

Gleanings in

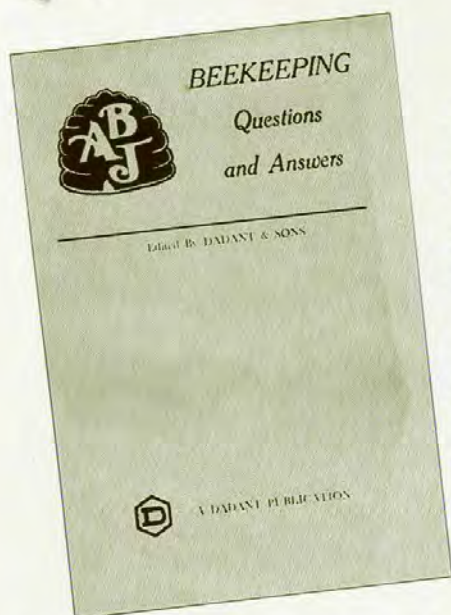
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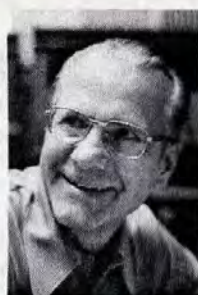
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John Root



Lawrence Goltz

Gleanings in Bee Culture

May 1978

Vol. 106, No. 5

Created to Help Beekeepers Succeed

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Lawrence Goltz, Editor
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John Root, Associate Editor
Dr. Roger A. Morse, Research Editor
Naomi M. Yost, Advertising Mgr.
Mary Louise Robinson, Sub. Mgr.

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Monthly HONEY Report

LAWRENCE GOLTZ

April 10, 1978

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.)		.50	.50	.46	.50	.50	.46	.46	.48
Amber (per lb.)		.45	.45	.45	.44	.39	.39	.42	.40
1 lb. jar (case 24)			19.40	17.85		19.50		17.75	
2 lb. jar (case 12)			18.70	16.50		18.75		17.25	
Retail Extracted									
8 oz. jar		.61	.66	.61	.59	.60		.58	
12 oz. jar				.90		.78		.90	
1 lb. jar	1.25	1.10	1.09	1.05	1.10	1.06	1.10	1.06	1.12
2 lb. jar	2.25	2.00	2.00	1.78	1.98	1.88	1.85	1.90	2.00
3 lb. jar		2.85	2.85	2.79		2.75		2.86	2.80
4 lb. jar		3.69		3.49			3.48		
5 lb. jar	5.50	4.50	4.48			4.45		4.49	
16 oz. Comb		1.55	1.60		1.35	1.41			2.00
Creamed 16 oz.		1.15		1.12					1.15

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Comments:

VERMONT- Bees seemed to have wintered well. All colonies with honey look good. Some starvation. Moisture conditions good.

NEW YORK- Bees wintered better than expected, though some losses ran up to 20%. Honey prices up.

PENNSYLVANIA - Winter losses 10-15%. Rainfall and ground moisture conditions good.

OHIO - Bee winter losses about 10%. Bees look good to fair. Some feeding needed.

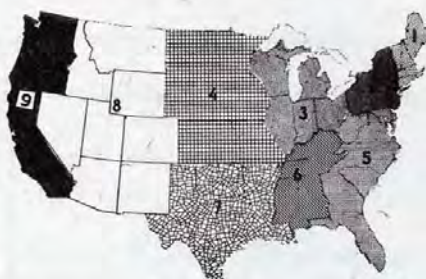
INDIANA- Bulk honey sales good. Winter loss greater than expected and much feeding required. Bees in fair condition.

ILLINOIS - About 40% loss of bees in Illinois. Late spring is allowing beekeepers to build back colony numbers with splits and packages. Colonies in fair to poor condition. Moisture condition good.

MICHIGAN Emergency feeding needed in some areas. Package bees being used to make up heavy winter kill. Colonies in fair condition.

WISCONSIN - Looks like higher than normal winter loss. Bees in fair condition. Retail honey sales good.

MINNESOTA - Long, steady cold winter with no chance for cleansing flights, along with sunshine that attracted the



bees out into cold air caused dwindling of populations. 25% loss not uncommon. Moisture conditions fair to good.

NORTH DAKOTA - Bees in good condition.

IOWA - Heavy winter loss, reported to be as high as 75%. Demand for packages very heavy. Moisture conditions good.

NEBRASKA - Over 100 days without bee flight during winter. Winter losses heavy, but remaining colonies in good to fair condition.

WEST VIRGINIA - Late season. Bees wintered well and in good condition.

VIRGINIA - Bees late in building up, but bees gathering early pollen at end of March. No reports of big winter kills.

NORTH CAROLINA - Bees flying and pollen coming in at end of March. Brood in 3-4 frames. Moisture conditions good.

FLORIDA - Orange flow started late, about March 20-25. Good flow should be good crop.

KENTUCKY - Even though it was a record long, cold winter colonies wintered better than expected. Losses about 10-25%. Brood rearing under way in late March.

TENNESSEE - Bees came through poorly and will be late in building up for the honey flow. Moisture conditions good.

ALABAMA - Prospects for good spring honey flow are improving with the improvement in the weather. Bees in fair condition.

OKLAHOMA - Colonies 4 to 6 weeks behind normal condition at end of March. High winter losses. Demand for package bees high.

ARKANSAS - Winter losses run 10-30%. Good prospects for strong spring honey flow. Bees in good condition.

MONTANA - Snow melt and warm weather at end of March gave bees flights. Some winter kill is higher than average but bees in fair to good condition. Moisture conditions good.

COLORADO - Winter bee loss about normal. Early pollen coming in at end of March. Bees in good condition. Moisture supplies good.

WASHINGTON - Nectar flow starting in early April. Bees in good condition.

CALIFORNIA - Bees in good condition. Moisture conditions good.

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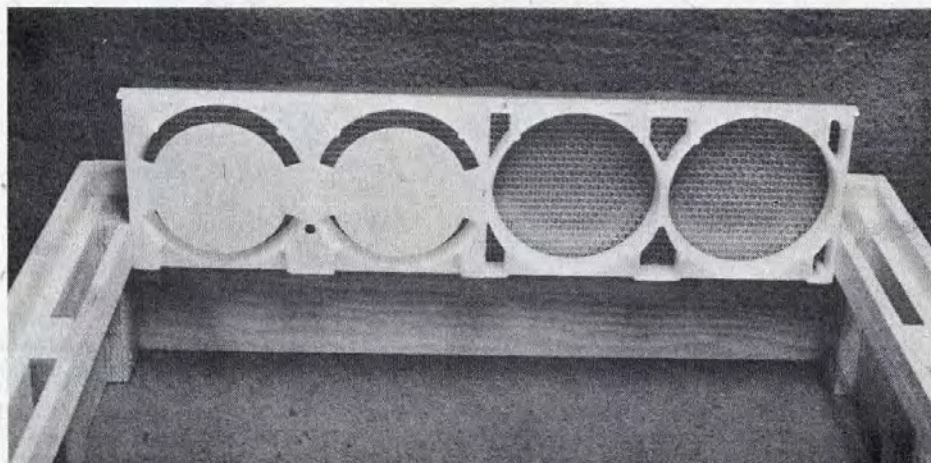
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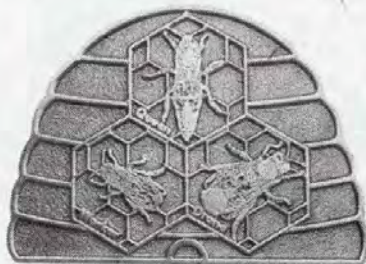
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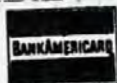
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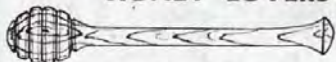
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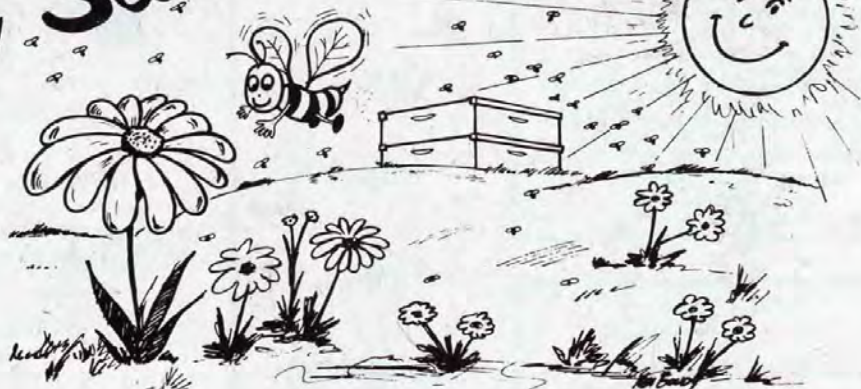
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Will Your Bees Swarm?

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

An Examination of Ways to Prevent Swarming

A BEGINNER AT beekeeping usually strives to do all of the things he's supposed to do to bring his colonies into the spring at full strength.

If he's done everything right, they may be so strong that he's threatened with their swarming. Then, much of what he had hoped for may be lost. Colonies that swarm lose such a large portion of their numerical strength (30-70%) that they often produce no surplus. (Morse 1975). What shall he do?

First, it is probably beneficial for him to realize that his troubles in this matter may not lie with inferiority in his queens. It is their age that is especially important at this stage. If they are less than a year old, they will be less likely to be a part of the reason for their colonies' swarming.

A research study by J. Simpson (1960) shows that swarming is more frequent with two-year-old queens than with one year-old queens. Simpson states that the ratio is at least three to one, and possibly considerably greater.

There is seldom anything wrong with the two year olds, and the three year olds that go out with swarms. The fact is that they have to be vigorous and productive in order to participate in providing the number of young bees necessary to make up a swarm. Also, they must be physically strong enough to be able to make the flying trip to the new nest. There they may be superseded if they don't continue to function satisfactorily.

Accordingly, the more fastidious beekeeper often follows the practice of clipping the wings of his queens—the right wing in even years, the left wing in odd years—and, as one beekeeper has said, the neck the third year. Then he has means of knowing how old his queens are, and whether they are supersedure queens. Clipping also yields the beekeeper a respite of about seven days before a swarm can issue successfully.

If the operator's queens are 2-3 years old, their workers will usually try to swarm if they can manage it. It is instinctual for them to do so.

How Shall the Beekeeper Prevent Swarming?

Honeybees tend to maintain their spring brood nest at a goodly distance from the entrance. It's warmer there, and

the brood is less vulnerable consequently to the cold and wind. Bees in wild nests, trees, for example, do not build comb, as a rule, closer than six inches from the outside of the entrance. (Seeley and Morse 1976). Man places the frames in the hives much closer to the elements than that—only a couple of inches. The only way man can help the bees in this dilemma is to keep an entrance cleat in place until the nectar flow begins—or even beyond that. Throughout the month of June this year (1977) here in the Hudson Valley, one hundred miles north of New York City, the night-time temperatures frequently dropped to 40 degrees F. This is 53 degrees lower than the average temperature maintained by the bees in their brood nest area. It seems obvious that they might better be a little too warm at midday than too cold at midnight.

Because the upper of the normal two-body nest becomes full of brood, and the bees are reluctant to place brood close to the entrance, many beekeepers practice "reversing"; that is, they interchange the two hive bodies. They do this in some cases as early as April 15-20.

But, as we have indicated above, unless the beekeeper retains the entrance cleat in position, the bees are burdened with the task of maintaining a brood rearing temperature of 93 degrees immediately adjacent to an out-of-door temperature of 40 degrees, and for long periods.

The reversing process has the benefits of reducing congestion in the nest, and of encouraging the queen and her workers to place eggs in the cells that were previously near the bottom board. Reversing is often effective in preventing swarming. If the colony is very strong, the two hive bodies may have to be reversed 7-10 days later—or as soon as the majority of the cells in the upper hive body have been filled, and the cells in the lower body are vacated by hatching bees.

As suggested above, the first reversal of hive bodies may need to be performed fairly early in April. Congestion is the test. Reversing may need to be repeated as many as two more times in May. Even reversing may not eliminate the urge of a colony to swarm, the reason being that they are still conscious of being a strong unit, and therefore capable of performing a successful swarming.

Will putting a third hive body of drawn combs above the two hive body nest

reduce swarming? Often it is not very effective. The chief reason is that the bees are not prompted to occupy a third hive body actively until nectar begins to be brought in. They tend not to cluster there until that time. For that reason, some operators elevate a frame or two into the center of the third hive body and put the displaced frame of drawn comb into the second hive body brood nest.

In so doing, the operator needs to consider the chance of such brood cooling to the point that the brood dies. Further, this manipulation does not contribute greatly to breaking up unity in the brood nest. **All parts are still in contact.** Not everyone agrees with me on this point.

The Demareeing Plan

There is a second deterrent often employed by beekeepers to reduce congestion, to retard swarming. It is the Demareeing method. It may take different forms. What it consists of, essentially, is separating the queen from part of her working force, and nearly all of her brood. This obviously reduces congestion and unity. It removes from the bees the consciousness of being part of an aggregation large enough to give promise of success if swarming is ventured.

The mechanics of the method consist of placing the queen on one frame of brood of various ages, including eggs and larvae, and filling out the rest of the space with good drawn combs, comparatively free from drone cells. Above this hive body a second one of drawn comb is placed.

Next comes an excluder, and above that are placed two hive bodies housing the rest of the colony's brood in various stages. Four to six days later it will likely be necessary to go through the frames in the upper hive bodies to cut out any queen cells that may have been built there. If this is not done carefully, swarming may ensue. If cells are built in the lowest hive body, more drastic action is probably in order.

There are still other ways of preventing a colony from swarming. One is to exchange its location with that of a numerically weaker unit. Another is to break up the colony; dividing it into two or more parts, forming nuclei; or giving some of its strength to other weaker units. You just don't need to let a colony swarm if you act soon enough.

The Two-Queen Plan

In preference to using the reversing, or the Demaree plan, some operators prefer the two-queen method of avoiding swarming.

The careful reader will note that the two-queen plan is a much more positive procedure in reducing congestion than either of the two other methods. They merely rearrange the brood nest, leaving its parts essentially together. The two-queen plan, on the other hand, temporarily splits the working force, thereby largely eliminating the factor that chiefly causes swarming (or is, at least, an evidence of it): congestion and one unit strength. Also, it provides the presence of a young queen which is almost always the only deterrent a colony of bees needs against the swarming impulse.

Research shows that a two-queen unit will normally yield 60-75% more honey than a single queen unit. (Moeller 1976). Such a unit tends to swarm less frequently than a single queen colony. Careful research has been done on this subject over a six year period at the University of Wisconsin at Madison, Wisconsin. In fact, study on this subject has been going on at Wisconsin for a long time.

This method also usually assures the beekeeper of a young queen in each colony. Year old queens normally swarm less frequently than older queens; and they usually winter more successfully. Two-queen colonies in the second year normally build up more rapidly in the spring because of the presence of more pollen.

Moeller states that these more populous colonies are less subject to nosema attack, and are better able to clean out brood diseases.

More work is entailed, of course, in operating a two-queen colony than one that is headed by a single queen. But in terms of work per pound of honey yielded, less time is required according to Moeller. The two-queen system is especially productive when the nectar flow is short.

The Mechanics of Operating a Two-Queen Colony

Early in the spring the upper exits should be closed so that there will not be too much drifting to the upper unit once it has been established.

Of course, when a two-queen unit has been set up, an inner cover with the hole screened both above and below must be used in place of an excluder as under the Demaree plan.

About half of the brood and worker strength of the wintered-over colony is placed above the screened inner cover, the queen being kept below. An exit for the

upper half is provided either by boring a one inch hole just above the handhold, or some other escape is given such as a cut in the inner cover, or even by placing a sliver of wood wide enough to allow passage of bees between the inner cover and the bottom of the hive body just above.

After the upper part of the unit has been in place for four days, its frames should be checked for the presence of queen cells, and they should be cut if present. Then a young queen may be introduced by the cage method, or some other.

The screened hole in the inner cover will allow the passage of air, thus providing warmth from the lower unit which is usually the stronger numerically of the two—at the start.

If either unit becomes congested, reversing within each unit will need to be practiced about every 7-10 days. The operator may be helped in his manipulations by numbering the hive bodies with chalk. That helps him to identify each hive body when they are reassembled.

About two weeks after the young queen in the upper unit has begun to lay, a queen excluder may be substituted for the inner cover. This helps the two units to adjust in strength, and to begin to cooperate in honey production. When the nectar flow is within approximately three weeks of its end, the excluder may be removed, and the colony allowed to eliminate one of the queens if it wishes. Usually the younger queen will survive, especially if she is in the upper unit.

Probably the reason most beekeepers hesitate to adopt the two-queen method is that it seems complicated. Also, it entails more work. Further, the expense of purchasing, or providing, a young queen must be borne. But even at present high prices for queens, a young queen should more than pay for herself under the two-queen plan, experiments show.

The two-queen system is, in most cases, not for beginners. To operate it successfully, the beekeeper must know the fundamentals of bee behavior—what is taking place, and what effects his operations have upon the situation.

Producing Your Own Queens

Most beekeepers at some time in their working lives toy with the idea of producing a young queen in each colony.

It can be done, of course, by elevating a frame of eggs or young larvae above a screened inner cover, and allowing the bees there to produce a queen. The element of time gets in the way, however.

A period of two and one-half months (10 weeks) is required before the queen that develops from an egg (larva) produces a worker old enough to engage in gathering nectar: sixteen days for a queen

to develop; 7-9 days before mating is consummated; 4-7 days more before egg laying begins in earnest; 21 days for the young worker to gain maturity to become a house worker; twenty-one additional days before she is old enough to engage in nectar gathering. Some may object that seven days before mating, and seven days before egg laying are too long periods. All right, cut off a day, or two, or three. It's still approximately ten weeks—a long, long time.

To be sure, seven weeks are all that are required to produce a house worker—and she, too, plays her part in the colony effort.

Accordingly, some operators try to grow a queen in a nucleus over a full strength colony after the nectar flow is past. It can be done, especially if the nucleus is given some help by way of a comb or two of brood, and some winter stores. And such a queen and her unit will be very valuable in the spring. Such a nucleus can usually be wintered successfully over a full strength colony by placing a screened inner cover between the two. But not everyone has the desire, nor the venturousness to try it.

If raising a single young queen in a colony entails the use of any considerable number of worker bees that are currently needed elsewhere in the colony, doing so is poor economy. In most cases it is more economical to buy young queens, or to raise them in regular queen raising quarters.

Summary

A beekeeper need not fear swarming if he understands the principles of prevention—and is willing to undertake the operation of them. Not everyone is willing to open a brood nest.

I was somewhat amazed to hear the chief bee inspector of a great state declare recently that 80% of the brood nests of the colonies inspected by his helpers in the past year had not had a single frame removed during that time.

As a group, beginners are afraid of opening a brood nest. Commercial operators feel they seldom need to do so. They are capable, by examining the exterior of a colony, of assessing much that is going on inside. They can't, as a rule, detect the presence of disease (except in its advanced stages) by examining the exterior of the colony; but they can tell whether it is strong; queenright; engaged in producing brood; in possession of space; is inclined to swarm soon; has adequate stores, etc.

Swarming need not be tolerated. Reversing helps avoid it. Demareeing in some form is even more effective. The two-queen system may be even more preventive.

(Continued on page 241)

What is Bee Poisoning?

By CARL JOHANSEN
Dept. of Entomology
Washington State University
Pullman, WA 99164

EVERYONE KNOWS THAT bee poisoning is the accidental killing of bees through the use of insecticides in pest control. However, we have gradually determined more exactly what happens when a colony of honeybees is being poisoned.

First of all, the symptoms are often a clue to some of the things which occur. Excessive numbers of dead worker bees piling up in front of the hive are the most common symptom and essentially a sure sign that chemical poisoning is involved. This symptom varies considerably with a number of factors. Strong colonies, slow acting chemicals, and short distance to treated plants all lead to heaviest build-ups. Speed of action of the chemical can make a sizable difference. For example, when we treated plots with fast-acting Orthene as compared to slow-acting Sevin: even though Orthene affected the colonies more severely, we only collected up to 3,387 dead bees in front of the hives during the first week. We collected up to 19,942 dead in the first week from colonies in the Sevin-treated plot. Quite understandably, aggressiveness is also a common symptom. When bees are being killed, the workers almost always get "pecky."

Stupefaction, paralysis, abnormal jerky or spinning movements are associated with many kinds of chemicals, but regurgitation of nectar from the honey stomach is mainly related to organophosphorus insecticides. When you find a wet, sticky mass of dead and dying bees in front of the hive, this is the likely kind of chemical involved. On the other hand, if the bees simply slow down, cannot fly, and become "crawlers", the logical suspect is Sevin. The only other modern insecticide which causes these symptoms is dieldrin, and it has been removed from agricultural crop uses.

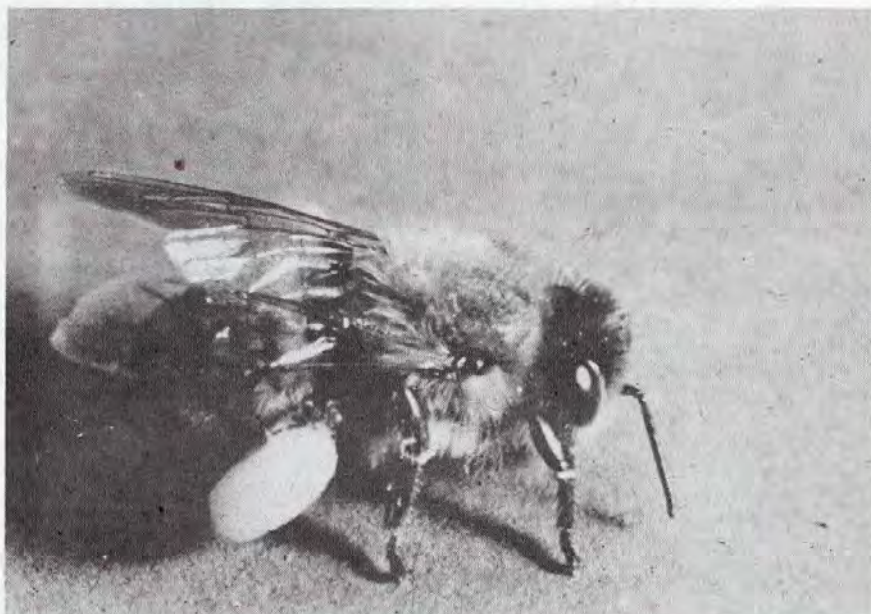
Poor housecleaning is typical of severe cases of poisoning. The accumulation of dead bees on the bottom board may plug up the entrance so badly that the remaining foragers can hardly get through. Poisoning should not be confused with winterkill because there will be no dead bees on the top bars or head down in the comb cells.

By far the most common way in which a chemical contaminates the hive is by being carried in the pollen loads of the bees. This is the main reason powder formulations are more hazardous than

Entomologist, Dept. of Entomology, Washington State University, Pullman, Wa 99164



The most common symptom of poisoning, large numbers of dead bees in front of the hives and none to few inside.



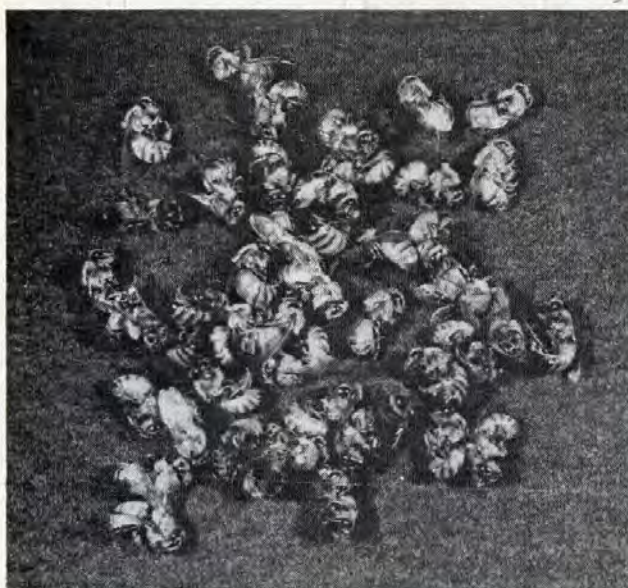
If a powder formulation of an insecticide is used, it is especially likely to adhere to the bee's body and ultimately be combed

and packed with the pollen onto the hind legs.

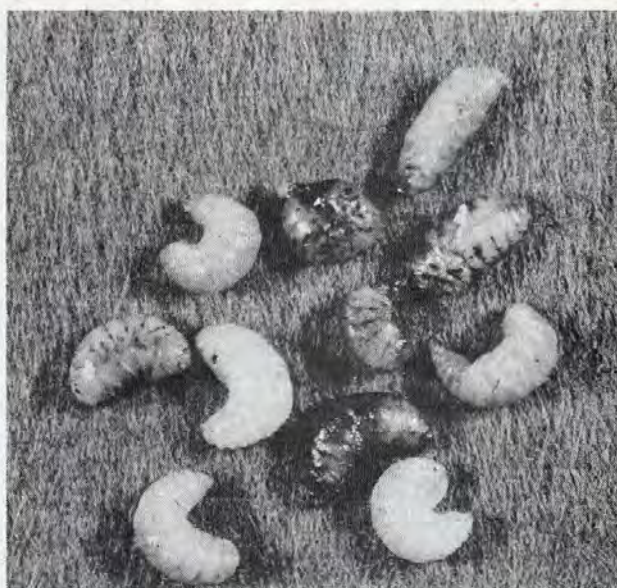
liquid formulations; they more readily adhere to the bee's body and subsequently are combed and packed with the pollen onto the pollen baskets. When you see dead and dying light-colored, fuzzy, newly-emerged workers it is a sure sign of contamination since they feed actively

on the pollen.

Under normal conditions, healthy workers begin to produce royal jelly a few days after they emerge. This is what I suspect is involved when the brood cycle is broken within a few days of the time the



A sure sign of pollen contamination is the death of light-colored, newly emerged workers.

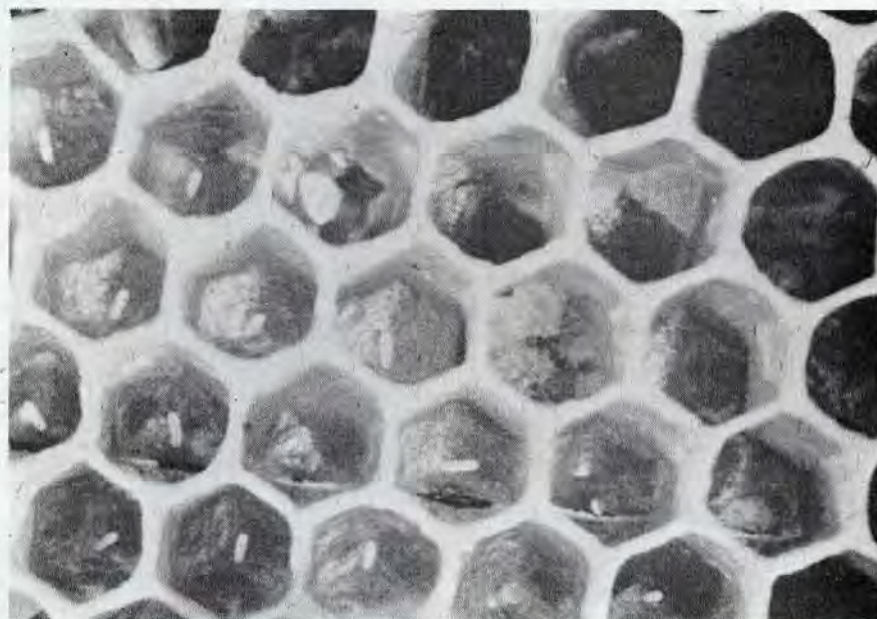


Larvae mainly die of desiccation due to lack of nurse bees and are pulled out of the cells.

insecticide was applied. The queen stops laying eggs because she is no longer receiving royal jelly. Foragers have also probably stopped bringing in pollen. The queen often remains alive and apparently healthy for a week or two before she is superseded. Since queen substance, not lack of brood, is the factor we have associated with supersedure, I suspect it takes one to two weeks for the titer of queen substance to drop to the level where she is superseded. You will not find supersedure cells because there are no eggs or young larvae with which to start new queens. At this point, the colony is a complete loss, the workers can no longer start a new queen, they are unlikely to accept one which you introduce, and the hive is contaminated. Laying workers develop and the colony dwindles to a sure death by fall or during the winter.

Soon after the queen is superseded, the colony will begin to display the symptoms of queenlessness. Workers are agitated and will quickly fly off the top bars as you remove the hive cover. A scattering of cells in some of the brood frames will contain from two to six or more eggs each, produced by laying workers. Foragers will often fill empty cells in the centers of brood frames with pollen and honey. In time, some of the drone brood will develop and their large capped cells will rise above the smaller worker cells. This gives a very lumpy and irregular appearance to the combs. You will also begin to note a preponderance of drones and fewer and fewer workers in the colony.

Strong, healthy colonies with 12-1600 square inches of brood at the start of the season can be reduced to weak colonies with 60-80 square inches within ten days time. All brood will be old and capped, simply remnants which haven't emerged



In severe poisoning cases, the queen stops laying eggs soon after the chemical is

applied.

yet. If any brood is present in the fall, it will be drone brood from laying workers.

Queens can also suffer direct effects from the poison. They may begin laying erratically or they may simply be killed. However, brood is mainly killed because of the lack of young nurse bees. Some persons have suggested they die from chilling and starvation. We found that uncapped brood can withstand a considerable amount of chilling as long as the humidity is high, and believe the larvae and pupae are mainly killed by desiccation.

One of the newer insecticides, Dimilin, can cause the development of a drone

layer if it is fed to the colony at a relatively high dosage rate. This chemical kills insects by disrupting the enzyme involved in production of cuticular structures. I suspect the queen is functionally sterilized because of the effect of the chemical on her sperm storage and transfer structures or egg covering structures which are cuticular in derivation. her eggs are no longer fertilized as they pass through the oviduct.

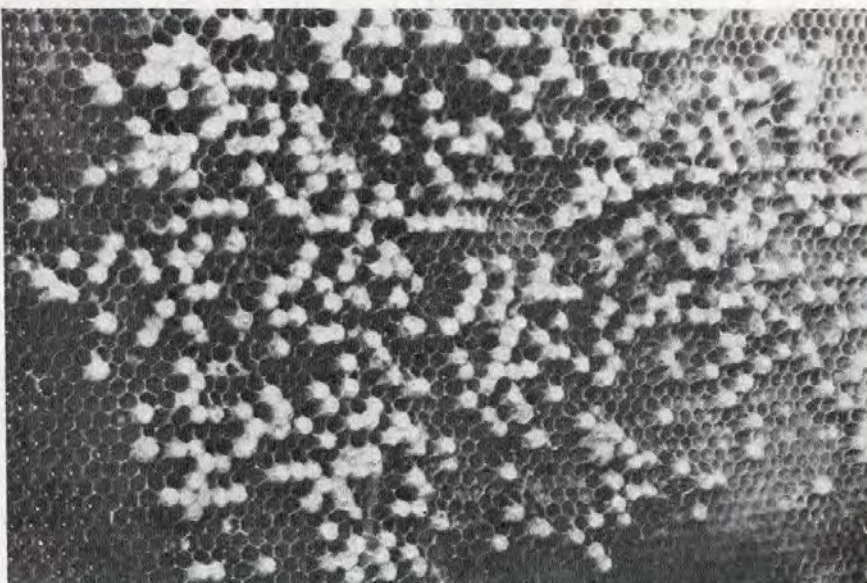
Temperature is an important modifier of bee poisoning effects. In one set of tests, holding the insecticidal residues at 50° F as compared to 85° F increased the length of time the chemical remained toxic to bees by 18-fold. On the other

hand, warm weather during late evening or early morning will extend the bee's foraging times and greater killing is likely to occur.

I hope the foregoing information increases your ability to detect bee poisoning problems. Beekeepers have often confused pesticide damage to bees with disease or winterkill. When you have a good understanding of bee poisoning effects, you can usually determine whether chemicals are involved.

When symptoms are recognized soon enough, you may be able to take corrective actions to save the bees or reduce future problems.

After the queen is superseded, the advanced symptom of laying workers is a scattering of enlarged drone cells.



One Method of Uniting and Requeening

By **ROGER A. MORSE**
Professor of Apiculture
Cornell University, Ithaca, N.Y. 14850

THE BEST WAY TO unite weak colonies, which is often done both in the spring and fall, or to requeen a colony, is to use the old-fashioned newspaper technique. The method, which is probably over a hundred years old, is nearly infallible; it is the only practical uniting technique about which one can make such a strong statement. Two colonies are placed together, one above the other, with a single sheet of newspaper between them. It is thought that by the time the newspaper is eaten away by the bees, allowing contact between the two halves, their colony odors will have mixed and there will be little fighting between the two colonies.

Uniting

In the uniting of colonies, it is old-time beekeepers' experience that one places the colony with the best queen on top. It is usually the queen that is above the newspaper that survives. I usually judge a queen by her brood pattern; it's not a perfect method but it works reasonably well.

One should not hesitate to unite in the early spring or late fall if colonies are weak. Weak colonies combine with little risk of fighting when the newspaper method is used. The two weak colonies united as one will usually grow more

brood and become more populous than the two units would total if left alone; in fact, in the late fall weak units may not survive separately. Weak units united in the late fall will usually (though not

A single piece of newspaper is placed on top of the lower of the two hives to be

always—it depends on the weather) join into a single cluster and prosper in the spring. Of course, no empty supers or supers of honey should be left between the two units when they are combined at this uniting; two or three slits are usually made in the paper.



time of year, since that would prevent the formation of a single winter cluster. It is important to remember that the brood rearing temperature is about 92 degrees F. This is a high temperature and a large number of bees are required to maintain it, especially in winter.

It is usually possible to unite two weak colonies for some months and separate them later into two units, requeening the queenless part or allowing it to grow a new queen of its own. One of the most difficult questions for the practical beekeeper to answer is when it is important to unite and when it is not necessary to do so. It is a question that only experience can answer.

Requeening

Many commercial beekeepers keep a small number of single-story colonies in their apiaries for the express purpose of having a supply of queens on hand to requeen failing colonies. I think this is a good practice. In the spring and summer I suggest it is appropriate to have five to ten percent of one's colonies be nucleus colonies. Queen failure may be devastating to a colony, and a beekeeper, and one must be ready to remedy the situation quickly when it happens. Single-story colonies remaining in the fall may be united, though often those started in the spring or early summer will have grown sufficiently by fall to winter by themselves.

For requeening, the procedure used is much the same as that for uniting colonies. The colony that has lost its queen, or that is being requeened because of a failing queen, is placed below on the bottom board. The sheet of newspaper is placed over the top of the frames in the top super of this colony. The colony with the new queen, even though it may be in only a single super, is placed above. Beekeepers agree that when one is requeening a colony it is best to kill the poorer queen; however, this is a debatable question and there are no data to prove conclusively that this is required. Sometimes queens that are small or have poor brood patterns appear so only because the colony does not have sufficient food.

The Chemistry of Requeening

Many of the management techniques we use today were invented 75 to 100

years ago. We are only now beginning to understand why they work, although our knowledge is still incomplete. The newspaper method of uniting is one such old and successful technique which, we now know, depends on the bees' detection of a chemical message for its effectiveness.

Contrary to popular opinion, worker bees rarely kill one of the queens when two are present; it is the queens themselves that meet and fight until only one is surviving. However, worker bees can recognize their own queen. We know that a chemical substance (a pheromone) is common to all queens and is the substance by which workers first recognize queens. Bees recognize their own queen by a combination of yet unknown substances which are probably predominantly plant extracts.

When bees recognize a foreign queen they clamp onto and bite her. Beekeepers call this balling. Balled queens are sometimes killed but I am convinced that when this occurs it is accidental. It may occur because bees balling a queen protrude their stings slightly to release alarm odor, which is used to mark the foreign queen as being foreign, and the protruded stings may sometimes penetrate the queen's body, killing her.

Two single story colonies united with a single sheet of newspaper between them.

In experimental situations we have observed that bees from a queenless colony which ball an introduced queen cease to do so within about 24 hours and then accept her as their own. On the other hand, bees from a queenright colony balling a foreign queen within a few inches of their own queen may ball the foreign queen for as many as five days, which is the longest time we have followed such action.

When one unites colonies by the newspaper method the odor in the two units mingles slowly and the worker bees fight little or not at all. Apparently bees in both units, if both are queenright, protect their respective queens until the two queens meet by chance.

When one unites two colonies, only one of which is queenright, the queen is again protected, and workers from the second unit come into contact with her slowly and so presumably recognize her as their own by the time they have approached her. However, it is important that the queenright colony be above the queenless unit and that the two units have only a single entrance which is at the bottom of the hive. In such a situation the bees from the queenless unit, especially the older bees, are discouraged from entering the queenright half of the new colony too rapidly.

The new colony has a single entrance on the bottom board.



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Reminiscing and Planning

By WALTER CRAWFORD
Massillon, OH.

WHILE WHIRLING snowdrifts add to the frozen crust already covering the ground, I look out the window to the field behind the house where several hives of willing workers are settled into a period of relative inactivity, sleeping and resting to conserve their strength and stores for the days when all nature awakens and rejoices in the warmth of the sun. I have reservations about two or three colonies. They were not strong when the season closed and their honey supply was not as much as I would have liked them to have. If I had done it early enough, I could have provided some full frames of honey in exchange for some which had not been filled well. Perhaps better still, I should have united the weaker colonies early and provided them with a good supply of sealed honey. The winter cluster does not consume a lot of honey until brood rearing begins in earnest as the weather becomes warmer, so with early spring feeding they may come through all right.

So I'm thinking about what should have been done and what I plan to do this year. I'm going to again raise some queens for my own use, just to keep on hand in case of need. Perhaps I'll have some to spare if a friend has need of them. I built several nucleus boxes last spring. Each holds three full depth frames and are fastened together in pairs about three inches apart to provide better stability. Some nice queens were raised last year but some did not impress me as being very good. The nucs were made up before the queen cells had hatched, and some may have come from older larvae. I've read that the larvae should not be over twelve hours old to raise the best queens.

Making Nuclei Using Swarm Cells

In this area, swarming begins in early May, so about the first of the month, some colonies should be extra strong or building queen cells. If queen cells are found, I'll put those frames, along with all frames having eggs and unsealed brood, about a double queen excluder, making sure the queen is below. Early in April, the brood chambers will have been reversed in strong colonies. Reversing at this time of the year places the full brood chamber below and induces the queen to lay in the area above, which is mostly open and ready for the expansion of the nest.

If no queen cells are found, all the frames with eggs and larvae will be placed in one hive body and those with sealed brood will be placed in the bottom chamber. A close watch will be kept for

the queen and if she is found, she'll be put below with the sealed brood. A hive body with empty drawn comb will be used as the second chamber. This will give the new queen and bees extra room for nectar and brood. There should be some frames with a great deal of pollen and these should be placed next to the outside brood frames. Frames with emerging brood should go with the unsealed brood. This will provide a surplus of young bees which are the ones that feed and care for the eggs and larva. This brood chamber will be placed over a double queen excluder. Place the inner cover on so that the bees can use the inner cover notch for an entrance. I drill a 3/4 inch hold in the edge of the telescoping cover to match the position of the notch. It will be best to place this upper entrance at the rear of the hive.

In case the queen cannot be located, just make a check after four days and if no queen cells are found, she will be among this brood, and eggs should be present. It should not be difficult to locate her now and she can be placed below the excluders by exchanging frames. If queen cells are found, you can be sure the queen is below, where we want her. In either case, on the fourth day, destroy all sealed queen cells to insure that the queens will be raised from larvae that are not too old.

The double excluders will allow the bees to pass and still prevent the old and young queen from fighting. The warmth from the bees below will help maintain needed temperature above. In ten days, frames with sealed queen cells can be placed in hive bodies above double screens on other strong colonies to provide needed queens. A top entrance must be provided so that the queen can fly out to mate. When she starts to lay, she will build up her nucleus faster because of the warmth of the colony below. See that each nucleus has a frame of emerging brood and a frame of honey and pollen. Be certain that these frames covered with bees come from the same colony that the frame with the queen cell came from so the bees will not fight. They should all be set up as a nucleus at the same time. Frames of emerging bees may be added and should be shaken to remove the older bees, if from a strange colony.

When the queen has filled three or four frames with brood, she can be placed in one of the nucleus boxes with two frames of brood and bees and a frame of honey and pollen. The use of full depth frames simplifies the transfer of bees, brood and queens to and from nucs. When the nucleus becomes too strong, a frame of

sealed brood can be removed, the bees shaken off and the frame given to a colony needing more strength.

Adding the hive body with drawn out comb, will give the old queen and bees plenty of room and should insure that the colonies will not swarm. If the nucleus above is left to develop until full of brood, the field bees will remain with the old hive when the nuc is removed. The strength of the parent colony will not be impaired. By this time, the honey flow should be on and supers can be added.

It's fun checking the nucs to see how the new queens are laying, and good queens are ready when needed. As they are built in pairs, eight nucs can be placed on one square pallet, with the entrances facing four directions. When one is removed, the field bees will find their way to nucleus next to it. If the entrance is swung a little toward the open space they will more quickly become accustomed to the new home.

EDB MAY BE BANNED

ETHYLENE DIBROMIDE (EDB) a highly effective fumigant for stored comb may be the object of prompt suspension action according to Pesticide & Toxic Chemical News. The Environmental Protection Agency's Carcinogen Assessment Group (CAG) has stated in an update of its preliminary EDB risk assessment that EDB use in citrus fumigation centers presents office workers exposed for 40 years with close to 100% risk of cancer. CAG's assessment update was based on EDB levels in air samples taken in 1976 in and around two Florida fumigation centers. The group's assessment said that if the air sample measurements reflected true average exposure levels, "individuals are being exposed to a compound that results in an unprecedented high risk".

While the agency is verifying the 1976 EDB air sampling data, officials will observe changes in fumigation practices (of citrus) if any, which might reduce EDB exposure levels.

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Bait Hives

By **ROGER A. MORSE**
Dept. of Ent., Cornell Univ.
Ithaca, NY
and

THOMAS D. SEELEY
Museum of Comparative Zoology
Harvard Univ.
Cambridge, Mass.

Summary

Basic research on nest site selection by honeybees has progressed to the point where an effective design for bait hives can be reported. Using 88 bait hives close to the optimal design, we captured 51 swarms in the summer of 1977. This success reflects our understanding of what bees seek in a nest site. The important variables include height off the ground; visibility; cavity volume; entrance size, direction and position; and probably cavity dryness and draftiness. Our findings indicate that beekeepers in areas with numerous wild colonies of honeybees can expect to annually fill at least 50 percent of properly constructed and positioned bait hives.

Introduction

Practical commercial beekeeping developed very rapidly in the late 1800's with the invention of movable frame hives, comb foundation, honey extractors and other apparatus. All of these inventions were designed around the honeybee's natural biology. Two aspects of bee biology which were unstudied at the time of the apicultural renaissance, and which therefore could not contribute to the rapid advances, are the honeybee's natural nest and the bee's preferences in nest site properties. Knowledge of these two subjects is the foundation to the use of bait hives, that is, hives intended to catch wild swarms of bees. We have studied both subjects. Complete reports of our studies have been published elsewhere (Seeley 1977, 1978; Seeley and Morse 1976, 1978) and should be consulted for detailed descriptions of this research. The following is a brief report of some of our findings coupled with recommendations on the construction and placement of bait hives.

Our studies were conducted in Tompkins County in southern New York State. This region has been heavily settled since the early 1800's and until the mid 1900's was devoted primarily to agriculture. The area is no longer heavily farmed; large acreages which were once cultivated have grown into unmanaged forests. Wooden houses are the predominant structures. Our unpublished data suggest there are at least as many honeybee colonies living in trees and houses (wild colonies) as there are in beekeeper's hives in the area. We have

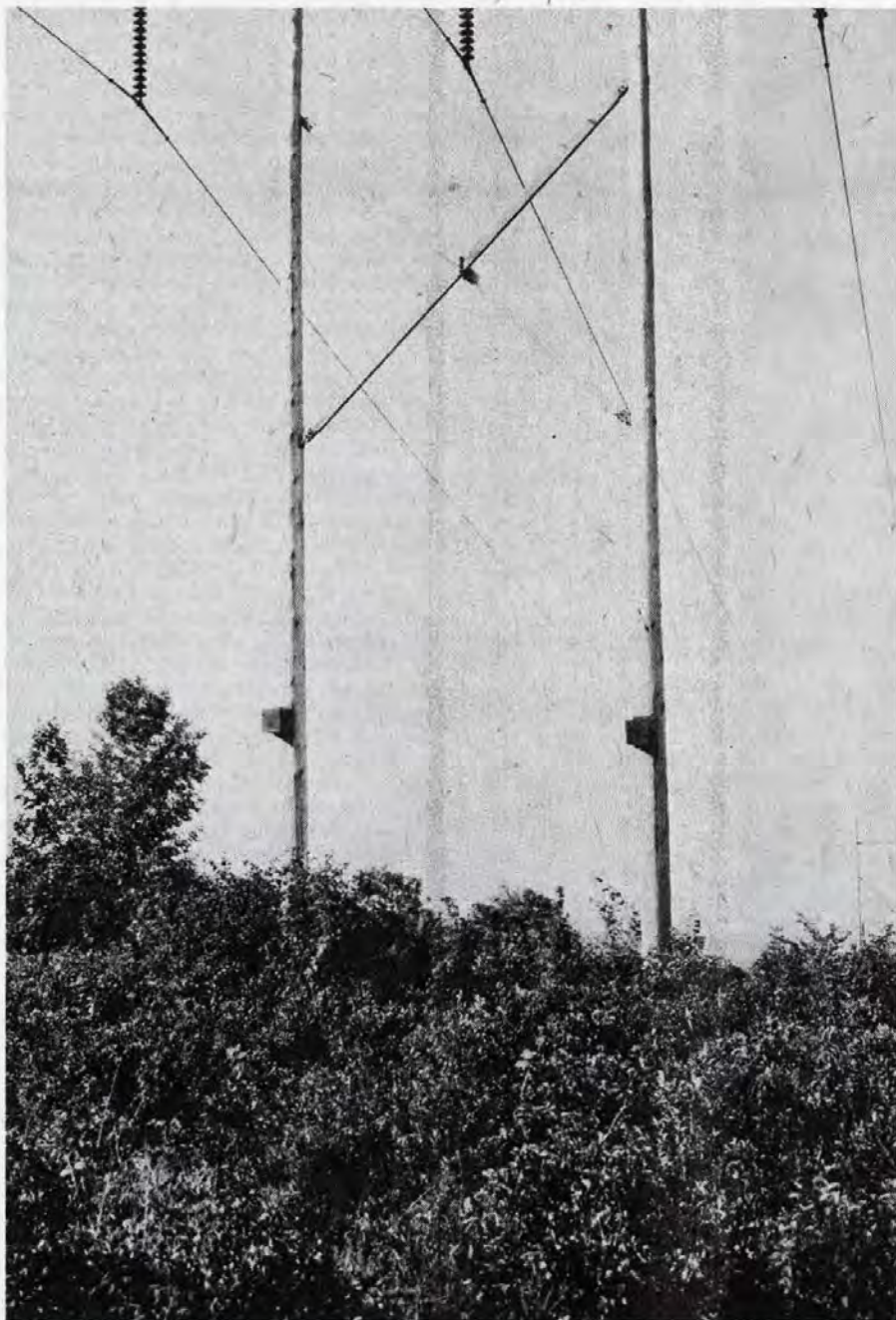


Fig. 1. A typical nestbox pair used in the study of the honeybee's preferences in nest site properties. As is shown, the nestboxes were closely matched in height,

visibility-exposure and entrance direction. In this pair, the nestboxes differed only in the shape of their entrances.

also found that the typical honeybee nest in a tree or building is relatively small, about the size of one 10-frame Langstroth super. Colonies in such small nest cavities cast swarms nearly every year. Thus the annual production of wild swarms in regions like Tompkins County is quite large. These wild swarms constitute a valuable resource, provided they are efficiently harvested, as with bait hives, and are not over-exploited.

Methods

We tested the honeybee's preferences in nest site properties by setting out pairs of nestboxes in which the nestboxes differed from each other in one nest site variable, such as height off ground or entrance size. Wild swarms would discover the nestbox pairs and inhabit one of the two nestboxes in each pair. We counted as a test result only the first occupation of a nestbox in

each nestbox pair. Statistical analyses of the patterns in first occupations revealed the presence or absence of preferences in nest site properties.

The experimental nestboxes were 40 liter cubes (except in the Cavity Volume and Cavity Shape experiments) made of 5/8 inch plywood and painted dark green on the outside. (A 10-frame Langstroth super, for comparison, is 42 liters in volume.) With a few exceptions, the nestboxes had a 1-1/4 inch diameter entrance hole on the front side. A nail across the entrance prevented occupation by birds. The two nestboxes constituting a pair were nailed to trees or power line poles which were 10 to 25 yards apart and were closely matched in visibility and exposure. Both nestboxes in each pair faced the same direction. A typical nestbox pair is shown in Figure 1. A closer view of three sizes of nestboxes used in the Cavity Volume experiment is given in Figure 2.

Results

1. Height Above Ground — To test this nest site variable, we set out 8 pairs of nestboxes. In each pair, one nestbox was 1 yard and the other 5 yards above the ground. In six out of six cases the five yard high nestbox was inhabited by a swarm. This indicates that bees occupy high nest sites more rapidly than low sites. From this test and other experiences we feel that height is one of the most important nest site variables.

2. Exposure and Visibility — Three years ago we observed that eight out of ten nestboxes positioned in highly visible and exposed locations, such as dead elm trees or telephone poles, were occupied in one summer. Over the same period, in the same area, and using identical nestboxes, only two out of ten nestboxes positioned deep in woods were inhabited. This difference in occupation rate is statistically significant. We suspect that although bees prefer sheltered nest sites, the highly visible nestboxes were more easily discovered by scout bees and thus were more rapidly inhabited.

3. Entrance Size — Our study of natural honeybee nests revealed that entrances to these nests are usually quite small, typically less than six square inches. When we established 14 pairs of nestboxes containing one nestbox with a 1-1/4 inch diameter entrance, the other with a 3-3/4 inch diameter entrance, we observed six out of six swarms occupy the smaller entrance nestbox. Thus entrance size is also an important nest site variable.

4. Entrance Shape — In a test of entrance shape using 10 pairs of nestboxes, each nestbox within a pair having either a circular or a slit-shaped entrance of the same area, we observed no significant preference. Four swarms chose a slit-entrance nestbox while two inhabited circular entrance nestboxes.

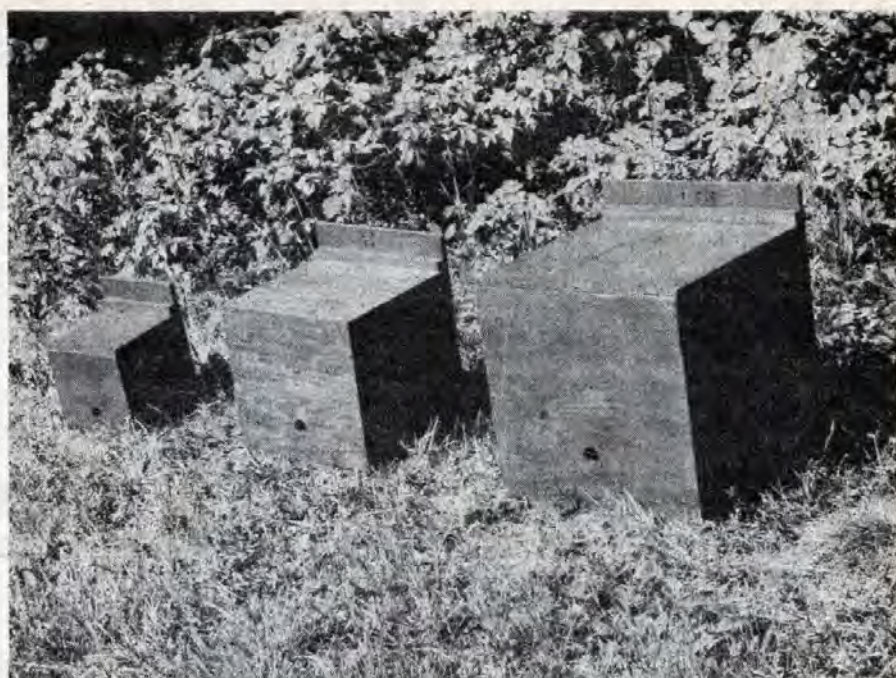


Fig. 2. Nestboxes of three sizes (10, 40 and 100 liters) used in the study of the preferred nest cavity volume. A pen atop the middle nestbox provides a size

reference. Bees prefer nestboxes of the middle size over the smaller and larger sizes.

5. Entrance Position — The entrances in honeybee nests in trees are disproportionately located near the bottom of the nest cavity. This may merely reflect the pattern of decay which produces hollows in trees. However, we tested the bee's preference in this variable by establishing 12 pairs of tall nestboxes (about 40 inches tall, and 10 inches deep and wide). In these pairs, one nestbox had its entrance at the bottom of the front side, the other's entrance was at the top of the front side. Eight swarms inhabited the bottom entrance nestboxes and two occupied the top entrance nestboxes. Though not quite statistically significant, these results strongly suggest that bees prefer their nest entrance near the base of a nest cavity.

6. Entrance Direction — We compared the rate of nestbox occupation for 124 nestbox pairs whose entrances faced various compass directions. The statistical analysis of this data is somewhat involved and is not discussed here. However, the result of this analysis is the conclusion that bees more rapidly occupy nestboxes with southward rather than northward entrances.

7. Cavity Volume — The volume of 49 natural nests in trees and houses varied from 12 to 448 liters (a liter is slightly larger than a quart). Most nest volumes were clustered in the 20 to 100 liter subrange, with about 40 liters the most common size. This is about the same size as a 10-frame Langstroth super (volume about 42 liters). Various tests in which swarms were offered nestboxes of several sizes demonstrated that bees prefer 40 liter over 10 and 100 liter nest cavities.

Thus 40 liters is or is close to the most attractive nest cavity volume for the bees studied.

8. Cavity Shape — Most natural nests in trees take the form of an elongate, upright cylinder, consistent with a tree's shape. We tested whether bees prefer nest cavities of this shape over cube-shaped ones. Twelve nestbox pairs were established containing one tall, elongate nestbox and one cube-shaped nestbox, both with the same volume. Six cubes and three tall nestboxes were inhabited. Thus there was no statistically significant difference in attractiveness between tall and cubical nestboxes. This suggests that beekeepers may use a wide variety of box shapes in constructing bait hives.

9. Cavity Dryness — To test this variable, we set up 10 nestbox pairs with two quarts of a sawdust-punkwood mixture in the bottom of each nestbox. In each pair, one nestbox was kept damp inside by a weekly wetting of its sawdust-punkwood carpet with one quart of water. The "dry" nestbox was inhabited in two nestbox pairs and the "wet" nestbox was occupied in three others. Thus the bees showed no preference of a "dry" nestbox over a "wet" one. However, only the floors of the "wet" nestboxes were wet. Bees may well be repulsed by cavities which are more thoroughly wetted inside.

10. Cavity Draftiness — We tested this variable by establishing 12 nestbox pairs in which one nestbox was left sound and the other was made drafty by drilling

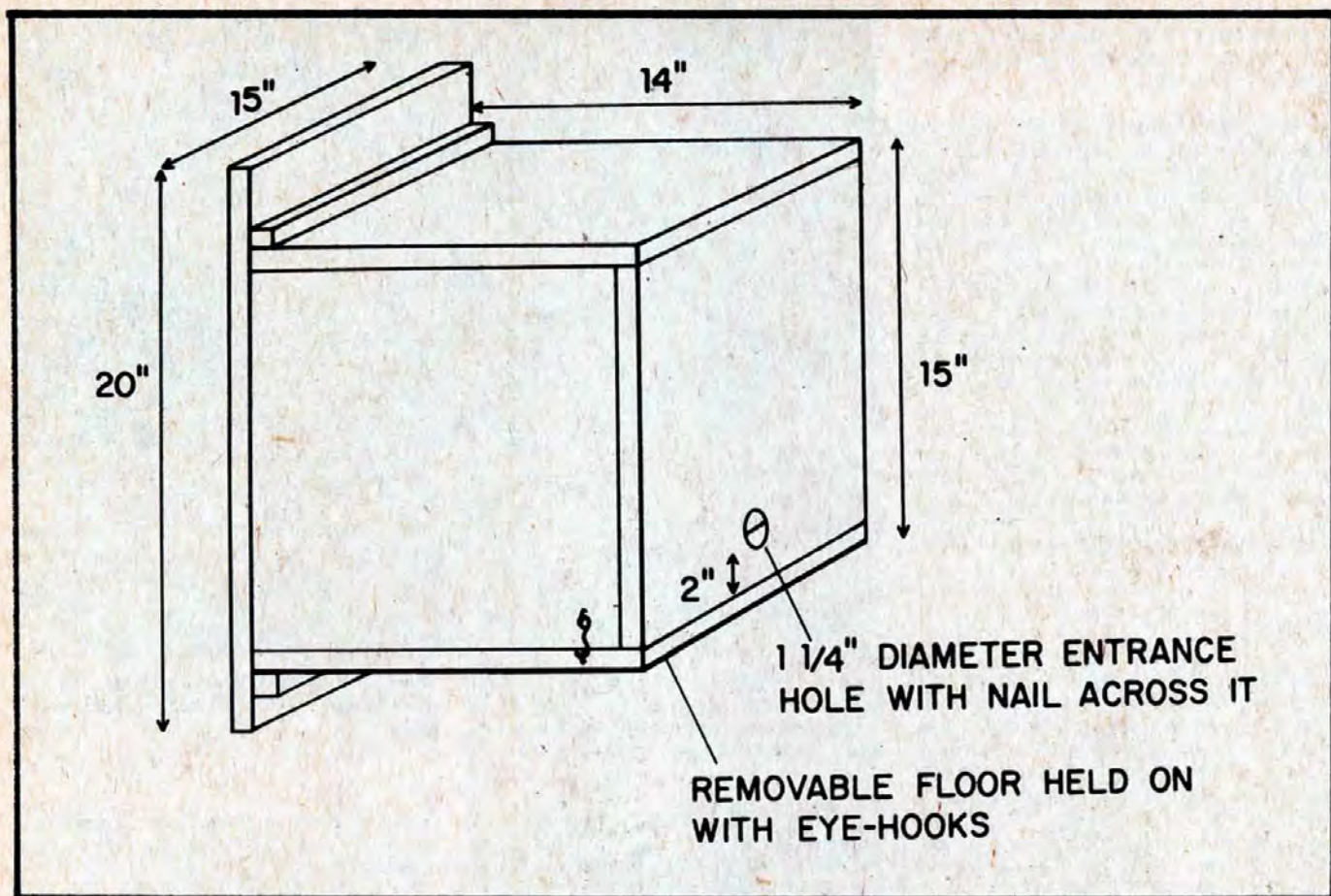


Fig. 3. Suggested bait hive design based upon the design of the nestboxes which

were successful in our experiments. All dimensions are in inches. Use either 5/8"

or 3/4" exterior plywood.

25-1/4 inch holes each in its front and two lateral sides. Four drafty nestboxes were occupied and three sound nestboxes were inhabited. Thus the bees showed no preference between these two types of nestboxes. This may reflect the bee's ability to plug up such small openings with propolis, as did all the swarms which nested in the drafty nestboxes.

11. Comb in Cavity — Almost everyone who has graced the beekeeping literature with advice on bait hive design has advocated placing old bee comb in the bait hive. However, no one provides experimental evidence for its effectiveness, if any. Our test of the effect of comb inside a nest cavity involved 12 nestbox pairs in which one nestbox contained an approximately 6 x 8 inch piece of dark, old comb and the other contained no comb. Three out of three swarms inhabited nestboxes with comb. Although these meager data do not significantly demonstrate a preference for a comb-containing nest cavity, they do demonstrate that bees do not reject cavities because of comb inside.

Recommendations on Bait Hives

The experiments which we have briefly described above allow us to make several recommendations on bait hives: **height**,

high off the ground, at least 10 feet up; **visibility**, high, such as on a dead tree or telephone pole; **entrance size**, small, a 1-1/4 inch diameter hole is effective; **entrance shape**, probably does not matter; **entrance position**, near the floor of the bait hive; **entrance direction**, facing south; **volume**, about 40 liters (about 1.4 cubic feet); **shape**, probably does not matter; **dryness and draftiness**, a soundly built bait hive which is dry and snug is probably best; **comb in cavity**, leave it out, it may improve a bait hive's attractiveness but it can also transmit disease to the swarm.

We have no advice, based upon biological studies, regarding bait hive color. However, we do recommend painting them a dark color to reduce their conspicuousness to humans. In an unplanned sociological experiment, we found that light-colored nestboxes frequently become riddled with bullet holes during the hunting season. Also, we have no data concerning the effects upon bait hive attractiveness of the odors of fresh paint and newly-sawn lumber. These and many other bait hive variables offer opportunities for further studies.

A suggested bait hive design is shown in Fig. 3. This is the design of our experimental nestboxes which has proved

to be effective. The floor is removable to facilitate bait-hive cleaning. Occasionally wasps and ants inhabit honeybee bait hives. We used eye-hooks or long, thin nails to hold the floor in place and sealed the floor seam with masking tape or opaque photographic tape (No. 235, Scotch, 3M Co.). A nail across the entrance prevents occupation by birds. And the use of scaffolding (double headed) nails when fastening bait hives in place facilitates taking them down.

A possible alternative to specially constructed bait hives is the use of beekeeping supers. An old, 10-frame Langstroth super which has a tightly fitting cover and bottom, a small entrance, and which is correctly situated, could prove to be an effective bait hive. However, we have not tested this possibility.

The timing of setting out bait hives is of obvious importance. Scout bees from colonies about to swarm start searching for new nest sites several days before the swarms depart their parent nests. Thus bait hives should be in place at least a few weeks in advance of the expected start of swarming.

(Continued on page 242)

Retrieving the High Swarms

By J. G. STEVENS
Roanoke, Va.

WHEN SWARMS OF bees get lofty ideas and aspire to clustering out on a limb high above the ground, this device can be a real convenience. The first time I used it I felt fully compensated for making it. Having never seen anything similar offered by bee supply dealers, I would like to share it with the readers of *Gleanings in Bee Culture*.

Basically it is a method of pulling a screened swarm cage and funnel up under a clustered swarm and trapping them into the cage while you stand on the ground.

I have demonstrated this device tangibly and with color slides at meetings of the Virginia State Beekeepers Association and local meetings here in the Roanoke Valley, and a number of beekeepers over the state are copying it with each making slight modifications according to his or her own ingenuity.

While the dimensions indicated in the drawing are not absolutely essential, I have found them to work efficiently in my model. Of course, they must be proportional. I cut the lath from one by four inch clear pine lumber as long as I

can carry in my station wagon. I use two pieces of lath with a series of holes in each piece so they can be bolted together for different working lengths. Note the wide area at top of lath and screen cage handle. This is important in that it enables you, once the cage is pulled all the way up, to give the lath a twist, thereby swinging the funnel and cage to right or left as required in order get the funnel directly under the cluster of bees.

The cage should be about nine or ten inches high and wide. On my model the screened cage handle is about 26 inches long. The top ends of lath and cage handle are nearly four inches wide.

No cover is indicated for the cage as you can easily improvise one from thin plywood or even use a piece of cardboard. Drill two holes near top of funnel for trying funnel to cage handle with wire.

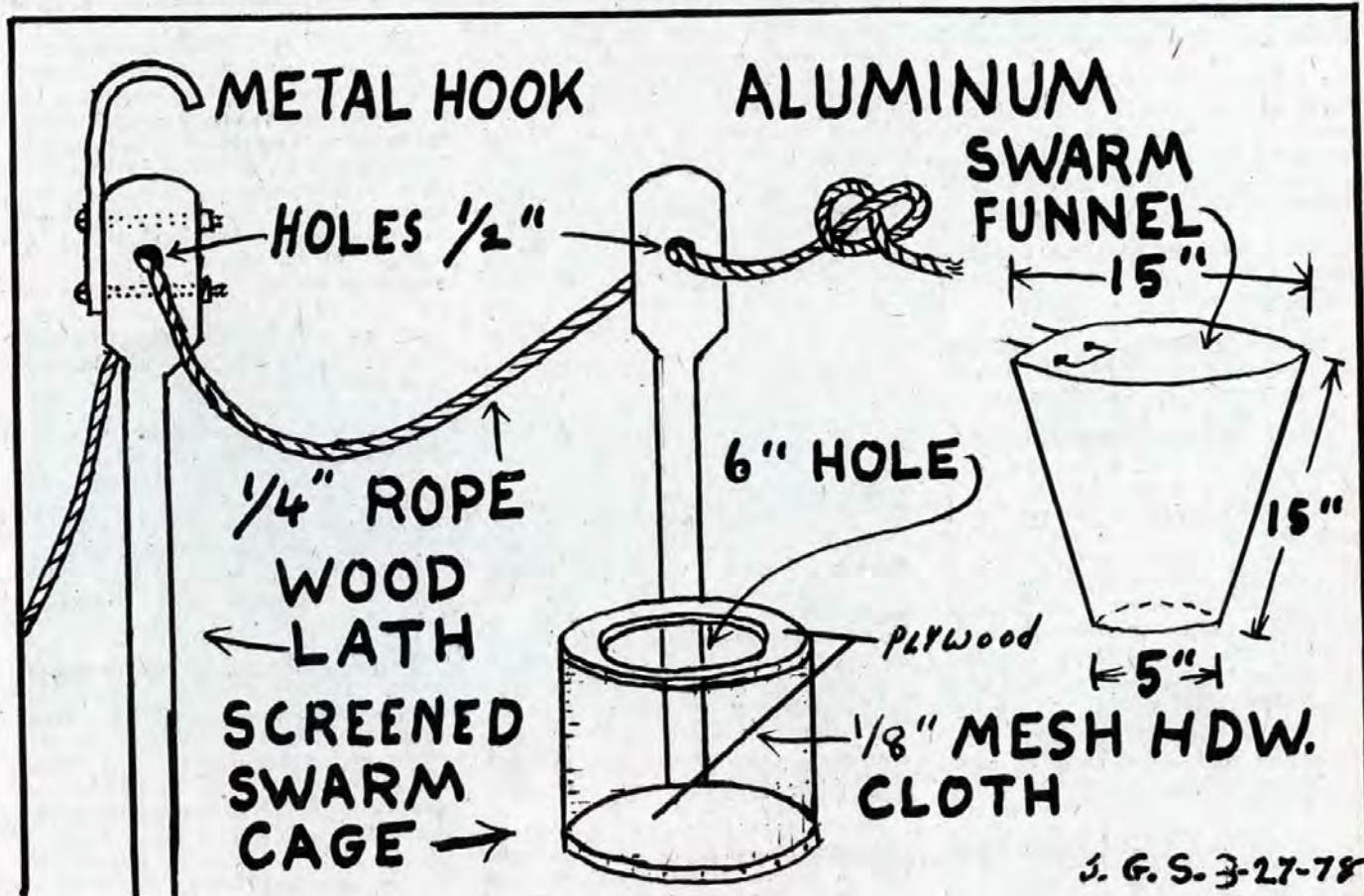
All you have to lift up into the tree is the lath with the rope threaded through the one-half inch hole. I use 50 feet of quarter-inch manilla rope. With funnel inserted into hole in cage as far as it will go and upper end of funnel tied

temporarily to cage handle with a piece of wire, run the rope through hole in cage handle and tie a simple knot as per sketch.

You are now in for a real thrill. Pull the funnel and cage up. Position funnel as nearly under the cluster of bees as possible. Give the limb either a jerk or a sudden push and the bees will fall through the funnel like shelled corn. If you get half of the swarm and the queen into the cage you are doing O.K. Let cage come down, take off the funnel and close the cage. Pull cage up a few feet and just wait. There may be several thousand bees on the wing, just flying around in confusion. They may seem to abscond but they will eventually find the cage and cluster on the outside of it.

The first time I used this device I got about half of the swarm into the cage. They flew around a few minutes and then began to consolidate on the outside of the cage. It was soon completely covered with bees. I had to cut the rope in order to carry the bees to a new hive. Another hole near top of cage handle would make it easy to hang cage to a limb with wire

(Continued on page 242)



Safe Queen Introduction

By **CLIFFORD BECKWITH**
Bean Station, TN.

AS A RESULT of recent experiences, I thought I'd like to pass along some ideas that have been helpful to me and might be so to fellow amateurs and hobbyists.

IN the past four years I have been increasing colonies by making divisions headed by purchased queens. It has been of special interest to me to try bees of different strains and especially important to have them accepted.

Over a period of years I've read quite a few articles on requeening and faithfully followed the directions and suggestions. For several years I have been using nuclei for introducing and then uniting by the newspaper method for requeening or just building up the nuclei for increase.

Last year, by using some ideas which I've never noticed in print, plus one from a British journal, I was able to get 30 of 31 queens accepted. Previously the best I could do, even using nuclei, was 60-75%.

The one queen lost of the 31 was a queen that was killed in her cage because the hive queen was in the nucleus. I never found her though I checked and double checked the nucleus, but she was there. I had not realized a young queen could be killed through the wire by another queen.

So I resorted to an article by D.G. Morris in the April '77 British Bee Journal as to a method that would guarantee a queenless nucleus without a lot of hunting for the queen. In essence, the steps are as follows:

1. Select the desired number of frames containing brood of the right age for a good nucleus.
2. Shake the bees gently back in the hive, or enough of them so there is no doubt as to the absence of the queen.
3. Place the brood frames in the hive body to be used for the nucleus.
4. Place hive body back on hive over a queen excluder.
5. Leave this unit for a half hour over the brood nest, or longer over the top super. The frames will then be well covered by young nurse bees of the right age for a nucleus.

I took the nucleus that had had the new queen killed, treated it this way, and was amazed at how quickly the nurse bees came through the excluder. I introduced another queen which was accepted. Actually, it took me much less time than it would have taken to hunt a queen and

there was no doubt as to where the hive queen now was.

One idea given to me by Mr. John Caulk of the A.T.I. at Wooster, Ohio, was that the chances of acceptance would be greater if the nurse bees were removed from the mailing cages. This could be accomplished by holding the cage next to a window; perhaps the car window at the hive site. The bees would leave the cage and stay on the window (do it on the inside of the car so the queen can't fly away) from whence the queen could be returned to the cage. This worked O.K. but another thing that worked also was to take an empty queen cage, hold the two cages together with the open ends so that the bees could pass from one to the other. It usually took a very short time to get the queen isolated. She is then returned to the cage with the candy and recorked.

Now the queen would be fed by the hive bees through the wire and all would be well.

This helped, I think, but was not the complete answer. I lost eight of ten attempts, in nuclei, with the queens isolated.

Mr. Caulk mentioned also that the queens in the standard mailing cages would sometimes be released too soon. I noticed also that in the last of the attempts, in which I lost eight of ten, one of the survivors was an isolated queen which had not yet been released when I checked in seven days. Upon checking for the reason, I found I'd forgotten to remove the cork. The candy was still in

place. The cork was removed, the cage replaced, and in a short time the queen was laying and all was well.

So last season the procedures were followed as before, except that I did not remove any corks on the candy end. In two days I checked the cages. In about half the cases it was easy to see that the queens were going to be accepted. In these cages the corks were then removed, the nuclei closed, and rechecked in seven days. In the other half it was obvious that bees were acting in a distinctly hostile manner. The corks were left in place and queen cells removed which were already underway. (Since then have learned that nuclei building queen cells doesn't necessarily mean the new queens won't be accepted). Two days later I rechecked these nuclei and by this time all but one were treating the new queens in a normal friendly manner. Those corks were removed. In the last case, more queen cells were removed and two days later the last cork was removed.

Irregardless of whether the hive bees were acting in a friendly manner to the caged queen, she was well fed and growing into laying condition.

This procedure is doubtless too costly in time and travel for a professional. However, I did get 100% acceptance, save for the one killed by the hive queen, which was definitely my fault. I'm convinced I would have lost one out of three had I removed the corks immediately upon making up the nucs. Aside from preventing the loss of \$65.00 worth of queens, I had had colonies building up of the strain I wanted.



A Moroccan Apiary.

LAND OF HONEY

CAPT. BILALI SAID of Kenitra, Morocco, sent this photo of part of his apiary of 160 colonies. The

picture was taken at the beginning of the main honeyflow. The colonies averaged over 189 pounds per colony, the best ones gave up to 300 pounds.

The Values of Sharing Your Knowledge

By V.J.BERTO
Kirkland, Wa.

"You will be rewarded in the knowledge that you have instilled in the children an appreciation of the valuable work carried on by one of man's best friends."

EVERY BEEKEEPER HAS a responsibility to impart his knowledge to the younger generation in order to encourage the understanding of the value of the honeybee. Perhaps one of the best methods to accomplish this is to volunteer your services to youth groups. Let Boy Scout leaders, school officials and others know you are available for talks and presentations about honey and honeybees.

Schools are usually eager to invite you, especially for their science classes where insects are studied,-----most often in the elementary grades. Many of these children consider any bee an enemy that stings. In discussions with young children, one might follow a simple outline starting with the bees' home. Compare the beehive (which you have taken along together with veil, coveralls, gloves, etc.) with the children's home. Start with the house foundation which would be the hive bottom board. Then show the relation of the living quarters to the deep hive body. The sides and ends compare with the structure of the home.

Inside the hive are the frames. Point out the wired foundation which the bees build upon, how the comb is drawn out, where the babies sleep.

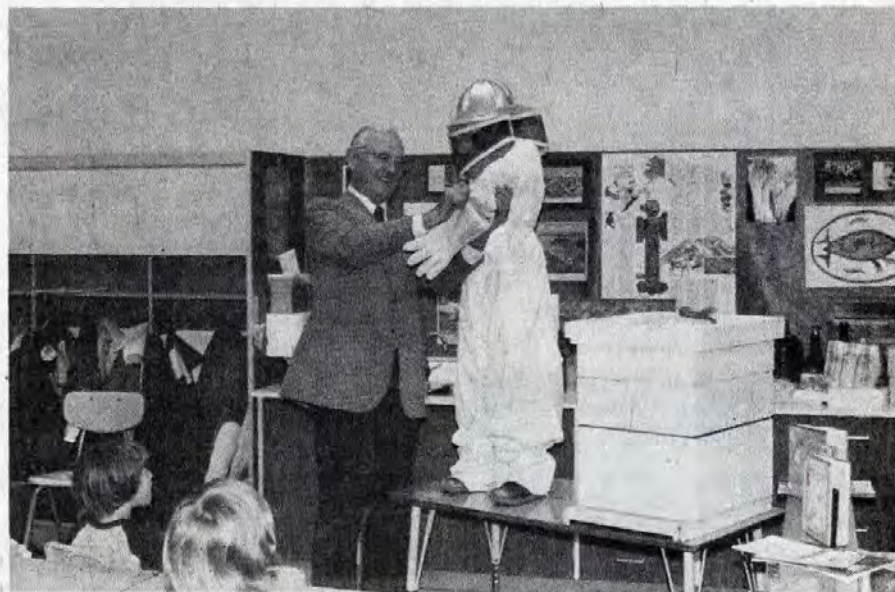
Above this single hive comes the second story of the bee house, and above this the attic or shallow super for storing extra supplies just as in the attic of the children's home.

You are ready now to explain the hive occupants starting with the mother and her function, followed by the father or drone, the workers, and their duties. Finally explain about the baby bees, beginning with the egg which looks like a fleck of sawdust. Pictures, if you have them, help explain that after three days this egg hatches into a larva, which is then fed a milky substance called royal jelly, and that after three days, this food is gradually changed until the larva is fed mostly beebread,-- a combination of pollen and honey.

The children are always fascinated with the hatching of the bee, so explain that



"The dressed up demonstration injects humor into the presentation." Photo by K. Waddle.



"An added value to the learning process is having one of the students get up on a table and dress in the coveralls, veil, boots and gloves." Photo by K. Waddle.

after five or six days after the egg is hatched, the larva which has filled the cell, is now sealed over with wax. In time it sheds its skin and finally, 21 days after it was laid as an egg, the worker bee hatches from the cell.

The children understand when you tell them the young bee begins working for the good of the entire colony, that the first three weeks of its life is spent in the nest, cleaning out cells, building wax foundation and feeding the young, as well

as other jobs. Explain that in time the young bee becomes a field or worker bee and gathers pollen and nectar(honey) for the hive; that, in the summer, its life is short from working so hard.

So that the children understand the bees' value, explain that during its short life span of six weeks in the summer, it has not only brought in propolis, pollen and nectar, but it has also pollinated a great many vegetable plants and fruit trees which provide us with food. Without their valuable service, we would not be able to eat a great many fruits and vegetables which we enjoy everyday.

If you have brought your costume, explain that when the beekeeper wishes to take the honey from the hive or inspect it, he usually wears protective clothing such as a veil, coveralls, high boots and gloves to prevent being stung.

An added value to the learning process is having one of the students get up on a table and dress in the coveralls, veil, boots, and gloves. With the hive tool in one hand and the smoker between the child's knees, he is shown how to gently open the hive from the back, first smoking the bees sparingly. Explain what the smoke does and why it is used.

The dressed-up demonstration injects humor into the presentation. The proud exhibitor, standing in the oversized apparel, sometimes brings a smile to the soberest face,—including that of the teacher.

All people including children like to hear their own voices, so this is a good time to ask for questions from the pupils. The display has loosened up the group to the point that you will get many questions. Your answers will fill the remainder of your allotted speaking time.

Invariably one will get such questions as, "Did you ever get stung?" Do not treat them lightly. Remember you are dealing with young, often shy, sensitive people who are easily embarrassed. Enlarge every question, and praise the questioner when possible.

As the questions continue, you will be given the opportunity to explain stings, marking the queen, queen laying, uses of honey, sugared honey, extracting the honey, selling honey, origin of beeswax and its uses, using bees for pollinating, bee diseases and prevention. Tell of the enemies of bees,—skunks, bears, dragon flies and toads.

This is a time to mention vandalism, and its results not only to the beekeeper but also to the orchardists and gardeners and farmers.

Because the history of the bee's use in centuries past is fascinating to young people as well as to older ones, tell how the Greek armies took along the bees not

Dear Mr. Berto,

Thank you for coming. I learned a lot. You are a very nice. Thanks for leaving the honey. I hope you can come again.

Sincerely Yours,
Murray Wais

only for the energy the honey gave the soldiers but also for the medicinal use of honey when put on wounds; tell how honey was worshipped by early cultures, how their rulers were buried in it; how great athletes were fed it, and how honey was used to appease the gods.

At the end of your presentation, leave a jar of sugared honey for the teacher to distribute later. Leave also pamphlets, bee catalogs, and any other literature you may have available. A list of books available from the library is also a great help.

You will not be paid your car expenses, nor for your time in talking to these young people. You will, however, be rewarded in the knowledge that you have instilled in the children an appreciation of the valuable work carried on by one of man's best friends. You will also feel that you've helped prevent vandalism while at the same time you've promoted the use of honey, and possibly inspired some child to become a future beekeeper. An added bonus will be the many grateful letters you'll receive from teachers and little friends.

And after that, you'll be inspired to go out again to tell the fascinating story of the honeybee.

A simple outline for a honeybee presentation in a classroom:
A beehive compared with child's home
Occupants of both
Brood rearing
Food gathering
Pollination
The beekeeper's equipment
Questions: a time to add richness and knowledge
Donations of honey, wax, literature, sources

MICHIGAN TO RESUME BEE INSPECTION

FOLLOWING a four-year lapse, the Michigan Department of Agriculture (MDA) is reviving its inspection program for American foulbrood in May.

Dean Lovitt, MDA plant industry division chief, told beekeepers participating in Michigan State University's Farmers' Week, March 20-24, that \$60,000 has been appropriated to run the program the next two years.

Lovitt says there will be a random inspection this summer of about 20,000, or 18 percent, of the 110,000 colonies of bees in Michigan. For the past four years, colonies have been inspected by MDA only at the request of the beekeeper. — M.S.U. News Release.



HONEYBEE FASHION SHOW

This "Beeaster" bonnet is a bit "far out" but one of the events at the Eastern Apicultural Society's Aug. 9-12 meeting in Wooster, Ohio, will be a Honeybee Fashion Show and Contest to choose the

best apparel made with a bee or honeycomb motif. For E.A.S. registration information write E.A.S. Registration, c/o Wm. McNutt, 245 North St., Columbus, OH. 43216.

Book Review

A Complete Guide to the Mystery and Management of Bees by William White. Sr., 71 pages, cloth, \$12.50, half leather binding, \$20.00. Available from Northern Bee Books, Scout Bottom Farm, Mytholmroyd, W. Yorkshire, England.

First published in 1771 this reprint is attractively bound by David Stinton of Pennine.

William White, professional English beekeeper attained great success over a period of many years with his manipulations of bees. He gives interesting accounts of swarming and beekeeping practices in Oxfordshire in the mid-18th century.

Curative Properties of Honey and Bee Venom, by N. Yoirish. New Glide Publications, Inc., 330 Ellis Street, San Francisco, California 94102, 1977. 199 pp., \$3.95.

This book was originally published in the Soviet Union in 1959, and was translated from the Russian language into English by Xenia Danko. It is well written and precise with a welcome scientific slant, and will be a valuable and useful resource book.

Written for a general audience, the book delves into a number of fascinat-

ing possibilities for the use of honey, bee venom, beeswax, propolis, pollen and royal jelly in areas of nutrition and medicine. One example of this covered in the book is apitoxin therapy, or bee venom treatment.

Curative Properties of Honey and Bee Venom consists of five chapters and starts with a chapter devoted to "General Data on Bee Biology," and then proceeds logically into the "Therapeutic Uses of Honey," "New Kinds of Honey," which includes sections, among others, on the express method of producing honey and multivitamin honey; "Therapeutic Uses of Bee Venom;" and "Curative Properties of Beeswax, Propolis, Pollen and Royal Jelly."

Ruth Gottstein, who wrote the introduction to the book, points out very clearly the intent and purpose of this book when she says:

"The book that you are about to read comes from the Soviet Union, the largest honey producing country in the world today, and it embodies much that is known of the ancient uses of honey's medicinal and nutritive properties, brought up to date with scientific studies and written with a humanistic approach."

All in all, I would recommend this particular book, as it goes a long way in adding to our knowledge of, and I hope, increase our desire to know more about, our gift to humanity — our product honey. — John Caulk.



APIMONDIA AWARDS GOLD MEDAL FOR "CITRUS HONEY" FILM

A COLOR FILM on Florida citrus honey production has earned an award from Apimondia at the 26th International Congress of Apiculture in Adelaide, Australia, last October. The film was produced by the Editorial Dept. of Florida's Institute of Food and Agricultural Sciences in Cooperation with the Dept. of Entomology.

The film was entered in the competition by John D. Haynie, retired U.F. Apiculturist and Professor Emeritus. Congress President Keith M. Doull of the University of Adelaide told Haynie in a letter that the judges had rated the film very high in the competition.

The award-winning film, directed and narrated by Doug Buck shows two of Florida's important agricultural products, citrus and honey produced "side by side". — From Gainesville Sun.



Siftings

By CHARLES MRAZ
Middlebury, Vermont

I AM GLAD to know that "Steve" on page 175 of April *Gleanings* did see our program on bee venom therapy on the Today Show, NBC-TV. It was indeed an excellent program. Tonight we are going to the east side of the State and we hope to see the BV program at 7:30 PM from Boston. Robin Young is the producer of this program which is similar to, but not as elaborate as the Frank Bourgholtzer program. His is indeed a classic. Tomorrow, after seeing the program, I will let you know what it was like. If any of you live within the range of a Westinghouse TV broadcasting station (I believe there are about seven in the U.S.), you may have a chance to see it also on the "Evening Magazine" program.

In the past, and no doubt in the near future I will get inquiries from new beekeepers, usually with limited experience, as follows: How do you collect bee venom? Where can it be sold? These questions are rather ridiculous, indicating very little experience with such a project. First, to know how to collect pure bee venom you need about 30 years of experience in beekeeping and the same number of years experimenting with the many possible methods of collecting pure bee venom on a large scale. For some strange reason, bees don't seem to enjoy getting the "electrical hot foot" and contributing their bee venom to some dumb beekeeper that should know better. Collecting bee venom can make any bees more fierce than any "African or Killer Bees" ever thought of being.

The bees insist on "sharing" their bee venom. One sting for the collector and one sting in the collector's hide. So, if you collect venom from 50,000 bees, you may not get 50,000 stings into your hide, but you sure will think you are. And when it comes to selling it, well, there really isn't any market for it yet, if ever, so you end up giving it away. So if any of you newly indoctrinated beekeepers have any idea of getting rich collecting and selling bee venom, you will have better luck squeezing blood from a stone. There is a good possibility some genius could make a little, maybe, collecting wasp and hornet venoms. There may be a market for this, when and if, the pure venom allergin replaces the whole body extract of the insects. Whole bee extract is just about useless for desensitizing those hyper-sensitive, even though it may have been used for perhaps 50 years now. If you can collect a few grams of wasp venom, let me know and I will buy it from you.

Another interesting phenomena now going on with the sudden great increase in

amateur beekeeping, is the flood of books now coming out on beekeeping. I have hardly read any of them, but I gather from the contents and the authors that they are new in the business. It almost seems as if some of them buy one hive of bees, keep them for one year and suddenly they are "expert" beekeepers and write a book. Well, I know how it is. Only once in my life did I believe I was an "expert" beekeeper, that was the first year I kept bees. Then I knew everything. Now, after almost 60 years of beekeeping, 50 years of those in commercial beekeeping, I feel that perhaps with 50 more years of experience, maybe and only maybe, I might learn something about beekeeping. It must be I don't learn very fast, about the only thing I keep learning is how little I know and how much I have yet to learn.

Really, when you get right down to it, the two best books on beekeeping, Jim Powers, the largest beekeeper in the U.S. says, are Langstroth's original *Hive and the Honeybee*, and Dr. C.C. Cook's, *50 Years Among the Bees*. I agree with Jim. Read those two books, one now over 100 years old and the other over 50 years old and you will find they are still the best books every written on beekeeping and perhaps will be for many more years to come in spite of the flood of new books now coming out.

Thanks to friends on the other side of the mountain, we saw our BV Therapy program on the Evening Magazine program on WBZ Westinghouse TV station in Boston. It was not as elaborate and detailed as the program of Frank Bourgholtzer, but it was interesting in that people that were helped were interviewed and I had a chance to add more information about our project. Already phone calls and letters are coming in for information.

The article on page 162 by Clifford Beckwith is of great interest to me in that he brings out an important characteristic we used to have in bees years ago, but is now lost in many of the bees being sold today. In the old days, bees had to be conservative with their stores or they starved to death. The most conservative bees I have ever seen were the Caucasians imported almost 50 years ago.

In those days we produced only section comb honey and wintered bees in just one hive body. In the same yard, the usual Italian hive would need up to 40 pounds of feed to winter, but these Caucasians had their brood nearly full of honey and didn't need a pound of feed. Also, in the comb honey supers, they would fill the sections completely when once started.

It was not unusual to take off a super of section honey with four sections in the center completely filled and capped while all the rest of the sections were just foundation. The Italians would put perhaps an ounce or two of honey in a dozen sections so none were salable.

When package bees became big business, much effort was made to breed queens into "egg laying" machines. They would lay eggs continually, regardless of a honey flow or not. As long as you kept a feed can on them they would survive, but they could never survive without it. I remember buying some of this same strain of Caucasians 30 years later. They had a crop of almost 100 pounds and before I could get the supers off, they used every pound of it raising brood. To survive the winter they would need at least another 75 pounds of feed or more. No beekeeper will ever get rich with that kind of bees. Bees that eat more honey than they can produce are worthless.

Trying to produce "super bees" by making them "super egg layers" is foolish. A lot of bees and brood before a honey crop are necessary, but a lot of brood and bees after the honey crop is bankruptcy. We need to go back to these old-time conservative bees, and not spoil them by breeding for high egg-laying capacity under all conditions. When the honey flow stops, the queens must have sense enough to stop laying and conserve stores for the long periods when no honey is coming in. I am glad to hear the present strain of Buckfast is still conservative and that Roy Weaver will keep them that way so that they produce more honey than they eat.

Generally speaking, nearly all races of bees in their "wild state" are conservative with stores. If they weren't they would not survive. It is only when man starts messing up the breeding program that we foul things up. What use are bees if they starve to death?



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BEE TALK - - - -



By DR. RICHARD TAYLOR
P.O. Box 549
Trumansburg, N.Y. 14886

THIS IS GOING to be a swarming year. Now I don't very often make a statement like that, because I long ago learned that you can't predict much about bees. They fool you almost every time. And yet I feel quite confident about this one, the reason being that there were, at least in these parts, very few swarms last year. I saw only one, which is unprecedented. What this means is that the queens in my hives are of higher than average age now, and that is a factor that is directly related to swarming. Since very few swarms flew off last year, the old queens that would have left with them are, for the most part, still there, and their daughters are ready to fly off with them at the slightest provocation.

Studies show that a colony headed by a queen born within the previous year will hardly ever swarm unless goaded to it. And, of course, this suggests a means of controlling swarming: Requeen every colony every year. And I've seen that advocated. But it doesn't seem to me very practical. Someone with only twenty or thirty hives might be able to do that, but I don't see how anyone with several hundred is going to find time. Besides, queens cost about \$6.00 apiece. So if you requeen, say, three colonies, and thereby prevent the one that would otherwise have swarmed from doing so (the other two probably weren't going to swarm anyway, going by the law of averages), then you have spent \$18.00 and quite a lot of time to save one swarm. And that's assuming that all went well, which is by no means always the case in requeening. If one of those three queens didn't get accepted, then your bill goes up to \$24.00, plus the way that colony has gotten behind, plus a few headaches. And there is still another problem here. Maybe some people can go around murdering lovely queen bees in their prime, but I can't. It would take the joy out of life. I would rather lose a few swarms, or, which is better, go about the swarming problem in a way that seems more in keeping with the general spirit of things.

About requeening, which I said is not the simplest thing in the world to do

without mishap, there is a surefire way (almost). Like this: You walk up to the two-story (or one-and-a-half story) colony that you want to requeen, and set the top story off. Then make sure there are at least three combs in that top story with sealed and unsealed brood in them, and that the queen is **not** in that top story.

She's got to be down below. Next put an inner cover over the bottom story, with the center hole screened on both sides, then set the queenless top story over that. Now introduce your new queen to the top part, by exposing the candy in the little queen mailing cage and poking a nail hole through it and laying it screen down over the top bars or, better, fixing it vertically between two combs of brood and with the candy end up so that no dead bee will fall into the candy end and plug it. The double screen at the inner cover hole will keep the queen below from getting at this new queen above. And there's really no need to remove the attendant workers in the queen cage. Finally, replace the cover, and an inner cover if you have one, and fix it so a very small entrance to this top story is to the **back** of the hive. You can do this by just inserting a small stick or pebble under it, and stuffing newspaper around to fill up the extra crack, leaving a little entrance that one or two bees at a time can pass through.

After three or four days you'll find that the queen is out of her cage and laying eggs, so you can now eliminate the old queen below, and just reunite the two stories by removing the screened inner cover. No need to use a sheet of newspaper in uniting them; these bees are all sisters and will get along fine.

The reason that always works is that the queen gets introduced to **young** bees, who are always friendly to new queens. The old flying bees up in the second story return to their front entrance and go into the bottom story. Then by the time the two stories are reunited the new queen is laying eggs and acting as though she belongs there, and the older bees are willing to go along with this.

Of course, the method just described can be used very nicely to make increase, too. Instead of reuniting the two halves, just set the top story off onto a new bottom board and hive stand, and you've got yourself a new colony. Or you can just set it onto a new hive stand from the start, instead of setting it on a screened inner cover. That way you don't have to eliminate the old queen. Or if there is quite a lot of sealed brood in the top story—sealed brood in six frames is enough—then you can break it up and make two new colonies, requeening each new part. What is important in all these manipulations is that the old queen remain with the part that stays on the

original hive stand, where she will be joined by all the older flying bees. And try not to have too much honey in the parts that get set onto new hive stands, because this can get the bees started robbing. The honey you move is, after all, theirs, and they see no reason why they shouldn't bring it back home, that is, back to the original hive stand.

The procedures just described will not work if the bees have queen cells with larvae in them, nor if they have laying workers. And the best time to do them is in the spring, when lots of flowers are out and the bees have too much on their minds to be thinking about robbing.

If you suspect the presence of queen cells in a colony, just peer up under the top story to see. If there are any queen cells at all in the hive, then **some**, at least, will be right there, and you can see them without even lifting off the top story or removing a single frame. Then what you can do, having found queen cells, is divide the colony, putting the top story off onto a new hive stand in the same apiary, and making sure that most of the sealed brood and at least some of the queen cells are in that top story that gets moved, and that the old queen is in the bottom part that stays put. Give that bottom story a second story right away (within a day or two), and the other one a second story as soon as you can get around to it, and it is very unlikely that either part will throw a swarm. The moved part will not because it will have lost all its flying bees to the other part, which they all return to, and the unmoved part is not likely to because it will have lost most of its sealed brood.

(Continued on page 241)

A large prime swarm, perfectly clustered.



From the West



By **CHARLES J. KOOVER**
1434 Punahou St.
Honolulu, Hawaii 96822

Thick-Top Bar Frames

"IN THE EARLY 90's the thick top bar frame was introduced to the public, but some years prior to that time J.B. Hall, then of Woodstock, Ontario, Canada, had been using frames with top bars 1 inch wide by 7/8 inch thick. Soon after he began using them he discovered that the tops of these frames were free from burr combs. Likewise there were no brace combs between the frames. He made his top bars thick, he said, not because of the burr or the brace comb nuisance, but because he desired to prevent their sagging. It was not long after that Dr. C.C. Miller called the attention of the beekeeping world to Hall's discovery, and in a very few years the thick top bar frame came to be almost universal. After the top bars were made stronger and heavier, the end bars as well as the bottom bars were made thicker and wider."

So far I have been quoting **ABC & XYZ**, my bible of beekeeping. If you don't have a copy, get one. Today we are at another milestone in beekeeping, for molded plastic foundation is about to replace wax foundation. But what do we have now? Instead of producing their molded plastic foundation as a sheet to be inserted into a 7/8 inch thick top bar frame, two of the three manufacturers are still insisting on a thin plastic frame, although one has now swung over to the wide 1-1/8 inch top bar. Still, this is not right according to the instincts bees live by. It's not only a wide top bar but a thick top bar as well that makes them forego building these pesky burr and brace combs. It would be nice if someone could convince the bees to accept these combination plastic frames and foundations as is, but they won't. In the meantime a molded plastic foundation is coming on the market so beekeepers can have their choice. They are all three advertised in **Gleanings** so please read the ads carefully and you will save yourself and me a lot of wasted energy writing and replying to letters.

Now if the authorities in beekeeping in Washington, D.C., or Beltsville, Maryland, if they should read my column, will only do something about this man's disease troubles I wouldn't feel so bad. And if the scientists aren't interested in that new disease I keep reading about then Charles Mraz will no doubt help the man out. He has done it for the beekeepers in Mexico and his queens have something that other queens haven't got. Charles Mraz is fully able to speak up for himself and I hope he takes me up on this Texas farmer-beekeeper's troubles. I have his letter and address and will be glad to furnish it to Washington or other interested parties. When you read this I will be in Canada and won't be back until July. So I will furnish the Editor of **Gleanings** with the information. What takes me to Canada is that now that I am alone I want to go visit over there without having to sightsee, and spend all my time with beekeepers. They too have become overheated on plastic molded foundation, in fact to such extent that one company sent me a cable to get a distributorship for this new foundation from Taiwan. But I have nothing to do with the merchandising of the product. All I have done is to test it in one of my hives to make sure that it is acceptable to the bees. For I wouldn't advocate its use unless I knew the bees will accept it without any hesitation. They do and you can take my word for it. There wasn't a nectar flow on when they were given this molded plastic foundation so they were fed sugar water and even so they drew out perfect worker cell combs. Every cell a worker cell.

When you read this it will be May although I am typing this in the middle of March. It takes that long to get it in print and to you. What I would like to suggest to you is, to get hold of every swarm you can lay your hands on and install them on this molded plastic foundation. Feed them if you have to but not too much. You don't want them to store a lot of sugar water. It's only a substitute and not good for them. They have to predigest it and it's rough on them. I am saying all these things for after all these letters I have received I realize that most of my correspondence comes from beginners and amateurs. They do need help and a refresher course doesn't harm them a bit. And I beg, leave that old queen alone that came with your swarm. When the time comes to replace her the bees will do it and do a far better job than you can. I'll say it again. If you do want to mess around with your bees do it with an observation hive. An observation hive will teach you more about bees than all the poking around in the brood nests of your production hives. For it costs you money every time you take that hive cover off. So have fun this summer catching swarms. You save yourself a lot of

money. And don't listen to all that misguided information you can get from some old time beekeeper. **Gleanings** wouldn't have us columnists around unless we know about what we write about. And then there is Charles Mraz with his "Siftings" to see to it that we tell the truth and nothing but the truth.

I can tell you now that the Australian molded plastic foundation bit the dust. The manufacturers stopped making it after they sold me their last few sheets on hand. How do I know? The manufacturer of that new molded plastic foundation from Taiwan flew to Australia and visited with them.

They are two older brothers who had enough of trying to fix their molds so they would produce perfect sheets of foundation at a high rate of speed. For that's what it takes to make it possible to sell this plastic foundation at a reasonable cost. The bees won't accept it unless it's perfect and perfection is almost impossible to attain in anything. So when you buy this molded foundation you are getting a bargain. I know, for I have been watching the development process for all these years. And I may as well go a step further and tell you that after this unsuccessful trip to Australia, this same man flew to Taiwan to have this molded foundation made in China and has been there four times since to see to it that it is made right. Why, you may ask yourself will someone spend so much money to get a new product on the market? My answer to that is that I don't know what makes Americans take risks like that. For you see, after 55 years in America, I still wouldn't dare gamble my money like that to make a buck. But it also explains why America leads the world in new ideas.

And then there is something else. Beekeepers have been sending two dollars for a sample frame and are complaining to me that they have not received their frame. One man here in Hawaii mailed in his two dollars last November when this frame was first announced and as yet he hasn't received his sample frame. I don't understand why this sort of thing is happening for this manufacturer is making deliveries of his deep molded plastic frames. I received a call from Colorado from a beekeeper who had received his order and wanted me to advise him. I can't for I too have not as yet received my sample frame.

A New Disease?

A farmer-beekeeper from Texas writes, "Your article in the November issue of **Gleanings** is of great interest to me. We live here in Fayette County which is not considered good beekeeping territory. Years ago when I was younger it was much better and there were no pesticides to contend with, also everybody planted cotton and lots of hubam clover and the pastures were only mowed once in awhile

(Continued on page 241)



Research Review



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

Colony Reproduction and Survival

IN THE ITHACA (Southern Tier) region of New York State there are probably more colonies of bees in trees and houses than there are in beekeepers' hives. This area of the state is largely abandoned insofar as farming is concerned and in similar areas one may likewise find a large number of feral (wild) colonies.

Forty-two feral colonies (26 in trees) were observed from 1973 to 1977. It had been found earlier that bees selecting nesting sites prefer small cavities, those about the size of a 10-frame super. This has a profound effect on swarming as such colonies become crowded rapidly in the late spring and summer.

It was observed that only 24 per cent of new feral colonies survive the first winter. However, 80 per cent of those colonies which lived through the first winter survive subsequent winters. Feral colonies which survive the winter produce swarms about nine years out of ten. Though it is not stated in this paper, it appears that the greatest problem for swarms is to find a suitable home site. It is possible that the time of year the swarm is produced has much to do with survival; this question is under study.

These data suggest that a high population of feral colonies will be maintained in areas such as the Southern Tier of New York State and other similar areas where trees and buildings provide an abundance of nesting sites. While these colonies represent a source of bees for hobby beekeepers their effects on commercial beekeeping operations, especially with regard to foraging competition, are yet to be determined.

Seeley, Thomas D.
Life history strategy of the honeybee, *Apis mellifera*.
Oecologia 32:109-118. 1978.

Unwanted Immigrants

ENTOMOLOGISTS HAVE known that many of "Our most serious crop pests were not native to North America". In the paper cited below it is recorded that 1385 foreign species of insects, many of which are pests, are known to have been introduced into this country, some purposely but most accidentally. However, the list is incomplete. With increased travel abroad the problem is becoming more severe.

Our best protection against this problem is to gain more "information about the status of pests in other countries". Only insects are considered in this paper but the same thought applies to bee disease and other pests.

I suggest that it is important for those in the beekeeping industry to encourage more study abroad by our bee disease specialists. The recent introduction of chalkbrood disease provides an example of what can happen when we are unprepared.

Sailer, Reece, I.
Our immigrant insect fauna. *Bulletin of the Entomological Society of America* 24:3-1 1978.

African Bees in Africa

AFRICAN BEES ARE well known for their aggressiveness. This fact has caused wide attention in Brazil but the same type of scare stories which emanate from there are not so common in Africa.

According to the report cited below, there have been far more importations of European bees into parts of Africa than has been heretofore recorded. The basis for all these importations was an attempt to provide more gentle bees. When queen rearing was attempted in Africa it was

observed that 30 to 40 per cent of virgin queens of European origin were lost before they reached the egg-laying stage of their life; it was presumed much of this loss took place while they were on mating flights. African queens appear to take mating flights of a shorter duration and perhaps are better able to avoid predation. It would appear, therefore, that the importations have had little impact on the native bees in Africa.

African bees are different from their European counterparts in that they will nest under rocks, in termite nests, in holes in the ground, and apparently in smaller cavities than are normally occupied by European bees. In the warmer parts of Africa colonies that form nests on the undersides of branches may survive for many years.

African bees kept in primitive log hives usually produce less than 20 pounds of honey per colony per year for their owners. Colonies of African bees kept in modern frame hives may produce well over 100 pounds per colony and even greater surpluses have been recorded.

It is suggested that colonies of African bees will forage earlier and later in the day than their European counterparts. Compared with European bees the African bees have more rapid flight patterns. They dart more rapidly from blossom to blossom and enter and leave hives more quickly. Presumably this habit evolved for the avoidance of predators.

There are many enemies of African bees, some of which we do not have in this country. They include wasps, flies which parasitize adult workers, several species of bee-eating birds, safari ants and the honey badger, a large mammal which may weigh 20 to 30 pounds and which may destroy one or more hives in an evening. European foulbrood and *Nosema* are present in Africa but American foulbrood is not.

One of the more interesting behaviors of African bees is their occasional migration. The subject is just beginning to receive the attention it deserves but the distance that swarms are able to fly is still unknown. A swarm, for example, was observed arriving on an island about seven miles off the South African coast, indicating that long flights are possible.

Beekeepers in Africa are at a disadvantage in obtaining information on bees and beekeeping since most of the literature available to them is concerned with European bees which are obviously different. Hopefully, reports such as that cited will stimulate more research on the native African bees.

Fletcher, David J.C.
The African Bee, *Apis mellifera adansonii*, in Africa.
Annual Review of Entomology 23:151-71. 1978.

Fundamentals for All

"Ecology is for Beekeepers"

ECOLOGY IS A word that has become more common in the last few years. As a branch of human understanding, it has existed since man first looked at his surroundings and wondered about where he was and what was around him—the relationship of everything as he knew it. Ecology is defined as "dealing with the relationship of organisms and their environment". In beekeeping, this means the relationship of bees and flowers—and everything else influencing this relationship, including man. Appreciation of what it all means results in "an ecological concept" which varies according to the depth of understanding of what bees and flowers mean to each other and all the factors which influence this relationship.

Roger Tory Peterson is a well-known authority on birds. He says that people do not start out with an ecological concept, but acquire it through using some specific springboard, such as birds, plants, or something else in nature. I am sure that if Peterson were a beekeeper, he would have ranked beekeeping as an ideal springboard for the study of ecology. I know of none better. To be a beekeeper, in the truest sense of the word, is to be a real ecologist. To be anything less is to short change himself, or herself, in the appreciation of the meaning of life.

Now, let us see if we are together on the meaning of the words I have used. I trust that I have made ecology clear. In ecology, we, ourselves, are the central figures, as well as the observers of our surroundings. There follows the expression "ecological concept", which to me embodies something of the way in which I summarize my ideas of ecology. I am concerned, however, about the word study. To me, the word "study" means work and, while I like work, I have all-too-vivid memories of forced studies which were neither pleasurable, nor rewarding. But I know of no better word to describe how one ponders the meaning of life. I offer no justification for that term "the meaning of life", for that is what every human seeks, either consciously, or otherwise. And thinking of life's meaning in terms of honeybees' involvement leads me to the pleasant discovery of truths. These truths may not be original, but for me to discover them in terms of everyday experiences of thinking and acting is satisfaction as of a real accomplishment. They become original for me, and, I believe, must be so for everyone. They become building blocks



By W. A. STEPHEN
Worthington, Ohio

in our understanding. They are basic to what Shakespeare meant by "books in running brooks" and "sermons in stones".

I cannot claim that I have always been observant. I'm afraid that I am like a farmer whom I know well. He lives in a part of the country where maple syrup is made. As anyone knows who has seen sugar maples in autumn, these trees turn beautiful shades of crimson and sunset gold. Once, as we were motoring along a dirt road, an outstandingly magnificent specimen in its autumn beauty appeared before us. We stopped in order that I could take a picture of it. Later, my farmer friend said that he had never observed the beauty of fall coloring before. He had seen it every autumn of his more than seventy years, but had not become conscious of it all. Too often each of us sees without observing our surroundings.

I recently read a letter written by a university alumnus who let his basic youthful yearning for understanding, rather than an accumulation of knowledge, or training for a profession, determine his course of specialization in college. For me, it is a beautiful example of seeking out the path that leads to greatest satisfaction in life. This man relates that he got his inspiration for learning by going to Sunday School. Here, he learned that "The fear of the Lord is the beginning of wisdom", and reasoned that education, once acquired, was a thing no one could take away from him. He began his university studies as an engineering student. His mathematics were not sufficient to enable him to grasp the fundamentals of engineering and he says that year was wasted. He then went to an agricultural college, where he "went the rounds" of the departments. Outstanding professors in field crops attracted his interest; also a renowned professor in animal science. Horticulture appealed to him, but he was most impressed by an area where animals and plants meet.

What really attracted the young man most was an evening lecture on the adaptations of plants to receive insect visitors. He says, "I thought this was the department I would love most to be in—this department concerned with adaptations...the revelation of God in His creation of so many things". This feeling of interest reached its climax when the professor of apiculture described the adaptation of the bee as a pollinator. The combination of studies of flower adaption to insects and insect adaption to flowers made him decide that these were the studies for him, regardless of what he might make out of it financially! (Having obtained my schooling during the period known now as "the great depression", I stand in awe of anyone with the courage to make such a decision. For my part, I went into apiculture because it offered me a job.) But to continue his story: "The insect (honeybee) met the simplest flowers, represented by the buttercup, and then the more important flowers, represented by the clovers. This meant that beekeeping was the thing for me".

I'm not even sure that the word "ecology" ever entered into lectures of honeybee-plant relationships at that time. I don't remember meeting it in my studies until long after college. However, like television and electronic gadgetry, which have made life more interesting for all of us, "ecology" is a handy invention to have around.

As I watch a bee probe in the heart of a flower, I see unfold the story of honey production (which makes it possible for man to keep bees), and pollination, which makes "the earth bear fruit", to use the Biblical expression. If there are no bees present, I am forced to wonder "why?" and am led to consider weather, fertility, temperature, plant competition, and many other factors (the list ends at my mental horizon) which determine honeybee-plant relationships. It gets me away from the considerations of world problems which interfere with life-fulfillment and the thousand and one decisions one has to face in everyday life. Ecology, as the Greek words from which it comes imply, is home study; the making intelligent of those things around us. Beekeeping is the foundation stone for the building of a more perfect understanding of our environment; putting it in a term you now understand, "Ecology".

The Old Timer

AN EVER CHANGING kaleidoscope of events, here on the farm and in the back country, (where I spend some of my time with or without the company of bees) produces an adventurous mode of life. We are certainly **never** bored, and two lifetimes (mine and my wife's) added to wisdom passed on by parents and others has resulted in an accumulation of bits and pieces of knowledge which stands us in good stead. We learn more, by seeing and doing and our own mistakes rather than from literature. We don't get much time for reading, I haven't read a newspaper in the last 20 or 30 years. The only magazine we subscribe to is **Gleanings** and even that may not be picked up for months, usually when the work's all done in the fall. We are self-sufficient, or is it self-sustaining? In other words, we produce everything we eat (nothing unusual in that) and a lot of other things beside, but strange as it may seem, although we get older, it somehow seems a little easier every year to cultivate and store more and ever more produce. When I buy fuel for the truck, or once in a while an axe head or boots etc., why, the money for these items comes from surplus farm produce — honey, eggs, milk, vegetables and so on. While I was writing this I asked my wife if she had purchased anything lately and she said, "Yes", she had bought some wool to knit a sweater a year or so ago and, of course, tea, from time to time.

Now I suppose the reason I brought up the foregoing is because I heard somewhere that the spade, the hoe, the scythe and the axe are "tools of ignorance". Correct me if I'm wrong, this must mean (unless there's some deeper meaning) that anyone using these implements is old fashioned, ignorant, uncouth or something. Since I use one or all of these items almost every day then I must fall into this "horrible" category, for which I'm not overly concerned in my case as I admit to being unlearned as to formal education. However, what does bring me to a slow boil is the fact that (by their own volition) there must be millions of people worldwide (I know lots myself) who, by the sweat of their brow and primitive makeshift tools, work to provide a **happy home** which I consider the most desirable end product of all labor. Now I don't know what your're working for friend, but this kind of **happy home** philosophy came down from generations of my forebearers and I thank god our own family also accepts this doctrine. So I think a better term would be **Tools of Happiness** instead of **Tools of Ignorance** because anyone I know who uses some or all of these instruments in their daily lives are honest, sincere, upright, and a credit to the human race. In my opinion, a better class of citizen. Most people in the city don't seem to be very happy, I couldn't live like that.

"Life in the back country produces an adventurous mode of life."



Anyway to get back to a more welcome topic — during the first week of February there came a warm sunny day, allowing our bees a welcome late winter flight. They were out in full force and the "roar" could be heard on the county line road a hundred yards away. I was out in the yard when two young people, attracted, they later said by this activity and so many (only 53) bright blue hives behind the barn, dismounted from their bicycles and hesitatingly advanced up the driveway. As I beckoned them on in, the young man blurted out "could they get some information about bees". To which I replied, "Of course, we would be glad to share what little we know about those wonderful little creatures" and seeing they were ill at ease but anxious to talk shop I invited them in for tea, over which they said they had just got married and were in the process of buying a run-down property at some distance. The former owner had left them, among other things, two colonies of bees, so now began a long animated conversation, interspersed with cups of tea and the writing of notes and two trips to the apiary. Before they left (just before chores) I had promised to go out and have a look at their hives soon.

Now all this is leading up to something, and here it is. Later on when we came back from the barn my wife began gathering up the remaining pages of notes which were scattered across the kitchen table and remarked, "Why don't you send some of these to **Gleanings**". To which I replied, "OK, I will". To start with, as I explained to the young couple today, most of my bee savvy came from a host of beekeepers (far more knowledgeable than I) past and present, with whom I have been privileged to rub shoulders. One such gentleman stands out in our minds as a veritable genius with his uncanny understanding of living things. Old Alec is his name. He can just barely read and write. Sometimes when I visit him, if I know this beforehand, I will take

some literature (usually **Gleanings**) on bees and I watch with mixed feelings as he slowly, laboriously spells out the words. Right here I must point out that the public has the curious delusion that the more educated and wealthy a man is, the more right he is bound to be. Nothing could be further from the truth. We are inundated with armchair "specialists" in all fields, especially of the outdoors. Why, just recently I saw a picture on the cover of a magazine depicting the inside of a supposedly backwoods cabin, and hanging all over from floor to ceiling was every kind of trophy imaginable, excepting his mother-in-law. Tell the truth now, did you ever see a true wilderness home with the walls all cluttered up with heads and backside of animals? Old Alec, gifted, with snow-white hair is a mountain man with a difference. To see this old master work with bees or any other animal, is to know you are in the presence of a great and kind man. Even the creatures, large and small, wild and tame, seem to sense this. He cares nought for recognition or fame and wants nothing more than to be what he is. I'm very sure if our leaders would humble themselves with a visit to this modest old mountaineer's cabin and shake his hand in truth and sincerity and talk with this wise old man, we would all be rewarded with a much better world to live in.

In these northern wilderness regions dwells a race of stubborn, intrepid men who want no part of civilization and all its unwholesomeness (my Father's words when he went north as a young man) and who live by a code of ethics unknown in so-called genteel, high class society. The Missus and I owe most of our knowledge concerning plants and animals, so invaluable to us in our efforts to remain self-sufficient and disease-free to information handed down from these old masters in whose steps I humbly tread.

All the best—The Old Timer.

You be the Judge

By Murray Loring
Williamsburg, Va.

THE GRAND JURY returned an indictment stating: "The said Brayton McOmber, between the 3rd day of June, 1951, and the date hereof, and for a long time prior thereto, at his residence, on the premises of his said premises, did unlawfully, knowingly, and willfully maintain a colony of honeybees, said honeybees being owned by him, consisting of ten or more hives, at present consisting of about thirty hives or swarms, which said honeybees did and do swarm upon and fly over and upon the

premises of the surrounding property owners, ten or more in number, and do and have on frequent occasions stung the said property owners and members of their families to their great pain and discomfort, and said honeybees do and have lighted upon the washings of said property owners causing spots on the washings of said property owners while being hung out on the clotheslines to dry and thereby causing said washings to have to be re-washed in order to remove said spots, and the said honeybees have and do hinder the free and proper use of their premises by the said surrounding property owners and their families, and generally annoyed, injured and endangered the comfort, repose, health and safety of a considerable number of persons, said persons being the said property owners, contrary to the form of the statute of the State of New York".

After reading the rather lengthy indictment, Brayton contends that it does not sufficiently set out the acts of negligence or criminal intent on his part... and that a plain and concise statement of the acts complained of are not set out...; that no unlawful act is set forth in the indictment; and that the hiving of bees is a lawful business and in the absence of an ordinance or statute making the same unlawful, he has the right to hive bees.

Hearing the evidence of both sides, the Honorable Judge Hudson of the Supreme

Court of New York, rendered his decision:

"It is not necessary to show acts of negligence or criminal intent in order to constitute the crime of maintaining a public nuisance.

I am of the opinion that sufficient facts are set forth in the indictment to fully acquaint Mr. McOmber of the charges which are made against him and that the number of persons whom it is alleged have been affected by the alleged public nuisance come within the requirement of the statute 'a considerable number of persons'.

Therefore, it seems to me that while Mr. McOmber admittedly has a right lawfully to maintain a colony of honeybees upon his premises, he is nevertheless charged with a duty of maintaining them in such a manner that they will not annoy, injure or endanger the comfort, repose, health or safety of any considerable number of persons insecure in the use of their property and that if he omits to do so, he is subject to an indictment for the crime of maintaining a public nuisance as defined in Section 1530 of the Penal Law. I am also of the opinion that the form of the indictment is sufficient to cover the crime charged".

People v. McOmber, 133 N.Y.S.2d.407



By BESS CLARKE
Canton, PA.

EVERY TIME I attend a meeting of our local Council or School Board, I am impressed with the dedication of the citizens in our democracy. This doesn't seem to be true of larger governmental bodies but in small towns the persons who represent us are trying hard to do a conscientious job.

The men and women who are elected to serve at little or no pay spend hours of their time, not only at regularly scheduled meetings, but in researching problems, seeking to find a way through the reams of regulations, and soothing citizens who are quick to criticize but slow to aid.

Money—or the lack of it—is a constant problem. There never is enough to go around. So a compromise is made.

Notes from the Straw Skep



Perhaps a job can be done in segments. There's no money for a water heater for the swimming pool, and the tennis courts will continue to have metal fencing instead of string nets, but the potholes in the main streets have been repaired with local effort instead of waiting for the state crews. That decision will prevent damage to many of the vehicles who use the highways which run through our small town.

School Boards have an awesome responsibility of providing the best possible education in an increasingly permissive society. And talk about government regulations! It takes a legal mind to even begin to comprehend the jargon. These Boards have to deal with people too. Teachers and staffs have rights which are spelled out in fine detail and a law suit can be a costly and time-consuming reality if they are infringed.

Patience is one of the qualities any board member needs. An open mind helps, too. And we are fortunate to have so many people with these qualities who also will give of themselves to aid their neighbors.

Chinese cooking has always been popular but I have never lived in an area where I had much access to it—I still don't, as a matter of fact. However, there seems to be more recipes in the magazines, and better equipment for stir frying and such. The quick, stir-fry methods of cooking aid in vitamin retention, tend to be lower calorie, and can be accomplished in a small amount of time. Those are all pluses in my book. The most recent recipe we've enjoyed is this one for Sweet-Sour Fish.

Sweet-Sour Fish

Two pounds fish fillets, 2 tablespoons cornstarch, 2 tablespoons cooking oil, 1 small onion, 1 clove garlic, 1 slice ginger. Cut fillets into 2 inch chunks and shake in bag with cornstarch to coat.

Heat wok or fry pan to 350° F., add oil and heat. Fry fish until golden brown, stirring frequently. Remove fish from pan. Chop onion, crush garlic, slice ginger, and quick-fry all of them until golden brown.

(Continued on page 241)

Questions and Answers

Q. Can you supply information concerning the spraying or dusting for mosquito control? We are having that problem in this area. What has been the result on honeybees where used?

What protection can be given to honeybees or what should be done?—R. D., Ohio.

A. Normally mosquito control programs are carried out at night when bees are not flying and in these cases it usually does not cause damage. About the best defense you have is if you have a cooperative applicator who will not spray your apiaries if you tell him where they are.

Mosquito control is effective because many cities have gone to it.

Probably the most effective protection is to be sure that your bees are registered at the local ASCS office in case you have to apply for indemnification damages.

☆☆☆☆

Q. Is Nosema present in most hives? How much damage can be done in a colony? I haven't read anything in the bee magazines about this problem. I treat mine in the spring with Fumidil B. Some say they should be treated in the fall also. Any information you can give will be appreciated.—W.F., Michigan.

A. Most of the northern states have Nosema present to a degree. In most cases it does not prove fatal to the colony. The maximum infestation usually occurs in late winter and it generally clears up during the summer months. Severe infestation causes slow build up of the colony in the spring, queen superseding and the usual signs of dysentery. Suspicion of the presence of this disease usually calls for a treatment with Fumidil B in sugar syrup, fed at least one month before the main honey flow. Fall feeding helps to reduce infection the following spring.

Dr. Basil Furgala says that Nosema losses remove more money from the honey industry's pocketbooks than all the other diseases put together.

☆☆☆☆

Q. I am interested in getting a more technical education in beekeeping. Can you tell me of any schools that offer two or four year programs in apiculture? I am interested in attending a school this fall if possible.—J.F., Idaho.

A. I suggest you contact John Caulk, Beekeeping Specialist, Agricultural Technical Institute, Ohio State University, Wooster, Ohio, 44691. This is a two year

program in commercial beekeeping technology in which you may be interested.

Other programs on a four year college level and graduate school are given at Davis, California, a branch of the University of California, and at Cornell University, Ithaca, N.Y. At the University of California, Davis, contact Dr. Norman Gary and at Cornell University contact Dr. Roger Morse.

☆☆☆☆

Q. I am the first to admit I wouldn't want to return to the so-called black German bees when I started over fifty years ago. However, they seemed to possess one good characteristic—winter hardiness. The common practice then was to winter in single eight frame hives, no spring feeding. I don't recall the winter loss being a problem. I now use equivalent to two full depth bodies (ten frame) and about sixty pounds of food, upper ventilation with an abundance of bees, etc. and I found a big problem this winter—Yes! We had forty-six consecutive days of temperature not above 32°. Some of the hives lost were requeened in September with different strains. I find the largest loss is in the Italian.

My question is this. Is it possible the breeders are overlooking one important genetic characteristic—winter hardiness in their cross breeding?—E.M., Nebraska.

A. Apparently the bee loss you mention in your recent correspondence is quite universal and is sometimes connected with the disorder called "disappearing disease". Genetic deficiencies are being suspected but this is difficult to prove. Scientists are probing this problem, especially where it affects the wintering traits, but so far very little has been found.

After two severe winters in the Midwest and East more attention is evidently needed in colony preparation such as insulation, ventilation, wind protection and better stores.

☆☆☆☆

Q. I have a two year old hive that is in need of a new queen. Try as I may I can't locate the old queen.

Is there a fool-proof way to replace this old queen without first locating and destroying her?

I'd like to replace this queen for the 1978 honey flow.—J.S., Illinois.

A. Most requeening methods, and the most successful we may add, involve

finding the old queen and destroying her before introducing the new queen.

Some methods of finding the old queen other than a comb-by-comb search may prove to be more trouble but be the only alternative. All the bees may be shaken in front of the hive entrance and forced to pass through a queen excluder before crawling back on the combs. The queen will thus be separated and trapped.

Requeening without removing the old queen involves making up a nucleus with several combs of brood, introducing the new queen to this nuc and then uniting with the colony to be requeened. This is done by placing the nuc on top of the colony with the old queen with a single thickness of newspaper between. Before uniting allow time for the new queen to become well established in the nucleus. As the bees unite, one queen will be destroyed, usually the least productive and vigorous of the two.

☆☆☆☆

Q. I am thoroughly enjoying Langstroth on the Hive and the Honey-bee, which I recently purchased from the A.I. Root Co. as a reprint. I'm amazed at the insight he had! His comments have raised two questions to which I would appreciate answers.

1. In several places [particularly pp. 175-179] Langstroth recommends using a spray of sugar water instead of smoke to calm the bees. This is the first time I have seen this suggestion which to me seems so much nicer than using smoke. Does it really work? What are the advantages and disadvantages?

2. Langstroth states that a colony will never swarm if they "have an abundance of room below their main hive" [p.165] or "ample accommodations ... below their main works" [p. 166]. I winter my colonies in two full-depth hive bodies and reverse them in the spring to move the queen below the empty combs as is often recommended to stimulate brood rearing. This latter practice has always bothered me because a portion of the brood is often separated from the main part of the nest and can easily be chilled. Moreover, the bees must spend time rearranging the stores. If Langstroth is correct, it seems to me that a reasonable practice would be simply to leave the colony alone rather than practice reversing. The queen would eventually be forced down as the upper cells are used for stores. Supering could be started when a good layer of honey is in the upper chamber. The whole operation would reduce the labor of reversing and hiving swarms and could be done without opening the hive. [I estimate

honey storage by hefting the rear of the hives.] Questions: Is this "leave-alone" method used often in practice? What are the advantages and disadvantages?—G.Z. Massachusetts.

A. We must remember that considerable progress has been made in methods of handling bees as well as knowledge of their behavior along with improved beekeeping equipment since the time of Langstroth. We must also remember that bee behavior has not changed to any extent and Langstroth was nearly as advanced as we are today in practical apicultural practices, perhaps by methods he used that were in advance of his time.

The use of sugar water in place of smoke is not a popular method mainly because of the danger of robbing which may result. Our smokers are vastly improved since the time of Langstroth and this may account for his use of alternative methods, such as using a sugar-water spray.

In regard to your second statement, we believe that there is considerable merit to this suggestion. Reversing the brood chambers is only one method of alleviating crowded conditions in the brood chamber, although it is not necessarily the principal reason of doing this manipulation. Many beekeepers use an extra

deep bottom board and in conjunction with this, insert a slatted rack below the brood nest, which gives clustering space and perhaps serves to prevent the conditions which contribute to swarming. Reversing brood chambers is still practiced and is one recommended method of swarm prevention. Commercial beekeepers find this method too time consuming and involves too much labor so they may not use reversing extensively for this reason. The principal advantage to reversing brood chambers is that it stimulates queen activity and if practiced faithfully and at the proper time, is no doubt of great value to this end.

(Continued on page 242)

Memories Of Bee Inspection In The Thirties And Forties

"He said, 'Now I caught you! and with that pulled both triggers.'"

By N. EUGENE SHOEMAKER
Red Lion, Pa.

PART IV

BEE INSPECTION WAS for the most part very enjoyable work, but it would not be honest or fair to leave the readers of my yarns about bee inspection in the 30's and 40's with the idea that the life of the inspector was all pleasant. There were times when one could have gotten the idea that there are other ways of earning a livelihood that would be more pleasant. In spite of these times bee inspection for me was fun primarily because I liked people and I liked to work with bees. Meeting the people who were interested in bees and being constantly exposed to new and interesting situations made a combination hard to beat in my way of thinking, in spite of the disadvantages.

To correct any false ideas let me enumerate some of the ways the work of the inspector might be somewhat on the difficult side.

1. Under any circumstance if you work bees all day you will have done a hard days work and if you are working bees during or after a honey flow before the honey has been removed you will have done a lot of heavy lifting.

2. The weather does not always cooperate. One may have to do his work between showers and besides the possibility of getting and staying wet you may find the bees not quite so docile as they are under fair skies when they can work without interruption. Or the opposite condition may be the case: a prolonged period of drought in which case the bees

could be starving and their dispositions again not too friendly.

3. You may run into situations where the inside of the hives do not have the proper bee space around the frames. If the space is too small, the bees will glue everything together with propolis and if the space is too great they will build burr combs. (1/4 to 5/16 inches is usually considered the proper bee space). Home-made equipment is fine if it is made properly and with the proper dimensions.

4. I suppose there will always be cases where the beekeeper neglects the proper use of foundation or allows mice to destroy the bee combs in winter time and in either case cross combs result.

5. Unfortunately there are people who think that bees should be kept on land that is worthless for any other purpose and sometimes such land is not a good place for keeping the bees. An example is a steep hillside where, if you work the bees, you have to take care or you may tumble down the hill and even have the beehive tumble with you.

6. Sometimes folks think they are being real good to the bees if they keep them in a shed or beehouse. In many cases the bee shed is most undesirable and it certainly makes it most difficult to work with the bees. I have inspected bees where the bees were standing on shelves one above the other. Sometimes there would be as many as three stories of beehives in the shed and

to stand on a scaffold of some kind to do this kind of work was most undesirable. In some cases the hives had to be lifted out, examined, and lifted back when your work was finished. (You will likely agree that this was being unfair to anyone having to work the bees).

7. There were times when you would find a beekeeper who liked to house his bees in fancy hives resembling various kinds of buildings, such as churches, schools, or human dwellings. In cases such as these it frequently followed that considerable extra care had to be taken in taking apart and in reassembling the equipment. More thought was given to the appearance and not enough to the effect propolis would have on working the hive, or how the hive would hold up under various weather conditions.

8. Back in the 30's and 40's you could be most unfortunate in that you would follow a cattle inspection drive in a county and it so happened that many cattle were condemned because of disease and had to be destroyed. You can understand the farmers' feelings about the prospect of having their bees inspected and the possibility of having them destroyed because of American foulbrood. The conversation of any group of farmers quickly turned to the subject of inspection of cattle or bees. In most any gathering of people one might expect there would be those with hot tempers who spoke without too much thought. Their threats were enough to make a prudent person stop

and give the matter some serious thought before pushing too hard with anything that might be controversial in the community.

There is little doubt that if a group of experienced bee men got together they could think of many more conditions that would give the bee inspector a handicap, but I believe eight is enough to illustrate the point that the inspector who is trying to do his work well earns his pay.

In the particular county in which I was working I was following the cattle inspector and he was causing considerable ruckus among the farmers. This bee inspector was hearing all sorts of things such as, "We are living in a dictatorship", or, "Don't a man have any rights any more!" or "The bees are mine and what right have you to do as you please with them?", or "Do you know you are trespassing on my property?" One man ordered the bee inspector off his property and made violent threats if he didn't leave.

Much help came from the good beekeepers who were well informed concerning the losses that could come from outbreaks of American foulbrood. They knew the real service that was being rendered by having a complete inspection of the apiaries and their words went much further than those of the bee inspector who was a foreigner in the community. Due credit should be given to the beekeepers associations for their very valuable assistance.

I kept wishing that the work in this county was finished so I could work someplace where the reception was more pleasant.

As always the visits to the office of the county farm agent were frequent. When I dropped in one morning, the county agent said he had a message for me. The message was that I should call a certain number on the telephone and make an appointment to inspect bees, setting an exact time for the work. I was directed to ask for the farmer's wife or his sister and not speak to the farmer himself. Upon questioning the county agent about the strangeness of this request he shrugged his shoulders. I said, "Maybe we have a lady beekeeper?" Finally the county agent said, "It may have something to do with the mental breakdown this gentleman is experiencing."

According to directions, I made the call and immediately was set at ease for the lady said, "We want to cooperate. We know what you are doing is a good thing and for our benefit." We set the appointment and I was given specific directions not only as to time, but how to approach the apiary, where to park, and in addition I was told not to go to the house but rather to immediately inspect the apiary and leave. Having just talked to the county agent I thought I understood.



Bees in a shed. This is most undesirable for obvious reasons.

The day and time arrived. Needless to say I followed directions exactly and the work went smoothly. Everything went so well that maybe I had forgotten the circumstances under which I was working. Just as I was about to open the final hive of the apiary I heard a metallic click. Upon looking up I saw a man with wild looking eyes aiming a double barrel shotgun directly at me. He said, "Now I caught you," and with that he pulled both triggers. I am thankful that the gun was not loaded or I would not be telling the story.

There are few other times in my life when I experienced such fright. It was most difficult to find words or to act. What should one do under such circumstances? We must have stood there just looking at each other for what seemed like a long time, but, in reality; it was but a few moments when the man's wife and sister hastened to the scene and told the gentleman I was his friend and a friend of the bees. With considerable encouragement from them he was ushered into the house. As they departed I saw one of the ladies wave as much as to say, "Finish your work and leave!" Believe me, I lost no time in doing just that.

You can guess that I decided that I had had enough excitement to last for not only that day but for many days to come. With this thought and the thought that I needed some experience that would settle my nerves, I decided to visit with and inspect the apiary of one of the men I had met at the County Beekeepers Association meeting. It wasn't taking the work in order but after all it was on my way back to the place I was staying, and the work I had to do at this apiary would just about finish out the day. I counted on this friendly gentleman to calm my nerves and to put me in the proper frame of mind to start enjoying life again.

After parking in the shade of a nice big tree to write my report and try to pull myself together, I drove to the home of this member of the beekeepers association where I hoped for a nerve-soothing visit.

As I got out of the car my host came running out to meet me carrying a shotgun. He waved his arms and the gun around in an excited manner saying, "Get on down to the woods. I am going to do something the bee inspector won't soon forget. Get a move on."

Looking back it is easy to understand that he might have been puzzled by the way I responded. My experience with a mentally deranged man and a shotgun had done things to me that caused me to act in a manner he didn't understand. It was difficult to want more shotgun experience. It is a wonder I didn't run for the car and drive away. I kept saying to myself, "This man is O.K. I am upset. Everything is going to be O.K."

My feet carried me down to the woods in spite of the fact that my mind kept wishing I was elsewhere. When I got there I saw a swarm of bees hanging at the end of a limb near the top of a very tall tree. Directly under the swarm, the beekeeper had spread a sheet on which he had set a hive with drawn combs.

Now to my surprise he aimed the shotgun at the swarm and fired. Down came most of the bees landing on the sheet, and would you believe that many of them began to run into the hive. He aimed again and the blast cut off the little limb so down it came with the remainder of the bees.

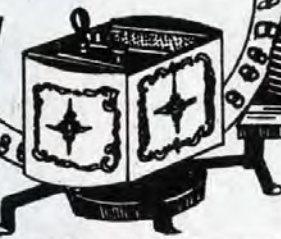
The beekeeper was so proud of his success. He explained to me that the only danger is that you may kill the queen.

(Continued on page 241)



The Collector's Corner

by DARL and IVA STOLLER



What We Have Learned

THIS IS THE sixth article we have written on the joys of collecting. In every endeavor in life, a time comes when we must stop, pause, and evaluate what we have accomplished, and then try to determine if we are achieving the goals we had set out to attain. What are our goals? What have we accomplished? Our goal was this; how many collectors are there today, and what are they collecting? This month, let's call our article simply, **WHAT WE HAVE LEARNED.**

WE HAVE LEARNED that honey pots or related items to the honeybee, have been made in many different sizes, shapes and colors, for a long period of time. They have been made for many different uses, from the bee skepstring holders that were used to tie up the packages in the old general stores, to the beehive brass candlestick holders, whose candles lighted many a family's table.

WE HAVE LEARNED there are many interesting collections beekeepers have put together, and everytime we are with a group of beekeepers, we are told of other collections, with many of the collectors specializing in some particular area of the honeybee.

WE HAVE LEARNED that the collecting of old bee books and magazines is probably the most interesting and challenging of all the different phases of the bee collector. Collections of bee books range from the large memorial libraries of Dr. Miller, and Langstroth, to the beekeeper who has only three or four books. Old bee books are very scarce, and most of the rare book dealers have a list of collectors who take all the books they can find.

WE HAVE LEARNED that many different types of bee jewelry were made, and the jewelry collectors probably have the widest range of items available to them of all the bee items collected. They were made in rings, earrings, bracelets, pins, etc., with many of the finest pieces

made with pure gold. Many of them have precious stones.

WE HAVE LEARNED there are collectors for old primitive tools; old and interesting hives; honey labels; old bee smokers; old honey jars; the list could go on and on.

These are some of the things we have learned, and those of you that collect learn many of the same things. Collecting is an inexhaustible challenge and it can bring much satisfaction, especially when you can find that "something special".

The picture below shows several different types of china with honeybees. The two on the left are both "Occupied Japan" and the ones on the top were not bought as a set, but it appears that it was made as a set. The bottom one on the right is a typical honey pot, with a separate saucer beneath the honey pot.

WE HAVE LEARNED that a relatively small number of honey pots are being

made today. This was a mystery to us until the national meeting at Orlando in January. After a very interesting discussion with some other collectors at the meeting, we came to this conclusion; today we live in such a fast paced "throw-away" society, that the modern housewife has no need or time to use the beautiful honey dishes that graced our ancestor's tables many years ago.

In the last quarter of the 19th century, and early in this century, most of the beekeepers had a small number of hives, and it was a common thing for each farmer to have a few hives of bees producing enough honey for their own use and there was usually enough to sell or give to their neighbors. Most of our early beekeepers took a great deal of pride in producing section comb honey, and much more of it was produced in those early years than liquid honey.

For many different reasons, more and more of the younger beekeepers turned to
(Continued on page 241)



Prolificness or Longevity

"One must judge bees by what they do, not what color they are."

By **HOWARD J. ROCK**
Dale, WI

CONVERSATIONS with experienced beekeepers from all parts of the world and the reading of the various bee journals confirms my thesis that prolific strains of bees are short lived while long-lived bees maintain a smaller brood area the biggest part of the season, the one exception being late spring brood rearing which is many times explosive in long-lived bees.

Usually, conservative, long-lived bees are the darker races or their racial hybrids. Most disease resistant strains are dark, conservative bees with some notable exceptions which leads me to believe that resistance or immunity to disease is a unit characteristic. I have encountered yellow bees in Minnesota that were remarkable in their remaining healthy in AFB infected yards. But for every colony of yellow, prolific bees that were resistant to AFB I have found at least 20 colonies of dark, conservative bees with this ability.

Concerning terminology, a physicist once chided me on using the term resistance when referring to disease. He maintained that "resistance" in scientific circles was something that could be accurately measured in suitable units of measure and that immunity would be more to the point. After all, bees or any other living thing is either free of disease or not. If disease appears you can be certain that you aren't dealing with immunity.

I have worked with hundreds of colonies of bees that were absolutely immune to AFB, having the ability to clean out a rotten comb of AFB scales without infection spreading to its own brood. These bees were without exception, dark, long-lived, conservative bees and they were racial hybrids.

One standard brood nest was all they ever needed. They were remarkably free of the swarming propensity and they would have been ideal except for their ferocious temper. They wouldn't do for the backlotter living anywhere near town or a highway. Their production did not come up to what good commercial bees could accomplish, but with their characteristics one could produce a satisfactory crop by maintaining perhaps 30 percent more hives. The commercial bees wanted to swarm and we all know that swarm control is time consuming and exasperating.

Speaking of such bees, a few years ago the Curneen black bees were given much

space in the literature. In several commercial apiaries they proved to be outstanding, especially during adverse seasons. Now they seem to have slipped into oblivion. Perhaps they didn't appeal to the producers who use packages exclusively because they didn't come up to maximum production, colony on colony. But for the year-around beekeeper, wouldn't it be better for him to manage up to 30 percent more colonies of Curneen to get equal production and be happily free of extensive swarm control and the fall gassing of colonies, always an arduous, disagreeable task? There would be other obvious advantages.

I have had much experience with Carniolan stock and with their racial hybrids. Italian virgins mated to Carniolan drones. Either strain is conservative of stores, free of superseding and all the diseases that plague beekeepers. They, too, have explosive brood expansion in late spring and they will attempt to swarm if not handled intelligently. I was so troubled with swarming when I first started in this business that I wrote Dr. Haydak at the University of Minnesota for his valued advice. He advised giving each colony three standard brood chambers during build-up. Until the main honey flow began he advised placing the bottom brood nest on top every nine or ten days. That settled 90 percent of my swarming. Yes, I have always had some swarming, minimal. Show me the beekeeper who doesn't.

Although these hybrids were seasonally prolific during build-up, they never had "solid slabs" of brood. There would be 16 or 17 combs with brood but, each area of brood was surrounded with pollen and honey, in that order. This is most typical of conservative bees, regardless of their color. One must judge bees by what they do, not what color they are, but, one must remember that most prolific, short lived bees are largely on the light, yellow side.

I help several beginner beekeepers in this vicinity. Without exception they order packages headed by yellow hybrids that are highly prolific and require the maximum in stores on a year around basis. Their winter mortality runs a consistent 50 to 60 percent. During spring build-up their brood, up to 20 percent, breaks down immediately after pupation, and just before pigmentation. It's not AFB, EFB or para-foulbrood. I have seen these diseases by the thousands. I am

no scientist but I surmise that this brood has a weakness or diathesis for some common, ubiquitous virus through unwise inbreeding. If I produced such queens I would think that I had made a hash of things.

Several readers have written me and suggested that I am prejudiced against the Italian race. Far from it. I have had too much success with the Mott and the Burleson strains of Italians. In 1966 I had such a heavy crop of section comb from colonies headed by Burleson Italians, from queens reared by Henry Lohr of Texas, that the floor of my small honey house collapsed from the weight.

These two strains of Italians were reared right, having all the desirable conservative characteristics. The queens were reared and mated naturally, as Dr. C.C. Miller advised, only from the best hives. All intelligent queen breeders know that, "Like produces like, each after its own kind." This knowledge has been available for at least two thousand years, maybe more.



**FIFTY-YEAR BEEKEEPER
CARRIES ON**

MR. EARL STICKNEY of Milford, N.H. lost a leg and is on crutches but he maintains fourteen colonies of bees, all producing comb honey. Five hundred and eighty-five sections were taken off in 1977. A young helper does the heavy lifting but Mr. Stickney's direction of the manipulations shows that it takes knowledge as well as brawn to win out. This proves that being incapacitated does not always rule out keeping bees.

The Thrill of Victory

"I encourage everyone and anyone who has never made a crop of honey to hang in."

By CHRISTOPHER KELLY
Huntington, N.Y.

JUST AS AN athlete strives for excellence, so must a beekeeper. A beekeeper attempts to manage his hives well enough to gain a surplus; his prize for excellence.

I was only twelve when I was introduced to the world of Apiculture. Starting with a Boy Scout Beekeeping Merit Badge, I was soon caught up in the fascinating world of the honeybee. My master beekeeper, John M. Arleth, gives me new insights into the honeybee hive every time we work.

Finally, it happened. After two years of work with Mr. Arleth, I asked for my own hive. My parents just about swallowed their tongues, but the newness and differentness intrigued them. They said "yes", and I had my first hive of bees.

Well, as in the poem, "T'was the Night Before Christmas", the line where it says, "and visions of sugar plums danced in their heads," I thought, "and visions of lots of honey danced in my head." But the truth of keeping bees hit me that year.

The first hive went queenless; and even after repeated attempts to requeen, it still stayed queenless. It went into winter hopelessly queenless. On a warm day in March, I checked the hive. What I saw sent my heart to the ground—one dead honeybee hive. Undaunted, I started another colony of bees.

All went well with this colony. It built up well but made no surplus honey. This was the second straight year of no honey. The honeybees in my house came out with quotes like these: "What do you keep bees for?", "Where's the honey?", "Wilbur gets honey, why don't you?". The colony died of starvation even though it was fed late into winter and was provided with dry sugar on the inner cover. This evoked a famous quote by my brother, "How many bees did you murder this year?"

Last spring was the third year of keeping bees in my yard. I was tired of losing bees...so I started a second colony aside from the first one, as well as an observation hive. By now, "success" was a word which seemed to belong to another world. But, lo and behold, the first minor success I had was with the observation hive. It was successfully introduced to its special glass hive and the

queen was accepted. (Last year, the observation hive I started was dead in ten days.) The other two hives' introductions went without a hitch. Around three weeks later, I used the observation hive as part of a lecture on bees at Holy Family High School. This went so well that I am slated for several more lectures this Spring. The observation hive was then transferred into a standard hive upon its return home, and this operation also went perfectly.

Then Mother Nature helped me out with beautiful weather and rain only when needed, or so it seemed. All the hives built up rapidly; so quickly that I had to buy two extra honey supers, build them, and put them on the hives.

This was beyond my comprehension—HONEY. Hurrah! It was true; in August when I looked, I had several supers of capped honey. I could hardly believe it, the joy in my mind and heart was inexplicable. In late October, we extracted the honey. Two supers came from the new colonies I had started and one came from the former observation hive.

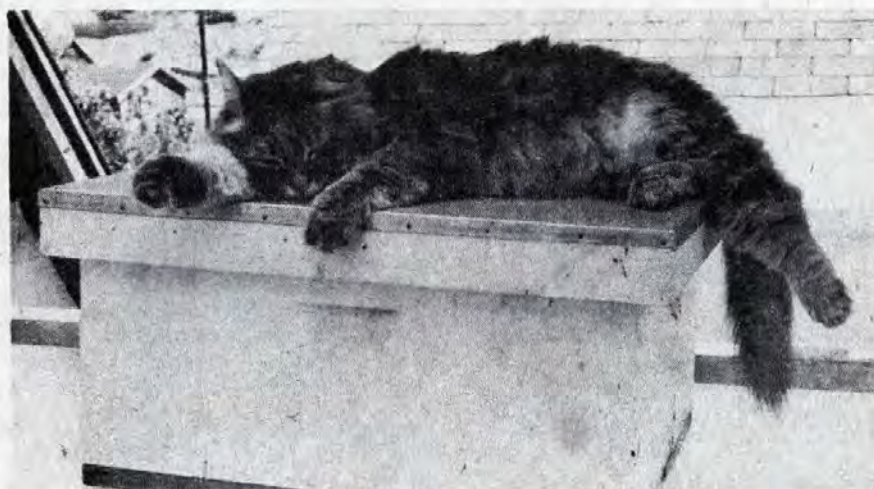
The observation hive is a story in itself, building a full-size hive starting from

plain foundation. It was built from a single frame of foundation to two full depth supers and a super of honey.

I never thought the extracting of the honey would come but when it did my eyes beamed with pride. That precious gold had finally been captured by me. I am now a beekeeper, not a bee-haver.

So, with pride in my eyes and heart, I gave a jar of liquid gold to Mr. John M. Arleth, the man to whom I am forever indebted for his kindness and generosity, for his hours upon hours of driving to and fro, the many fine meals, and lastly for his indoctrinating me into the world of beekeeping. Now I only have five pounds left out of forty-six pounds of honey, because some of Mr. Arleth's kindness has rubbed off on me. Of this nectar of the Gods, I gave away around thirty-five pounds, just to allow people their first taste of honey.

Bees are a large part of my life, and I hope to enjoy them until I die. I encourage everyone and anyone who has never made a crop of honey to hang in. The sheer joy from your first crop is worth the wait of many years.



FEARLESS FELINE

ALTHOUGH THEIR CAT had a really painful experience with the bees she's at peace with them again, says Willi Krause of Trail, B.C., Canada. She once was stung in the mouth—probably by

trying to catch a bee.

Since Mr. and Mrs. Krause live in town, the bees are kept on top of the flat roof above the living room.

NEW YORK
Beekeeping Short Course
 Cornell University, Ithaca, N.Y. 14853
 July 21, 22, 23, 1978
 (\$10 Advance Registration Required)

Friday Evening, July 21

P.M.
 5:00 - 8:00 Registration
 7:30 Movies on bees

Saturday, July 22

A.M.
 8:00 Registration
 8:30 - 400 Program
 P.M.
 6:30 Dinner - Speaker
 Sunday, July 23

A.M.
 9:00 - 12:00 Workshops
 P.M.
 1:00 - 3:30 Open house and demonstrations—Dyce Laboratory

Instructors include Professor Roger A. Morse, Cornell Lecturer Jon C. Glase, New York State Chief Apiary Inspector Gerald Stevens, retired Extension Specialist in Apiculture at Pennsylvania State College Professor W. W. Clarke, Author and Lecturer Bess Clarke, Author and Lecturer Dr. Grant D. Morse, Harvard Fellow Thomas Seeley, Commercial Beekeeper Jonathan P. Ryan, and graduate students David DeJong, Richard Fell, Richard Nowagrodzki, and Williard Robinson.

Participants will stay in student dormitories and eat in the university dining room. Lecture and demonstration rooms are air conditioned; the dormitory, dining room and lecture hall are within a few hundred feet of each other. Enrollment will be limited. The cost is \$65 per person. This includes a single room for two nights, three meals on Saturday and two on Sunday, all instruction materials and registration fee. Double rooms are \$5.00 less per person (total \$60.00). Full linen service is provided. Registration forms may be obtained from: Office of Apiculture, Department of Entomology, Comstock Hall, Cornell Univ., Ithaca, NY 14853.

OHIO **Tuscarawas Co. Beekeepers Assoc.**

The Tuscarawas County Beekeepers Association will hold its spring meeting and picnic at Ninevah Grange Hall on June 11 at 12 o'clock noon on S.R. 416 out of Tuscarawas, Ohio. Anyone interested in bees is welcome to attend.

NEW JERSEY **Beekeepers Assn. Annual Spring Meeting**

The Annual Spring Meeting of the New Jersey Beekeepers Association will be held on Saturday, May 27, 1978 at the 4-H Camp, Sussex County, Route 519, Beemerville, N.J.

This meeting will be held jointly with

MAY 1978

NEWS and EVENTS



the North West Jersey and Sussex County Beekeepers Branch Associations. N.J. B.A. President, George Schaefer will open the morning session at 10:30 a.m. Dr. Roger A. Morse, Professor of Apiculture, Cornell University, Ithaca, N.Y. will open the session by speaking on "Swarm Control".

A chicken luncheon will be served at 12:00 noon. A brief business meeting will be conducted at 1:15 p.m.

At the afternoon session, Dr. Morse, will speak again on "Queen Rearing and How to Select Better Stock for Your Apiary". Other speakers will be Dr. Radclyffe B. Roberts, Asst. Professor of Apiculture, Cook College and Jack Matthenius, Jr., Supervisor of Bee Culture, N.J. Dept. of Agri.

Please send reservations with your check for \$4.50, no later than May 13, 1978, to: Mrs. Liz Rodrigues, RD 2, Box 216, Five Point Rd., Colts Neck, N.J. 07722

PENNSYLVANIA **Beekeeping Short Course**

The annual beekeepers short course will be held on the main campus of The Pennsylvania State University from July 31 to August 4, 1978.

Registration fee is \$40.00 for Pennsylvanians and \$45.00 for non-Pennsylvania residents. Fee is payable at the time of registration on July 31.

In considering University housing, registration is from 2:00 to 3:00 p.m., Monday, July 31. Classes begin at 3:00 p.m. Housing reservations must be made before July 24.

To enroll, please complete an application blank available from the Director of Short Courses, Dr. Fred C. Snyder, 306 Ag. Adm. Bldg., The Pennsylvania State University, University Park, Pa. 16802.

Please Note: Bring your own veil and gloves.

MASSACHUSETTS **Free Clinic and Workshop**

Will be held Sat. May 6, 1978 at 1:00 p.m. at the Hampden County Improvement League Building, 1499 Memorial Ave., West Springfield, Mass., through

the efforts of Everett Wilder, Reg. Fruit and Livestock Agent, Hampden County Cooperative Extension Service and The Hampden County Beekeepers Association.

WISCONSIN **Beekeeping Program Offered**

Beekeeping instructors and experienced beekeepers will be able to take part in consecutive-day programs in June at the University of Wisconsin-Madison.

Walter Gojmerac, UW-Extension entomologist, announces that participants can register for one or both programs: the Special Course for Beekeeping Instructors and Advanced Topics in Beekeeping. The annual course and workshop are again being held with cooperation of the U.S. Department of Agriculture's North Central Bee Research Laboratory in Madison.

The course is scheduled to start at 9 a.m. on June 22, and the workshop begin at 9 a.m. on June 23.

In designing the instructor's course, explains Gojmerac, he had in mind persons who wish to teach beginning beekeeper courses. He says that science teachers wishing to include more on bees in their courses should plan on the course, too.

The course is open to both those teaching now and those interested in preparing to teach bee culture.

The Advanced Topics workshop, Gojmerac says, is designed for experienced beekeepers. It deals with nutrition and behavior, overwintering problems, communications and public relations, and other currently important problems. Specific problems will be discussed during open discussion, and beekeepers will take a tour of the USDA North Central Bee Lab.

Each of the one day sessions carries half unit of continuing education credit (CEU).

For more information or registration materials, contact the Agricultural Conference Office, University of Wisconsin Extension, Jorns Hall, Madison, 53706; telephone (608) 263-1672.

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OHIO

Beekeeping Representatives at ATI

Representatives of the Ohio beekeeping industry gathered at the Ohio State University's Agricultural Technical Institute recently to discuss the curriculum of the school's Commercial Beekeeping program with its coordinator, John R. Caulk.

At the recent meeting, members were informed that the school has acquired a building which will be used for a honey house and that space will be available in the next few months for a beekeeping laboratory. These facilities augment the already existing apiaries and laboratory space used by beekeeping students.

Of the program's 28 presently enrolled students, said Caulk, fourteen are from outside Ohio. Members discussed the need to recruit more students from inside Ohio and to promote commercial beekeeping within the state.

Caulk reported on the status of his students' internship experiences and the performance of the outstanding graduates. "There are more jobs than students at the technical level", he stated, mentioning that salaries for both interns and graduates has been consistently above average.

The visiting members approved changing the name of the program to "Commercial Beekeeping" and they discussed such beekeeping issues as pesticides, the need for Ohio to produce more nectar and pollen-producing crops and the status of legislative lobbying by beekeepers for an Extension Entomologist in agriculture.

GEORGIA

Beekeeping Short Course

The Chattahoochee Nature Center at Roswell, Georgia, will offer a beginner's beekeeping program on Thursday, 7:30 p.m., May 4. The public is invited and there is no charge. The instructor will be Lewis Ledsinger.

GEORGIA

Beginners Beekeeper's Program

The annual beekeepers short course for beginners and more experienced beekeepers will be held on June 10, 1978, at the University of Georgia in Athens, Georgia.

Topics and demonstrations will include honeybee biology and behavior, bee diseases, management for honey production, honey house operation, queen rearing and package bee installation.

The teaching staff will consist of several specialists including commercial honey and queen and package bee producers. The course fee is \$15.00 per person. Advanced registration is required by June 8, 1978.



Back row from left: Charles Stock, Stan Swier, Dan Garrison, John Caulk and Gordon Rudloff. Front row from left: Bill McNutt, John Root, Vic Thompson and Emmerson Long.

Obituaries

Marie Morse

The news of the death of MRS. MARIE MORSE on February 14, 1978 leaves the Executive Board of the Eastern Apicultural Society and its membership deeply saddened and immeasurably poorer.

Marie had served as EAS Secretary in 1972, acting Secretary from September of 1974 until August of 1975, and Treasurer from September 1975 until her death. She also was EAS Historian since 1973 and a member of the Connecticut Beekeepers Association.

She gave unstintingly of her time and energy and looked forward with great enthusiasm to each Annual Conference. Marie had many friends in the Society. We are indeed richer for having had her in our midst.

Mrs. Morse is survived by three sisters of Erie, Pa. and a nephew from Pittsburgh, Pa. She was buried in Erie, Pa.

We are grateful to Marie Morse for her many contributions to EAS. She was loved and will be missed. Contributions in Marie Morse's name can be sent to the Sharon Hospital, Sharon, Connecticut 06069.

William R. Hettrick

WILLIAM R. HETTRICK, 67, living at Hamilton, Montana, died Thursday evening March 16 in a Missoula, Montana hospital. Bill, as he was known to his many friends, was born March 29, 1910, in Grangeville, Idaho. He moved to Colorado and was raised there. Bill married Anne Foudray August 31, 1931 in Coeur D Alene, Idaho. In 1933 Bill and Anna moved to Ronan, Montana and in 1951 to Hamilton, Montana.

Survivors include his wife in Hamilton, two sons, two daughters, two brothers, a sister, nine grandchildren and six great grandchildren.

Bill's knowledge and assistance helped many beekeepers, novice and professional, to solve their problems. No questions about his many inventions were ever turned down and his contributions to the bee business will live forever.

Edmond A Biggerstaff

EDMOND A. BIGGERSTAFF, 66, of 5817 Danford Drive, Billings, Montana, died at his home on March 27, 1978.

He was president and general manager of Northwest Fixtures Company.

His hobby was beekeeping and he sold his honey from his office, health food stores and in groceries.

Survivors include his widow, two daughters, two sisters, six grandchildren and two brothers.

Floyd W. Hatch

FLOYD W. HATCH of Cave Creek, Arizona, passed away March 3, 1978. Mr. Hatch was born in Copemish, Michigan and kept bees in and around Manistee County for 16 years, moving to Arizona in 1949. He grew many kinds of cactus as a hobby, was a rock hound and kept a few bees.

He is survived by his widow Verna, a son, a daughter and grandchildren.

J. (Joe) Gillett Kibbey

J. (Joe) Gillett Kibbey of Jefferson City, Missouri, died March 5, 1978.

Mr. Kibbey was a graduate of the University of Missouri and a 33-year resident of Jefferson City. He retired from the Division of Employment Security in 1973. He kept bees as a hobby, turning it into a business and eventually helping to found the Missouri Beekeepers Association.

Mr. Kibbey is survived by his widow, one son, one daughter, five brothers, one sister and three grandchildren.

The Central Missouri Beekeepers Association honored him with a reception and plaque in 1976 and he was selected "Beekeeper of the Year" in 1977 by the state association.

Eva Nickelson

EVA NICKELSON, 83, of La Jara, Colorado died April 3, 1978 after a long illness.

For 50 years, Mrs. Nickelson sold honey from the Evergreen Apiaries and was acquainted with many in the industry. In light of Matt and Eva's years with the bees, the M. B. NICKELSON BEE RESEARCH FUND has been set up in La Jara.

She is survived by her husband Matt, three daughters, as well as eight grandchildren.

Requests for additional information, program and registration forms should be addressed to Dr. Alfred Dietz, Department of Entomology, University of Georgia, Athens, Georgia, 30602.

ILLINOIS Beekeepers Association

The Illinois State Beekeepers' Association will hold its summer meeting Saturday, June 24, 1978.

Lake Land Beekeepers' Association will sponsor the meeting; which will be held at Lake Land College, Mattoon, Illinois.

A lunch will be served at noon, and reservations for lodgings may be made at the Sheraton Motel, Rt. 45 S. at I 57, (217) 235-4161.

More information will follow, and those interested may contact: G.W. Kloppe, President, Illinois State Beekeepers' Association, 1934 S. Lincoln Ave., Apt. B, Springfield, Ill. 62704, or Robert Snyder, Secretary, Lake Land Beekeepers' Association, 1811 Grant, Charleston, Illinois 61920.

WILL YOUR BEES SWARM?

(Continued from page 212)

No one should launch out upon a new plan, however, on a large scale—no matter how well recommended, nor how

promising, theoretically. The best way is to try out an idea first on a limited basis.

Sources Consulted

Moeller, Floyd E. 1976

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The Nest of the Honey Bee. Insectes Sociaux 23: 495-512.

Simpson, J. 1960

"The Age of Queen Honeybees and the Tendency of Their Colonies to Swarm", *Journal of Agricultural Sciences*, Vol. 54 No.2 Printed in Great Britain.

COLLECTOR'S CORNER

(Continued from page 236)

producing liquid honey in an ever-increasing percentage to comb honey until today, the production of section comb honey is almost a lost art.

In those early days, the square comb honey dishes were available in many different types, and in these the beautiful sections of comb honey were served. The liquid honey was mostly stored in the 60 pound square cans and it was dispensed from them into the honey pots that most housewives used on their table. Both of these two types of dishes were readily available in stores in many types and colors, and those that have survived are eagerly sought today by collectors.

Next month we have a real treat for you. Professor W.A. Stephen and his wife Beth will share with us part of the collection they have acquired during their many years of service to beekeepers all over the world. Until then, enjoy the world of the "Bee Collector".

FROM THE WEST

(Continued from page 228)

so horsemint, milkweed and broom weed flourished. Now that I am getting older I would like to retire from farming and work mainly with the bees. We have about 300 colonies and the reason for this letter is, that I think we have some kind of a disease in our bees since 1976. Our inspector is overworked with migratory beekeepers' bees and has no time for ours. I have used sulfa and terramycin patties but have had no luck with them. Many of our colonies are weak at this time and most of them made no honey in 1977 and we are feeding them. Your article on foulbrood resistance got me excited and I feel I must get some of those queens from the native bees of Hawaii that you described as being resistant to foulbrood. So will you please send me a few names and addresses of people who produce those native queens. I feel our beekeeping future will depend on getting some resistant stock. This is my 50th year with the bees and I love nothing better than to get out and work with them."

NOTES FROM THE STRAW SKEP

(Continued from page 232)

Make sauce: 3 tablespoons soy sauce, 2 tablespoons sherry, 1/2 cup honey, 4 tablespoons vinegar, 2 tablespoons cornstarch, 1 cup chicken stock (boullion cube and water). Add sauce to fry pan, bring to boil and stir until thick. Reduce heat to low, add fish gently, simmer 1 minute. Serve hot with rice. This serves 4 to 6 and is delicious.

MEMORIES OF BEE INSPECTION IN THE THIRTIES AND FORTIES

(Continued from page 235)

There were a number of workers killed but after all he did get the remainder of the swarm.

I tried to act appreciative of the demonstration of a shotgun method of hiving a swarm. I could not help looking at the unfortunate bees that got in the path of a shot and were cut in half and I was thankful that it was the will of Divine Providence that the gun aimed at me was not loaded.

BEE TALK

(Continued from page 227)

I think those are the best ways of handling swarming. Of course, there are other things you do, like supering up in plenty of time, to sort of keep things under control, but all that goes without saying.

QUESTIONS AND ANSWERS

(Continued from page 234)

Q. In a health column by Dr. Lawrence E. Lamb honey was said to contain a carcinogen which may stimulate the formation of cancer. Is this true?—S.W., Ontario, Canada.

A. The information given by Dr. Lamb would appear to have little basis in reality and be on the borderline of fact. Dr. Lamb's statement came about as a result of quoting Dr. Thomas H. Jukes in the New England Journal of Medicine "Current Concepts in Nutrition", vol. 297 #8 (427-30). In his report Dr. Jukes used the sentence "Honey has just been found to contain a carcinogen coming from pollen, —; this statement based on a paper "The Occurrence of Pyrrolizidine Alkaloids in Honey Produced from Tansy Ragwort (*Senecio jacobaea*), a Toxic Weed", by Burgett.

Dr. Jude, and particularly Dr. Lamb, used extemporaneous statements in a manner damaging to the honey industry; the implication being that all honeys are carcinogenic. Actually, tansy ragwort (*Senecio jacobaea*) is an introduced weed of the Northwest and only under certain conditions contributes local honey in an insignificant amount when compared to the some 245 million pounds of honey produced in the U.S.

Without going into the ramifications of what is and what is not carcinogenic, it may be in order to suggest that anyone concerned with public information show more prudence about making statements which reflect on the creditability of a product with as many proven virtues as honey.

BAIT HIVES

(Continued from page 220)

Our final recommendation on bait hives is that one should start a program of swarm trapping on a small scale to avoid damaging the source of the wild swarms by over-harvesting. If beekeepers divert too many swarms from the population of wild colonies into their apiaries, then the number of wild colonies will decline. And because honeybee colonies have long lives and slow reproduction, the recovery from a major drop in the wild-colony population will be slow. Unfortunately our ecological knowledge of wild honeybee colonies is very poor. Thus we cannot specify for any area the rate of swarm capture which constitutes over-harvesting. We, therefore, recommend that each beekeeper start on a small scale and then expand slowly in his use of bait hives. In this way it should be possible to develop a feel for the rate of swarm capture which the local population of wild colonies can sustain.

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The nest of the honeybee (*Apis mellifera* L.). *Insects sociaux* 23, 495-512.

RETRIEVING THE HIGH SWARMS

(Continued from page 221)

hook, thereby making it easy to untie rope from cage handle.

The height from which you can retrieve swarms is limited only by the length of the lath you use.

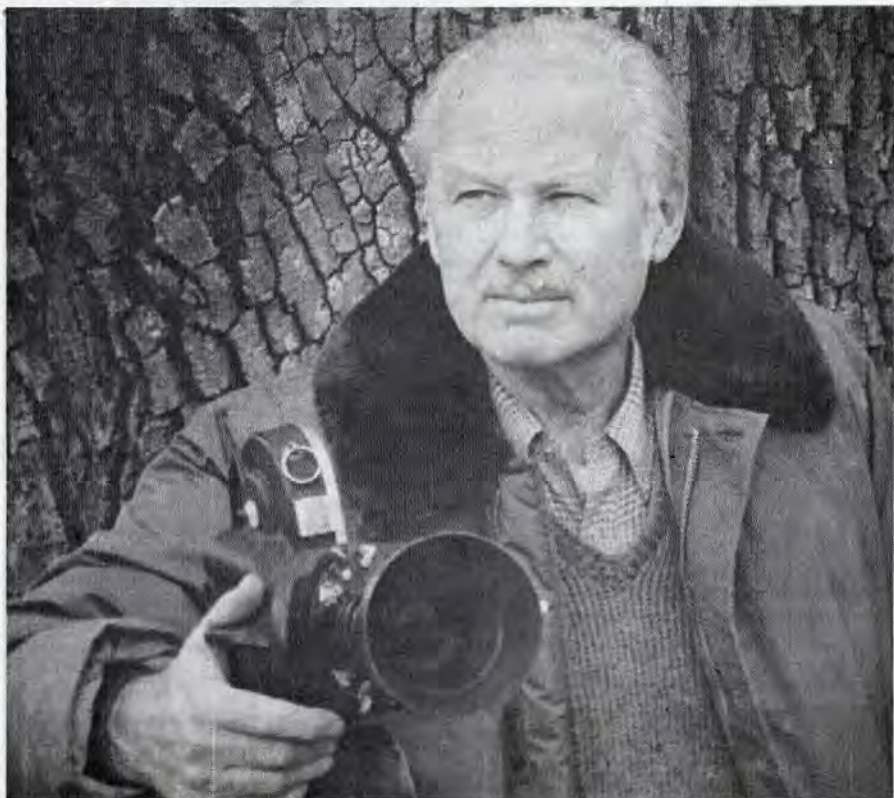
Another advantage I wish to mention is the fact that you do not have to have a new hive ready when the swarm issues. You can keep the bees in the cage a day or two if necessary. Just let them hang under the tree in the shade. They will be all right, confined in the cage, and maybe you will be happier, too, while you get a new hive ready.

FILM PRESENTATION

RENOWNED WILDLIFE photographer and Audubon Society tour speaker Karl Maslowski will give one of his spellbinding film presentations at the Aug. 9-12 Eastern Apicultural Society meeting. This event will be sponsored by the Southwestern Ohio Beekeeper's Association. For registration information on the E.A.S. meeting write E.A.S. Registration, c/o Wm. McNutt, 245 North St., Columbus, Ohio 43216.

GERALDINE BUELL NAMED MICHIGAN BEEKEEPER OF THE YEAR

GERALDINE BUELL, Milford, was named Beekeeper of the Year by the Michigan Beekeepers Association (MBA) during Michigan State University's Farmers' Week (March 20-24). She is shown with Dick Hubbard, MBA president. Mrs. Buell and her husband, Ray, maintain 5,500 colonies, producing extracted and comb honey, and beeswax candles. She was cited for her outstanding contributions and leadership provided MBA the past several years. — M.S.U. Information Services.



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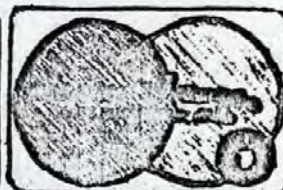
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P. O. BOX 159



PACKAGE BEES — QUEENS — HONEY
 FUNSTON, GEORGIA 31753



Phone 912/941-5522

PRICE LIST

ITALIAN PACKAGE BEES AND QUEENS

We ship pure worker bees by your truck, car, trailer or by parcel post. Prices are F.O.B. Funston, Georgia.

	2 lbs.	3 lbs.	4 lbs.	5 lbs.	Queens
1-24	\$16.25	\$20.50	\$25.00	\$30.00	\$5.75
25-99	\$15.75	\$20.00	\$24.50	\$29.50	\$5.40
100 Up	\$15.25	\$19.50	\$24.00	\$29.00	\$5.00

Clipping Queens 40¢ each — Marking Queens 40¢ each.
 For queenless packages deduct \$3.00 from the above prices.

Packages can be shipped only by parcel post or your transportation.
 Get away for a few days, pool your order with your neighbor, pick your bees up here and save the postage. Deduct 75¢ each if you bring your own usable cages. \$2.00 deposit per package required to book your order — balance due 15 days prior to shipping date.
 For most desirable shipping dates book your order early.
 Prices subject to change without notice. Thank you

Shipping Dates April 1st thru May 20th

ITALIAN QUEENS CAUCASIAN

Nice large queens
 1-24 25-99 100 up
 \$6.00 \$5.40 \$5.00
 Clipping 50¢ Marking 50¢

See April ad for package bee prices.
 Fumidil B fed to nuclei.

Package bees are not guaranteed thru the mail.
 Insurance thru 4th zone only.

May 22nd on
 1-24 25 up
 Queens — \$4.25 \$4.00

Queens are guaranteed in quality and live delivery.

Order 1 or 1,000

MITCHELL'S APIARIES

Otis Mitchell
 and Son-in-Law, DOUGLAS LAMBERTSEN
 Bunkie, La. 71322 Phone: 318-346-2176

Caucasian, Italian,

Dadant Midnite Hybrid

Queens & Pkg. Bees



KANE APIARIES

R. 1, Box 192
 Ph. 512-798-3287
 Hallettsville, Texas 77964



ADIRONDACK MOUNTAIN QUEENS

Selectively bred for superior wintering ability, outstanding honey production, gentleness, disease resistance and a reluctance to swarm.

VIRGIN QUEENS

1-9 — \$2.50 10-99 — \$2.30
 100 & up — \$1.99

MATED QUEENS — \$6.50 each

Marking and clipping — 25¢ each.
 Send for free catalog.

JURICA APIARIES

325 Wells Street
 Johnstown, New York 12095
 518 - 762-3404

LOHMAN APIARIES

Quality and Understanding has kept our family Package and Queen Business going for over 31 years. We don't overbook.

This year try:

Lohman Apiaries

Route 1, Box 8F
Arbuckle, CA 95912
916-476-2322

No Order Is Too Small.

Package prices are set in August. Caucasian Queens are shipped from May 1 to July 1.

MRAZ QUEENS

Winter hardy. Disease resistant.

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

NO PACKAGES

Clip or Mark 35¢

Add 50¢ per order under 10 queens for postage.

Sundown Apiaries

P. O. Box 172
Columbus, Miss. 39701

Ph: 601-327-8739 after 5 p.m.

YELLOW ITALIAN QUEENS

1-24 ... \$4.50 25-up ... \$4.00

FLOYD'S APIARIES

Rt. 1, Box 328 Deville, La. 71328
Phone: 318-466-5289 or 318-443-7879

QUALITY QUEENS

Italian Queens Produced
With Extra Care

1-24	\$5.00
25-up	4.75

Queen Cells Available

GLENN APIARIES

2000 Fortune Hill Rd.
Fallbrook, CA 92028
Ph: 714-728-3731

Do You Need Increase?

5,000

4-frame nucs available

Call for price quotations
and delivery arrangements.

Rio Grande Valley Queens

3 Miles South Jackson Rd. Contact: Tom Sprague
McAllen, Texas 78501 Phone: 512-687-5421

BETTER

BRED

QUEENS

Calvert Apiaries Calvert, AL 36513

THREE BANDED ITALIANS

If you failed to get you queens and packages in April, we can make prompt shipments now. We also have plenty of our Better Bred Queens to make divides and replace those poor queens.

PACKAGES

2-lb. with queen	\$20.00 postpaid
Truck prices	15.50
3-lb. with queen	25.00 postpaid
Truck prices	20.50

QUEENS

1-24	\$5.25
25-99	4.75
100 or more	4.50

A. L. Webb, Manager
Phone: 205-829-6183

Mrs. Jessie S. Knox, Sec.
Phone: 205-829-6074
Call between 5 & 10 PM

THREE BANDED ITALIANS

1978 QUEENS

Starting May 20th

1-9	\$3.25	10-24	\$3.00
25-99	2.75	100 up	2.25

MILLRY BEE CO. MILLRY, ALA. 36558

Rt. 2, Box 55-B

Phone: 205-846-2662



CAUCASIAN

1-10	\$6.20
11-39	5.75
40-99	5.45
100-499	5.15
500 up	4.95

QUEENS





MIDNITE

1-10	\$6.60
11-39	6.15
40-99	5.85
100-499	5.55
500 up	5.35

HOWARD WEAVER & SONS
Rt. 1, Box 16-A Navasota, Texas 77868
add 40¢ per queen.

For clipping and/or marking queens
Ph: 713-825-7714

SUNDANCE



3 Frame

5 Frame

CORRUGATED NUC BOX

Now Introducing
The 5 Frame Nuc Box

Please write for more information, prices and shipping costs

Transport Bees On Frames	Eliminate Nuc Box Deposit
Faster Spring Build Up	Package Bee Container
Pollination Unit	Water Resistant
Splitting Hives	Easy Assembly
Lightweight	Economical
Wax Coated	Reusable

3 Frame Prices	10	100	1000
Screened lids each	\$1.70	1.60	1.50
Solid lids	\$1.55	1.45	1.35

Add shipping costs at 1.8 pounds per box - \$1 per order for pkg.

Orders 50 or less, call UPS for shipping rates

3 frame sample send \$3 5 frame sample send \$3.50

California residents add 6% sales tax

For more information write:

Sundance Honey Company
Post Office Box 12131
Santa Ana, California 92712
(714) 545-3033

HOMAN'S

QUALITY BRED CAUCASIAN & ITALIAN BEES & QUEENS

2-lb. w/q	\$15.00	3-lb. w/q	\$19.00
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Queens **\$4.50**

Queens postpaid airmail. Packages F.O.B. Shannon.

Health certificate furnished. Write for prices and dates on truckload lots.

HOLDER HOMAN APIARIES

Rt. 2, Box 123-B SHANNON, MS 38868 Ph. 601-767-3880

ITALIAN

Package Bees, Queens, and Nucs



Phone (916) 678-3251
After 7:00 678-3424



QUEENS

Two good strains of bees. Very gentle and good workers.

1 to 24	\$7.25
25 to 99	6.50
100 up	6.00

QUEENS

Dadant's Starline Our Regular Italians

1 to 24	\$7.25
25 to 99	6.50
100 up	6.00



QUEENS

1 to 24	\$7.25
25 to 99	6.50
100 up	6.00

Clip and Mark 50¢ each.

GEO. E. CURTIS & SONS, INC.

Box 507 La Belle, Fla. 33935 Phone: 813-675-1665 or 675-1566

1978

QUEENS AND PACKAGES

Italian — Caucasian — Carniolan

QUEENS

\$6.50 ea. postage prepaid
minimum order 10

PACKAGES

\$30.00 2-lb. w/queen
35.00 3-lb. w/queen

postage prepaid

Terms: 25% deposit with order, balance due 2 weeks prior to shipping. Available April 15th, weather permitting.

C.E.M. APIARIES

P.O. Box 303 Grass Valley, CA 95945
(916) 273-1097

ITALIANS (Postage Paid)

In Lots of	Queens	2-lb. & Qn.	3-lb. & Qn.
1-24	\$5.00	\$20.00	\$24.00
25-99	4.90	19.50	23.50
100 up	4.75	19.00	23.00

Clip or Mark Queens — 25¢ ea.

1-99	TRUCK ORDERS	100 up
2-lb. w/q	\$16.75	2-lb. w/q \$15.75
3-lb. w/q	20.75	3-lb. w/q \$19.75

Payments in full 15 days prior to shipping date.

HARDEMAN APIARIES Mt. Vernon, GA 30445 Ph: 912-583-2710

Perrin's High Quality

ITALIAN QUEENS

1-24 \$5.50	25-99 \$5.25	100 up \$5.00
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Clipped & Marked Free Upon Request

Live delivery guaranteed.

PERRIN'S APIARIES

P.O. Box 70 Ponchatoula, LA 70454
Ph. (504) 386-3485

ALL PURPOSE ITALIAN QUEENS

Some plants produce only nectar, other plants produce only pollen. Your hive needs both nectar collectors for honey, and pollen collectors for brood rearing and pollination. Pollen is becoming a popular health food.

Our gentle yellow Italian queens are bred for all these purposes.

2-9	\$5.00	10-49	\$4.75	50 up	\$4.50
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Marking 20¢ Clipping no charge

Sent air mail postage paid 10% payment books your shipping date.

Hel-Le Bee Farm

P.O. Box 95 Phone: 904-468-1494 Hampton, FL 32044

ITALIAN

Package Bees and Queens

Due to the late spring up we expect to be in full operation in the month of May.

2 pound package w/queen \$17.50

Extra queen **5.25**

These prices include postage, special handling and insurance to the 3rd zone, beyond we do not guarantee live delivery.

Neal's Apiaries

Box 502 Hamburg, La. 71339
Phone 1-318-985-2416

YORK'S--- Quality Bred

1 STARLINES

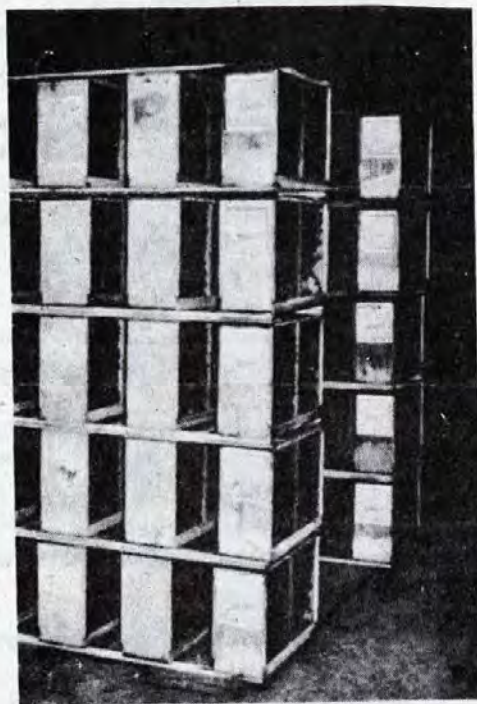
9 MIDNITES

7 ITALIANS

8

**The Strains Preferred by Leading
Honey Producers**

Have you tried York's bees and service? Make 1978 your season to purchase your bees from a firm featuring both types of hybrid stock. New Starlines and Midnites continue to be the only privately developed strains of hybrids that consistently return more honey per colony. Be modern and use hybrid queens that produce vigorous workers which will extend your season and add to your total crop. Shipment made by parcel post, or your truck or station wagon. Information leaflets available on Starlines and Midnites; write us for your copy by return mail. Now booking for choice dates.



Bees & Queens

For Hobbyist - Honey Producer - Pollinator

ITALIANS

	1-3	4-25	26-99	100 up
2-lb. pkg. w/q	\$16.25	\$16.00	\$15.75	\$15.50
3-lb. pkg. w/q	20.85	20.60	20.35	20.00
5-lb. pkg. w/q	32.50	32.00	31.50	31.00
QUEENS	5.50	5.40	5.30	5.20

STARLINE OR MIDNITE

	1-3	4-25	26-99	100 up
2-lb. pkg. w/q	\$16.65	\$16.40	\$16.15	\$15.90
3-lb. pkg. w/q	21.40	21.00	20.75	20.40
5-lb. pkg. w/q	32.90	32.40	31.90	31.40
QUEENS	5.90	5.80	5.70	5.60

Prices F.O.B. Jesup

Queenless packages — deduct \$2.00 per pkg.

Tested Queens—add \$1.00 per pkg. or queen.

Clipped and Marked 50¢ each.

Terms: Small orders cash, larger orders \$2.00 deposit per package and balance three weeks prior to shipping date.

Shipments start first of April depending upon spring weather conditions.

APRIL 1978						
S	M	T	W	T	F	S
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9	10	11	12	13	14	15
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23	24	25	26	27	28	29
30						

MAY 1978						
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7	8	9	10	11	12	13
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21	22	23	24	25	26	27
28	29	30	31			

JUNE 1978						
S	M	T	W	T	F	S
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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	

PLAN NOW on your shipping dates for the coming spring. Present indications are that shipments will have to be planned now for more difficult delivery schedules by parcel post. Now booking orders.

Particularly plan to use hybrids for the coming season. Our rate of production of hybrids continues to rise as modern, commercial beekeepers learn of increased benefits to them. **BEE WISE — HYBRIDIZE.**

YORK BEE CO.

POST OFFICE BOX 307

(The Universal Apiaries)

412 W. Orange St. Ph: 912-427-7311

JESUP, GEORGIA 31545

**Help us to help you
ORDER TODAY**

BUY & SELL

Classified rates: 32¢ per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it) count as one word. Copy should be in by the 10th of the month, preceding publication. Send classified ads to: The A. I. Root Co., Advertising Department, Gleanings in Bee Culture, 623 W. Liberty St., P. O. Box 706, Medina, Ohio 44256.

MAGAZINES

THE AMERICAN BEEKEEPING FEDERATION needs your support; participate in national affairs; receive six issues of the **NEWS LETTER** per year. The ABF, Rt. 1, Box 62, Cannon Falls, Minn. 55009.

DO YOU FIND IT difficult to secure information about sheep and sheep ranching methods? **THE SHEEP AND GOAT RAISER** reaches more sheepmen with more information on range sheep than any other magazine published. Subscription, \$5. Box 1840, San Angelo, Tex. 76901.

THE SCOTTISH BEEKEEPER — Magazine of The Scottish Beekeepers' Association, International in appeal. Scottish in character. Membership terms from R. G. Brown, Publicity Convenor, Richmond Villa, Richmond Avenue, Dumfries, Scotland. Sample copy sent. Price 20 pence or equivalent.

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.

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

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

Bee Craft — Official (monthly) magazine of the **BRITISH BEEKEEPERS ASSOCIATION**. Contains interesting and informative articles. Annual Subscription (Sterling cheque £2.22p. or U.S. \$6.) Post paid. The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex, RH10 3DS.

INDIAN BEE JOURNAL. Know facts concerning the honeybees of India. The only bee journal of India published in English. Subscription Rs.24/- (Indian Currency) or £ 1.30 (Sterling) or \$4.25 (U.S.A.) per year (International MO). Sample copy Rs.5/- (Indian Currency) or 25d. (Sterling) or 75¢ (USA) - (No foreign remittance in coins or currency) - All India Beekeepers Association, 727 (new) Sadashiv Peth, POONA 411 030 (INDIA).

DAIRY GOATS—for milk, pleasure and profit. Excellent for children, women and family! Monthly magazine \$9.00 per year (12 issues); \$17.00 two years (24 issues); \$24.00 three years (36 issues). **DAIRY GOAT JOURNAL**, Box 1908 T-3, Scottsdale, Arizona 85252.

MISCELLANEOUS

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

EMBLEMS CUSTOM EMBROIDERED; for club or business. Minimum ten. Write: TLM28, 1929 East 52nd, Indianapolis, 46205.

DISTRIBUTORS WANTED for new items. Consolidated Sales, Box 3231-G, Orlando, FL 32802.

LOANS UP TO \$50,000 to start or expand commercial beekeeping operations. Majority of applications approved. Where and how details, \$3.00. Floyd Jerred, Rt. 1, Portage, WI 53901.

HONEYWINE recipe, Herbs, Spices. Free catalog. Bacchanalia, 273BC, Riverside, Westport, CT 06880.

QUALITY BEE VEIL: Nylon mesh, elastic top, drawstring, folds flat. \$4.50 for two. Postpaid. **Supplies**, Post Box 411, Farmville, Va. 23901.

"MY STORY by A. Honeybee": "Beekeeping 'Round the World"; "Beekeeping for Beginners". Each has 40 colored slides, printed script and cassette recording, \$27.50 each or \$75.00 for all three. C. A. Divelbiss, Route 10, Mansfield, Ohio 44903.

BEEKEEPERS PLANNING Guide & Record Book helps keep track of income, expenses, inventory, production, beeyard information. Includes year-round management planner \$2.95 postpaid. M. Chatelain, P. O. Box 1373, Baton Rouge, Louisiana 70821.

HAVE YOU read Richard Taylor's **HOW TO RAISE BEAUTIFUL COMB HONEY?** \$3.95 ppd. Linden Books, Interlaken, NY 14847.

HONEY FOR SALE

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

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

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

CLOVER, Orange, U.S. and Yucatan Wildflower, in sixties. Other flavors and bakery grade available. **MOORLAND APIARIES**, P.O. Box 387, Chartley, Mass. 02712.

HELP WANTED

WANTED SINGLE MAN for seasonal work. No commercial experience required. Room and board. Cash wage. John L. Wilson, Lakeside, Nebr. 69351.

GLEANINGS IN BEE CULTURE

POSITION WANTED

YOUNG BEEKEEPER with four years' experience desires work with commercial operator. Prefer Wisconsin or nearby area. Contact: Michael Turba, 233 Lakelawn Place, Madison, WI 53703. Phone: 608-257-3871.

FULLTIME beekeeping job. I am single, young, hardworking, responsible. Prefer northwest area. Michael, 503-687-0571.

HONEY WANTED

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

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

WANTED — All types in drums, tins, truck and car lots. Send samples and prices each lot. Chas. E. Farris Co., Inc., 40 Worth Street, New York, N.Y. 10013. Established since 1910.

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

WANTED — White Extracted or Comb Honey. Send sample. Millersport Honey Co., Millersport, Ohio. 614-467-2201.

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

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

WANTED: All grades of honey in 60's or drums, truck or rail, car load lots. Send sample and price to **DUTCH GOLD HONEY, INC.**, 2220 Dutch Gold Dr., Lancaster, Pa. 17601.

WANTED—All grades of extracted honey. Send sample and price to MacDonald Honey Co., Sauquoit, New York 13456. Area Code 315 /37-5662.

WANTED HONEY! The Honey Man's Raw Honey. Forest Lake, Minn. 55025. Phone: 612-464-5420, 612-922-5234.

WANTED: Comb and all grades of extracted in 60's or drums. Send sample and price to **MOORLAND APIARIES INC.**, P.O. Box 387, Chantley, Mass. 02712.

I NEED HONEY — Give me a call evenings so we can talk. Frank Joynt, 914-687-7552.

BEEWAX WANTED

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

WRITE FOR SHIPPING TAGS and quotations on rendered beeswax. We buy from one pound up and if you have over-25 pounds let us work it into foundation for you at a 25% saving. Walter T. Kelley Co., Clarkson, Ky.

BEEWAX WANTED — Highest prices paid in cash or trade for bee supplies. Dadant & Sons, Inc., Hamilton, Ill. 62341 OR ANY BRANCH. See Dadant ad for addresses.

BEEWAX WANTED — Small lots to truck loads. Write or call. **DONALD SCHMIDT**, 859 W. 9th Street, Winner, S.D. 57580. Ph: 605-842-0350.

WANTED

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

BEEES, LOCATIONS and equipment in Idaho or western Montana. Box 101, San Carlos, CA 94070. (415) 591-9149.

MANAGER FOR migratory beekeeping outfit in Texas and Nebraska. Start immediately. Must be experienced and have references. Opportunity to lease in the future. Try us. Box 3, Gleanings, Medina, Oh. 44256.

WANTED: BEEES to run on share crop. Bruce Rabe, Box 245, Woonsocket, South Dakota 57385.

WANTED: Work for beekeeper in Hawaii or small apiary setup. Brunner, Star Route, Winona, MO 65588.

WANTED TO BUY: Small apiary located in good queen rearing area. No junk. Box 51G, Gleanings, Medina, OH 44256.

SEEDS

HONEY PLANTS our specialty. Catalog on request. Pellett Gardens, Atlantic, Iowa 50022.

HUBAM SWEET CLOVER SEED For Sale, 85% germination. 50-lbs. 85¢ lb.; 100-lbs. 72¢ lb.; 500-lbs. 68¢ lb., FOB San Antonio, TX. Douglass W. King Co., P.O. Box 20320, San Antonio, TX 78286.

POLLEN

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

FOR ALL your pollen needs—Bee Feed or Human Consumption Pollen—buy direct from North America's largest producer. North Peace Apiaries Ltd., R.R. 1, Fort St. John, B.C. Ph: 604-785-4808.

BEEES & QUEENS FOR SALE

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

STUD SERVICE—from your breeder: \$25.00 each daughter. No minimum order. Breeder returned. Winter-Hardy Queens, Barneveld, N. Y. 13304.

PELICAN STATE QUEENS — Italian Type Hybrids - \$4.50 each. Pelican State Apiaries, P.O. Box 2904, Baton Rouge, LA 70821 - Phone 504-293-3034 Evenings.

1978 PACKAGE bees with Italian queens, available April-May. 2-pound \$14.50; 3-pound \$19.50. Nucs available. 20% books order. Ron Erb, 4700 Sardine Creek Rd., Gold Hill, Oregon 97525. Ph: (503) 855-1248.

ITALIAN QUEENS and Packages. Queens 1-5 \$4.75, 6-25 \$4.50, 26-100 \$4.25, 500 and up \$3.75. 2-lb. packages w/Q \$13.50 plus package. John L. Rickard, Rt. 3, Box 449E, Cottonwood, CA 96022. Ph: (916) 347-4141, 347-4547-365-5551.

NORTHERN BRED ITALIAN QUEENS — Selected breeders June 7-September \$5.00. Live delivery guaranteed. Barry Dunlap, Olanta, Penna. 16863. 814-236-2458.

PENNSYLVANIA double-grafted Italian queens. Northern, hardy stock. Nucs fed Fumidil-B. Taking bookings now with payments. Live delivery guaranteed. May 1 to September 30th. \$5.00 1-24; \$4.50 25 and up. Marking 50¢. James Mentzer, RD 2, New Holland, Pa. 17557. Ph: 717-354-8042.

QUEENS, MRAZ—1-10 \$6; 11-25 \$5.75; 26 up \$5.50. ROUSE APIARIES, Rt. 2, Box 373, Warsaw, NC 28398. Phone: (919) 293-7166.

ONE-STORY BEEHIVES available after June 15th in New York, Massachusetts, or Maine. \$50 hive. Norman Sharp, Fishers, NY 14453. 716-924-2747.

NUCS-3-frames loaded with bees and brood, with young, established Italian queen. 1-3 \$34.50; 4-10 \$34.00; 11 up \$33.00. Price includes shipping. For more information call or write Coleman Apiaries, 344 Westside Dr., Roswell, GA 30075. 404-993-0004.

ITALIAN, CAUCASIAN or STARLINE. April or May, delivered in Pardeeville, Wisconsin. Also some hives of bees. Write or call for prices. Ramsey Jewelry, Pardeeville, Wisconsin. 608-429-3045.

LOUISIANA QUEENS—Good cold weather bees from quality breeding techniques. Any number, postpaid with inspection certificate, \$4.50 each. Clipped and marked free. Larry Mornhinveg, 1223 Convention, Baton Rouge, LA 70802.

200 SINGLE-STORY hives, 1978 queens, available May, \$37.50. Write: Bees, 390 Birkshire Dr., Dixon, CA 95620.

PACKAGE BEES with Italian Queens—Available April 1978. Two lbs. @ \$15.50; 3 lbs. @ \$20.50. F.O.B. Alabama, Magnolia Springs Apiaries, P. O. Box 11, Hwy. 98, Magnolia Springs, Alabama 36555.

PACKAGE BEES. Pick-up Dearborn, MI. April and May. Bill Jansen, 21917 Garrison Road, Dearborn, MI 48126. 313-565-1747 night. 313-562-1626 day.

ROYAL JELLY

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

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

BEE SUPPLIES FOR SALE

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

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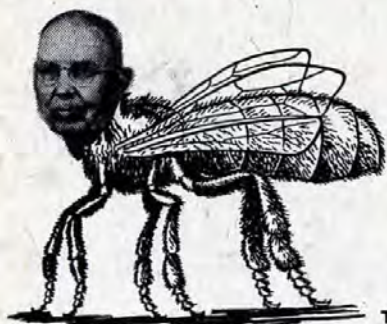
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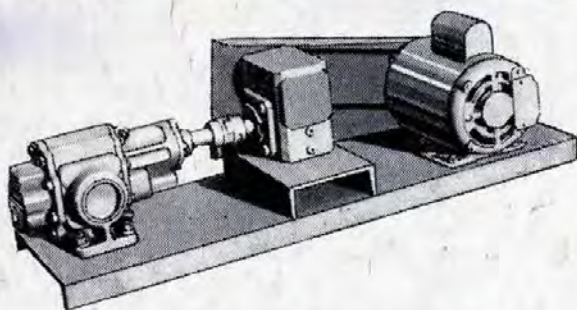
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