Dear Editor:

On page 523 of your November 1978 issue, a reader complains about being stung by yellow jackets. You suggest he find the nest. He needs to do no such thing. Tell him to tie a piece of cheap meat (Lamb's liver) to a 4 inch wide piece of wood with an extra strong thread. Fill a bucket half full with water and add some DDT powder or detergent soap. Put the board with the meat down on the bucket. After the yellow jackets gorge themselves on the meat they are so heavy that they invariably drop in the liquid. In no time your reader will have a bucketful of very dead yellow jackets.—Albert Troost, Grass Valley, CA.

Dear Editor:

After reading in the November, 1978 issue of *Gleanings* an article by Francis O. Holmes entitled "Factors Affecting Nectar Secretion" I felt compelled to write this letter. Mr. Holmes makes mention of the herbicide 2, 4, 5, T increasing the nectar secretion of alfalfa.

I have been researching the effects of herbicides, especially 2, 4, 5, T extensively for over three years.

It (2, 4, 5, T) has been called by the Environmental Protection Agency and many other authoritative sources "The most toxic substance known to man". It's lethal effects are measured in quantities so small only a handful of scientists the world over have mastered the methodology necessary to measure it in dosages such as parts per trillion and it is even claimed that one molecule can cause a birth defect.

The label restrictions, which are binding by law, are very strict regarding the application and use of these herbicides. Unfortunately, they are usually disregarded by the applicators.

And the spraying goes on and on. In the name of all that is sacred and Holy I beseech all those spraying these herbicides to stop doing so while there are still people and bees around to cry out **Stop!**—R. Cucullu, Pres., Tangipahoa Environmental Action Center, Rt. 1, Box 84X, Loranger, LA 70446.

Dear Editor:

Dr. Roger A. Morse's article on bait hives in the December *Gleanings* prompts me to suggest that it's really not necessary to have a special hive for this purpose. I always have a few regular one story hives filled with empty frames scattered around during the swarming season, and usually a

few swarms do move in. After a day or two I just move them to a permanent location. That way, there's no transferring of combs and hassling the bees.

Of course, you don't want to leave combs with honey standing around in empty hives for bees to rob. Old brown comb in drawn frames is the best, but I've even had swarms move into frames with new foundation. Sometimes I add a frame or two of honey after a swarm moves in.

I also have several four-frame nuc boxes that I set around on stumps and shed roofs to attract swarms. These come in very handy to combine with queenless hives. Four frames of militant bees protecting a queen will even pacify laying workers if the situation has gone that far.—Everett W. Whealdon, Port Townsend, WA.

Dear Editor:

The increasing popularity of round comb honey sections makes it important to clear up a confusion concerning trade names.

Round section equipment was originally sold under the trade name "Cobana" and that name is still widely, but incorrectly, applied to all round section equipment. Actually, this equipment is now being manufactured on a large scale by three different companies, only one of which retains the name "Cobana". These companies, with their individual trade names, are:

1. The Happy Hive, 4476 Tulane, Dearborn, Mich., 48125: "Cobana".
2. Ross Rounds, Inc., Box 485, Massillon, Ohio 44646: "Ross Rounds Visi-Chek".
3. Papio Valley Honey, 4801 North 144, Omaha, Neb., 68164: "Papio Valley Naturels".—Richard Taylor, Trumansburg, N.Y.

Dear Editor:

On page 572 in the December 1978 *Gleanings* I note that a beekeeper wanted to know what he could use to preserve beehive wood.

You suggested that beekeeper should use paint only. We believe he could use raw or boiled linseed oil. It is best to rub the linseed oil on hive bodies with a piece of cloth. After the first coat dries a

second coat can be put on. Some paint will peel off. Linseed oil will soak in and never peel off.—Frank Dawson, McKeesport, PA.

Editor's note: Thank you for the tip. Another reader, B. Austin Bennett of Bridgeton, N.J. wonders if equal parts of raw linseed oil and turpentine, which has been suggested for bird houses, would be suitable for beehives. Another reader, J.G. Davis, of Nashville, TN uses two coats of "Coppo", a commercial wood preservative sold in hardware stores followed by two coats of outside white latex paint.

Dear Editor:

Oh, for the good old days, when *Gleanings* came for one dollar per annum and each issue was filled with the solid experiences of the bee masters such as Pritchard, Latham, Wilder, E.R. Root and many others. Their techniques have not been added to one iota, only confirmed by such solid researchers as Farrar, Milum, etc.

From a wider perspective, perhaps we are in the nascent stage of the technological revolution and my viewpoint is as shortsighted as the workmen of Liverpool and Leeds who stormed the textile mills of that day, when the industrial revolution gathered momentum, to destroy the machinery that threatened their old life style.—Howard J. Rock, Dale, Wis.

Dear Editor:

Once a politician said, I may not agree with what.....says but I will defend with my life his right to express them. Now I find myself in such a position and must break my tradition of ever addressing a comment to an author, publication or editor.

As one who looks forward to each issue of *Gleanings* and who reads it from cover to cover—even as the novice I am, I must rise to its defense.

In the December issue under *Gleanings Mail Box*, I find a letter I like very much on the whole, yet it makes two statements I just can't subscribe to. I refer to Mr. Taede Visserman of Hazelton, Canada.

My friend (I can call him that because he is a beekeeper) states beekeepers, especially small time operators and hobbyists, have to be a little mad to be in it at all.

Possibly so, and I am sure a great many believe us so—yet aren't Christians also considered peculiar? I am such and proud of it, just as I am of being a small beekeeper or hobbyist. Peter 2:9, "But ye are a chosen generation, . . . , a peculiar people". That is what my Bible says.

That word "peculiar" can confuse until you dig into its meaning. It means quite simply to be devoted to, or given over to a particular thing, such as a doctor, attorney or a certain profession.

Yes, we beekeepers are a peculiar people—not mad—just peculiar, because we are devoted to our little winged friends that make up a society humanity could learn by. Yes, they are my friends because, aside from their social system, they teach me of nature, of weather, of seasons, of the flora and fauna. They are a gentle race of little friends if given an opportunity to be, although, they are accused of a great many misdemeanors.

If we weren't peculiar people would so many beekeepers have hastened to the aid of the tractor-trailer loaded with bees which overturned close to Marietta, Ga., last Sept. 8th? This was carried on TV as well as going out on the news services.

So, Ed., although I concur, in part, with Mr. Visserman I dislike being called, "mad". Peculiar, yes—mad—no.

Secondly, I must disagree with my friend, Mr. Visserman, when he states "Too often Gleanings confines itself totally to a slightly sentimental, deadly serious, almost reverent tone.

IF the authors of the various articles carried by *Gleanings* weren't so I certainly would not care to read what they write, nor would very many beekeepers. I have the utmost respect for each of them, their backgrounds and education. I enjoy everyone of their articles. Possibly to some they may sound like know-it-alls, but from each one of them I've gained and profited. My thanks goes out to them and to you, Ed., and all who give us such a magnificent publication each month.

Finally, with you I will agree, "Humor" as friend Taede suggests would be nice and I am sure a welcome addition. For about a year I have toyed with the idea of an article titled, "Bee Stings" by A. Novice; written to recount mistakes I have made—all my fault—and the stings both fleshly and monetarily. Written as a novice, for smiles by others, and in an

attempt to guide some newcomer from such foolish errors. I am certain there are a host of others who, if they would, could add to this with accounts of their own bee stings.

And for friend Taede, may he understand the bee industry and its people aren't standing still. I am in my third attempt with bees over about a thirty year period and I certainly can see the strides made, the trend to come; some of which has already arrived. Initiative, experimentation, and research are certainly in full stride. No, we aren't standing still.

I am somewhat like my friend, in that I am about 100 miles from nearest real source of information and supplies but with two other beekeepers here I am not discouraged. I do make mistakes but each teaches me something. Then too, I've never met a beeman who wasn't willing and ready to give advice, as best he could and assist in any manner he could.

At almost 70 I'm still young at heart, but curtailed on account of health, yet this doesn't have any adverse affect on me and my four hives of little friends and doesn't leave any spare dull moments.—"A Novice", J. Robert Walton, Saline, LA.

The Honey Industry of Mexico

MEXICO, with a population of 65 million people has 38,000 beekeepers and a total of 2.1 million colonies of honeybees. The yield per colony was 30 kilograms (about 66 pounds) in 1977.

Mexico's honey production has been steadily increasing and has the floral resources to make Mexico a steady leader in world exports. Some of the main honey floral sources remain to be developed. Further gains, however, must come from modernizing the beekeeping industry, not from extending beekeeping into under-utilized areas as in the past. Several times as much honey is exported as is consumed internally, giving Mexico its first place as a world exporter of honey.

Production

The production of honey in Mexico has advanced, particularly in the last several years. Exports reached a record level in 1977. The producer with a small number of hives is likely to have non-modern hives and does not add substantially to the honey produced for sale on the world market. Technical progress is coming slowly to the rural areas. A sizable proportion of Mexico's beekeepers reside in semi-communal villages and are assigned a piece of land by the government, usually for crop growing. Bees kept on this land may be owned by the whole

village and certain members of the village chosen to be beekeepers. The proceeds from this type of beekeeping operation go to the entire village.

Many other beekeepers operate on a private basis, including the larger producers. Beekeeping in Yucatan is technically advanced even though each beekeeper probably averages less than 50 hives. Production methods in the Mexican honey industry is labor intensive. This is true even of the beekeepers with the largest number of hives. Although modern extractors and packing sheds are used in the larger operations many employees are involved in the various stages of production and processing. Labor has been plentiful and wages relatively low.

Beekeeping Regions

The largest number of colonies of bees is in the central Plateau and Pacific Coast regions. Only in the Yucatan Peninsula does the number of modern hives outnumber the rustic type. The Yucatan is nearly level and lies just above sea level. There are alternating wet and dry seasons with a natural vegetation of scrub forest. Few cultivated agricultural crops are grown. Honey production is a good source of cash income.

In the Pacific Coast region the lower

MEXICO: HONEY PRODUCTION, EXPORTS, CONSUMPTION, AND STOCK CHANGES, 1965-77.

(In thousands of tons)

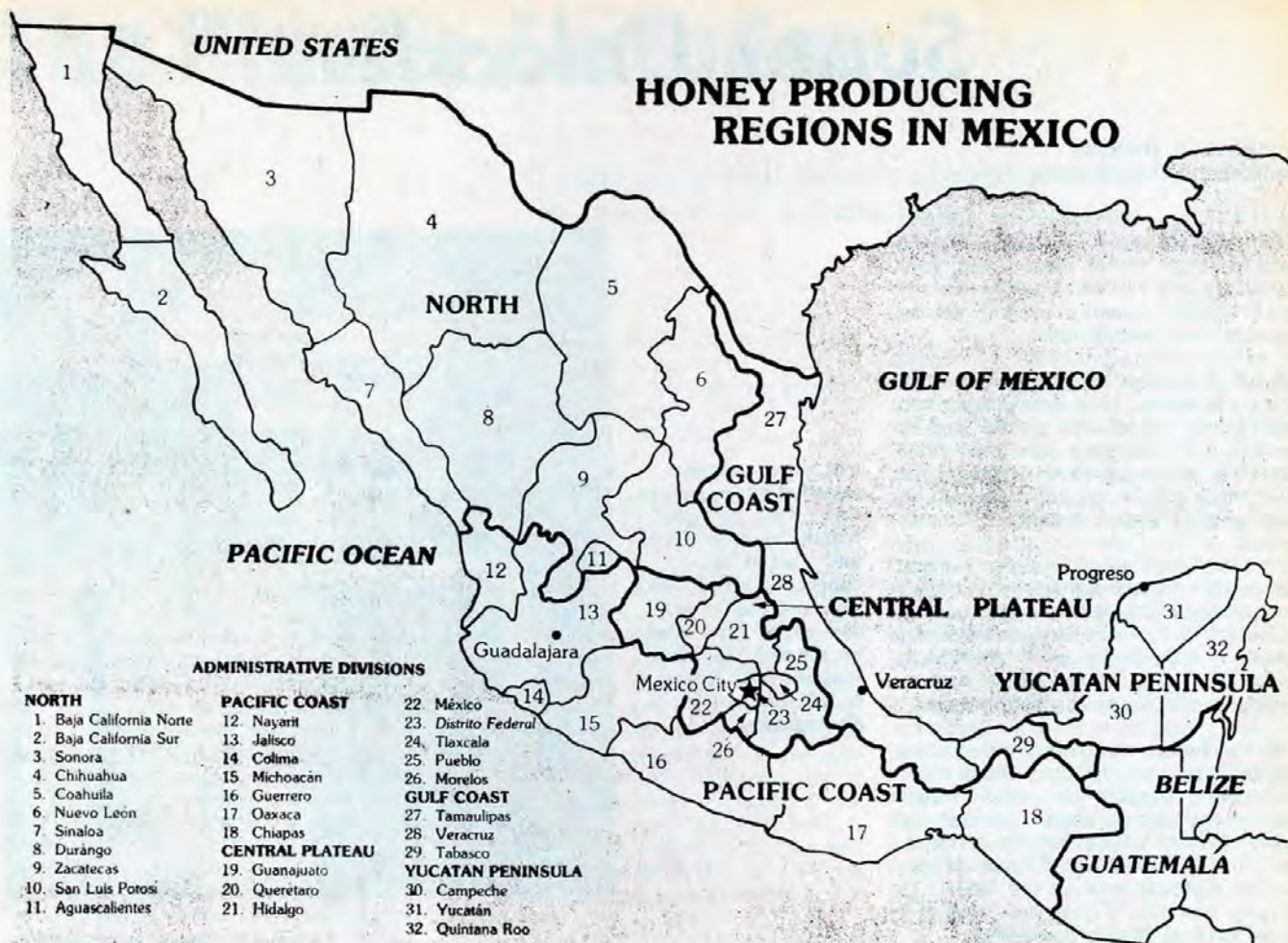
Year	Production	Exports	Consumption	Stock Changes ¹
1965	28.0	23.6	4.5	-0.1
1966	34.0	27.8	5.5	+0.7
1967	28.0	23.7	4.5	-0.2
1968	36.0	30.4	6.0	-0.4
1969	33.0	26.0	6.5	+0.5
1970	30.0	22.6	7.0	+0.4
1971	25.0	17.3	7.5	+0.2
1972	38.0	31.1	7.0	-0.1
1973	33.0	25.3	7.0	+0.7
1974	42.0	22.2	8.0	+11.8
1975	38.0	30.1	8.0	-0.1
1976	44.0	47.8	7.5	-11.3
1977	60.0	53.0	7.0	0

Source: FAS Horticultural and Tropical Products Division, Commodity Programs.

¹ (+) denotes the increase in stocks; (-) denotes the decrease. Stock changes are estimated as the residual of production less exports and domestic consumption.

areas have a tropical wet and dry climate but away from the coast the terrain becomes more mountainous and highland climate prevails.

The central Plateau area is the most densely populated area of Mexico. It has a semi-arid climate. The mountain sides have various floral sources for beekeeping. Further to the east the Gulf coast has steeply sloping areas that become level and low-lying near the coast. The region



has heavy rains, high humidity and extreme heat.

The northern region of Mexico is very dry and floral sources are sparse in most areas, except where irrigation is used.

The central Plateau is the most crowded beekeeping region of Mexico.

Yields

Yields in Mexico compare favorably with other producing countries. The report states that yields in Mexico are similar to those in the United States, though perhaps this statement is subject to certain qualifications when comparing on the basis of productivity per man hour. The potential for increasing productivity is favorable in Mexico with the increased use of modern hives.

While Mexico's honey output has risen steadily there have been variations from year to year because of changes in the weather. During the period between 1965 and 1977 honey production dropped in six of the twelve years, however, production rose overall by 68% during those years. During the same period colony numbers increased by an estimated 35% and yield per colony rose about 25%.

Types of Honey

Elevation is an important factor in determining the type of honey produced in Mexico. At the lower elevations along the coasts the honey tends to be darker, often amber in color, depending upon the floral source. At the medium elevations or in Yucatan the color is likely to be amber or extra light amber. At the highest elevations the honey is likely to be light and in some cases even white in color. Moisture content is likely to be lower in honeys produced at the higher altitudes.

Yucatan honey is probably the most common type produced in Mexico. It is fairly consistent in quality from year to year and from over the whole Yucatan. Yucatan honey has by law a maximum moisture content of 19% when marketed. Orange honey is becoming an important honey in Mexico.

Marketing and Exports

The very largest producers in Mexico usually engage in direct export sales. The smaller producer is likely to sell to a middleman or directly to a private exporter. In the case of Yucatan the beekeepers belong to cooperatives. The

government does most of the marketing in Yucatan, although one or two co-ops are still doing their own marketing at last report. In the rest of Mexico the exporting is usually done by associations or by private exporters.

Honey consumption in Mexico is rising gradually though still limited, accounting for only 14% of the honey produced during 1976 and 1977.

West Germany is the single largest importer of Mexico's honey. The United States is becoming an increasingly important destination, accounting for 33% of Mexico's exports in 1977.

Mexico's honey prices have continued to rise in recent years though subject to yearly fluctuations due to supply and demand. In 1977 Mexico's honey exports of 53,000 tons were a record. Practically all of Mexico's honey is exported in bulk.

Official quality standards on exported honey were issued in 1958 but apparently not enforced. Most exporters, however, have their own quality standards.

(Continued on page 92)

Super Unloader

By ORVILLE HARRIS
Wallaceburg, Ont., Canada

I HAVE approximately forty colonies of bees which I enjoy very much. Having received many useful ideas from your journal to help me when caring for my bees I thought I would share with you an idea that I find very helpful.

A lot of heavy lifting is involved when taking off honey. My large supers can weigh as much as 85 to 97 pounds and by the end of the day they get quite heavy. For this reason I put together the unloader shown in the enclosed picture, taken by my friend C. Evans.

At first I was going to use a manual boat winch to make a hoist but luckily I came across a 12 volt boat winch on sale for \$115.00 which would work perfectly. It was a 12 volt, American Power Winch, Model No. AG 2000, which had a maximum working load of 750 pounds.

At the lumber company I bought two 10-foot lengths of door track and a set of door rollers. I spaced the track 14 inches apart in my garage where I unload the supers in front of the bee house door. Next, iron 16 inches long (2 inches longer than the distance between the rollers) to the roller brackets. Trying this, I found it moved back and forth beautifully.

Clamping the hoist to the channel iron where the pull would be in the center of the rollers I marked the holes, drilled them, then bolted the unit together. If preferred, a plate could be used between the hoist and channel iron and the unit bolted to this.

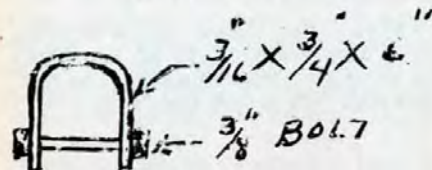
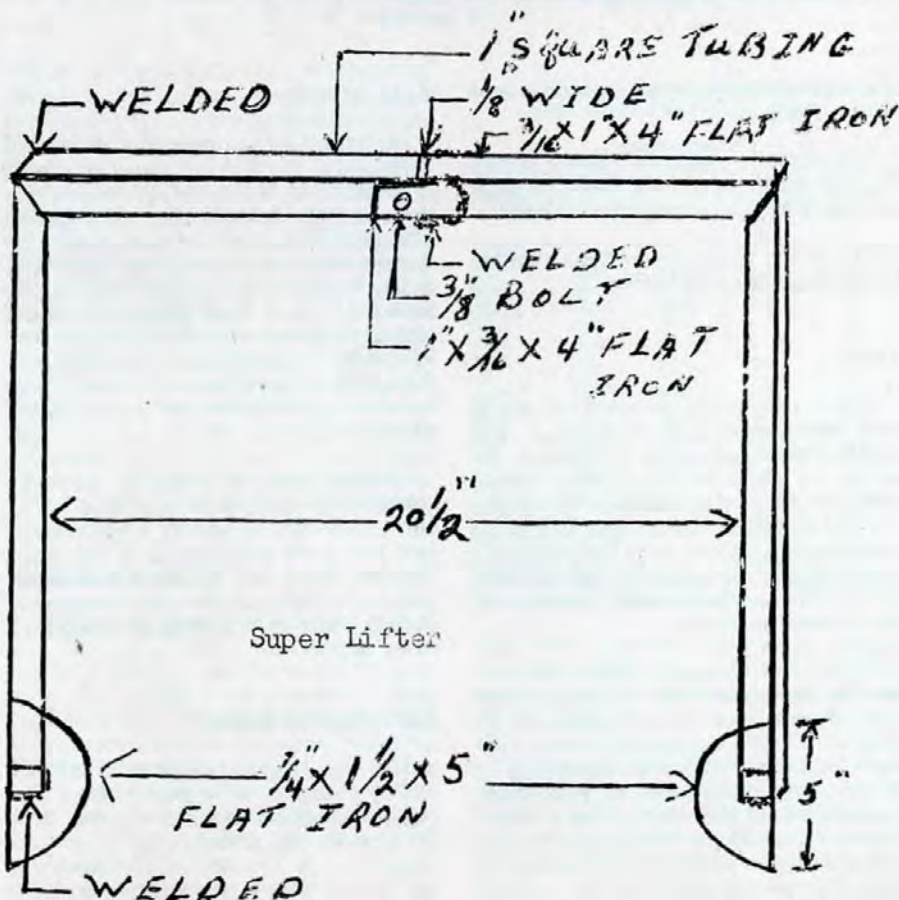
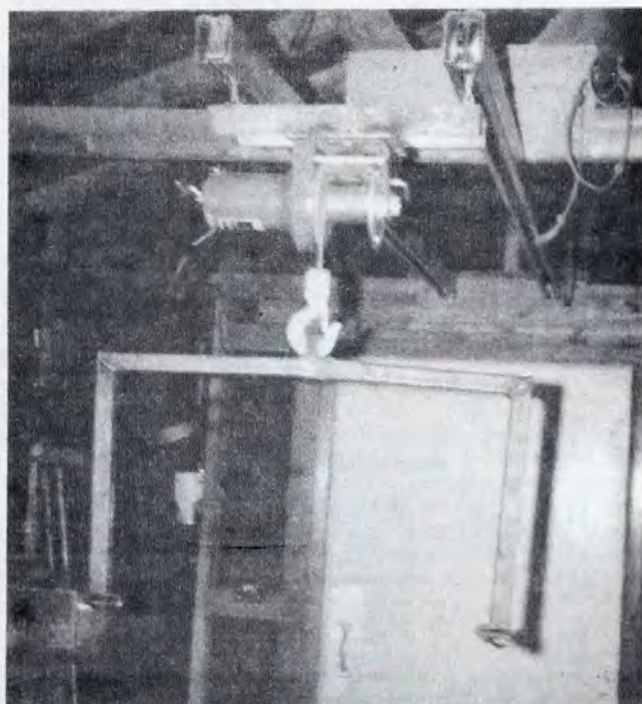
Now I was ready for the switch. Normally, this is on the end of the hoist, but it is possible to mount this switch on the wall, which is what I did, placing it next to the bee house door. However, it is possible to purchase a hoist which is already equipped with a wall mount switch.

Having completed the first part of my unloader, it was time to see if it would work. Everything worked exactly as I had expected. The hoist would lift my weight of 200 pounds with no trouble.

The next problem was to develop a way to use this hoist to lift the boxes. My first design, shown in the accompanying

(Continued on page 90)

The super unloader installed above garage door. Two ten foot lengths of door track and a set of door rollers combined with a powered boat winch and super lifter make up the unit. Switches toup the unit. Switch is to left side of door in photograph.



The Plastic Excluder

"There are several possible explanations for the failure of this excluder to do its job."

By D. WILLIAM BUCK
Gardena, CA.

AWARE OF MY more than casual interest in beekeeping a relative presented me this last season with a supering outfit purchased from a well-known firm. I can always use a few extra shallow supers so I was more than pleased with the gift, although for the same price I could have obtained about a half dozen such boxes. What intrigued me, however, was that this particular "beginners kit" featured an excluder made entirely of plastic and patterned after the old-fashioned—and now largely discredited—zinc excluder. Wafer-thin, this replication is perforated with holes matching exactly those found on the zinc style. Now plastic, unlike zinc, would seem less likely to fray the wings of honey-laden workers passing through the holes to the supers. Yet it appeared to me it might hinder movement into the supers, especially if one were using foundation rather than drawn combs.

The holes seemed just too small and too few. My only recourse to overcoming or substantiating my doubts would be, of course, to test the plastic out on a fairly strong colony, one suitable to terms of vigor and nectar-gathering.

On a bright day in early spring I received a telephone call, the frightened voice at the other end speaking of "a gigantic cloud of bees goin' everywhere". I picked up my equipment and left for the source of the caller's fear. That night I took home to the backyard a rather nice swarm consisting of about four pounds of bees. Within an incredibly short time the swarm had fully occupied two standard supers and had drawn out eighteen frames of plastic-base foundation, filling them with brood, pollen, and honey. I then put the plastic excluder over the brood nest and placed upon that standard shallow super with plain foundation.

After waiting a few weeks I opened the hive and much to my dismay discovered that no more than thirty bees had occupied the super. In fact, workers were beginning to plug the holes in the excluder with wax and propolis. In contrast, during the same period five colonies with wire excluders were filling supers almost as fast as I could provide them. I decided to continue testing the plastic and baited the supers with previously extracted combs and with a frame of fresh larva. About a week later I checked to see whether this ploy was working. The result was that although the bait enticed more

workers into the super, there were still fewer than would normally be present all things being equal. I decided to give the plastic yet one more chance before relegating it to the status of a dust collector.

For the next test I chose a colony which had been established two years ago and which was now roaring with activity. Two shallow supers were already filled with honey and storage was commencing in the third. I slipped the plastic excluder under the supers after making such the queen was below and again waited. Upon checking to see if the excluder was having any effect on the rate of nectar gathering, I found that the colony was preparing to swarm. Whether the excluder in any way encouraged this I can't really say, but it seemed that the bees considered the excluder as some sort of repulsive barrier. There had been no indication that the bees were making preparations to swarm before the excluder was placed over the brood nest.

Still another problem I discovered with the plastic excluder (at least with the one I had), is that it tended to warp. The bees, as every beekeeper should know, will compensate for any imperfections in equipment by using propolis. Propolis makes colony manipulation more difficult and sometimes almost impossible. Of course, anything which increases the likelihood of angry, stinging bees is something to be avoided, especially when living in a populated area as I do. And wasting precious time prying loose an excluder that doesn't seem to do the job is asking too much.

While I didn't test the plastic excluder any further and cannot therefore dismiss it as inherently defective, it is my opinion that it should be avoided. Other colonies with the standard wood frame, wire excluders have been yielding honey this season in amounts well over the average for this area. There was no apparent reason for two colonies, one from a large swarm and the other from an established, strong colony, to either fail to fill the supers or to halt work in the middle of a good honey flow. These same two colonies readily occupied supers once the plastic excluder was removed.

There are several possible explanations for the failure of this excluder to do its job. One reason may be that the bees prefer a series of horizontal slits such as

those on the wood bound and all wire designs. Another explanation might be that this particular plastic emits a certain scent that serves as a repellent to the workers. I am aware that plastic hive bodies have been on the market and are evidently suitable, but an excluder that separates brood nest from surplus is a horse of a different color. Of course, a third reason for the bad experience with the plastic excluder might be with the bees themselves. The two colonies given the excluder may have failed to expand for a number of reasons, none of which could be associated with the excluder. However, my opinion is that either the design is faulty or that the bees do indeed find something repulsive about plastic separating their brood and storage space. I've used plastic base foundation without serious hassles but I have noted that workers will tend to draw out pure beeswax first when plastic base and plain foundation are in the same super.

A sideline like myself must be quite careful to keep equipment costs down if expecting to earn a little extra income. I've tried to forego the expense of using excluders for extracted honey but have found that the investment is minimal when compared to the frustration one encounters at harvest time with larvae, pupae, and emerging brood scattered throughout the honey supers. And a functional excluder also helps keep down the amount of pollen in the extracting frames. This, along with combs that are used solely for honey storage, will help assure a harvest that is of greater clarity and sweeter taste.

I am certainly aware of the long standing argument against the use of excluders when one is producing only extracted honey. For many commercial beekeepers excluders may seem an extra cost as well as extra labor. For the hobbyist/sideline, however, the extra cost and labor is justified by the fact that comb honey can be produced and sold easily, and the extracted crop will be of better quality. And with the proper management techniques I've found no difference in the frequency of swarming between colonies with excluders and those without. Unfortunately, the same is not true for the plastic excluder I was stuck with. My advice is to steer clear of it and stick with the designs that have been around and have passed the test of time.

Sequel To S.W.C. Observation Hive

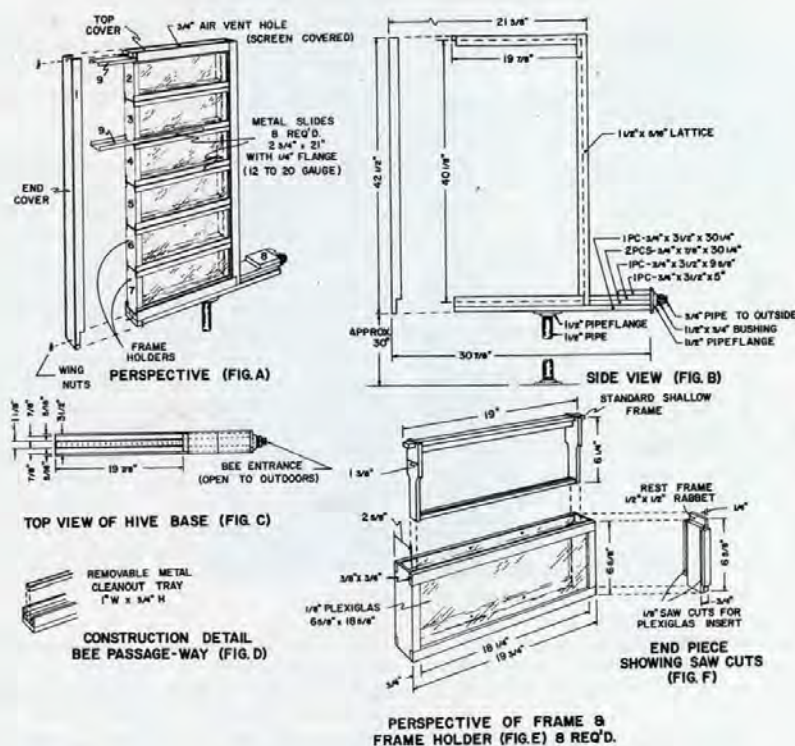
By WALTER B. CRAWFORD
Massillon, Ohio

THE ARTICLE in the February 1978 issue of *Gleanings* relates the experiences encountered with the observation hive at the Stark Wilderness Center near Wilmot, Ohio. It was constructed by a member of the Stark County Beekeepers Association and installed at the Center in the spring of 1977. Other beekeeper's groups became interested in such a project for nature centers in their area. This is a commendable undertaking for a beekeepers organization. The activity within the hive is fascinating to adults and children alike. Bus loads of children from the schools in the area visit the Center throughout the summer and until the trees lose their beautiful foliage and the weather turns cold. These along with hundreds of adults have the opportunity to observe the life of the honeybee at close range.

When the article was first written, the bees had not yet finished gathering nectar and it was decided to see if they could be wintered in the hive. When the weather turned cool, the queen stopped laying and the bees formed a cluster covering most of the two full depth brood combs. The temperature was reduced to about 55 degrees during the week. The combs contained considerable unsealed honey, but little surplus was stored in the upper shallow frames. A feeder was installed between the hive and the entrance tube, using a five pound honey jar. It was enclosed in a box made of thin plywood with a clear plastic window and a lid held on with a screw so that children could not tamper with it. A little metal slide was arranged to confine the bees when the jar was removed. The feeder worked fine until dead bees accumulated in the bottom of the hive and finally blocked the entrance so that they could neither get to the syrup nor to the exit tube.

By the latter part of January, the number of bees had dwindled to a very small cluster, and soon only a dozen or so remained alive. The cages, combs and entrance tubing were removed and cleaned to be ready for a new spring start. It would be a decided advantage to have a hinged door on the bottom of the hive to facilitate cleaning out the debris.

The clear entrance tube is about ten feet long and sloping upward at a 45 degree angle to the exit above an adjoining roof. It requires at least a full minute for a bee to travel the full length of the tube and it is very difficult for the bees to remove the



dead. Even if the colony had survived, it would have been necessary to give the cages and tubing a good cleaning because of the offensive odor and messy appearance. Two frames of brood and bees were again placed in the hive in the spring of 1978. Their laying queen was with them. They were fed a jar of syrup about twice a month because they did not seem to ever accumulate any surplus. When they became quite strong, one frame of brood and bees was removed and a frame of foundation was replaced. This provided an exhibition of comb building which was very interesting to the public. Now that the honeyseason is ended, the bees have been removed and placed in a three frame nucleus box arranged so that the entrance exits to the outside under a window sash.

For those interested in constructing a similar observation hive, the plans show the details. The support of the hive is in the form of a triangular table, the wide part being against the wall. It is also attached to the wall by sturdy brackets. There is a twelve inch open area between

the top of the table and the bottom of the hive. This is handy for literature and a large manifying glass. The five frames of comb are placed in separate cages having clear plastic sides. Each should be made so that a $\frac{3}{8}$ inch bee space is left between each frame. The top cage has a $\frac{3}{4}$ inch cover held on with a hook and eye at each end. Two 1-inch screen covered ventilation holes are provided through this cover and also the top and bottom of the framework that encloses the cages. A sheet metal cover with flanges on each side is fastened to the back of the frame and the flanges give support to the perpendicular side pieces of the framework. When this cover is removed, any cage with it's frame of comb and bees can be slipped out by using the four sheet metal slides, two above and two below. Two of these will confine the bees to the cage and two to the rest of the hive. One-eighth inch pins from welding rod or wire are inserted through holes in the upright end pieces of the outer frame to support the upper cages. The metal slides may sag a little and allow bees to escape

so an adjustable block was used to hold the center of each metal slide tightly between the cages when one has been removed.

The flexible plastic tubing is available from one of the bee supply companies. The 1-1/2 inch size just fits the 1-1/2 inch plastic drain elbows. Metal screws were used to prevent the tubing from slipping out.

NOTE: The Stark Wilderness Center Observation Hive was not built to the exact specifications of the plans shown, but similar. The hive plans are from The University of Wisconsin.

INSTALLATION: First, locate the observation hive exactly where you want it and check that the opening to the outside is not blocked.

Place the frame in a frame holder with honey in position (7-Figure A). Then

place another frame in a frame holder with sealed brood in position 6, and the frame containing eggs in position 5. While these positions are not absolutely essential, the bees tend to move the honey from the position 7 upward. This will open cells for the queen to lay eggs. You will want to keep the queen and the brood in the lower portions of the observation hive. Normally honey is stored in the top of the hive. Place either comb or foundation in positions 4, 3 and 2, and as the population increases, bees will either store honey or the queen will lay eggs in this area.

With the frame holders containing bees in position, the sheet metal slides can be removed. Bees can then mix and spread throughout the observation hive. Secure the end cover (1-Figure A).

As mentioned, the unique feature of the hive in Figure A is that you can manipulate it indoors without dismantling. If done properly, no bees will escape. Suppose you wish to remove the bees and

frame in position 5 and replace it with an empty frame. The first step is to insert the metal slide (12 to 20 gauge) between positions 5 and 6 (9-Figure A). The metal slide should close the top of the frame holder in position 6. Secure this with masking tape. Next, insert a second metal slide between positions 5 and 6, covering the bottom of the frame holder in position 5. Secure this with masking tape. Take the fourth metal slide and insert it between 4 and 5, closing the bottom of the frame holder in position 4. This confines the bees that are in frame holders in positions 2, 3 and 4 into that area. The bees are also confined exclusively to the frame holder in position 5, and into position 6 and 7. All that is now necessary is to slide out the frame holder in position 5.

It is quite important that you have someone assist you, or the frame holders in position 2, 3 and 4 will drop out of place. You must retain the frame holders in place so you can insert a new or empty frame holder into position 5.

Texas A&M Offers Beekeeping Course

By WILLIAM W. SPEER, III
College Station, Texas

IN THE December 1976 issue of *Gleanings in Bee Culture*, a story written by Richard V. Wallace appeared on page 454 titled, "Sparse Texas Beekeeping Education".

It was a story about how Texas's oldest and largest agricultural institution, Texas A&M University, failed to offer any beekeeping program or courses.

At that time Dr. R. C. Potts, A&M associate dean of agriculture, said there was no demand for a beekeeping program or courses and that "beekeeping is just a skill. We don't teach any housekeeping courses here. We don't teach horse-shoeing either".

It has been almost two years since that article was published, and A&M still doesn't have any courses in horseshoeing or housekeeping, but it finally has a beekeeping course. Why did a university that prided itself for its agricultural prowess ignore beekeeping, but then suddenly offer a beekeeping course in the spring of 1978?

Paul W. Jackson, State Entomologist, said it was the combined efforts of Dr. J.W. Smith, professor of Entomology at A&M, the Texas Apiary Inspection

Service located at A&M, along with the approval of Dr. P.L. Adkisson, head of the Entomology Department, that were successful in establishing the beekeeping course.

"Entomology 333 offers the student a basic course in beekeeping on the hobbyist's level", Jackson said. "It gives the student an idea of the fun and profitability of beekeeping".

The two-hour college credit course has one hour of lecture a week and three hours of lab. The course is offered only in the spring semester because they felt that the students could be exposed to the greatest number of management skills that are necessary for successful beekeeping.

Potts, now retired, had said there was no demand for a beekeeping program at A&M, but when the course was offered for the first time they had to limit the enrollment to 50 students because of limited lab facilities.

Jackson, who was in charge of the labs, said that of the 50 students, approximately 25 met in the two separate weekly labs.

"No previous experience was required of students who took the course, although we did have some students who had worked for commercial beekeepers before", he said.

The one-hour weekly lecture was taught by Smith. The text used was *The Hive and Honeybee*, edited by Dadant & Sons. Students were required to furnish their own protective clothing such as suits, gloves and veils.

"We tried to organize the lab into a logical sequence, but occasionally had to make adjustments because of the weather", Jackson said.

The first week in lab was spent on protective clothing, equipment usage and sting prevention. Hive building and assembly covered the next two weeks, with the students being graded on technique. Installing foundation gave students the most trouble. The following week was spent instructing students on how to correctly inspect a colony of bees. The next several labs were largely dependent upon the weather, as the students did requeening, installation of package bees, disease prevention and

(Continued on page 94)

NEWS and EVENTS



CONNECTICUT Beekeeping Short Course

A short course will be given at the White Memorial Conservation Center (formerly the Litchfield Nature Center and Museum), Litchfield, Conn. The instructor will be Professor Al Avitabile of the University of Connecticut.

The course will consist of 4 Saturday morning lectures beginning at 9:30 A.M. immediately followed by field trips to bee yards. The dates for the course will be April 7 and 21st and May 5 and 12th.

Demonstrations will include: how to hive package bees and swarms, how to rear your own queens, how to divide colonies, how to manage a two-queen system and many other demonstrations related to bee management.

Cost will be \$23.00 per person for the entire course. For additional information contact either Gordon Loery, Director of the Center at 567-0015 or Al Avitabile at 757-1231 (Ext. 38) area code (203).

CONNECTICUT Winter Meeting

The Winter Meeting of the Connecticut Beekeepers Association will be held on Saturday, February 24, 1979, at the Connecticut Agricultural Experiment Station, 123 Huntington St., New Haven, Connecticut, at 10 A.M. in the Donald F. Jones Auditorium.

Our program will feature two talks by Dr. Dewey M. Caron, Associate Professor of Apiculture at the University of Maryland. One talk is entitled, "Queen Replacement in the Bee Colony"; the other, "Handling Bee Colony Pests".

In addition, the program will include a movie showing the beautiful Province of Ontario, Canada.

The always delicious potluck lunch will be served at noon. Don't forget to bring something you like for the buffet table.

MISSOURI Missouri State Beekeepers Assn.

The Annual Spring Meeting of the Missouri State Beekeepers Assn. will be held in the University of Missouri Agriculture Building at Columbia, March 24, 1979.

Dr. W. T. Wilson of the U.S.D.A. Agriculture Research Center, Laramie, Wyo. will speak on bee diseases in the forenoon and pesticides in the afternoon.

Business on the agenda will include presentation of a plaque to the Missouri Beekeeper of the Year, Mr. Carl Kalthoff. In addition a Missouri Honey Queen will be chosen.

NEW YORK Beekeeping Short Course

A course in practical beekeeping will be offered to the general public at the University of Rochester by Dr. Richard Taylor, meeting Tuesday afternoons 4:00-5:30 plus a field trip in the spring, beginning February 12. Students will be shown how to set up their own apiaries this spring. For information phone 275-2331.

NEVADA Southern Nevada Beekeepers Assn.

Southern Nevada Beekeepers Association officers for 1979 are Richard C. Hicks, Director and Juane Arrington, Secretary-Treasurer. The SNBA meets on the first Thursday of each month at the Clark County Cooperative Extension Service Conference Room in Las Vegas, 7-9 P.M. The *Desert Bee* is the Association's monthly newsletter.

Dr. Gordon Waller of the U.S.D.A. Bee Research Laboratory in Tucson, Arizona was the guest speaker for the February 1 meeting. Floyd Hilbig, Chief Apiarist, Nevada State Dept. of Agriculture, will present the March 1 program.

Contact Richard C. Hicks, (702) 451-3199, 648-5236 for additional information.

INDIANA I.S.B.A. Workshop

March 3, 1979 is the date for the Beekeepers Workshop to be held at the MCL Cafeteria in Greenwood, Indiana. Registration will be \$5.00 for individuals and \$6.00 for families.

A.M.
9:00 - Registration
9:30 - Introduction & film on bee & Honey Management
10:30 - Honeybee—Martin Hoernig

11:15 - Introduction of Honey Queen
11:30 - Lunch
P.M.
12:30 - Announcements
12:45 - Bee Equipment—Dadants
1:30 - Starting with bees—Tom Ott
2:00 - Break
2:15 - Bee Management—Ray Hampton
3:00 - Pollination—John Cutshall
3:15 - Bee diseases & Inspection—Claude Wade
4:00 - Questions & Answers
4:30 - Door Prizes & Raffle

MICHIGAN Beginners' Class

A Beginners Class will be held at Southwestern Michigan College, Dowagiac, Mich. from Feb. 26th to Apr. 21st. Contact Bob Wagel at 616-782-3444, Ext. 236.

PENNSYLVANIA Beekeeping Courses

Delaware Valley College, Doylestown, Pa., will again be offering two, 3-day beekeeping short courses, this year. The Spring Short Course will be held on Saturday, March 31, April 7, and April 21, 1979. This year, for the first time, the Summer Short Course will be held on Friday, Saturday, and Sunday, June 22, 23, and 24, 1979, instead of Wednesday, Thursday, and Friday as in past years. This change is being made in an attempt to accommodate those persons unable to attend the course on the three weekdays.

The courses are being offered cooperatively by Dr. Robert Berthold (Associate Professor, Biology) and Mr. Jack Matthenius (New Jersey Supervisor of Bee Culture). Instruction will take place on the Delaware Valley College Campus, with the College apiary and fully equipped honey house being utilized.

The course includes both lecture and field demonstrations on most areas of practical beekeeping including starting with bees, equipment, diseases, queen rearing, management, swarm control, honey extraction, processing, and marketing, candle and mead making, and a special talk by Mrs. Marren Berthold on uses of honey in cooking, baking, and canning.

The total cost for the three days of instruction is \$20 (this does not include

GLEANINGS IN BEE CULTURE

meals or lodging). A special rate of \$15 will be made available to young people 17 years of age or younger and Senior Citizens 65 years or age or older. Further information and an application for the course may be obtained by writing Dr. Berthold, C/O Delaware Valley College, Doylestown, Pa. 18901, or by calling him at (215) 345-1500.

Obituaries

RALPH ALBERTSON

ON December 10, 1978, Mr. Ralph Albertson, age 60 of 4224 Malta Street, Philadelphia and Irma, New Jersey, died suddenly at the Veteran's Administration Hospital, Philadelphia. He had been a beekeeper for the last twelve years and was a member of the Pennsylvania State Beekeepers Association. He is survived by his wife, Mrs. Jean Albertson of Philadelphia, one daughter, Dianne and a son, Ralph.

RAY KING

Ray King became one of the most dedicated workers for the Central Eastern Illinois Beekeepers Association one could ever hope to meet. His devotion to honeybees, getting young people interested in beekeeping, and his untiring and generous application of his talent, time, money and equipment to further the cause amazed all whom were aware.

He was post haste elected vice president and in due time President of CEIBA. His efforts included sole responsibility for an educational display booth at the Champlain County Fair.

Always Ray did more than his share to further the projects of our association. He died suddenly Saturday, December 16, 1978.

A LARGE HIVE STORY

Dadants say "the Langstroth-Simplicity frame is long enough but hardly deep enough. The Quinby frame is deep enough but would be better if a little shorter ... We would counsel beginners to use the Quinby size, especially if they intend to winter out-of-doors, or at least to use a frame as long as the standard Langstroth and as deep as the Quinby".

After a time A.N. Draper suggested the Jumbo hive, ten frames the same length as Langstroth and two and one quarter inches deeper. This attracted a following, reaching the stage of being recommended as a possible alternative to the Langstroth by the 1937 official government guide to beekeeping in Canada, issued in those days by the Federal Department of

Agriculture and written by C. B. Gooderham, the Dominion Apiarist.

In 1917 the Dadants themselves brought out the Modified Dadant hive, no longer a Quinby but the Langstroth length and 11 and 1/4 inches deep. But they retained the 11 frame width of the hive and the one and a half inches between the combs, which they favored.

These couldn't be mixed with ordinary equipment, at least not conveniently.

As for myself a friend gave me five Jumbo hives he was no longer using about 20 years ago, and I had no occasion to use them until about five years ago, when I began to have a few more bees.

I seldom have any occasion to move them, and they are all right. I got new frames and foundation when I put them to use, although I didn't get quite enough foundation, therefore, I had to use the composite job as illustrated.

They are especially good for wintering. With an ordinary super as a second story or food chamber they have plenty of stores and the queens go to work in the spring in a nearly empty Jumbo hive body with a nearly full super of honey above and if she is a good one they produce a lot of brood and a big colony.

They don't seem to me significantly harder to handle than ordinary Langstroth frames when it is time to examine the combs. But it is hard to prove the colonies in these hives produce more honey than those in regular hives. It is easy to imagine some seasons so poor that the bees do little more than fill that larger storage space, when they might have put up a little surplus in a regular Langstroth hive—but if a season is that bad the bees may need all they can gather to winter on anyway.

Summing up on large hives, I would say don't be too hesitant about them if some are available, but on the other hand, don't get into an odd size unless there is equipment a hand ready to use under some circumstance that makes it a bargain. As a rule of thumb, do what beekeepers in general have done, use larger frames, etc., if there is a reason to do so, but don't replace them when the time comes. Instead, make the investment in standard material.



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SUPER UNLOADER

(Continued from page 84)

diagram worked perfectly. This lift was made from one inch square tubing, the kind that is used for porch railings. This box lift can be made to handle or lift more than one super by extending the arms and making them longer. I made mine to handle two large supers.

With the switch by the door, I am able to unload my truck by placing the supers on dollies and no manual lifting is necessary.

I keep a 12 volt battery on the bench with a 1/2 amp. slow charger on the battery at all times. I have had no trouble all summer long.

I was going to put in a track so that the hoist could be moved in both directions over my truck, but, I found that the supers slid quite easily on the pickup floor with the use of a hoe so the extra track was not necessary.

Using this method, I never had to get on the truck. Everything is done from the ground.

The following is a list of the materials that I use:

- 1 piece of channel iron 4 x 16 in. long
- 1 plate 1/4 x 5 x 6 in.
- 1 piece of sq. tubing 1 x 48 in. long
- 1 piece of flat iron 1/4 x 1-1/2 x 10 in. long
- 1 piece of flat iron 3/16 x 3/4 x 7 in. long
- 1 piece of flat iron 3/16 x 1 x 15 in. long
- 1 bolt 3/8 x 3 in. long

HONEY PLANTS

(Continued from page 68)

completely dependent upon insect pollinators, especially the honeybee. Modern farming methods have eliminated fence rows, many woodlots, brushy areas along streams and roads and permitted converting swamps and other areas formerly inaccessible into farmland. These areas served as a refuge for wild pollinators. With their elimination the burden of performance is placed on the live honeybee if plants which depend on insect pollination are to survive. Intensive and clean cultivation plus the highly efficient herbicides, fungicides and insecticides have reduced the populations of insects that formerly posed a threat to agricultural crops but at the same time their indiscriminate use has reduced the number of beneficial insects, particularly those organisms which exerted controls over the destructive ones.

Next month, Honey Bee Forage.

Farrar, C.L. Influence of Pollen Reserves on the Surviving Population of Overwintering Colonies, *American Bee Journal*, (Sept. 1936).

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THE HONEY INDUSTRY OF MEXICO

(Continued from page 83)

Future Prospects

With weather favorable in nearly all areas Mexico's honey production in 1977 went record high. However, stocks were not built up as the crop found a ready market in foreign countries. The weather was not favorable in early 1978, particularly in the Yucatan, and the output is likely to be down from the 1977 level. Exports, likewise, are expected to be lower in the current year.

In the longer term, Mexico's honey production is expected to continue to increase. Trade and other sources estimate that as much as two times the present floral source area could become available in the future if all floral resources were developed and used for beekeeping. However, the potential floral sources are not as good, on the average, as those presently being utilized. Some new sources will become available as agriculture is further developed through irrigation and by other means. Further production increases in the Central Plateau region will have to come mainly from better yields, since most of the area's present floral sources are being used. The State of Tabasco and Chiapas have especially good potential because of

their ample floral sources and developing agriculture.

Major obstacles to the development of Mexico's honey industry include lack of financing, low educational levels, poor technology, lack of research and considerable use of unimproved bee stock. Although there are substantial beekeeping extension services in the Yucatan, they are somewhat limited in the rest of Mexico. How well these obstacles are overcome and the assets are utilized will determine the rate of future expansion in Mexico's honey industry.

Taken from a report by Robert M. McConnell, Deputy Director for Analysis, Horticulture & Tropical Products, Commodity Programs, Foreign Agricultural Service.

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25-99	5.65	17.25	22.50	28.00	32.00
100-up	5.15	16.50	21.75	27.00	31.00

THE BLIND BEEKEEPER

(Continued from page 65)

I guess nothing makes a beekeeper's heart pound more quickly than the sighting of a swarm. My three school-aged sons, for a \$1.00 payment each, have become to beekeeping what the young lad on top of the mast of the whaling ship was to that industry. I would like to say that I have absolutely no difficulty getting a swarm of bees no matter where it is. This is, of course, not true. Swarms have a way of attaching themselves to the highest limb, to the most prickly bush and to the most inaccessible eave of a house. The best I can say in this area is that my heart does beat fast and I have assisted in many swarm catchings.

The reward for any beekeeper, of course, are those wonderful days in the summer and fall when those full honey supers are ready for extraction.

I use nine frames in the honey supers which makes extracting easier since I can feel the extended comb. An electric uncapping knife works fine. Sighted people that are helping do watch to make sure that I have opened all the cells. A two frame hand extractor works fine in conjunction with a capping separator, clarifier and pump which moves the honey into a holding, filtering and bottling tank. Bottling is a simple process with a finger held at the rim of the jar

which allows me to gage when it is full. I do not know of anyone sighted or blind who bottles honey that does not find it a sticky process. Perhaps I get more sticky than other beekeepers, but it is certainly enjoyable.

In summary, I guess my only reason for writing this article is to share with other beekeepers my love for this hobby. I do not wish to sound pompous, but no matter what your handicap, if you really set your mind to do something you generally can do it.

SPRING WILLOWS

(Continued from page 63)

foreigners, busy like old woodsmen gathering up the bounty. Completely unconcerned with my arrival til one, weary, saw this convenient huge form to land on. I watched this creature, all legs and quivering, sweeping antennae, do its acrobatics to brush the last pollen grains into her baskets. No angry stinging stranger this, no weary traveler, no idler in the sun, nor timid wild creature afraid of man, but no slave of man either. Just a golden friend taking a brief rest, sizing me up perhaps. Our respect was mutual, barriers no longer existed. The bees and I could work and live together in harmony. Finished, she fell heavily into the air and headed towards home, unconcerned.

Too soon a mass of leaves will join the willows in the sky. Wild apples, cherries and dandelions on southern slopes will join the fray for the bees' attention and invariably the willows are forgotten. The colors of the pollen coming in now changes and even the very smell around the hives changes. Like the old overwintered bees now mostly died off and replaced by the willow-made young ones, they've had their moment in the sun, their days of glory and full life and must now, like all things in their season, give way to others.

TEXAS A&M OFFERS BEEKEEPING COURSE

(Continued from page 87)

making division for increase. A field trip was taken to observe Morris Weaver's queen rearing operation at nearby Navasota.

As for future expansion of the course, the total class size will be continued to be limited to 50 students and the actual extraction process of honey will be undertaken.

CORRECTION

THE January, 1979 issue of *Gleanings* (pg. 31) stated that The U.S.D.A. in Beltsville, Maryland analysed bees killed by pesticides. This is an error.

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Established 1888

Phone 713-825-2312





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These queens are **Good!** They'll make **strong colonies** . . . they'll **winter well** . . . they'll **build up fast** in the spring . . . they'll **help clean up EFB and Nosema** . . . and they'll produce a **good crop of honey!**"

Amos McLamb

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1979 Prices

1-10	\$6.00
11-99	5.75
100-over	5.50

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10% deposit to book.

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FRUGAL

PRODUCTIVE

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1-10	\$6.00
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26 & up	5.50

Clip or mark 25¢

1-10 Cash with order.

11 & up 15% to book, balance due 15 days before shipment.

LIVE DELIVERY GUARANTEED TO U.S. & CANADA. PRICES SUBJECT TO CHANGE WITHOUT NOTICE. Queen yard manager is Page Simpson, who has been working bees since 1928 and producing good Queens since 1949.

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Health Certificate Included

Queens \$4.25 each air mail postpaid

Clipping 25¢ & Marking 25¢

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Minimum order 15 queens

Available through May 15th

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	1-9	10-24	25-99	100-up
2-Lb. W/Q	\$22.00	\$21.00	\$20.00	\$19.00
3-Lb. W/Q	26.75	25.50	24.50	23.50
4-Lb. W/Q	33.50	32.00	30.75	29.50

Above prices include postage, special handling insurance, and handling fees. Packages can only be shipped PARCEL POST. If packages arrive in damaged condition. File claim for Insurance.

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1 -24	\$ 5.50	\$16.50	\$21.00	\$26.50
25 -99	5.25	16.00	20.50	26.00
100-Up	5.00	15.50	20.00	25.50

WRITE FOR DELIVERED PRICES
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QUEENS POSTPAID, AIRMAIL.
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\$6.00 each

1-5 kg. package \$32.00 ppd.

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Clip and Mark 50¢ each.

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W/q	1-24	25-99	100 up
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3-lb. pkg.	19.50	19.00	18.50

Packages shipped F.O.B. Baxley, Ga.
WRITE OR CALL FOR LARGER
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QUEEN PRICES

Postage Paid—Add 70¢ Special
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ALL QUEENS FED FUMIDIL-B	Until June 15	After June 15
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Tested Queens 50¢ ea.

TERMS: Orders \$100 or more, 10%
deposit and balance due two weeks
before shipment—others cash w/order.

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YORK'S--- Quality Bred

1 STARLINES

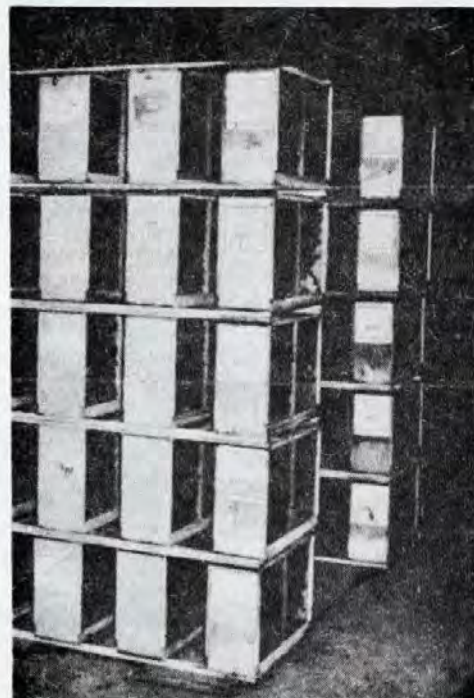
9 MIDNITES

7 ITALIANS

9

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S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31

MAY 1979
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6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31

JUNE 1979
S M T W T F S
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10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30

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QUEENS	5.75	5.55	5.45	5.35

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3-lb. pkg. w/q	21.90	21.50	21.25	20.90
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QUEENS	6.15	5.95	5.85	5.75

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

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GLEANINGS IN BEE CULTURE

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WANTED: Baby Queen Mating Nucs. Patagonia Apiaries, Patagonia, AZ. 85624 602-394-2448.

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10-frame single story hives **ITALIAN** bees, young queen colonies in good condition. Pick up dates start mid-April. \$50.00 each. Anderson Apiaries, 115 N. Oak, Adell, Ga. 31620. Ph: 912-896-4419.

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PACKAGE BEES. Pick up St. Paul, Minnesota, April 14. Now booking 1979 orders. Please book early, limited supply. Write or call for free brochure. J.B. APIARIES, P.O. Box 6626, St. Paul, Minn. 55106 612-429-4267.

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PACKAGE BEES delivered to north eastern States. Marasan Honey Limited (see advertisers index).

VIRGIN QUEENS—\$2.50 each. Floyd's Apiaries, Rt. 1, Box 328, Deville, LA 71328. PH 1-318-466-5289.

FOUR FRAME NUCS, new queens, no frame exchange. Available April, May, pick-up only. 20% books order. Harold Lee, Box 503, Taylor, AZ 85939. 602-536-7982.

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PENNSYLVANIA DOUBLE GRAFTED ITALIAN QUEENS. Northern, hardy stock. Mating nucs fed Fumidil-B. Book now with payment. Live delivery guaranteed! May to September. 1-5 \$6.00; 6-up \$5.50. Marking .50. James Mentzer, RD 2, New Holland, Penn. 17557. 717-354-8042.

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IMPROVED Italian Queens—nice large yellow ones. Airmail postpaid. Health certificate, add 70 cents special handling charge. 1-9 \$4.75; 10-49 \$4.50; 50-Up \$4.25. Clip or mark 25 cents each. Jon Colston, Rt. 1, Taylorsville, GA. 30178.

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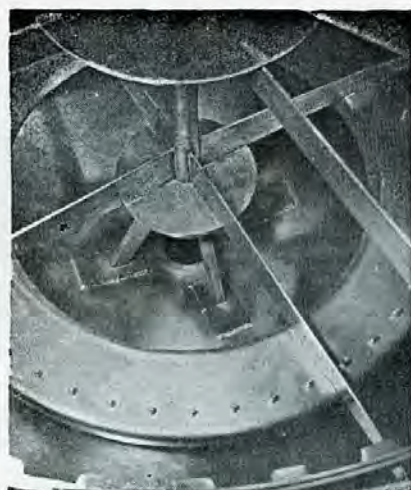
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